Final Supplemental Remedial Investigation/ Feasibility Study Field Sampling and Data Report

River Mile 11 East
Portland, Oregon

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Prepared for

RM11E GROUP

Prepared by

GSI Water Solutions, Inc.
55 SW Yamhill Street, Suite 300 Portland, OR 97204
P: 503.239.8799 F: 503.239.8940
info@gsiws.com www.gsiws.com

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Abbreviations and Acronyms

µg/kg	microgram(s) per kilogram
ADCI	Association of Diving Contractors International
ALS	ALS Environmental
AOPC	area of potential concern
ASTM	American Society for Testing and Materials
bgs	below ground surface
BMC	Ballard Marine Construction, Inc.
Cargill	Cargill, Inc.
Cascade Drilling	Cascade Drilling, LP
City	City of Portland
cm	centimeter
COC	contaminant of concern
com	voice communications equipment
DEA	David Evans and Associates, Inc.
DEQ	Oregon Department of Environmental Quality
dGPS	differential global positioning system
DOF	Dalton, Olmsted & Fuglevand, Inc.
EDD	electronic data deliverables
EPA	U.S. Environmental Protection Agency

FD	Field Director
FS	feasibility study
ft/bgs	feet/below ground surface
Glacier NW	Glacier Northwest, Inc.
GSI	GSI Water Solutions, Inc.
HPAH	high molecular weight PAH
HSP	Health and Safety Plan
ID	identification
IDW	investigation-derived waste
LPAH	low molecular weight PAH
LWG	Lower Willamette Group
MDL	method detection limits
mg/kg	milligram(s) per kilogram
MRL	method reporting limits
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NTU	nephelometric units
ODOT	Oregon Department of Transportation
OF	outfall
OHW	ordinary high water
OVM	organic vapor monitor
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD/F	polychlorinated dibenzo-p-dioxins/furans
PCE	tetrachloroethylene
PEF	potency equivalent factors
PID	photoionization detector
PM	Project Manager
Portland Harbor	Portland Harbor Superfund Site
ppm	parts per million
PVC	polyvinyl chloride
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
QA/QC Solutions	QA/QC Solutions, LLC

RA	risk assessment
RAL	remedial action level
RG	registered geologist
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RM	river mile
RM11E	River Mile 11 East
RM11E Group	Cargill, Inc., CBS Corporation, City of Portland, DIL Trust, Glacier Northwest, Inc., and PacifiCorp
ROD	Record of Decision
RSS	Research Support Services, Inc.
SAC	Sampling and Analysis Coordinator
SAP	sampling and analysis plan
SOP	standard operating procedure
SOW	scope of work
SVOC	semivolatile organic compound
TCE	trichloroethylene
TEF	toxicity equivalency factors
TEQ	toxic equivalent
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USGS	U.S. Geological Survey
VOC	volatile organic compound
Willamette CRA	Willamette Cultural Resources Associates, LTD
Work Plan	Supplemental Remedial Investigation/Feasibility Study Work Plan

SECTION 1

Introduction

This Field Sampling and Data Report, prepared by GSI Water Solutions, Inc. (GSI), for the River Mile 11 East (RM11E) Project Area is submitted by Cargill, Inc. (Cargill); CBS Corporation; City of Portland (City); DIL Trust; Glacier Northwest, Inc. (Glacier NW); and PacifiCorp, collectively referred to as the RM11E Group. This report provides the results of the surface sediment, bank soil, upland (subsurface) soil, and groundwater sampling efforts described in the EPA-approved Final Supplemental Remedial Investigation and Feasibility Study (RI/FS) Work Plan (Work Plan; GSI and DOF, 2013). This work is being conducted pursuant to the Statement of Work (SOW) contained within the Administrative Settlement Agreement and Order on Consent (EPA Region 10, CERCLA Docket No. 10-2013-0087). These investigations are supplementary to and consistent with, investigations conducted for the RI/FS of the Portland Harbor Superfund Site (Portland Harbor) and required by EPA to facilitate selection and design of a final remedy at the RM11E Project Area.

The RM11E Project Area is shown in Figure 1-1, and lies between approximately river mile (RM) 10.9[1] and RM 11.6 along the east bank of the Willamette River and includes Area of Potential Concern (AOPC) 25 (from the Draft FS for the Portland Harbor [Anchor QEA et al., 2012]) and the riverbank area to the top of the bank.

1.1 Background

Existing data for RM11E were inventoried, reviewed, and summarized in Section 3 of the Work Plan. The existing data set was reviewed to identify additional information or data gaps that would be needed to support characterization, remedy selection, and remedial design within the RM11E Project Area. RM11E was not originally included in the initial study area (RM 3.5 to RM 9.2) investigated by the Lower Willamette Group. To fill these data gaps, the RM11E Group and EPA identified a set of supplemental RI/FS investigations that will inform remedy selection and expedite the final remedial design following issuance of the site-wide Portland Harbor Record of Decision (ROD). The identified data gaps are described in Section 6 of the Work Plan.

The data presented in this report will be used in the forthcoming Recontamination Assessment and Implementability Study Reports, which are described in Sections 2.8 and 2.9 of the SOW and Section 9 of the Work Plan.

1.2 Purpose and Objective

As described in the Work Plan, this report compiles supplemental environmental data collected to date under the SOW. The RM11E Supplemental RI/FS investigation completed

[1] The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).

to date consisted of multiple sampling efforts, which are detailed in the Upland Groundwater and Bank Soil Sampling and Analysis Plan (SAP; Appendix B of the Work Plan) and the Surface Sediment SAP Addendum (Appendix C of the Work Plan). This report documents field activities and analytical results from each of those tasks, and describes deviations from the associated SAPs.

The results of a porewater investigation scheduled to be conducted in late summer, early fall of 2014 will be reported in a separate data report. Interpretation and discussion of all the data collected under the SOW will be contained in the Recontamination Assessment Report and Implementability Study Report.

1.2.1 Upland Groundwater and Bank Soil SAP

The purpose of the work described in the Upland Groundwater and Bank Soil SAP was to gain a sufficient understanding of the extent of contaminants of concern (COCs) in bank soils and upland groundwater within the RM11E Project Area to support the Recontamination Assessment and Implementability Study and meet the following objectives:

- Evaluate groundwater as a potential recontamination pathway by characterizing the physical (soil characteristics and groundwater levels) and chemical components (polychlorinated biphenyls [PCBs] and other COCs) of the groundwater system feeding into the RM11E Project Area. Groundwater monitoring sites were located slightly landward along the top of the river bank adjacent to and upgradient of the potential sediment management areas Figure 1-2 identified in the Draft FS Report for Portland Harbor (Anchor QEA et al., 2012). Newly collected data will be used to: (1) characterize groundwater quality and flow conditions (spatially and temporally); (2) assess whether groundwater is a significant pathway for consideration in the Recontamination Assessment, and; (3) evaluate groundwater's effect, if any, in the Implementability Study.

- Complete an evaluation of the recontamination potential from potentially erodible surface soils (from zero to 1 foot[2] below ground surface [bgs]) along the riverbank through the collection of supplemental bank soil samples. These data will be used to evaluate whether bank erosion or overland flow is a significant pathway for consideration in the Recontamination Assessment and evaluate potential implementability considerations associated with the riverbank areas.

Following approval of the Work Plan, a fifth well adjacent to the northern end of the RM11E Project Area was added as a condition of EPA's approval of the Work Plan (see Appendix A1 for related correspondence). . The objective of this well was to evaluate potential impacts associated with the former Albina Engine and Machine Works shipyard and operating area.

[2] For consistency with the previous RM11E Focused Sediment Characterization, "surface soil" is defined using the same depth parameters as "surface sediment." namely it includes soils collected between zero and 1 foot (approximately 30 centimeters [cm]) bgs. This is consistent with the Draft Final RI for the Portland Harbor, which defines the "surface sediment" interval as 30 cm (Integral et al., 2011).

1.2.2 Surface Sediment SAP Addendum

The purpose of the work described in the Surface Sediment SAP Addendum was to: (1) further characterize the extent of PCB concentrations north of the Fremont Bridge, and; (2) collect under-dock surface sediment samples to support the Implementability Study and meet the following objectives:

- Measure and further delineate PCB concentrations in surface sediment between RM 10.9 and RM 11.0 within and adjacent to locations where PCBs previously were detected in surface sediment (see Figure 1-2).
- Measure and delineate PCB levels in surface sediment beneath the main Glacier NW and Cargill docks.

After approval of the Work Plan, and in response to EPA's directive to conduct further analysis of dioxins and furans, two additional objectives were added (see Appendix A2 for related correspondence):

- Evaluate dioxin/furan concentrations in select locations as described in Section 6.1 of this report.
- Assess any changes in PCB concentrations by re-occupying six sediment sampling locations where elevated PCB concentrations previously were reported.

The Quality Assurance Project Plan (QAPP) Addendum (Appendix A of the Work Plan) describes the quality assurance/quality control (QA/QC) procedures that were used to determine concentrations of selected chemicals in environmental media that were collected as part of this RM11E Supplemental RI/FS investigation. Deviations from the QAPP Addendum, including the addition of the dioxin/furan analysis, are described in this report.

1.3 Document Organization

This report presents the field and laboratory procedures and analyses of the RM11E surface sediment, bank soil (i.e., surface soil), subsurface soil, and groundwater quality monitoring efforts. The investigative approach and sampling procedures are fully described in the Work Plan, QAPP Addendum, Upland Groundwater and Bank Soil SAP, and Surface Sediment SAP Addendum. This report summarizes the analytical data collected during the field sampling efforts, the procedures laid out in the project QAPP Addendum and SAPs, and presents any deviations from the proposed sampling efforts.

This report is organized into the following sections:

Section 1 – Provides an introduction to the project and objectives.

Section 2 – Summarizes the project team and schedule.

Section 3 – Summarizes upland groundwater monitoring well drilling, construction, and development activities. It also includes a description of the subsurface soil sample collection methodology for samples collected from the monitoring well borings.

Sections 4 through 6 – Summarizes sampling approaches, station positioning, field documentation, and sampling procedures for groundwater, surface bank soils, and surface sediment, respectively.

Section 7 – Summarizes field QA/QC samples and equipment decontamination procedures, sample handling, documentation and transport procedures, including cultural resource monitoring efforts.

Section 8 - Describes the laboratory analysis program, including laboratory QA/QC protocols and data validation procedures.

Section 9 – Summarizes data management procedures.

Section 10 – Presents analytical results.

Section 11 - Presents references.

Supporting information including field documentation, photographs, laboratory and data validation reports, the cultural resources monitoring report, and data files are provided in Appendices A through J.

SECTION 2

Project Organization

This section summarizes the organizational structure, health and safety requirements, and schedule for the RM11E Supplemental RI/FS investigation.

2.1 Team Organization

Field sampling activities were overseen and coordinated by GSI, under contract to Dalton, Olmsted & Fuglevand, Inc. (DOF). GSI staff fulfilled the following roles, as identified and discussed in detail in the SAPs, GSI Health and Safety Plan (HSP; Appendix D of the Work Plan), and QAPP Addendum:

- Project Manager
- Technical Project Lead
- Field Director (FD)/Health and Safety Officer
- Sampling and Analysis Coordinator
- QA Manager
- Data Manager

Additional support was provided by the following subcontractors:

- **ALS Environmental (ALS) –** Courier and analytical service provider for all sampling activities.
- **Applied Professional Services, Inc**. – Private utility locater at all drilling locations.
- **Ballard Marine Construction, Inc. (BMC) –** Vessel operator and dive contractor for manual sediment sampling activities in limited access locations.
- **Cascade Drilling, LP (Cascade Drilling) –** Upland groundwater monitoring well driller and investigation-derived waste (IDW) management.
- **David Evans and Associates, Inc. (DEA) –** Surveyor of the groundwater monitoring wells and bank soil sample locations.
- **Research Support Services, Inc. (RSS) –** Vessel operator for power-grab sediment sampling.
- **QA/QC Solutions, LLC (QA/QC Solutions) –** QA review and validation of the analytical data
- **Willamette Cultural Resources Associates, LTD (Willamette CRA) –** Archaeological/cultural resources oversight during sediment sampling and drilling activities.

Project staffing did not deviate from that described in the SAPs and QAPP Addendum, with one exception, BMC performed the diver-collected sediment sampling services, including vessel operations, rather than RSS.

2.2 Health and Safety

Field activities were completed in compliance with Hazardous Waste Operations and Emergency Response regulations under Chapter 29 Code of Federal Regulations 1910.120. GSI developed a project-specific HSP to ensure the safety of GSI personnel working onsite and compliance with relevant regulations and standards. The HSP covered all identified field and inwater hazards associated with the tasks necessary to complete the investigation activities. Subcontractors prepared their own HSPs and were responsible for monitoring and compliance with their plans. A diver-specific HSP was prepared by the diving contractor and reviewed and approved by EPA before implementation.

2.3 Project Schedule

A summary of the field activity schedule completed as part of the RM11E Supplemental RI/FS investigation is provided in Table 2-1. Surface power-grab sediment sampling was conducted from October 30 to October 31, 2013. Groundwater well installation, subsurface soil sampling, and bank soil sampling were conducted on October 31 and from November 18 to 22, 2013. The first round of groundwater monitoring samples was collected from December 4 to 10, 2013, and the second round was collected on April 14 and 15, 2014. The limited-access surface sediment samples were collected manually by divers on May 1 and 2, 2014. Interim validated results were provided to EPA in the December 2013, January 2014, and May 2014 monthly progress reports as further described in Section 1 of the Work Plan.

The forthcoming Recontamination Assessment and Implementability Study Reports are scheduled to be submitted to EPA 60 days after submission of the Final Porewater Characterization Report as outlined in a June 4, 2014 e-mail to Sean Sheldrake from Jackie Wetzsteon on behalf of the RM11E Group.

SECTION 3

Monitoring Well Drilling, Installation, and Subsurface Soil Sampling

This section describes the procedures that were used for drilling, construction, well development, and completion of five groundwater monitoring wells. The monitoring well locations are shown in Figure 1-2 with coordinates and well construction details provided in Table 3-1. Depth-discrete soil sample collection is discussed in this section while groundwater monitoring activities are discussed in Section 4. EPA provided oversight for all phases of the monitoring well drilling and installation and DEQ representatives were onsite to observe a portion of the drilling and borehole logging activities. Unless otherwise noted, these activities were conducted in accordance with the EPA-approved Upland Groundwater and Bank Soil SAP.

3.1 Monitoring Well Locations and Utility Clearance

Four new monitoring wells (RM11E-MW001, -MW002s, -MW003d, and –MW004) were proposed in the Work Plan that was submitted to EPA on October 3, 2013, to complement two existing monitoring wells (MULT 1007 and MULT 89881). EPA's approval of the Work Plan was conditional upon the addition of a new well in the vicinity the former Albina Engine and Machine Works shipyard operations in the northern portion of the current Glacier NW property. Accordingly, the RM11E Group added a fifth shallow monitoring well (RM11E-MW005). The location of the five new and two existing wells are shown in Figure 1-2. Correspondence between the regulatory agencies and the RM11E Group regarding this additional well is provided in Appendix A1.

Before commencement of fieldwork, the target monitoring well locations were sited and staked by GSI following consultation with the property owners and drilling contractors and review of site utility documents. Some well sites were shifted slightly from the target locations specified in the SAP because of site constraints, such as heavy traffic (i.e., RM11E-MW001), the presence of fences (i.e., RM11E-MW002s and -MW003d), and overhead features (i.e., RM11E- MW004). The actual and proposed monitoring well locations are provided in Appendix B1. Table B1 lists the monitoring well coordinates while Figure B1 shows their relative positions on a map.

After staking the monitoring well locations, a utility locate was requested and completed within a 50-foot radius of each staked location through the Oregon Utility Notification Center (One Call Locates). GSI staff members met the utility locators from the City of Portland and Level3 Communications to ensure adequate set-backs from stormwater, public drinking water, and fiber optic infrastructure. A private utility locator, Applied Professional Services, Inc., also was subcontracted to perform private utility locates at all drilling locations.

After completion of the utility locates, each borehole location was pre-excavated by air-knife and vacuum excavation to a depth of 5 feet by Cascade Drilling to confirm that no shallow underground utilities would be impacted by drilling. To provide for alternative drilling locations in the event of refusal (i.e., depth or point at which borehole drilling cannot be advanced to target depth), one or two extra locations within 20 feet of the target station also were air-knifed. To facilitate drilling activities, these locations were positioned parallel to the orientation of the drill rig, such that they could back up to the next hole should refusal be encountered. To create a safe working area, unused points were covered temporarily, using steel plates or heavy rubber mats. At the completion of the well installations, any unused points were filled and abandoned properly by Cascade Drilling. Excavated soils for utility clearance were drummed and managed as IDW (see Section 3.8).

3.2 Monitoring Well Drilling and Equipment Decontamination

In November 2013, the five new groundwater monitoring wells were drilled using rotosonic drilling methods. The wells were drilled, constructed, and developed by an Oregon-licensed driller (Cascade Drilling) under the direction of an Oregon registered geologist (RG) from GSI.

Each monitoring well was drilled with a 6-inch-nominal-diameter boring core to maintain an annular space of 2 inches between the borehole wall and the 2-inch-nominal-diameter well casing. The borehole cores were advanced at 5-foot intervals, rather than longer 10- or 20-foot runs to enhance core sample recovery. Greater sample recovery allowed for more comprehensive characterization of lithology with depth and improved stratigraphic control.

Drilling and well development equipment was decontaminated with a high-pressure steam cleaner and pressure washer before each use. Decontamination water was captured and placed in properly labeled drums and stored in a secure location for disposal with other IDW (see Section 3.8).

3.3 Field Screening and Methane Monitoring

Field screening for health and safety and potential contaminant characterization was completed using a MiniRAE 3000 organic vapor monitor-photoionization detector (OVM-PID) and a Solaris Multigas Detector-MSHA. Health and safety screening was done on the work platform of the drill rig, inside the steel drill casings, and inside the plastic bags holding the soil cores. Additional readings for potential contamination were completed by placing soil aliquots from each 5-foot core interval for all of the well borings into a sealable plastic bag, disaggregating the sample, and after several minutes, inserting the OVM-PID probe in the airspace in the bag above the soil.

No detections of combustible gases, hydrogen sulfide, carbon monoxide, or volatile organic compounds (VOCs) were made within the breathing zones, working spaces, or equipment of the drilling crews. Similarly, there were no detections of any combustible gases, hydrogen sulfide, or carbon monoxide in the plastic bags containing the soil samples.

Additionally, the PID did not detect any VOCs in the soil samples collected from boreholes for RM11E-MW001 and RM11E-MW003d. Low-level VOC detections were observed in the borehole soils from RM11E-MW002s (0.2 to 0.4 parts per million [ppm]), RM11E-MW004

(0.1 ppm), and RM11E- MW005 (0.1 ppm). These detections are considered to be insignificant because the PID responds to a number of influences including temperature, humidity, soil moisture content, and operational conditions. Complete instrument readings for the soil samples are provided in the soil logs in Appendix B2.

3.4 Borehole Logging

The soil cores were photographed and logged in the field by an Oregon RG in general accordance with American Society for Testing and Materials (ASTM) D2488 – Standard Practice for Description and Identification of Soils (Visual/Manual Procedure). These classifications are based on a visual examination of the soil and a determination of the predominant fractions of soil (e.g., gravel, sand, silt, and clay). Approximate physical or textural soil characteristics (e.g., color, odor, coarseness, gradation, particle shape and roundness, soil moisture conditions, and consistency) were recorded on field boring logs. Appendix B2 includes drafted copies of the logs. Appendix B3 includes photographs of soil cores from each well arranged in sequential order from ground surface to the total borehole depth.

3.5 Subsurface Soil Sampling

Soil samples were collected throughout the overlying artificial fill and underlying upper 5 feet of native alluvium material. The contact between the artificial fill and the native alluvium was determined by the RG based on field observations, such as changes in grain size, color, anthropogenic debris, and degree of cementation. Soil borings and horizon boundaries were photographed and logged to document such determinations and are provided in Appendices B2 and B3.

For each 5-foot core, a soil sample was collected representing the full recovery length of each 5-foot core interval: soil was obtained from the core center using a decontaminated stainless-steel spoon, homogenized in a decontaminated stainless-steel bowl and transferred into laboratory-provided soil sample jars. These core samples were collected from each 5-foot core interval until at least 5 feet below the base of the artificial fill. A composite sample of the artificial fill was also collected by placing equal volumes of soil from core intervals representing the full length of the artificial fill and homogenizing this soil as above. This composite sample and the sample of upper 5 feet of native alluvium were submitting to ALS for analysis of PCBs and other potential COCs as described in Section 8. All other samples were submitted to ALS for frozen archival.

The SAP indicated that composite samples representing the unsaturated and saturated portions of the artificial fill would be collected. However, at the time of well installation and soil sampling in the four new shallow monitoring wells (RM11E-MW001, -MW002s, -MW004, and –MW005), the full thickness of the artificial fill was found to be unsaturated and as a result no samples for saturated artificial fill were collected. In the deep monitoring well (RM11E-MW003d), the full thickness of the artificial fill also was found to be unsaturated. Because this well is co-located with RM11E-MW002s, a soil sample of the unsaturated artificial fill was collected for archiving.

Scoops, spoons, mixing bowls, and other equipment used to collect samples were decontaminated using the multi-step process described in the SAP and Section 7 of this report. All decontamination fluids and remnant soils from logging and sampling were placed in properly labeled drums dedicated to each borehole as described in Section 3.8.

3.6 Well Construction

Summaries of well completion details are provided in Table 3-1. The well construction and soil logs are provided in Appendix B2. The monitoring wells were constructed of 2-inch-diameter Schedule 40, flush-threaded, polyvinyl chloride (PVC) well casing and completed with a 0.010-inch milled slot screen and 10-20 Colorado silica sand filter pack. The filter pack was placed within the 2-inch annular space from the bottom of the tailpipe to 2 feet above the top of the screen.

The four shallow monitoring wells (RM11E-MW001, -MW002s, -MW004, and -MW005) were completed and screened across the base of the fill to account for seasonal and tidal groundwater level fluctuations. Completed total depths of the shallow wells ranged between approximately 36 and 43 feet below ground surface (ft bgs), including a 5-foot tailpipe sump. A deeper well (RM11E-MW003d) was drilled in a paleochannel to a depth of 106 ft bgs, penetrating into Troutdale Formation Gravels at 103.5 feet bgs. The well was completed within the paleochannel deposits with the screen interval set between 90 to 100 ft bgs.

All wells were drilled and completed as described in the SAP or as agreed to based on subsequent regulatory agency communication, with a few minor exceptions that will not affect the quality of data:

- Given the fine-grained, continuous, silt (ML) encountered below the base of the artificial fill at RM11E-MW002s, a 20-foot (versus 15-foot) well screen was installed to increase recharge to the well and the likelihood of obtaining a groundwater sample from this low-permeability confining unit.
- The tailpipe sumps attached to the bottom of each well screen were 5 feet long versus the 3-foot lengths identified in the SAP. The tailpipes were threaded by the manufacturer on the top and bottom so they could be attached to the base of the well screen and be fitted with an end cap at its base. Fashioning a 3-foot tailpipe would have required trimming off the bottom threads and using PVC solvent cement or epoxy resin to attach the end cap, potentially introducing contaminants into the completed well.

3.7 Well Development

After a minimum of 24 hours had passed since the surface seal was installed, well development was conducted to remove fine-grained material from the filter pack and borehole, thereby improving the hydraulic connection between the well and the water-bearing zone(s). The five new monitoring wells and the two existing wells were developed by the drilling contractor and GSI staff members using a combination of surging, bailing, and pumping in general accordance with the well development sequence specified in the

SAP until groundwater parameters stabilized and turbidity dropped to acceptable levels (5 to 10 nephelometric units [NTUs]).

At the completion of development, the turbidity in six of the wells ranged from 0.28 NTU in MULT 89881 to 4.38 NTU in RM11E- MW003d. The stabilized field parameters and total volume purged during development of the wells and before collecting groundwater samples are provided in Section 4. Well development water was stored in Department of Transportation (DOT)-approved 55-gallon drums and disposed of as nonhazardous waste following characterization as described in the next section.

3.8 Investigation-Derived Waste

Soil cuttings from well installation and water from development, equipment decontamination, and groundwater sampling were placed into DOT-approved 55-gallon drums for each borehole. Each drum was labeled with the project name, description of contents, generation date, and contact information. The drums were stored in secured locations within the locked facilities at the Glacier NW and Cargill sites.

Analytical results obtained from each borehole and groundwater results from the first monitoring event were used to profile the drummed IDW for disposal. A generator's waste profile was completed for Cascade Drilling by Burlington Environmental and the drums were picked up and disposed of as nonhazardous waste by PES Environmental Services after the second round of groundwater monitoring was completed.

3.9 Location/Elevation Survey

The location and elevation of each of the seven monitoring wells were surveyed by an Oregon-licensed land surveyor using an established datum. The surveyor measured the latitude, longitude (northings and eastings), and elevation at the top of the well casing and ground surface next to each well monument. Horizontal coordinates were established to the closest 0.1 foot and referenced to the North American Datum of 1983 (NAD83), State Plane Coordinate System, Oregon North Zone. Elevations were established to an accuracy of 0.01 foot and referenced to North American Vertical Datum of 1988 (NAVD88).

SECTION 4

Groundwater Sample Collection and Elevation Monitoring

This section summarizes the approach and procedures associated with the groundwater level and groundwater quality monitoring events. Unless otherwise noted, the groundwater sampling was in accordance with the EPA-approved Upland Groundwater and Bank Soil SAP. EPA provided oversight for both groundwater sampling events.

4.1 Groundwater Monitoring Approach and Schedule

Two rounds of groundwater monitoring were conducted to characterize the physical and chemical components in the groundwater system beneath and adjacent to the RM11E Project Area. Groundwater levels measurements and groundwater quality samples were collected from the RM11E monitoring well network, which consists of the five newly drilled wells and the two existing wells shown in Figure 1-2.

As noted in the SAP, both groundwater monitoring events were intended to target a sampling time when seasonal and diurnal fluctuations in river level (stage) were at their lowest or near-lowest levels to ensure to the extent possible that the samples were representative of groundwater and not infiltrating river water. Historically, the Willamette River level stage is generally lowest during the late-summer through early-fall (September through early November) and late-winter through early-spring (February to mid-March), and thus those were the targeted sampling periods. In addition, both sampling events were designed to target periods when the anticipated Willamette River stage was below 12 feet NAVD88.

The new monitoring well locations were approved and installed by November 22, 2013. Well development was conducted primarily between November 21 and 25 and the wells were left to recover and reach equilibrium for up to two weeks prior to the first groundwater sampling event. Additional well development time was needed at RM11E-MW001 to improve the well's hydraulic connection with the aquifer. After development, RM11E-MW001 was allowed to recover and reach equilibrium for one day prior to sampling. The fall groundwater sampling event occurred from December 4 through 10, 2013. The fall sampling event was conducted when the Willamette River stage was less than 12 feet NAVD88 and the gradient was toward the river, as intended. Because of an abundance of rain in February and March 2014, the Willamette River levels were atypically high during this period, and therefore, the second sampling event was postponed to comply with the objectives stated in the SAP. The river stage declined to levels near 12 feet NAVD88 in April 2014, and the RM11E Group and EPA agreed that as long as the river levels were below 13.5 feet NAVD88 before the sampling event, then the groundwater gradient could be expected to be flowing toward the river and sampling could be conducted (see Appendix

A2). The second round of samples was collected between April 14 and 15, 2014, and targeted the lower tidal periods of the day when the river stage dropped below 12 feet NAVD88.

Given the low recharge rates associated with the shallow monitoring wells and attempts to avoid sampling during periods of high tide, each of the groundwater sampling events spanned a period of 2 or 3 days rather than 1 day, as originally anticipated.

Groundwater samples were analyzed for the RM11E COCs, conventional analytes, and VOCs as discussed in Section 5 of the Work Plan and Section 8 of this report. The RM11E COCs include analytes from the following chemical groups: PCBs, total petroleum hydrocarbons, polycyclic aromatic hydrocarbon (PAHs), pesticides, metals, phthalates, and semivolatile organic compounds (SVOCs). To assess potential impacts from the Tarr property[3] plume, groundwater was analyzed for VOCs (including tetrachloroethylene [PCE] and trichloroethylene [TCE]).

4.2 Groundwater Elevation Monitoring

Groundwater levels were collected manually using an electronic water-level probe during the two groundwater monitoring events. Additional water levels were collected manually on three occasions: January 17, 2014; March 11, 2014; and April 8, 2014. The water level in each well was measured from the surveyed top of the inner casing to the nearest 0.01 foot. Water level measurements and surveyed measuring point elevations were used to compute groundwater elevations and are presented in Table 4-1.

In addition to the manual water level measurements, two monitoring wells (RM11E-MW002s and -MW003d) were equipped with automated, vented pressure transducers with internal data loggers on December 9, 2013. The transducers were factory-calibrated before installation and will remain deployed for up to 12 months. Data from these transducers were downloaded in conjunction with the other groundwater monitoring events. The last download was conducted on April 15, 2014.

The transducer readings and surveyed measuring point elevations were used to generate a continuous record of groundwater elevation at the two wells containing transducers. This continuous data, as well as the manual water level measurements from all seven wells, daily precipitation, and Willamette River stage data, are plotted together versus time in Figure 4-1 to further evaluate the hydraulic gradient between groundwater and the river.

4.3 Groundwater Quality Sampling

Groundwater quality samples were collected from the seven monitoring wells located along and near to the east bank of the Willamette River (Figure 1-2). As discussed above, two rounds of groundwater sampling and analyses were conducted during December 2013 and April 2014. Both events targeted periods when seasonal and diurnal fluctuations in river stage were near their lowest levels to ensure the samples were representative of groundwater and not infiltrating river water.

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[3] As discussed in Section 6.2.2 of the Work Plan, one known contaminant plume has been identified in the RM11E Project Area. A chlorinated solvent plume originating at the Tarr property (ECSI #1139) has migrated in a westerly direction and has the potential to discharge to the river in the RM11E Project Area. Tarr, Inc. is not involved in the RM11E Group.

Before collecting groundwater samples, the monitoring wells were purged using a low-flow pump, an electronic pump, or a bailer, depending upon the water levels and well recharge rates. Field parameters were monitored during purging. Purge water was conveyed through a flow-through cell, and monitored for pH, water temperature, specific conductance, oxidation-reduction potential, dissolved oxygen, and turbidity. The field parameters, including water level, were measured at regular intervals (e.g., approximately every well volume or every 3 to 5 minutes, depending on the sampling method used) and recorded on separate groundwater sampling forms for each well. Sample collection began after three successive readings reached stabilization, according to the stabilization criteria listed in the Purging and Sampling Procedure in Attachment 2 of the SAP. Water quality sensors used for field parameter monitoring were field-calibrated daily according to manufacturer instructions. A summary of the stabilized field parameters, total volume purged, and purge technique is provided for in the December 2013 and April 2014 groundwater sampling events in Tables 4-2 and 4-3, respectively. Copies of the Well Sampling Field Logs are provided as Appendix B4.

With the exception of the December 2013 sample from RM11E-MW001, all other groundwater samples were collected using the Low-Stress (Low-Flow)/Minimal Drawdown method (as described in Attachment 2 of the SAP), using Teflon or Teflon-lined polyethylene tubing. Because of the low-recovery nature of monitoring well RM11E-MW001, EPA approved a Field Change Request Form (see Appendix A1) and the well was sampled with a bailer rather than the low-flow technique during the December 2013 sampling event. On December 4 and 9, 2013, approximately 8 gallons of water were removed from that well by bailing it dry in an attempt to clear the water and increase the recharge rates before sampling. On December 10, 2013, groundwater samples were collected from the well with a bailer even though fine silts were still present in the well that produced a turbidity measurement of 82.5 NTU (laboratory measurement). This well was re-evaluated on March 11, 2014, when GSI staff members used a peristaltic pump to attempt additional clearing. Four gallons of water were removed from the well with little drawdown and lower levels of turbidity when compared to December's samples. The well was sampled on April 14, 2014, with stable water-level and field parameters and a turbidity of 0.18 NTU (laboratory measurement) at the time of sampling.

Groundwater quality samples were placed in appropriate, analytical laboratory-supplied pre-cleaned and preserved containers. Separate containers were provided for total and dissolved metals and TOC. Laboratory filtering was performed before dissolved analysis of these constituents. As described in the SAP, glass vials for VOC analyses were filled so that there was a meniscus at the top of the vial and no bubbles or headspace present in the vial after it was capped. Groundwater quality and field QC sample bottles were placed on ice in coolers with padding for transfer to ALS following the procedures in Section 7.

Groundwater sampling equipment reused between monitoring locations (e.g., pump system, flow-through cell) was decontaminated between uses, as described in the SAP. Sample tubing was dedicated to a single monitoring well to eliminate the need for decontamination.

Pending receipt of the groundwater monitoring results to determine appropriate disposal, purge and decontamination water was temporarily stored onsite in a secure location in DOT-approved 55-gallon drums labeled as nonhazardous waste (see Section 3.8).

SECTION 5

Surface Soil Sample Collection

This section summarizes the sampling approach, station positioning, field documentation, and sampling procedures associated with surface soil sample collection. Unless otherwise noted, the surface soil sampling was conducted in accordance with the EPA-approved Upland Groundwater and Bank Soil SAP. EPA provided oversight for the surface soil sampling events.

5.1 Surface Soil Sampling Approach and Schedule

Surface soil samples were collected to characterize potentially erodible surface soils along the riverbank above the ordinary high water (OHW) level and to further characterize shallow soil in the upper portions of a cove located at RM 11.4. The top of the bank samples were collected concurrent with well installation (Section 3) between November 19 and 22, 2013. Two samples were collected along the upper portions of the cove in conjunction with the surface sediment sampling event (Section 6) on October 31, 2013.

Samples collected from the bank soil sampling sites were analyzed for the RM11E COCs discussed in Section 5 of the Work Plan and Section 8 of this report. The RM11E COCs include analytes from the following chemical groups: PCBs, hydrocarbons, PAHs, pesticides, metals, phthalates, and SVOCs. In addition to the project COCs, surface soil samples were analyzed for TOC. Additional soil volumes also were collected and archived at ALS for potential further analyses.

5.2 Surface Soil Station Locating

A handheld differential global positioning system (dGPS) unit was used to locate the targeted location of bank soil samples set forth in the SAP. These proposed sample locations then were modified by an RG to: (1) accommodate onsite access or obstructions that limited sample accessibility, or; (2) target potential areas of runoff, if present, observed near the proposed sample location. A map showing the actual and proposed surface soil locations is provided in Figure C1 in Appendix C1; the coordinates and rationale for modifications greater than 30 feet are provided in Table C1 in Appendix C1.

After the samples were collected, the approximate centroid of each multi-point composite sample location was staked, and the location and elevation were surveyed by an Oregon-licensed land surveyor using established datum. The surveyor measured the latitude, longitude (northings and eastings), and elevation at the ground surface next to each stake. Horizontal coordinates were established to the closest 0.1 foot and referenced to the NAD83, State Plane Coordinate System, Oregon North Zone. Elevations were established to an accuracy of 0.01 foot and referenced to vertical datum NAVD88.

The actual bank surface soil sample locations are shown in Figure 5-1 and sample coordinates and collection details are provided in Table 5-1.

5.3 Surface Soil Sampling Procedures

Bank soil samples were collected from nine locations (Figure 5-1) located along the east bank of the Willamette River using the multi-point composite sampling procedure described in Section 5.5.1 of the SAP. Specifically, seven composite samples were collected from locations on the top of the bank where exposed soils were observed to have the potential for erosion to the river, with a focus on unarmored areas with finer grain-sized materials. Two additional composite samples were collected from riverbank surface soils (zero to 1 foot depth [30 cm]) in the upper portion of the cove located on the east bank at RM 11.4. Photographs showing the arrangement of the multi-point composites are provided in Appendix C2.

The exposed bank soil material along the top of the bank was sampled using a decontaminated hand auger. Sample locations (RM11E-SL035 and -SL036) were sampled using a hand shovel because of the presence of debris and gravel in the cove area. Equal volumes of soil were collected from approximately the upper 12 inches (30 cm) at each of the individual sampling positions and placed in a decontaminated stainless-steel bowl for characterization and homogenizing. The penetration depth of each individual sample, the number of samples in each composite, a description of the sampling area, and the physical descriptions of the samples, as recorded by an RG, are included on the surface soil grab sample description forms (Appendix C3). The average penetration depth for each sample is provided in Table 5-1.

Organic materials, such as twigs and leaves, landscaping mulch, and any loose surface rocks or gravel, were carefully removed by hand before sampling. Samples then were homogenized and transferred directly to sample jars in accordance with the procedures described in the SAP. Additional detail on sample analysis is provided in Section 8.

The excess soil not used for samples was used to backfill the sample holes; as such, no IDW was generated. All sampled locations were restored to pre-sampling conditions.

SECTION 6

Surface Sediment Sample Collection

This section summarizes the sampling approach, station positioning, field documentation, and sampling procedures associated with surface sediment sample collection. Unless otherwise noted, the surface sediment sampling was conducted in accordance with the EPA-approved Surface Sediment SAP Addendum. All surface sediment sampling activities were conducted under direct EPA oversight.

6.1 Surface Sediment Sampling Approach

A total of 22 surface sediment samples were collected in the RM11E Project Area, as shown in Figure 6-1 and Table 6-1. Twelve of those samples were collected using a pneumatic power-grab sampler (Power Grab in Figure 6-1) in October 2013 and 10 samples were manually collected (Manual Grab in Figure 6-1) by divers in May 2014. The rationale for sample collection is described in Section 1.2.2 and summarized below.

- Eight surface sediment samples were collected downstream of the Fremont Bridge between RM 10.9 and RM 11.0 to confirm and further characterize sediments around two historical sampling stations (LW3-G771 and WLCDRD05PG06363; see Figure 10-1b) where PCBs previously were detected at estimated (i.e., 'J'-flagged) concentrations of 95 micrograms per kilogram (µg/kg) and 200 µg/kg, respectively.

- Six sediment sampling locations upstream of the Fremont Bridge where elevated PCB concentrations previously were reported were resampled to assess any changes in PCB concentrations (RM11E-G009 [2,900 µg/kg], RM11E-G017 [410 µg/kg], LW3-UG02 [6,000 µg/kg], LWG-UG03 [1,200 µg/kg], RM11E-G036 [1,300 µg/kg], and RM11E-G064 [1,600 µg/kg]).

- Three samples from underneath the main Glacier NW dock and two from underneath the Cargill dock were collected to assess PCB levels in surface sediment beneath these structures.

- Three new diver-assisted manual surface sediment samples (RM11E-G087, -G088, and –G089[4]) were added at the request of EPA (see Appendix A2) to evaluate dioxin/furan concentrations in the vicinity of existing sediment sample RM11E-G039 (RM 11.4 to 11.5) and downstream of the previous sediment sample location RM11E-C003 (RM 11.1 to 11.2).

As described in Section 8, all sediment samples were analyzed for PCB Aroclors, TOC, total solids, and grain-size distribution. Samples from several re-occupied stations also were analyzed for organochlorine pesticides, as discussed in Section 3.1 of the QAPP Addendum.

[4] Per agreement with EPA, sample was held for potential dioxin/furan analysis pending the results at RM11E-G088. Dioxin/furan analysis was not conducted at this location based on RM11E-G088 concentrations being below EPA's proposed RALs (agency communication provided in Appendix A2).

At EPA's direction, several samples, including two archived samples downstream of the Fremont Bridge, were also analyzed for dioxins and furans.

Additional sediment from each sample location was archived frozen (at -20°C).

6.2 Surface Sediment Station Positioning

6.2.1 Power-Grab Station Positioning

RSS mobilized the vessel *Carolyn Dow* to conduct power-grab sampling on October 30 and 31, 2013. The target sample coordinates were pre-loaded into the on-board navigation system and qualitatively checked by the FD using aerial photographs and site knowledge upon arrival at each station.

After the sampling equipment had been deployed, the latitude and longitude coordinates were obtained when the equipment was on the river bottom, using the high-resolution dGPS mounted on the A-frame directly above the power-grab sampler. The standard projection method used during field activities is NAD83, State Plane Coordinate System, Oregon North Zone, in feet. A map showing the actual and proposed surface sediment locations is provided in Figure D1 of Appendix D1, and the sample coordinates and rationale for modifications greater than 30 feet are provided in Table D1 of Appendix D1. With two exceptions, all samples were collected within 30 feet of the target, with an average separation of 6.8 feet. A gravelly substrate and the presence of debris downstream of the Fremont Bridge made it difficult to collect power-grab samples in this area. After three or more attempts were made within 30 feet of the target coordinates for samples RM11E-G068 and –G075, a field change request was submitted to EPA on October 30, 2013, and approved by EPA on October 31, 2013 (see Appendix A3). At EPA's request, additional attempts were made by moving 50 feet upstream for samples RM11E-G068 and –G075. Those samples were collected within 2 feet of the new target locations.

Given water depths greater than 30 feet and the river current, vertical depth measurement using a lead line was determined to be inaccurate because of drift. Therefore the electronic fathometer reading on the sampling vessel was recorded to the nearest tenth of a foot by the FD as soon as the sampling equipment was on the river bottom at each station. This fathometer depth was recorded as the water depth at each of the power-grab surface sample collection locations.

6.2.2 Diver-Assisted Manual Grab Station Positioning

The collection of sediment samples underneath and behind the docks was deferred while addressing EPA's issues regarding diver certification and practices as well as Standard Operating Procedures (SOP). Final resolution and approval required changing marine contractors for the diver-assisted sampling efforts. BMC from Washougal Washington was selected as the diving contractor for this portion of the project. The final SOP was provided to EPA on April 17, 2014. This SOP and the agency communication are in Appendix A4.

BMC mobilized a landing-craft-style dive vessel and a 30-foot support barge to conduct the diver-assisted manual grab sampling on May 1 and 2, 2014. The target sample coordinates

were pre-loaded into the on-board navigation system and qualitatively checked by the FD using aerial photographs and site knowledge upon arrival at each station.

Station positioning was accomplished in conformance with the SOP for diver-collected sediment samples to locate samples within areas of softer (yet representative) sediment and minimal debris:

- Diver moved to the general sample location with care not to disturb the river bottom.
- The FD on the vessel viewed the general sample location on video, looking for areas of soft sediment and minimal debris.
- GSI and the Dive Captain coordinated with the diver via voice communications equipment (com) and video to direct the diver to a specific sample location.

The sample location was established by dGPS, using the standard projection system of NAD83, State Plane Coordinate System, Oregon North Zone, in feet. In areas where adequate satellite coverage was restricted, the sample locations were established by measurement off of fixed points (e.g., pilings or known coordinates). A map showing the actual and proposed surface sediment locations is provided in Figure D1 of Appendix D1 and the sample coordinates and rationale for moving sample RM11E-G087 more than 30 feet from target are provided in Table D1 of Appendix D1. All other diver-assisted manual grab samples were collected within 30 feet of the target location in accordance with the SOP.

Vertical positioning was established using a pneumofathometer. The method involves a hose connected to the umbilical of the diver's dry suit and an on-board air distribution manifold. When the diver was at depth at the sampling location, the dive supervisor instructed the diver to hold position, applied air to the hose, and the differential pressure was read through the on-board manifold gauge, moments later. The pressure readings then were converted into depth readings using standard pressure/depth correction tables. As required by Association of Diving Contractors International (ADCI) standards, BMC calibrates all of its gauges every 6 months, and retains certification documents. Where the sample location was accessible from the sampling platform, a lead line measurement was collected.

To establish the elevation of the mudline at each surface sediment sampling station, the water depth measurements were subtracted from the nearest corresponding river stage elevation[5]. The sample coordinates, water depths, and mudline elevations for all successful surface sediment samples are provided in Table 6-1.

[5] Willamette River stage data are recorded on a 15-minute basis from U.S. Geological Survey (USGS) station number 14211720 (USGS, 2014), the datum of which is 1.55 ft above the National Geodetic Datum of 1929. This station is located on the upstream side of the Morrison Bridge (RM 12.8). River stage elevation data reported by USGS are corrected to NAVD88 at RM 11 by adding 5.05 feet to the USGS reading.

6.3 Surface Sediment Sampling Procedures

6.3.1 Power-Grab Sampling Procedures

Twelve surface sediment samples were collected in accordance with the power-grab sampling procedures described in the Surface Sediment SAP Addendum. These procedures generally followed those developed by the Lower Willamette Group (LWG) and approved by EPA for the Portland Harbor RI/FS.

Sediment recovered by the power-grab sampler was reviewed for acceptance by the FD upon retrieval. If the power-grab sampler was visibly empty or was not completely closed upon breaking the water surface it was photographed (Appendix D2) but denoted as 'rejected' in the field notes and a subsequent attempt was made. When the power-grab sampler was closed and appeared to contain sediment, it was brought on to the vessel and secured in its stand for closer inspection by the FD. The penetration depth was measured in one or more locations within the power-grab sampler using a stainless-steel ruler to determine if the grab sample would be retained. If the sample had acceptable penetration depth, it was photographed (Appendix D2) and a representative aliquot of sediment was collected from the portion of the grab sampler that contained the greatest amount of intact sediment. The representative penetration associated with each retained sample is provided in Table 6-1. Care was taken to avoid collecting sediment in contact with the sides of the sampler. Organic materials, such as twigs and leaves, and any rocks or gravel greater than 2 inches in diameter, were removed from the sampling bowl before homogenization. The physical characteristics of the sediment were described and recorded on the grab sample description logs (Appendix D3). Additional detail on sample analysis is provided in Section 8.

The target depth for sample collection was 30 centimeters (cm) below the mudline[6]; with a minimum acceptable penetration of 20 cm. Multiple attempts were required at many locations to obtain an acceptable power-grab sample. Figure D1 in Appendix D shows the target and actual sample locations and Table D1 in Appendix D provides the coordinates for power-grab target and actual samples. Appendix D3 describes the various attempts (retained and rejected) made for each sample location. In two instances (RM11E-G070 and –G075), 20-cm penetration could not be attained within three attempts and a sample with a lesser penetration depth was collected. As noted in Section 6.2.1, two stations (RM11E-G068 and –G075) were relocated 50 feet from target because of rocky substrate in the target areas that precluded closure of the power-grab sampler.

Between stations, the sediment grab samplers were washed with potable water and Liquinox, and then rinsed with potable water before sampling a new station. Excess sediment from each station was lowered back carefully to the river bottom and released in accordance with the SAP Addendum. No IDW was generated during the surface sediment sampling activities.

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[6] For consistency with the previous RM11E Focused Sediment Characterization and the Draft Final RI for the Portland Harbor (Integral et al., 2011), "surface sediment" is defined as sediment collected between zero and 1 foot (approximately 30 cm) below mudline.

6.3.2 Diver-Assisted Manual-Grab Sampling Procedures

Ten surface sediment samples were collected in general accordance with the diver-assisted sediment sampling procedures described in the final version of the SOP. These sampling procedures, including any deviations, are summarized below.

With two exceptions (RM11E-G085 and –G086) described below, the diver-assisted surface sediment samples from the limited access areas were collected manually by divers using 4-inch-diameter aluminum tubing equipped with a new 4-inch polycarbonate sleeve and a clean core catcher. The outside of the sampling assembly was marked with tape such that the diver could advance the sampler 1 foot, 1.5 feet, or 2 feet beyond the core catcher. Once on station, the diver advanced the sampling assembly to at least the first target depth (1 foot beyond the core catcher) using a fence-post-type driver. The diver communicated via com with the Dive Captain and FD to determine and record the appropriate penetration depth and to record a water depth using the pneumofathometer at each successful sample location. When the target depth was reached, the diver capped the top of the aluminum tubing, extracted it using a large wrench, and took care to keep the sampler oriented in a vertical position as he brought it to the surface and handed it to support staff on the vessel for processing.

The retained sample depth associated with each successful sample is provided in Table 6-1. With two exceptions, noted below, all accepted samples met the minimum recovery goal of 20 cm, as specified in the SAP. The upper foot of material or full penetration length (if less than 1 foot were recovered) was removed from the polycarbonate sleeve and placed into a decontaminated stainless steel bowl for homogenization and sampling. The physical characteristics of the sediment were described and recorded on the grab sample description logs (Appendix D3).

This sampling method (which is consistent with Method B in the Diver-Assisted Surface Sediment SOP) was unsuccessful at two stations because of the presence of gravel, cobbles, and large woody debris, which prevented adequate penetration of the sampling assembly. After at least three failed attempts at each station and communication with the PM, the samples were collected using Method C, which involved using a trowel to collect the upper 5 to 8 cm of sediment from an approximately 5-foot radius. The diver filled two 32-ounce, wide-mouth jars at each station, capping them to maintain sample integrity before bringing the jars to the surface and handing them to GSI staff on the research vessel for processing. Both jars of sediment from each station were homogenized in a steel bowl. The physical characteristics of the sediment were described and recorded on the grab sample description forms (Appendix D3).

Organic materials, such as twigs and leaves, and any rocks or gravel greater than 2 inches in diameter, were carefully removed by hand before sampling. Samples then were homogenized and transferred directly to sample jars in accordance with the procedures described in the Surface Sediment SAP Addendum. Additional detail on sample analysis is provided in Section 8.

The small amount of excess material at each station was released back into the water at the actual sampling location. No IDW was generated during the surface sediment sampling activities.

SECTION 7

Sample Handling and Field QC Procedures

This section summarizes the sample identification, handling, transport, and custody for all media collected during the RM11E Supplemental RI/FS investigation, as described in Sections 3 through 6. It also addresses QC samples collected in the field, sampling equipment decontamination procedures, and the cultural resource monitoring efforts.

7.1 Sample Identification

All samples were assigned a unique identification (ID) based on the sample designation scheme described in the associated SAP. Sample IDs consist of two to four components separated by dashes or underscores. The first component, RM11E, identifies the data as belonging to the RM11E sampling event. The second component contains a one- to three-letter abbreviation for the sample type followed by a unique station ID or monitoring well number. The following abbreviations for sample types were used:

- MW = groundwater quality sample from a monitoring well
- MWS = monitoring well borehole soil sample
- SL = bank soil sample
- G = grab surface sediment sample

The third component is used to code the sample depth for soil sampling intervals or the date for the groundwater sampling event. The sampling intervals include the start and end depth in feet with an underscore between them (e.g., 24_29, for 24 to 29 ft bgs). The trailing depth abbreviations (e.g., ft or cm) were not included in the sample ID, but these units are shown in the tables of this report and associated data file. For groundwater samples, the month and year that the sample was collected were added as the third component and were separated by a dash (e.g., 04-2014, for April 2014).

As specified in the associated SAPs, the sample identification for field QC samples was assigned sequential numbers starting with 500 or 900 for field duplicates (splits) and equipment rinsate blanks, respectively.

Discrepancies in the sample names in the electronic laboratory deliverables were corrected before inclusion in the report tables, project database, and data files.

7.2 Field Quality Control Samples

Field QC samples are used to evaluate the effectiveness of sample homogenization and within-sample variability (e.g., splits), evaluate potential sources of sample cross-contamination (e.g., rinsate and trip blanks), or confirm proper shipping/storage conditions (e.g., temperature blanks and trip blanks).

The types of QC samples that were collected as part of these RM11E Supplemental RI/FS investigation sampling events include the following:

- **Split samples (field duplicate samples) –** for soil and sediment were homogenized in the field using the same procedures as those employed at stations where field splits were not collected. Namely, a GSI scientist homogenized the samples in a stainless steel bowl manually using a stainless steel spoon until the sample reached visible uniformity (a homogenous mixture of color, texture, density, and particle density that is free of any clay clasts). Prior to homogenization, large gravel (greater than about an inch), twigs, and debris were carefully removed from the sample bowl. Due to the site conditions and the sample collection and processing techniques, the sample aliquots sent to ALS may over-represent the percentage of fine-grained materials in the bulk sediment matrix. Once homogenized, the sample material was placed into separate jars for the parent sample and the field split and assigned unique sample ID's as noted in Section 7.1. Groundwater field splits were collected in a manner identical to that of the parent sample and were also assigned a unique sample ID. All subsequent sample handling and transport, and analytical procedures for field splits were identical to those employed for all other samples and consistent with those used by the LWG during the Portland Harbor RI.

- **Rinsate blanks –** were collected by carefully pouring lab provided DI water into the decontaminated stainless steel bowl containing the decontaminated stainless steel spoon(s) and pouring that water into lab provided jars for analysis. Samples were labeled with unique sample ID's as noted in Section 7.1 and all subsequent sample handling, transport, and analytical procedures were identical to those employed for other water samples.

- **Trip blanks –** were provided by the laboratory and traveled in the same coolers as the voa vials (used to sample for VOCs and gasoline range hydrocarbons) throughout the groundwater sampling events and chain-of-custody process.

- **Temperature blanks –** were included in each cooler provided by the laboratory and traveled with the other field samples throughout each sampling event and the full chain-of-custody process.

These QC samples are described in Section 2.2 of the QAPP Addendum. The number and type of QC samples that were collected during the sampling event are summarized in Table 7-1 and are consistent with the expectations set forth in the project SAPs and QAPP Addendum.

7.3 Equipment Decontamination Procedures

Equipment that came in direct contact with samples, such as scoops, spoons, and mixing bowls, was decontaminated in the following manner before use at each station and between field splits:

- Rinse with potable water.

- Wash with brush and Liquinox or other phosphate-free detergent.

- Double rinse with distilled water.
- Rinse with 0.1 percent N nitric acid.
- Rinse with deionized water.
- Rinse with methanol or ethanol.
- Rinse with deionized water.

Sample handling equipment was wrapped in aluminum foil following decontamination and before sampling. To minimize sample contamination, a fresh pair of nitrile gloves was used before using the sampling equipment and collecting sample aliquots.

To the extent practical, decontamination of sampling equipment was conducted in an onshore office to minimize the use of chemicals on the vessel or job site and to facilitate sample collection. In addition to the phosphate-free detergent that was used to clean the power-grab sampler, limited volumes of 10 percent nitric acid and ethanol were used to decontaminate the hand auger and other sampling equipment.

Any probes or sensors that came into contact with the sample media (e.g., groundwater level probes) were decontaminated before each use using a rinse-wash-rinse sequence of clean potable water, phosphate-free detergent, and distilled water. The sensors or probes were wrapped in aluminum foil when transported between monitoring locations.

All disposable materials used in sample collection and processing, such as paper towels and disposable gloves, were placed in heavyweight garbage bags before disposal as municipal waste. Liquid and solid waste generated from RM11E Supplemental RI/FS investigation activities was managed as specified in the Upland Groundwater and Bank Soil SAP and the Surface Sediment SAP Addendum and as described in Sections 3 through 6 of this report.

7.4 Sample Handling, Transport, and Custody

Samples collected during the RM11E Supplemental RI/FS investigation sampling event were tracked from the time of sample collection through laboratory and data analysis using standard chain-of-custody forms and procedures as described in the project SAPs. Samples were stored in coolers with "blue ice," which was refreshed as necessary to maintain a target temperature of 4°C. The chain-of-custody forms were adhered to the inside of the cooler lids and three custody seals were attached to each cooler before relinquishment to the ALS courier. Copies of the chain-of-custody forms are provided with the laboratory reports in Appendix E.

7.5 Cultural Resource Monitoring

Sampling procedures to protect and address cultural resources were consistent with those presented in the approved Inadvertent Discovery Plan that was included as an attachment to the Upland Groundwater and Bank Soil SAP and the Surface Sediment SAP Addendum. Willamette CRA was retained to oversee potential cultural resources found at the RM11E Project Area during surface sediment sampling and groundwater monitoring well installation activities. The results of Willamette CRA monitoring are presented in the

Archaeological Monitoring Report provided in Appendix F. As noted in that report, no evidence of cultural material (i.e., archeological deposits) was observed during the sampling events.

SECTION 8

Laboratory Analysis, QA/QC Procedures, and Data Validation and Usability

This section summarizes the physical and chemical analyses that were performed on samples collected during the RM11E Supplemental RI/FS investigation. Procedures for chemical analysis and laboratory QA and QC conformed to the EPA-approved project QAPP Addendum unless otherwise noted. The laboratory QC and data validation protocols were followed to ensure that data quality and representation are in accordance with method requirements and that data usability is appropriately assessed for project objectives.

8.1 Physical and Chemical Analyses

Prior to analysis, sediment and soil samples were mixed thoroughly by the lab chemist using an inert spatula, stirring rod or other implement. Foreign objects such as sticks, leaves, and rocks were then discarded and the sample was loosened from the sides of container and mixed until no segregation of the sample by aggregate size was visible. A subsample was then taken from this homogenate for extraction.

The specific analyses that were conducted on each groundwater, bank soil, subsurface soil, surface sediment, and associated field QC samples are summarized in Table 8-1. The analytical approach is consistent with the QAPP Addendum with the following additions:

- Dioxin and furan analysis via EPA Method E1613B was added to four samples (RM11E-G072, -G075, -G087, and –G088) at the direction of EPA as noted in Section 1.2.2 and the regulatory agency communication provided in Appendix A2.
- ALS inadvertently analyzed sample RM11E-G089 for PCBs, TOC and total solids. Those results are included in this report.
- PCB analysis was requested on sample RM11E-SL031 for completeness.
- Hexachlorobenzene was reported via the high-resolution pesticide method (EPA 1699M: HRGC/MS/MS) instead of the low-level SVOC method (EPA 8270D LL) for the following reasons:
    - The detection limits listed for hexachlorobenzene in the QAAP Addendum were by GC/MS/MS.
    - Hexachlorobenzene detection limits are much lower for both soils and aqueous samples as reported by GC/MS/MS.

In some instances, ALS used different, but equivalent, methods than those that were cited in the QAPP Addendum. Methods used by ALS that were different than those cited in the

QAPP Addendum are EPA-approved methods as identified in the Data Validation Report (Appendix G1).

Laboratory method detection limits (MDLs) and method reporting limits (MRLs) for all target analytes are summarized in the QAPP Addendum. ALS elevated the MDLs and MRLs in some samples to account for matrix interference issues and the need for dilution. All sediment and soil sample results were reported on a dry-weight basis.

8.2 Laboratory QA/QC Procedures

Laboratory QA/QC was maintained through the use of standard EPA methods and other accepted methods and standard analytical procedures for the target analytes. The method-specific and other analytical and laboratory QC procedures and protocols followed are detailed in the QAPP Addendum. These procedures incorporated the collection and analysis of the following laboratory QA/QC components:

- Internal QC samples
- MRL checks
- Method blanks
- Matrix spike (MS) and matrix spike duplicate (MSD) samples
- Laboratory blank spikes
- Surrogate spikes
- Calibration check samples
- Laboratory replicates

Analytical QC measurements were performed exclusively on sample matrices from the RM11E Supplemental RI/FS investigation and samples from other projects were not mixed with the RM11E sample analyses.

8.3 Data Review, Verification, and Validation Procedures

Field and laboratory data were subjected to a formal verification and validation process in accordance with EPA guidance documents as described in the QAPP Addendum and associated SAPs. A document summarizing the data validation procedures and findings was prepared and is provided in Appendix G1 of this report.

QA/QC Solutions performed the data validation to determine the usability of the data for meeting project objectives. An abbreviated validation review (i.e., a summary review of the results reported) was performed on all the data and a more comprehensive validation review was performed on a subset of the data as described in Appendix G1. Among the laboratory data deliverables reviewed for the data validation, were results for the equipment rinsate blank and trip blank samples. The results of these field QC samples are included in Appendices G2 and G3.

Data qualifiers were assigned during data validation to the electronic data deliverables (EDD) when applicable QA/QC limits were not met and the qualification was warranted following guidance specified by EPA (2002, 2005, 2008, and 2010), QC requirements specified in the RM11E SAP, and method-specific QC requirements, as applicable. Final, qualified (as necessary) laboratory results were transmitted in EDDs for data management, further evaluation, and reporting as described in Section 9.

8.4 Data Quality and Usability

After verification and validation of the field and laboratory data as described above and in Appendix H, data completeness was calculated by comparing the total number of acceptable data (non-rejected data) to the total number of data points generated. Overall, completeness for the RM11E Supplemental RI/FS investigation dataset is 100 percent (i.e., no data were rejected). Detailed discussion regarding the qualification and usability of the data can be found in the data validation summary in Appendix G1.

SECTION 9

Data Management

Data generated as part of the RM11E Supplemental RI/FS investigation were documented and managed as described in previous sections and in accordance with the methods described in Section 7 of the Work Plan. These techniques incorporate data management protocols used for the Portland Harbor RI/FS and were implemented to provide consistent, accurate, and defensible documentation of data quality. Significant deviations from the data management methods described in the Work Plan and project SAPs are described in this section.

9.1 Field Data Management

Field data consisted of field logbooks, sample description logs, photographs, and the creation of electronic logs as described in Sections 3 through 6 of this report with supporting information provided in the tables and appendices. The electronic record provided with this report (i.e., monitoring well soil logs, soil grab sample logs, and sediment grab sample logs) are compilations of the handwritten field logbooks and field data sheets, and are provided with this report for legibility. Electronic data sheets have been reviewed by the FD for accuracy and completeness. Scanned copies of the field logbooks and daily safety meeting records are provided in Appendix I. Handwritten data sheets will be retained by GSI in the project file as part of the permanent record.

As noted in Section 7.4, all samples were logged into chain-of-custody forms to document sample possession and handling from the time of collection through sample transfer and management at ALS and copies of the COCs are provided with the laboratory reports in Appendix E.

9.2 Electronic Data Management

Following the data validation review described in Section 8.3, the validated EDDs, containing the appropriate data validation qualifiers were provided to GSI for data reduction and inclusion in the project database (Microsoft Access format).

Before inclusion in the project database, GSI created a copy of the validated EDDs and checked them for potential errors, such as date and time formats, text field lengths, and that QA/QC data have matching parent samples. A subset of the validated electronic data was double-checked against the hard copy laboratory results for accuracy and completeness before entry in the Microsoft Access project database.

9.3 Data Reduction and Handling

Data reduction and handling were conducted in accordance with the data management rules described in Section 7 of the EPA-approved Work Plan and are based on procedures

followed in other Portland Harbor RI sediment investigations (Integral et al., 2011; Integral, 2008; Kennedy/Jenks, 2004).

9.3.1 Data Summation Rules

Two sets of rules for summing data and retaining or modifying qualifiers were used consistent with the Portland Harbor RI/FS - (1) RI data set summation rules (RI Calc), and (2) Risk Assessment/background data rules used in the FS (FS Calc). The summation rules, which are described in detail in Section 7 of the Work Plan, apply to select analytical groups, such as PCB Aroclors and PAHs. The "RI data rules (RI Calc)" are intended for site characterization and generally use zero to represent non-detect values while the "RA/background data rules (FS Calc)" are intended for RA and determination of background preliminary remediation goals and generally use one-half the MDL to represent non-detect values. The RA/background data rules result in higher values than with the RI data rules, especially for low concentration samples. Data from the RM11E Supplemental RI/FS investigation are reported in the Section 10 tables using both sets of data rules, but have been mapped and presented in the data file using the RA/background data rules and denoted as 'FS Calc', which are the more conservative set of rules that have been carried forward to the Portland Harbor FS (see Appendix A2).

The RI data set summation rules are as follows:

- Calculated totals are the sum of all detected concentrations, with non-detected concentrations are treated as zero.
- If all analytes for a total are not detected, then the highest MDL is used for the summation.

The RA and background data set summation rules are as follows:

- Calculated totals are the sum of all detected concentrations, with non-detected results included in the summation at one-half the MDL.
- If all analytes for a total are not detected, then the highest MDL is used for the summation.

Data qualifiers were carried through the summation procedure. If all of the analytes were not detected, a "U" qualifier was carried through to indicate that all results were reported as undetected. All calculated totals were flagged with a "T" indicating they were mathematically derived values.

The data guidelines also specify summation rules for select analytical groups, which include the same individual constituents regardless of which data rules are being used. Specifically:

- Total PCBs Aroclors were calculated as the sum of individual Aroclors.
- Total low molecular weight PAHs (LPAH) were calculated using the concentrations for 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. Total high molecular weight PAHs (HPAH) were calculated using the concentrations for benzo(a)anthracene, benzo(a)pyrene,

benzo(g,h,i)perylene, benzofluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, and pyrene. Total PAHs were calculated by summing the LPAH and HPAH values. Total carcinogenic PAH (cPAH) is the sum of benzo(a)pyrene (BaP) equivalent (BaPEq) concentrations, calculated by multiplying the cPAHs by their respective potency equivalent factors (PEFs). cPAHs are benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3,-c,d)pyrene, and dibenzo(a,h)anthracene. PEFs were assigned according to EPA (1993).

- Total DDx values were calculated with the concentrations of the six DDx compounds: 2,4′-DDD; 4,4′-DDD; 2,4′-DDE; 4,4′ DDE; 2,4′-DDT; and 4,4′-DDT. Total DDD values are calculated with 2,4′-DDD and 4,4′-DDD; total DDE values are calculated with 2,4′-DDE and 4,4′-DDE; and total DDT was calculated by summing 2,4′-DDT and 4,4′-DDT.

- Total chlordanes were calculated as the sum of the following compounds: cis-chlordane, trans-chlordane, oxychlordane, cis-nonachlor, and trans-nonachlor.

- Total polychlorinated dibenzo-p-dioxin/furan (PCDD/Fs) were calculated as the sum of individual PCDD/F compounds (on a dry weight basis).

- Dioxin and furan TCDD toxic equivalents (TEQs) were calculated using the 2005 World Health Organization consensus toxicity equivalency factors (TEF) relative 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD or TCDD) values for mammals, as described in Appendix A3 of the Draft Final RI Report for the Portland Harbor (Integral et al., 2011). TEQs were calculated as the sum of each congener concentration (or MDL for non-detects) multiplied by the corresponding TEF value. When all of the congeners were not detected in a given sample, then the reported TEQ value was the highest congener detection limit multiplied times the TEF value.

- Total fines were calculated as the sum of silt and clay.

9.3.2 Data Averaging

Analytical results for field QC split samples are presented in Appendix H. Only the averaged values of field splits are used in the data analysis, analyte concentration maps, and results presented in Section 10.

The averaging rules that were applied are consistent with those used in the Portland Harbor RI/FS when addressing these three general combinations of detected and non-detected results:

- If the analyte was detected in two or more samples, only the detected results were averaged (the non-detected results are ignored).

- If the analyte was detected in only one sample, the detected value was reported as the average (the non-detected results are ignored).

- If the analyte was not detected in any samples, the lowest MDL was reported as the average.

Data validation qualifiers also were assigned in accordance with the guidelines used on the Portland Harbor RI/FS. If all results, including the calculated average, have the same qualifier, then that qualifier was applied to the calculated average. If one or more of the results is qualified as estimated (J - flagged), then the calculated average was similarly qualified (J). A "T" qualifier was added to results that are mathematically derived, including averaged and summed results.

9.3.3 Data Replacement

Nine of the surface sediment sampling locations (RM11E-G071, -G073, -G076, -G077, -G079, -G082, -G083, -G085, and –G088) were re-occupied to assess the any changes in PCB concentrations since previous rounds of sampling. Similarly, one sample, RM11E-G088 (former sample RM11E-G039), was collected to re-test and assess a single elevated dioxin/furan result paired with a low PCB result observed in this location in 2009. Sediment from several of the re-occupied stations also was analyzed for organochlorine pesticides by the high resolution GC/MS/MS method to assess the degree of bias in the conventional GC/ECD organochlorine pesticide results in these locations using a more accurate analytical method.

Analytical results for the resampled stations are presented for a side-by-side comparison in Appendix J with the replacement values highlighted where applicable. As noted in Section 7 of the Work Plan, the most recent data from the most accurate laboratory method was used when replacing the data previously collected at the same location and only the new results were carried forward for use in the analyte concentration maps and data evaluation. Both sets of data are included in the project database and the Microsoft Excel data file presented in Appendix K.

9.3.4 Significant Figures

The data guidelines used in the Portland Harbor RI/FS were followed in generating and maintaining the RM11E data file. The number of significant figures provided by ALS was maintained in the RM11E database and a minimum of two significant figures was assumed for all results. The significant figures were maintained during calculations, such as averaging splits and summing totals. The final results of these calculations were rounded to the smallest number of significant figures for the values included in the calculations.

SECTION 10

Results

10.1 Supplemental RI/FS Data

Table 10-1 presents results of the December 2013 and April 2014 groundwater monitoring events. Table 10-2, Table 10-3, and Table 10-4 present the results of the subsurface soil samples, surface soil samples, and surface sediment samples, respectively. As noted previously, the analytical results for field QC rinsate blank and trip blank samples are provided in Appendix G with the field QC split samples and averages provided in Appendix H.

10.2 Existing Data

Existing data for RM11E were inventoried and reviewed and are summarized in Section 3 of the Work Plan. To create an updated data file that includes all relevant sediment and soil data collected in the vicinity of the RM11E Project Area, a RM11E project database was developed that built upon the information contained in Section H 3.0 of Appendix H of the August 29, 2011, Draft Final RI Report for Portland Harbor (Integral et al., 2011). Beginning with the updated SCRA database entitled 'RI_BERA20110727+RA-SummedParams_SCRA', which was provided as Attachment H2 of Appendix H the Draft Final RI Report, the project database was compiled using the following guidelines:

- Includes sample locations with river mile (RM) designations ranging from 10.0 to 12.0. Note that while some of these data were collected outside of the RM11E Project Area, the broader 2-mile river stretch was included for the purpose of generating maps and improving the accuracy of mapping interpolation techniques (e.g., natural neighbor).
- Includes only sediment (sample matrix code 'SE'), soil (sample matrix code 'SO'), or sediment trap (sample matrix of 'SEIRT'). Note that this file does not include existing bank debris, fish tissue, or surface water information.
- Excludes analytical results from sample locations that have been subsequently dredged or capped. Note that while samples marked as "capped" are excluded from the 'surface sediment' figures, these data may be retained for further evaluation as part of the Implementability Study.
- Per RI data selection rules, includes data that had a quality assurance approval code indicating a Category 1-level of data quality and either a level of validation of "QA1" or "QA2" (see Section 2.1 of Integral et al., 2011).

Using the established format of the SCRA database, the following data were normalized for upload and inclusion in the project database:

- The bank soil and re-analyzed sediment results from the City's 2013 Supplemental Data Report (GSI, 2013). Note that the high-resolution pesticide results from the archived sample stations replaced the results obtained via the standard method in 2009.

- The final reduced RM11E Supplemental RI/FS results for all media. This included addition of the new groundwater data (assigned a sample matrix code of 'GW').

Once the new dataset was compiled, a 'sample description' was assigned to the data to designate it based on the sample matrix and sample elevation. For consistency with the Portland Harbor FS Sediment Database, a 13.0 ft NAVD88 elevation benchmark was used to distinguish 'sediment' from 'soil'. Data with an elevation of less than or equal to 13.0 feet NAVD88 was classified as sediment and data collected above that elevation was classified as soil. Note that the 2009 bank soil samples collected below ordinary high water had been assigned an elevation of 10 ft NAVD88 and unlike the FS Sediment Database, are included in the project database with a sample description of either 'surface sediment' or 'subsurface sediment' and mapped accordingly (as described in Section 10.3).

All sediment samples with a start depth of zero and an end depth of less than or equal to 40 cm are categorized as 'surface sediment' for consistency with the Portland Harbor FS Sediment Database. All other bedded sediment samples are categorized as subsurface sediments. Note that since most samples in the Portland Harbor were collected as part of the RI, which defined surface sediment as the upper foot (approximately 30 cm); most of the surface samples are indicative of those depths. The FS Sediment Database expanded that depth interval to 40 cm and required a start depth of zero. For consistency, those guidelines were followed for the RM11E Supplemental RI/FS investigations.

Once the relevant Portland Harbor RI/FS data were uploaded into the RM11E project database, the analyte group totals were calculated for the combined dataset according to the FS rules described in Section 9.3. This data file provides the most updated and accurate reference for data mapping and evaluation between RM 10 and 12.

Appendix K contains the Excel data files for all surface, subsurface, and sediment trap data collected between RM 10 and RM 12. It also includes the upland monitoring well and soil data collected as part of this study. Data collected as part of the RM11E Supplemental RI/FS investigation have been given the task code 'RM11E_SupRIFS' to distinguish them from other sampling events. A description of the task codes for samples collected between RM10 and RM12 is provided as a separate tab in Appendix K. Figure 10-1a shows the location of all samples in the vicinity of the RM11E Project Area. Sample location names are labeled in Figure 10-1b, Figure 10-1c, and Figure 10-d for reference.

10.3 Updated Contaminant Distribution Maps

The Draft FS Report, submitted to EPA in March 2012, described the development and evaluation of remedial alternatives and identified sediment management areas (SMAs) (Anchor QEA et al., 2012). The SMAs in the Draft FS report were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment concentrations of bounding COCs (PCBs, BaPEq, DDD, DDE, DDT, and PCDF). These groupings were classified across a scale of progressively conservative remedial action levels (RALs) and subsequently

presented as FS Alternatives B through F[7]. The RAL concentrations from the Draft FS are presented in Table 10-5a. In addition to the combined RAL footprints for the bounding COCs, Table 10-5a also includes areas identified as posing potentially unacceptable benthic risk via multiple contaminants at Year 10 for Alternative B and at Year 0 for all other alternatives. The combination of the RALs and benthic risk areas make up the combined SMA footprints are shown in Figure 1-2. The resulting SMAs define areas where active remediation will be considered necessary by EPA under remedial alternatives B through F.

Following submission of the Draft FS, EPA provided the LWG with new RALs for two COCs and new directions for incorporating benthic risk areas in developing SMAs:

- New Total DDx RALs were provided to use in place of the individual total DDD, DDE, and DDT RALs in the Draft FS.
- The 2,3,4,7,8-PeCDF RALs were replaced with new total dioxin/furan TCDD TEQ RALs, as noted in the correspondence provided in Appendix A2.
- The LWG was instructed to use the Year 0 comprehensive benthic risk areas for all Alternatives (rather than a reduced footprint for Alternative B).

The current bounding COCs and the associated RALs and benthic risk areas for FS Alternatives B through F, are shown in Table 10-5b. The cells in Tables 10-5a and 10-5b where the RALs presented in the Draft FS differ from EPA's current proposed RALs are highlighted for reference.

Using the updated data set described in Section 10.2 of this report, which combines all applicable existing data with the new Supplemental RI/FS data, an updated series of figures was prepared to visualize the distribution of EPA's FS RAL chemicals in surface sediment and soil in the vicinity of the RM11E Project Area. The RAL footprints shown for the bounding COCs (PCBs, BaPEq, DDx, and DFTEQ) in Figures 10-2 through 10-5 were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment[8] concentrations in a manner consistent with that used by the LWG in the Draft FS for the Portland Harbor (and shown in Figure 1-2.) Due to the site conditions and the sample collection and processing techniques, the sample results and RAL footprints may be overly conservative.

[7] Alternative A is not included in Table 10-5 because it represents the No Action Alternative. Note that the EPA had also suggested evaluation of a more conservative Alternative G; however this alternative was screened out of the FS prior to the detailed evaluation of the remedial alternatives. As stated in Section 2 of the EPA-approved RM11E Work Plan, the RM11E Group determined that it would use FS Alternative F as the most conservative footprint for the alternatives analysis pending finalization of the Portland Harbor FS.

[8] As described in Section 10.2 of this report, the 'surface sediment' classification now includes bank soils collected below 13 ft NAVD88, whereas these samples noted as having a soils matrix were not included in the SMA maps in the Draft FS.

SECTION 11

References

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Table 2-1
Supplemental RI/FS Sampling Schedule

RM11E Supplemental RI/FS Sampling Activity	Dates Conducted
Surface Sediment Power-Grab Sampling	October 30 and 31, 2013
Surface Soil Sampling	October 31 and November 18 and 22, 2013
Subsurface Soil Sampling (Monitoring Well Drilling and Installation)	November 19, 20, 21, and 22, 2013 with additional development on RM11E-MW001 on December 4, 6, and 9, 2013
Well Development	November 21, 22, and 25
1st Round Groundwater Sampling	December 4, 5, 6, and 10, 2013
2nd Round Groundwater Sampling	April 14 and 15, 2014
Surface Sediment Manual-Grab Sampling	May 1 and 2, 2014

Table 3-1
Monitoring Well Locations and Construction Summary

Station ID	Station Coordinates[1]		Measuring Point Elevation[2] (ft NAVD88)	Ground Surface Elevation[2] (ft NAVD88)	River Mile	Well Construction Details										
									Well Screen				Filter Pack			
	Northing	Easting				Well Tag No.	Well Diameter (inches)	Completed Well Depth (ft bgs)	Depth to Top (ft bgs)	Depth to Bottom (ft bgs)	Length (ft)	Slot Size (inches)	Depth to Top (ft bgs)	Depth to Bottom (ft bgs)	Length (ft)	Gradation Sizing
RM11E-MW001	689361.1	7644323.0	33.4	33.9	11.3	L114004	2.0	37.0	17	32	15	0.010	14.8	33	18.2	10-20
RM11E-MW002s	689208.5	7644647.0	36.0	36.3	11.3	L114002	2.0	42.5	17.5	37.5	20	0.010	15.5	39	23.5	10-20
RM11E-MW003d	689217.9	7644642.3	35.6	36.1	11.3	L114001	2.0	105.0	90	100	10	0.010	88	101	13	10-20
RM11E-MW004	688981.0	7644765.3	35.9	36.6	11.4	L114003	2.0	40.0	20	35	15	0.010	18	36	18	10-20
RM11E-MW005	689919.8	7643614.8	35.0	35.5	11.1	L114005	2.0	36.5	16.5	31.5	15	0.010	14.5	33	18.5	10-20
RM11E-MULT1007	689726.0	7643823.9	35.8	34.1	11.2	NA	4.0	37.0	20	37	17	0.020	18	37	19	8-16
RM11E-MULT89881	690064.8	7643915.9	34.7	35.0	11.1	L89405	1.0	55.0	45	55	10	0.010	43	55	12	10-20

Notes:
bgs = below ground surface
NA = Not applicable
[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.
[2] Elevations exist in the following coordinate system: North American Vertical Datum of 1988 (NAVD88) in units of feet.

Table 4-1
Groundwater Elevations

Station I.D.	Date	Depth to Water[1] (ft)	Measuring Point Elevation[2] (ft NAVD88)	Water Level Elevation[2] (ft NAVD88)
RM11E-MW001	11/25/2013	23.50	33.44	9.94
	12/6/2013	22.48	33.44	10.96
	12/9/2013	22.94	33.44	10.50
	12/10/2013	23.09	33.44	10.35
	1/7/2014	22.79	33.44	10.65
	3/11/2014	16.26	33.44	17.18
	4/14/2014	20.55	33.44	12.89
RM11E-MW002s	11/25/2013	21.12	35.95	14.83
	12/9/2013	21.02	35.95	14.93
	12/10/2013	21.42	35.95	14.53
	1/17/2014	20.55	35.95	15.40
	3/11/2014	18.93	35.95	17.02
	4/15/2014	20.31	35.95	15.64
RM11E-MW003d	12/5/2013	23.41	35.63	12.22
	12/9/2013	24.43	35.63	11.20
	1/17/2014	24.10	35.63	11.53
	3/11/2014	19.61	35.63	16.02
	4/15/2014	22.87	35.63	12.76
RM11E-MW004	11/25/2013	24.02	35.91	11.89
	12/5/2013	23.48	35.91	12.43
	12/10/2013	23.73	35.91	12.18
	1/7/2014	23.60	35.91	12.31
	3/11/2014	18.42	35.91	17.49
	4/15/2014	22.41	35.91	13.50
RM11E-MW005	11/25/2013	25.51	35.02	9.51
	12/4/2013	24.33	35.02	10.69
	12/5/2013	23.87	35.02	11.15
	1/17/2014	24.85	35.02	10.17
	3/11/2014	17.88	35.02	17.14
	4/14/2014	23.35	35.02	11.67
RM11E-MULT1007	11/25/2013	26.60	35.81	9.21
	12/4/2013	24.66	35.81	11.15
	12/6/2013	24.49	35.81	11.32
	1/17/2014	25.02	35.81	10.79
	3/11/2014	19.36	35.81	16.45
	4/14/2014	23.06	35.81	12.75
RM11E-MULT89881	11/25/2013	24.44	34.72	10.28
	12/4/2013	22.90	34.72	11.82
	1/17/2014	44.42 [3]	34.72	--
	3/11/2014	18.72	34.72	16.00
	4/15/2014	21.76	34.72	12.96

Notes:

-- Signifies that data was not processed.

[1] Depth to water is collected from the top of the well casing using an electronic water level indicator.

[2] Elevations exist in the following coordinate system: North American Vertical Datum of 1988 (NAVD88) in units of feet.

[3] Small inside diameter of the well (0.75-inches) is believed to have interfered with collection of an accurate measurement. This point is clearly erroneous and was not included in Figure 4-1.

Table 4-2

December 2013 Development and Groundwater Monitoring Summary

Station ID	Water Temperature (°C)	pH (SI units)	Specific Conductance (µS/cm)[1]	Dissolved Oxygen (mg/L)[2]	Oxidation-Reduction Potential (mV)[3]	Turbidity (NTU)[4]	Total Purge Volume (gal)[5]	Notes/Comments
RM11E-MW001	13.6	6.60	494	2.50	83.8	NC[6]	15.7	very cloudy; brown
RM11E-MW002s	12.8	6.46	1,258	0.33	-29.8	4.38	27.7	clear; very slightly yellow
RM11E-MW003d	14.6	6.94	334	0.11	-91.7	4.14	156.2	clear; colorless
RM11E-MW004	11.7	6.42	478	0.52	68.8	0.74	47.5	clear; colorless
RM11E-MW005	12.9	6.20	398	0.72	-51.7	0.48	155.5	clear; colorless
RM11E-MULT1007	15.9	6.31	322	3.67	125.9	2.80	72	clear; colorless
RM11E-MULT89881	13.1	6.14	304	5.78	119.7	0.28	18.5	clear; colorless

Notes:

Well development continued until water quality parameters stabilized and turbidity dropped to below 5 to 10 nephelometric units (NTU). Values displayed in this table are final readings recorded before groundwater sample collection.

NC = field measurement was not collected

[1] electrical conductivity in micro-Siemens per centimeter

[2] milligrams of dissolved oxygen per liter

[3] millivolts of electrical potential

[4] nephelometric units of turbidity

[5] total gallons of purge water removed during well development

[6] The field turbidity measurement was not collected in this well but the water was noted as being clear at the beginning of the sampling event and slightly cloudy and yellowish at the end of the sampling event.

Table 4-3
April 2014 Groundwater Monitoring Summary

Monitoring Well	Water Temperature (°C)	pH (SI units)	Specific Conductance (µS/cm)[1]	Dissolved Oxygen (mg/L)[2]	Oxidation-Reduction Potential (mV)[3]	Turbidity (NTU)[4]	Total Purge Volume (gal)[5]	Notes/Comments
RM11E-MW001	16.1	6.16	547	2.99	102.2	1.8	3.5	clear/colorless
RM11E-MW002s	15.2	6.63	1,662	0.32	-66.6	3.96	3.5	clear/yellow
RM11E-MW003d	14.9	6.39	336	0.44	-52.8	1.44	15.8	clear/colorless
RM11E-MW004	14.6	6.35	530	0.24	78.4	0.9	4.8	clear/colorless
RM11E-MW005	15.7	6.14	403	0.36	-50.2	1.19	8.7	very slightly cloudy/colorless
RM11E-MULT1007	16.7	6.03	369	0.72	89.9	2.60	9	clear/colorless
RM11E-MULT89881	13.8	6.34	298	6.68	147.4	0.36	3.7	clear/colorless

Notes:

[1] electrical conductivity in micro-Siemens per centimeter
[2] milligrams of dissolved oxygen per liter
[3] millivolts of electrical potential
[4] nephelometric units of turbidity
[5] total gallons of purge water removed sampling event

Table 5-1
Surface Soil Sample Locations and Collection Details

Station ID	Sample Date	Sample Time	Station Coordinates[1]		Ground Surface Elevation (ft NAVD88[2])	River Mile	Number of Sample Increments	Sample Depth (cm)	
			Northing	Easting				Start Depth	End Depth
RM11E-SL028	11/22/13	13:00	689925.8	7643540.4	33.5	11.1	5	0	30
RM11E-SL029	11/22/13	14:00	689680.2	7643862.8	32.9	11.2	5	0	28
RM11E-SL030	11/22/13	14:25	689500.5	7644105.5	32.5	11.2	5	0	30
RM11E-SL031	11/22/13	9:15	689321.9	7644361.9	33.1	11.3	5	0	23
RM11E-SL032	11/18/13	12:50	689232.5	7644583.0	28.6	11.3	5	0	27
RM11E-SL033	11/18/13	14:45	689040.0	7644664.9	35.9	11.4	5	0	29
RM11E-SL034	11/18/13	15:45	688793.0	7644828.4	35.9	11.4	4	0	29
RM11E-SL035	10/31/13	13:50	689171.8	7644555.0	13.1	11.3	5	0	20
RM11E-SL036	10/31/13	15:20	689125.2	7644587.0	13.5	11.3	5	0	30

Notes:

[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.

[2] Elevations exist in the following coordinate system: North American Vertical Datum of 1988 (NAVD88) in units of feet.

Table 6-1
Surface Sediment Sample Locations and Collection Details

Station ID	Sample Collection Technique	Sample Date	Sample Time	Station Coordinates[1]		Sample Depth (cm)		River Mile	Water Depth (ft)	Measurement Source[2]	Willamette River Elevation[3,4] (ft NAVD88)	Mudline Elevation[4] (ft NAVD88)
				Northing	Easting	Start Depth	End Depth					
RM11E-G068	power-grab	10/31/2013	18:00	690626.74	7642451.72	0	26	10.9	47.3	fathometer	8.6	-38.7
RM11E-G069	power-grab	10/30/2013	10:23	690716.68	7642497.15	0	24	10.8	41.0	fathometer	6.2	-34.8
RM11E-G070	power-grab	10/30/2013	14:15	690570.31	7642502.94	0	8	10.9	48.1	fathometer	8.5	-39.6
RM11E-G071	power-grab	10/30/2013	13:13	690611.58	7642549.02	0	24	10.9	43.1	fathometer	7.3	-35.8
RM11E-G072	power-grab	10/30/2013	14:40	690636.16	7642670.48	0	26	10.9	16.4	lead line	8.9	-7.5
RM11E-G073	power-grab	10/30/2013	15:32	690509.92	7642709.40	0	22	10.9	34.0	fathometer	9.0	-25.0
RM11E-G074	power-grab	10/30/2013	16:47	690441.71	7642646.52	0	26	10.9	46.2	fathometer	8.6	-37.6
RM11E-G075	power-grab	10/31/2013	16:55	690378.43	7642793.06	0	17	10.9	44.0	fathometer	9.3	-34.7
RM11E-G076	power-grab	10/31/2013	9:30	689723.51	7643543.73	0	25	11.1	48.6	fathometer	6.6	-42.0
RM11E-G077	power-grab	10/31/2013	10:12	689452.98	7643673.35	0	22	11.2	46.8	fathometer	6.4	-40.4
RM11E-G078	manual	5/2/2014	8:59	689443.24	7644016.49	0	30.5	11.2	37.0	pneumofathometer	14.2	-22.9
RM11E-G079	power-grab	10/31/2013	15:43	689302.84	7644009.50	0	23	11.2	49.7	fathometer	9.5	-40.2
RM11E-G080	manual	5/2/2014	9:55	689349.73	7644133.33	0	30.5	11.3	37.0	pneumofathometer	14.0	-23.0
RM11E-G081	manual	5/2/2014	11:20	689283.56	7644212.26	0	30.5	11.3	33.0	pneumofathometer	13.8	-19.2
RM11E-G082	power-grab	10/31/2013	12:02	689107.13	7644280.41	0	20	11.3	41.2	fathometer	6.1	-35.2
RM11E-G083	manual	5/1/2014	12:00	688912.32	7644627.91	0	24	11.4	41.0	pneumofathometer	14.1	-26.9
RM11E-G084	manual	5/1/2014	11:17	688882.69	7644712.28	0	20	11.4	10.7	bathymetry[5]	14.2	3.5
RM11E-G085	manual	5/2/2014	13:50	688676.70	7644828.13	0	8[6]	11.4	13.3	bathymetry[7]	13.3	0.0
RM11E-G086	manual	5/2/2014	12:55	688647.88	7644803.34	0	8[6]	11.4	33.0	pneumofathometer	13.4	-19.6
RM11E-G087	manual	5/2/2014	15:10	689889.20	7643448.79	0	26	11.1	32.0	lead line	13.0	-19.0
RM11E-G088	manual	5/1/2014	14:40	688801.84	7644746.36	0	21.5	11.4	21.7	lead line	13.7	-8.0
RM11E-G089	manual	5/1/2014	13:50	688773.91	7644718.25	0	24	11.4	41.0	pneumofathometer	13.9	-27.1

Notes:

[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.

[2] Various methods for calculating sample elevation were performed and the selected representative method is displayed in the table.

[3] Willamette River stage data are recorded on a 15-minute basis from U.S. Geological Survey (USGS) station number 14211720 (USGS, 2014). This station is located on the upstream side of the Morrison Bridge (RM 12.8). River stage elevation data reported by USGS are corrected to NAVD 88 at RM 11 by adding 5.05 feet to the USGS reading.

[4] Elevations exist in the following coordinate system: North American Vertical Datum of 1988 (NAVD88) in units of feet.

[5] Lead line measurement of 20.8 ft was collected at the buoy location after sampling was completed. However the buoy had clearly shifted prior to collection of the lead line elevation so the bathymetry elevation associated with the actual sampling coordinates was used in place of this field measurement.

[6] Method C: Top 5-8 cm of sediment was scooped into a wide mouth jar.

[7] The water depth was not measured in the field so the bathymetry elevation associated with the actual sampling coordinates was used to represent the mudline elevation.

Table 7-1
Summary of Field QC Samples

Sample Type and Analyte Group	Sample Count			
	Analyzed Field Samples	Field QC Splits	Field Rinsate Blanks	Total Number of Field Samples
Groundwater				
PCB Aroclors	14	2	0	16
Total Organic Carbon	14	2	0	16
High-Resolution Pesticides	14	2	0	16
SVOCs (including Phenols, PAHs, and Phthalates)	14	2	0	16
Hydrocarbons	14	2	0	16
Metals	14	2	0	16
VOCs[1]	14	2	0	16
Conventionals	14	2	0	16
Subsurface Soils				
PCB Aroclors	8	1	1	10
Total Organic Carbon	8	1	1	10
Total Solids	8	1	0	9
Grain Size	8	1	0	9
High-Resolution Pesticides	8	1	1	10
Dioxin/Furan Analysis	8	1	1	10
SVOCs (including Phenols, PAHs, and Phthalates)	8	1	1	10
Hydrocarbons	8	1	1	10
Metals	8	1	1	10
Surface Soils				
PCB Aroclors	9	1	1	11
Total Organic Carbon	9	1	1	11
Total Solids	9	1	0	10
Grain Size	0	0	0	0
High-Resolution Pesticides	9	1	1	11
Dioxin/Furan Analysis	0	0	0	0
SVOCs (including Phenols, PAHs, and Phthalates)	9	1	1	11
Hydrocarbons	9	1	1	11
Metals	9	1	1	11
Surface Sediment				
PCB Aroclors	22	2	2	26
Total Organic Carbon	22	2	2	26
Total Solids	22	2	2	26
Grain Size	22	2	2	26
High-Resolution Pesticides	5	0	0	5
Dioxin/Furan Analysis	4	0	0	4

Note:
[1] A trip blank was included in every cooler containing groundwater samples to be analyzed for VOCs and TPH-Gx.

Table 8-1
Supplemental RI/FS Sampling and Analytical Summary

Sample ID	Sample Date	Sample Time	Sample Depth			Lab Sample ID (s)	*Samples submitted to ALS for the following analysis*												Field Parameters [10]	Groundwater Level [11]
			Start	End	Units		Archival (Frozen) [1]	PCB Aroclors [2]	Total Organic Carbon	Total Solids [3]	Grain Size	High-Resolution Pesticides [4]	Dioxin/Furan Analysis	SVOCs (including Phenols, PAHs, and Phthalates) [5]	Total Petroleum Hydrocarbons [6]	Metals [7]	VOCs [8]	Conventionals [9]		
Groundwater - December 2013																				
RM11E-MW001-12-2013	12/10/2013	16:00	17	32	ft	K1313401-001	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW002s-12-2013	12/5/2013	14:00	17.5	37.5	ft	K1313248-004	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW003d-12-2013	12/5/2013	14:50	90	100	ft	K1313248-005	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW004-12-2013	12/5/2013	17:00	20	35	ft	K1313248-002	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW005-12-2013	12/5/2013	10:40	16.5	31.5	ft	K1313248-001	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MULT1007-12-2013	12/6/2013	11:30	20	37	ft	K1313248-003	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MULT89881-12-2013	12/4/2013	12:50	45	55	ft	K1313208-001	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-5MULT89881-12-2013	*12/4/2013*	*13:00*	*45*	*55*	*ft*	*K1313208-002*	--	*X*	*X*	--	--	*X*	--	*X*	*X*	*X*	*X*	*X*	*X*	*X*
RM11E-TB01-12-2013	*12/4/2013*	*12:50*	*NA*	*NA*	*NA*	*K1313208-003*	--	--	--	--	--	--	--	--	--	--	*X*	--	--	--
RM11E-TB02-12-2013	*12/5/2013*	*14:00*	*NA*	*NA*	*NA*	*K1313248-006*	--	--	--	--	--	--	--	--	--	--	*X*	--	--	--
RM11E-TB03-12-2013	*12/10/2013*	*16:00*	*NA*	*NA*	*NA*	*K1313401-002*	--	--	--	--	--	--	--	--	--	--	*X*	--	--	--
Groundwater - April 2014																				
RM11E-MW001-04-2014	4/14/2014	13:00	17	32	ft	K1403697-001	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW002s-04-2014	4/15/2014	14:50	17.5	37.5	ft	K1403697-008	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW003d-04-2014	4/15/2014	15:25	90	100	ft	K1403697-006	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW004-04-2014	4/15/2014	17:25	20	35	ft	K1403697-009	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW005-04-2014	4/14/2014	16:45	16.5	31.5	ft	K1403697-003	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MULT1007-04-2014	4/14/2014	15:40	20	37	ft	K1403697-002	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MULT89881-04-2014	4/15/2014	11:25	45	55	ft	K1403697-007	--	X	X	--	--	X	--	X	X	X	X	X	X	X
RM11E-MW505-04-2014	*4/14/2014*	*16:45*	*45*	*55*	*ft*	*K1403697-004*	--	*X*	*X*	--	--	*X*	--	*X*	*X*	*X*	*X*	*X*	*X*	*X*
RM11E-TB01-04-2014	*4/14/2014*	*00:00*	*NA*	*NA*	*NA*	*K1403697-005*	--	--	--	--	--	--	--	--	--	--	*X*	--	--	--
RM11E-TB02-04-2014	*4/15/2014*	*00:00*	*NA*	*NA*	*NA*	*K1403697-010*	--	--	--	--	--	--	--	--	--	--	*X*	--	--	--
Subsurface Soils																				
RM11E-MWS003d-5_10'	11/19/2013	10:50	5	10	ft	K1312731-001	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-10_15'	11/19/2013	11:00	10	15	ft	K1312731-002	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-15_20'	11/19/2013	12:40	15	20	ft	K1312731-003	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-20_25	11/19/2013	12:50	20	25	ft	K1312731-004	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-25_30'	11/19/2013	13:00	25	30	ft	K1312731-005	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-30_35	11/19/2013	14:00	30	35	ft	K1312731-006	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-5_18.7'	11/19/2013	12:10	5	18.7	ft	K1312731-007	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS003d-18.7_23.7'	11/19/2013	12:30	18.7	23.7	ft	K1312731-008	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS002s-5_10'	11/20/2013	13:40	5	10	ft	K1312803-001	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS002s-10_15'	11/20/2013	13:50	10	15	ft	K1312803-002	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS002s-15_20'	11/20/2013	14:05	15	20	ft	K1312803-003	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS002s-20_25'	11/20/2013	14:40	20	25	ft	K1312803-004	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS002s-5_20'	11/20/2013	14:45	5	20	ft	K1312803-005	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS002s-25_30'	11/20/2013	14:50	35	30	ft	K1312803-006	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS001-5_10'	11/21/2013	15:00	5	10	ft	K1312857-001	X	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 8-1
Supplemental RI/FS Sampling and Analytical Summary

Sample ID	Sample Date	Sample Time	Sample Depth			Lab Sample ID (s)	*Samples submitted to ALS for the following analysis*												Field Parameters [10]	Groundwater Level [11]
			Start	End	Units		Archival (Frozen) [1]	PCB Aroclors [2]	Total Organic Carbon	Total Solids [3]	Grain Size	High-Resolution Pesticides [4]	Dioxin/Furan Analysis	SVOCs (including Phenols, PAHs, and Phthalates) [5]	Total Petroleum Hydrocarbons [6]	Metals [7]	VOCs [8]	Conventionals [9]		
RM11E-MWS001-10_15'	11/21/2013	15:15	10	15	ft	K1312857-002	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS001-15_20'	11/21/2013	15:30	15	20	ft	K1312857-003	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS001-20_24'	11/21/2013	16:40	20	24	ft	K1312857-004	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS001-5_24'	11/21/2013	16:10	5	24	ft	K1312857-005	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS001-24_29'	11/21/2013	16:25	24	29	ft	K1312857-006	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS001-29_34'	11/22/2013	8:15	29	34	ft	K1312857-007	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-5_10'	11/22/2013	9:50	5	10	ft	K1312857-008	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-10_15'	11/21/2013	10:00	10	15	ft	K1312857-009	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-15_20'	11/21/2013	10:55	15	20	ft	K1312857-010	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-20_25	11/21/2013	11:00	20	25	ft	K1312857-011	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-5_24'	11/21/2013	11:20	5	24	ft	K1312857-012	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS004-24_29'	11/21/2013	11:30	24	29	ft	K1312857-013	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS004-30_35'	11/21/2013	12:45	30	35	ft	K1312857-014	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS004-25_30'	11/21/2013	12:25	25	30	ft	K1312857-015	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS504-24_29'	*11/21/2013*	*11:15*	*24*	*29*	ft	*K1312857-016*	*X*	*X*	*X*	*X*	--	*X*	--	*X*	*X*	*X*	--	--	--	--
RM11E-MWS904-24_29'	*11/21/2013*	*11:45*	*NA*	*NA*	*NA*	*K1312857-017*	--	*X*	*X*	--	--	*X*	--	*X*	*X*	*X*	--	--	--	--
RM11E-MWS005-5_10'	11/22/2013	11:00	5	10	ft	K1312857-018	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-10_15'	11/22/2013	11:15	10	15	ft	K1312857-019	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-15_20'	11/22/2013	11:35	15	20	ft	K1312857-020	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-20_25	11/22/2013	12:00	20	25	ft	K1312857-021	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-25_30'	11/22/2013	11:55	25	30	ft	K1312857-022	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-30_35'	11/22/2013	12:15	30	35	ft	K1312857-023	X	--	--	--	--	--	--	--	--	--	--	--	--	--
RM11E-MWS005-5_21'	11/22/2013	11:45	5	21	ft	K1312857-024	X	X	X	X	X	X	--	X	X	X	--	--	--	--
RM11E-MWS005-21_26'	11/22/2013	11:50	21	26	ft	K1312857-025	X	X	X	X	X	X	--	X	X	X	--	--	--	--
Surface Soils																				
RM11E-SL035	10/31/2013	13:50	0	30	cm	K1311918-004	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL036	10/31/2013	15:20	0	28	cm	K1311918-005	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL028	11/22/2013	13:00	0	30	cm	K1312857-027	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL029	11/22/2013	14:00	0	23	cm	K1312857-028	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL030	11/22/2013	14:25	0	27	cm	K1312857-029	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL031	11/22/2013	9:15	0	29	cm	K1312857-026 K1400182-001*	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL032	11/18/2013	12:50	0	29	cm	K1312655-002	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL033	11/18/2013	14:45	0	20	cm	K1312655-004	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL034	11/18/2013	15:45	0	30	cm	K1312655-005	X	X	X	X	--	X	--	X	X	X	--	--	--	--
RM11E-SL532	*11/18/2013*	*13:00*	*0*	*29*	*cm*	*K1312655-003*	*X*	*X*	*X*	*X*	--	*X*	--	*X*	*X*	*X*	--	--	--	--
RM11E-SL932	*11/18/2013*	*12:10*	*NA*	*NA*	*NA*	*K1312655-001*	--	*X*	*X*	--	--	*X*	--	*X*	*X*	*X*	--	--	--	--
Surface Sediment																				
RM11E-G068	10/31/2013	18:00	0	26	cm	K1311918-008	X	X	X	X	X	--	--	--	--	--	--	--	--	--

Table 8-1
Supplemental RI/FS Sampling and Analytical Summary

Sample ID	Sample Date	Sample Time	Sample Depth			Lab Sample ID (s)	*Samples submitted to ALS for the following analysis*												Field Parameters [10]	Groundwater Level [11]
			Start	End	Units		Archival (Frozen) [1]	PCB Aroclors [2]	Total Organic Carbon	Total Solids [3]	Grain Size	High-Resolution Pesticides [4]	Dioxin/Furan Analysis	SVOCs (including Phenols, PAHs, and Phthalates) [5]	Total Petroleum Hydrocarbons [6]	Metals [7]	VOCs [8]	Conventionals [9]		
RM11E-G069	10/30/2013	10:23	0	24	cm	K1311862-001	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G070	10/30/2013	14:15	0	8	cm	K1311862-002	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G071	10/30/2013	13:13	0	24	cm	K1311862-003	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G072	10/30/2013	14:40	0	26	cm	K1311862-004 K1404419-003*	X	X	X	X	X	--	X	--	--	--	--	--	--	--
RM11E-G073	10/30/2013	15:32	0	22	cm	K1311862-005	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G074	10/30/2013	16:47	0	26	cm	K1311862-006	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G075	10/31/2013	16:55	0	17	cm	K1311918-007 K1404419-004*	X	X	X	X	X	--	X	--	--	--	--	--	--	--
RM11E-G076	10/31/2013	9:30	0	25	cm	K1311918-001	X	X	X	X	X	X	--	--	--	--	--	--	--	--
RM11E-G077	10/31/2013	10:12	0	22	cm	K1311918-002	X	X	X	X	X	X	--	--	--	--	--	--	--	--
RM11E-G078	5/2/2014	8:59	0	30.5	*cm*	K1404420-001	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G079	10/31/2013	15:43	0	23	cm	K1311918-006	X	X	X	X	X	X	--	--	--	--	--	--	--	--
RM11E-G080	5/2/2014	9:55	0	30.5	*cm*	K1404420-002	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G081	5/2/2014	11:20	0	30.5	*cm*	K1404420-003	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G082	10/31/2013	12:02	0	20	cm	K1311918-003	X	X	X	X	X	X	--	--	--	--	--	--	--	--
RM11E-G083	5/1/2014	12:00	0	24	*cm*	K1404420-004	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G084	5/1/2014	11:17	0	20	*cm*	K1404420-005	X	X	X	X	X	X	--	--	--	--	--	--	--	--
RM11E-G085	5/2/2014	13:50	0	8	*cm*	K1404420-006	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G086	5/2/2014	12:55	0	8	*cm*	K1404420-007	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G087	5/2/2014	15:10	0	26	*cm*	K1404420-008 K1404419-002*	X	X	X	X	X	--	X	--	--	--	--	--	--	--
RM11E-G088	5/1/2014	14:40	0	21.5	*cm*	K1404420-009 K1404419-001*	X	X	X	X	X	--	X	--	--	--	--	--	--	--
RM11E-G089	5/1/2014	13:50	0	24	*cm*	K1404420-010	X	X	X	X	X	--	--	--	--	--	--	--	--	--
RM11E-G578	*5/2/2014*	*9:20*	*0*	*30.5*	*cm*	*K1404420-011*	--	*X*	*X*	*X*	*X*	--	--	--	--	--	--	--	--	--
RM11E-G579	*10/31/2013*	*15:43*	*0*	*23*	*cm*	*K1311918-010*	--	*X*	*X*	*X*	*X*	--	--	--	--	--	--	--	--	--
RM11E-G978	*5/2/2014*	*8:15*	*NA*	*NA*	*NA*	*K1404420-012*	--	*X*	*X*	*X*	*X*	--	--	--	--	--	--	--	--	--
RM11E-G979	*10/31/2013*	*14:47*	*NA*	*NA*	*NA*	*K1311918-009*	--	*X*	*X*	*X*	*X*	--	--	--	--	--	--	--	--	--

Table 8-1
Supplemental RI/FS Sampling and Analytical Summary

Notes:

[1] Archived samples will be retained by the primary contract laboratory until approval of disposal is granted by the Project Manager.

[2] Includes: Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268. Total PCBs is the sum of the Aroclor concentrations.

[3] Total solids was analyzed for on sediment and soil samples only (not groundwater).

[4] Includes: (1) Dieldrin, (2) Total DDx (sum of 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT), (3) Gamma-Hexachlorocyclohexane (Lindane), (4) Total Chlordanes, and (5) Heptachlor Epoxide. Total Chlordanes are calculated as the sum of the following compounds: cis-chlordane, trans-chlordane, oxychlordane, cis-nonachlor, and trans-nonachlor.

[5] Includes: Hexachlorobenzene and Pentachlorophenol, Bis(2-Ethylhexyl) Phthalate, (1) total low molecular weight PAHs (LPAHs), (2) total high molecular weight PAHs (HPAHs), (3) total PAHs (sum of total LPAH and total HPAH concentrations), and (4) total carcinogenic PAHs (cPAHs). Total LPAHs are calculated using the concentrations for 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, and Phenanthrene. Total HPAHs are calculated using the concentrations for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3,-cd)pyrene, and Pyrene. Total cPAHs are calculated using the concentrations of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, and Indeno(1,2,3-cd)pyrene multiplied by the relative potency factor describing the carcinogenic potential relative to Benzo(a)pyrene equivalents (BaP-EQ).

[6] Includes: (1) NWTPH-Dx (C-10 to C-12 aliphatic/aromatic) and (2) NWTPH-Gx (C4-C6 aliphatic, C6-C8 aliphatic, and C8-C10 aliphatic). NWTPH-Dx was analyzed in soil and groundwater samples. NWTPH-Gx analysis was conducted in groundwater samples only.

[7] For soil and groundwater samples, metals include: Antimony, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, and Zinc. Groundwater samples were also analyzed for the following metals: Barium, Beryllium, Cobalt, Iron, Magnesium, Manganese, Potassium, Sodium, and Vanadium.

[8] Includes: Benzene, Carbon disulfide, Chlorobenzene, Chloroethane, Chloroform, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, 1,1-Dichloroethene, cis-1,2-Dichloroethene, Ethylbenzene, Isopropylbenzene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Toluene, Trichloroethene, o-Xylene, m-Xylene, p-Xylene, and total Xylene.

[9] Conventionals include pH, Specific conductance, Oxidation-reduction potential, Turbidity, Hardness, Ferrous iron, Dissolved organic carbon, Calcium, Chloride, Bicarbonate, and Sulfate.

[10] Field parameters consisted of pH, Temperature, Dissolved oxygen, Specific conductance, Oxidation-reduction potential, and Turbidity.

[11] High-frequency groundwater levels were obtained at RM11E-MW002s and RM11E-MW003d using automated pressure transducers. Manual readings collected using an electronic water-level probe were obtained at all new and existing monitoring wells.

-- = Not applicable; TBD = to be determined based on screening of Q3 results; TOC = total organic carbon; PAH = polycyclic aromatic hydrocarbon; VOC = volatile organic compound; SVOC = semi-volatile organic compound

Table 10-1
Analytical Results of Groundwater

Analyte	Sample ID	RM11E-MW001		RM11E-MW002s		RM11E-MW003d		RM11E-MW004		RM11E-MW005		RM11E-MULT1007		RM11E-MULT89881	
	Unit	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014
Conventionals															
Dissolved organic carbon	mg/l	2.90	2.15	12.4	11.8	0.38 U	1.51	0.86 U	4.22	0.98 U	1.12 T	0.36 U	1.43	0.3 JT	1.36
Total organic carbon	mg/l	2.8	2.13	12.6	14.9	0.60 U	0.62	1.21 U	3.11	0.97 U	1.15 T	0.56 U	1.56	2 JT	0.25 J
PCBs															
Aroclor 1016	ug/l	0.0026 U	0.0011 U	0.0013 U	0.0011 U	0.00099 U	0.0011 U	0.0011 U	0.0011 U	0.0014 U	0.00098 UT	0.00097 U	0.0070 U	0.0011 UT	0.0011 U
Aroclor 1221	ug/l	0.0011 U	0.0011 U	0.00098 U	0.0011 U	0.00099 U	0.0055 U	0.0011 U	0.0011 U	0.0019 U	0.00098 UT	0.00097 U	0.0030 U	0.0024 UT	0.0011 U
Aroclor 1232	ug/l	0.0033 U	0.0011 U	0.0032 U	0.0011 U	0.0028 U	0.0029 U	0.0039 U	0.0011 U	0.0029 U	0.00098 UT	0.0026 U	0.012 U	0.0031 UT	0.0011 U
Aroclor 1242	ug/l	0.0020 U	0.0012 NJ	0.0017 U	0.0011 U	0.0013 U	0.0013 U	0.0011 U	0.0011 U	0.0015 U	0.00098 UT	0.00097 U	0.0088 U	0.0011 UT	0.0011 U
Aroclor 1248	ug/l	0.0025 U	0.0011 U	0.0011 U	0.0011 U	0.00099 U	0.0020 U	0.0011 U	0.0011 U	0.00098 U	0.00098 UT	0.0019 U	0.0088 U	0.0011 UT	0.0011 U
Aroclor 1254	ug/l	0.0086	0.0023 NJ	0.0016 U	0.0011 U	0.00099 U	0.0056 U	0.0023 U	0.0044 NJ	0.00098 U	0.00098 UT	0.00097 U	0.024 U	0.0012 UT	0.0011 U
Aroclor 1260	ug/l	0.0075 U	0.0011 U	0.00098 U	0.0011 U	0.00099 U	0.0057 U	0.0011 U	0.0013 NJ	0.00098 U	0.00098 UT	0.00097 U	0.0092 NJ	0.0011 UT	0.0011 U
Aroclor 1262	ug/l	0.0011 U	0.0011 U	0.00098 U	0.0011 U	0.00099 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.00098 UT	0.00097 U	0.0030 U	0.0011 UT	0.0011 U
Aroclor 1268	ug/l	0.0011 U	0.0011 U	0.00098 U	0.0011 U	0.00099 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.00098 UT	0.00097 U	0.0030 U	0.0011 UT	0.0011 U
Total PCBs (FS Calc)	ug/l	0.019 T	0.0074 NJT	0.0032 UT	0.0011 UT	0.0028 UT	0.0057 UT	0.0039 UT	0.0096 NJT	0.0029 UT	0.00098 UT	0.0026 UT	0.044 NJT	0.0031 UT	0.0011 UT
Total PCBs (RI Calc)	ug/l	0.0086 T	0.0035 NJT	0.0032 UT	0.0011 UT	0.0028 UT	0.0057 UT	0.0039 UT	0.0057 NJT	0.0029 UT	0.00098 UT	0.0026 UT	0.0092 NJT	0.0031 UT	0.0011 UT
Dissolved Metals															
Antimony	ug/l	0.125 J	0.791	0.099 U	0.024 U	0.005 U	0.005 U	0.106 U	0.624	0.005 U	0.005 UT	0.044 U	0.054	0.05 UT	0.069
Arsenic	ug/l	1.5	0.9	0.8	0.8	1.1	2.2	1.9	1.2	1.4	2.6 T	0.8	0.2 J	1.7 T	1.5
Barium	ug/l	97.9	81.4	130	58.6	21.4	25.0	66.1	54.9	28.5	29.4 T	15.9	18.0	20.3 T	21.3
Beryllium	ug/l	0.015 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.007 J	0.006 U	0.006 JT	0.006 U	0.006 U	0.006 UT	0.006 U
Cadmium	ug/l	0.054 U	0.059	0.008 J	0.008 J	0.005 U	0.005 U	0.036	0.073	0.005 U	0.005 U	0.005 U	0.018 J	0.134 T	1.40
Calcium	ug/l	54200	91900	139000	175000	26800	25600	50200	81100	33000	32550 T	36400	42200	35050 T	32900
Chromium	ug/l	0.09 U	0.60	0.13 J	0.27	0.02 U	0.05 J	0.61	0.10 J	0.26	0.1 JT	1.15	0.08 J	1.34 T	1.17
Cobalt	ug/l	8.310	0.183	18.0	7.830	1.410	0.131	1.290	1.690	1.100	1.12 T	2.400	0.585	0.089 T	0.088
Copper	ug/l	1.72	1.27	0.64	0.88	0.15	0.51	0.51	2.68	0.17	0.36 T	0.50	0.63	2.27 T	2.50
Iron	ug/l	10.8 J	3.7 U	92.7	25000	7510	12800	3.0 U	16.9 U	12300	16050 T	3.0 U	17.0 J	3 UT	4.4 U
Lead	ug/l	0.013 U	0.007 J	0.015 U	0.018 J	0.005 U	0.018 J	0.005 U	0.033	0.005 U	0.014 JT	0.015 U	0.033	0.005 U	0.005 U
Magnesium	ug/l	18300	12400	51100	75700	11300	11600	25400	10900	14500	15300 T	14300	15900	13050 T	12900
Manganese	ug/l	13100	10.9	7720	7360	1140	926	319	215	3760	3520 T	5.220	483	3.1 T	0.478
Mercury	ug/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 T	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	ug/l	8.84	1.58 J	10.0	3.59 J	1.09	0.87 J	3.06	2.81 J	0.78	0.84 JT	2.51	3.76 J	1.1 T	1.00 J
Potassium	ug/l	5120	6520	4060	4080	3170	3520	3590	6030	2930	2855 T	3080	3330	3115 T	2860
Sodium	ug/l	20000	12000	47700	53700	10400	11400	16000	21500	9830	10300 T	8730	13500	8405 T	8430
Vanadium	ug/l	1.82	5.90	0.15 J	0.25	0.03 U	0.03 U	15.4	6.65	0.03 U	0.03 UT	7.24	2.00	9.45 T	8.42
Zinc	ug/l	4.0	16.9 J	4.4	2.0 J	2.1	24.8 J	1.8	33.1 J	0.4 J	1.1 JT	10.7	10.8 J	12.4 T	10.3 J
Total Metals															
Antimony	ug/l	0.147 J	0.788	0.123 U	0.034 U	0.005 U	0.010 U	0.106 U	0.642	0.005 U	0.01 U	0.054 U	0.109	0.148 UT	0.062
Arsenic	ug/l	7.6	0.8	1.1	3.2	2.7	3.5	1.8	1.3	5.4	6.3 T	1.2	1.2	1.7 T	1.6
Barium	ug/l	170	82.3	174	153	38.9	40.8	67.2	55.9	49.0	51.6 T	17.1	20.9	20 T	21.3
Beryllium	ug/l	0.283	0.007 J	0.019 U	0.020	0.008 J	0.008 J	0.013 U	0.006 J	0.006 U	0.006 U	0.006 U	0.006 U	0.006 UT	0.006 U
Cadmium	ug/l	0.114	0.054	0.012 U	0.018 J	0.005 U	0.005 U	0.028	0.089	0.005 U	0.005 UT	0.005 U	0.023	0.153 T	1.44
Calcium	ug/l	55600	92300	136000	161000	27600	25800	51800	80700	33600	33100 T	36200	42700	35550 T	33300
Chromium	ug/l	19.3	0.75	0.94	1.71	2.07	0.84	0.62	0.20 J	0.06 U	0.15 JT	2.87	1.49	1.37 T	1.19
Cobalt	ug/l	12.6	0.195	15.8	8.800	2.330	0.148	1.290	1.670	1.130	1.135 T	2.820	0.682	0.1 T	0.091
Copper	ug/l	13.4	1.37	1.29	0.76	0.47	0.23	0.47	2.27	0.08 U	0.12 T	0.55	1.06	2.35 T	2.56
Iron	ug/l	17000	6.7 U	11000	77700	19900	18200	9.2 U	98.8	27200	28250 T	476	1550	3 UT	8.3 U

Table 10-1
Analytical Results of Groundwater

Analyte	Sample ID	RM11E-MW001		RM11E-MW002s		RM11E-MW003d		RM11E-MW004		RM11E-MW005		RM11E-MULT1007		RM11E-MULT89881	
	Unit	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014
Lead	ug/l	6.860	0.026	0.156	0.185	0.111	0.061	0.015 U	0.055	0.005 U	0.005 UT	0.068 U	1.34	0.005 UT	0.006 J
Magnesium	ug/l	19700	12600	50800	68700	11800	11500	26300	11000	14700	15300 T	14300	16300	13150 T	12900
Manganese	ug/l	13600	10.9	6940	6840	1160	942	328	210	3720	3565 T	25.7	511	3.19 T	0.653
Mercury	ug/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UT	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	ug/l	13.7	1.49 J	11.1	3.66 J	1.28	1.00 J	3.20	2.74 J	0.65	0.84 JT	2.47	4.12 J	1.08 T	1.01 J
Potassium	ug/l	5580	6520	4180	4140	3300	3500	3690	6070	3000	2895 T	3130	3410	3100 T	2850
Sodium	ug/l	20000	12200	46300	44900	10800	11200	16500	21800	9940	10350 T	8710	14100	8445 T	8390
Vanadium	ug/l	39.2	6.22	1.34	1.36	0.19 J	0.10 J	15.6	6.85	0.21	0.23 T	8.70	7.27	9.78 T	9.19
Zinc	ug/l	20.7	17.1 J	5.8	11.8 J	3.6	84.0 J	1.8	33.0 J	0.4 J	0.5 JT	15.7	16.7 J	12.6 T	10.3 J
PAHs															
2-Methylnaphthalene	ug/l	0.029 U	0.028 U	0.029 U	0.027 U	0.029 U	0.029 U	0.030 U	0.027 U	0.027 U	0.027 UT	0.027 U	0.066 J	0.028 UT	0.027 U
Acenaphthene	ug/l	0.028 U	0.027 U	0.028 U	0.026 U	0.028 U	0.028 U	0.029 U	0.026 U	0.026 U	0.026 UT	0.026 U	0.027 U	0.027 UT	0.026 U
Acenaphthylene	ug/l	0.016 U	0.016 U	0.016 U	0.015 U	0.016 U	0.016 U	0.017 U	0.015 U	0.015 U	0.015 UT	0.015 U	0.016 U	0.016 UT	0.015 U
Anthracene	ug/l	0.026 U	0.025 U	0.026 U	0.024 U	0.026 U	0.026 U	0.027 U	0.024 U	0.024 U	0.024 UT	0.024 U	0.025 U	0.025 UT	0.024 U
Benzo(a)anthracene	ug/l	0.019 U	0.019 U	0.019 U	0.018 U	0.019 U	0.019 U	0.020 U	0.018 U	0.018 U	0.018 UT	0.018 U	0.019 U	0.019 UT	0.018 U
Benzo(a)pyrene	ug/l	0.033 U	0.032 U	0.033 U	0.031 U	0.033 U	0.033 U	0.034 U	0.031 U	0.031 U	0.031 UT	0.031 U	0.032 U	0.032 UT	0.031 U
Benzo(b)fluoranthene	ug/l	0.018 U	0.018 U	0.018 U	0.017 U	0.018 U	0.018 U	0.019 U	0.017 U	0.017 U	0.017 UT	0.017 U	0.018 U	0.018 UT	0.017 U
Benzo(g,h,i)perylene	ug/l	0.14 J	0.020 U	0.021 U	0.019 U	0.021 U	0.020 U	0.021 U	0.019 U	0.019 U	0.019 UT	0.019 U	0.020 U	0.02 UT	0.019 U
Benzo(k)fluoranthene	ug/l	0.026 U	0.025 U	0.026 U	0.024 U	0.026 U	0.026 U	0.027 U	0.024 U	0.024 U	0.024 UT	0.024 U	0.025 U	0.025 UT	0.024 U
Chrysene	ug/l	0.030 U	0.029 U	0.030 U	0.028 U	0.030 U	0.030 U	0.031 U	0.028 U	0.028 U	0.028 UT	0.028 U	0.029 U	0.029 UT	0.028 U
Dibenzo(a,h)anthracene	ug/l	0.19 J	0.018 U	0.018 U	0.017 U	0.018 U	0.018 U	0.019 U	0.017 U	0.017 U	0.017 UT	0.017 U	0.018 U	0.018 UT	0.017 U
Fluoranthene	ug/l	0.021 U	0.021 U	0.022 U	0.028 J	0.022 U	0.021 U	0.022 U	0.020 U	0.020 U	0.02 UT	0.020 U	0.029 J	0.021 UT	0.020 U
Fluorene	ug/l	0.029 U	0.028 U	0.029 U	0.027 U	0.029 U	0.029 U	0.030 U	0.027 U	0.027 U	0.027 UT	0.027 U	0.028 U	0.028 UT	0.027 U
Indeno(1,2,3-cd)pyrene	ug/l	0.022 U	0.022 U	0.023 U	0.021 U	0.023 U	0.022 U	0.023 U	0.021 U	0.021 U	0.021 UT	0.021 U	0.022 U	0.022 UT	0.021 U
Naphthalene	ug/l	0.023 U	0.023 U	0.071 J	0.026 J	0.049 J	0.032 J	0.071 J	0.040 J	0.048 J	0.022 UT	0.048 J	0.023 U	0.068 JT	0.054 J
Phenanthrene	ug/l	0.023 U	0.023 U	0.024 U	0.022 U	0.024 U	0.023 U	0.024 J	0.022 U	0.022 U	0.022 UT	0.022 U	0.023 U	0.023 UT	0.022 U
Pyrene	ug/l	0.020 U	0.020 U	0.021 U	0.019 U	0.021 U	0.020 U	0.021 U	0.019 U	0.019 U	0.019 UT	0.019 U	0.028 J	0.02 UT	0.019 U
Total LPAH (FS Calc)	ug/l	0.029 UT	0.028 UT	0.15 JT	0.097 JT	0.13 JT	0.11 JT	0.16 JT	0.11 JT	0.12 JT	0.027 UT	0.12 JT	0.14 JT	0.14 JT	0.12 JT
Total HPAH (FS Calc)	ug/l	0.42 JT	0.032 UT	0.033 UT	0.13 JT	0.033 UT	0.033 UT	0.034 UT	0.031 UT	0.031 UT	0.031 UT	0.031 UT	0.15 JT	0.032 UT	0.031 UT
Total PAH (FS Calc)	ug/l	0.51 JT	0.032 UT	0.26 JT	0.22 JT	0.24 JT	0.22 JT	0.28 JT	0.22 JT	0.23 JT	0.031 UT	0.23 JT	0.29 JT	0.25 JT	0.23 JT
Total cPAH (BaPeq) (FS Calc)	ug/l	0.21 JT	0.032 UT	0.033 UT	0.031 UT	0.033 UT	0.033 UT	0.034 UT	0.031 UT	0.031 UT	0.031 UT	0.031 UT	0.032 UT	0.032 UT	0.031 UT
Total LPAH (RI Calc)	ug/l	0.029 UT	0.028 UT	0.071 JT	0.025 JT	0.049 JT	0.032 JT	0.095 JT	0.040 JT	0.048 JT	0.027 UT	0.048 JT	0.066 JT	0.068 JT	0.054 JT
Total HPAH (RI Calc)	ug/l	0.33 JT	0.032 UT	0.033 UT	0.017 JT	0.033 UT	0.033 UT	0.034 UT	0.031 UT	0.031 UT	0.031 UT	0.031 UT	0.029 JT	0.032 UT	0.031 UT
Total PAH (RI Calc)	ug/l	0.16 JT	0.032 UT	0.014 JT	0.054 JT	0.049 JT	0.032 JT	0.095 JT	0.040 JT	0.048 JT	0.031 UT	0.048 JT	0.12 JT	0.068 JT	0.54 JT
Total cPAH (BaPeq) (RI Calc)	ug/l	0.19 JT	0.032 UT	0.033 UT	0.031 UT	0.033 UT	0.033 UT	0.034 UT	0.031 UT	0.031 UT	0.031 UT	0.031 UT	0.032 UT	0.032 UT	0.031 UT
Pesticides															
2,4'-DDD	ng/l	0.11 U	0.11 U	0.11 U	0.12 U	0.13 U	0.11 U	0.12 U	0.12 U	0.12 U	0.11 UT	0.11 U	0.11 U	0.11 UT	0.14 U
2,4'-DDE	ng/l	0.11 U	0.11 U	0.11 U	0.12 U	0.13 U	0.11 U	0.12 U	0.12 U	0.12 U	0.11 UT	0.11 U	0.11 U	0.11 UT	0.14 U
2,4'-DDT	ng/l	0.087 U	0.087 U	0.087 U	0.089 U	0.099 U	0.087 U	0.093 U	0.091 U	0.088 U	0.087 UT	0.087 U	0.087 U	0.087 UT	0.11 U
Total 2,4-DDx (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.14 UT
Total 2,4-DDx (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.14 UT
4,4'-DDD	ng/l	0.10 U	0.10 U	0.10 U	0.11 U	0.12 U	0.10 U	0.11 U	0.11 U	0.11 U	0.1 UT	0.10 U	0.10 U	0.1 UT	0.12 U
4,4'-DDE	ng/l	0.075 U	0.075 U	0.075 U	0.077 U	0.086 U	0.075 U	0.080 U	0.079 U	0.076 U	0.075 UT	0.075 U	0.10 J	0.075 UT	0.090 U
4,4'-DDT	ng/l	0.088 U	0.088 U	0.088 U	0.090 U	0.11 U	0.14 J	0.094 U	0.092 U	0.089 U	0.088 UT	0.088 U	0.27 J	0.088 UT	0.11 U
Total 4,4-DDx (FS Calc)	ng/l	0.1 UT	0.1 UT	0.1 UT	0.11 UT	0.12 UT	0.23 JT	0.11 UT	0.11 UT	0.11 UT	0.1 UT	0.1 UT	0.42 JT	0.1 UT	0.12 UT
Total 4,4-DDx (RI Calc)	ng/l	0.1 UT	0.1 UT	0.1 UT	0.11 UT	0.12 UT	0.14 JT	0.11 UT	0.11 UT	0.11 UT	0.1 UT	0.1 UT	0.37 JT	0.1 UT	0.12 UT

Table 10-1
Analytical Results of Groundwater

Analyte	Sample ID	RM11E-MW001		RM11E-MW002s		RM11E-MW003d		RM11E-MW004		RM11E-MW005		RM11E-MULT1007		RM11E-MULT89881	
	Unit	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014
Total DDD (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.14 UT
Total DDD (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.14 UT
Total DDE (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.16 JT	0.11 UT	0.14 UT
Total DDE (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.11 UT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.10 JT	0.11 UT	0.14 UT
Total DDT (FS Calc)	ng/l	0.088 UT	0.088 UT	0.088 UT	0.09 UT	0.11 UT	0.18 JT	0.094 UT	0.092 UT	0.089 UT	0.088 UT	0.088 UT	0.31 JT	0.088 UT	0.11 UT
Total DDT (RI Calc)	ng/l	0.088 UT	0.088 UT	0.088 UT	0.09 UT	0.11 UT	.014 JT	0.094 UT	0.092 UT	0.089 UT	0.088 UT	0.088 UT	0.27 JT	0.088 UT	0.11 UT
Total DDx (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.38 JT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.57 JT	0.11 UT	0.14 UT
Total DDx (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.13 UT	0.14 JT	0.12 UT	0.12 UT	0.12 UT	0.11 UT	0.11 UT	0.27 JT	0.11 UT	0.14 UT
cis-Chlordane	ng/l	0.13 U	0.13 U	0.13 U	0.14 U	0.15 U	0.13 U	0.14 U	0.18 J	0.14 U	0.13 UT	0.13 U	0.13 U	0.13 UT	0.16 U
cis-Nonachlor	ng/l	0.17 U	0.17 U	0.17 U	0.18 U	0.20 U	0.17 U	0.19 U	0.18 U	0.18 U	0.17 UT	0.17 U	0.17 U	0.17 UT	0.21 U
trans-Chlordane	ng/l	0.17 U	0.17 U	0.17 U	0.18 U	0.20 U	0.17 U	0.19 U	0.20 J	0.18 U	0.17 UT	0.17 U	0.17 U	0.17 UT	0.21 U
trans-Nonachlor	ng/l	0.12 U	0.12 U	0.12 U	0.13 U	0.14 U	0.12 U	0.13 U	0.13 U	0.13 U	0.12 UT	0.12 U	0.12 U	0.12 UT	0.15 U
Oxychlordane	ng/l	2.0 U	2.0 U	2.0 U	2.1 U	2.3 U	2.0 U	2.2 U	2.1 U	2.1 U	2 UT	2.0 U	2.0 U	2 U	2.4 U
Total Chlordane (FS Calc)	ng/l	2 UT	2 UT	2 UT	2.1 UT	2.3 UT	2 UT	2.2 UT	1.6 JT	2.1 UT	2 UT	2 UT	2 UT	2 UT	2.4 UT
Total Chlordane (RI Calc)	ng/l	2 UT	2 UT	2 UT	2.1 UT	2.3 UT	2 UT	2.2 UT	0.38 JT	2.1 UT	2 UT	2 UT	2 UT	2 UT	2.4 UT
Dieldrin	ng/l	0.74 U	0.74 U	0.74 U	0.76 U	0.85 U	0.74 U	0.79 U	0.90 J	0.75 U	0.74 UT	0.74 U	0.74 U	0.74 UT	0.89 U
gamma-Hexachlorocyclohexane	ng/l	0.30 U	0.30 U	0.30 U	0.31 U	0.35 U	0.30 U	0.32 U	0.32 U	0.31 U	0.3 UT	0.30 U	0.30 U	0.3 UT	0.36 U
Heptachlor epoxide	ng/l	0.16 U	0.16 U	0.16 U	0.17 U	0.19 U	0.16 U	0.18 U	0.17 U	0.17 U	0.16 UT	0.16 U	0.16 U	0.16 UT	0.20 U
Hexachlorobenzene	ng/l	0.27 U	0.27 U	0.27 U	0.28 U	0.31 U	0.27 U	0.29 U	0.29 U	0.28 U	0.27 UT	0.27 U	0.27 U	0.31 JT	0.36 J
Hydrocarbons															
Diesel Range Hydrocarbons	ug/l	49 U	12 U	11 U	12 U	12 U	40 J	12 U	12 U	12 U	11 UT	11 U	42 J	11 U	12 U
Gasoline Range Hydrocarbons	ug/l	13 U	13 U	56 J	13 U	13 U	13 U	13 U	13 U	13 U	13 UT	13 U	13 U	13 U	13 U
Residual Range Hydrocarbons	ug/l	130 U	20 U	27 U	21 U	31 U	57 J	26 U	20 U	25 U	19 UT	24 U	61 J	19 U	20 U
Phenols															
Pentachlorophenol	ug/l	0.36 U	0.35 U	0.36 U	0.34 U	0.36 U	0.36 U	0.37 U	0.34 U	0.34 U	0.34 UT	0.34 U	0.35 U	0.35 U	0.34 U
Phthalates															
Bis(2-ethylhexyl) phthalate	ug/l	0.68 J	0.14 U	0.14 U	0.13 U	0.14 U	0.28 J	0.15 U	0.16 J	0.13 U	0.13 UT	0.13 J	8.3	0.014 U	0.13 U
VOCs															
1,1-Dichloroethene	ug/l	0.080 U	0.080 U	0.080 U	0.080 U	0.10 J	0.080 U	0.080 U	0.080 U	0.32 J	0.28 JT	0.080 U	0.080 U	0.11 JT	0.080 U
1,2,4-Trimethylbenzene	ug/l	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 UT	0.069 U	0.069 U	0.069 UT	0.069 U
1,2-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 UT	0.12 U	0.12 U	0.12 UT	0.12 U
1,3,5-Trimethylbenzene	ug/l	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U	0.089 UT	0.089 U	0.089 U	0.089 UT	0.089 U
1,4-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 UT	0.12 U	0.12 U	0.12 UT	0.12 U
Benzene	ug/l	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 UT	0.062 U	0.062 U	0.062 UT	0.062 U
Carbon disulfide	ug/l	0.13 J	0.069 U	0.080 J	0.16 J	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 UT	0.069 U	0.069 U	0.069 UT	0.069 U
Chlorobenzene	ug/l	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 UT	0.11 U	0.11 U	0.11 UT	0.11 U
Chloroethane	ug/l	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 UT	0.16 U	0.16 U	0.16 UT	0.16 U
Chloroform	ug/l	0.072 U	0.072 U	1.3	0.072 U	0.072 U	0.072 U	0.23 U	0.072 U	0.072 U	0.072 UT	0.30 U	0.17 J	0.36 UT	0.33 J
cis-1,2-Dichloroethene	ug/l	0.067 U	0.067 U	0.067 U	0.067 U	2.9	2.3	0.067 U	0.067 U	37	40 T	0.070 J	0.14 J	0.88 T	0.62
Ethylbenzene	ug/l	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.05 UT	0.050 U	0.050 U	0.05 UT	0.050 U
Isopropylbenzene	ug/l	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 UT	0.051 U	0.051 U	0.051 UT	0.051 U
m,p-Xylene	ug/l	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 UT	0.11 U	0.11 U	0.11 UT	0.11 U
o-Xylene	ug/l	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U	0.074 UT	0.074 U	0.074 U	0.074 UT	0.074 U
Tetrachloroethene	ug/l	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U	0.17 J	0.099 U	0.19 J	10	4.8 T	2.3	1.9	15 T	13
Toluene	ug/l	0.20 J	0.14 U	0.054 U	0.054 U	0.054 U	0.054 U	0.060 J	0.054 U	0.054 U	0.054 UT	0.054 U	0.054 U	0.054 UT	0.054 U
Trichloroethene	ug/l	0.20 J	0.10 U	0.10 U	0.10 U	5.7	4.5	0.10 U	0.10 U	4.1	4.7 T	1.4	1.3	3.8 T	3.2

Table 10-1
Analytical Results of Groundwater

Analyte	Sample ID	RM11E-MW001		RM11E-MW002s		RM11E-MW003d		RM11E-MW004		RM11E-MW005		RM11E-MULT1007		RM11E-MULT89881	
	Unit	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014	-12-2013	-04-2014
Total BTEX (FS Calc)	ug/l	0.35 JT	0.14 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.21 JT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total BTEX (RI Calc)	ug/l	0.20 JT	0.14 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.060 JT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total Xylene (FS Calc)	ug/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total Xylene (RI Calc)	ug/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Major Cations/Anions and General Chemistry															
Bicarbonate	mg/l	264	275	558	536	108	109	234	273	151	156 T	132	173	120 T	111
Carbonate	mg/l	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 UT	3 U	3 U	3 UT	3 U
Chloride	mg/l	5.3	3.0	48.0	48	14.8	14.8	4.0	7.6	7.0	6.8 T	6.5	6.2	6.5 T	6.5
Conductivity	umhos/cm	515	473	1210	1280	312	251	505	486	352	330 T	343	347	325 T	306
Hardness as CaCO3	mg/l	220	282	550	684	118	112	238	247	144	146 T	149	174	142 T	136
Oxidation-Reduction Potential	mv	246 J	218	78.8 J	-116	71.4 J	-40	246 J	157	17 J	-28 T	263 J	126	281 JT	190
Iron, Divalent	mg/l	0.05 U	0.05 UJ	4.1	30.8 J	13.8	14.0	0.05 U	0.05 UJ	25.4	21.2 T	0.05 U	0.27	0.05 T	0.05 UJ
pH	ph units	7.05 J	7.39 J	6.91 J	6.84 J	6.95 J	6.91 J	6.95 J	7.10 J	6.84 J	7.02 JT	7.11 J	7.35 J	7.57 JT	7.21 J
Sulfate	mg/l	5.33	26.0	76.8 J	293	25.4 J	21.5	20.9 J	17.2	19.4 J	18.4 T	19.7 J	17.1	19.6 T	20.0
Turbidity	ntu	82.5	0.18 U	23.2	463	18.8	14.2	0.26 U	0.58	10.4	73.4 T	2.38	4.16	0.12 UT	0.15 U

Notes:
RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).
FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).
Definition of data qualifiers:
U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).
N = The analysis indicates the presence of a PCB Aroclor that has been identified as “presumptively present”. As per EPA guidelines, the data validator reviewed the associated chromatograms and determined that while the pattern-matching quality was marginal and the presence of many non-target compounds were apparent, the presence of an Aroclor was strongly suggested, and the results were thus qualified as presumptively present "N".

Table 10-2
Analytical Results of Subsurface Soil

Analyte	Sample ID	RM11E-MWS001		RM11E-MWS002s		RM11E-MWS004		RM11E-MWS005	
	Unit	-5_24' (Fill)	-24_29' (Native)	-5_20' (Fill)	-20_25' (Native)	-5_24' (Fill)	-24_29' (Native)	-5_21' (Fill)	-21_26' (Native)
Conventionals									
Total organic carbon	percent	0.760	0.531	0.879	0.692	0.468	0.1 T	1.23	1.85
Total solids	percent	83.0	72.4	78.8	69.0	80.2	70.8 T	80.5	72.3
Grain Size									
Clay	percent	9.31	8.70	1.54	11.13	22.04	--	15.03	10.33
Silt	percent	25.23	25.75	21.49	25.82	52.24	--	40.07	36.26
Total Fines	percent	34.5 T	34.5 T	23 T	36.95 T	74.28 T	--	55.1 T	46.59 T
Very fine sand	percent	3.48	7.55	2.05	4.20	5.45	--	4.69	9.95
Fine sand	percent	7.13	38.40	5.99	6.11	6.13	--	4.02	29.60
Medium sand	percent	4.48	15.69	4.73	1.92	2.50	--	1.51	5.50
Coarse sand	percent	3.24	3.01	6.53	2.80	1.93	--	2.19	1.40
Very coarse sand	percent	4.63	1.36	10.11	6.10	1.80	--	3.12	1.43
Fine gravel	percent	5.07	0.99	14.34	18.89	1.85	--	4.69	0.71
Medium gravel	percent	40.06	0.00	28.79	19.18	1.84	--	27.67	4.14
PCBs									
Aroclor 1016	ug/kg	11 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Aroclor 1221	ug/kg	11 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Aroclor 1232	ug/kg	11 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Aroclor 1242	ug/kg	26 U	2.1 U	4.4	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Aroclor 1248	ug/kg	11 U	2.1 U	2.1 U	2.1 U	8.2	2.1 UT	2.1 U	2.1 U
Aroclor 1254	ug/kg	360	7.0 U	8.2 J	2.1 U	2.1 U	2.1 UT	70	2.1 U
Aroclor 1260	ug/kg	190	21	34	2.1 U	2.1 U	2.1 UT	22 U	2.1 U
Aroclor 1262	ug/kg	11 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Aroclor 1268	ug/kg	11 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U
Total PCBs (FS Calc)	ug/kg	600 T	32 T	53 JT	2.1 UT	17 T	2.1 UT	88 T	2.1 UT
Total PCBs (RI Calc)	ug/kg	550 T	21 T	47 JT	2.1 UT	8.2 T	2.1 UT	70 T	2.1 UT
Metals									
Antimony	mg/kg	0.629 J	0.147 J	0.430 J	0.046 J	0.490 J	0.32 JT	0.451 J	0.288 J
Arsenic	mg/kg	6.54	2.17	5.46	3.61	8.52	5.03 T	7.07	3.30
Cadmium	mg/kg	0.535	0.099	0.398	0.082	0.301	0.18 T	0.251	0.116
Chromium	mg/kg	20.6 J	19.5 J	38.3 J	30.3 J	19.9 J	14 JT	23.5 J	20.9 J
Copper	mg/kg	146 J	22.8 J	89.0 J	27.2 J	35.7 J	22.5 JT	34.2 J	34.7 J
Lead	mg/kg	551 J	32.0 J	142 J	13.5 J	106 J	13.9 JT	54.5 J	38.6 J
Mercury	mg/kg	0.096	0.075	0.306	0.081	0.232	0.025 T	0.061	0.064
Nickel	mg/kg	18.1	20.7	35.6	25.0	17.9	17.9 T	18.4	23.9
Zinc	mg/kg	269 J	62.8 J	224 J	63.4 J	138 J	67.8 JT	121 J	73.7 J
PAHs									
2-Methylnaphthalene	ug/kg	28 U	2.8 U	14 U	2.8 U	8.9	2.8 UT	28 U	18 J
Acenaphthene	ug/kg	32 U	3.2 U	16 U	3.2 U	4.7 J	3.2 UT	32 U	20 J
Acenaphthylene	ug/kg	30 J	6.3 J	30 J	2.6 U	6.5	2.6 UT	26 U	20 J
Anthracene	ug/kg	53 J	4.8 J	23 J	3.2 U	11	3.2 UT	32 U	31 J
Benzo(a)anthracene	ug/kg	170	14	47	3.6 U	22	3.6 UT	54 J	67
Benzo(a)pyrene	ug/kg	160	14	110	3.6 U	28	3.6 UT	36 U	80
Benzo(b)fluoranthene	ug/kg	200	21	100	3.4 U	33	3.4 UT	34 U	78
Benzo(g,h,i)perylene	ug/kg	130	12	110	3.7 U	24	3.7 UT	37 U	60
Benzo(k)fluoranthene	ug/kg	66	6.2 J	40	4.0 U	10	4 UT	40 U	21 J
Chrysene	ug/kg	240	15	70	4.1 U	28	4.1 UT	120	70
Dibenzo(a,h)anthracene	ug/kg	30 U	3.0 U	20 J	3.0 U	3.0 U	3 UT	30 U	15 U

Table 10-2
Analytical Results of Subsurface Soil

Analyte	Sample ID	RM11E-MWS001		RM11E-MWS002s		RM11E-MWS004		RM11E-MWS005	
	Unit	-5_24' (Fill)	-24_29' (Native)	-5_20' (Fill)	-20_25' (Native)	-5_24' (Fill)	-24_29' (Native)	-5_21' (Fill)	-21_26' (Native)
Fluoranthene	ug/kg	250	29	81	3.7 U	51	3.7 UT	73	130
Fluorene	ug/kg	33 U	3.3 U	17 U	3.3 U	5.1 J	3.3 UT	63	17 U
Indeno(1,2,3-cd)pyrene	ug/kg	120	11	95	3.2 U	23	3.2 UT	32 U	49
Naphthalene	ug/kg	29 U	12	15 U	2.9 U	11	2.9 UT	29 U	45
Phenanthrene	ug/kg	210	18	44	3.6 U	27	3.6 UT	160	130
Pyrene	ug/kg	370	25	110	3.7 U	50	4.7 JT	110	160
Total LPAH (FS Calc)	ug/kg	350 JT	46 JT	130 JT	3.6 UT	74 JT	3.6 UT	300 T	270 JT
Total LPAH (RI Calc)	ug/kg	293 JT	41 JT	97 JT	3.6 UT	74 JT	3.6 UT	223 T	264 JT
Total HPAH (FS Calc)	ug/kg	1700 T	150 JT	780 JT	4.1 UT	270 T	21 JT	460 JT	720 JT
Total HPAH (RI Calc)	ug/kg	1700 T	150 JT	780 JT	4.1 UT	270 T	4.7 JT	357 JT	720 JT
Total PAH (FS Calc)	ug/kg	2100 JT	190 JT	910 JT	4.1 UT	340 JT	32 JT	760 JT	1000 JT
Total PAH (RI Calc)	ug/kg	2000 JT	190 JT	880 JT	4.1 UT	340 JT	4.7 JT	580 JT	980 JT
Total cPAH (BaPeq) (FS Calc)	ug/kg	220 T	20 JT	150 JT	3.6 UT	37 T	3.6 UT	42 JT	110 JT
Total cPAH (BaPeq) (RI Calc)	ug/kg	210 T	19 JT	150 JT	3.6 UT	36 T	3.6 UT	5.5 JT	100 JT
Pesticides									
2,4'-DDD	ug/kg	0.14	0.063 U	0.29	0.063 U	0.69	0.063 UT	0.63 U	0.063 U
2,4'-DDE	ug/kg	0.079 U	0.079 U	0.079 U	0.079 U	0.079 U	0.073 UT	0.79 U	0.079 U
2,4'-DDT	ug/kg	0.15 U	0.094 U	2.2	0.094 U	0.094 U	0.094 UT	0.94 U	0.094 U
Total 2,4-DDx (FS Calc)	ug/kg	0.25 T	0.094 UT	2.5 T	0.094 UT	0.78 T	0.094 UT	0.94 UT	0.094 UT
Total 2,4-DDx (RI Calc)	ug/kg	0.14 T	0.094 UT	2.5 T	0.094 UT	0.69 T	0.094 UT	0.94 UT	0.094 UT
4,4'-DDD	ug/kg	0.66	0.19	1.3	0.035 U	1.7	0.067 JT	1.2	0.041 J
4,4'-DDE	ug/kg	0.41	0.076	1.9	0.070 U	0.48	0.07 UT	0.70 U	0.070 U
4,4'-DDT	ug/kg	0.69	1.3	19	0.11	0.22	0.047 UT	0.47 U	0.047 U
Total 4,4-DDx (FS Calc)	ug/kg	1.8 T	1.6 T	22 T	0.16 T	2.4 T	0.13 JT	1.8 T	0.1 JT
Total 4,4-DDx (RI Calc)	ug/kg	1.8 T	1.6 T	22 T	0.11 T	2.4 T	0.067 JT	1.2 T	0.041 JT
Total DDD (FS Calc)	ug/kg	0.8 T	0.22 T	1.6 T	0.063 UT	2.4 T	0.099 JT	1.5 T	0.073 JT
Total DDD (RI Calc)	ug/kg	0.8 T	0.19 T	1.6 T	0.063 UT	2.4 T	0.067 JT	1.2 T	0.041 JT
Total DDE (FS Calc)	ug/kg	0.45 T	0.12 T	1.9 T	0.079 UT	0.52 T	0.073 UT	0.79 UT	0.079 UT
Total DDE (RI Calc)	ug/kg	0.41 T	0.076 T	1.9 T	0.079 UT	0.48 T	0.073 UT	0.79 UT	0.079 UT
Total DDT (FS Calc)	ug/kg	0.77 T	1.3 T	21 T	0.16 T	0.27 T	0.094 UT	0.94 UT	0.094 UT
Total DDT (RI Calc)	ug/kg	0.69 T	1.3 T	21 T	0.11 T	0.22 T	0.094 UT	0.94 UT	0.094 UT
Total DDx (FS Calc)	ug/kg	2 T	1.7 T	25 T	0.28 T	3.2 T	0.24 JT	3 T	0.22 JT
Total DDx (RI Calc)	ug/kg	1.9 T	1.6 T	25 T	0.11 T	3.1 T	0.067 JT	1.2 T	0.041 JT
cis-Chlordane	ug/kg	0.10	0.079	3.5	0.062 U	0.12	0.062 UT	0.62 U	0.062 U
cis-Nonachlor	ug/kg	0.097 U	0.097 U	0.55	0.097 U	0.097 U	0.097 UT	0.97 U	0.097 U
trans-Chlordane	ug/kg	0.15	0.12	5.6	0.064 U	0.14	0.064 UT	0.64 U	0.064 U
trans-Nonachlor	ug/kg	0.058 U	0.058 U	1.8	0.058 U	0.058 U	0.058 UT	0.58 U	0.058 U
Total Chlordane (FS Calc)	ug/kg	0.39 T	0.34 T	12 T	0.13 UT	0.4 T	0.13 UT	1.3 UT	0.13 UT
Total Chlordane (RI Calc)	ug/kg	0.25 T	0.2 T	11 T	0.13 UT	0.3 T	0.13 UT	1.3 UT	0.13 UT
Dieldrin	ug/kg	0.077 U	0.077 U	3.1	0.077 U	0.077 U	0.077 UT	0.77 U	0.077 U
gamma-Hexachlorocyclohexane	ug/kg	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 UT	0.31 U	0.031 U
Heptachlor epoxide	ug/kg	0.073 U	0.073 U	0.41	0.073 U	0.073 U	0.073 UT	0.73 U	0.073 U
Hexachlorobenzene	ug/kg	0.094	0.092 U	1.3	0.092 U	0.092 U	0.092 UT	0.43 U	0.092 U
Oxychlordane	ug/kg	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 UT	1.3 U	0.13 U
Hydrocarbons									
Diesel Range Hydrocarbons	mg/kg	140 J	24 J	33 J	2.6 U	20 J	3.25 JT	280 J	55
Residual Range Hydrocarbons	mg/kg	190 J	79 J	220 J	5.7 U	37 J	5.5 UT	1400 J	150

Table 10-2
Analytical Results of Subsurface Soil

Analyte	Sample ID	RM11E-MWS001		RM11E-MWS002s		RM11E-MWS004		RM11E-MWS005	
	Unit	-5_24' (Fill)	-24_29' (Native)	-5_20' (Fill)	-20_25' (Native)	-5_24' (Fill)	-24_29' (Native)	-5_21' (Fill)	-21_26' (Native)
Phenols									
Pentachlorophenol	ug/kg	53 U	5.3 U	27 U	5.3 U	5.3 U	5.3 UT	53 U	27 U
Phthalates									
Bis(2-ethylhexyl) phthalate	ug/kg	210 J	66 J	1100	8.9 U	8.9 U	8.9 UT	94 J	45 U

Notes:
All sample results are reported on a dry-weight basis.
-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.
RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).
FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).
Definition of data qualifiers:
U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

Table 10-3
Analytical Results of Surface Soil

Analyte	Sample ID / Unit	RM11E-SL028	RM11E-SL029	RM11E-SL030	RM11E-SL031	RM11E-SL032	RM11E-SL033	RM11E-SL034	RM11E-SL035	RM11E-SL036
Conventionals										
Total organic carbon	percent	1.89	0.618	0.944	0.412	1.8 T	1.70	2.75	0.523	1.16
Total solids	percent	85.5	89.0	84.2	90.2	83.6 T	85.6	72.6	85.1	88.1
PCBs										
Aroclor 1016	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1221	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1232	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1242	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1248	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1254	ug/kg	6.8 J	2.1 U	2.1 U	2.4 J	8.9 T	94	2.1 U	17	40
Aroclor 1260	ug/kg	18	2.6 J	5.4	14	25 T	69	2.1 U	12	25
Aroclor 1262	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 T	2.1 U	2.1 U	2.1 U	2.1 U
Aroclor 1268	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	5 JT	2.1 U	2.1 U	2.1 U	2.1 U
Total PCBs (FS Calc)	ug/kg	32 JT	11 JT	14 T	24 JT	46 JT	170 T	2.1 UT	36 T	72 T
Total PCBs (RI Calc)	ug/kg	26 JT	2.6 JT	5.4 JT	16 JT	41 JT	163 T	2.1 UT	29 T	65 T
Metals										
Antimony	mg/kg	0.208 J	0.115 J	0.275 J	0.609 J	1.5 JT	0.342 J	0.176 J	1.200 J	6.300 J
Arsenic	mg/kg	6.37	4.38	3.36	3.14	5.58 T	6.99	3.33	4.50	12.0
Cadmium	mg/kg	0.231	0.397	0.197	0.262	0.66 T	0.477	0.241	0.067	0.128
Chromium	mg/kg	15.9 J	13.8 J	13.2 J	46.8 J	57.8 JT	16.4 J	17.4 J	154	186
Copper	mg/kg	28.6 J	34.0 J	25.5 J	33.7	104 JT	44.4 J	24.8 J	32.8	93.0
Lead	mg/kg	21.5 J	76.1 J	43.6 J	39.7 J	152 JT	86.1 J	14.5 J	218 J	178 J
Mercury	mg/kg	0.021	0.070	0.029	0.060	1.1 T	0.395	0.019	0.053	0.067
Nickel	mg/kg	26.7	14.0	14.7	54.0	60.7 T	18.2	25.5	759 J	691 J
Zinc	mg/kg	85.9 J	126 J	77.6 J	85.6 J	382 JT	282 J	129 J	136	254
PAHs										
2-Methylnaphthalene	ug/kg	28 U	28 U	14 U	14 U	14 UT	56 U	14 U	13	81
Acenaphthene	ug/kg	32 U	32 U	16 U	16 U	16 UT	64 U	16 U	4.2 J	21
Acenaphthylene	ug/kg	56 J	26 U	13 U	13 U	36 T	52 U	13 U	5.5 J	38
Anthracene	ug/kg	63	32 U	16 U	16 U	54 T	93 J	16 U	9.2 J	58
Benzo(a)anthracene	ug/kg	190	36 U	26 J	82	180 T	430	27 J	36	130
Benzo(a)pyrene	ug/kg	290	36 U	39	160	230 T	610	37	43	180
Benzo(b)fluoranthene	ug/kg	300	34 U	46	210	370 T	760	69	72	230
Benzo(g,h,i)perylene	ug/kg	360	37 U	46	150	190 T	400	36	34	120
Benzo(k)fluoranthene	ug/kg	84	40 U	20 U	64	110 T	220	20 U	24	87
Chrysene	ug/kg	240	41 U	35	110	270 T	530	52	65	230
Dibenzo(a,h)anthracene	ug/kg	30 U	30 U	15 U	35	38.5 T	99 J	15 U	9.2 J	24
Fluoranthene	ug/kg	430	37 U	47	65	385 T	1000	60	120	570
Fluorene	ug/kg	33 U	33 U	17 U	17 U	17 UT	66 U	17 U	4.0 J	31
Indeno(1,2,3-cd)pyrene	ug/kg	320	32 U	33	150	290 JT	810 J	65 J	37	130
Naphthalene	ug/kg	29 U	29 U	15 U	15 U	15 UT	58 U	15 U	16	130
Phenanthrene	ug/kg	260	36 U	35	20 J	155 T	500	28 J	61	690
Pyrene	ug/kg	580	37 U	51	86	410 T	1100	69	100	480
Total LPAH (FS Calc)	ug/kg	440 JT	36 UT	81 T	66 JT	280 T	740 JT	74 JT	110 JT	1000 T
Total LPAH (RI Calc)	ug/kg	380 JT	36 UT	35 T	20 JT	245 T	593 JT	28 JT	110 JT	1000 T
Total HPAH (FS Calc)	ug/kg	2800 T	41 UT	340 JT	1100 T	2500 JT	6000 JT	430 JT	540 JT	2200 T
Total HPAH (RI Calc)	ug/kg	2800 T	41 UT	320 JT	1100 T	2500 JT	6000 JT	420 JT	540 JT	2200 T
Total PAH (FS Calc)	ug/kg	3200 JT	41 UT	420 JT	1200 JT	2700 JT	6700 JT	510 JT	650 JT	3200 T

Table 10-3
Analytical Results of Surface Soil

Analyte	Sample ID / Unit	RM11E-SL028	RM11E-SL029	RM11E-SL030	RM11E-SL031	RM11E-SL032	RM11E-SL033	RM11E-SL034	RM11E-SL035	RM11E-SL036
Total PAH (RI Calc)	ug/kg	3200 JT	41 UT	360 JT	1100 JT	2700 JT	6500 JT	440 JT	650 JT	3200 T
Total cPAH (BaPeq) (FS Calc)	ug/kg	390 T	36 UT	57 JT	240 T	350 JT	910 JT	61 JT	67 JT	250 T
Total cPAH (BaPeq) (RI Calc)	ug/kg	370 T	36 UT	50 JT	240 T	350 JT	910 JT	53 JT	67 JT	250 T
Pesticides										
2,4'-DDD	ug/kg	0.077	0.063 U	0.34 U	0.063 U	0.09 T	0.073	0.093 U	0.066 U	0.064 U
2,4'-DDE	ug/kg	0.079 U	0.079 U	0.079 U	0.079 U	0.079 UT	0.079 U	0.079 U	0.083 U	0.080 U
2,4'-DDT	ug/kg	0.17 U	0.33	0.094 U	0.094 U	0.21 T	0.45	0.17	0.098 U	0.095 U
Total 2,4-DDx (FS Calc)	ug/kg	0.2 T	0.4 T	0.34 UT	0.094 UT	0.34 T	0.56 T	0.26 T	0.098 UT	0.095 UT
Total 2,4-DDx (RI Calc)	ug/kg	0.077 T	0.33 T	0.34 UT	0.094 UT	0.3 T	0.53 T	0.17 T	0.098 UT	0.095 UT
4,4'-DDD	ug/kg	0.20	0.15	0.59	0.072	0.25 T	0.31	0.13	0.037 U	0.070 J
4,4'-DDE	ug/kg	0.66	0.41	0.27	0.16	0.32 T	1.0	0.44	0.073 U	0.071 U
4,4'-DDT	ug/kg	0.75	2.2	0.37	0.47	1.8 T	3.9	0.87	0.049 U	0.063 J
Total 4,4-DDx (FS Calc)	ug/kg	1.6 T	2.8 T	1.2 T	0.7 T	2.4 T	5.2 T	1.4 T	0.073 UT	0.17 JT
Total 4,4-DDx (RI Calc)	ug/kg	1.6 T	2.8 T	1.2 T	0.7 T	2.4 T	5.2 T	1.4 T	0.073 UT	0.13 JT
Total DDD (FS Calc)	ug/kg	0.28 T	0.18 T	0.76 T	0.1 T	0.34 T	0.38 T	0.18 T	0.066 UT	0.1 JT
Total DDD (RI Calc)	ug/kg	0.28 T	0.15 T	0.59 T	0.072 T	0.34 T	0.38 T	0.13 T	0.066 UT	0.070 JT
Total DDE (FS Calc)	ug/kg	0.7 T	0.45 T	0.31 T	0.2 T	0.36 T	1 T	0.48 T	0.083 UT	0.08 UT
Total DDE (RI Calc)	ug/kg	0.7 T	0.41 T	0.27 T	0.16 T	0.32 T	1 T	0.44 T	0.083 UT	0.08 UT
Total DDT (FS Calc)	ug/kg	0.84 T	2.5 T	0.42 T	0.52 T	2 T	4.4 T	1 T	0.098 UT	0.11 JT
Total DDT (RI Calc)	ug/kg	0.75 T	2.5 T	0.37 T	0.47 T	2 T	4.4 T	1 T	0.098 UT	0.063 JT
Total DDx (FS Calc)	ug/kg	1.8 T	3.2 T	1.5 T	0.82 T	2.7 T	5.8 T	1.7 T	0.098 UT	0.29 JT
Total DDx (RI Calc)	ug/kg	1.6 T	3.1 T	1.2 T	0.70 T	2.7 T	5.7 T	1.6 T	0.098 UT	0.13 JT
cis-Chlordane	ug/kg	0.83	0.12	0.11	0.29	0.57 T	1.2	0.29	0.065 U	0.063 U
cis-Nonachlor	ug/kg	0.30	0.097 U	0.097 U	0.12	0.32 T	0.21	0.11	0.11 U	0.098 U
trans-Chlordane	ug/kg	1.0	0.16	0.15	0.37	0.68 T	1.6	0.26	0.067 U	0.065 U
trans-Nonachlor	ug/kg	0.87	0.079	0.092	0.36	0.85 T	0.71	0.37	0.061 U	0.059 U
Total Chlordane (FS Calc)	ug/kg	3.1 T	0.47 T	0.47 T	1.2 T	2.5 T	3.8 T	1.1 T	0.14 UT	0.14 UT
Total Chlordane (RI Calc)	ug/kg	3 T	0.36 T	0.35 T	1.1 T	2.4 T	3.7 T	1 T	0.14 UT	0.14 UT
Dieldrin	ug/kg	0.43	0.077 U	0.077 U	0.077 U	2 JT	0.26 U	0.13 J	0.081 U	0.078 U
gamma-Hexachlorocyclohexane	ug/kg	0.031 U	0.031 U	0.031 U	0.031 U	0.062 T	0.042 J	0.031 U	0.033 U	0.032 U
Heptachlor epoxide	ug/kg	0.087	0.093	0.073 U	0.073 U	0.073 UT	0.094	0.073 U	0.077 U	0.074 U
Hexachlorobenzene	ug/kg	0.095	0.092 U	0.092 U	0.092 U	0.16 T	0.28	0.23	0.096 U	0.16
Oxychlordane	ug/kg	0.13 U	0.13 U	0.13 U	0.13 U	0.13 UT	0.13 U	0.13 U	0.14 U	0.14 U
Hydrocarbons										
Diesel Range Hydrocarbons	mg/kg	17 J	17 J	11 J	19 J	23 JT	30 J	61 J	--	--
Residual Range Hydrocarbons	mg/kg	300 J	260 J	110 J	160 J	140 JT	160 J	310 J	--	--
Phenols										
Pentachlorophenol	ug/kg	53 U	53 U	27 U	27 U	94 JT	110 U	99 J	5.6 U	5.4 U
Phthalates										
Bis(2-ethylhexyl) phthalate	ug/kg	89 U	89 U	45 U	45 U	262 JT	180 U	240 J	20 J	31 J

Table 10-3
Analytical Results of Surface Soil

Notes:
All sample results are reported on a dry-weight basis.
-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.
RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).
FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).
Definition of data qualifiers:
U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

Table 10-4
Analytical Results of Surface Sediment

Analyte	Sample ID / Unit	RM11E-G068	RM11E-G069	RM11E-G070	RM11E-G071	RM11E-G072	RM11E-G073	RM11E-G074	RM11E-G075	RM11E-G076[1]	RM11E-G077	RM11E-G078
Conventionals												
Total organic carbon	percent	0.865	1.40	1.99	1.38	1.64	1.03	1.16	0.685	0.974	0.280	1 T
Total solids	percent	63.3 J	56.4	39.1	66.0	56.3	75.1	63.5	67.7	69.7	79.1	63.4 T
PCBs												
Aroclor 1016	ug/kg	2.1 U	2.6 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.6 U	2.1 U	2.1 UT
Aroclor 1221	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT
Aroclor 1232	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	3.7 U	2.1 U	2.1 UT
Aroclor 1242	ug/kg	7.7 J	2.1 U	2.1 U	17	2.1 U	2.1 U	5.2	2.1 U	2.1 U	2.1 U	2.1 UT
Aroclor 1248	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	5.8 U	2.1 U	2.1 UT
Aroclor 1254	ug/kg	28 J	3.9 U	2.1 U	51 J	16	2.7 J	29	5.3 U	16 J	2.1 U	2.1 UT
Aroclor 1260	ug/kg	55	54	420	110	15	13	39	39	87	280	330 JT
Aroclor 1262	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT
Aroclor 1268	ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 UT
Total PCBs (FS Calc)	ug/kg	97 JT	64 T	430 T	180 JT	38 T	23 JT	80 T	49 T	110 JT	290 T	340 JT
Total PCBs (RI Calc)	ug/kg	90 JT	54 T	420 T	178 JT	31 T	15.7 JT	73.2 T	39 T	103 JT	280 T	330 JT
Grain Size												
Clay	percent	5.30	4.62	4.70	3.89	6.96	1.36	5.61	1.74	1.94	1.06	5.9 T
Silt	percent	26.74	25.64	51.95	23.85	32.62	5.74	30.92	5.31	7.05	4.00	18.7 T
Total Fines	percent	32 T	30.3 T	56.7 T	27.7 T	39.6 T	7.1 T	36.5 T	7.05 T	8.99 T	5.06 T	25 T
Very fine sand	percent	7.66	18.33	5.51	6.29	13.25	6.08	11.04	4.49	2.16	1.06	10.91 T
Fine sand	percent	26.15	39.48	13.96	24.33	34.36	23.58	27.69	28.21	28.66	9.24	50.4 T
Medium sand	percent	13.53	4.09	7.58	15.72	2.23	4.90	9.40	21.89	22.94	14.09	4.6 T
Coarse sand	percent	13.49	0.72	8.69	6.66	1.37	2.27	3.58	5.07	21.45	17.67	1.12 T
Very coarse sand	percent	6.39	0.64	7.56	4.65	1.64	2.52	1.89	3.01	8.23	8.39	1.55 T
Fine gravel	percent	2.08	0.80	4.78	6.14	1.70	9.04	2.32	7.46	6.44	8.20	1.53 T
Medium gravel	percent	0.00	0.10	1.94	0.63	2.61	45.53	0.00	30.34	0.63	41.24	1.11 JT
Pesticides												
2,4'-DDD	ug/kg	0.21 J	--	--	--	--	--	--	--	0.38	0.063 U	--
2,4'-DDE	ug/kg	0.18 U	--	--	--	--	--	--	--	0.18 U	0.079 U	--
2,4'-DDT	ug/kg	0.16 U	--	--	--	--	--	--	--	0.16 U	0.094 U	--
GSI Total 2,4-DDx (FS Calc)	ug/kg	0.38 JT	--	--	--	--	--	--	--	0.55 T	0.094 UT	--
GSI Total 2,4-DDx (RI Calc)	ug/kg	0.21 JT	--	--	--	--	--	--	--	0.38 T	0.094 UT	--
4,4'-DDD	ug/kg	0.74	--	--	--	--	--	--	--	0.98	0.074	--
4,4'-DDE	ug/kg	1.5	--	--	--	--	--	--	--	0.81	0.17	--
4,4'-DDT	ug/kg	0.23 U	--	--	--	--	--	--	--	0.25 J	0.047 U	--
GSI Total 4,4-DDx (FS Calc)	ug/kg	2.4 T	--	--	--	--	--	--	--	2 JT	0.27 T	--
GSI Total 4,4-DDx (RI Calc)	ug/kg	2.24 T	--	--	--	--	--	--	--	2 JT	0.244 T	--
GSI Total DDD (FS Calc)	ug/kg	0.95 JT	--	--	--	--	--	--	--	1.4 T	0.11 T	--
GSI Total DDD (RI Calc)	ug/kg	0.95 JT	--	--	--	--	--	--	--	1.36 T	0.074 JT	--
GSI Total DDE (FS Calc)	ug/kg	1.6 T	--	--	--	--	--	--	--	0.9 T	0.21 T	--
GSI Total DDE (RI Calc)	ug/kg	1.5 T	--	--	--	--	--	--	--	0.81 T	0.17 T	--
GSI Total DDT (FS Calc)	ug/kg	0.23 UT	--	--	--	--	--	--	--	0.33 JT	0.094 UT	--
GSI Total DDT (RI Calc)	ug/kg	0.23 UT	--	--	--	--	--	--	--	0.25 JT	0.094 UT	--
GSI Total DDx (FS Calc)	ug/kg	2.7 JT	--	--	--	--	--	--	--	2.6 JT	0.39 T	--
GSI Total DDx (RI Calc)	ug/kg	2.5 JT	--	--	--	--	--	--	--	2.2 JT	0.24 T	--
cis-Chlordane	ug/kg	0.28 J	--	--	--	--	--	--	--	0.36	0.062 U	--
cis-Nonachlor	ug/kg	0.15 U	--	--	--	--	--	--	--	0.15 U	0.097 U	--
trans-Chlordane	ug/kg	0.47	--	--	--	--	--	--	--	0.51	0.064 U	--

Table 10-4
Analytical Results of Surface Sediment

Analyte	Sample ID / Unit	RM11E-G068	RM11E-G069	RM11E-G070	RM11E-G071	RM11E-G072	RM11E-G073	RM11E-G074	RM11E-G075	RM11E-G076[1]	RM11E-G077	RM11E-G078
trans-Nonachlor	ug/kg	0.15 J	--	--	--	--	--	--	--	0.28 J	0.058 U	--
Oxychlordane	ug/kg	0.52 U	--	--	--	--	--	--	--	0.52 U	0.13 U	--
GSI Total Chlordane (FS Calc)	ug/kg	1.2 JT	--	--	--	--	--	--	--	1.5 JT	0.13 UT	--
GSI Total Chlordane (RI Calc)	ug/kg	0.9 JT	--	--	--	--	--	--	--	1.2 JT	0.13 UT	--
Dieldrin	ug/kg	0.19 U	--	--	--	--	--	--	--	0.19 U	0.077 U	--
gamma-Hexachlorocyclohexane	ug/kg	0.12 U	--	--	--	--	--	--	--	0.12 U	0.031 U	--
Heptachlor epoxide	ug/kg	0.20 U	--	--	--	--	--	--	--	0.20 U	0.073 U	--
Hexachlorobenzene	ug/kg	0.47	--	--	--	--	--	--	--	0.36	0.10	--
Dioxins/Furans												
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	--	--	--	--	19.8	--	--	25.1	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	--	--	--	--	98.2	--	--	162	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	--	--	--	--	1.72 J	--	--	1.89 J	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	1.77 J	--	--	2.20 J	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	0.722 J	--	--	0.904 J	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	0.663 J	--	--	0.695 J	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	4.72	--	--	6.29	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	--	--	--	--	0.304 U	--	--	0.562 J	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	1.54 J	--	--	1.77 J	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	0.226 U	--	--	0.315 J	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	--	--	--	--	0.401 J	--	--	0.325 J	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	0.940 J	--	--	1.23 J	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	0.663 J	--	--	0.972 J	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	pg/g	--	--	--	--	0.187 U	--	--	0.146 U	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	--	--	--	--	0.316 U	--	--	0.264 U	--	--	--
Total Dioxin/Furan TEQ (FS Calc)	pg/g	--	--	--	--	3.1 JT	--	--	4.4 JT	--	--	--
Total PCDD/F (FS Calc)	pg/g	--	--	--	--	860 JT	--	--	1860 JT	--	--	--
Total Dioxin/Furan TEQ (RI Calc)	pg/g	--	--	--	--	3.1 JT	--	--	4.4 JT	--	--	--
Total PCDD/F (RI Calc)	pg/g	--	--	--	--	855 JT	--	--	1860 JT	--	--	--
Dioxins/Furan Homologs												
Hexachlorodibenzofuran homologs	pg/g	--	--	--	--	24.5	--	--	39.9	--	--	--
Hexachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	20.2	--	--	42.0	--	--	--
Heptachlorodibenzofuran homologs	pg/g	--	--	--	--	95.5	--	--	137	--	--	--
Heptachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	192	--	--	441	--	--	--
Pentachlorodibenzofuran homologs	pg/g	--	--	--	--	1.49 J	--	--	3.71	--	--	--
Pentachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	2.10 J	--	--	1.26 J	--	--	--
Tetrachlorodibenzofuran homologs	pg/g	--	--	--	--	0.187 U	--	--	0.146 U	--	--	--
Tetrachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	2.25	--	--	1.25	--	--	--
Octachlorodibenzofuran	pg/g	--	--	--	--	73.4	--	--	114	--	--	--
Octachlorodibenzo-p-dioxin	pg/g	--	--	--	--	650	--	--	1540	--	--	--

Table 10-4
Analytical Results of Surface Sediment

Analyte	Sample ID / Unit	RM11E-G079	RM11E-G080	RM11E-G081	RM11E-G082[1]	RM11E-G083[2]	RM11E-G084	RM11E-G085	RM11E-G086[2]	RM11E-G087	RM11E-G088	RM11E-G089[2]
Conventionals												
Total organic carbon	percent	0.484 T	2.22	2.09	0.626	2.30	2.50	1.35	0.487	2.87	1.27	0.771
Total solids	percent	73.4 T	66.5	52.0	69.3	42.8	60.2	78.7	79.1	73.2	66.1	72.1
PCBs												
Aroclor 1016	ug/kg	2.1 UT	2.1 U	16 U	69 U	3.3 U	31 U	2.1 U	2.1 U	26 U	2.1 U	2.1 U
Aroclor 1221	ug/kg	2.1 UT	2.1 U	2.1 U	8.4 U	3.3 U	7.0 U	2.1 U	2.1 U	3.6 U	2.1 U	2.1 U
Aroclor 1232	ug/kg	2.1 UT	2.1 U	15 U	190 U	3.3 U	45 U	2.1 U	2.1 U	30 U	2.1 U	3.1 U
Aroclor 1242	ug/kg	2.1 UT	2.1 U	9.8 U	99 U	3.3 U	22 U	2.1 U	2.1 U	24 U	2.1 U	2.3 J
Aroclor 1248	ug/kg	2.1 UT	2.1 U	28 U	190 U	3.3 U	19 U	25	19	31 U	2.1 U	2.1 U
Aroclor 1254	ug/kg	2.1 UT	2.1 U	58 J	130 U	3.6 J	63	23 J	13 J	3.6 U	2.1 U	2.1 U
Aroclor 1260	ug/kg	1405 JT	130	68	560	11	34	15	8.9	250	2.5 J	13
Aroclor 1262	ug/kg	2.1 UT	2.1 U	2.1 U	2.1 U	3.3 U	2.1 U	2.1 U	2.1 U	3.6 U	2.1 U	2.1 U
Aroclor 1268	ug/kg	2.1 UT	2.1 U	2.1 U	2.1 U	3.3 U	2.1 U	2.1 U	2.1 U	3.6 U	2.1 U	2.1 U
Total PCBs (FS Calc)	ug/kg	1400 JT	140 T	160 JT	910 T	26 JT	160 T	69 JT	47 JT	310 T	11 JT	23 JT
Total PCBs (RI Calc)	ug/kg	1405 JT	130 T	126 JT	560 T	15 JT	97 T	63 JT	41 JT	250 T	2.5 JT	15.3 JT
Grain Size												
Clay	percent	1.8 T	4.3	12.8	0.99	1.9	3.6	0.1	0.6	1.2	9.2	5.7
Silt	percent	5.16 T	17.2	45.5	3.82	41.6	16.0	2.5	2.6	5.7	42.1	6.7
Total Fines	percent	7 T	22 T	58.3 T	4.8 T	44 T	20 T	2.6 T	3.2 T	6.9 T	51 T	12 T
Very fine sand	percent	1.32 T	6.93	10.39	4.15	13.24	3.70	0.50	2.36	3.06	9.57	10.96
Fine sand	percent	9.63 T	25.38	28.88	31.47	32.57	5.01	3.03	17.69	14.41	17.91	30.75
Medium sand	percent	15.03 T	7.77	1.84	22.57	2.67	1.77	3.51	15.86	9.70	1.44	9.08
Coarse sand	percent	13.65 T	5.46	0.52	11.78	1.03	1.99	4.00	9.20	13.07	1.16	3.60
Very coarse sand	percent	5.1 T	10.10	0.47	3.81	1.47	3.09	6.71	6.81	13.24	1.37	3.17
Fine gravel	percent	5.72 T	14.81	0.63	4.73	2.31	4.25	13.16	8.42	16.46	3.83	4.44
Medium gravel	percent	49.58 T	8.07	1.32	24.12	0.40	69.13	71.56	36.58	22.00	4.29	23.49
Pesticides												
2,4'-DDD	ug/kg	0.063 U	--	--	0.26 J	--	1.6 J	--	--	--	--	--
2,4'-DDE	ug/kg	0.079 U	--	--	0.18 U	--	0.18 U	--	--	--	--	--
2,4'-DDT	ug/kg	0.094 U	--	--	0.16 U	--	0.16 U	--	--	--	--	--
GSI Total 2,4-DDx (FS Calc)	ug/kg	0.094 UT	--	--	0.43 JT	--	1.8 JT	--	--	--	--	--
GSI Total 2,4-DDx (RI Calc)	ug/kg	0.094 UT	--	--	0.26 JT	--	1.6 JT	--	--	--	--	--
4,4'-DDD	ug/kg	0.30	--	--	0.95	--	4.8 J	--	--	--	--	--
4,4'-DDE	ug/kg	0.23	--	--	0.67	--	3.1 J	--	--	--	--	--
4,4'-DDT	ug/kg	0.11 U	--	--	0.23 U	--	0.23 U	--	--	--	--	--
GSI Total 4,4-DDx (FS Calc)	ug/kg	0.59 T	--	--	1.7 T	--	8 JT	--	--	--	--	--
GSI Total 4,4-DDx (RI Calc)	ug/kg	0.53 T	--	--	1.62 T	--	7.9 JT	--	--	--	--	--
GSI Total DDD (FS Calc)	ug/kg	0.33 T	--	--	1.2 JT	--	6.4 JT	--	--	--	--	--
GSI Total DDD (RI Calc)	ug/kg	0.30 T	--	--	1.21 JT	--	6.4 JT	--	--	--	--	--
GSI Total DDE (FS Calc)	ug/kg	0.27 T	--	--	0.76 T	--	3.2 JT	--	--	--	--	--
GSI Total DDE (RI Calc)	ug/kg	0.23 T	--	--	0.67 T	--	3.1 JT	--	--	--	--	--
GSI Total DDT (FS Calc)	ug/kg	0.11 UT	--	--	0.23 UT	--	0.23 UT	--	--	--	--	--
GSI Total DDT (RI Calc)	ug/kg	0.11 UT	--	--	0.23 UT	--	0.23 UT	--	--	--	--	--
GSI Total DDx (FS Calc)	ug/kg	0.7 T	--	--	2.2 JT	--	9.8 JT	--	--	--	--	--
GSI Total DDx (RI Calc)	ug/kg	0.53 T	--	--	1.9 JT	--	9.5 JT	--	--	--	--	--
cis-Chlordane	ug/kg	0.062 U	--	--	0.19 J	--	0.88 J	--	--	--	--	--
cis-Nonachlor	ug/kg	0.097 U	--	--	0.15 U	--	0.21 J	--	--	--	--	--
trans-Chlordane	ug/kg	0.064 U	--	--	0.28 J	--	1.5 J	--	--	--	--	--

Table 10-4
Analytical Results of Surface Sediment

Analyte	Sample ID / Unit	RM11E-G079	RM11E-G080	RM11E-G081	RM11E-G082[1]	RM11E-G083[2]	RM11E-G084	RM11E-G085	RM11E-G086[2]	RM11E-G087	RM11E-G088	RM11E-G089[2]
trans-Nonachlor	ug/kg	0.058 U	--	--	0.13 J	--	0.60 U	--	--	--	--	--
Oxychlordane	ug/kg	0.13 U	--	--	0.52 U	--	0.52 U	--	--	--	--	--
GSI Total Chlordane (FS Calc)	ug/kg	0.13 UT	--	--	0.94 JT	--	3.2 JT	--	--	--	--	--
GSI Total Chlordane (RI Calc)	ug/kg	0.13 UT	--	--	0.6 JT	--	2.6 JT	--	--	--	--	--
Dieldrin	ug/kg	0.077 U	--	--	0.19 U	--	0.19 U	--	--	--	--	--
gamma-Hexachlorocyclohexane	ug/kg	0.031 U	--	--	0.12 U	--	0.12 U	--	--	--	--	--
Heptachlor epoxide	ug/kg	0.073 U	--	--	0.20 U	--	0.20 U	--	--	--	--	--
Hexachlorobenzene	ug/kg	1.1 U	--	--	0.18	--	0.16 J	--	--	--	--	--
Dioxins/Furans												
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	33.8	9.05	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	183	56.3	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	2.57 J	0.691 J	--
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	3.47	0.965 J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	1.46 J	0.519 J	--
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	1.36 J	0.349 J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	8.31	2.66 J	--
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	0.807 J	0.283 U	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	3.14 J	0.854 J	--
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	0.564 J	0.106 U	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	1.13 J	0.0899 U	--
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	2.53 J	0.541 J	--
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	0.634 J	0.109 U	--
2,3,7,8-Tetrachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	0.839	0.151 U	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	0.225 U	0.274 U	--
Total Dioxin/Furan TEQ (FS Calc)	pg/g	--	--	--	--	--	--	--	--	6.31 JT	1.49 JT	--
Total PCDD/F (FS Calc)	pg/g	--	--	--	--	--	--	--	--	2160 JT	556 JT	--
Total Dioxin/Furan TEQ (RI Calc)	pg/g	--	--	--	--	--	--	--	--	6.31 JT	1.48 JT	--
Total PCDD/F (RI Calc)	pg/g	--	--	--	--	--	--	--	--	2160 JT	556 JT	--
Dioxins/Furan Homologs												
Hexachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	67.7	13.2	--
Hexachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	43.4	9.02	--
Heptachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	163	45.8	--
Heptachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	329	101	--
Pentachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	27.8	0.0960 U	--
Pentachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	4.62	0.475 J	--
Tetrachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	8.48	0.151 U	--
Tetrachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	0.486 J	0.274 U	--
Octachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	134	29.5	--
Octachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	1780	454	--

Table 10-4
Analytical Results of Surface Sediment

Notes:

All sample results are reported on a dry-weight basis.

-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.

RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

[1] The detection limit was elevated for select PCB Aroclors in samples RM11E-G076 and RM11E-G082. The chromatogram indicated the presence of non-target background components that prevented adequate resolution of the target compounds at the normal limit. The results were flagged as estimated (J) to indicate matrix interference.

[2] Per agreement with EPA, sample was held for potential dioxin/furan analysis pending the results at RM11E-G088. Dioxin/furan analysis were not conducted at this location based on RM11E-G088 concentrations being below EPA's proposed RALs.

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).

J = The associated numerical value is an estimated quantity.

T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

Table 10-5
Grouping of Remedial Action Levels for SMA Determination by FS Alternative

Table 10-5a: Remedial Action Levels from the Draft FS for the Portland Harbor (March 2012)

FS Alternative	Benthic Toxicity	Total PCBs	BaPEq	2,3,4,7,8 PCDF	Total DDE	Total DDD	Total DDT
	Year	ug/kg	ug/kg	pg/g	ug/kg	ug/kg	ug/kg
Alternative B	Comp. Benthic Risk Areas achieved at Year 10 (estimated) MQ > 0.7	1,000	20,000	NA	1000	NA	NA
Alternative C	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	750	15,000	NA	1000	NA	NA
Alternative D	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	500	8000	NA	200	NA	NA
Alternative E	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	200	4000	20	50	100	150
Alternative F	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	75	1500	10	20	50	60

Table 10-5b: EPA's Updated Remedial Action Levels (February 2014)

FS Alternative	Benthic Toxicity	Total PCBs	BaPEq	Dioxin/ Furan TEQ	Total DDx
	Year	ug/kg	ug/kg	pg/g	ug/kg
Alternative B	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	1,000	20,000	120	650
Alternative C	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	750	15,000	81	550
Alternative D	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	500	8000	53	450
Alternative E	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	200	4000	38	300
Alternative F	Comp. Benthic Risk Areas achieved at Year 0 MQ > 0.7	75	1500	22	160

Notes:

The purple highlighted cells indicate areas where the values presented in the Draft FS differ from those currently proposed.

BaPEq = benzo(a)pyrene equivalent
DDD = dichloro-diphenyl-dichloroethane
DDE = dichloro-diphenyl-dichloroethene
DDT = dichloro-diphenyl-trichloroethane
FS = Feasibility Study (for the Portland Harbor)
MQ = Mean Quotient
PCDF = polychlorinated dibenzofuran
RAL = remedial action level
SMA = Sediment Management Area
TEQ = toxicity equivalent

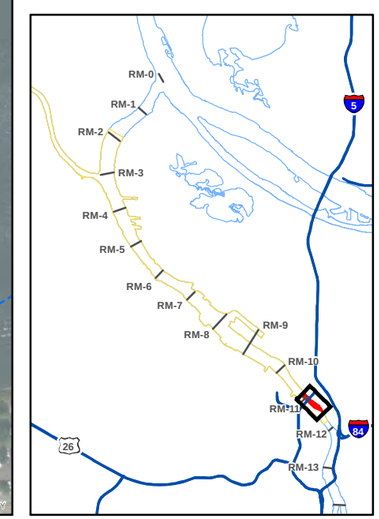
FIGURE 1-1
Project Area

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- Shoreline Properties
- U.S. Army Corps of Engineers Navigation Channel
- Active Outfall
- Inactive Outfall
- River Mile (RM) Tenths



MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RM = River Mile
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).

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Feet

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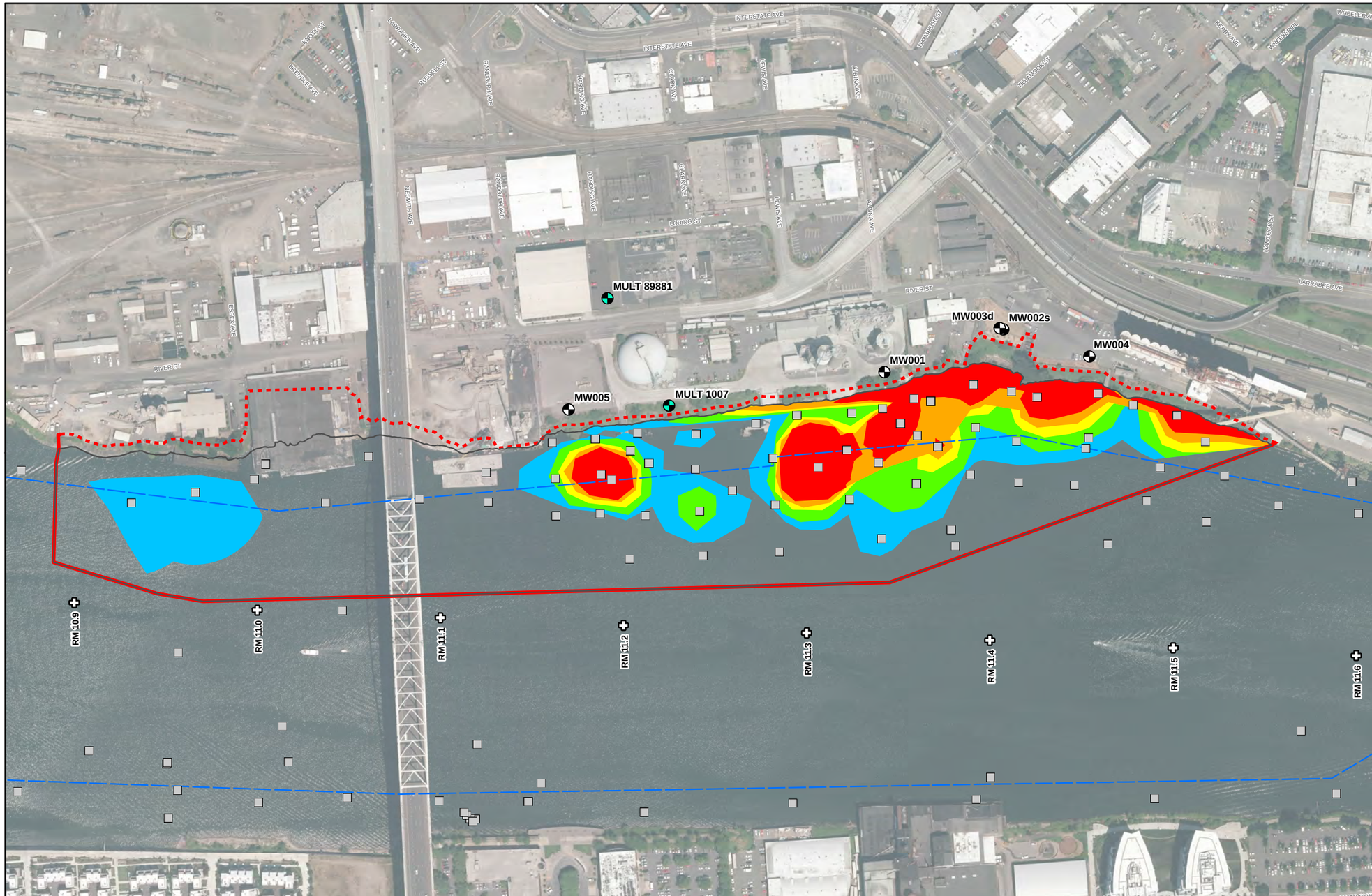

FIGURE 1-2
Potential Sediment Management Areas from the Portland Harbor Draft Feasibility Study and RM11E Monitoring Well Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Potential Sediment Management Areas from Portland Harbor Draft FS[8]

- FS Alternative B
- FS Alternative C
- FS Alternative D
- FS Alternative E
- FS Alternative F

Supplemental RI/FS Monitoring Well

- New Well (October, 2013)
- Existing Well[7]

All Other Features

- Existing Surface Sediment Sample Locations
- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
SMA = Sediment Management Area
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the Draft FS Sediment Database dated March 29, 2011 (Anchor QEA et al., 2012).
7. Only existing monitoring wells that were included in the Supplemental RI/FS groundwater monitoring efforts are included in this figure.
8. The SMAs in the Draft FS report prepared by the LWG were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment concentrations of bounding chemicals of concern (PCBs, BaPEq, DDD, DDE, DDT, and 2,3,4,7,8-PCDF).
9. The source of the existing data that was used to generate the SMA footprints is the LWG's FS Sediment Database (Integral et al., 2011). Analyte group totals (e.g., total PCBs) in this database were calculated using the Portland Harbor FS (RA/background) data rules.

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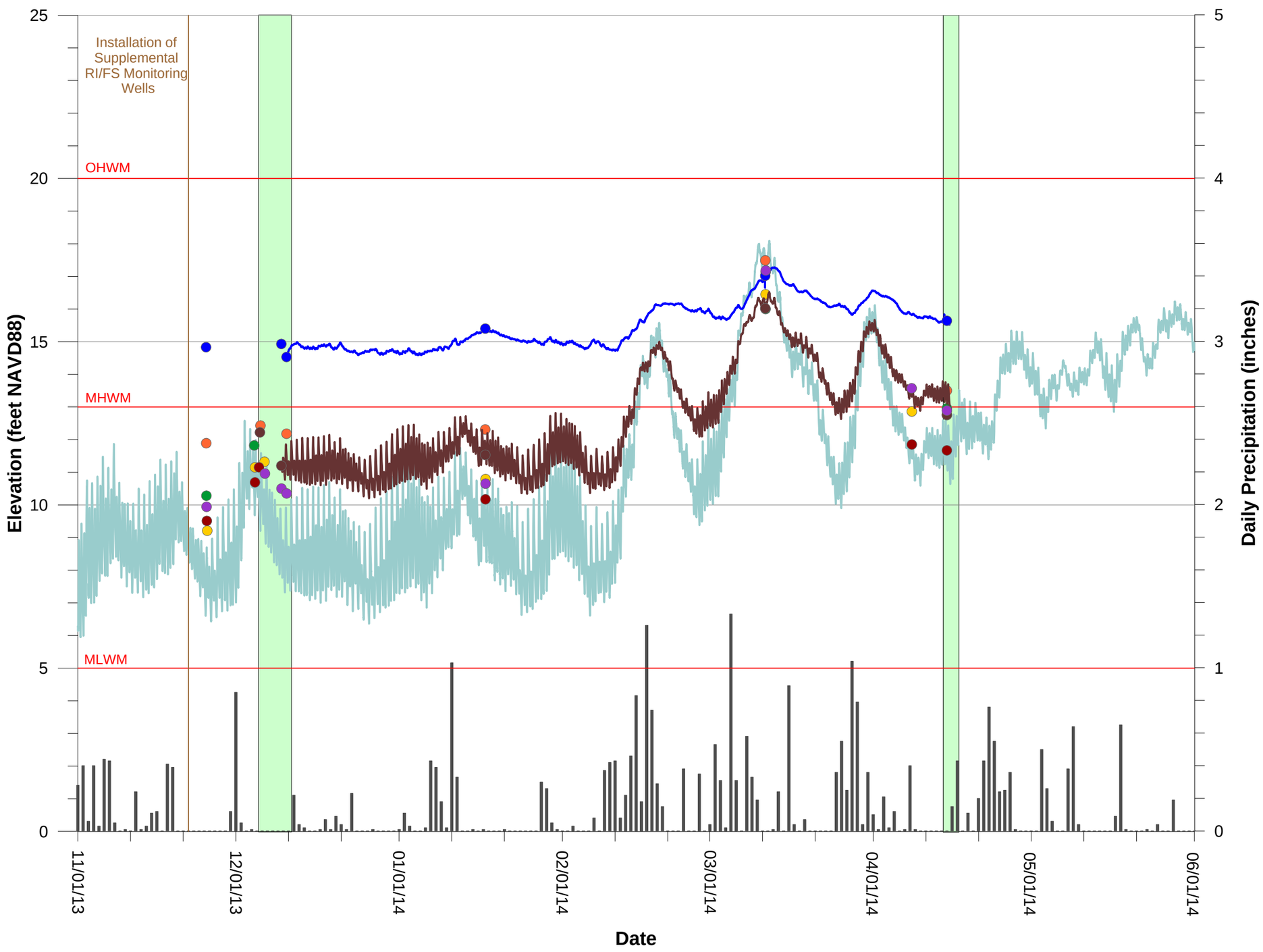

FIGURE 4-1
Willamette River Stage and Groundwater Elevations 2013-2014

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland Oregon

Legend

- MW001 Manual Measurements
- MW002s Manual Measurements
- MW002s Transducer Measurements
- MW003d Manual Measurements
- MW003d Transducer Measurements
- MW004 Manual Measurements
- MW005 Manual Measurements
- MULT 89881
- MULT 1007
- River Elevation
- Precipitation Data
- Portland Harbor Water Level Datums
- Supplemental RI/FS Groundwater Sampling Events

Notes:

Supplemental RI/FS groundwater sampling events occurred from December 6-10, 2013 and April 14-15, 2014.

OHWM = Ordinary High Water Mark, refers to upper edge of the riverbank and defines the elevation beyond which inundation by the river is limited to extreme flow events, which occur approximately every 5 years.

MHWM = Mean High Water Mark, refers to the elevation defining the shoreline boundary of the Portland Harbor Superfund Site and is based on DEQ memorandum dated July 9, 2003 to EPA regarding the upland/in-water boundary for the Superfund Site (DEQ 2003b).

MLWM = Mean Low Water Mark, refers to the average approximate average low water height.

River stage data were recorded on a 30-minute basis from USGS station number 14211720. Station is located on the upstream side of the Morrison Bridge (RM 12.8). River stage elevation data reported by the USGS are corrected to NAVD88 at the Site by adding 5.05 feet to the USGS reading.

Precipitation data were obtained from the Astor Elementary School rain gage located approximately 4 miles from the Site. Daily totals were obtained from the City of Portland Hydra Network available on the USGS Web site.

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FIGURE 5-1
Surface Soil
Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Sample

- Surface Soil (October, 2013)

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).

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Feet

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FIGURE 6-1
Surface Sediment Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Surface Sediment Sample

- Power Grab (October, 2013)
- Manual Grab (May, 2014)

All Other Features

- Existing Surface Sediment Sample Locations
- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.

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Feet

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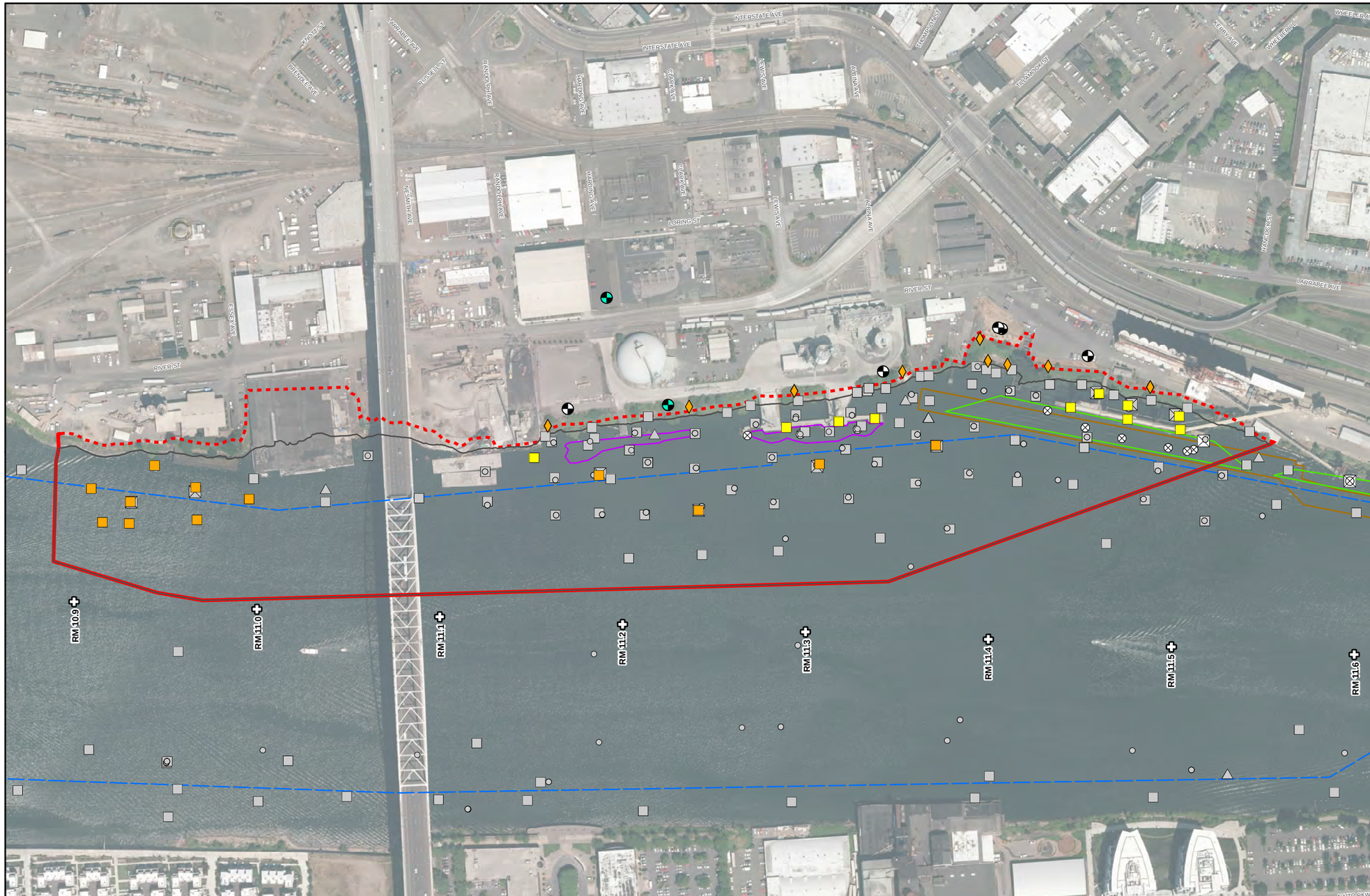
FIGURE 10-1a
Existing Sediment and Supplemental RI/FS Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon



LEGEND

Supplemental RI/FS Samples

- Surface Sediment Power Grab (October, 2013)
- Surface Sediment Manual Grab (May, 2014)
- Surface Soil (October, 2013)
- New Well (October, 2013)
- Existing Well[7]

Existing Sediment Sample Locations

- Subsurface Sediment
- Surface Sediment
- Sediment Trap

Excluded Sediment Samples

- Subsurface Sediment (dredged/capped)
- Surface Sediment (dredged)

Replaced Sediment Samples

- Surface Sediment

Dredged and/or Capped Areas

- Cargill Dredged Area (2002)
- Cargill Dredged/Capped Area (2009)
- Glacier NW Dredged Area (2004)

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.
7. Only existing monitoring wells that were included in the Supplemental RI/FS groundwater monitoring efforts are included in this figure.

N

0 150 300
Feet

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FIGURE 10-1b
Existing Sediment and Supplemental RI/FS Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Samples

- Surface Sediment Power Grab (October, 2013)

Existing Sediment Sample Locations

- Subsurface Sediment
- Surface Sediment
- Sediment Trap

Replaced Sediment Samples

- Surface Sediment

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.
7. Sample labels reflect the "sample_ID" (as noted in Appendix J data file) for surface sediment and soil samples. For subsurface sediment, sediment traps, and groundwater samples, the "LocationID" is shown for clarity since multiple sampling intervals and/or events may have been conducted at this location.

N

0 50 100
Feet

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FIGURE 10-1c
Existing Sediment and Supplemental RI/FS Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Samples

- Surface Sediment Power Grab (October, 2013)
- Surface Sediment Manual Grab (May, 2014)
- Surface Soil (October, 2013)
- New Well (October, 2013)
- Existing Well[8]

Existing Sediment Sample Locations

- Subsurface Sediment
- Surface Sediment
- Sediment Trap

Excluded Sediment Samples

- Subsurface Sediment (dredged/capped)

Replaced Sediment Samples

- Surface Sediment

Dredged and/or Capped Areas

- Glacier NW Dredged Area (2004)

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.
7. Sample labels reflect the "sample_ID" (as noted in Appendix J data file) for surface sediment and soil samples. For subsurface sediment, sediment traps, and groundwater samples, the "LocationID" is shown for clarity since multiple sampling intervals and/or events may have been conducted at this location.
8. Only existing monitoring wells that were included in the Supplemental RI/FS groundwater monitoring efforts are included in this figure.

N

0 50 100
Feet

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FIGURE 10-1d
Existing Sediment and Supplemental RI/FS Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Samples

- Surface Sediment Power Grab (October, 2013)
- Surface Sediment Manual Grab (May, 2014)
- Surface Soil (October, 2013)
- New Well (October, 2013)
- Existing Well[8]

Existing Sediment Sample Locations

- Subsurface Sediment
- Surface Sediment
- Sediment Trap

Excluded Sediment Samples

- Subsurface Sediment (dredged/capped)
- Surface Sediment (dredged)

Replaced Sediment Samples

- Surface Sediment

Dredged and/or Capped Areas

- Cargill Dredged Area (2002)
- Cargill Dredged/Capped Area (2009)
- Glacier NW Dredged Area (2004)

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.
7. Sample labels reflect the "sample_ID" (as noted in Appendix J data file) for surface sediment and soil samples. For subsurface sediment, sediment traps, and groundwater samples, the "LocationID" is shown for clarity since multiple sampling intervals and/or events may have been conducted at this location.
8. Only existing monitoring wells that were included in the Supplemental RI/FS groundwater monitoring efforts are included in this figure.

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GSI Water Solutions, Inc.

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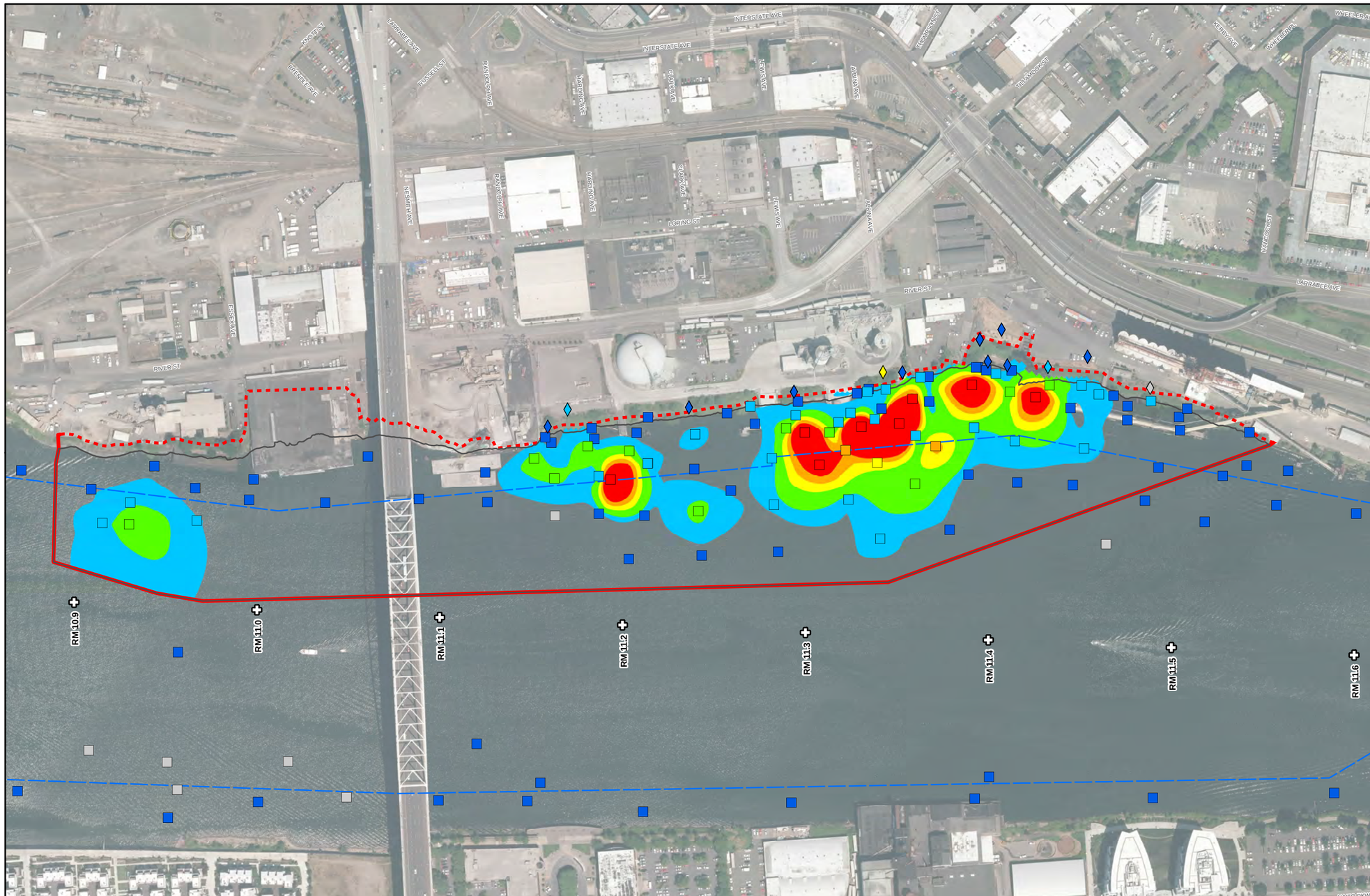

FIGURE 10-2
Total PCBs in Surface Sediment and Soil

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- Surface Sediment Sample
- Soil Sample

Total PCBs in Surface Sediment (EPA RAL Footprints)

- Alt B: >1,000 ug/kg
- Alt C: >750 - 1,000 ug/kg
- Alt D: >500 - 750 ug/kg
- Alt E: >200 - 500 ug/kg
- Alt F: >75 - 200 ug/kg
- Below RALs: 0 - 75 ug/kg
- Non-Detect

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RAL = Remedial Action Level
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. The Total PCB RAL footprints were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment (including bank soil samples collected below an elevation of 13 ft NAVD88) concentrations in a manner consistent with that used by the LWG in the Draft FS for the Portland Harbor (and shown in Figure 1-2.)
7. The source of the sediment and soil data is the updated RM11E dataset described in Section 10.2 of this report. As noted in Section 9.3.1 of this report, the Total PCB concentrations were calculated using the Portland Harbor FS (RA/background) data rules.

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GSI Water Solutions, Inc.

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FIGURE 10-3
Total Dioxin/Furan TEQ in Surface Sediment and Soil

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- Surface Sediment Sample
- Soil Sample

Total Dioxin/Furan TEQ in Surface Sediment (EPA RAL Footprints)

- Alt B: >120 pg/g
- Alt C: >81 - 120 pg/g
- Alt D: >53 - 81 pg/g
- Alt E: >38 - 53 pg/g
- Alt F: >22 - 38 pg/g
- Below RALs: 0 - 22 pg/g
- Non-Detect

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RAL = Remedial Action Level
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. The Total Dioxin/Furan TEQ RAL footprints were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment (including bank soil samples collected below an elevation of 13 ft NAVD88) concentrations in a manner consistent with that used by the LWG in the Draft FS for the Portland Harbor (and shown in Figure 1-2.)
7. The source of the sediment and soil data is the updated RM11E dataset described in Section 10.2 of this report. As noted in Section 9.3.1 of this report, the Total Dioxin/Furan TEQ concentrations were calculated using the Portland Harbor FS (RA/background) data rules.

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GSI Water Solutions, Inc.

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FIGURE 10-4
Total DDx in Surface Sediment and Soil

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- Surface Sediment Sample
- Soil Sample

Total DDx in Surface Sediment (EPA RAL Footprints)

- Alt B: >650 ug/kg
- Alt C: >550 - 650 ug/kg
- Alt D: >450 - 550 ug/kg
- Alt E: >300 - 450 ug/kg
- Alt F: >160 - 300 ug/kg
- Below RALs: 0 - 160 ug/kg
- Non-Detect

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RAL = Remedial Action Level
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. The Total DDx RAL footprints were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment (including bank soil samples collected below an elevation of 13 ft NAVD88) concentrations in a manner consistent with that used by the LWG in the Draft FS for the Portland Harbor (and shown in Figure 1-2.)
7. The source of the sediment and soil data is the updated RM11E dataset described in Section 10.2 of this report. As noted in Section 9.3.1 of this report, the Total DDx concentrations were calculated using the Portland Harbor FS (RA/background) data rules.

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GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF\GIS\Project_mxds\FDR\Figure10-4_Total_DDx_Surface_Sediment_Soil.mxd

FIGURE 10-5
Total Benzo(a)pyrene Equivalent (cPAHs) in Surface Sediment and Soil

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- Surface Sediment Sample
- Soil Sample

Total Benzo(a)pyrene Equivalent (cPAHs) in Surface Sediment (EPA RAL Footprints)

- Alt B: >20,000 ug/kg
- Alt C: >15,000 - 20,000 ug/kg
- Alt D: >8,000 - 15,000 ug/kg
- Alt E: >4,000 - 8,000 ug/kg
- Alt F: >1,500 - 4,000 ug/kg
- Below RALs: 0 - 1,500 ug/kg
- Non-Detect

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RAL = Remedial Action Level
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. The Total Benzo(a)pyrene Equivalent (cPAHs) RAL footprints were delineated using the natural neighbor interpolations (in ArcGIS) of surface sediment (including bank soil samples collected below an elevation of 13 ft NAVD88) concentrations in a manner consistent with that used by the LWG in the Draft FS for the Portland Harbor (and shown in Figure 1-2.)
7. The source of the sediment and soil data is the updated RM11E dataset described in Section 10.2 of this report. As noted in Section 9.3.1 of this report, the Total Benzo(a)pyrene Equivalent (cPAHs) concentrations were calculated using the Portland Harbor FS (RA/background) data rules.

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GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF\GIS\Project_mxds\FDR\Figure10-5_Total_BaPEq_cPAHs_Surface_Sediment_Soil.mxd

APPENDIX A
AGENCY COMMUNICATION

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

APPENDIX A1
GROUNDWATER MONITORING

From:	HAFLEY Dan
To:	"Jackie Wetzsteon"; Sean Sheldrake (sheldrake.sean@epa.gov); Lance Peterson (PetersonLE@cdmsmith.com); LIVERMAN Alex; Erin Carroll Hughes
Cc:	Bill Ford; Bryan Wigginton; Dave Livesay; Dawn Sanders; Dennis Roznowski; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; wells@tmw-law.com
Subject:	DEQ approval of revised groundwater investigation plan
Date:	Thursday, November 07, 2013 11:55:52 AM
Attachments:	RM11E Groundwater Work Plan.pdf

All –

Attached is a letter documenting DEQ's approval of the bankline soil/groundwater investigation as modified by GSI's November 1, 2013 letter prepared on the behalf of the RM11E Group, and our November 5 conference call. Please do not hesitate to call if you have questions or comments.

Dan Hafley

Daniel J Hafley, RG
Senior Project Manager/Hydrogeologist
Northwest Region Cleanup Section
Oregon DEQ
(503) 229-5417

From: Erin Carroll Hughes [mailto:EcHughes@gsiws.com]
Sent: Friday, November 01, 2013 10:55 AM
To: HAFLEY Dan; Sean Sheldrake (sheldrake.sean@epa.gov); Lance Peterson (PetersonLE@cdmsmith.com); LIVERMAN Alex
Cc: Bill Ford; Bryan Wigginton; Dave Livesay; Dawn Sanders; Dennis Roznowski; Erin Carroll Hughes; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; wells@tmw-law.com
Subject: RE: Additional well request - RM11E

Dan,

On behalf of the RM11E Group, I am attaching a letter that clarifies the proposed monitoring well network and well construction objectives.

Please let Dave Livesay of me know if you have any questions or concerns.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

FIGURE 1
Proposed Groundwater Monitoring Well Locations and Historic 1943 Air Photo

River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

- Proposed Monitoring Well
- Exisitng Monitoring Well

Measurement Type

- Water Quality and Water Level

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- Albina Engine and Machine Works - Active Ship Construction and Repair Area
- Current Property Owners
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenth

MAP NOTES:

Date: October 24, 2013
AOPC = Area of Potential Concern
FS = Feasibility Study
PCB = Polychlorinated Biphenyl
RM = River Mile
1. The locations of all features shown are approximate.
2. The comprehensive benthic risk areas, and the AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
3. The breakdown of total PCB concentrations is consistent with each of the remedial alternatives (B through F) presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
4. Air Photo taken Fall 2012 by METRO.

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Feet

GSI Water Solutions, Inc.

File Path: P:\Portland\487-DOF\001-RM11E_RI_FS\Project_GIS\Project_mxds\Field\Figure1_Proposed_Mon_Wells_Historic_Photo_1943.mxd, Date: October 24, 2013 1:12:05 PM

Oregon
John Kitzhaber, MD, Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-6945
TTY (503) 229-5471

November 7, 2013

Jackie Wetzsteon
RM11E Group
825 NE Multnomah, Suite 550
Portland, OR 97232

Re: Proposed Groundwater Investigation
Portland Harbor RM11E

Jackie:

After reviewing the ***Final Supplemental Remediation Investigation/Feasibility Study Work Plan*** (RI/FS WP) prepared for River Mile 11 East and dated October 2013, DEQ requested that the proposed bankline/groundwater characterization efforts be expanded. This request was discussed in conference calls and addressed in a letter from the RM11E Group dated November 1, 2013 (GSI). Based on our review of the letter, and a subsequent conference call on November 5, we understand the following to be true:

- Shallow riverbank borings will be advanced at least 5 feet below fill/native interface, and wells screened across the interface where environmental impacts are most likely to be present.
- An additional boring/well will be installed in the northern RM11E riverbank, in the general vicinity of the former Paint Storage & Shops shown on Figure 6-5 of the RI/FS WP (and Figure X of the November 1 letter). The boring will be advanced and well constructed in the manner outlined in the above bullet.
- The RM11E Group will confirm that well Mult 1007 is constructed across the fill/native interface as will be done for proposed shallow bankline wells.
- In lieu of an additional deep monitoring well in the northern bankline (requested by DEQ), the RM11E Group will sample intermediate-depth well Mult 89881, and consider sampling results from additional wells in the area in evaluating the potential for deeper groundwater impacts in the northern portion of the RM11E bankline area (including more upgradient sources).
- The deep well (MW003d) in the southern bankline area will be installed as proposed.

One additional comment: soil sampling as proposed in the RI/FS WP entails the collection of composite samples representing the: (1) unsaturated portion of the artificial fill, (2) saturated portion of the artificial fill, and (3) upper 5 feet of native alluvium for contaminant analysis. Additional soil volumes from 5-foot sampling intervals will be collected and archived (frozen) for possible additional chemical analysis in the future. If significant contamination is observed in the field in discrete soil horizons (for example at the fill/native interface), it is DEQ's expectation that follow-up discrete sampling will be performed on archived samples.

It is our hope that proposed investigation will be adequate to complete characterization of both bankline-area soil and groundwater in the vicinity of the Willamette River in the RM11E area. Based on sampling results, it is of course possible that follow-up investigation will be necessary.

Please proceed with proposed work at your earliest convenience. Note that DEQ would like to observe some of the investigation work, including screening of fill soil and the "tagging" of the fill/native interface in selected bankline borings. Please keep us updated on the schedule for this work.

I can be reached at (503) 229-5417 if you have questions or comments.

Sincerely,

Daniel Hafley, RG
Project Manager/Hydrogeologist
NWR Cleanup Section

Cc: all appropriate parties via email

From:	Erin Carroll Hughes
To:	HAFLEY.Dan@deq.state.or.us; Sean Sheldrake (sheldrake.sean@epa.gov); Lance Peterson (PetersonLE@cdmsmith.com); Liverman.alex@deq.state.or.us
Cc:	Bill Ford; Bryan Wigginton; Dave Livesay; Dawn Sanders; Dennis Roznowski; Erin Carroll Hughes; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; wells@tmw-law.com
Subject:	RE: Additional well request - RM11E
Date:	Friday, November 01, 2013 10:55:04 AM
Attachments:	RM11E letter_11-1-13.pdf

Dan,

On behalf of the RM11E Group, I am attaching a letter that clarifies the proposed monitoring well network and well construction objectives.

Please let Dave Livesay of me know if you have any questions or concerns.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

Please note my new name and email (echughes@gsiws.com)

From: HAFLEY Dan [mailto:HAFLEY.Dan@deq.state.or.us]
Sent: Monday, October 28, 2013 3:19 PM
To: 'Sheldrake, Sean'; Lance Peterson; Wetzsteon, Jackie; LIVERMAN Alex
Subject: FW: Additional well request - RM11E

Folks –

I apologize for bringing up these issues at what appears to be the eleventh hour, but they really flow from the figures in the Final Supplemental RI/FS for RM11E, and are the unfortunate consequence of the limited amount of time I had to review this document before heading out for vacation. The following is clarification regarding DEQ's request for additional groundwater monitoring in the northern portion of what was once the Albina Engine Works operating area, and a comment about work proposed for the MW001 location.

Our primary concern regarding a groundwater-to-surface water migration pathway is related to former Albina Engine Work (Albina) activities, rather than sources located in more upgradient areas or located on the current ground surface. Albina releases that could impact groundwater are most

likely to be associated with former "overwater" or shoreline activities that may have led to shallow sediment impacts along the east bank of the Willamette River (now covered by fill and currently representing "upland"), or in (contaminated) fill that was subsequently placed to fill in the shipways and bankline area after termination of Albina activities.

The RI/FS Work Plan approach is to install or monitoring existing wells constructed screening the top of the saturated zone (20-35' bgs), which will be useful in assessing potential impacts from current upland sources and shallow fill. To assess potential intermediate to deep groundwater impacts, monitoring of existing well MULT89881 and installation and sampling of a deeper well (80-100' bgs) is proposed in the "southern" Albina area at well location MW003.

In the "northern" Albina area where both current and proposed monitoring points are absence, installation of an additional shallow/deep well pair along the lines of MW002/MW003 seems prudent. Our concern, however, it that neither the shallow or deep monitoring intervals, as proposed, may be capturing the subsurface area that represents the former working surface of Albina operations, or nearshore mudline, both of which were subsequently covered will fill. DEQ recommends that in the course of advancing deeper borings at both the "southern" and "northern" Albina locations, careful field screening be completed to try to identify this interface, and determine whether significant contamination is present (which could represent a proximate source of contamination to the Willamette River). If the location of the interface does not fall within either the shallow or deep monitoring intervals (unlikely) and significant contamination is observed, we recommend the collection of soil/groundwater samples during the field event and follow-up may be necessary.

At the well MW001 location, we recommend advancing the boring (as necessary) to the former sediment/fill interface, which may be deeper than the proposed 35' bgs. The MW001 is proposed in an area that was formerly in-water, located between the shore and the outfitting dock. Advancing the boring to this former interface is important, we feel, to assess the potential for contamination associated with bankline and overwater activities that may have impacted sediment in this area and may not be "captured" by the proposed monitoring. If the interface is determined to be less than 35' bgs, great.

I would be happy to discuss this matter further with you next week as needed. My availability on the afternoon of November 5 is good.

Thank you.

GSI Water Solutions, Inc.

November 1, 2013

Dan Hafley
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

Dan,

Thank you for taking the time to provide additional background discussion supporting DEQs' request to install an additional monitoring well in the northern portion of the former Albina Engine and Machine Works (AEMW) facility. As noted in the RM11E Group's response to EPA comments on October 24, 2013, the Group will install a new well if required by EPA. Based on our conversation with EPA last week, we understand that EPA is requiring the well, and this email outlines our proposal to install a well with a target completion depth coinciding with the shore/mudline that existed during the time the AEMW facilities were in peak operation during WWII.

We understand that DEQ's primary concern in this area is related to the former AEMW shipyard and related overwater manufacturing activities, and not upgradient (inland) sources or sources located on the current ground surface in the shoreline area. We think that completion of a well at a depth coincident with the former mudline during peak operations at AEMW (approximately 20 to 35 feet below grade) is the most conservative and direct approach to assess potential impacts to groundwater from this potential source.

Our technical logic for the proposed monitoring well approach is described below.

- Based upon evaluation of historical photos and geologic logs from the area, we estimate that the historical shore/mudline during the AEMW era will be approximately 20 to 25 feet below the current ground surface. Unlike some other shipyards in the Pacific Northwest, this shipyard utilized rails on the native shore/mudline slope to construct the vessels and built associated support buildings on pilings above water next to the shipways. A couple of representative photos of the former shipyard from the mid-1940s are provided below for reference.

- All shallow monitoring wells in this investigation are targeting the base of the artificial fill and the upper portion of the native material. As stated in the Upland Groundwater and Bank Soil SAP (Appendix B of the Supplemental RI/FS Work Plan), the anticipated depth of the shallow wells is 35 feet, with a screened interval of approximately 20 to 35 feet below ground surface. This depth was chosen to span the seasonal fluctuation in groundwater (and river levels) as well as span the interface between the artificial fill and the underlying native alluvium. However the RM11E Group anticipates that the well depth and screened interval may need to be adjusted to ensure that groundwater sampled in these wells represents water that is in contact with the base of the saturated fill and the upper portions of the native alluvium, or the depths at which potential historical impacts may be represented. The screening adjustments will be based on field observations during drilling and well construction.

- Soil samples representing the full length of the saturated fill, the unsaturated fill, and the upper 5 feet of the underlying native alluvium are planned for collection and analysis and will be determined following careful field screening to identify the interface between the native fill and alluvium. Attached is a cross section showing the location of these wells in relation to the anticipated fill and native alluvium. As mentioned above, these depths were proposed for scoping purposes, but will be adjusted either upwards or downwards depending upon field observations during well installation.

- The deeper well, at MW003d, was proposed to evaluate regional groundwater quality at the base of the catastrophic flood deposits, in what appears to be a paleochannel in the underlying Troutdale Formation. Historical impacts or persistent organic chemicals associated with potential shoreline or overwater activities would not be anticipated to reach this depth.

The RM11E Group would like to reach resolution on the groundwater monitoring approach by COB on November 5, 2013. This resolution would provide adequate time to coordinate well installation that is currently scheduled to begin on November 18, 2013. Accordingly, we would like EPA to provide confirmation (e.g., by return e-mail) that the proposed approach meets EPA's requirements. After completing your review of this letter, should additional discussion be warranted, we would be happy to meet with EPA and DEQ on Tuesday, November 5, to resolve this issue.

Sincerely,
GSI Water Solutions, Inc.

Erin Carroll Hughes

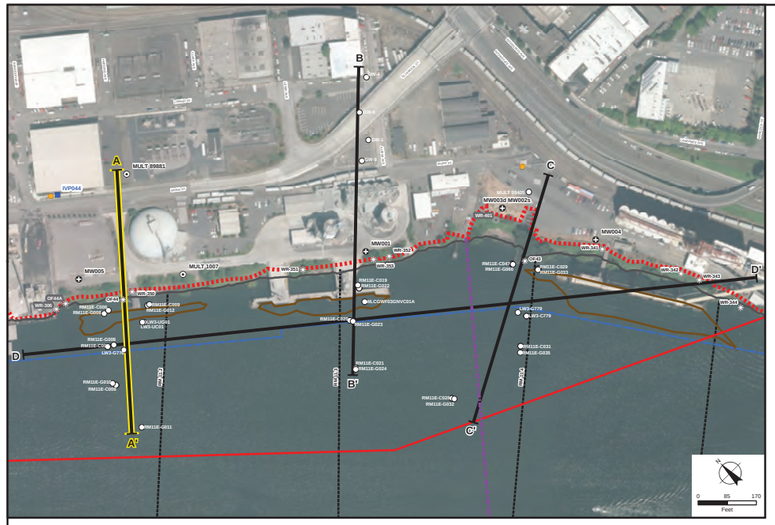
Erin Carroll Hughes, R.G.
Technical Project Lead

Attachment

FIGURE X
Conceptual Geologic Cross Section A-A'

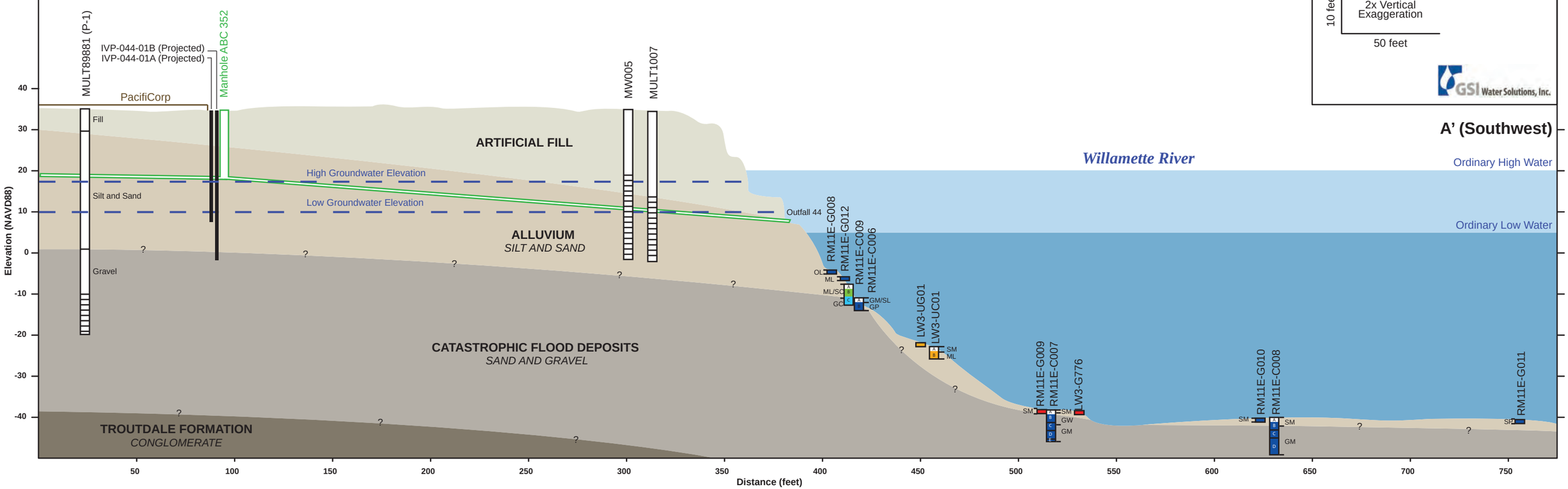
River Mile 11 East

Willamette River
Portland, Oregon



A (Northeast)

A' (Southwest)



LEGEND

- Stormwater Pipeline
- Approximate Geologic Contact
- Seasonal Water Table Elevation Range (February 2008 - August 2009)

Lithology

- Artificial Fill (Holocene)
- Alluvium (Holocene)
- Catastrophic Flood Deposits (Pleistocene)
- Troutdale Formation (Pliocene to Pleistocene)

Total PCBs (µg/kg)

- 0 - 34
- >34 - 75
- >75 - 150
- >150 - 300
- >300 - 1000
- >1,000

SCALE

10 feet
2x Vertical Exaggeration
50 feet

GSI Water Solutions, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

October 25, 2013

Ms. Jackie Thiell Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1700
Portland, OR 97232

Sent via email only

RE: Conditional Approval Clarification, *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11East, Portland, Oregon,* (dated October 2013), CERCLA Docket No. 10-2013-0087

Dear Ms. Wetzsteon:

The U.S. Environmental Protection Agency (EPA) has reviewed The RM11E Group's October 24, 2013 response to EPA's conditional approval letter dated October 18, 2013 regarding the *Final Supplemental Remedial Investigation/Feasibility Study Work Plan* (Work Plan), dated October 2013. EPA provided four Work Plan expectations in its October 18th letter and has the following clarifications based on the RM11E Group's October 24th letter.

<u>Clarification regarding request for additional monitoring well or wells in the area of the former Albina Engine Works:</u>
EPA accepts the RM11E Group's proposed location for the additional monitoring well or wells. While the location proposed in the response seems appropriate, a primary data need is to gain an understanding of the deepest groundwater that penetrates the Catastrophic Flood Deposits and overlies the Troutdale Formation. This information will not be provided by the proposed additional 35 foot deep shallow well. EPA and its partners are available for a meeting on or after November 5, 2013 to discuss an acceptable scope for groundwater data collection at this location.

<u>Clarification regarding the revised Dive Safety and Work Plan/schedule for diving and power grab samples:</u>
EPA accepts the RM11E Group's proposed schedule for the power-grab sampling change. EPA requests that a revised Dive Safety and Work Plan information be provided a minimum 4 weeks prior to the planned diver sampling. We understand a meeting to further discuss this issue with the RM11E Group will be scheduled for the week of October 28, 2013.

<u>Clarification regarding the revised fieldwork schedule:</u>
The RM11E Group should provide EPA a weekly schedule update. For those items noted as "TBD" please submit a proposed schedule to EPA for review and approval a minimum of two weeks prior to the planned activity.

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Please let me know if you have any questions or concerns at (206) 553-1220 or via email at Sheldrake.sean@epa.gov.

Sincerely,

Sean Sheldrake, RPM

Cc:

Kristine Koch, EPA *via email only*
Chip Humphrey, EPA
Dan Hafley, DEQ
Lance Peterson, CDM

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

825 NE Multnomah, 1500 LCT
Portland, OR 97232
phone (503) 813-5036

October 24, 2013

Via E-Mail

Sean Sheldrake
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 900
M/S ECL-115
Seattle, WA 98101
Sheldrake.sean@epa.gov

Re: Supplemental RI/FS Work at the River Mile 11E Project Area
Portland Harbor Superfund Site (PHSS)
Response to EPA's Conditional Approval of the Final Work Plan

Dear Mr. Sheldrake:

Thank you for providing a conditional approval of the *Final Supplemental Remedial Investigation/Feasibility Study Work Plan* (Work Plan) dated October 3, 2013. The RM11E Group appreciates your quick response to review and approve the Final Work Plan given the unfortunate situation with the government shutdown. As outlined in your letter, EPA's approval of the Final Work Plan is based on four conditions. As presented below **in bold text** after discussions with EPA over the course of the last few days, the RM11E Group has responded to and addressed these conditions.

1. Work Plan Comment 31 and Appendix B Comment 16 deal with the location of proposed upland groundwater monitoring wells relative to the former Albina Engine Works. This information has been provided pictorially in Figures 6-5 and 6-6 of the Final Work Plan. Figure 6-5 shows a number of shipways, outfitting dock, paint storage & shops, welding & pipe shops, etc., in the northern portion of the Glacier site. No monitoring wells are either present or proposed for this area. Based on this information, EPA believes that an additional boring should be advanced through the fill in this area and completed as a monitoring well or wells. EPA requests a meeting with the RM11E Group to discuss this request.

   RESPONSE: The RM11E Group will comply with the request to meet regarding installation of another monitoring well (MW005). To facilitate this discussion, we are providing a map with a proposed well location in the vicinity that you requested. If required, this new well would be drilled, installed, completed, and sampled using the

same methodology as the other three shallow wells presented in the *Upland Groundwater and Bank Soil SAP* (Appendix B of the Work Plan).

2. Provide a response to comments and revised dive safety and work plan responding to EPA comments transmitted to the RM11E Group on October 17, 2013. The revised dive safety and work plan should be submitted by October 22, 2013. The following items should also be included in the dive safety and work plan:

    a. The sampling vessel will be equipped with recreational and alpha dive flags to alert other boaters of these activities and encourage them to exercise caution and keep their distance.
    b. The vessel captain will notify the U.S. Coast Guard of sampling activities to determine whether in-water sampling locations/activities would require a notice to mariners to be issued.

    RESPONSE: The RM11E Group provided a revised Dive Safety and Work Plan to EPA on October 21, 2013. Based on additional comments and subsequent discussions with EPA, the RM11E Group recommends proceeding with the power-grab sampling the week of October 28, 2013 and deferring the collection of the sediment samples underneath and behind the docks until concerns regarding diver certifications and requirements are resolved. These seven diver collected samples will be obtained in late 2013 or early 2014. The actual schedule may vary based on subcontractor availability, adverse weather, and unforeseen factors. EPA will be notified of the specific sampling date once it is confirmed and notice will be provided prior to initiation of these activities.

3. Provide a revised project schedule by October 23, 2013.

    RESPONSE: The anticipate schedule for fieldwork is as follows:
    - **Surface Sediment Power-Grab Sampling: October 30-31, 2013**
    - **Surface Soil Sampling in the 'Cove': October 30-31, 2013**
    - **Monitoring Well Drilling, Installation, Development, and Deep Soil Sampling: November 18-22, 2013**
    - **Geotech Boring and Inclinometer Installation: November 18-22, 2013**
    - **Surface Soil Sampling along the Top of Bank: November 18-22, 2013**
    - **First Round of Groundwater Monitoring: December 3-4, 2013**
    - **Diver Collected Surface Sediment Samples: Late 2013 to Early 2014 (TBD)**
    - **Second Round of Groundwater Monitoring: Early 2014 (TBD)**
    - **Porewater Investigation: Spring 2014 (TBD)**

    Note that the actual schedule may vary based on subcontractor availability, adverse weather, subsurface obstructions, equipment conditions, and unforeseen factors.

Other than as noted above, the project schedule will be as outlined in Table 10-1 of the Work Plan.

4. The timing for submittal of the RM11E Group's draft porewater sampling and analysis plan remains as noted in EPA's letter dated September 26, 2013. EPA also reiterates that the porewater data will inform multiple facets of the supplemental remedial investigation and feasibility study including recontamination potential, capping, bioavailability, baseline data, and comparison to an future remedial action levels (RALs) for porewater.

   RESPONSE: The RM11E Group will provide a draft porewater sampling and analysis plan on or before March 4, 2014 as noted in EPA's letter dated September 26, 2013 and as outlined in the Final Work Plan.

We believe that we have adequately responded to the conditions outlined in your October 18, 2013. We look forward to talking to you and your technical team at 10:30 am on Friday, October 25, 2013 to confirm that all conditions have been met and mobilizing to the field next week.

Sincerely yours,

Jacqueline Thiell Wetzsteon
RM11E Project Coordinator

Cc (via email):
River Mile 11E Respondents
AOC Notice Recipients (Paragraph 97.c through m)
Paul Fuglevand

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

October 18, 2013

Ms. Jackie Thiell Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1700
Portland, OR 97232

Sent via email only

RE: *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11East, Portland, Oregon*, (dated October 2013), CERCLA Docket No. 10-2013-0087

Dear Ms. Wetzsteon:

The U.S. Environmental Protection Agency (EPA) has reviewed the *Final Supplemental Remedial Investigation/Feasibility Study Work Plan* (Work Plan), dated October 2013, and prepared by GSI Water Solutions, Inc. and Dalton, Olmsted & Fuglevand, Inc. on behalf of the RM11E Group. EPA conditionally approves the Work Plan with the following expectations:

1. Work Plan Comment 31 and Appendix B Comment 16 deal with the location of proposed upland groundwater monitoring wells relative to the former Albina Engine Works. This information has been provided pictorially in Figures 6-5 and 6-6 of the Final Work Plan. Figure 6-5 shows a number of shipways, outfitting dock, paint storage & shops, welding & pipe shops, etc., in the northern portion of the Glacier site. No monitoring wells are either present or proposed for this area. Based on this information, EPA believes that an additional boring should be advanced through the fill in this area and completed as a monitoring well or wells. EPA requests a meeting with the RM11E Group to discuss this request.

2. Provide a response to comments and revised dive safety and work plan responding to EPA comments transmitted to the RM11E Group on October 17, 2013. The revised dive safety and work plan should be submitted by October 22, 2013. The following items should also be included in the dive safety and work plan:

    - The sampling vessel will be equipped with recreational and alpha dive flags to alert other boaters of these activities and encourage them to exercise caution and keep their distance.
    - The vessel captain will notify the U.S. Coast Guard of sampling activities to determine whether in-water sampling locations/activities would require a notice to mariners to be issued.

3. Provide a revised project schedule by October 23, 2013.

4. The timing for submittal of the RM11E Group's draft porewater sampling and analysis plan remains as noted in EPA's letter dated September 26, 2013. EPA also reiterates that the porewater data will inform multiple facets of the supplemental remedial investigation and feasibility study including recontamination potential, capping, bioavailability, baseline data, and comparison to an future remedial action levels (RALs) for porewater.

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Please let me know if you have any questions or concerns at (206) 553-1220 or via email at Sheldrake.sean@epa.gov.

Sincerely,

Sean Sheldrake, RPM

Cc:

Kristine Koch, EPA *via email only*
Chip Humphrey, EPA
Dan Hafley, DEQ
Lance Peterson, CDM

From: Sheldrake, Sean
To: Erin Carroll Hughes; Lance Peterson (PetersonLE@cdmsmith.com)
Cc: Conley, Alanna; Alex Liverman; Audie Huber (audiehuber@ctuir.com); schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; Brian Cunninghame (cunninghame@gorge.net); callie@ridolfi.com; Humphrey, Chip; Dan Hafley; Dana Bayuk; Eric Blischke; Erin Madden (erin.madden@gmail.com); Gail Fricano; Genevieve Angle; JD Willimas; Jen Kassakian; peterson.Jennifer@deq.state.or.us; Jeremy_Buck@fws.gov; Julie Weis; Keith Johnson; Kristin Callahan; Koch, Kristine; Cora, Lori; Matt Johnson; Matt McClincy; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; poulsen.mike@deq.state.or.us; nancy.munn@noaa.gov; Paul Henson (Paul_Henson@fws.gov); Rachel DelVecchio; Muza, Richard; Rick Kepler (rick.j.kepler@state.or.us); Robert.Neely@noaa.gov; Robert Dexter; rose@yakamafish-nsn.gov; Ryan Sudbury; Ted Buerger; tomd@ctsi.nsn.us; Tom Gainer; Bill Ford; Bryan Wigginton; Dave Livesay; Dennis Roznowski; Dustin Till; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathleen Dent; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; Tim Thompson; wells@tmw-law.com
Subject: RE: RM11E - Notice to Collect Groundwater Samples, April 14 to 16, 2014
Date: Thursday, April 10, 2014 9:00:03 PM

Erin,
Thank you for providing the elevation information; this facilitated our evaluation. EPA approves the modification of the Willamette River elevation used to trigger a postponement of any planned groundwater sampling from 12 ft NAVD88 to 13.5 ft NAVD88. EPA interprets the 13.5 elevation to be the level to which the Willamette River could rise before a groundwater flow reversal would be expected.
S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Erin Carroll Hughes [mailto:EcHughes@gsiws.com]
Sent: Thursday, April 10, 2014 10:36 AM
To: Sheldrake, Sean; Lance Peterson (PetersonLE@cdmsmith.com)
Cc: Conley, Alanna; Alex Liverman; Audie Huber (audiehuber@ctuir.com); schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; Brian Cunninghame (cunninghame@gorge.net); callie@ridolfi.com; Humphrey, Chip; Dan Hafley; Dana Bayuk; Eric Blischke; Erin Madden (erin.madden@gmail.com); Gail Fricano; Genevieve Angle; JD Willimas; Jen Kassakian; peterson.Jennifer@deq.state.or.us; Jeremy_Buck@fws.gov; Julie Weis; Keith Johnson; Kristin Callahan; Koch, Kristine; Cora, Lori; Matt Johnson; Matt McClincy; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; poulsen.mike@deq.state.or.us; nancy.munn@noaa.gov; Paul Henson (Paul_Henson@fws.gov); Rachel DelVecchio; Muza, Richard; Rick Kepler (rick.j.kepler@state.or.us); Robert.Neely@noaa.gov; Robert Dexter; rose@yakamafish-nsn.gov; Ryan Sudbury; Ted Buerger; tomd@ctsi.nsn.us; Tom Gainer; Bill Ford; Bryan Wigginton; Dave Livesay; Dennis Roznowski; Dustin Till; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathleen Dent; Kathy Huibregtse; Kim Cox; Kirk

Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; Tim Thompson; wells@tmw-law.com
Subject: RE: RM11E - Notice to Collect Groundwater Samples, April 14 to 16, 2014

Sean,

Attached please find a figure showing the monitoring well locations and two hydrographs illustrating the groundwater levels in comparison to the Willamette River Stage in the NAVD88 datum.

- The hydrograph on the second page shows data collected by PacifiCorp in 2011 from the piezometer (P-1), also known as MULT 89881, located east of River Street, approximately 350 ft from the shoreline. The red lines on the graph approximate the elevation at which the gradient reversal is observed at this location. As illustrated in the figure, the gradient reversal occurred between approximately 14 and 18 ft NAVD88 depending upon the time of year.
- The hydrograph on the third page, shows the new water level measurements that have been collected by GSI since November 2013. The blue line is the Willamette River Stage and the green and purple lines represent the transducer data collected from the RM11E-MW002s/-MW003d well cluster. The dots are manual measurements collected from multiple wells. You can see the gradient is typically toward the river except during periods when the river elevations spike upward. While we haven't downloaded the transducer data since mid-March, we did measure groundwater levels in wells on the Glacier NW property on Tuesday (4/8) and confirmed that the gradient remains toward the river.

At this time the Willamette River is on a downward/stable trend (see hydrograph). While groundwater remains in hydraulic connection with the river, the groundwater levels indicate that groundwater is discharging toward the river. We feel confident we have appropriate hydraulic conditions to meet the DQOs and request your concurrence with our assessment. Please contact me if you have additional questions or require additional information.

Regards,

Erin Carroll Hughes

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Wednesday, April 09, 2014 8:13 PM
To: Erin Carroll Hughes; Lance Peterson (PetersonLE@cdmsmith.com)
Cc: Conley, Alanna; Alex Liverman; Audie Huber (audiehuber@ctuir.com); schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; Brian Cunninghame (cunninghame@gorge.net); callie@ridolfi.com; Humphrey, Chip; Dan Hafley; Dana Bayuk; Eric Blischke; Erin Madden (erin.madden@gmail.com); Gail Fricano; Genevieve Angle; JD Willimas; Jen Kassakian;

peterson.Jennifer@deq.state.or.us; Jeremy_Buck@fws.gov; Julie Weis; Keith Johnson; Kristin Callahan; Koch, Kristine; Cora, Lori; Matt Johnson; Matt McClincy; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; poulsen.mike@deq.state.or.us; nancy.munn@noaa.gov; Paul Henson (Paul_Henson@fws.gov); Rachel DelVecchio; Muza, Richard; Rick Kepler (rick.j.kepler@state.or.us); Robert.Neely@noaa.gov; Robert Dexter; rose@yakamafish-nsn.gov; Ryan Sudbury; Ted Buerger; tomd@ctsi.nsn.us; Tom Gainer; Bill Ford; Bryan Wigginton; Dave Livesay; Dennis Roznowski; Dustin Till; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathleen Dent; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; Tim Thompson; wells@tmw-law.com
Subject: RE: RM11E - Notice to Collect Groundwater Samples, April 14 to 16, 2014
Erin, can you please provide the data (water level comparison to river stage) that you are using to base your request for the 13.5 ft NAVD88 sampling elevation benchmark. EPA can then consider the request for written confirmation this benchmark is acceptable.
Thank you.
S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

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From: Erin Carroll Hughes [mailto:EcHughes@gsiws.com]
Sent: Wednesday, April 09, 2014 9:37 AM
To: Sheldrake, Sean; Lance Peterson (PetersonLE@cdmsmith.com)
Cc: Conley, Alanna; Alex Liverman; Audie Huber (audiehuber@ctuir.com); schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; Brian Cunninghame (cunninghame@gorge.net); callie@ridolfi.com; Humphrey, Chip; Dan Hafley; Dana Bayuk; Eric Blischke; Erin Madden (erin.madden@gmail.com); Gail Fricano; Genevieve Angle; JD Willimas; Jen Kassakian; peterson.Jennifer@deq.state.or.us; Jeremy_Buck@fws.gov; Julie Weis; Keith Johnson; Kristin Callahan; Koch, Kristine; Cora, Lori; Matt Johnson; Matt McClincy; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; poulsen.mike@deq.state.or.us; nancy.munn@noaa.gov; Paul Henson (Paul_Henson@fws.gov); Rachel DelVecchio; Muza, Richard; Rick Kepler (rick.j.kepler@state.or.us); Robert.Neely@noaa.gov; Robert Dexter; rose@yakamafish-nsn.gov; Ryan Sudbury; Ted Buerger; tomd@ctsi.nsn.us; Tom Gainer; Bill Ford; Bryan Wigginton; Dave Livesay; Dennis Roznowski; Dustin Till; Erin Carroll Hughes; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathleen Dent; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; Tim Thompson; wells@tmw-law.com
Subject: RM11E - Notice to Collect Groundwater Samples, April 14 to 16, 2014
Importance: High
Sean and Lance,

With this email, the RM11E Group provides notice of its intention to collect the second round of groundwater samples from the RM11E Monitoring Well network next **Monday through Wednesday, April 14th through 16th, 2014.** The river level has been declining since April 1, 2014 and the current Willamette River stage is about 11.4 ft NAVD88. Recently the river stage has been oscillating above and below the 12 ft NAVD88 benchmark mentioned in the SAP in response to the tidal cycle, and according to NOAA's Advanced Hydrologic Prediction Services the river stage is projected to continue oscillating around 12 ft NAVD88 through the end of this week (see graph below).

Note that you have to add a datum conversion of 5.05 ft to the USGS datum to get the elevation in NAVD88

The empirical water level data recently collected from the RM11E monitoring well network indicates that gradient reversals adjacent to the RM11E Project Area are observed when the river reaches an elevation of approximately 13.5 ft NAVD88, which is higher than the 12 ft NAVD88 elevation identified in the SAP. The water level forecast for early next week oscillates across 12 ft NAVD88. Accordingly, based on the recently collected data regarding the correlation between river stage and gradient reversal, **the Data Quality Objectives (DQOs) in the SAP will be met when the river is at the current and forecasted levels for next week.**

Before we collect the samples, we want assurance that EPA and its Partners are in agreement that sampling next week when the river is below 13.5 ft NAVD88 is acceptable and will meet project DQOs. Thank you for your consideration and please confirm in writing that the sampling elevation benchmark of below 13.5 ft NAVD88 is acceptable to EPA such that we can move forward with sampling next Monday through Wednesday.

Feel free to contact me directly with questions.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

From: Erin Carroll Hughes
To: Libby Smith
Subject: FW: RM11E Field Change Request 002
Date: Tuesday, December 10, 2013 5:33:08 PM

Agency communication. Sorry I didn't copy you earlier.

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Tuesday, December 10, 2013 3:03 PM
To: Erin Carroll Hughes; Lance Peterson
Cc: Paul Fuglevand; Dave Livesay; Jackie Wetzsteon; Kenny Janssen
Subject: Re: RM11E Field Change Request 002

Erin, this fcr is approved.

S
Sean Sheldrake
Unit Diving Officer, RPM
206.553.1220 work cell
Like us on facebook!
https://www.facebook.com/epaDIVERS

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Tuesday, December 10, 2013 12:14:49 PM
To: Lance Peterson (PetersonLE@cdmsmith.com); Sheldrake, Sean
Cc: Paul Fuglevand (pfuglevand@dofnw.com); Dave Livesay; Wetzsteon, Jackie; Kenny Janssen
Subject: RM11E Field Change Request 002

Lance and Sean.

As discussed with Lance yesterday, I am providing you with a FCR for the groundwater sample collection technique proposed for RM11E-MW001. We are planning to collect that final groundwater sample this afternoon so if you can please give us your blessing in the next couple of hours that would be greatly appreciated.

Feel free to call or email with questions or concerns.

Thank you for your attention to this matter and I apologize for the late notice.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

FIELD CHANGE REQUEST (FCR) FORM
GSI Water Solutions, Inc.

Project Name: River Mile 11 East, Supplemental RI/FS Investigation

FCR Number: 002 **FCR Date: December 10, 2013**

Prepared for: Sean Sheldrake, EPA

Summary of Work Completed:

With the exception of RM11E-MW001, groundwater samples were collected from all other wells in the RM11E monitoring network between December 4th and 6th, 2013. RM11E-MW001 was not sampled due to the low recovery nature of the well, and the inability to sample groundwater using a peristaltic or electrical submersible pump.

Description of Proposed Modification:

Approximately 16 gallons of water were removed from this well during development on November 25th, December 4th, December 6th, and December 9th, 2013. The total volume removed is equivalent to approximately seven well casing volumes and is nearly four times greater than the four gallons of water used by the driller during well drilling. During the development periods, the well was pumped dry several times and the water level was slow to recover. Sampling with the peristaltic pump is not physically possible due to the depth at which the pump needs to be set, which is beyond the physical limitations of this sampling technique. Sampling with an electrical submersible pump is not possible, because there is no control at very low purging rates and the well dries up within a couple of minutes pumping. Sampling with a bailer appears to be the best option for this well. In attempt to obtain a representative groundwater sample, the well was bailed dry on Friday December 6th, and late-afternoon on Monday December 9th in anticipation for sampling on Tuesday December 10th. Field parameter data have been recorded at this well during early purge events, but because of the low volume, water removed during sampling will be reserved to fill sample bottles. Field parameters will only be recorded if sufficient volume is available.

Reasons for Modification:

This modification is requested due to the sampling limitations associated with the low recovery observed in RM11E-MW001. Groundwater does not enter this well at a sufficient rate to sample using the low-flow sampling method proposed in the Upland Groundwater and Bank Soil Sampling and Analysis Plan. Sampling with a bailer is consistent with industry standards and is considered the best option for collecting a sample from this well.

Schedule Impacts:

Sampling of this remaining well will occur this afternoon, December 10, 2013 on the falling tide of the Willamette River. We request your immediate review and approval of this FCR so that we can conduct sampling today.

Submitted by:

Technical Project Lead: Erin Cornell Hughes Date: December 10, 2013

Approved by:

EPA Representative: _____ Date: _____

APPENDIX A2
DIOXIN / FURAN ANALYSIS

From: Wetzsteon, Jackie
To: "Sheldrake, Sean"
Cc: "Betz, Jan"; "Bryan Wigginton"; Dave Livesay; ""Denis Roznowski"; Dent, Kathleen; Erin Carroll Hughes; "Ford, Bill (LG)"; "Groy, Jeff"; ""Jason Conder"; "Jeff Dresser"; ""Kathryn R. Huibregtse"; "Kim.Cox@portlandoregon.gov"; "KIRK.WILKINSON@lw.com"; "Klinger, Nanci"; Libby Smith; "Matt Wells"; "Michelle Rosenthal"; "Paul Fuglevand"; "Rick Ernst"; ""Russ P Cepko"; "Sanders, Dawn"; Wiencke, Mary
Subject: RE: 11e; Specific d/f analyses
Date: Wednesday, March 12, 2014 12:49:09 PM

Great news, Sean, and you are most welcome. We thank you and your team as well!

Jackie

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Wednesday, March 12, 2014 12:40 PM
To: Wetzsteon, Jackie; Wetzsteon, Jackie; Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand
Cc: Alex Liverman (liverman.alex@deq.state.or.us); allenmc@cdm.com; audiehuber@ctuir.com; bayuk.dana@deq.state.or.us; schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; callie@ridolfi.com; Conley, Alanna; Cora, Lori; cunninghame@gorge.net; Dan Hafley (HAFLEY.Dan@deq.state.or.us); erin.madden@gmail.com; Fuentes, Rene; Gail Fricano (gfricano@indecon.com); Genevieve Angle (Genevieve.Angle@noaa.gov); Humphrey, Chip; jd@williamsjohnsonlaw.com; Jen Kassakian (jkassakian@indecon.com); Jeremy_Buck@fws.gov; johnson.keith@deq.state.or.us; jweis@hk-law.com; Kristin Callahan; Koch, Kristine; Lance Peterson (PetersonLE@cdmsmith.com); matt@williamsjohnsonlaw.com; mcclincy.matt@deq.state.or.us; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; Muza, Richard; nancy.munn@noaa.gov; peterson.Jennifer@deq.state.or.us; poulsen.mike@deq.state.or.us; Rachel DelVecchio (rdelvecchio@indecon.com); Robert.Neely@noaa.gov; rose@yakamafish-nsn.gov; ted_buerger@fws.gov; tomd@ctsi.nsn.us; Tom Gainer (gainer.tom@deq.state.or.us)
Subject: RE: 11e; Specific d/f analyses

Jackie,

The RM11e Group's proposal is approved. Thank you for your time in working through the specifics of EPA's data need to a mutually agreeable solution.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Tuesday, March 11, 2014 10:18 AM
To: undisclosed-recipients@epamail.epa.gov
Subject: RE: 11e; Specific d/f analyses

Sean, Lance, and Eric.

From:	Wetzsteon, Jackie
To:	Sean Sheldrake (sheldrake.sean@epa.gov)
Cc:	Lance Peterson (PetersonLE@cdmsmith.com); "Betz, Jan"; "Bryan Wigginton"; Dave Livesay; "Denis Roznowski; Dent, Kathleen; Erin Carroll Hughes; "Ford, Bill (LG)"; "Groy, Jeff"; "Jason Conder; "Jeff Dresser"; "Kathryn R. Huibregtse; "Kim.Cox@portlandoregon.gov"; "KIRK.WILKINSON@lw.com"; "Klinger, Nanci"; Libby Smith; "Matt Wells"; "Michelle Rosenthal"; Paul Fuglevand; "Rick Ernst"; "Russ P Cepko; "Sanders, Dawn"; Wiencke, Mary
Subject:	RE: 11e; Specific d/f analyses
Date:	Tuesday, March 11, 2014 2:39:13 PM

Sounds good. Thanks Sean.

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Tuesday, March 11, 2014 2:37 PM
To: Wetzsteon, Jackie; Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand
Cc: Lance Peterson (PetersonLE@cdmsmith.com)
Subject: FW: 11e; Specific d/f analyses

Thanks Jackie. So that we can allow our key team members to review (some of whom are on travel today), EPA extends the informal dispute resolution period between EPA and the RM11E Group through this Thursday March 13.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Tuesday, March 11, 2014 10:18 AM
To: undisclosed-recipients@epamail.epa.gov
Subject: RE: 11e; Specific d/f analyses

Sean, Lance, and Eric.
Thank you for participating in the dioxin/furan discussion with the RM11E Group yesterday afternoon. Your input on the rationale for the analysis of each of the proposed samples was very helpful. The attached document summarizes the RM11E Group's response to EPA's request for additional dioxin/furan analysis on a sample-by-sample basis.
Please confirm by email or letter that the approach described in the attached document addresses EPA's concerns regarding dioxins/furans and will satisfy EPA's directive for additional sample analysis.
Thank you,
Jackie

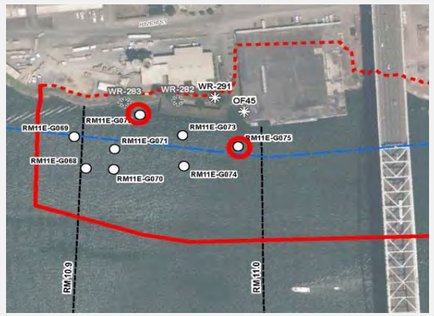
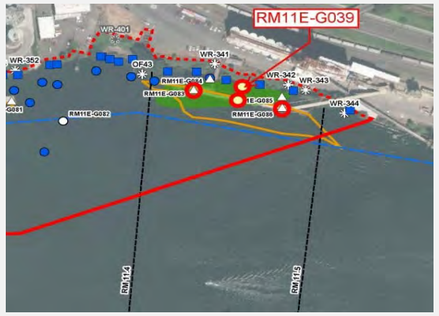
Location	Proposed Revision to Sampling Plan	EPA Rationale	RM11E Group Response	Image of Sampling Area
Downstream of the Fremont Bridge (RM 10.9)				
RM11E-G072	Add dioxin/furan analysis.	No dioxin/furan data downstream of RM 11 in RM11 E Project Area.	The RM11E group will perform follow-up dioxin/furan analysis of archived sediment samples RM11E-G075 and RM11E-G072 as requested.	
RM11E-G075	Add dioxin/furan analysis.	No dioxin/furan data downstream of RM 11 in RM11 E Project Area.		
Area near existing sediment core RM11E-C003 (RM 11.15)				
Offshore of RM11E-C003	Collect additional surface sample for PCB and dioxin furan analysis.	Offshore delineation of TCDD TEQ detection of 27.9 ng/kg in shallow subsurface sediments at sample location RM11E-C003.	The RM11E Group will attempt to collect the proposed sample and analyze for PCBs and dioxins/furans as requested. If after three attempts a sample is not successful, the proposed station will be abandoned.	
Area near existing surface sediment sample RM11E-G039 (RM 11.45)				
RM11E-G039	Re-occupy station and collect an additional surface sample for PCB and dioxin furan analysis.	*Not Identified by EPA*	The RM11E Group proposes re-occupying station RM11E-G039 to confirm current concentrations of dioxins/furans and PCBs at this location. The Group proposes rushing the analysis on this sample. If the dioxin/furan concentrations are observed in excess of any of EPA's proposed dioxin/furan TCDD TEQ Remedial Action Levels (RALs), then follow-up analysis will be conducted on the three archived samples described below.	
New Sample Offshore of RM11E-G039	Collect additional surface sediment sample for PCB and dioxin furan analysis.	Offshore delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.	Sample will be collected, archived, and will only be analyzed if the PCB and/or dioxin/furan concentrations in the re-occupied RM11E-G039 sample come back higher than EPA's proposed RALs. [Note that this sample will be moved directly underneath the dock as requested by EPA/CDM]	
RM11E-G083 (Downstream and Offshore of RM11E-G039)	Add dioxin/furan analysis.	Downstream delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.	Sample will be collected for archival and will only be analyzed for dioxins/furans if the concentrations in the re-occupied RM11E-G039 sample come back higher than EPA's proposed dioxin/furan TCDD TEQ RAL(s).	
RM11E-G086 (Upstream and Offshore of RM11E-G039)	Add dioxin/furan analysis.	Upstream delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.	Sample will be collected for archival and will only be analyzed for dioxins/furans if the concentrations in the re-occupied RM11E-G039 sample come back higher than EPA's proposed dioxin/furan TCDD TEQ RAL(s).	

FIGURE X
Total Dioxin/Furan TEQ Concentrations (FS Data Rules)

River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Sample Type

- Surface Sediment
- RM11E Bank Soil
- Proposed Manual Grab

Total Dioxin/Furan TEQ Concentrations

- >0.12 ug/kg (FS RAL Alternative B)
- >0.081 - 0.12 ug/kg (FS RAL Alternative C)
- >0.053 - 0.081 ug/kg (FS RAL Alternative D)
- >0.038 - 0.053 ug/kg (FS RAL Alternative E)
- >0.022 - 0.038 ug/kg (FS RAL Alternative F)
- >0.012 - 0.022 ug/kg (FS RAL Alternative G)
- <0.012 ug/kg
- Non Detect
- Not Analyzed

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- Historical Maintenance Dredge Area
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenth
- Active Outfall
- Inactive Outfall
- Supplemental RI/FS Sample that may be analyzed for dioxins/ furans as described in the table above
- Proposed new surface sediment sample that may be analyzed for dioxins/furans as described in the table above

MAP NOTES:

Date: March 10, 2014
FS = Feasibility Study
LWG = Lower Willamette Group
PRG = Preliminary Remediation Goal
RAL = Remedial Action Level
RAO = Remedial Action Objective
RM = River Mile

1. The locations of all features shown are approximate.
2. Source of existing sediment sample locations and results is the FS Sediment Database dated March 29, 2011. Note that the FS did not include bank soil samples in their interpolation of the sediment management areas (SMA's).
3. Analyte group totals follow the FS data summation/calculation rules described in Appendix R of the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
4. Source of bank soil sampling results is Appendix C of the Supplemental Data Report: Archived Bank Soil and Sediment Re-Analysis (GSI, 2013).
5. Aerial photos taken in Fall of 2012 by Metro.

N

0 150 300
Feet

GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF_RM11E\GIS\Project_mxds\Misc\FigureX_FS_Total_DFTEQ_For_Additional_Analysis.mxd

From: Wetzsteon, Jackie
To: undisclosed-recipients
Subject: RE: Request for an Extension to the Informal Dispute Resolution Period (11e d/f data)
Date: Wednesday, February 26, 2014 11:10:51 AM

Thank you Sean.

I will get in touch with you next week with some proposed dates for a conference call during the week of March 10th to discuss the RALs and their implications for the RM11E area.

In the meantime, we were hoping that EPA could provide us with additional information on the 'EPA Sediment Management Area' footprints shown on the figures that you sent including a description of (1) the combination of RALs that were used and the (2) interpolation method that was used to develop the new areas.

Thanks again,
Jackie

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Tuesday, February 25, 2014 9:23 AM
To: Wetzsteon, Jackie; Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand
Cc: Alex Liverman (liverman.alex@deq.state.or.us); allenmc@cdm.com; audiehuber@ctuir.com; bayuk.dana@deq.state.or.us; schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; callie@ridolfi.com; Conley, Alanna; Cora, Lori; cunninghame@gorge.net; Dan Hafley (HAFLEY.Dan@deq.state.or.us); erin.madden@gmail.com; Fuentes, Rene; Gail Fricano (gfricano@indecon.com); Genevieve Angle (Genevieve.Angle@noaa.gov); Humphrey, Chip; jd@williamsjohnsonlaw.com; Jen Kassakian (jkassakian@indecon.com); Jeremy_Buck@fws.gov; johnson.keith@deq.state.or.us; jweis@hk-law.com; Kristin Callahan; Koch, Kristine; Lance Peterson (PetersonLE@cdmsmith.com); matt@williamsjohnsonlaw.com; mcclincy.matt@deq.state.or.us; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; Muza, Richard; nancy.munn@noaa.gov; peterson.Jennifer@deq.state.or.us; poulsen.mike@deq.state.or.us; Rachel DelVecchio (rdelvecchio@indecon.com); Robert.Neely@noaa.gov; rose@yakamafish-nsn.gov; ted_buerger@fws.gov; tomd@ctsi.nsn.us; Tom Gainer (gainer.tom@deq.state.or.us)
Subject: FW: Request for an Extension to the Informal Dispute Resolution Period (11e d/f data)

Hello Jackie, Here are the D/F RALs as discussed. We'll await your proposed telecon dates to hold time to further discuss.

Let us know if you have any questions.

Thank you.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor

http://www.epa.gov/region10/dive/

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From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Tuesday, February 04, 2014 8:44 AM
To: undisclosed-recipients
Subject: RE: Request for an Extension to the Informal Dispute Resolution Period (11e d/f data)

Thank you Sean. We look forward to receiving the revised dioxin/furan TCDD TEQ RALs from EPA as soon as possible. Also, thank you for clarifying the need to use the FS database as we move forward. So noted.

Jackie

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Friday, January 31, 2014 9:56 AM
To: Wetzsteon, Jackie
Cc: Alex Liverman (liverman.alex@deq.state.or.us); allenmc@cdm.com; audiehuber@ctuir.com; bayuk.dana@deq.state.or.us; schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; callie@ridolfi.com; Conley, Alanna; Cora, Lori; cunninghame@gorge.net; Dan Hafley (HAFLEY.Dan@deq.state.or.us); erin.madden@gmail.com; Fuentes, Rene; Gail Fricano (gfricano@indecon.com); Genevieve Angle (Genevieve.Angle@noaa.gov); Humphrey, Chip; jd@williamsjohnsonlaw.com; Jen Kassakian (jkassakian@indecon.com); Jeremy_Buck@fws.gov; johnson.keith@deq.state.or.us; jweis@hk-law.com; Kristin Callahan; Koch, Kristine; Lance Peterson (PetersonLE@cdmsmith.com); matt@williamsjohnsonlaw.com; mcclincy.matt@deq.state.or.us; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; Muza, Richard; Nancy.Munn@noaa.gov; peterson.Jennifer@deq.state.or.us; poulsen.mike@deq.state.or.us; Rachel DelVecchio (rdelvecchio@indecon.com); Robert.Neely@noaa.gov; rose@yakamafish-nsn.gov; ted_buerger@fws.gov; tomd@ctsi.nsn.us; Tom Gainer (gainer.tom@deq.state.or.us); Wetzsteon, Jackie; Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand
Subject: RE: Request for an Extension to the Informal Dispute Resolution Period (11e d/f data)

Jackie,

Thank you for the productive call this week. Your request for extension is approved. One item we didn't cover on the call is that we need to use the FS datasets for analysis of the issue. In the RI, non-detects were treated as 0 in sums instead of ½ the detect. While we aren't requiring this data set be corrected in the RI, the FS database has sums based on using ½ ND values. Therefore, to ensure we're all using the same data as the harborwide process, the FS database is what needs to be used as we move forward.

Thank you.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101

206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

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From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Thursday, January 30, 2014 1:07 PM
To: undisclosed-recipients@epamail.epa.gov
Subject: RE: Request for an Extension to the Informal Dispute Resolution Period

Hi Sean,

Thank you for taking the time to talk to the RM11E Group about the dioxin/furan directive yesterday. We thought the conference call was very productive and would like to confirm the path that we discussed during the call for moving forward.

- EPA will review their files to ensure that they have access to the data that was published in the *Supplemental Data Report: Bank Soil and Sediment Re-Analysis* (GSI, 2013)
- EPA is in the process of developing Dioxin/Furan TCDD TEQ RALS for the Portland Harbor Superfund Site and will provide them to the RM11E Group as soon as possible, or at the latest, by the end of February.
- EPA and the RM11E Group will evaluate the geographic distribution of the dioxin/furan data available for River Mile 11E. EPA and the RM11E Group will also compare the dataset to the newly developed Dioxin/Furan TCDD TEQ RALs when they are provided by EPA.
- Once the evaluation process is complete, EPA and the RM11E Group will participate in a conference call to identify any additional dioxin/furan data that are required to meet the objectives of the Recontamination Assessment and Implementability Study, and to inform remedy selection by EPA.

As discussed during the call, the informal dispute resolution period between EPA and the RM11E Group will continue to be extended during this evaluation period. EPA previously extended the deadline through our email exchange on January 21 and 22. We propose that the dispute resolution period now be extended to 2 weeks after the RM11E Group receives the newly adopted Dioxin/Furan TCDD TEQ RALS from EPA. This should give us enough time to review the information provided by EPA, compare it to the existing dataset, participate in 1 or 2 conference calls with EPA to discuss the results and reach agreement on any additional actions that may be warranted, and formalize the approach in a letter.

As you know, our diver collected sediment program is scheduled to occur between March 20th and 25th, 2014 and rescheduling is difficult because of the need to avoid shipping traffic. If it is determined that additional sediment sampling for dioxin/furans is warranted, this would be an ideal time to collect the samples. We hope that we are able to reach resolution with EPA on this issue in the near term so that the schedule for the delivery of the Field and Data Report as well as the other deliverables is not impacted.

Can you please confirm that the approach outlined above and that our request to extend the informal dispute resolution period to 2 weeks after we receive the newly developed Dioxin/Furan TCDD TEQ RALS is acceptable to EPA.

Thank you,
Jackie

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Wednesday, January 22, 2014 8:38 AM
To: Wetzsteon, Jackie
Cc: Wetzsteon, Jackie; Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand; Alex Liverman (liverman.alex@deq.state.or.us); allenmc@cdm.com; audiehuber@ctuir.com; bayuk.dana@deq.state.or.us; schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; callie@ridolfi.com; Conley, Alanna; Cora, Lori; cunninghame@gorge.net; Dan Hafley (HAFLEY.Dan@deq.state.or.us); erin.madden@gmail.com; Fuentes, Rene; Gail Fricano (gfricano@indecon.com); Genevieve Angle (Genevieve.Angle@noaa.gov); Humphrey, Chip; jd@williamsjohnsonlaw.com; Jen Kassakian (jkassakian@indecon.com); Jeremy_Buck@fws.gov; johnson.keith@deq.state.or.us; jweis@hk-law.com; Kristin Callahan; Koch, Kristine; Lance Peterson (PetersonLE@cdmsmith.com); matt@williamsjohnsonlaw.com; mcclincy.matt@deq.state.or.us; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; Muza, Richard; Nancy.Munn@noaa.gov; peterson.Jennifer@deq.state.or.us; poulsen.mike@deq.state.or.us; Rachel DelVecchio (rdelvecchio@indecon.com); Robert.Neely@noaa.gov; rose@yakamafish-nsn.gov; ted_buerger@fws.gov; tomd@ctsi.nsn.us; Tom Gainer (gainer.tom@deq.state.or.us)
Subject: RE: Request for an Extension to the Informal Dispute Resolution Period
Jackie,

Your request is granted. I'll check with my team and get back to you on 1/28 vs 1/29 for a telecon.

Thank you.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
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http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Tuesday, January 21, 2014 4:56 PM
To: undisclosed-recipients@epamail.epa.gov
Subject: Request for an Extension to the Informal Dispute Resolution Period

Hi Sean,

As we discussed today on the phone, the RM11E Group is in the process of reviewing your letter of January 10, 2014, directing the analysis of dioxin and furans on the archived samples collected from the RM11E Project Area. As I explained, we have a number of questions regarding the information contained in paragraph 2 of the letter as well as some bigger picture questions that relate to the development of PRGs and RALs for the Portland Harbor Superfund Site. We plan to transmit a list of questions to you no later than Friday, January 24, 2014. We would like to schedule a conference call with EPA on Tuesday, January 28, 2014, or Wednesday, January 29, 2014 to walk through the questions and obtain some clarification from EPA.

To ensure that we are complying with the terms of the AOC and to allow time for discussion of the issues raised by your letter, the RM11E Group is requesting an extension to the informal dispute resolution period as described in Paragraph 52. As outlined above, we plan to provide EPA with a list of questions no later than January 24th and obtain input from EPA during the week of January 27th. It is our hope that we will be able to informally resolve any issues raised by the directive and subsequent discussions with EPA by February 7, 2014.

Can you please confirm that this schedule is acceptable to you and that EPA agrees to extend the informal dispute resolution period until February 7, 2014? Also, can you please advise us of your availability next week so that we can set up a conference call?

Thank you so much,

Jackie

Jackie Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1500
Portland, OR 97232
(503) 813 5036 (work)
(503) 961 3955 (cell)

From:	Wetzsteon, Jackie
To:	Matthew D. Wells; Jeff Dresser; Wiencke, Mary; Dent, Kathleen; Nanci Klinger; Dawn Sanders; Kim Cox; Jan Betz; Russ P Cepko; Jeff Groy; Kathryn R. Huibregtse; jconder@environcorp.com; Michelle Rosenthal; Bryan Wigginton; Rick Ernst; Bill Ford, (LG); Denis M Roznowski; KIRK WILKINSON; Erin Carroll Hughes; Dave Livesay; Paul Fuglevand; Libby Smith
Subject:	Fwd: 11e; Specific d/f analyses
Date:	Thursday, March 06, 2014 12:35:06 PM
Attachments:	RM11E_Dioxin_Analysis_05_Mar_14.pdf Dioxin_furan_3_6_14.pdf

---

FYI

-------- Original message --------
From: "Sheldrake, Sean"
Date:03/06/2014 12:24 PM (GMT-08:00)
To: "Wetzsteon, Jackie" ,"Bill Ford (WFord@LATHROPGAGE.COM)" ,Dave Livesay ,Erin Carroll Hughes ,"Jeff Groy (Jeff.Groy@cbs.com)" ,"Kim Cox (Kim.Cox@portlandoregon.gov)" ,"Matt Wells (wells@tmw-law.com)" ,"Nanci Klinger (N.Klinger@portlandoregon.gov)" ,Paul Fuglevand
Cc: "Alex Liverman (liverman.alex@deq.state.or.us)" ,allenmc@cdm.com,audiehuber@ctuir.com,bayuk.dana@deq.state.or.us,schwarz.bob@deq.state.or.us,brandy.humphreys@grandronde.org,callie@ridolfi.com,"Conley, Alanna" ,"Cora, Lori" ,cunninghame@gorge.net,"Dan Hafley (HAFLEY.Dan@deq.state.or.us)" ,erin.madden@gmail.com,"Fuentes, Rene" ,"Gail Fricano (gfricano@indecon.com)" ,"Genevieve Angle (Genevieve.Angle@noaa.gov)" ,"Humphrey, Chip" ,jd@williamsjohnsonlaw.com,"Jen Kassakian (jkassakian@indecon.com)" ,Jeremy_Buck@fws.gov,johnson.keith@deq.state.or.us,jweis@hk-law.com,Kristin Callahan ,"Koch, Kristine" ,"Lance Peterson (PetersonLE@cdmsmith.com)" ,matt@williamsjohnsonlaw.com,mcclincy.matt@deq.state.or.us,tosm@yakamafish-nsn.gov,Michael.karnosh@grandronde.org,"Muza, Richard" ,nancy.munn@noaa.gov,peterson.Jennifer@deq.state.or.us,poulsen.mike@deq.state.or.us,"Rachel DelVecchio (rdelvecchio@indecon.com)" ,Robert.Neely@noaa.gov,rose@yakamafish-nsn.gov,ted_buerger@fws.gov,tomd@ctsi.nsn.us,"Tom Gainer (gainer.tom@deq.state.or.us)"
Subject: 11e; Specific d/f analyses

Hello Jackie,

Please see the attached additional information regarding specific dioxin/furan analyses for discussion during our teleconference on Monday.

Thank you.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
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206.225.6528 cell
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http://www.epa.gov/region10/dive/

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

March 6, 2014

Ms. Jackie Thiell Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1700
Portland, OR 97232

Sent via email only

Re: Request for Dioxin/Furan Analysis, *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11East, Portland, Oregon,* (dated October 2013), CERCLA Docket No. 10-2013-0087

Dear Ms. Wetzsteon:

The U.S. Environmental Protection Agency (EPA) letter dated January 10, 2014 directed the RM11E Group to conduct polychlorinated-dibenzo dioxin and furan (PCDD/PCDF) analysis on all supplemental Remedial Investigation/Feasibility Study (RI/FS) solids matrices and also incorporate this information into the Draft Field Sampling and Data Report, Draft Implementability Study Report, and Draft Recontamination Assessment Report as appropriate. EPA and the RM11E Group held subsequent discussions where it was agreed that EPA would develop Dioxin/Furan 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) toxicity equivalent (TEQ) remedial action levels (RALs) for the Portland Harbor Superfund Site and provide them to the RM11E Group. EPA transmitted the Dioxin/Furan TCDD TEQ RALs to the RM11E Group on February 25, 2014. In preparation for a conference call scheduled for March 10, 2014, EPA requested its contractor CDM Smith to evaluate what additional dioxin/furan data is necessary as part of the supplemental RI/FS work. A memorandum presenting this evaluation is attached. EPA believes the requested dioxin/furan data is needed to inform alternative evaluation under the Portland Harbor Feasibility Study. The dioxin/furan data will also inform the source control recontamination evaluation to be presented in the Recontamination Assessment Report.

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We look forward to discussing the requested analyses during the March 10, 2014 conference call. Please let me know you have any questions or concerns about this letter at (206) 553-1220 or via email at sheldrake.sean@epa.gov

Sincerely,

Sean Sheldrake, RPM

Enclosure

Cc:

Kristine Koch, EPA *via email only*
Chip Humphrey, EPA
Dan Hafley, DEQ
Lance Peterson, CDM

Memorandum

To: *Sean Sheldrake, USEPA Region 10*

From: *Lance Peterson and Eric Blischke*

Date: *March 5, 2014*

Subject: *Dioxin and Furan Analysis at RM11E Project Area*

CDM Smith has reviewed existing dioxin and furan sediment data generated at the River Mile 11 East (RM11E) Project Area. The purpose of the evaluation was to determine whether additional dioxin and furan data were needed to support work under the supplemental Remedial Investigation/Feasibility Study investigation for the RM11E Project Area. EPA recently developed a set of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin toxicity equivalent quotient (TCDD TEQ) remedial action levels (RALs) to better account for risks to human health associated with exposure to dioxins and furans at the Portland Harbor Site. As a result, this evaluation is focused on TCDD TEQ detected in surface and subsurface sediments and sediment traps at the RM11E Project Area. The distribution of RALs in the RM11E area is shown on **Figure 1**.

Review of Existing Data

TCDD TEQ was detected in surface sediments collected within the RM11E Project Area at concentrations ranging from 0.0314 to 21.6 nanograms per kilogram (ng/kg). The highest concentration (21.6 ng/kg) was detected in sample RM11E-G039 at approximately RM 11.45. The second highest concentration of 11.6 ng/kg was detected in sample RM11E-G033 collected immediately downstream of RM11E-G039.

RALs for TCDD TEQ are presented in **Table 1**. The TCDD TEQ concentration detections at the RM11E-G039 and RM11E-G033 locations exceed or are comparable to the Alternative G RAL of 12 ng/kg and the Alternative F RAL of 22 ng/kg.

TCDD TEQ was detected in subsurface sediment samples within the RM11E Project Area at concentrations up to 34.9 ng/kg. TCDD TEQ was detected above the Alternative F RAL in sediment cores RM11E-C003 and RM11E-C048 including at a concentration of 27.9 ng/kg in the 30.5 – 91.4 centimeter (cm) depth interval at RM11E-C003. Other detections greater than TCDD TEQ RALs were detected at depths greater than 91.4 cm.

TCDD TEQ was detected in RM11E sediment traps at concentrations ranging from 0.0775 to 4.73 ng/kg which is below the lowest TCDD TEQ RAL of 12 ng/kg (Alternative G).

Recommendation

Additional dioxin furan analysis is recommended in three locations within the RM11 Study Area to address three primary data gaps:

- Delineation of the detection of TCDD TEQ in surface sediment samples RM11E-G033 and RM11E-G039.
- Delineation of the detection of TCDD TEQ in shallow subsurface sediment sample RM11E-C003.
- The lack of dioxin furan data downstream of RM 11.

A summary of proposed changes to the sampling plan including rationale is presented in **Table 2**. Proposed sample locations are provided in **Figure 2**, which was derived from the RM11E Work Plan.

Table 1
TCDD TEQ RALs Established for Portland Harbor Site

Alternative	TCDD TEQ RAL	
	ng/kg	µg/kg
B	120	0.12
C	81	0.081
D	53	0.053
E	38	0.038
F	22	0.022
G	12	0.012

µg/kg – microgram per kilogram

Table 2
Proposed Dioxin Analysis at RM 11E Project Area

Location	Proposed Revision to Sampling Plan	Rationale
RM11E-G086	Add dioxin/furan analysis	Upstream delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.
Offshore of RM11E-G-039	Collect additional surface sediment sample for PCB and dioxin furan analysis.	Offshore delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.
RM11E-G083	Add dioxin/furan analysis	Downstream delineation of TCDD TEQ detection of 21.6 ng/kg in surface sediments at location RM11E-G039.
Offshore of RM11E-C003	Collect additional surface sample for PCB and dioxin furan analysis.	Offshore delineation of TCDD TEQ detection of 27.9 ng/kg in shallow subsurface sediments at sample location RM11E-C003.
RM11E-G075	Add dioxin/furan analysis	No dioxin/furan data downstream of RM 11 in RM11 E Project Area.
RM11E-G072	Add dioxin/furan analysis	No dioxin/furan data downstream of RM 11 in RM11 E Project Area.

Dioxin/Furans as TEQ

Memo Figure 1

0 200 400 800 1,200 1,600 Feet

Date: 2/24/2014

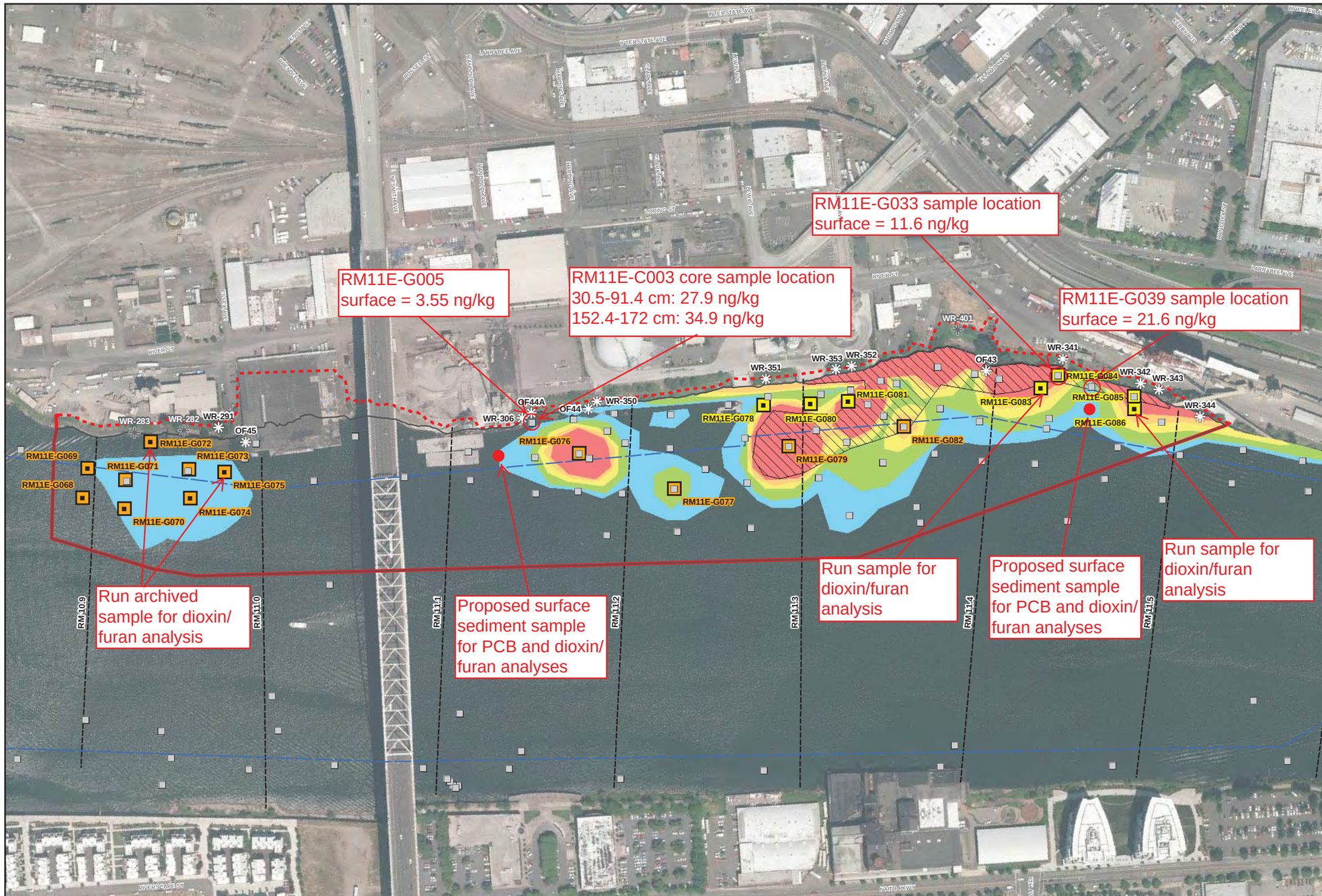

FIGURE 6-2
Proposed Surface Sediment Sampling Locations

River Mile 11 East
Supplemental RI/FS Work Plan

Willamette River
Portland, Oregon

LEGEND

Proposed Surface Sediment Sample

- Power Grab
- Manual Grab

Total PCBs in Surface Sediment (RAL Footprints)

- 75 - 200 ug/kg
- >200 - 500 ug/kg
- >500 - 750 ug/kg
- >750 - 1,000 ug/kg
- >1,000 ug/kg
- Comprehensive Benthic Risk Areas

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25
- U.S. Army Corps of Engineers Navigation Channel
- River Mile Tenth (RM)
- Existing Surface Sediment Sample
- Active Outfall
- Inactive Outfall

MAP NOTES:
Date: October 2, 2013
AOPC = Area of Potential Concern
FS = Feasibility Study
RM = River Mile
PCB = Polychlorinated Biphenyl
1.The comprehensive benthic risk areas, and the AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
2. The breakdown of total PCB concentrations is consistent with each of the remedial alternatives (B through F) presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).

3. Source of existing sediment sample locations is LWG SCRA Combo database (dated July 7, 2009) and DPSC Field and Data Report (dated January 2009). Other sediment data might exist that are not included in the LWG SCRA Combo database or the DPSC Field and Data Report.

N

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Feet

Memo Figure 2
Proposed Dioxin/Furan Analysis Locations

GSI Water Solutions, Inc.

File Path: P:\Portland\487-DOF\001-RM11E_RI_FS\Project_GIS\Project_mxds\Work_Plan\Final\Figure6-2_Proposed_Surf_Sed_Samp_Locs.mxd

EPA Directive on Dioxin Furan Analysis
River Mile 11E Project Area
List of Issues for Further Discussion with EPA
on January 29, 2014

Data Referenced

There are some inconsistencies in EPA's January 10, 2014, letter that we would like to discuss with EPA to be certain that EPA and the RM11E Group have the same understanding of the data referenced.

Our comments are listed below along with the relevant highlighted sections of the EPA letter.

1. Nomenclature inconsistencies appear to lead to incorrect citing of dioxin/furan TEQ values. The third and fourth quarter 2007 sediment trap results referenced by EPA of 39.9 and 81.9 ng/kg (see highlighted text below) reflect 'Total TCDD TEQ' values, which also include dioxin-like PCB congeners in the TEQ summation, rather than only the 'dioxin/furan TEQ' referenced in the sentence. The Draft Final RI Report reports the third and fourth quarter sediment trap dioxin/furan TCDD TEQ results as **4.73 and 1.56 ng/kg** respectively, which are significantly lower than the values referenced in EPA's letter. These values from the LWG 2007 data used in the RI are comparable to the 2009/2010 RM11E sediment trap data collected by the City of Portland. For comparison, the highest 2009/2010 RM11E sediment trap dioxin/furan TCDD TEQ results were 3.3 (RM11E_STST004-Q3) and 2.3 ng/kg (RM11E_STST005-Q4) for the third and fourth quarters, respectively. These results are consistent with levels reported as "background" based on the 95% UPL reported in the Draft FS Report (March 30, 2012).

> (PeCDF) (see Work Plan Specific Comment 18). During the third and fourth quarter 2007 sediment trap sampling event, dioxin/furan TEQ was detected in accumulated sediments at 39.9 and 81.9 nanograms per kilogram (ng/kg) respectively. These were some of the highest detections of total TCDD toxicity equivalent in sediment traps at the Portland Harbor site. Individual dioxin and furan congeners

2. The 1,2,3,4,6,7,8-HpCDD result in the fourth quarter 2007 sediment trap (LW3-ST4-007) was actually **61.3 ng/kg** rather than 139 ng/kg (see highlighted text below).

equivalent in sediment traps at the Portland Harbor site. Individual dioxin and furan congeners contributing to the TEQ included 1,2,3,4,6,7,8-heptachloro-dibenzo-p-dioxin (HpCDD) which was detected in the fourth quarter 2007 sediment trap at 139 ng/kg. HpCDD was also detected in bedded

3. EPA appears to reference different sample IDs than those utilized in the Portland Harbor Site Characterization and Risk Assessment (SCRA) database. The 1,2,3,4,6,7,8-HpCDD result of 1,070 ng/kg was identified in EPA's letter as sample ID H801. This ID is not in the current version of the LWG SCRA database. To prevent future misunderstanding, please clarify which database EPA is using for this project and confirm that it is consistent with the Portland Harbor SCRA database that we are using for our work.

sediments immediately upstream from the sediment trap deployment location at 1,070 ng/kg (sample H801). This is one of the highest concentrations of HpCDD detected in sediments at the Portland Harbor

Relevant Criteria

The attached table summarizes our current understanding of the applicable dioxin/furan benchmarks – background, RALs for Alternatives B through F, and PRGs. Please confirm that these are the values we should be using moving forward and that 2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF) will continue to be used as the surrogate dioxin/furan for the purposes of the sediment management area (SMA) delineation in the Portland Harbor (using the RALs in the attached table).

Other Technical Questions and Considerations

When determining the need for further analysis of dioxin and furans as part of this supplemental RI/FS investigation to assess implementability and recontamination, the RM11E Group believes that the following technical considerations must be taken into account.

1. **Existing Dioxin Data Density**. Other than River Mile 7 (the former Arkema Facility), the density of dioxin/furan data available in the RM11E project area is greater than that collected anywhere else in Portland Harbor (See attached map H3.1-5 from the Portland Harbor Draft Final RI). EPA is proceeding with remedy selection at other areas in Portland Harbor that

have similar dioxin/furan concentrations and a lower data density than exists at RM 11. Between RM 10.5 and 12.0, there are 60 bedded sediment and 19 sediment trap samples that have associated dioxin/furan data. Additionally, there are 23 bank soil samples that were collected below ordinary high water (OHW) in 2009 that have been analyzed for dioxins and furans. This level of detailed characterization is unique and significantly exceeds most of the Portland Harbor site, and the existing dioxin/furan data density should not limit EPA's ability to select a remedy at RM11E.

2. **Bounding Chemical Footprint.** Existing data indicate that the footprint of dioxin/furan contamination falls within the footprint of the PCB-driven SMAs in the RM11E area. Additionally, no exceedances of the 2,3,4,7,8-PeCDF RALs have been observed in surface sediment in the RM11E area and, therefore, the cleanup action will not be driven by dioxins.

3. **Range of Concentrations.** The dioxin/furan concentrations measured in surface sediment are within the range observed in other Portland Harbor SMAs suggesting that there is not a unique or significant source in this area as compared to other industrial portions of the river.

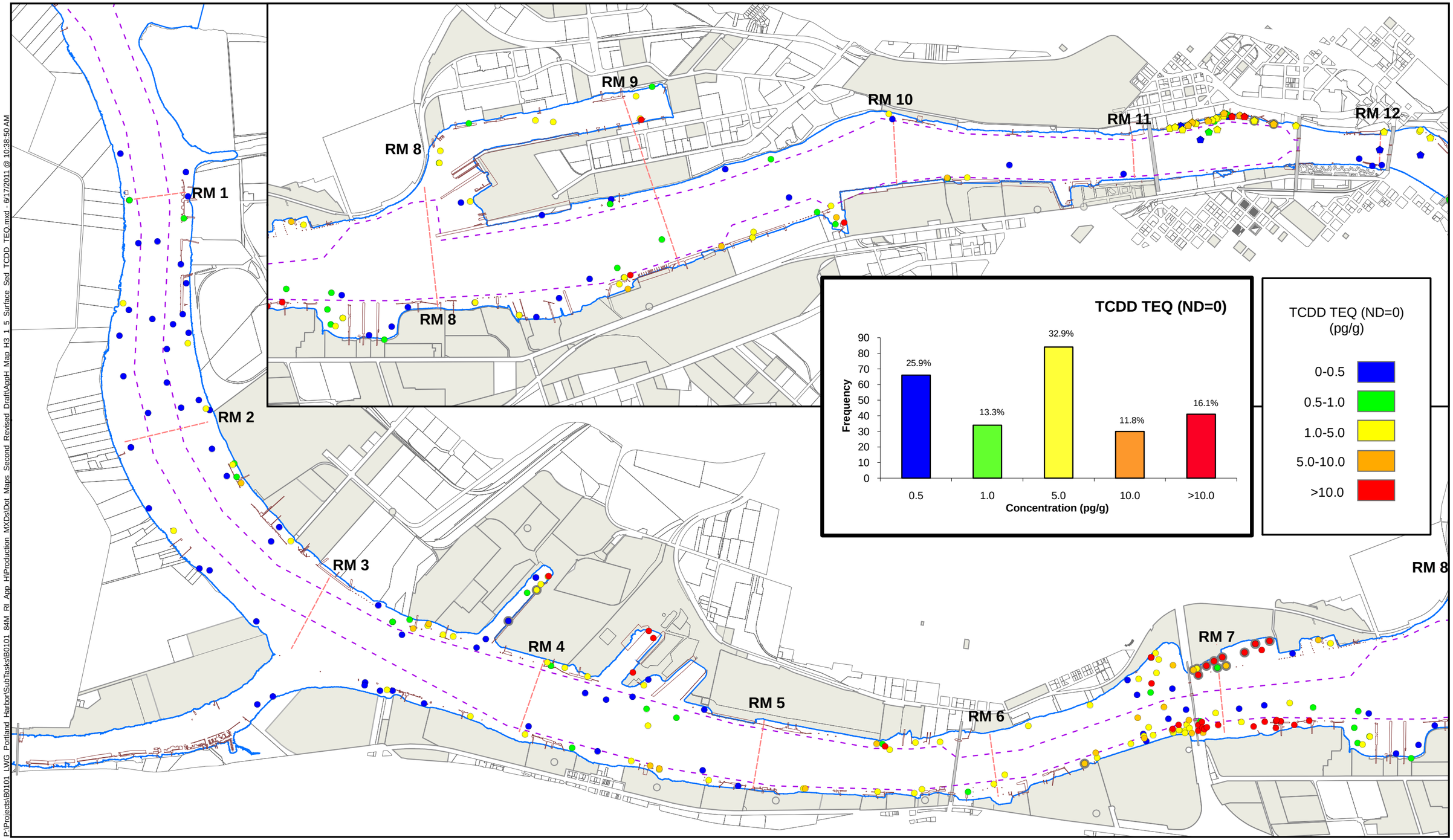
4. **Toxicity.** The RM11E Group is unclear why EPA is focusing on 1,2,3,4,6,7,8-HpCDD (the congener referenced by EPA in the sample EPA designates as H801). For the purposes of this Supplemental RI/FS, it seems reasonable to keep discussions focused on COCs where benchmarks such as RALs and PRGs will be identified by EPA, rather than on specific congeners where RALs or PRGs are not developed.

Portland Harbor Superfund Site
Relevant Benchmarks for Dioxins/Furans

Benchmark				2,3,4,7,8-PeCDF	Dioxin/Furan TCDD TEQ[1]	Total PCDD/Fs[2]
				ug/kg	ug/kg	ug/kg
LWG FS Bkgd[3]	95% UCL			0.0001	0.0013	NC
	95% UPL			0.0005	0.0022	NC
EPA Background Nov 2013	95% UCL			NC	NC	0.08
	95% UPL			NC	NC	0.2
EPA FS Alternative RAL Nov 2013	Alternative B			0.08	--	--
	Alternative C			0.05	--	--
	Alternative D			0.03	--	--
	Alternative E			0.02	--	--
	Alternative F			0.01	--	--
LWG FS Alternative RAL	Alternative B			--	--	--
	Alternative C			--	--	--
	Alternative D			--	--	--
	Alternative E			0.02	--	--
	Alternative F			0.01	--	--
EPA re-calculated and LWG Preliminary Remedial Goals, November 2013	RAO 1	Beach		--	--	--
		Sediment		--	0.01	--
	RAO 2	Tissue		--	6.00E-06	--
		Sediment		9.00E-05	3.00E-05	--
	RAO 3	Surface Water	ug/L	--	5.1E-10	--
	RAO 4	Groundwater	ug/L	--	3.00E-05	--
	RAO 5	Sediments		--	--	--
	RAO 6	Tissue		0.019	--	--
	RAO 7	Surface Water	ug/L	--	3.80E-04	--
	RAO 8	Groundwater	ug/L	--	--	--

NC = Not Calculated
-- None Assigned
2,3,4,7,8-PeCDF = 2,3,4,7,8-Pentachlorodibenzofuran (surrogate for the dioxin/furan group)
Dioxin/Furan TCDD TEQ = Dioxin/Furan Tetrachlorodibenzo-p-dioxin (TCDD) Toxic Equivalent (TEQ)
PCDD/Fs = Polychlorinated Dibenzo-p-dioxin/furan

[1] The dioxin/furan TEQ was calculated by multiplying dioxin and furan congeners by their toxicity equivalency factors (TEFs), and summing the resulting concentrations.
[2] Sum of dioxin and furan congener concentration.
[3] LWG, Appendix A, Table 1.3-5b, Draft FS, March 30, 2012



P:\Projects\B0101_LWG_Portland_Harbor\SubTasks\B0101_84M_RI_App_H\Production_MXDs\Dot_Maps_Second_Revised_Draft\AppH_Map_H3_1_5_Surface_Sed_TCDD_TEQ.mxd - 6/17/2011 @ 10:38:50 AM

integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River Miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

N

0 1,000 2,000 3,000 4,000 5,000 Feet

Map Features

- River Miles
- Navigation Channel
- River Edge +13 ft NAVD
- Surface Chemistry (Updated 2010 RI Data Set)
- Surface Chemistry (2008 RI Data Set)
- Surface Dredge/Cap Locations
- Bridges
- Docks and Structures
- Upland ECSI Sites (2008)
- Waterfront Taxlots

DRAFT
DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Map H3.1-5
Portland Harbor RI/FS
Remedial Investigation Report
Surface Sediment Chemistry
TCDD TEQ (ND=0) (pg/g)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

January 10, 2014

Ms. Jackie Thiell Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1700
Portland, OR 97232 *Sent via email only*

Re: River Mile 11 East – Response to Comments on Dioxin/Furan Analysis, *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11East, Portland, Oregon,* (dated October 2013), CERCLA Docket No. 10-2013-0087

Dear Ms. Wetzsteon,

During discussions in September 2013 regarding U.S. Environmental Protection Agency (EPA) comments on the Draft Supplemental Remedial Investigation/Feasibility Study (RI/FS)Work Plan, the River Mile 11East (RM11E) Group agreed to archive additional sample volume from each sediment and soil station for potential future analysis should a data need be identified during the Recontamination Assessment. The subject of this letter is Work Plan Specific Comments 18 and 30 as well as Work Plan Appendix B Specific Comment 15 regarding the agreement to defer dioxins and furans analysis. The comments in question, as presented in the RM11E Group's September 13, 2013 response to comments submittal, are repeated in Attachment 1 of this letter.

EPA has further evaluated Portland Harbor sediment sample results collected in the vicinity of the RM11E Project Area including surface sediment, subsurface sediment and sediment trap results. This evaluation has determined that elevated levels of dioxin measured as total 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) toxicity equivalent (dioxin/furan TEQ) are present in sediment trap samples deployed in 2007 at RM 11.3 in addition to the previously cited detections of 2,3,4,7,8-pentachloro-dibenzo-furan (PeCDF) (see Work Plan Specific Comment 18). During the third and fourth quarter 2007 sediment trap sampling event, dioxin/furan TEQ was detected in accumulated sediments at 39.9 and 81.9 nanograms per kilogram (ng/kg) respectively. These were some of the highest detections of total TCDD toxicity equivalent in sediment traps at the Portland Harbor site. Individual dioxin and furan congeners contributing to the TEQ included 1,2,3,4,6,7,8-heptachloro-dibenzo-p-dioxin (HpCDD) which was detected in the fourth quarter 2007 sediment trap at 139 ng/kg. HpCDD was also detected in bedded sediments immediately upstream from the sediment trap deployment location at 1,070 ng/kg (sample H801). This is one of the highest concentrations of HpCDD detected in sediments at the Portland Harbor site and suggests that dioxins are a driver for cleanup in this area and that there may be a unique dioxin source in the vicinity of the RM 11E Project Area. Chemical analysis of sediment samples collected during the RM11E supplemental RI/FS investigation for chlorinated-dibenzo dioxins and furans (PCDD/PCDF) would facilitate evaluation of a protective remedy for RM 11E and potential dioxin sources.

Although EPA has identified 2,3,4,7,8-PeCDF as "RAL COC" (remedial action level contaminant of concern), this does not imply that EPA is only interested in this specific congener. EPA identified dioxin/furan TEQ as both a human health and ecological COC in a Portland Harbor Feasibility Study meeting with the Lower Willamette Group on November 13, 2013. **While the RAL COCs will be used**

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in the Portland Harbor Feasibility Study (FS) for developing sediment area/volume and cost estimates, evaluation of all human health and ecological COCs will also be required to ensure that the remedy meets remedial action objectives (RAOs) for the Portland Harbor site. EPA has determined that analysis of PCDD/PCDF is required to:

- evaluate the extent of dioxin contamination associated with potential sources of HpCDD;
- estimate expected risk reduction during the evaluation of long-term effectiveness and permanence in the Portland Harbor Feasibility Study; and
- facilitate selection of the final remedy at the RM11E Project Area.

As a result, EPA directs the RM11E Group to conduct PCDD/PCDF analysis on all supplemental RI/FS solids matrices and also incorporate this information into the Draft Field Sampling and Data Report, Draft Implementability Study Report, and Draft Recontamination Assessment Report as appropriate.
Please let me know if you have any questions or concerns at (206) 553-1220 or via email at Sheldrake.sean@epa.gov.

Sincerely,

Sean Sheldrake, RPM

Cc:

Kristine Koch, EPA *via email only*
Chip Humphrey, EPA
Dan Hafley, DEQ
Lance Peterson, CDM

APPENDIX A3
SEDIMENT GRAB SAMPLING

From:	Dave Livesay
To:	Erin Carroll Hughes; Libby Smith
Subject:	FW: FIELD CHANGE REQUEST 001-11E
Date:	Friday, November 01, 2013 9:38:33 AM
Attachments:	FIELD CHANGE REQUEST 001.docx Fig 6-2 from Final_RM11E Work Plan_100313_Clean[1].pdf

---

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Thursday, October 31, 2013 2:04 PM
To: Dave Livesay; (Jackie.Wetzsteon@pacificorp.com)
Cc: Peterson, Lance
Subject: FW: FIELD CHANGE REQUEST 001-11E

Thanks Dave and Jackie for your time on the call this morning; this FCR is approved.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Dave Livesay [mailto:DLivesay@gsiws.com]
Sent: Thursday, October 31, 2013 10:07 AM
To: Sheldrake, Sean; Peterson, Lance
Cc: Erin Carroll Hughes; Libby Smith; Wetzsteon, Jackie; Paul Fuglevand
Subject: FIELD CHANGE REQUEST 001

Please find attached the FCR with an addendum that describes our call today. We are proceeding based on verbal approval this morning. Lance, will keep you informed this afternoon of our progress.

Dave

From:	Erin Carroll Hughes
To:	Sean Sheldrake (sheldrake.sean@epa.gov); Lance Peterson (PetersonLE@cdmsmith.com)
Cc:	Bill Ford; Dave Livesay; Dawn Sanders; Dennis Roznowski; Erin Carroll Hughes; Jackie Wetzsteon (Jackie.Wetzsteon@PacifiCorp.com); Jan Betz; Jason Conder; Jeff Dresser; Jeff Groy; Kathy Huibregtse; Kim Cox; Kirk Wilkinson; Libby Smith; Mary.Wiencke@PacifiCorp.com; Michelle Rosenthal; nanci.klinger@portlandoregon.gov; Paul Fuglevand; Rick Ernst; Russ Cepko; wells@tmw-law.com
Subject:	RM11E Fieldwork Summary: October 30th and 31st, 2013
Date:	Friday, November 01, 2013 3:58:36 PM
Attachments:	Tbl1_Sample_Tracking_Sheet_Oct28th.pdf Figure1_Proposed_vs_Actual_Sed_Samps.pdf 073_large rock.jpg 070_R2 rocks.jpg 079_R1 debris in jaws.jpg

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Sean and Lance,

I am writing to summarize the fieldwork activities conducted on October 30th and 31st, 2013.

As planned, we successfully collected all 12 surface sediment power-grab samples and the two five-point composite bank soil samples in the 'cove.' A summary of these samples is provided in the attached Table 1 and the 'actual' vs. 'proposed' sediment sampling locations are shown in the attached Figure 1. Note that the location of the bank samples have been staked and will be surveyed in as per the SAP.

As stated in the Field Change Request Form submitted by Dave Livesay on October 30, 2013, cobbles and gravels on the riverbed downstream of the Fremont Bridge prevented penetration and proper operation of the power-grab sampler. Attached are a couple photos illustrating some of the more difficult sampling conditions. At EPA's request, additional attempts were made to obtain samples RM11E-G068 and RM11E-G075 on October 31, 2013, and they were successfully collected approximately 50 feet upstream of their target locations, as instructed by EPA.

A gravelly substrate and debris were also encountered upstream of the Fremont Bridge, especially in the vicinity of RM11E-G079. But after seven attempts at this station, we succeeded in collecting an acceptable sample.

So, despite the challenging field conditions, we were successful in meeting our sampling objectives.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

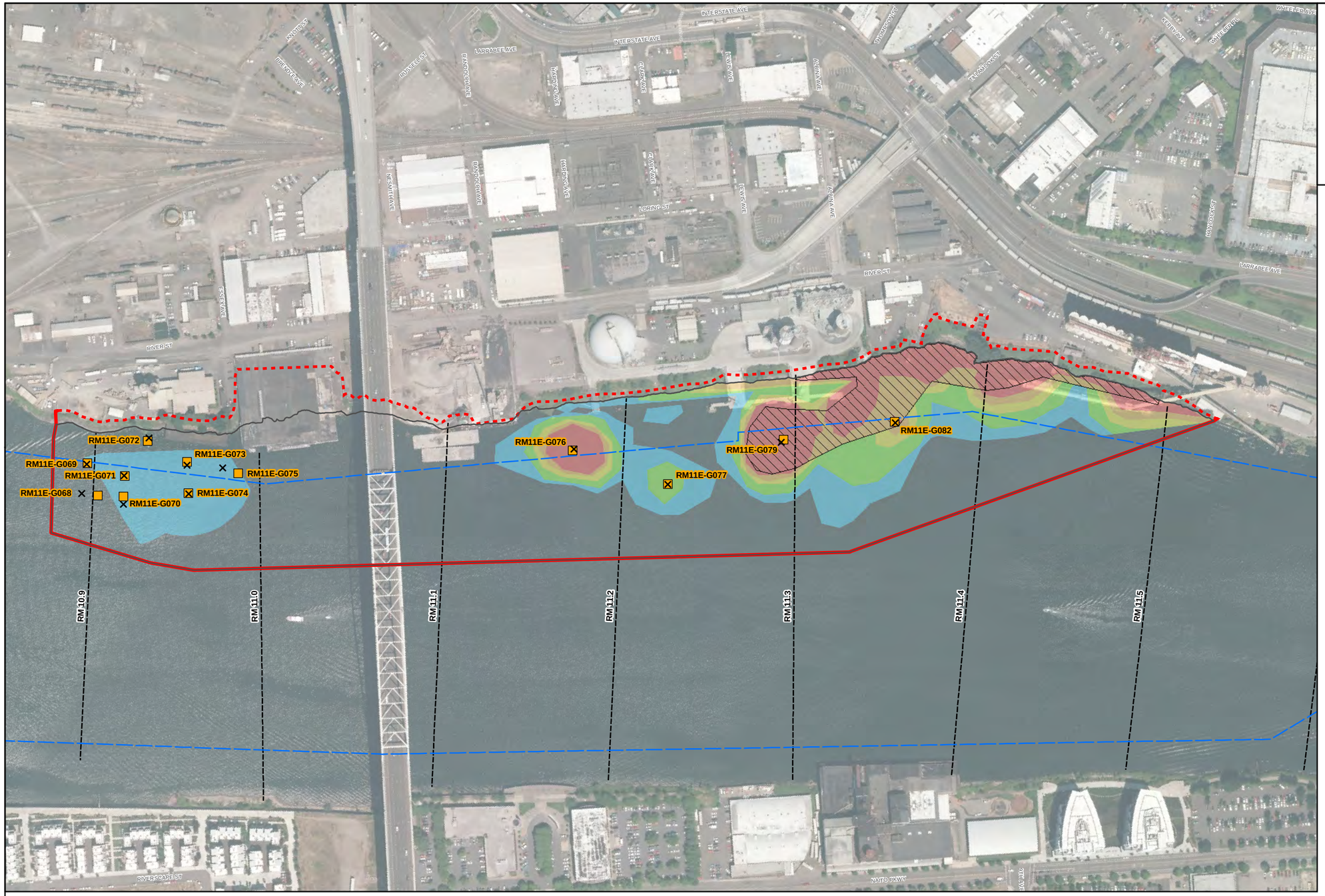
GSI Water Solutions, Inc.

Please note my new name and email (echughes@gsiws.com)

FIGURE 1
Proposed vs. Actual Sampling Locations

River Mile 11 East

Willamette River
Portland, Oregon



LEGEND

Actual Sample Location

- Surface Sediment, Power Grab

Proposed Sample Location

- Surface Sediment, Power Grab

Total PCBs in Surface Sediment (RAL Footprints)

- 75 - 200 ug/kg
- >200 - 500 ug/kg
- >500 - 750 ug/kg
- >750 - 1,000 ug/kg
- >1,000 ug/kg
- Comprehensive Benthic Risk Areas

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25
- U.S. Army Corps of Engineers Navigation Channel
- River Mile Tenth (RM)

MAP NOTES:

Date: November 1, 2013
AOPC = Area of Potential Concern
FS = Feasibility Study
RM = River Mile
PCB = Polychlorinated Biphenyl
1.The comprehensive benthic risk areas, and the AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
2. The breakdown of total PCB concentrations is consistent with each of the remedial alternatives (B through F) presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).

3. Source of existing sediment sample locations is LWG SCRA Combo database (dated July 7, 2009) and DPSC Field and Data Report (dated January 2009). Other sediment data might exist that are not included in the LWG SCRA Combo database or the DPSC Field and Data Report.

N

0 150 300
Feet

GSI Water Solutions, Inc.

File Path: P:\Portland\487-DOF\001-RM11E_RI_FS\Project_GIS\Project_mxds\Field\FigureX_Proposed_vs_Actual_Sed_Samps.mxd, Date: November 1, 2013 2:34:00 PM

FIELD CHANGE REQUEST (FCR) FORM
GSI Water Solutions, Inc.

Project Name: River Mile 11 East, Supplemental RI/FS Investigation

FCR Number: 001 **FCR Date: October 30, 2013**

Prepared for: Sean Sheldrake, EPA

Summary of Work Completed:

Conducted power grab sampling at the eight locations downstream of the Fremont Bridge on October 30, 2013. The status of sampling at end of day:

- Successful at the following five locations with no exceptions to SAP: GO-69, -71, -72, -73 and -74.
- Sample collected, but shallower than full target depth due to cobbles: GO70. Approx. 10 cm. depth.
- Refusal at two locations due to gravel and cobble: GO-68 and GO-75. Procedures described in SAP (three attempts) to collect samples were followed without success. A fourth attempt was made at GO-68 also without success.

Description of Proposed Modification:

We plan on moving sampling operations to upstream of the Fremont Bridge first thing in the morning (October 31, 2013) and collect sediment samples at GO-76, -77, -79 and -82. In addition, we will collect the two surface soil samples in the 'cove' area that are best accessed by boat.

Consistent with the descriptions of sediment from the Portland Harbor RI, and the results from today's work, the sediment in the area downstream of the Fremont Bridge is predominantly gravel and cobble. We would like to confer with EPA in the morning (October 31) to discuss the value in additional attempts to find fine-grained sediment near the target locations. It is our concern that the value is diminished as locations are moved from the original targets that were carefully considered by the RM 11E Group and the Agency review team. If EPA requests additional attempts to collect the remaining two samples below the Fremont Bridge, these can be

made toward the end of the day following successful completion of the upstream sediment and cove bank samples.

Reasons for Modification:

Cobbles and gravels in sediment at two target locations downstream of Fremont Bridge prevented penetration and proper operation of sampler.

Schedule Impacts:

None, providing all work can be completed tomorrow.

Submitted by:

Project Manager: _____ Date: October 30, 2013

Approved by:

EPA Representative: _____ Date:_____

Addendum:

A conference call was held the morning of 10/31 with Sean Sheldrake, Lance Paterson, Jackie Wetzsteon and Dave Livesay to discuss the content of this FCR. The group agreed to the approach outlined above with the following conditions:

- Attempts to collect samples at GO-68 and GO-75 will be made by moving up to 50 feet upstream and downstream of the target locations. We will not move toward the center of the channel.
- If samples cannot be collected today due to refusal or nightfall, alternate sampling techniques will be considered in the future (i.e. diver) pending an evaluation of the power grab sample results.

APPENDIX A4
DIVER-ASSITED SEDIMENT SAMPLING

Libby Smith

Subject: FW: SOP for Diver Collected Sediment Samples
Attachments: Transmittal of SOP for Dive Samples 12 5 2013.pdf

---

From: Sheldrake, Sean [mailto:sheldrake.sean@epa.gov]
Sent: Thursday, December 05, 2013 7:13 PM
To: (Jackie.Wetzsteon@pacificorp.com); Bill Ford (WFord@LATHROPGAGE.COM); Dave Livesay; Erin Carroll Hughes; Jeff Groy (Jeff.Groy@cbs.com); Kim Cox (Kim.Cox@portlandoregon.gov); Matt Wells (wells@tmw-law.com); Nanci Klinger (N.Klinger@portlandoregon.gov); Paul Fuglevand
Cc: Ader, Mark; Alex Liverman (liverman.alex@deq.state.or.us); allenmc@cdm.com; audiehuber@ctuir.com; bayuk.dana@deq.state.or.us; schwarz.bob@deq.state.or.us; brandy.humphreys@grandronde.org; callie@ridolfi.com; Conley, Alanna; Cora, Lori; cunninghame@gorge.net; Dan Hafley (HAFLEY.Dan@deq.state.or.us); erin.madden@gmail.com; Fuentes, Rene; Gail Fricano (gfricano@indecon.com); Genevieve Angle (Genevieve.Angle@noaa.gov); Humphrey, Chip; jd@williamsjohnsonlaw.com; Jen Kassakian (jkassakian@indecon.com); Jeremy_Buck@fws.gov; johnson.keith@deq.state.or.us; jweis@hk-law.com; Kristin Callahan; Koch, Kristine; Lance Peterson (PetersonLE@cdmsmith.com); matt@williamsjohnsonlaw.com; mcclincy.matt@deq.state.or.us; tosm@yakamafish-nsn.gov; Michael.karnosh@grandronde.org; Muza, Richard; Nancy.Munn@noaa.gov; peterson.Jennifer@deq.state.or.us; poulsen.mike@deq.state.or.us; Rachel DelVecchio (rdelvecchio@indecon.com); Robert.Neely@noaa.gov; rose@yakamafish-nsn.gov; ted_buerger@fws.gov; tomd@ctsi.nsn.us; Tom Gainer (gainer.tom@deq.state.or.us)
Subject: FW: SOP for Diver Collected Sediment Samples

Jackie, The attached transmittal is approved.

Thank you.

S

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor
http://www.epa.gov/region10/dive/

Like us on Facebook! https://www.facebook.com/EPADivers

From: Wetzsteon, Jackie [mailto:Jackie.Wetzsteon@pacificorp.com]
Sent: Thursday, December 05, 2013 10:26 AM
To: undisclosed-recipients@epamail.epa.gov
Subject: SOP for Diver Collected Sediment Samples

Sean – attached for your review and final approval is the SOP for Diver Collected Sediment Samples at the River Mile 11E Project Area.

I have been unable to determine why cc's are listed as undisclosed so here is the list of cc's that are receiving this e-mail.

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

825 NE Multnomah, 1500 LCT
Portland, OR 97232
phone (503) 813-5036

December 5, 2013

Via E-Mail

Sean Sheldrake
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 900
M/S ECL-115
Seattle, WA 98101
Sheldrake.sean@epa.gov

Re: Supplemental RI/FS Work at the River Mile 11E Project Area
Portland Harbor Superfund Site (PHSS)
Diver Collected Sediment Sample Collection Procedures

Dear Mr. Sheldrake,

Please find attached the Standard Operating Procedures (SOP) for Diver Collected Sediment Samples at the River Mile 11E Project Area for your review and final approval. The attached document reflects the input that you provided to Dave Livesay at GSI during your e-mail exchanges and discussions on December 4, 2013. This SOP supplements the River Mile 11 East Surface Sediment Sampling and Analysis Plan Addendum as Attachment 3 (*Appendix C of the Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11 East, Portland, Oregon, October 2013).*

The RM11E Group has been working under EPA's conditional approval of the Supplemental RI/FS Workplan since the receipt of your letter dated October 18, 2013. We have successfully worked through the conditions related to the installation of an additional groundwater monitoring well, a commitment to perform porewater monitoring, and the development of an acceptable Dive Safety Plan which was approved by you in your email dated November 15, 2013. The final condition requested in your November 15th email was to prepare this Diver Sediment Sampling SOP.

For the purpose of tracking deliverables as outlined in Table 10-1 of the Work Plan, the RM11E Group will use the date that we receive EPA's final approval of the attached document as the "Final Work Plan Approval Date" provided for in the Schedule of Project Deliverables. We will then prepare a project schedule for the various deliverables that are required under the workplan.

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Jacqueline Thiell Wetzsteon
RM11E Project Coordinator

Cc (via email):
River Mile 11E Respondents
AOC Notice Recipients (Paragraph 97.c through m)
Paul Fuglevand

Attachment 3 to River Mile 11E Sediment Sampling and Analysis Plan

Standard Operation Procedures for Diver-Collected Sediment Sampling

December 2013

Purpose

This sediment sampling standard operating procedures (SOP) document presents detailed descriptions of methodologies for divers to follow during collection of surface sediment samples for the River Mile 11E (RM11E) supplemental remedial investigation/feasibility study (RI/FS). The purpose of this document is to provide a clear set of protocols for the dive team to review and follow in order to ensure data of sufficient quality and consistency are collected to meet project objectives.

Pre-dive Briefing

- Review the Ballard Marine Construction (BMC) Dive, and Health and Safety Plans (HSP).
- Review this RM11E sediment sampling SOP with the dive team.
- Inspect the sampling equipment to ensure it will function properly.
- Verify that the diver has the required gear.
- Review the method to establish the sample location (below) and water depth on the river bed below the dock (such as measurement from pilings).

Sample Location

- Diver moves to the general sample location with care not to disturb the river bottom.
- GSI staff members onboard the research vessel, view the general sample location on video, looking for areas of soft sediment and minimal debris.
- GSI coordinates with the diver via com and video to direct the diver to a specific sample location.
- The sample location will be established by global positioning system (GPS). If GPS use is restricted due to over-water structures, the locations will be established by measurement off of fixed points (pilings).
- Sample locations will be maintained within 10 meters (approximately 30 feet) of the location identified in the Sediment Sampling and Analysis Plan (Sediment SAP).

Selection of Sampling Methods

GSI selects the sampling method for collecting the 30-centimeter (cm)-deep surface sediment sample based on the conditions encountered at the sample location. The sampling methods are:

- **Method A** (primary): Hand-pushed 2-inch-diameter Lexan (polycarbonate) tube with top and bottom caps
- **Method B** (secondary): 2-inch-inside-diameter (ID) steel drive sampler with Lexan liner
- **Method C** (tertiary): Manual collection using trowels to hand-dig sediment and transfer into sample jar

Surface Sediment Sampling Protocol

- After sample location is identified, GSI coordinates with the diver on the extent of removal of surface debris before sample collection, if required.
- GSI coordinates with the diver and talks through the sampling protocol during sample collection.
- Diver communicates measurements to establish the actual sample location; communicates water depth at the sample location; and records location/depth of both successful sample locations and unsuccessful sample locations.
- In the case of sampling refusal with the selected sampling method, GSI will coordinate with the diver to determine:
    - If there is an alternate sample location to attempt with the same sampling method
    - If removal of surface debris will facilitate sample collection
    - If the selected sampling method will not work at the location and if an alternate sampling method will be deployed
- The desired sample depth is 30 cm (12 inches) below the mudline, with a minimum acceptable penetration of 20 cm. If after three attempts of each technique (i.e. A, then B, then C) a 20-cm penetration cannot be attained because of refusal conditions, then the sample location may be adjusted through further consultation with the Project Manager (PM) or a sample as shallow as 10 cm penetration will be accepted.

Sampling Methodology

<u>Method A: Hand-Pushed Core</u>

1. The diver will identify the sample location by GPS coordinates. Identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance.
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. Diver will hand-drive the Lexan tube into the sediment to the appropriate depth to recover the sample. *(Should this method not be able to recover the sample at the appropriate depths, Method B or C will be used.)*
4. After the tube has reached full depth, the diver will dig along the side of the tube with a hand trowel and slip an end cap on the tube to retain the full contents.
5. Diver will pull the tube after the end cap has been placed and place a second cap on the top of the tube to ensure sample integrity after sample recovery
6. Diver will bring the sample to the surface and hand over to the GSI person on board the vessel for processing.

Method B: Mechanically Driven Core

1. The diver will identify the sample location by GPS coordinates. Identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance.
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. Diver will drive the steel drive sampler with Lexan liner into the sediment to recover the sample. *(Should this method not be able to recover the sample at the appropriate depths, Method C will be used.)*
4. The samplers are equipped with devices that retain the sediment in the tube and therefore do not require end capping prior to extraction.
5. Diver will pull the tube after it has reached the appropriate depth.
6. Caps will be placed on top and bottom of the sampler to ensure sample integrity after sample recovery.
7. Diver will bring the sample to the surface and hand it to GSI staff on the research vessel.

Method C: Hand Trowel

1. The diver will identify the sample location by GPS coordinates (identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance).
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. After the diver is in position, the diver will use a pre-cleaned trowel to recover the sediment to a 30-cm depth over an area large enough to ensure minimal material sloughing and representative sample collection from 0 to 30 cm depth and place it into a sterile glass jar.
4. The jar will be capped by the diver to ensure sample integrity.
5. Diver will bring the sample to the surface and hand it to GSI staff on the research vessel.

Sample Processing on Research Vessel

Samples will be visually inspected, logged and processed by GSI staff members in accordance with the methodology in the Sediment SAP.

'Conley, Alanna' <conley.alanna@epa.gov>; 'Alex Liverman (liverman.alex@deq.state.or.us)'; 'Audie Huber (audiehuber@ctuir.com)'; 'brandy.humphreys@grandronde.org'; 'Brian Cunninghame (cunninghame@gorge.net)'; 'callie@ridolfi.com'; 'Humphrey, Chip' <Humphrey.Chip@epa.gov>; 'Cora, Lori' <Cora.Lori@epa.gov>; 'Dan Hafley (HAFLEY.Dan@deq.state.or.us)'; 'Dana Bayuk (bayuk.dana@deq.state.or.us)'; 'Erin Madden (erin.madden@gmail.com)'; 'Gail Fricano (gfricano@indecon.com)'; 'Genevieve Angle (Genevieve.Angle@noaa.gov)'; 'JD Williams (jd@williamsjohnsonlaw.com)'; 'Jen Kassakian (jkassakian@indecon.com)'; 'peterson.Jennifer@deq.state.or.us'; 'Jeremy_Buck@fws.gov'; 'Julie Weis (jweis@hk-law.com)'; 'Keith Johnson (johnson.keith@deq.state.or.us)'; 'Kristin Callahan' <kristin@ridolfi.com>; 'Koch, Kristine' <Koch.Kristine@epa.gov>; 'Lance Peterson (PetersonLE@cdmsmith.com)'; 'Ader, Mark' <Ader.Mark@epa.gov>; 'Matt Johnson (matt@williamsjohnsonlaw.com)'; 'Matt McClincy (mcclincy.matt@deq.state.or.us)'; 'tosm@yakamafish-nsn.gov'; 'Michael.karnosh@grandronde.org'; 'poulsen.mike@deq.state.or.us'; 'Muza, Richard' <Muza.Richard@epa.gov>; 'Nancy Munn (Nancy.Munn@noaa.gov)'; 'Rachel DelVecchio (rdelvecchio@indecon.com)'; 'Robert.Neely@noaa.gov'; 'rose@yakamafish-nsn.gov'; 'schwarz.bob@deq.state.or.us'; 'Ted Buerger (ted_buerger@fws.gov)'; 'tomd@ctsi.nsn.us'; 'Tom Gainer (gainer.tom@deq.state.or.us)'; Paul Fuglevand <pfuglevand@dofnw.com>; Dave Livesay <DLivesay@gsiws.com>; Erin Carroll Hughes (EcHughes@gsiws.com); Libby Smith <LSmith@gsiws.com>; Matt Wells <wells@tmw-law.com>; Wiencke, Mary <Mary.Wiencke@pacificorp.com>; Jeff Dresser <jdresser@bridgeh2o.com>; Klinger, Nanci <Nanci.Klinger@portlandoregon.gov>; Betz, Jan <Jan.Betz@portlandoregon.gov>; Kim.Cox@portlandoregon.gov; Sanders, Dawn <Dawn.Sanders@portlandoregon.gov>; Russ P Cepko (Russ.Cepko@cbs.com); Groy, Jeff <Jeff.Groy@cbs.com>; Kathryn R. Huibregtse (khuibregtse@environcorp.com); Jason Conder (JConder@environcorp.com); Michelle Rosenthal <Michelle@verislawgroup.com>; Bryan Wigginton <bwigginton@calportland.com>; Rick Ernst <rick.ernst@hartcrowser.com>; Rosell, Jessica (LG) <JRosell@LATHROPGAGE.COM>; Ford, Bill (LG) <WFord@LATHROPGAGE.COM>; 'KIRK.WILKINSON@lw.com'; 'Roznowski, Denis M' <Denis.Roznowski@Foth.com>

Please do not hesitate to contact me if you have any questions.

Thank you,
Jackie

Jackie Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1500
Portland, OR 97232
(503) 813 5036 (work)
(503) 961 3955 (cell)

From:	Wetzsteon, Jackie
To:	undisclosed-recipients
Subject:	River Mile 11E Updates on the Draft Porewater SAP and the Diver Assisted Sampling Program
Date:	Thursday, April 17, 2014 4:24:34 PM
Attachments:	RM11E Group Response to EPA Comments on Porewater SAP 04172014.pdf SOP dive samples 12 3 13_Revised 041714_Clean.pdf SOP dive samples 12 3 13_Revised 041714_Redline.pdf

---

Hi Sean,

As we briefly discussed on the telephone today, I am transmitting several documents to you for your consideration.

Draft Porewater SAP

In anticipation of the conference call next Tuesday at 9 am between our technical teams, the RM11E Group has prepared a table that outlines our response to each of EPA's comments on the draft Porewater SAP that were transmitted to the group on April 3, 2014. The table is attached for your review and consideration and will serve as the basis for our discussion next Tuesday.

14-Day Notification of Diver Assisted Sampling Program

Based on updated shipping schedules from Glacier NW and Cargill, the optimum time to conduct the diver assisted sampling program is May 1-2, 2014. With this e-mail and in accordance with Paragraph 26c of the Administrative Settlement Agreement and Order on Consent , the RM11E Group is providing you with a 14-day notice of sampling program. We have received written confirmation from Ballard Marine Group that they are available on these dates.

Updated SOP for Diver Assisted Sediment Sample Collection

In order to allow for the collection of sufficient sediment sample volume to meet the modified analytical scheme that now includes dioxins/furans for some samples, the RM11E Group has modified the diver-assisted SOP to include a 4-inch diameter sampling device (vs. the 2-inch devices noted previously). A redline of the SOP as well as a clean version are attached for your information. Please let us know if you have any questions or concerns.

We look forward to our discussions with you next Tuesday about porewater and getting in the water to collect those sediment samples on May 1st.

Thanks so much,

Jackie

Jackie Wetzsteon
PacifiCorp
Strategic Policy and Environment
825 NE Multnomah, LCT 1500
Portland, OR 97232
(503) 813 5036 (work)
(503) 961 3955 (cell)

Attachment 1 to River Mile 11E Sediment Sampling and Analysis Plan

Standard Operation Procedures for Diver-Collected Sediment Sampling

December 2013 (Revised April 2014)

Purpose

This sediment sampling standard operating procedures (SOP) document presents detailed descriptions of methodologies for divers to follow during collection of surface sediment samples for the River Mile 11E (RM11E) supplemental remedial investigation/feasibility study (RI/FS). The purpose of this document is to provide a clear set of protocols for the dive team to review and follow in order to ensure data of sufficient quality and consistency are collected to meet project objectives.

Pre-dive Briefing

- Review the Ballard Marine Construction (BMC) Dive, and Health and Safety Plans (HSP).
- Review this RM11E sediment sampling SOP with the dive team.
- Inspect the sampling equipment to ensure it will function properly.
- Verify that the diver has the required gear.
- Review the method to establish the sample location (below) and water depth on the river bed.

Sample Location

- Diver moves to the general sample location with care not to disturb the river bottom.
- GSI staff members onboard the research vessel, view the general sample location on video, looking for areas of soft sediment and minimal debris.
- GSI coordinates with the diver via com and video to direct the diver to a specific sample location.
- The sample location will be established by global positioning system (GPS). If GPS use is restricted due to over-water structures, the locations will be established by measurement off of fixed points (pilings).
- Sample locations will be maintained within 10 meters (approximately 30 feet) of the location identified in the Sediment Sampling and Analysis Plan (Sediment SAP).

Selection of Sampling Methods

GSI selects the sampling method for collecting the 30-centimeter (cm)-deep surface sediment sample based on the conditions encountered at the sample location. The sampling methods are:

- **Method A** (primary): Hand-pushed 4-inch- diameter aluminum tubing with welded T-bar handle equipped with a 4-inch polycarbonate sleeve and a core catcher (see photo below).

- **Method B** (secondary): The same type of sampling equipment as Method A but without the T-bar handle such that a fence post type driver can be used advance the sampler into the sediment with greater force.
- **Method C** (tertiary): Manual collection using trowels to hand-dig sediment and transfer into sample jar.

Photo of 4-inch diameter aluminum tubing with
welded T-bar handle and core catcher (Method A).

Surface Sediment Sampling Protocol

- After sample location is identified, GSI coordinates with the diver on the extent of removal of surface debris before sample collection, if required.
- GSI coordinates with the diver and talks through the sampling protocol during sample collection.
- Diver communicates measurements to establish the actual sample location; water depth at the sample location will be obtained using a pneumofathometer; and GSI staff on-board the vessel will record the location/depth of both successful sample locations and unsuccessful sample locations.
- In the case of sampling refusal with the selected sampling method, GSI will coordinate with the diver to determine:
    - If there is an alternate sample location to attempt with the same sampling method
    - If removal of surface debris will facilitate sample collection
    - If the selected sampling method will not work at the location and if an alternate sampling method will be deployed
- The desired sample depth is 30 cm (12 inches) below the mudline, with a minimum acceptable penetration of 20 cm. If after three attempts of each technique (i.e. A, then B, then C) a 20-cm penetration cannot be attained because of refusal conditions, then the sample location may be adjusted through further consultation with the Project Manager (PM) or a sample as shallow as 10 cm penetration will be accepted.

Sampling Methodology

<u>Method A: Hand-Pushed Core</u>

1. The diver will identify the sample location by GPS coordinates. Identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance.
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. Diver will hand-drive the aluminum tube with the polycarbonate liner into the sediment to the appropriate depth to recover a 30 cm sample. *(Should this method not be able to recover the sample with at least 20 cm of recovery, Method B or C will be used.)*
4. After the tube has reached full depth, the diver will extract the sampler taking care to keep it oriented in a vertical position as he surfaces with the recovered sampler.
5. Diver will bring the sample to the surface and hand over to the GSI person on board the vessel for processing.

Method B: Mechanically Driven Core

1. The diver will identify the sample location by GPS coordinates. Identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance.
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. Diver will use the fence post type driver to advance the aluminum tube with the polycarbonate liner into the sediment to recover the sample. *(Should this method not be able to recover the sample at the appropriate depths, Method C will be used.)*
4. The samplers are equipped with core catchers that retain the sediment in the tube and therefore do not require end capping prior to extraction.
5. Diver will pull the tube after it has reached the appropriate depth taking care to keep it oriented in a vertical position as he surfaces with the recovered sampler.
6. Diver will bring the sample to the surface and hand it to GSI staff on the research vessel.

Method C: Hand Trowel

1. The diver will identify the sample location by GPS coordinates (identifying appropriate locations under structures may be difficult to ensure proper location, but should be possible to obtain within 30 feet tolerance).
2. Diver will move to the general sample location with care not to disturb the river bottom.
3. After the diver is in position, the diver will use a pre-cleaned trowel to recover the sediment to a 30-cm depth over an area large enough to ensure minimal material sloughing and representative sample collection from 0 to 30 cm depth and place it into a sterile glass jar.
4. The jar will be capped by the diver to ensure sample integrity.
5. Diver will bring the sample to the surface and hand it to GSI staff on the research vessel.

Sample Processing on Research Vessel

Samples will be visually inspected, logged and processed by GSI staff members in accordance with the methodology in the Sediment SAP.

APPENDIX B
MONITORING WELL DOCUMENTATION

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

APPENDIX B1
ACTUAL vs. TARGET MONITORING WELL LOCATIONS

Table B1
Actual vs. Target Monitoring Well Locations

Station ID	Proposed Station Coordinates[1]		Actual Station Coordinates[1]		Distance from Proposed to Actual Sample Location (ft)	Rationale for Moving Sample Station more than 30 feet
	Northing	Easting	Northing	Easting		
RM11E-MW001	689397.9	7644262.6	689361.1	7644323.0	70.7	Heavy traffic area with limited access. Moved monitoring well north to provide for safe drilling conditions and adequate protection of the completed well.
RM11E-MW002s	689205.1	7644632.7	689208.5	7644647.0	14.6	--
RM11E-MW003d	689205.1	7644632.7	689217.9	7644642.3	16.0	--
RM11E-MW004	688947.2	7644760.5	688981.0	7644765.3	34.1	Overhead obstructions at proposed location. Moved monitoring well north to provide for safe drilling conditions and avoidance of damage to overhead features.
RM11E-MW005	689930.6	7643612.2	689919.8	7643614.8	11.1	--

Notes:
[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.

FIGURE B1
Actual vs Target
Monitoring Well Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Supplemental RI/FS Monitoring Well

- Actual New Well (October, 2013)
- Target
- Existing Well[6]

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Only existing monitoring wells that were included in the Supplemental RI/FS groundwater monitoring efforts are included in this figure.

N

0 100 200
Feet

GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF\GIS\Project_mxds\FDR\FigureB1_ActualvsTarget_Monitoring_Wells.mxd

APPENDIX B2
MONITORING WELL CONSTRUCTION AND SOIL LOGS

Well Number: RM11E-MW001

Client: Dalton Olmsted and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 33.439'
Survey: 689361.119N--7644323.007E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-21/22-2013
ODWR Well Tag Number: L114004

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
				Ground Surface	34.0		
0	none	0%		0 to 5 feet: no recovery; borehole was airknifed to a depth of 5 feet on 11-18-13 to clear site for utilities	0.0 / 29.0		6-inch Diameter Borehole (0' to 40') Concrete (0' to 2') 0' to 5' interval--No PID/Gases
5	archive	90%		5 to 9 feet: soft, dark gray, moist, gravelly SILT (ML) with sand. Well-graded sand and gravel; gravel sub-rounded 3/4-inch minus; sands fine to medium. No odor (Fill)	5.0 / 25.0		2-Inch Sch.40 PVC Well Casing (0.5' to 37') 3/8-inch Bentonite Chips (2' to 14.8') 5' to 10' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
10	archive	90%		9 to 10 feet: soft, dark gray, moist to dry gravelly SAND (SM) with silt. Concrete construction debris, sub-rounded gravels 1-inch minus and well-graded fine to coarse sand. No odor (Fill)	9.0 / 24.0 / 10.0		
				10 to 12.5 feet: stiff, brown, gravelly SAND (ML)with sand. 3/4-inch gravels sub-rounded to sub-angular. Well-graded fine to medium gravel and well-graded fine to coarse sand. No odor (Fill)	21.5 / 12.5		
				12.5 to 15 feet: same as above except gravel and sand fraction is decreasing with depth (Fill)	19.0		10' to 15' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
15	archive	90%		15 to 17.5 feet: stiff to very stiff, brown, moist, clayey SILT (ML-CL) with trace fine gravel. Concrete and woody debris present with concrete chuncks 3-inch minus. Some light brown to yellowish-orange mottles. No odor (Fill)	15.0 / 16.5 / 17.5		Stainless Steel Centralizer 15' to 20' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				17.5 to 20 feet: same as above (ML-CL) except increasing concrete and metal construction debris with depth (Fill)	14.0		
20	archive	90%		**Analytical Sample: Unsaturated Fill (5' to 24')** 20 to 24 feet: Concrete throughout, no soil matrix (Fill)	20.0 / 10.0		2-Inch PVC 10-Slot Well Screen (17' to 32') 10/20 Silica Sand Filter Pack (14.8' to 33') 20' to 25' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0 Depth to Water: 23.50 on 11-25-13 (9.94' NAVD88)
25					24.0 / 9.0 / 25.0		

Well Number: RM11E-MW001

Client: Dalton Olmsted and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 33.439'
Survey: 689361.119N--7644323.007E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-21/22-2013
ODWR Well Tag Number: L114004

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
	archive	60%		24 to 25 feet: loose, light brown grading to dark gray, moist SAND (SW-SM). Poorly graded fine sand trrending to dark gray silt (Silt-Sand Alluvium)			2-Inch PVC 10-Slot Well Screen (17' to 32')
							10/20 Silica Sand Filter Pack (14.8 to 33')
				25 to 27.5 feet: loose, olive gray to dark gray, wet, clayey SAND (SC-SM) with silt. Poorly graded very fine to fine sand. No odor (Silt/Sand Alluvium)	6.5 27.5		25' to 30' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				Analytical Sample: Upper 5' Native Alluvium (24' to 29')	4.0		
30				27.5 to 30 feet: same as above (SC-SM) except with some woody debris consisting of twigs and sticks (Silt/Sand Alluvium)	30.0		
	archive	100%		30 to 31.5 feet: loose, olive gray to dark gray, moist, silty GRAVEL (GM) with fine sand. Well-graded cobbles 3-inch minus with some clay. Well-graded fine to medium gravel (Silt/Sand Alluvium)	2.5 31.5		Stainless Steel Centralizer
					0.5 33.5		30' to 35' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				31.5 to 33.5 feet: loose, olive gray to dark gray, moist, silty SAND (SM). Poorly-graded fine sand. No odor (Sand/Silt Alluvium)	-1.0 35.0		
35				33.5 to 35 feet: soft, light brown to yellowish-orange, wet, SILT (ML)coarsing downward to gravelly silt with some clay and chunks of weathered basalt. No odor (Sand/Silt Alluvium)			5-foot Sch.40 PVC Well Sump (32' to 37')
	none	100%					35' to 40' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				35 to 40 feet: loose, light brown to brown, wet sandy GRAVEL (GM) with silt and cobbles. Well-graded fine to coarse gravels 2 1/2-inch minus; sub-rounded. Well-graded fine to coarse sand. Cobbles 3 1/4 to 4-inches. No odor (Gravel Alluvium)	-6.0		3/8-inch Bentonite Chips (33' to 40')
40				End of Log	40.0		
45							
50							

Well Number: RM11E-MW002s

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.954
Survey: 689208.453N--7644646.99E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-20-2013
ODWR Well Tag Number: L114002

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth
				Ground Surface	36.3
0	none	0%		0 to 5 feet: no recovery; borehole was airknifed to a depth of 5 feet on 11-18-13 to clear site for utilities	0.0 / 31.3
5	archive	90%		5 to 10 feet: Soft, brown to dark brown gravelly SILT (ML) with sand and some clay. Some construction debris; bricks and concrete fragments. Some woody debris. No odor (Fill)	5.0 / 26.3
10	archive	85%		10 to 11 feet: no recovery	10.0 / 25.3
				11 to 12.5 feet: same as above (ML) but with a greater fraction of construction debris; large chunks of brick and concrete; moist (Fill)	11.0 / 23.8
				12.5 to 15 feet: soft, moist, light brown to yellowish-orange, sandy SILT (ML-MH) with some gravel and clay. Brick and concrete construction fragments and decomposed woody debris. Gravels sub-rounded 1-inch minus. (Fill)	12.5 / 21.3
15	archive	100%		15 to 17.5 feet: same as above (ML-MH) but with more brick debris and some dark gray sands from 15 feet to 15.5 feet (Fill)	15.0 / 18.8
				Composite Analytical Sample: Unsaturated Fill (5' to 20') 17.5 to 19.7 feet: same as above but with slightly less brick debris. Some concrete debris (Fill). Transition to native formation at approximately 19.7 feet	17.5 / 16.6
20	archive	100%		19.7 to 22.5 feet: medium stiff to stiff, olive gray to dark gray, moist, SILT (ML-CL) with some clay and trace organics; fine roots (Silt/Sand Alluvium)	19.7 / 13.8
				Composite Analytical Sample: Upper 5' of native alluvium (20' to 25') 22.5 to 25 feet: same as above (ML-CL) with light brown to yellowish-orange mottles from 23 feet to 25 feet; soft to medium stiff (S/S	22.5 / 11.3
25					25.0

Well Construction Notes and Field Observations

- 6-inch Diameter Borehole (0' to 43')
- Concrete (0' to 2')
- 0' to 5' interval--No PID/Gases
- 2-Inch Sch.40 PVC Well Casing (0.5' to 42.5')
- 3/8-inch Bentonite Chips (2' to 15.5')
- 5' to 10' interval: PID = 0.4 ppm LEL/CO/H2S = 0.0
- 10' to 15' interval: PID = 0.1 ppm LEL/CO/H2S = 0.0
- Stainless Steel Centralizer
- 15' to 20' interval: PID = 0.2 ppm LEL/CO/H2S = 0.0
- 2-Inch PVC 10-Slot Well Screen (17.5' to 37.5')
- 10/20 Silica Sand Filter Pack (15.5' to 39')
- Depth to Water: 21.12' on 11-25-13 (14.83' NAVD88)
- 20' to 25' interval: PID = 0.2 ppm LEL/CO/H2S = 0.0

Well Number: RM11E-MW002s

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.954
Survey: 689208.453N--7644646.99E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-20-2013
ODWR Well Tag Number: L114002

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth
	archive	100%		25 to 27.5 feet: same as above (ML-CL) except with increased mottling with some light brown to yellowish-orange; some gray mottling.Soft, moist, some fine roots (Sand/Silt Alluvium)	8.8
				27.5 to 30 feet: same as above (ML-CL) except little to no mottling present (Silt/Sand Alluvium)	27.5 / 6.3
30	none	100%		30 to 32.5 feet: same as above (ML-CL) except soft to medium stiff. Some woody debris (Silt/Sand Alluvium)	30.0 / 3.8
				32.5 to 35 feet: same as above (ML-CL). Fine root hairs and woody debris at 34.6 feet (Sand/Silt Alluvium)	32.5 / 1.3
35	none	100%		35 to 37.5 feet: same as above (ML-CL) with large chunk of woody debris at 36.4 feet. Trace fine roots (Silt/Sand Alluvium)	35.0 / -1.2
40	none	100%		37.5 to 43 feet: same as above (ML-CL) with trace woody debris and fine root hairs 40 to 43 feet (Silt/Sand Alluvium)	37.5 / -6.7
				End of Log	43.0
45					
50					

Well Construction Notes and Field Observations

- 2-Inch PVC 10-Slot Well Screen (17.5 to 37.5')
- 10/20 Silica Sand Filter Pack (15.5' to 39')
- 25' to 30' interval: PID = 0.1 ppm LEL/CO/H2S = 0.0
- 30' to 35' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- 35' to 40' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- Stainless Steel Centralizer
- 5-Foot Sch.40 PVC Well Sump (37.5' to 42.5')
- 3/8-inch Bentonite Chips (39' to 43')
- 40' to 43' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0

Well Number: RM11E-MW003d

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.63
Survey: 689217.885N--7644642.318E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen/Erin Hughes-GSI
Start/Finish Date: 11-19/20-2013
ODWR Well Tag Number: L114001

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
				Ground Surface	36.1		
0	none	0%		0 to 5 feet: no recovery; borehole was airknifed to a depth of 5 feet on 11-18-13 to clear site for utilities	0.0 / 31.1		6-inch Diameter Borehole (0' to 106') Concrete (0' to 2') 0' to 5' interval–No PID/Gases
5	archive	50%		5 to 7.5 feet: poor recovery	5.0 / 28.6		2-inch Sch.40 PVC Well Casing (0.5' to 105') 3/8-inch Bentonite Chips (2' to 31')
				7.5 to 9 feet: soft, dark brown, dry SILT (ML) with chunks of asphalt and angular brick fragments. No organics or odors (Fill)	7.5 / 27.1		5' to 10' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				9 to 10 feet: solely construction debris with broken-up asphalt and concrete with dry powdered or pulverized cement (Fill)	9.0 / 26.1		
10	archive	90%		10.5 to 11.5 feet: medium stiff SILT (ML) with gravel and construction fragments (Fill)	10.0 / 24.6		
				11.5 to 13 feet: dry cement powder with suspended chunks of concrete (Fill)	11.5 / 23.1		
				13 to 18 feet: loose, gray, dry, concrete with gravel and sand. Gravels to 1-inch minus are coated with cement powder (Fill)	13.0 / 21.1		10' to 15' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
15	archive	100%		**Composite Analytical Sample: Unsaturated Fill (5' to 18.7') (Archive)**	15.0 / 18.1		15' to 20' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				18 to 18.7 feet: soft, light brown, moist, silty GRAVEL (GM) with some fine sand and clay. Gravels sub-rounded to 2-inch minus. Gravels compose up to 20% of the soil matrix (Fill-transition to native alluvium)	18.0 / 16.1		
20	archive	70%		18.7 to 20 feet: soft to slightly firm, dark gray SILT (ML) with some clay. Trace woody debris (Silt/Sand Alluvium)	20.0		
				Composite Analytical Sample: Upper 5' of Native Alluvium (18.7' to 23.7') (Archive)	12.6		20' to 25' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				20 to 23.5 feet: same as above with trace (~ 1%) gravel. Gravels sub-rounded to 1-inch minus (Silt/Sand Alluvium)	23.5		
25							

Well Number: RM11E-MW003d

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.63
Survey: 689217.885N--7644642.318E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen/Erin Hughes-GSI
Start/Finish Date: 11-19/20-2013
ODWR Well Tag Number: L114001

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
	archive	100%		23.5 to 30 feet: soft, olive gray, moist SILT (ML) with trace clay. Light brown to yellowish orange mottles. Medium plasticity with no apparent structure. No odor (Silt/Sand Alluvium)			25' to 30' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
30					6.1		2-inch Sch.40 PVC Well Casing (0.5' to 105')
	archive	100%		30 to 35 feet: soft to medium stiff, olive gray, moist SILT (ML-CL) with some clay. No mottling apparent. Woody and organic debris at 31.5'bgs and wood and leaves at 32.2' and 34.4'bgs (Silt/Sand Alluvium)	30.0		Top of Concrete Grout (31' to 84') 30' to 35' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
35					1.1		
	none	100%		35 to 40 feet: same as above (ML-CL); organic debris at 36'bgs. No mottling or odor (Silt/Sand Alluvium)	35.0		35' to 40' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
40					-3.9		
	none	100%		40 to 45 feet: soft to medium stiff, olive gray, moist SILT (ML) with some clay and organics. Woody debris and trace fine sand. Moisture higher from 40' to 41'. Woody debris present at 41.4', 42.2', 42.5', 43.5', and 44'bgs. Diatom shell fragment at 44.5' (Silt/Sand Alluvium)	40.0		40' to 45' interval: PID = 0.0 ppm LEL/CO?H2S = 0.0
45					-8.9		
	none	100%		45 to 50 feet: same as above (ML) with woody debris at 45.6', 47.7', 48', 49.2', and 49.7'. No odor (Silt/Sand Alluvium)	45.0		45' to 50' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0 Stainless Steel Centralizer
50					-13.9 50.0		

Well Number: RM11E-MW003d

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.63
Survey: 689217.885N--7644642.318E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen/Erin Hughes-GSI
Start/Finish Date: 11-19/20-2013
ODWR Well Tag Number: L114001

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
	none	100%		50 to 55 feet: soft to medium stiff, olive gray to greenish gray, moist SILT (ML-CL) with some clay and organics. Woody debris at 51.3', 51.9', 52.3', and 54'bgs. Density increasing with depth. No odor (Silt/Sand Alluvium)	-18.9		50' to 55' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
55	none	100%		55 to 60 feet: loose, olive gray, moist SILT (ML) with trace organics; fine root hairs. Cobble up to 3-inch minus at 57.8'. No odor (Silt/Sand Alluvium)	55.0 -23.9		2-Inch Sch.40 PVC Well Casing (0.5' to 105') Concrete Grout (31' to 84') 55' to 60' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
60	none	100%		60 to 65 feet: same as above (ML) (Silt/Sand Alluvium)	60.0 -28.9		60' to 65' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
65	none	90%		65 to 70 feet: soft to medium stiff, light gray to olive gray SILT (ML) with some clay and trace gravels up to 1/8-inch minus (Silt/Sand Alluvium)	65.0 -33.9		65' to 70' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
70	none	90%		70 to 73.5 feet: soft to medium stiff, light gray to olive gray SILT (ML) with some fine to medium sand and trace sub-rounded gravels to 3/4-inch minus (5 to 10%). Sand and gravel fraction increasing with depth. Loose, soft, and wet at 70' (Silt/Sand Alluvium)	70.0 -37.4		70' to 75' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
75				73.5 to 76 feet: very soft to soft, very soft, light to olive gray, wet SILT (ML) with some fine to coarse sand and sub-rounded gravel up to 3/4-inch minus (Silt/Sand Alluvium)	73.5		

Well Number: RM11E-MW003d

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.63
Survey: 689217.885N--7644642.318E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen/Erin Hughes-GSI
Start/Finish Date: 11-19/20-2013
ODWR Well Tag Number: L114001

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
					-39.9		
	none	70%		76 to 86 feet: loose, dark gray, wet SAND (SP); poorly graded with trace sub-rounded gravels to 1-inch minus. Sands fine to medium with trace (~1%) cobbles 3-inch minus (Troutdale Formation Sands)	76.0		75' to 80' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
80							2-Inch Sch.40 PVC Well Casing (0.5' to 105')
	none	70%					80' to 85' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
							Bottom of Concrete Grout (31' to 84')
85					-49.9		3/8-inch Bentonite Chips (84' to 88')
	none	100%		86 to 96 feet: loose, dark gray, wet SAND (SP) with trace sub-rounded gravel to 3/4-inch minus. Poorly graded fine to medium sand. Mica flakes. No odor (Troutdale Formation Sands)	86.0		85' to 90' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
							Stainless Steel Centralizer
90							2-Inch PVC 10-Slot Well Screen (90' to 100')
							10/20 Silica Sand Filter Pack (88' to 101')
	none	100%					90' to 95' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
95					-59.9		
	none	100%		96 to 101 feet: same as above (SP)	96.0		95' to 100' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
100							

Well Number: RM11E-MW003d

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.63
Survey: 689217.885N--7644642.318E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen/Erin Hughes-GSI
Start/Finish Date: 11-19/20-2013
ODWR Well Tag Number: L114001

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
	none	100%		101 to 103.5 feet: same as above (SP) except sand is increasingly coarse with depth. Gravels and soil density also increasing with depth (Troutdale Formation Sands)	-64.9 101.0 -67.4		Stainless Steel Centralizer 5-Foot Sch.40 PVC Well Sump (100' to 105') Concrete/Bentonite Mix (101' to 106')
105				103.5 to 106 feet: medium dense to dense, olive gray to dark gray, moist GRAVEL (GM-GW) with silt and sand. Gravels are well graded and iron stained and cemented in a silt/sand matrix. Gravels well graded and rounded to sub-rounded to 2-inch minus. Well graded sand is fine to coarse. No odor (Troutdale Formation Gravels)	103.5 -69.9 106.0		100' to 106' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
				End of Log			
110							
115							
120							
125							

Well Number: RM11E-MW004

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.911
Survey: 688981.017D--7644765.277E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-21-2013
ODWR Well Tag Number: L114003

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth
				Ground Surface	36.6
0	none	0%		0 to 5 feet: no recovery; borehole was airknifed to a depth of 5 feet on 11-18-13 to clear site for utilities	0.0 / 31.6
5	archive	100%		5 to 7.5 feet: stiff, light brown to brown, moist to dry SILT (ML-CL) with some clay and occasional gravel. Some brick, concrete, and woody construction debris. Gravels fine, sub-rounded to sub-angular (Fill)	5.0 / 29.1
				7.5 to 10 feet: stiff, light brown/brown to olive gray, moist SILT (ML-CL) with some clay and gravel. Gravel 3/4-inch minus, 5 to 10% sub-rounded. Increasing construction debris; highly-weathered brick, wood (Fill)	7.5 / 26.6
10	archive	100%		10 to 12.5 feet: same as above (ML-CL); gravel less abundant and 1-inch minus.Woody debris and vitrified glass(?).Color transitioning to olive/dark gray (Fill)	10.0 / 24.1
				12.5 to 15 feet: same as above (ML-CL) with trace chunks of wood and clinker (Fill)	12.5 / 21.6
15	archive	100%		15 to 20 feet: same as above (ML-CL). Increase in construction debris at 17.5 feet; chunks of 3-inch minus angular concrete (Fill)	15.0 / 16.6
20	archive	100%		20 to 22.5 feet: soft, dark gray, moist SILT (OL-OH) with lots of organics and some clay trace concrete and trace fine to medium sand (Fill)	20.0 / 14.1
				Composite Analytical Sample: Unsaturated Fill (5' to 24')	22.5 / 13.0
				22.5 to 23.6 feet: same as above (OL-OH) except no concrete debris apparent (Fill)	23.6 / 11.6
25					25.0

Well Construction

Well Construction Notes and Field Observations

- 6-inch Diameter Borehole (0' to 41')
- Concrete (0' to 2')
- 0' to 5' interval--No PID/Gases
- 2-Inch Sch.40 PVC Well Casing (0.5' to 40')
- 3/8-inch Bentonite Chips (2' to 18')
- 5' to 10' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- 10' to 15' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- 15' to 20' interval: PID = 0.1 ppm LEL/CO/H2S = 0.0
- Stainless Steel Centralizer
- 2-Inch PVC 10-Slot Well Screen (20' to 35')
- 10/20 Silica Sand Filter Pack (18' to 36')
- 20' to 25' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- Depth to Water: 24.02' on 11-25-13 (11.89' NAVD88)

Well Number: RM11E-MW004

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.911
Survey: 688981.017D--7644765.277E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-21-2013
ODWR Well Tag Number: L114003

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth
	archive	100%		23.6 to 25 feet: very stiff, dark gray, moist SILT (ML) with some woody debris. Transition to native formation (Silt/Sand Alluvium) 25 to 27.5 feet: stiff, light brown to yellowish-orange SILT (ML) with trace orange mottles (Silt/Sand Alluvium) **Composite Analytical Sample: Upper 5' of native alluvium (24' to 29') (Duplicate also collected)**	9.1 27.5
30				27.5 to 30 feet: same as above (ML) except no mottling apparent. Moist to wet. No odor (Silt/Sand Alluvium)	6.6 30.0
	archive	100%		30 to 32.5 feet: same as above (ML) except with increasing proportion of sand; fine to medium. No odor (Sand/Silt Alluvium) 32.5 to 35 feet: loose, light brown to brown, moist to wet silty SAND (SM).Well-graded fine to very fine sand becoming fine to medium with depth (Silt/Sand Alluvium)	4.1 32.5
35				35 to 37.5 feet: very loose to loose, light brown to brown, wet silty SAND (SM). Well-graded very fine to fine sand. No odor (Sand/Silt Alluvium)	1.6 35.0
	none	100%		37.5 to 41 feet: soft to very soft, light brown to brown, wet SILT (ML) with trace fine sand (Sand/Silt Alluvium)	-0.9 37.5
40				End of Log	-4.4 41.0
45					
50					

Well Construction Notes and Field Observations

- 2-Inch PVC 10-Slot Well Screen (20' to 35')
- 10/20 Silica Sand Filter Pack (16' to 36')
- 25' to 30' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- 30' to 35' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- Stainless Steel Centralizer
- 5-foot Sch.40 PVC Well Sump (35' to 40')
- 3/8-inch Bentonite Chips (36' to 41')
- 35' to 40' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0

Well Number: RM11E-MW005

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.02
Survey: 689919.811N--7643614.754E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-22-2013
ODWR Well Tag Number: L114005

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth	Well Construction	Well Construction Notes and Field Observations
				Ground Surface	35.5		
0	none	0%		0 to 5 feet: no recovery; borehole was airknifed to a depth of 5 feet on 11-18-13 to clear site for utilities	0.0 / 30.5		6-inch Diameter Borehole (0' to 37') Concrete (0' to 2') 0' to 5' Interval–No PID/Gases
5	archive	100%		5 to 9 feet: stiff to very stiff, dark gray, gravelly SILT (ML) with some sand. Some wood debris and construction materials; concrete, brick, metal, and rebar. Well-graded gravel; medium to coarse sand. No odor (Fill)	5.0 / 26.5		2-Inch Sch.40 PVC Well Casing (0.5' to 36.5') 3/8-inch Bentonite Chips (2' to 14.5') 5' to 10' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
10	archive	100%		9 to 10 feet: loose, dark gray, dry, sandy GRAVEL (GW-GM) with silt. Some construction debris; gravels sub-rounded 11/2-inch minus; medium to coarse sand. No odor (Fill)	9.0 / 25.5 / 10.0		
				10 to 12.5 feet: stiff to very stiff, olive gray to greenish gray, dry, clayey SILT (ML-CL) with trace light brown mottles. Trace glass with some wood and brick debris. No odor (Fill)	23.0 / 12.5		
				12.5 to 15 feet: same as above (ML-CL) except no construction debris. Trace gravel (Fill)	20.5		10' to 15' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
15	archive	100%		15 to 19 feet: same as above (ML-CL). No odor (Fill)	15.0 / 16.5		Stainless Steel Centralizer 15' to 20' interval: PID = 0.1 ppm LEL/CO/H2S = 0.0
20				19 to 20.5 feet: same as above (ML-CL) except abundant construction debris; concrete and metal wire (Fill)	19.0 / 15.0		2-Inch PVC 10-Slot Well Screen (16.5' to 31.5')
	archive	100%		**Composite Analytical Sample: Unsaturated Fill (5' to 21')** 20.5 to 21 feet: same as above (ML-CL) with wood debris (Fill)	20.5 / 13.0		10/20 Silica Sand Filter Pack (14.5' to 33')
25				**Composite Analytical Sample: Upper 5 feet of native alluvium (21' to 26')** 21 to 22.5 feet: soft, olive gray to greenish gray, moist, clayey SILT (ML-CL) with some woody debris. Transition to native formation	22.5 / 10.5 / 25.0		20' to 25' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0

Well Number: RM11E-MW005

Client: Dalton, Olmsted, and Fuglevand
Project: River Mile 11 East (RM11E)
Location: Portland, Oregon
Project Number: 0487.002.004
TOC Elevation (NAVD88): 35.02
Survey: 689919.811N--7643614.754E

Driller: Cascade Drilling, Clackamas, Oregon
Drilling Method: Sonic CS-500
Sampling Method: continuous plastic core sleeves
Logged by: Kenny Janssen-GSI
Start/Finish Date: 11-22-2013
ODWR Well Tag Number: L114005

Depth (ft)	Sample Info: Sample Type	Sample Info: Recovery	Soils and Formations	Soil Description Log	Elev/Depth
	archive	60%		22.5 to 25 feet: loose, olive gray to dark gray, moist, silty fine SAND (SM) with some clay. Some woody debris. No odor (Silt/Sand Alluvium) 25 to 30 feet: same as above (SM) except silt and clay fines increasing with depth. Moist, no odor (Silt/Sand Alluvium)	5.5
30	archive	90%		30 to 33.5 feet: soft, dark gray, wet, sandy SILT (ML) with some sand and woody debris; sticks and roots. Sand is poorly graded fine to very fine and decreasing with depth and grading to silt. No odor (Silt/Sand Alluvium)	30.0 2.0
35				33.5 to 37 feet: loose, olive gray, wet, sandy GRAVEL (GM) with silt and cobbles. Well-graded fine to coarse sub-rounded gravel up to 3-inch minus; well-graded fine to coarse sand; cobbles to 41/2-inch minus. No odor (Gravel Alluvium)	33.5 -1.5
				End of Log	37.0
40					
45					
50					

Well Construction Notes and Field Observations

- Depth to Water: 25.51' on 11-25-13 (9.51' NAVD88)
- 2-Inch PVC 10-Slot Well Screen (16.5' to 31.5')
- 10/20 Silica Sand Filter Pack (14.5' to 33')
- 25' to 30' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- Stainless Steel Centralizer
- 30' to 35' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0
- 5-foot Sch.40 PVC Well Sump (31.5 to 36.5')
- 3/8-inch Bentonite Chips (33' to 37')
- 35' to 40' interval: PID = 0.0 ppm LEL/CO/H2S = 0.0

APPENDIX B3
MONITORING WELL SOIL BORING PHOTOGRAPHS

5-11.5'

6' 7' 8'

8' 9'

9' 10'

11'

11.5-19.5'

12' 13'

14' 15'

16' 17'

18' 19'

18.5-25'

19' 20'

21'

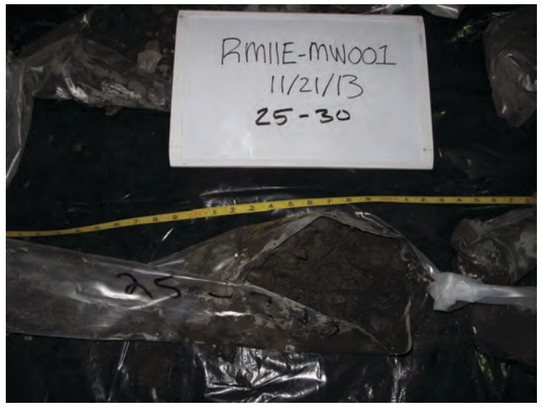
22' 23' 24' 25'

Fill: 0 to 24'
Upper Alluvium: 24 to 35'
Lower Alluvium: 35 to 40'

RM11E-MW001
November 21-22, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

26-33.5'



26' — 27' — 28' — 28' — 29' — 30' — 30' — 31' — 32' — 33'

33-39.5'

33' — 34' — 35' — 36' — 37' — 37' — 38' — 38' — 39'

39-40'

39' — 40'

Fill: 0 to 24'
Upper Alluvium: 24 to 35'
Lower Alluvium: 35 to 40'

RM11E-MW001
November 21-22, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

5-12.5’

5’ 6’ 7’ 8’ 9’ 10’ 12’

12.5-19’

13’ 14’ 15’ 16’ 17’ 18’ 19’

18.5-24’

19’ 20’ 21’ 23’ 24’

Fill: 0 to19.7’

Upper Alluvium: 19.7 to 43’

RM11E-MW002s
November 20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

23.5-30.5'

24' 25' 26' 27' 28' 29' 29' 30'

30.5-38'

31' 32' 33' 34' 35' 36' 37' 38'

38-43'

38' 39' 40' 41' 42'

Fill: 0 to19.7'

Upper Alluvium: 19.7 to 43'

RM11E-MW002s
November 20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

5-10.5'

6' 7'

7' 8'

8' 9'

10'

10.5-18'

11' 12'

13' 14'

14' 15' 16'

17' 18'

18-23.5'

18' 19'

20' 21'

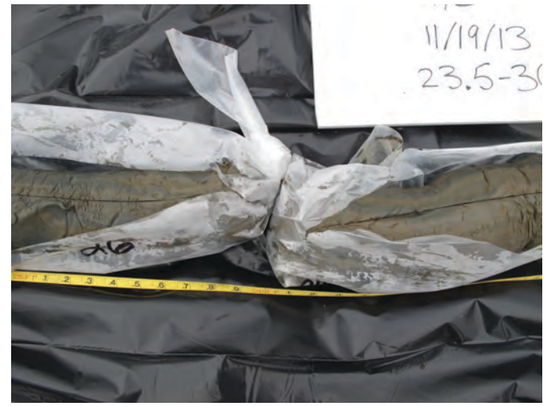
22' 23'

- Fill: 0 to 18.7'
- Upper Alluvium: 18.7 to 76'
- Troutdale Sands: 76 to 103.5'
- Troutdale Gravel: 103.5 to 106'

RM11E-MW003d
November 19-20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

23.5-30'



24' 25' 26' 27' 27' 28' 29' 30'

30.5-36.5'

31' 32' 33' 34' 35' 36'

36-40'

36' 37' 38' 39' 39' 40'

- Fill: 0 to 18.7'
- Upper Alluvium: 18.7 to 76'
- Troutdale Sands: 76 to 103.5'
- Troutdale Gravel: 103.5 to 106'

RM11E-MW003d
November 19-20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

40-48'

40' 41' 42' 43' 44' 45' 46' 46' 47' 48'

48-56.5'

48' 49' 50' 51' 52' 51' 52' 53' 54' 55' 56'

56-62.5'

56' 57' 58' 59' 60' 61' 62'

- Fill: 0 to 18.7'
- Upper Alluvium: 18.7 to 76'
- Troutdale Sands: 76 to 103.5'
- Troutdale Gravel: 103.5 to 106'

RM11E-MW003d
November 19-20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

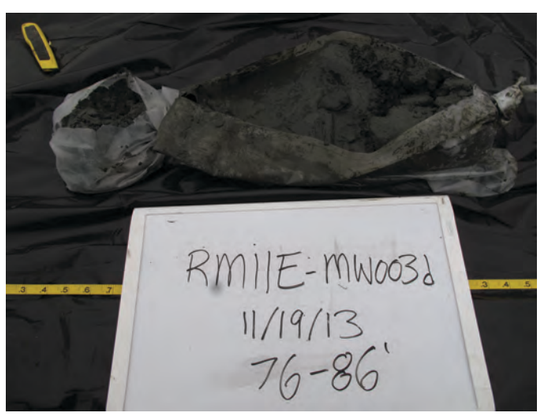
61.5-68'

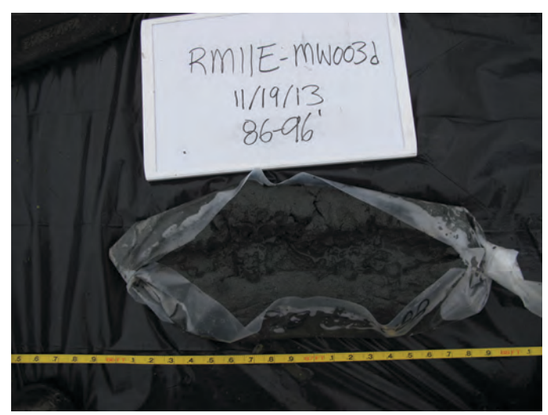
62' 63' 63' 64' 65' 64' 65' 66' 67' 68'

69-75.5'

69' 70' 71' 72' 73' 74' 75'

76-90'





76' 77' 78' 86' 87' 88' 89' 90'

- Fill: 0 to 18.7'
- Upper Alluvium: 18.7 to 76'
- Troutdale Sands: 76 to 103.5'
- Troutdale Gravel: 103.5 to 106'

RM11E-MW003d
November 19-20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

89.5-95.5'

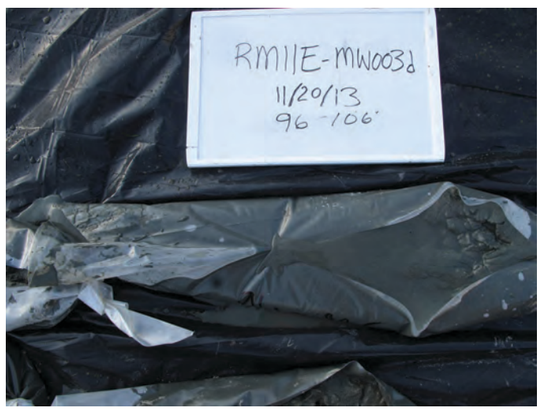
90' — 91'

91' — 92'

92' — 93'

94' — 95'

96-105.5'



96' — 97' — 98'

99' — 100' — 101'

101' — 102' — 103'

104' — 105'

- Fill: 0 to 18.7'
- Upper Alluvium: 18.7 to 76'
- Troutdale Sands: 76 to 103.5'
- Troutdale Gravel: 103.5 to 106'

RM11E-MW003d
November 19-20, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

5-11.5'

5' 6' 7' 8' 9' 10' 11'

11-18'

11' 12' 13' 14' 15' 15' 16' 17' 17' 18'

18.5-22'

18' 19' 19' 20' 20' 21' 22'

Fill: 0 to 23.6'
Upper Alluvium: 23.6 to 37.5'
Lower Alluvium: 37.5 to 41'

RM11E-MW004
November 21, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

21.5-26'

22' 23'

23' 24'

24' 25'

25' 26'

26.5-31.5'

27' 28'

28' 29'

29' 30'

31'

31.5-34.5'

32'

33' 34'

Fill: 0 to 23.6'

Upper Alluvium: 23.6 to 37.5'

Lower Alluvium: 37.5 to 41'

RM11E-MW004
November 21, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

5-12’

6’ 7’

7’ 8’

9’ 10’

11’ 12’

11.5-17’

12’ 13’

13’ 14’

14’ 15’

15’ 16’ 17’

17-25’

17’ 18’ 19’

19’ 20’

20’ 21’

Fill: 0 to 21’
Upper Alluvium: 21 to 35’
Lower Alluvium: 35 to 37’

RM11E-MW005
November 22, 2013

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

21.5-32.5'

22' 23' 27' 28' 29' 30' 31' 32'

33-37'

33' 34' 35' 36' 36' 37'

Fill: 0 to 21'
Upper Alluvium: 21 to 35'
Lower Alluvium: 35 to 37'

NOTE: Listed depths are approximate and correspond to measuring tape positioned parallel to the soil cores during logging

RM11E-MW005
November 22, 2013

APPENDIX B4
WELL SAMPLING FIELD LOGS

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 4/14/14

Project #: 0487.002.004 Field Team: P. Pellegrin T. Gorski E. Hughes Well I.D.: RM11E-MW001

Total Depth: (ft) ~ 37.10	(-) DTW: (ft) 20.55	Time 16.55 =	0.65 0.04 (X) 0.16 gal/ft	2.6 = Well Casing Volume:
Field Conditions: ~65°, light overcast, 0-2 S winds, recent dry period				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~22' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: NOTE: ~ Notation for total depth means reading is from previous measurement, this is done at all wells during groundwater sampling to minimize disturbance and turbidity issues in the well (typ.)

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (~~gpm~~ mL/m)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
11:55	Pump On Water to Bucket						240	Initial 20.55	240mL/min clear—colorless
12:14	1.0	15.9	552	3.68	6.00	108.9		20.70	C/C (0.86)
12:30	2.0	16.0	548	3.14	6.04	108.0		20.65	C/C (1.49)
12:35	2.24	16.0	548	3.07	6.06	107.3		20.65	C/C (1.11)
12:40	2.5	16.0	548	2.95	6.09	106.0	200	20.63	C/C (.95)
12:45	2.75	16.0	548	3.01	6.11	104.8	↑210	20.63	C/C (.43)
12:50	3.25	16.0	546	2.92	6.15	103.1		20.64	C/C (.33)
12:55	3.45	16.1	547	2.99	6.16	102.2		20.64	C/C (1.80)
:									
13:00	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 04 / 14 / 14		Time: 13 :00					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Preserv.	Ship Date	Analytical Method
RM11E-MW-001-0414		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4°C		General Chemistry
		1	250 ml	Amber glass	4°C		Ferrous Iron
		1	250 ml	Poly	4°C		Lab Filtered C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	4°C		Lab Filtered Dissolved Metals
		4 3	1 L	Amber glass	4°C		Pesticides/PCB PAH/SVOC/Phal.
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -0414)		3 2	40ml 40 ml	VOA VOA	HCL HCL	N/A	NWTPH-GX 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12/10/13

Project #: 0487.002.004 **Field Team:** E Hughes/P. Pellegrini-GSI **Well I.D.:** MW001

Total Depth: (ft) 37.10	(-) DTW: 23.09 (ft)	Time 15:50	14.01 =	(X) 0.16 gal\ft	2.2 = Well Casing Volume:
Field Conditions: ~32°, 2-5 mph S breeze, light snow — recent cold/wet					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

X	Purge Method ~~GeoPump II peristaltic~~ bailer
	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell after sampling

Comments/Exceptions to SAP: well was bailed dry on 12/9/13 by K. Jansen who removed approximately 4 gallons of water. Field measurements not collected prior to sampling

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
15:50	Pump On: Dedicated bailer							Initial 23.09	Initial water level
16:20		12.18	429	52.5%	6.45	92.0			DO/ORP may be impacted by bailing sampling method
16:22								31.95	ft bmp
:									
:									
:									
:									
:									
:									
:	Start Sampling 1600								Clear water
:	End Sampling 1620								Slightly cloudy water w/ yellow color

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 10 / 13		Time: 16 :00					
Sampling Method:	X	From: A VOC from dedicated polyethylene bailer					
		From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
RM11E-MW001-12-2013		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous
		1	250 ml	Poly	H_2SO_4		C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	HNO_3		Dissolved Metals
		3	1 L	Amber glass	4^0C		SVOCs, PCBs, Pesticides
		5 ~~3~~	40 ml	VOA	HCL		TPH-Gx and VOCs
Trip Blank ID (RM11E-TB——1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-06-13

Project #: 0487.002.004 **Field Team:** E. Hughes, P. Pellegrin **Well I.D.:** MW001

Total Depth: (ft) 37.10	(-) DTW: (ft) — Time	=	(X) 0.16 gal\ft	= Well Casing Volume:

Field Conditions: ~23°, light variable breeze(s), light snowing; recent wet

Decontamination: Alconox + tap wash; Tap rinse; DI rinse

PURGE INFORMATION

	Purge Method GeoPump II peristaltic
	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [/] YSI 556 Flow Cell

Comments/Exceptions to SAP: Note: After bailing well dry at 1258 the rate of recovery was observed for approximately 2-hours, recorded below.

Time	Purge Volume (gallons)	Temp (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft) Initial	Pump Speed/*Clarity/ Color/Remarks (NTU)
:	Pump On	TIME	WL'						
:		1258	36.55						
:		1300	36.25						
:		1304	36.0						
:		1320	35.16						
:		1342	34.0						
:		1402	33.0						
:		1423	32.0						
:		1501	30.70						
:	Start Sampling								
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: / /		Time: :					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
		From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous
		1	250 ml	Poly	H_2SO_4		C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	HNO_3		Dissolved Metals
		3	1 L	Amber glass	4^0C		Pesticides
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-4-13

Project #: 0487.002.004 **Field Team:** E. Hughes, P. Pellegrin **Well I.D.:** MW001

Total Depth: (ft) 37.10	(-) DTW: (ft) 22.48	Time	14.62 =	(X) 0.16 gal\ft	2.3g = Well Casing Volume:
Field Conditions: ~34°, clear, 0-3 SW breeze, recent wet					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~ 24' ↓ Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP:

TOS=17', BOS=32'

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate ~~(gpm)~~ mL/min	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
16:22	Pump On	Water to Bucket						Initial 22.48	VSC / colorless
16:37	1.0	12.6	492	0.89	6.69	53.8	250	26.55	0.75 (228) 1.0 (379)
16:56	1.5	11.5	502	0.74	6.52	54.6	210	27.65	(170) (148) 1.3g <RAN OUT>
12:34		Return to Well 12-6-13						22.48	Begun bailing
:		Purge with weighted bailer — gently surge along screen							
12:38	1.0	14.1	520	1.33	6.59	111.6	—	26.74	VC, brown
12:45	2.0	13.61	525	1.38	6.60	48.3	—	30.21	VC, brown
12:50	3.0	13.61	494	2.50	6.60	53.9	—	34.50	VC, brown
12:55	3.7	11.7	523	2.53	6.62	79.6	—	36.55	water level @ bottom
:	~~Start Sampling~~	No sample collected							
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: / /		Time: :					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
		From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
RM11E-MW001-12_2013		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous
		1	250 ml	Poly	H_2SO_4		C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	HNO_3		Dissolved Metals
		3	1 L	Amber glass	4^0C		Pesticides
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 04-15-14

Project #: 0487.002.004 **Field Team:** Mike Gorski, [illegible] **Well I.D.:** MW-002S

Total Depth: (ft)	~ 42.5	(-) DTW: (ft)	20.31	Time	22.19 =	0.65 0.04 (X) 0.16 gal/ft	3.5 = Well Casing Volume:

Field Conditions: ~45°, overcast, 0-3 S breeze; recent dry

Decontamination: Alconox + tap wash; Tap rinse; DI rinse

PURGE INFORMATION

- [x] Purge Method GeoPump II peristaltic
- [ ] Purge Method Rediflo 2 Submersible
- [ ] Refer to calibration log this date.

Pump Suction Depth(ft): ~27' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [x] YSI 556 Flow Cell

Comments/Exceptions to SAP: INITIAL PURGE RATE = 250 mL/MIN
LOWERED PURGE RATE #7, = 180 mL/MIN
(BLACK-INKY SLIME on TRANSDUCER SUSPENDED in WELL)

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
								Initial	
13:44	Pump On	14.9	1558	1.67	6.67	-88.9	250	20.31	SC, DARK PARTICLES. (13 NTU)
13:55	1.0	15.0	1670	1.02	6.46	-72.0	↓	22.71	SC, " (6.66 NTU)
14:00	1.5	14.9	1696	.59	6.52	-66.8	180	23.25	SC, ", (3.92 NTU)
14:26	2.8	15.0	1720	.39	6.59	-63.1		25.02	SC, ", (3.77 NTU)
14:31	3.0	15.1	1719	.36	6.61	-65.1		25.15	", "
14:36	3.15	15.1	1705	.34	6.62	-64.9		25.32	", "
14:41	3.30	15.0	1680	.34	6.63	-67.1		25.56	", "
14:46	3.49	15.2	1662	.32	6.63	-66.6		25.74	", " (3.96 NTU)
:									
1450 :	Start Sampling								Water noticeably yellow in sample bottles
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 04 / 15 / 14		Time: 14 : 50					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Preserv.	Ship Date	Analytical Method
RM11E-MW002S-0414		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous Iron
		(1)	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		(4) 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		(3)	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 02 -0414)		(3) 40ml	VOA	HCL			NWTPH-Gx 8260 B and 8260B SIM
		(2)	40 ml	VOA	HCL	N/A	
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-5-13

Project #: 0487.002.004 **Field Team:** EH, pperlegum **Well I.D.:** MW002S

Total Depth: (ft) ~ 42.5	(-) DTW: (ft) 20.90	Time	21.6 =	(X) 0.16 gal\ft	3.59 = Well Casing Volume:
Field Conditions: ~ 29°, clear, 0-4 NE breeze, recent wet					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~ 29.5' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: unable to control drawdown at slowest possible purge rate; waterlevel near pump maximum lift level.

TOS = 17.5', BOS 37.5'

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate ~~(gpm)~~ mL/min	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
11:55	Pump On	Water to Bucket						Initial 20.90	VSC, colorless (18.9) some bubbles
12:04	1.0	13.8	1355	1.51	6.50	-22.6	420	23.53	VSC, slightly yellow (20.5)
12:12	1.75	13.6	1394	1.14	6.49	-30.8	↓	24.65	VSC, SY, (13.2)
12:15	2.0	13.3	1353	1.01	6.50	-25.2	↓	25.00	clear/SY (9.15)
12:30	2.5	12.0	1296	0.71	6.50	-30.3	110	25.45	C/SY (8.37)
12:52	3.0	12.7	1292	0.48	6.50	-35.0		26.15	C/VSY (7.20)
13:06	3.5	12.9	1288	0.40	6.50	-37.7		26.79	C/VSY (6.98)
13:21	4.0	12.8	1264	0.36	6.48	-32.0		27.40	C/VSY (5.63)
13:38	4.5	12.8	1258	0.33	6.46	-29.8		28.18	C/VSY (4.38)
14:00	Start Sampling								(4.12)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 5 / 13		Time: 14 : 40					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Preserv.	Ship Date	Analytical Method
RM11E-MW002S-12-2013		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous
		(1)	250 ml	Poly	H_2SO_4		C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	HNO_3		Dissolved Metals
		(3)	1 L	Amber glass	4^0C		~~Pesticides~~
		(2) (3)	40 40 ml	VOA VOA	HCL HCL		NWTPH-Gx VOC
Trip Blank ID (RM11E-TB 01 -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 04-15-14

Project #: 0487.002.004 **Field Team:** pellegrin **Well I.D.:** MW-003d

Total Depth: (ft) ~105	(-) DTW: (ft) 22.87	Time 82.13 =	0.65 0.04 (X) 0.16 gal/ft	13:1 = Well Casing Volume:
Field Conditions: 65°, overcast, no winds; recent dry period.				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

	Purge Method GeoPump II peristaltic
X	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): ~92' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: Dedicated tubing used in all wells for groundwater monitoring (typ).

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
14:20	Pump On	Water to Bucket						Initial 22.87	Clear-colorless
14:34	3.0	14.9	338	0.99	5.90	-15.4	.2	22.95	C/C (3 min. pump stop at 1.5g closed vent on generator)
14:44	6.0	14.9	339	0.79	6.09	-33.8	.3	22.95	C/C (1.80)
14:56	9.0	14.9	337	0.63	6.22	-51.8	.25	22.95	C/C (1.81)
15:01	11	14.9	337	0.57	6.27	-47.9	↓	22.96	C/C (1.82)
15:06	12.2	14.9	336	0.53	6.31	-46.8	.24	22.95	C/C (1.42)
15:11	13.45	14.9	336	0.49	6.36	-48.9	|	22.95	C/C (1.66)
15:16	14.6	14.9	336	0.45	6.39	-51.2	|	22.95	C/C (1.43)
15:21	15.8	14.9	336	0.44	6.39	-52.8	|	22.94	C/C (1.44)
15:25	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 04 / 15 / 14		Time: 15 : 25					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW003-0414		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous Iron
		(1)	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		(4) 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		(3)	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 02 -0414)		(3) 2	40ML 40 ml	VOA VOA	HCL HCL	N/A	NWTPH-GX 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-5-13

Project #: 0487.002.004 **Field Team:** Pellegrin **Well I.D.:** MW003d

Total Depth: (ft) ~105	(-) DTW: (ft) 23.41	Time 81.59 =	(X) 0.16 gal\ft	13g = Well Casing Volume:
Field Conditions: ~29°, 0-4 NE breeze, clear, recent wet				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

[ ]	Purge Method GeoPump II peristaltic
[X]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~92' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP:

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
13:40	Pump On Water to Bucket							Initial 23.41	Silty brown — opaque At startup — clearing
13:48	3.0	14.3	334	0.24	7.00	-93.4	.4	24.00	VSC/colorless (67.0)
14:07	5.0	14.3	334	0.24	6.93	-90.0	.1	24.02	SC/colorless (60.0)
14:12	6.0	14.6	333	0.19	6.96	-96.2	.2	24.02	VSC/C (12.1)
14:23	8.0	14.6	333	0.16	6.96	-102.3	|	24.05	VSC/C (11.9)
14:30	9.0	14.6	334	0.16	6.96	-103.0	|	24.05	C/C (6.36)
14:39	10.5	14.6	334	0.12	6.94	-96.4	|	24.08	C/C (4.65)
14:44	11.5	14.6	334	0.12	6.94	-95.2	|	24.06	C/C (4.41)
14:49	12.2	14.6	334	0.11	6.94	-91.7	V	24.06	C/C (4.14)
14:50	Start Sampling								(4.62)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 5 / 13		Time: 14 : 50					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
RM11E-MW003d-12-2013		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous
		1	250 ml	Poly	H_2SO_4		C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	HNO_3		Dissolved Metals
		3	1 L	Amber glass	4^0C		~~Pesticides~~
		2 3	40ml 40 ml	VOA VOA	HCL HCL		NWTPH-Gx VOC
Trip Blank ID (RM11E-TB 01 -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 4/15/14

Project #: 0487.002.004 **Field Team:** EH, [illegible], JG **Well I.D.:** MW004

Total Depth: (ft)	(-) DTW: (ft)	Time	=	(X) gal/ft	= Well Casing Volume:
~40'	22.41'	17.59'		0.65 0.04 (X) 0.16	2.81 GAL

Field Conditions: CLOUDY, HIGH 60S

Decontamination: Alconox + tap wash; Tap rinse; DI rinse

PURGE INFORMATION

X	Purge Method GeoPump II peristaltic
	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): ≈ 25 ft Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: INITIAL PURGE RATE ≈ 410 ml/MIN

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate ~~(gpm)~~ mL/m	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
16:31	Pump On Water to Bucket						410	Initial 22.41	clear-colorless
16:42	1.0	14.9	560	.96	6.30	71.5		23.15	clear-colorless (1.49)
16:52	2.0	14.8	543	.49	6.30	66.6	340	23.35	CC (1.04 NTU)
17:02	3.0	14.8	535	.34	6.34	72.4		23.35	CC (.95 NTU)
17:07	3.4	14.9	532	.31	6.35	73.8		23.35	CC (.95 NTU)
17:12	4.0	14.8	531	.28	6.37	74.8		23.34	CC (.76 NTU)
17:17	4.48	14.7	530	.25	6.37	76.5		~~23.34~~	CC (.78 NTU)
17:22	4.81	14.6	530	.24	6.35	78.4		23.30	CC (.90 NTU)
:									SC
17:25	Start Sampling							23.33	
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 4 / 15 / 14		Time: 17 : 25					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW004-0414		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous Iron
		1	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		4 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 02 -0414)		3 2	40ml 40 ml	VOA VOA	HCL HCL	N/A	NWTPH-Gx 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-5-13

Project #: 0487.002.004 **Field Team:** Eth, Milligan **Well I.D.:** MW004

Total Depth: (ft) ~40'	(-) DTW: (ft) 23.48	Time	16.52 =	(X) 0.16 gal\ft	2.64 g = Well Casing Volume:
Field Conditions: ~28°, clear, 0-4 NE breeze, ground wet					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

X	Purge Method GeoPump II peristaltic
	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): ~25' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: TEMP or doc to dropping air temp.

TOS = 20' BOS = 35'

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
								Initial 23.48	
16:06	Pump On water to bucket								Clear & Colorless (1.87)
16:12	0.5	12.3	472	1.55	7.15	46.1	-	23.88	C/C (1.01)
16:17	1.0	12.4	471	1.21	6.78	55.4	0.1	23.96	C/C (1.09)
16:23	1.5	12.3	472	0.89	6.54	60.0		23.97	C/C (0.81)
16:38	2.5	11.8	475	0.65	6.46	65.4	.06	23.88	C/C (1.09)
16:46	3.0	11.7	477	0.56	6.42	6.43	6.43	23.87	C/C (0.97)
16:51	3.2	11.7	477	0.50	6.43	6.43	6.43	23.85	C/C (0.82)
16:56	3.5	11.7	478	0.52	6.42	68.8	.05	23.84	C/C (0.74)
:									
17:00	Start Sampling								(0.61)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 5 / 13		Time: 17 : 00					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW004-R_2013		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous
		(1)	250 ml	Poly	H_2SO_4		C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	HNO_3		Dissolved Metals
		(3)	1 L	Amber glass	4^0C		Pesticides
		(2) (3)	40ml 40 ml	VOA VOA	HCL HCL		NWTPH-Gx VOC
Trip Blank ID **(RM11E-TB01 -1213)**		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

<PAGE 1 of 2>

Date: 4/17/14

Project #: 0487.002.004 **Field Team:** J. Gorski E. Hughes **Well I.D.:** RM11E-MW005

Total Depth: (ft) ~36.5	(-) DTW: (ft) ~23.35 Time 14:57	13.15 ~~12.45~~ ECH	0.65 0.04 (X) 0.16 gal/ft	~~2.07~~ ECH 2.1 = Well Casing Volume:
Field Conditions: Sunny, 70's, Clear				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~26 ft bgs Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP:

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
								Initial	
15:00	Pump On Water to bucket							23.35	ALMOST CLEAR
15:20	1.6	15.2	402	1.88	5.84	-23.1		✓	CLEAR (1.48) ~~(13.9)~~ JG
15:25	~~5.51~~ 2.25	15.38	404	1.38	5.82	-20.2		23.55	Slightly cloudy, yellow
15:30	2.75	15.5	408	1.05	5.79	-24.7		23.56	CLOUDY YELLOW
15:35	3.5	15.38	407	0.91	5.81	-27.6		23.52	" (~~11.5~~) TOO HIGH ECH
15:42	4.1	15.56	405	.73	5.86	-29.6		23.55	" (1.46)
15:50	4.8	15.63	407	.62	5.92	-30.0		23.53	" (1.88)
15:55	~~5.25~~	15.53	407	0.55	5.96	-36.0		23.50	SC (1.39)
16:03	5.25	15.5	406	0.49	6.01	-42.8		23.49	SC (1.02)
:	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: / /		Time: :					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
		From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous Iron
		1	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB -0414)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

continued
purge readings

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 4/4/14

Project #: 0487.002.004 **Field Team:** E. Hughes, T. Gorski **Well I.D.:** RM11E-MW005

Total Depth: (ft)	(-) DTW: (ft)	Time	=	0.65 0.04 (X) 0.16 gal/ft	= Well Casing Volume:
Field Conditions:					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

	Purge Method GeoPump II peristaltic
	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

< SEE PAGE 1 >

Pump Suction Depth(ft): Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [ ] YSI 556 Flow Cell

Comments/Exceptions to SAP:

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
:	Pump On							Initial	
16:11	6.2	15.58	406	0.43	6.07	-44.7	200 ml/min	23.46	VSC, Turned pump up a little
16:17	6.56	15.36	406	0.40	6.09	-47.0	"	23.49	VSC (0.86)
16:22	7.5	15.63	404	0.40	6.12	-46.6		23.45	VSC (1.19)
16:27	8.4	15.44	404	0.37	6.13	-47.4		23.40	VSC (1.19)
16:32	8.7	15.74	403	0.36	6.14	-50.2		23.41	VSC
:									
:									
:									
16:45	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 04 / 14 / 14		Time: 16 :45					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW005 16:45		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous Iron
		1	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		4 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -0414)		3 2	40ml 40 ml	VOA VOA	HCL HCL	N/A	NWTPH-Dx 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-505-0414/16:45				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-5-13

Project #: 0487.002.004 **Field Team:** pHillegass - GSI **Well I.D.:** MW005

Total Depth: (ft)	~ 36.5	(-) DTW: (ft) 23.87	Time 12.63 =	(X) 0.16 gal\ft	2.0 = Well Casing Volume:
Field Conditions: ~28°, clear, 0-3.5 [illegible] — recent wet					
Decontamination: Alconox + tap wash; Tap rinse; DI rinse					

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~25' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP:

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
09:44	Pump On Water to Bucket							Initial 23.87	clear/colorless (1.19)
9:53	1.0	12.7	396	0.94	5.86	-9.0	.1	24.04	C/C (0.70)
9:54	1.5	12.8	399	0.93	6.17	-38.6		24.09	C/C (0.54)
10:03	2.0	12.8	398	0.88	6.17	-43.2		24.09	C/C (0.48)
10:06+	2.5	12.8	400	0.84	6.18	-48.1		24.09	C/C (0.60)
10:11	3.0	12.9	398	0.78	6.19	-50.0		24.09	C/C (0.48)
10:15	3.5	12.9	398	0.72	6.20	-51.7		24.09	C/C (0.48)
:									
:									
10:40	Start Sampling								(0.78)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 5 / 13		Time: 10 : 40					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW005-12-2013		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous
		(1)	250 ml	Poly	H_2SO_4		C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	HNO_3		Dissolved Metals
		(3)	1 L	Amber glass	4^0C		Pesticides
		(2) 3	40ml 40 ml	VOA VOA	HCL HCL		NWTPH-Gx VOC
Trip Blank ID **(RM11E-TB 01 -1213)**		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 4-14-14

Project #: 0487.002.004 **Field Team:** pellegrin-GSI **Well I.D.:** MWLT-1007

Total Depth: (ft) ~37	(-) DTW: (ft) 23.06	Time 13.94 =	0.65 0.04 (X) 0.16 gal/ft	9.0g = Well Casing Volume:

Field Conditions: 65°, light overcast, 0-2 S; recent dry period

Decontamination: Alconox + tap wash; Tap rinse; DI rinse

PURGE INFORMATION

	Purge Method GeoPump II peristaltic
X	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): ~26' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: NOTE!: ph probe not stabilizing as it should; re-cal.

5=21

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
12:44	Pump On	Water to Bucket						Initial 23.06	VSC- somewhat yellow
14:53	2.0	15.9	361	0.88	4.83'	167.8 ↓		24.56	VSC-SY
15:10	5.0	16.1	365	0.72	5.52	127°	.2	24.80	Clear-colorless (6.8)
15:19	6.5	16.1	366	0.74	5.70	113'	↓	24.83	C/C (4.27)
15:24	7.0	16.3	366	0.73	5.78	105'	.1	24.59	C/C (3.30)
15:29	7.5	16.8	366	0.72	5.95	96.5		24.49	C/C (3.11)
15:34	8.0	16.7	369	0.72	6.03	90.3		24.43	C/C (2.91)
15:39	8.5	16.7	369	0.72	6.03	89.9		24.41	C/C (2.60)
:									
:40	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 04 / 14 / 14		Time: 15 : 40					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MWT1007-0414		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous Iron
		(1)	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		(4) 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		(3)	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -0414)		(3) 2	40ML 40 ml	VOA VOA	HCL HCL	N/A	NWTPH-Gx 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-6-13

Project #: 0487.002.004 **Field Team:** p.kilgore/E.Hughes **Well I.D.:** MULT 1007

Total Depth: (ft) ~37	(-) DTW: (ft) 24.49	Time 12.51 =	(X) ~~0.16~~ 0.65 gal\ft	8.13 = Well Casing Volume:
Field Conditions: ~25°, 0-5 S breeze, light snow, recent wet				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

	Purge Method GeoPump II peristaltic
X	Purge Method Rediflo 2 Submersible
	Refer to calibration log this date.

Pump Suction Depth(ft): ~27.5' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: Temp is influenced by AIR temp.

TOS=20', BOS=37'

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
10:28	Pump On Water to Bucket							Initial 24.49	clear/colorless (296)
10:34	1.0	13.8'	320	5.00↓	6.24	137.8	.2	25.49	C/C (11.4)
10:44	3.0	15.5	321	3.86	6.31	130.2	↓	26.01	C/C (4.59)
11:02	5.0	15.7	322	3.83	6.30	127.7	.1	25.91	C/C (6.02)
11:10	6.0	15.9	323	3.71	6.32	128.1	.12	25.97	C/C (3.52)
11:15	6.6	15.5	322	3.66	6.31	126.3	.1	25.95	C/C (3.28)
11:20	7.0	15.9	322	3.67	6.31	125.9	.1	25.91	C/C (2.80)
:									
:									
11:30	Start Sampling								(2.73)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 6 / 13		Time: 11 :30					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presv.	Ship Date	Analytical Method
RM11E-MW1007-12-2013		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous
		1	250 ml	Poly	H_2SO_4		C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	HNO_3		Dissolved Metals
		3	1 L	Amber glass	4^0C		Pesticides
		~~2~~	~~40 ml~~	~~VOA~~	~~HCL~~		~~NWTPH-GX~~
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time				match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

River Mile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 04-15-14

Project #: 0487.002.004 **Field Team:** PELLEGRIN GORSKI **Well I.D.:** MULT 89881

Total Depth: (ft) ~ 53.4	(-) DTW: (ft) unk. ~22'	Time ~ 31.4 =	0.65 (0.04) (X) ~~0.16~~ gal/ft	1.256 = Well Casing Volume:
Field Conditions: 55°, overcast, recent dry period. 0-2 south breeze				
Decontamination: Alconox + tap wash; Tap rinse; DI rinse				

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~ 24' Purge water handling: (drummed)

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: Waterbed meters not giving consistent readings in well. One meter won't read at all—even in purge bucket (works in tap water). Succeed getting meter #2 to work.

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate ~~(gpm)~~ mL/min	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
10:37+	Pump On	Water to Bucket					310 mL/min	Initial 21.76	clear-colorless
10:50	1.0	13.9	262	6.22	6.21	153.6	300	21.77	C/C 3
11:00	1.8	13.8	295	6.53	6.24	153.5		21.78	C/C
11:07	2.5	13.8	297	6.62	6.3	150		21.80	C/C (1.38 NTU)
11:12	2.85	13.8	297	6.63	6.31	149.1		21.81	C/C (.70 NTU)
11:17	3.25	13.8	297	6.68	6.33	148.0		21.83	C/C (.69 NTU)
11:22	3.7	13.8	298	6.68	6.34	147.4		21.83	C/C (.36 NTU)
:									
:									
:25	Start Sampling								
:	End Sampling								

* VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 4 / 15 / 14		Time: 11 : 25					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. (SS-XXXX-MMYY)	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-MW489881-0414		1	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		1	1 L	Poly	4^0C		General Chemistry
		1	250 ml	Amber glass	4^0C		Ferrous Iron
		1	250 ml	Poly	4^0C		Lab Filtered C/TOC D
		1	250 ml	Poly	H_2SO_4		C/TOC T
		1	500 ml	Poly	HNO_3		Total Metals
		1	500 ml	Poly	4^0C		Lab Filtered Dissolved Metals
		4 3	1 L	Amber glass	4^0C		Pesticides/PCB PAH/SVOC/Phal.
		3	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB02 -0414)		3 2	40ml 40 ml	~~VOA~~ VOA	~~HCL~~ HCL	N/A	NWTPH-GX 8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5 -0414				match of parent sample			

Comments: Noticeable 'asphalt-odor' coming through sampling area from Ross Island to the northwest.

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

Rivermile Eleven East
WELL SAMPLING FIELD LOG
RM11E: Groundwater Monitoring
GSI WaterSolutions Inc.

Date: 12-4-13

Project #: 0487.002.004 **Field Team:** K Jackson, J Pellegrin-GSI **Well I.D.:** MW-89881

Total Depth: (ft) 53.4	(-) DTW: (ft) 22.90	Time 30.5 =	0.04 (X) ~~0.16~~ 1" well gal\ft	1.22 = Well Casing Volume:

Field Conditions: ~34°, clear, 0-3 SW breeze — recent wet

Decontamination: Alconox + tap wash; Tap rinse; DI rinse

PURGE INFORMATION

[X]	Purge Method GeoPump II peristaltic
[ ]	Purge Method Rediflo 2 Submersible
[ ]	Refer to calibration log this date.

Pump Suction Depth(ft): ~25' Purge water handling: drummed

Type of Flow Through Cell: [ ] 10 oz cup [X] YSI 556 Flow Cell

Comments/Exceptions to SAP: All turbidity taken downstream of F-T cell. First measurement taken from sample tubing.

TOS = 45', BOS = 55'

Time	Purge Volume (gallons)	Temp. (0.1°C)	Specific Conductance (uS/cm)	Dissolved O_2 (mg/L)	pH (0.1)	ORP (mV)	Purge Rate (gpm)	DTW (ft)	Pump Speed/*Clarity/ Color/Remarks (NTU)
11:43	Pump On Water to Bucket							Initial 22.90	clear/colorless, no odor
11:49	0.5	13.7	303	5.44	6.12	185.6		23.01	C/C (3.12)
11:55	1.0	13.3	305	5.77	6.10	154.2		23.01	C/C (—)
12:01	1.5	13.2	304	5.78	6.12	135.0		23.08	C/C (1.94)
12:06	2.0	13.1	304	5.81	6.12	128.4		23.08	C/C (0.50)
12:11	2.5	13.1	304	5.79	6.13	124.4		23.08	C/C (0.38)
12:16	3.0	13.1	304	5.79	6.14	121.2	↓	23.09	C/C (0.31)
12:21	3.5	13.1	304	5.78	6.14	119.7		23.09	C/C (0.28)
:									
12:50	Start Sampling								(0.30)
:	End Sampling								

VC=Very cloudy CI=Cloudy SC=Slightly Cloudy VSC=Very Slightly Cloudy AC=Almost Clear C=Clear CC=Crystal Clear

Laboratory Analytical Program
RM11E: Groundwater Monitoring
Sampling Information

Date: 12 / 4 / 13		Time: 12 : 50					
Sampling Method:		From: A VOC from dedicated polyethylene bailer					
	X	From: B dedicated polyethylene purge tubing					
Sample I.D. ~~(SS-XXXX-MMYY)~~	Duplicate	(Circle) Number of sample containers	Volume of each container	Container Type	Presev.	Ship Date	Analytical Method
RM11E-89881-12-2013		(1)	1 L	Amber glass	HCL		NWTPH-Dx NWTPH-SGT
		(1)	1 L	Poly	4^0C		General Chemistry
		(1)	250 ml	Amber glass	4^0C		Ferrous
		(1)	250 ml	Poly	H_2SO_4		C/TOC D
		(1)	250 ml	Poly	H_2SO_4		C/TOC T
		(1)	500 ml	Poly	HNO_3		Total Metals
		(1)	500 ml	Poly	HNO_3		Dissolved Metals
		(3)	1 L	Amber glass	4^0C		Pesticides
		(3)	40 ml	VOA	HCL		VOC
Trip Blank ID (RM11E-TB 01 -1213)		2	40 ml	VOA	HCL	N/A	8260 B and 8260B SIM
Duplicate I.D./Time RM11E-5MULT89881-12-2013		(13)		match of parent sample			

Comments:

Lab: ALS Environmental; Gregory Salata; 360-501-3376 x 3376
GSI-Erin Hughes; 503-927-4553
Sample delivery by Lab Courier

APPENDIX C
SURFACE SOIL DOCUMENTATION

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

APPENDIX C1
ACTUAL vs. TARGET SURFACE SOIL SAMPLING LOCATIONS

Table C1
Actual vs. Target Monitoring Surface Soil Sample Locations

Station ID	Proposed Station Coordinates[1]		Actual Station Coordinates[1]		Distance from Proposed to Actual Sample Location (ft)	Rationale for Moving Sample Station more than 30 feet
	Northing	Easting	Northing	Easting		
RM11E-SL028	689956.1	7643558.6	689925.8	7643540.4	35.4	Moved closer to the river so that it was truly located at the top of the bank as intended.
RM11E-SL029	689695.5	7643862.7	689680.2	7643862.8	15.4	--
RM11E-SL030	689513.2	7644093.0	689500.5	7644105.5	17.8	--
RM11E-SL031	689322.3	7644361.7	689321.9	7644361.9	0.5	--
RM11E-SL032	689230.9	7644605.8	689232.5	7644583.0	22.9	--
RM11E-SL033	689039.8	7644686.2	689040.0	7644664.9	21.3	--
RM11E-SL034	688741.2	7644858.1	688793.0	7644828.4	59.8	Moved northward to safely collect the sample during active drilling at RM11E-MW004. No visible signs of runoff existed in this stretch of the bank and the actual location appears representative of the landscaped conditions.
RM11E-SL035	689187.5	7644560.9	689171.8	7644555.0	16.8	--
RM11E-SL036	689143.1	7644589.4	689125.2	7644587.0	18.0	--

Notes:
[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.

FIGURE C1
Actual vs Target Surface Soil Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon

LEGEND

Surface Soil Sample Locations

- Actual
- Target

All Other Features

- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25
- U.S. Army Corps of Engineers Navigation Channel
- River Mile Tenth (RM)

MAP NOTES:

Date: June 12, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
RM = River Mile
1. The locations of all features shown are approximate.
2. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
3. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
4. Aerial photo taken fall 2012 by METRO.

N

0 100 200
Feet

GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF\GIS\Project_mxds\FDR\FigureC1_ActualvsTarget_Surface_Soil_Samples.mxd

APPENDIX C2
SURFACE SOIL SAMPLE PHOTOGRAPHS

11/22/2013
RM11E-SL028
5 Point Composite
13:00

11/22/2013
RM11E-SL028
5 Point Composite
13:00

RM11E-SL029
11/22/13
14:00
11/22/2013
RM11E-SL029
5 Point Composite
14:00

11/22/2013
RM11E-SL029
5 Point Composite
14:00

11/22/2013
RM11E-SL030
5 Point Composite
14:25

11/22/2013
RM11E-SL030
5 Point Composite
14:25

RM11E-SL031
11/22/13
9:15
5-pt
11/22/2013
RM11E-SL031
5 Point Composite
9:15

11/22/2013
RM11E-SL031
5 Point Composite
9:15

11/18/2013
RM11E-SL032
5 Point Composite
12:50

RM11E-SL032
11/18/13
12:50
11/18/2013
RM11E-SL032
5 Point Composite
12:50

11/18/2013
RM11E-SL033
5 Point Composite
14:45

11/18/2013
RM11E-SL033
5 Point Composite
14:45

11/18/2013
RM11E-SL034
4 Point Composite
15:45

11/18/2013
RM11E-SL034
4 Point Composite
15:45

RM11E-SL035
10-31-13
1350
10/31/2013
RM11E-SL035
5 Point Composite
13:50

10/31/2013
RM11E-SL035
5 Point Composite
13:50

10/31/2013
RM11E-SL036
5 Point Composite
15:20

10/31/2013
RM11E-SL036
5 Point Composite
15:20

10/31/2013
RM11E-SL036
5 Point Composite
15:20

APPENDIX C3
SURFACE SOIL GRAB SAMPLE DESCRIPTION LOGS

RM11E Sample Station	Collection Date (dd/mm/yy)	Time (24 hour)	Number of Sample Increments	Increment Penetration (inches)	Sample Location and Soil Description	Debris	Odor	Sheen	Color	Grab Photo Available (Yes/No)
SL028	11/22/13	1300	5	12 12 12 12 12	Top of bank sample from north end of Glacier property riverside of landscaping. Grassy swale and drainage feature leading into blackberies and downslope retaining wall. Dry silty sand with trace gravel. Poorly sorted fine-grained sands.	3/4 inch to 1/2 inch minus rootlets	none	none	dark brown	Yes
SL029	11/22/13	1400	5	12 10 12 10 12	Top of bank sample at Glacier property in low brush area adjacent to monitoring well MULT 1007 and bollard for mooring ships. Top inch composed of veneer of poorly sorted 1/2 inch to 1 inch poorly sorted gravels. Dark brown silt with sand and gravels.	1/2" to 1" minus rootlets	none	none	dark brown	Yes
SL030	11/22/13	1425	5	12 12 12 12 12	Top of bank sample at Glacier property along path through blackberries. Leaf litter at surface with silty sand. Fine sands are moderately sorted. Increments lower on the bank contain a greater proportion of silt.	leaf litter, organics, and rootlets	none	none	dark brown silt/ gray brown sand	Yes
SL031	11/22/13	915	5	9 9 9 9 9	Top of bank sample at south end of Glacier property located adjacent to ship mooring bollard. Bank below sample increments is cement-faced. Thin veneer of 3/4 inch minus gravels over dense, dark brown silty sand with gravel. Poorly sorted fine-grained sands with angular 3/4 inch minus gravels and small pieces of concrete.	small pieces of concrete and aggregate gravels	none	none	dark brown	Yes
SL032	11/18/13	1250	5	10 9 12 12 11	Top of bank sample at north portion of Cargill property near monitoring well MW-002s. Increments located in grassy drainage feature above blackberry thicket. Loose dark brown silt with sand and gravel. Angular gravels 1/4 inch to 1 inch with very fine sand.	root fragments	none	none	dark brown	Yes
SL033	11/18/13	1445	5	12 9 12 12 12	Top of bank sample on Cargill property adjacent to geotechnical well GRI B3. Increments located riverside of site landscaping with bark-mulch. Increments located in drainage features with little evidence of erosion and penetrated after removing 0 to 3 inches of loose barkdust. Medium dense dark brown moist clayey sandy silt. Angular gravels and fine sands with some yellow-red mottling.	roots rock at base of one increment	none	none	dark brown	Yes
SL034	11/18/13	1545	4	12 12 12 10 none	Top of bank sample on Cargill property on riverside of landscaping. Increments located along banktop with no obvious erosion and in wet drainage feature. Medium dense, moist, dark brown clayey sandy silt. Some angular 1/2 inch minus gravels approximately 9 inches below surface (pea gravel present at base of one increment). Sand is fine with some dark gray and yellow-red	roots, gravel at 9 inches in one hole	none	none	dark brown	Yes
SL035	10/31/13	1350	5	8 8 8 8 8	Sample located on sandy slope with driftwood alonside river at south portion of Cargill property. Coarse surface sands with leaf debris overlaying a soil matrix composed of dense brown clayey silty sand with many angular chunks of 1 inch to 10 inch gray siltstone.	metal scraps round nails bird feathers ceramic chard piling remnant <12 inches from one increment	none	none	tan- pale orange	Yes
SL036	10/31/13	1520	5	12 12 12 12 12	Sample located on sandy slope with driftwood alonside river at south portion of Cargill property approximately 12 feet riverside of blackberry thicket. Dense dull-orange sandy silt with many cobbles of 1 inch to 10 inch gray angular siltstone. No mottling, as noted in SL035.	metal scraps nails charcol bits in one increment	none	none	tan- pale orange	Yes

APPENDIX D
SURFACE SEDIMENT DOCUMENTATION

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

APPENDIX D1
ACTUAL vs. TARGET SURFACE SEDIMENT SAMPLING LOCATIONS

Table D1
Actual vs. Target Monitoring Surface Sediment Sample Locations

Station ID	Proposed Station Coordinates[1]		Actual Station Coordinates[1]		Distance from Proposed to Actual Sample Location (ft)	Rationale for Moving Sample Station more than 30 feet
	Northing	Easting	Northing	Easting		
RM11E-G068	690665.4	7642422.7	690626.7	7642451.7	48.3	Target area contained large cobbles that prevented closure of the power-grab sampler. EPA requested moving the sample 50 ft upstream of the target location.
RM11E-G069	690716.4	7642494.8	690716.7	7642497.1	2.4	--
RM11E-G070	690555.3	7642487.1	690570.3	7642502.9	21.8	--
RM11E-G071	690613.7	7642549.2	690611.6	7642549.0	2.1	--
RM11E-G072	690640.6	7642680.7	690636.2	7642670.5	11.1	--
RM11E-G073	690503.2	7642703.4	690509.9	7642709.4	9.0	--
RM11E-G074	690440.0	7642646.3	690441.7	7642646.5	1.7	--
RM11E-G075	690423.2	7642772.2	690378.4	7642793.1	49.4	Target area contained large cobbles that prevented closure of the power-grab sampler. EPA requested moving the sample 50 ft upstream of the target location.
RM11E-G076	689724.2	7643549.7	689723.5	7643543.7	6.0	--
RM11E-G077	689452.7	7643673.5	689453.0	7643673.4	0.3	--
RM11E-G078	689440.7	7644033.6	689443.2	7644016.5	17.3	--
RM11E-G079	689302.7	7643999.7	689302.8	7644009.5	9.8	--
RM11E-G080	689345.4	7644133.9	689349.7	7644133.3	4.4	--
RM11E-G081	689272.7	7644217.4	689283.6	7644212.3	12.0	--
RM11E-G082	689103.7	7644280.8	689107.1	7644280.4	3.5	--
RM11E-G083	688898.6	7644645.6	688912.3	7644627.9	22.4	--
RM11E-G084	688889.6	7644708.5	688882.7	7644712.3	7.8	--
RM11E-G085	688687.3	7644823.1	688676.7	7644828.1	11.7	--
RM11E-G086	688660.9	7644797.8	688647.9	7644803.3	14.1	--

Table D1
Actual vs. Target Monitoring Surface Sediment Sample Locations

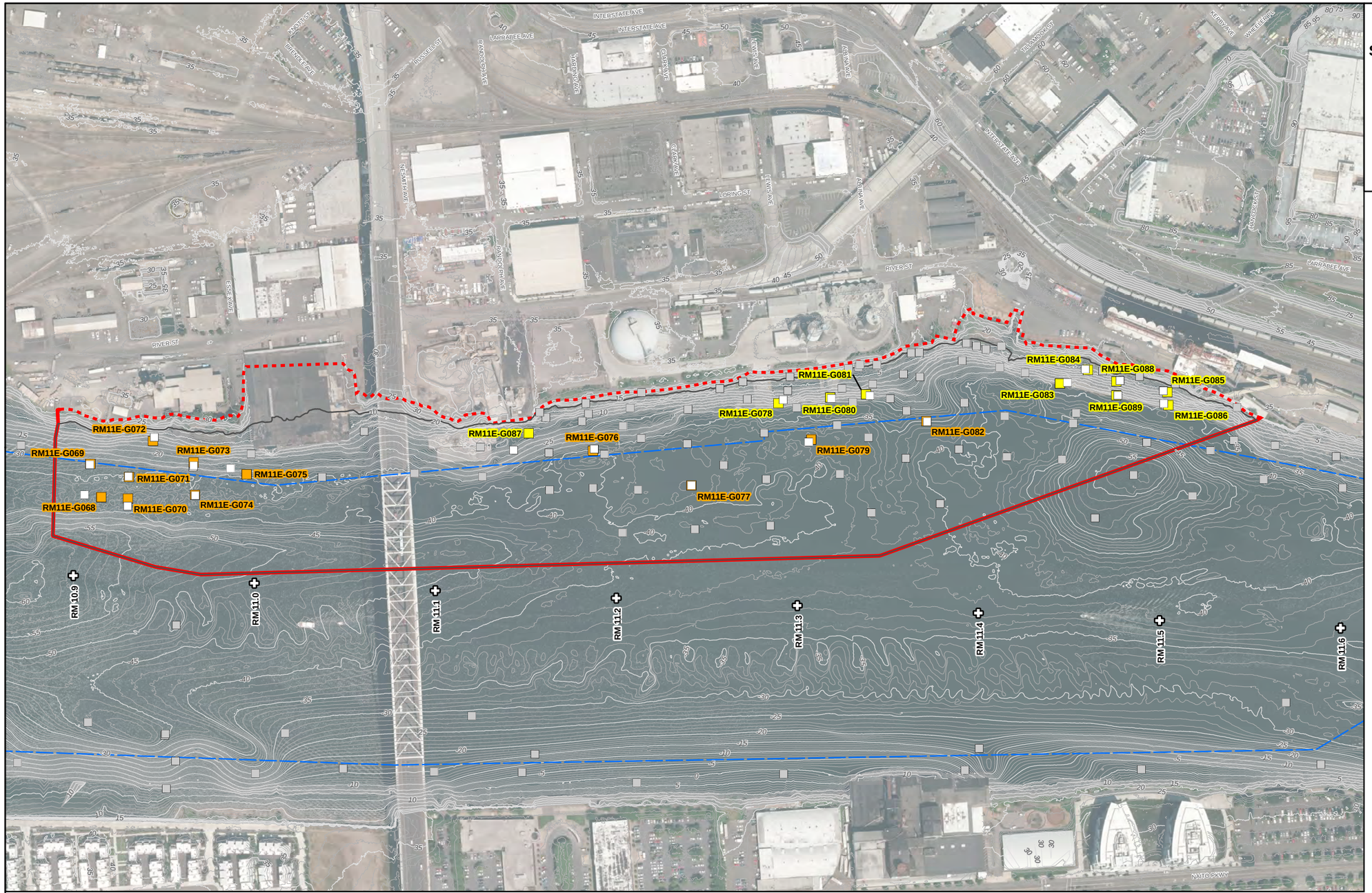
Station ID	Proposed Station Coordinates[1]		Actual Station Coordinates[1]		Distance from Proposed to Actual Sample Location (ft)	Rationale for Moving Sample Station more than 30 feet
	Northing	Easting	Northing	Easting		
RM11E-G087	689885.7	7643384.1	689889.2	7643448.8	64.8	Moved further upstream and onshore due to presence of barge and crane work at Ross Island Sand and Gravel. Sample positioned downstream and off-shore of former sample RM11E-C003 as per EPA's request.
RM11E-G088	688796.3	7644755.6	688801.8	7644746.4	10.8	--
RM11E-G089	688770.4	7644721.6	688773.9	7644718.2	4.8	--

Notes:
[1] Northing and easting coordinates exist in the following coordinate system: North American Datum of 1983 (NAD83), Oregon State Plane North Zone, in units of feet.

FIGURE D1
Actual vs Target Surface Sediment Sample Locations

Field Sampling and Data Report
River Mile 11 East

Willamette River
Portland, Oregon



LEGEND

Supplemental RI/FS Surface Sediment Power Grab Sample

- Actual (October, 2013)
- Target

Supplemental RI/FS Surface Sediment Manual Grab Sample

- Actual (May, 2014)
- Target

Riverbed Bathymetry

- 5 foot Contour
- 1 foot Contour

All Other Features

- Existing Surface Sediment Sample Locations
- RM11E Project Area (dashed line indicates inferred top of bank)
- AOPC 25[4]
- U.S. Army Corps of Engineers Navigation Channel
- River Mile (RM) Tenths

MAP NOTES:

Date: July 3, 2014
AOPC = Area of Potential Concern
FS = Feasibility Study
1. The locations of all features shown are approximate.
2. Aerial photo base taken in fall 2012 by METRO.
3. RM11E Project Area includes AOPC 25 and the adjacent riverbank area to the top of bank.
4. The AOPC 25 boundary is consistent with the information presented in the Draft FS report for the Portland Harbor (Anchor QEA et al., 2012).
5. The river mile (RM) designations are based on USACE stationing along the centerline of the Lower Willamette River navigation channel and represent the distance in miles from the start of channel at the Columbia River (USACE Portland District Hydrosurvey file WR_2014_Channel.DXF).
6. Source of the existing sediment sample locations is the updated RM11E dataset described in Section 10.2 of this report.
7. Contour lines are based on a composite digital elevation model (DEM) consisting of:
   - National Oceanic and Atmospheric Adiministration multibeam survey from 2009.
   - Oregon Division of State Lands multibeam and laser survey from 2010.
   - United States Army Corps of Engineers LiDAR survey from 2009.
   - David Evans and Associates, Inc. multibeam survey from 2011.
8. DEM was only modeled in the immediate vicinity of the remedial action area. It is not intended for navigation purposes.

N

0 150 300
Feet

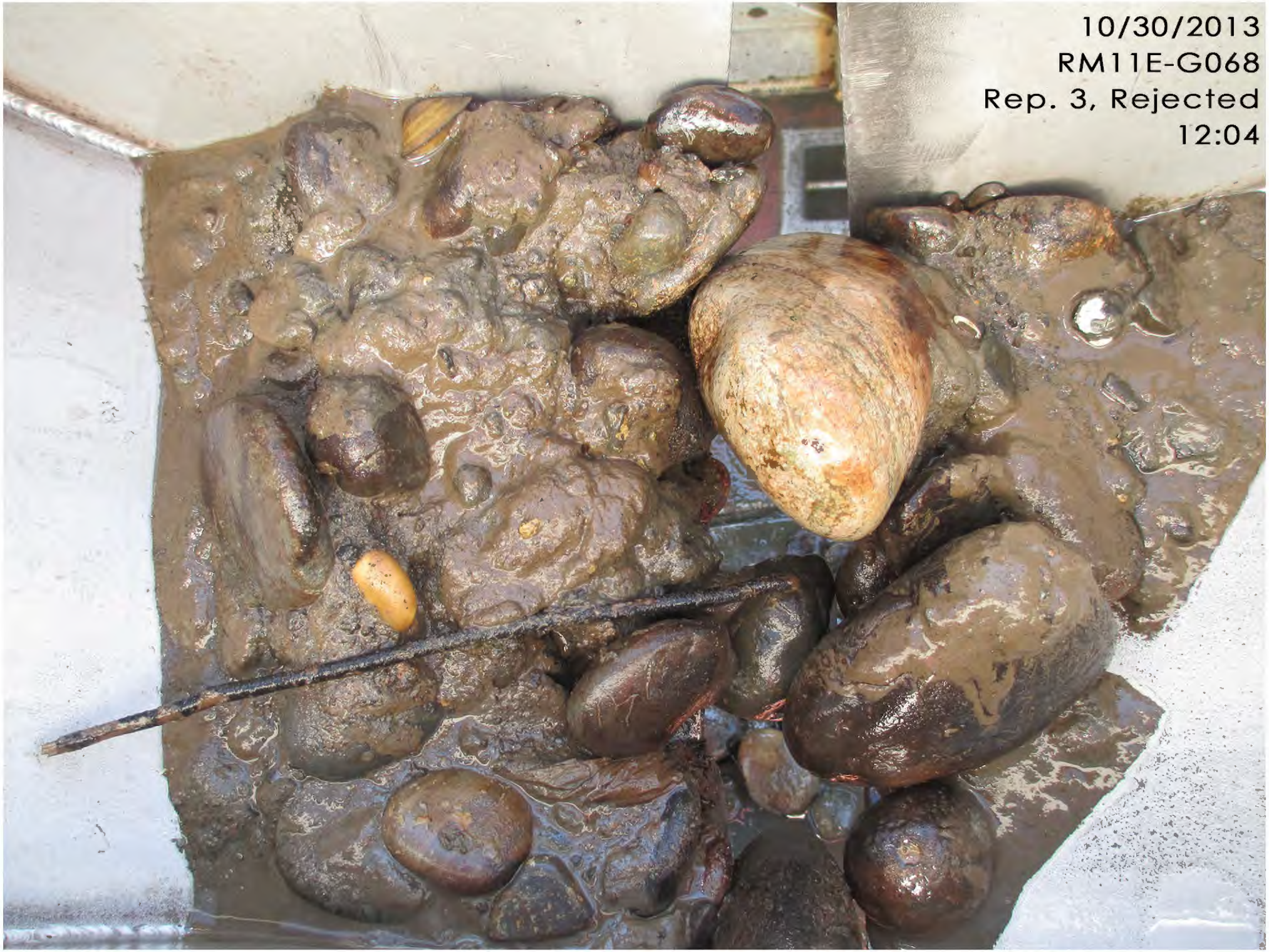
GSI Water Solutions, Inc.

Document Path: P:\Portland\487-DOF\GIS\Project_mxds\FDR\FigureD1_ActualvsTarget_Surface_Sediment_Samples.mxd

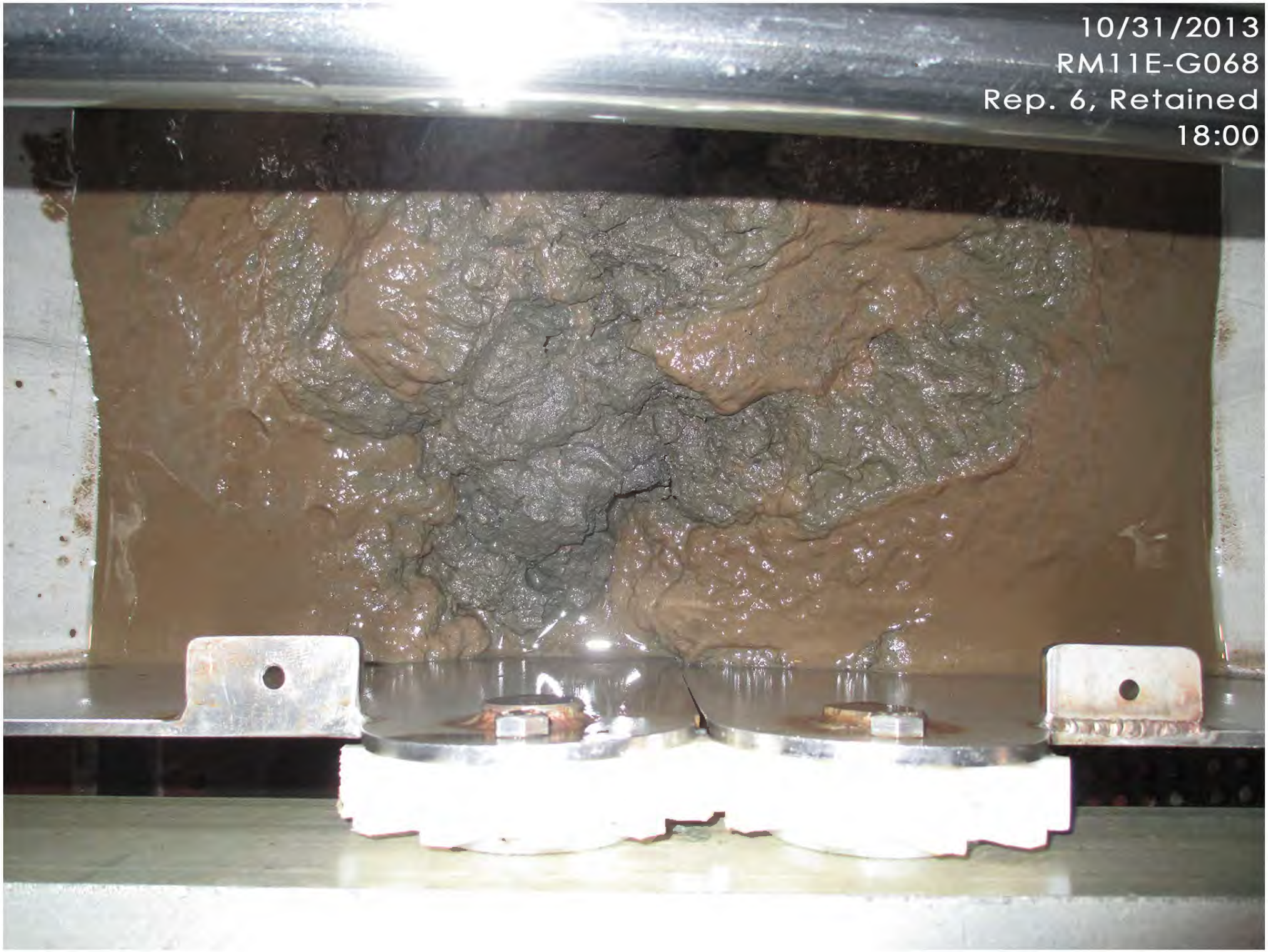
APPENDIX D2
SURFACE SEDIMENT SAMPLE PHOTOGRAPHS

10/30/2013
RM11E-G068
Rep. 1, Rejected
11:38

10/30/2013
RM11E-G068
Rep. 2, Rejected
11:48


10/30/2013
RM11E-G068
Rep. 3, Rejected
12:04

10/31/2013
RM11E-G068
Rep. 5, Rejected
17:43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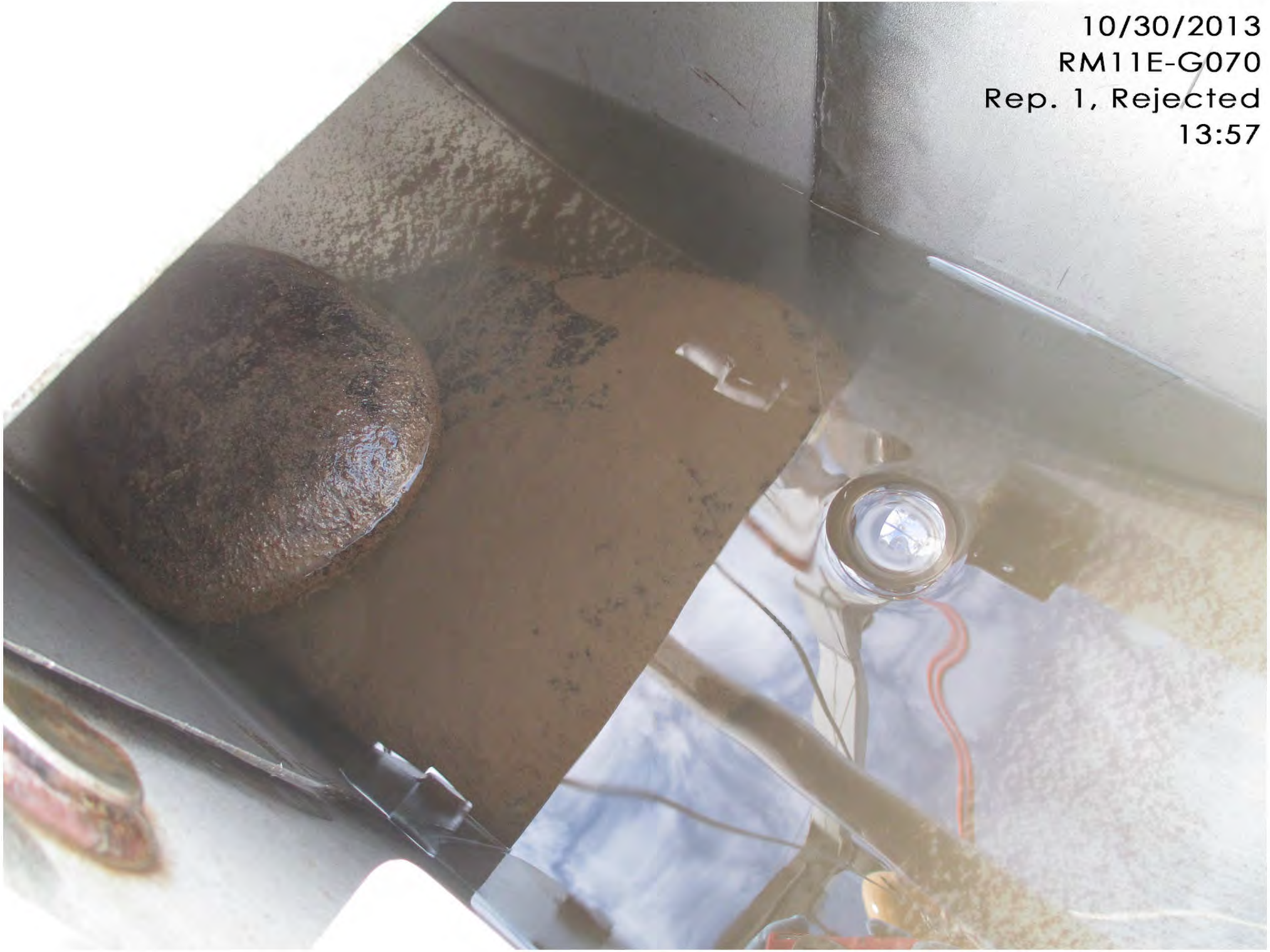
Rep. 6, Retained
18:00

10/30/2013
RM11E-G069
Rep. 1, Retained
10:23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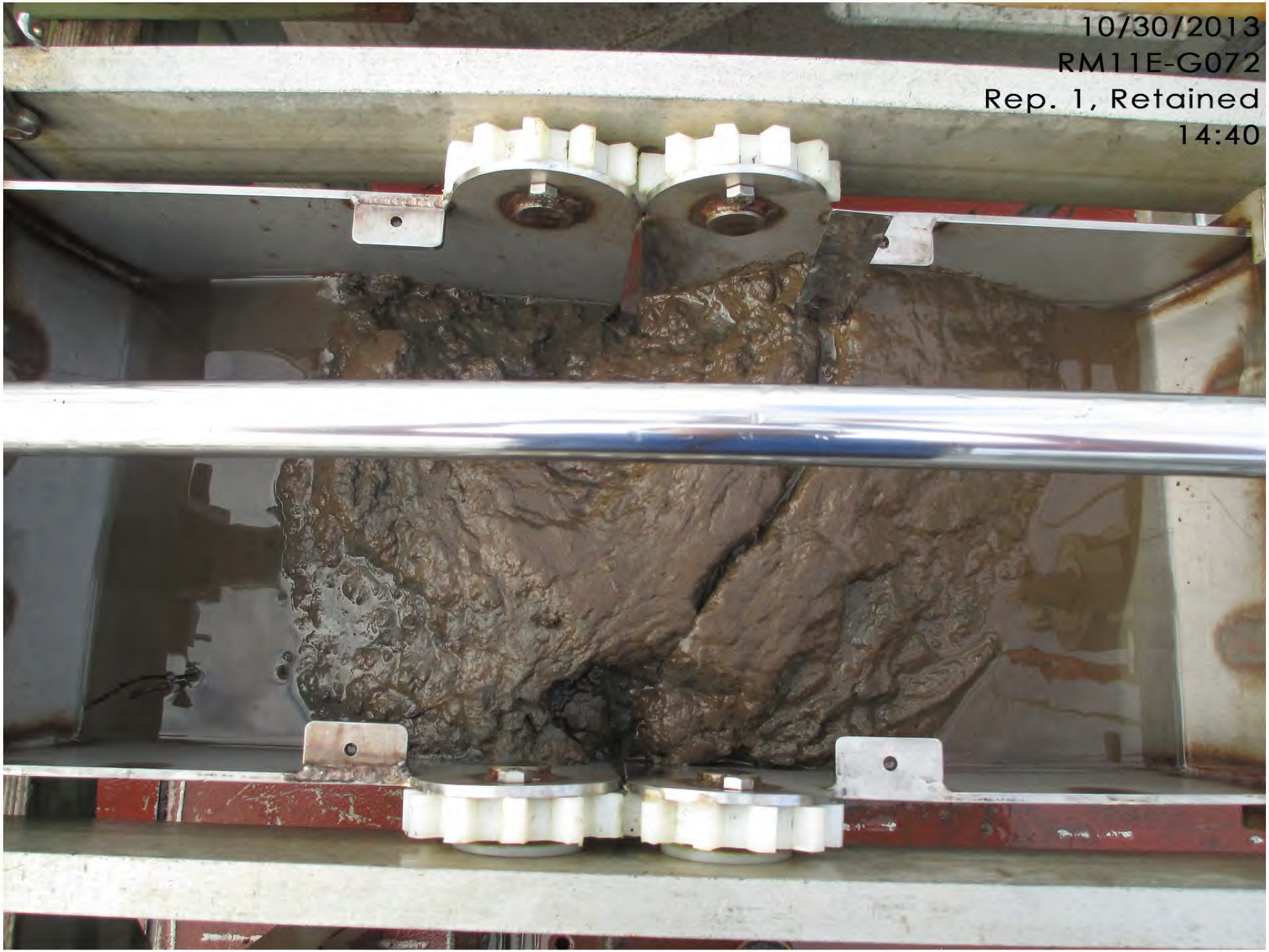
RM11E-G070
Rep. 1, Rejected
13:57

10/30/2013
RM11E-G070
Rep. 2, Rejected
14:04

10/30/2013
RM11E-G070
Rep. 3, Retained
14:15

10/30/2013
RM11E-G071
Rep. 1, Retained
13:13

10/30/2013
RM11E-G071
Rep. 1, Retained
13:13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14:40

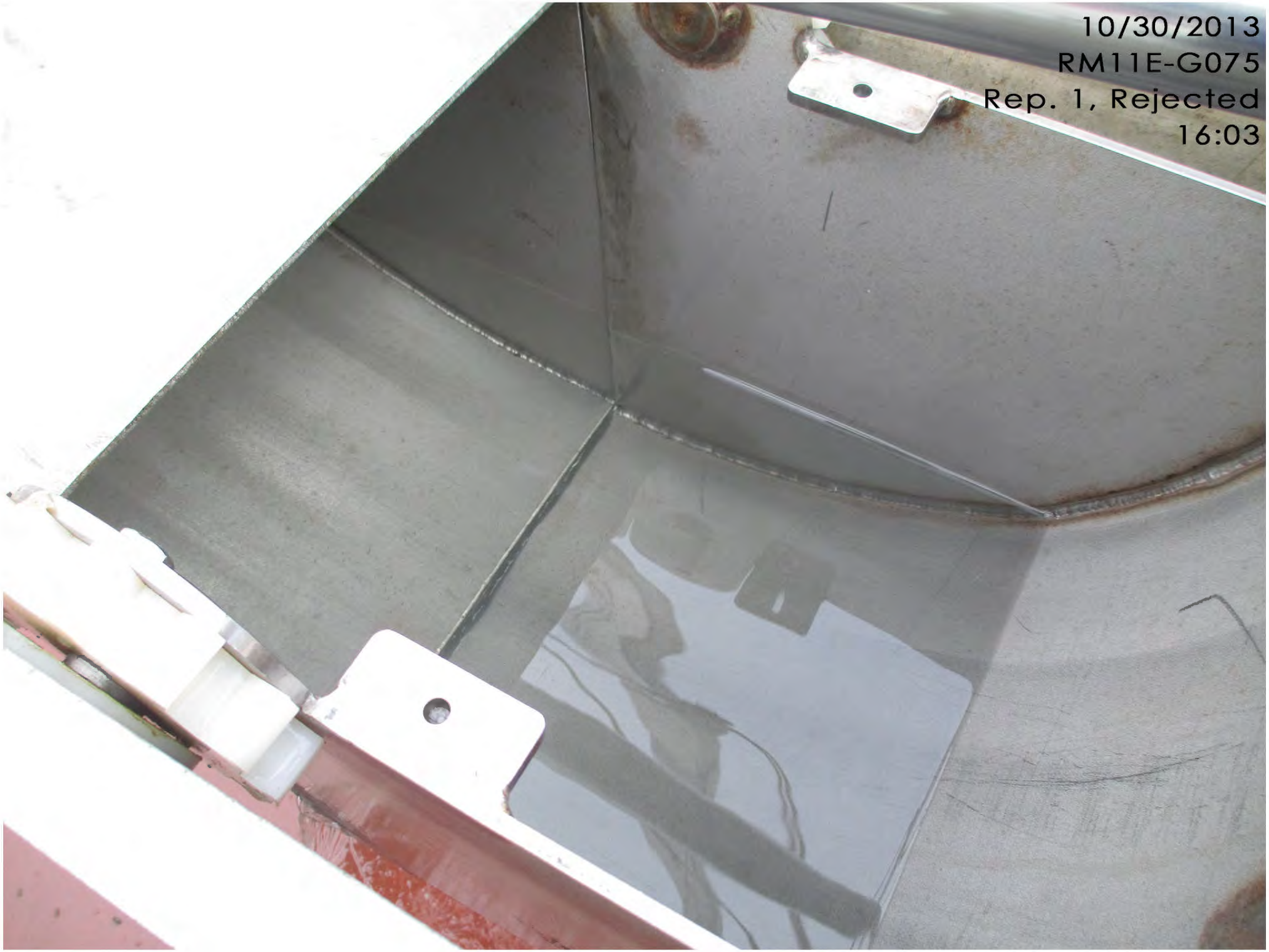
10/30/2013
RM11E-G073
Rep. 1, Rejected
15:10

10/30/2013
RM11E-G073
Rep. 3, Rejected
15:24

10/30/2013
RM11E-G073
Rep. 4, Retained
15:32

10/30/2013
RM11E-G073
Rep. 4, Retained
15:32

10/30/2013
RM11E-G074
Rep. 1, Retained
16:47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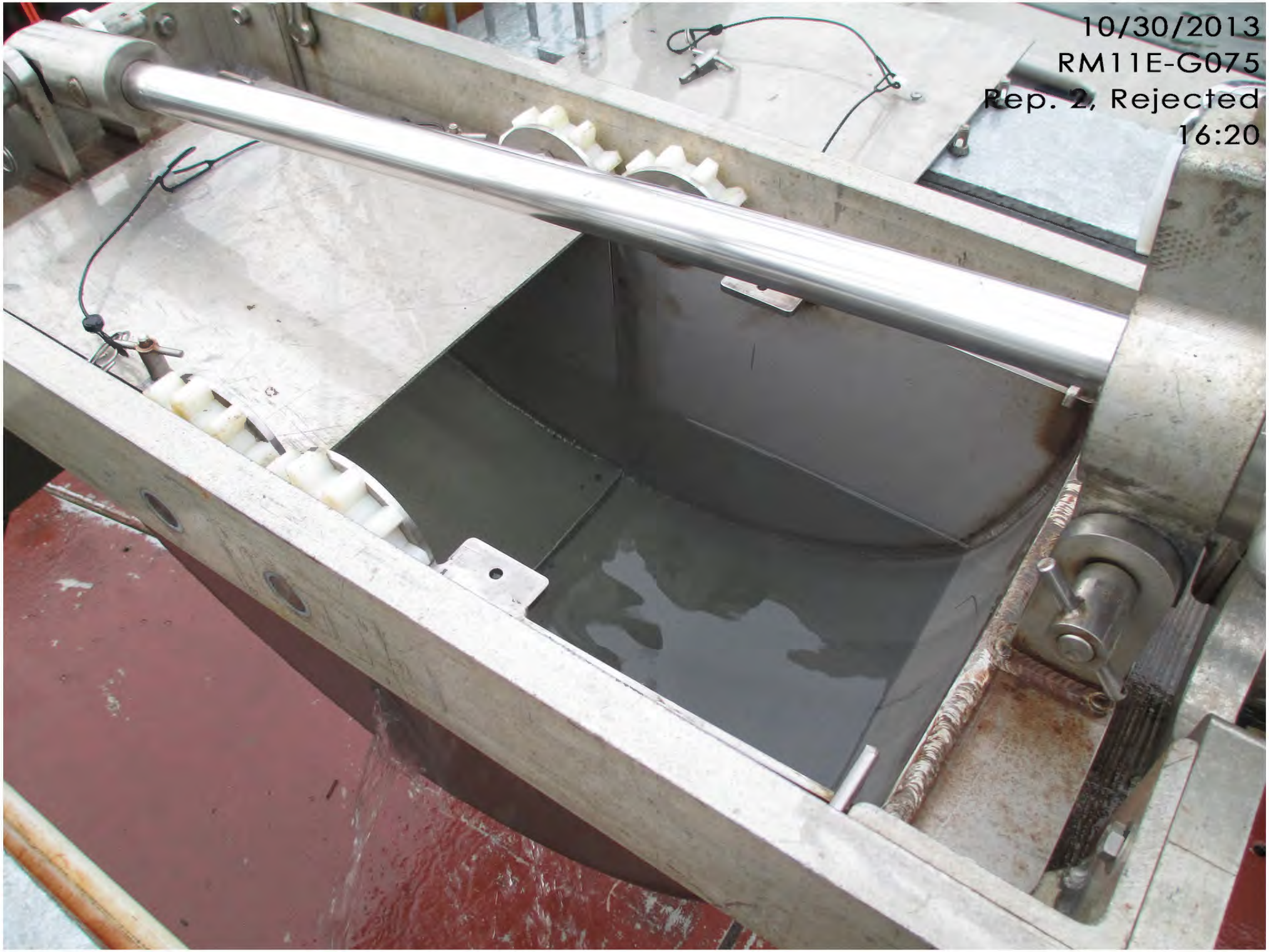
RM11E-G075
Rep. 1, Rejected
16:03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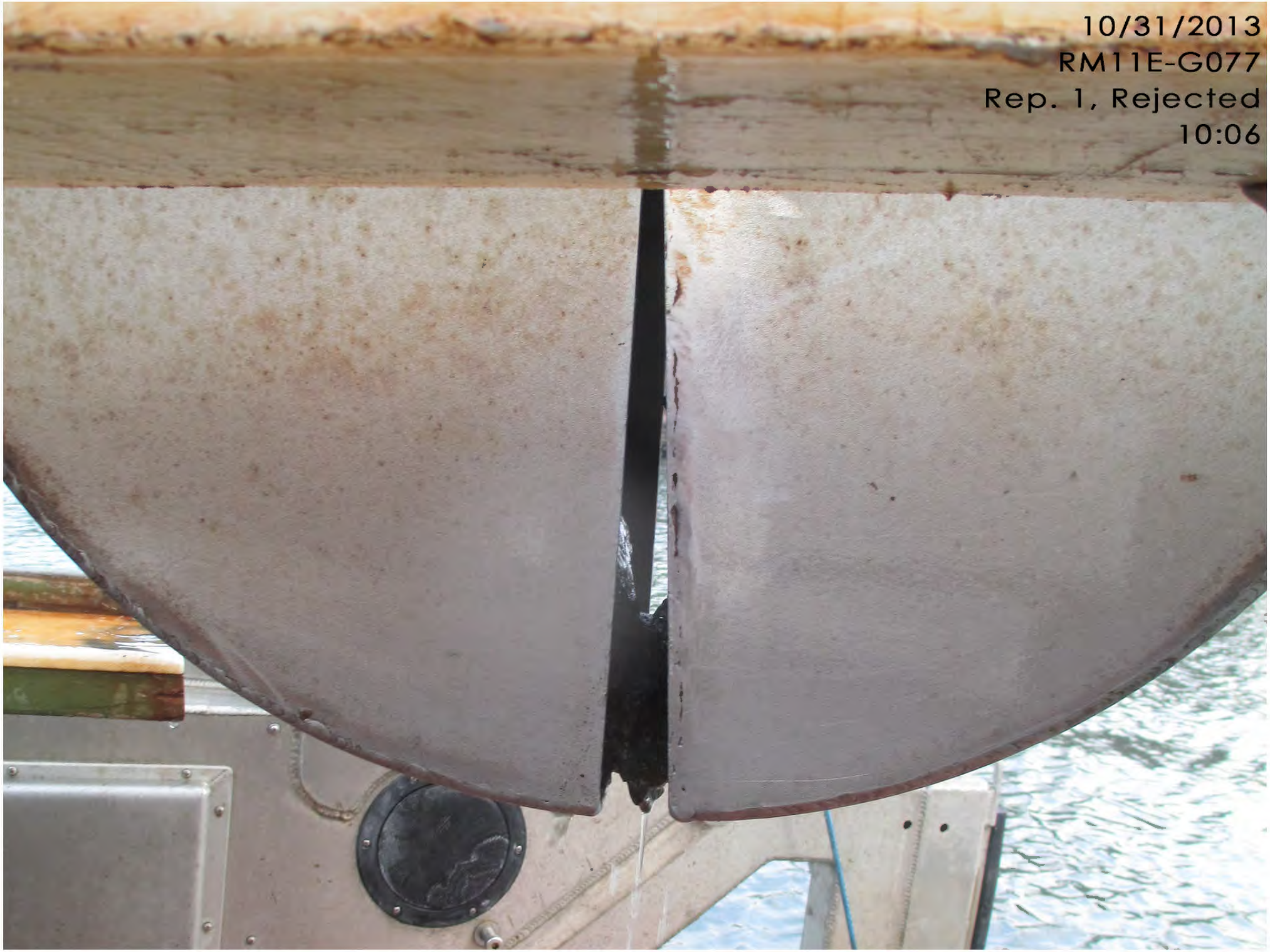
16:20

10/30/2013
RM11E-G075
Rep. 3, Rejected
16:34

10/31/2013
RM11E-G075
Rep. 5, Retained
16:55

10/31/2013
RM11E-G076
Rep. 2, Retained
09:30

10/31/2013
RM11E-G076
Rep. 2, Retained
09:30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10:06

10/31/2013
RM11E-G077
Rep. 2, Retained
10:12

5/2/2014
RM11E-G078
Rep. 2, Retained
08:59

10/31/2013
RM11E-G079
Rep. 2, Rejected
10:48

10/31/2013
RM11E-G079
Rep. 3, Rejected
11:03

10/31/2013
RM11E-G079
Rep. 6, Rejected
15:33

10/31/2013
RM11E-G079
Rep. 7, Retained
15:43

10/31/2013
RM11E-G079
Rep. 7, Retained
15:43

5/2/2014
RM11E-G080
Rep. 1, Retained
09:55

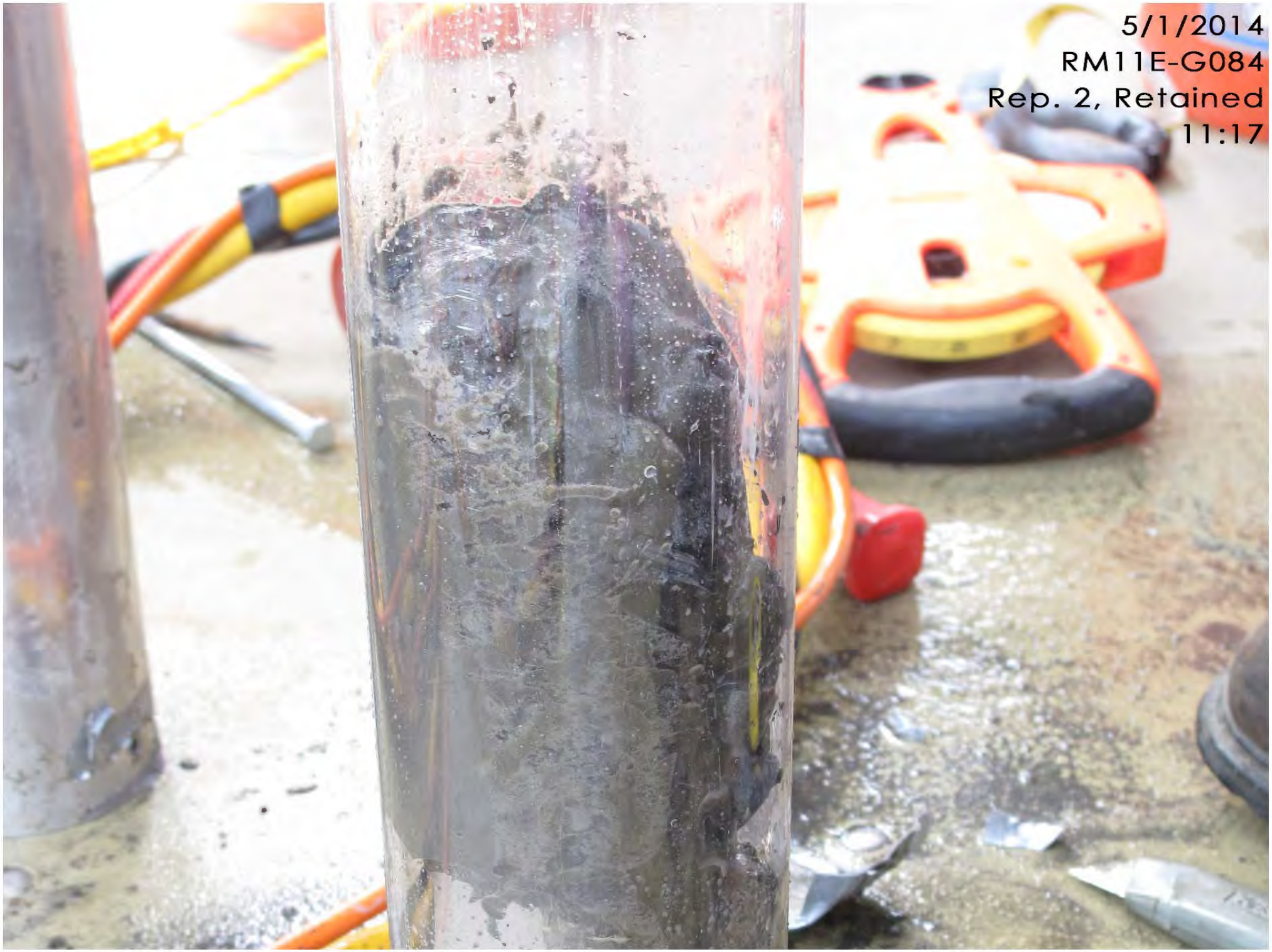
5/2/2014
RM11E-G081
Rep. 4, Retained
11:20

10/31/2013
RM11E-G082
Rep. 1, Rejected
11:23

10/31/2013
RM11E-G082
Rep. 2, Rejected
11:44

10/31/2013
RM11E-G082
Rep. 3, Retained
12:02

5/1/2014
RM11E-G083
Rep. 1, Retained
12:00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5/2/2014
RM11E-G085
Rep. 4, Retained
13:50

5/2/2014
RM11E-G086
Rep. 3, Retained
12:55

5/2/2014
RM11E-G087
Rep. 1, Retained
15:10

5/1/2014
RM11E-G088
Rep. 3, Retained
14:40

5/1/2014
RM11E-G089
Rep. 2, Retained
13:50

APPENDIX D3
SURFACE SEDIMENT GRAB SAMPLE DESCRIPTION LOGS

Station	Rep	Date	Time	Collection Method	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Retained/ Rejected	Sediment Type and Description (Horizon from top of sampler)	Debris	Odor (PID)	Sheen	Color	Grab Photo Available (Yes/No)
RM11E-G068	1	10/30/2013	11:38	power grab	43 ft.	fathometer	about 12	rejected	Grab sampler held open by wood & metal. Sediment present is very soft with yellow red silt (ML) on top.	wood & metal	-	-	yellow-red silt	Yes
RM11E-G068	2	10/30/2013	11:48	power grab	43.2 ft.	fathometer	about 12	rejected	Poor recovery. Sampler jaws held open by 3 inch rounded cobbles.	-	-	-	-	Yes
RM11E-G068	3	10/30/2013	12:04	power grab	44.5 ft.	fathometer	about 10	rejected	Only 3 to 4 inch cobbles present in sampler.	-	-	-	-	Yes
RM11E-G068	4	10/30/2013	12:15	power grab	43.6 ft.	fathometer	about 8cm	rejected	Only 3 to 4 inch cobbles present in sampler.	-	-	-	-	Yes
RM11E-G068	5	10/31/2013	17:43	power grab	46.1	fathometer	-	rejected	Only large cobbles present in sampler.	-	-	-	-	Yes
RM11E-G068	6	10/31/2013	18:00	power grab	47.3	fathometer	26 at deepest	retained	(0cm-3cm): loose, wet yellow-red clayey silt (ML). (3cm-26cm): loose gray-olive silty sand (SM) with some gravels and moderately sorted sands; fine to medium.	4 inch cobble(1)	slight organic (0.0 ppm)	none observed	yellow red / gray olive	Yes
RM11E-G069	1	10/30/2013	10:23	power grab	41 ft.	fathometer	23.5	retained	(0cm-6cm): loose yellow-red, very wet clayey silt (ML). Very fine sediment. (6cm-23.5cm): loose gray-olive wet silt (SM) poorly graded.	very minor wood debris at 10cm. Root fragments	no odor (0.0 ppm)	none observed	yellow red silt / gray olive	Yes
RM11E-G070	1	10/30/2013	13:57	power grab	47 ft.	fathometer	-	rejected	Two large 8 inch cobbles jam sampler.	-	-	-	-	Yes
RM11E-G070	2	10/30/2013	14:04	power grab	46.9 ft.	fathometer	-	rejected	Sampler fell over on the bottom during jaw closure. Sampler contained 2 to 5 inch gravels and cobbles.	-	-	-	-	Yes
RM11E-G070	3	10/30/2013	14:15	power grab	48.1 ft.	fathometer	8	retained	(0cm to 8cm): low recovery but sufficient to fill sample jars. Clayey silt (ML) with some fine sand.	cobbles 2-4"	no odor (0.0 ppm)	none observed	gray olive	Yes
RM11E-G071	1	10/30/2013	13:13	power grab	43.1 ft.	fathometer	24	retained	(0cm-1cm): loose yellow-red, very wet clayey silt (ML). (1cm-8cm): loose gray-olive, wet sandy silt (SM). Fine angular sands with well-sorted red lithics.	some organic materials	no odor (0.0 ppm)	none observed	yellow red / gray olive	Yes
RM11E-G072	1	10/30/2013	14:40	power grab	16.4 ft.	lead line	26	retained	(0cm-1cm): loose yellow-red, wet clayey silt (ML). (1cm-16cm): loose gray-olive, wet sandy silt (SM) with some sand and oxidized root channels. (10cm-26cm): loose gray-olive gravelly sandy silt (SM) with wood fragments.	rootlets & minor wood fragment	no odor (0.0 ppm)	none observed	yellow red / gray olive	Yes
RM11E-G073	1	10/30/2013	15:10	power grab	36.1	fathometer	-	rejected	18 inch boulder lodged in sampler jaws; no sediment recovery.	-	-	-	-	Yes
RM11E-G073	2	10/30/2013	15:15	power grab	36	fathometer	-	rejected	Sampler contents apparently washed-out during retrieval from river bottom.					Yes
RM11E-G073	3	10/30/2013	15:24	power grab	43.4	fathometer	-	rejected	18 inch boulder lodged in sampler jaws.					Yes
RM11E-G073	4	10/30/2013	15:32	power grab	34	fathometer	22	retained	(0cm-4cm): loose yellow-red silt (ML) with few two-inch minus gravels. (4cm-23cm): loose dark gray poorly sorted aggregate gravels with some silt.	all rock	no odor (0.0 ppm)	none observed	yellow red fines / dark gray gravel	Yes
RM11E-G074	1	10/30/2013	16:47	power grab	46.2	fathometer	26 on left side	retained	(0cm-1cm): loose yellow-red, wet clayey silt (ML). (1cm-26cm): loose gray-olive clayey silt (SM) with fine-grained sand. 2-4 inch rounded gravels and cobbles on the surface.		no odor (0.0 ppm)	none observed		Yes

Station	Rep	Date	Time	Collection Method	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Retained/ Rejected	Sediment Type and Description (Horizon from top of sampler)	Debris	Odor (PID)	Sheen	Color	Grab Photo Available (Yes/No)
RM11E-G075	1	10/30/2013	16:03	power grab	37	fathometer	-	rejected	Sampler did not collect sediments.	-	-	-	-	Yes
RM11E-G075	2	10/30/2013	16:20	power grab	35	fathometer	-	rejected	Sampler did not collect sediments.	-	-	-	-	Yes
RM11E-G075	3	10/30/2013	16:34	power grab	41.5	fathometer	-	rejected	Large boulder (>20 inches) lodged in jaws of sampler.	-	-	-	-	Yes
RM11E-G075	4	10/31/2013	16:45	power grab	42.7	fathometer	3	rejected	A few fine gray silts collected.					Yes
RM11E-G075	5	10/31/2013	16:55	power grab	44.0	fathometer	17	retained	(0cm-17cm): loose gray-olive silty sand (SM) with some gravels. Moderately sorted sands; fine to medium.	floss wood glass halogen light fixture gravel	no odor (0.1 ppm)	slight	gray olive	Yes
RM11E-G076	1	10/31/2013	9:15	power grab	43	fathometer	-	rejected	Abandoned grab; jaws pulling on something at the bottom.	-	-	-	-	Yes
RM11E-G076	2	10/31/2013	9:30	power grab	48.6	fathometer	25 (washed out on right side)	retained	(0cm-2cm): loose, yellow-red clayey-silt (ML). Two corbicula, or fresh water clams, on top surface. (2cm-25cm): medium dense yellow-red silty sand (SM) with fine-grained sands. Moderately sorted white fragments (shells) and red lithics throughout.	lots of woods debris; 10-25cm. trace fine gravel. corbicula	Weak organic odor in mixing bowl (0.0 ppm)	none observed	yellow red	Yes
RM11E-G077	1	10/31/2013	10:06	power grab	46.7	fathometer	-	rejected	Cobbles lodged in sampler jaws with approximately 4cm of sediment.	-	-	-	-	Yes
RM11E-G077	2	10/31/2013	10:12	power grab	46.8	fathometer	22	retained	(0cm-1cm): loose, yellow-red clayey silt (ML). (1cm-22cm): medium dense gravelly silty sand (SM). Gravels 0.2 to 1 inch are sub-rounded. Yellow, red, black, and green lithics with medium fine-grained sands.	wood pack of peanuts corbicula	no	none observed	yellow red	Yes
RM11E-G078	1	5/2/2014	8:35	manual grab (diver assisted)	36	pneumo-fathometer	30	rejected	Fines drained out when sampler was removed from the water.					No
RM11E-G078	2	5/2/2014	8:59	manual grab (diver assisted)	37	pneumo-fathometer	30.5	retained	(0cm-14cm): loose, yellow-red, silt (ML) with very fine rounded sand. 14cm-30.5cm): medium dense, yellow-red, wet silty sand (SM). Sand is very fine and poorly graded; yellow and dark gray clasts of the same material.	small brick fragments twigs	no odor (0.0 ppm)	none observed	yellow-red silt	Yes
RM11E-G079	1	10/31/2013	10:43	power grab	46.6	fathometer	-	rejected	Cobble in jaws of sampler. No recovery.	-	-	-	-	Yes
RM11E-G079	2	10/31/2013	10:48	power grab	45.8	fathometer	-	rejected	Abandoned grab; jaws pulling on something at the bottom.	-	-	-	-	Yes
RM11E-G079	3	10/31/2013	11:03	power grab	43.2	fathometer	11	rejected due to low recovery	(0cm-1cm): loose yellow-red clayey silt (ML). (1cm-11cm): silty sand (SM) with sub-rounded lithics (yellow, red, and black).	wood fragments	no odor (0.0 ppm)	no	gray olive / dark gray	Yes
RM11E-G079	4	10/31/2013	15:15	power grab	48.3	fathometer	-	rejected	Wood lodged in jaws of sampler.	-	-	-	-	Yes
RM11E-G079	5	10/31/2013	15:25	power grab	48.5	fathometer	-	rejected	Wood lodged in jaws of sampler.	-	-	-	-	Yes
RM11E-G079	6	10/31/2013	15:33	power grab	50	fathometer	-	rejected	Boulder and cobbles present in sampler.	-	-	-	-	Yes

Station	Rep	Date	Time	Collection Method	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Retained/ Rejected	Sediment Type and Description (Horizon from top of sampler)	Debris	Odor (PID)	Sheen	Color	Grab Photo Available (Yes/No)
RM11E-G079	7	10/31/2013	15:43	power grab	49.7	fathometer	23	retained	(0cm-6cm): dense gray-olive silty sand (SM) with gravel. Well sorted fine to medium sands. (6cm-20cm): yellow-red silty sand (SM) with poorly sorted gravels. Yellow, red, and black lithics. (20cm-23cm): dark gray silty sand (SM).	2 corbicula wire brick fragments T-bone	no odor (0.0 ppm)	none observed	gray olive	Yes
RM11E-G080	1	5/2/2014	9:55	manual grab (diver assisted)	37	pneumo-fathometer	30.5	retained	(0cm-14cm): medium stiff, yellow-red, moist silt with sand (ML). Very soft layer at the top. Sand is very fine and poorly-sorted. 14cm-22cm): sandy silt as above but with increasing sand content (0,50,50). 22cm-30.5cm): medium dense, yellow-red with dark gray clasts, wet silty sand (SM) with gravel. Sand is well-graded and angular with sub-angular gravels 1/2-inch minus.	twigs brick fragments glass	no odor (0.1 ppm)	none observed	yellow-red	Yes
RM11E-G081	1	5/2/2014	10:48	manual grab (diver assisted)	-	-	-	rejected	Rocky just under thin sediment layer.	-	-	-	-	No
RM11E-G081	2	5/2/2014	10:55	manual grab (diver assisted)	33	pneumo-fathometer	10	rejected	Insufficient recovery for sampling.					No
RM11E-G081	3	5/2/2014	11:00	manual grab (diver assisted)	34	pneumo-fathometer	-	rejected	Insufficient recovery for sampling.	-	-	-	-	No
RM11E-G081	4	5/2/2014	11:20	manual grab (diver assisted)	33	pneumo-fathometer	30.5	retained	(0cm-30.5cm): medium stiff, dark gray, wet silt (ML) with very fine sand.	coarse twigs	slight organic odor (0.0 ppm)	none observed	dark gray	Yes
RM11E-G082	1	10/31/2013	11:23	power grab	41	fathometer	10	rejected due to low recovery	Some silty sand collected.		no	no	gray olive / dark gray	Yes
RM11E-G082	2	10/31/2013	11:44	power grab	41.4	fathometer	8	rejected	Some silty sand collected.	no	no	no	gray olive	Yes
RM11E-G082	3	10/31/2013	12:02	power grab	41.2	fathometer	20 at highest right side washed out sampling from left	retained	(0cm-1cm): loose yellow-red clayey silt (ML). (1cm-9cm): dense gray-olive silty sand (SM) with poorly sorted sub-rounded yellow-red lithics. Well sorted sands. (9cm-20cm): dense dark gray gravelly silty sand (SM).	1 corbicula	no odor (0.0 ppm)	none observed	yellow red / gray olive / dark gray	Yes
RM11E-G083	1	5/1/2014	12:00	manual grab (diver assisted)	41	pneumo-fathometer	24	retained	(0cm-24cm): loose, dark brown, wet, silt (ML) with very fine rounded sand.	wheat grains small twig	strong marsh-like (0 to 0.9 ppm)	none observed	dark brown	Yes
RM11E-G084	1	5/1/2014	10:59	manual grab (diver assisted)	16	pneumo-fathometer	15	rejected	Very little silt or sediment present. Old pilings, woody debris, and gravel. Achieved full-penetration with sampler but only 6-inch recovery.	gravel, wood	-	none observed	dark black	Yes

Station	Rep	Date	Time	Collection Method	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Retained/ Rejected	Sediment Type and Description (Horizon from top of sampler)	Debris	Odor (PID)	Sheen	Color	Grab Photo Available (Yes/No)
RM11E-G084	2	5/1/2014	11:17	manual grab (diver assisted)	20.8	lead line	20	retained	(0cm-7cm): loose, black, moist rocky fill with well-sorted 1-inch minus angular rock. (7cm-19.5cm): medium dense, tan moist silt (ML) with very fine dark sand.	glass wood black-plastic	no odor (0.0 ppm)	none observed	black --- tan	Yes
RM11E-G085	1-3	5/2/2014	13:00	manual grab (diver assisted)	-	-	-	rejected	Insufficient recovery for sampling.	-	-	-	-	No
RM11E-G085	4	5/2/2014	13:50	manual grab (diver assisted)	-	-	Method C (scoop top 5-8 cm into wide-mouth jar)	retained	Loose, multi-colored gravels(GW) with some dark gray coarse sands. Gravels are well-graded and a heterogeneous mix of rounded, sub-rounded, and angular material.	concrete brick twigs leaves plastic	no odor (0.0 ppm)	none observed	none dominant sands are gray	Yes
RM11E-G086	1	5/1/2014	15:30	manual grab (diver assisted)	--	--	10	rejected	Gravels prevent penetration of sampler.				-	No
RM11E-G086	2	5/1/2014	16:10	manual grab (diver assisted)	31	pneumo-fathometer	255	rejected	Loose rock with no soil. 3-inch minus well-sorted gravels with chunks of asphalt, concrete aggregate, brick fragments, and sub-rounded and rounded gravels.	small twigs	no odor (0.0 ppm)	none observed	-	Yes
RM11E-G086	3	5/1/2014	16:30	manual grab (diver assisted)	38	pneumo-fathometer	-	rejected	Gravels prevent penetration of sampler.	woody debris				No
RM11E-G086	4	5/1/2014	16:42	manual grab (diver assisted)	-	-	-	rejected	4cm to 6cm of soft material over gravel. Unable to advance sampler or collect sediments.					No
RM11E-G086	5	5/2/2014	12:55	manual grab (diver assisted)	33	pneumo-fathometer	Method C (scoop top 5-8 cm into wide-mouth jar)	retained	Loose, olive gray, wet gravel (GM) with silty sand. Gravel is 1/4 to 2-inch minus and sub-rounded to sub-angular. Sand is well-graded fine to coarse and sub-rounded to sub-angular.	small bolt brick fragments twigs	no odor (0.0 ppm)	none observed	olive gray	Yes
RM11E-G087	1	5/2/2014	15:10	manual grab (diver assisted)	32	lead line	26	retained	Loose, dark olive gray and black, wet sand (SM) with gravel and silt. Sand is well-graded fine to coarse and angular. Some red and yellow flecks and gravels 1/4 to 2-inch minus.	twigs organics	no odor (0.0 ppm)	none observed	dark olive gray and black	Yes
RM11E-G088	1	5/1/2014	14:20	manual grab (diver assisted)	22	pneumo-fathometer	0	rejected	Gravels prevent penetration of sampler.					No
RM11E-G088	2	5/1/2014	14:30	manual grab (diver assisted)	22	lead line	5	rejected	Gravels prevent penetration of sampler.					No
RM11E-G088	3	5/1/2014	14:40	manual grab (diver assisted)	21.7	lead line	21.5	retained	(0cm-21.5cm): soft, dark brown to dark gray silt (ML) with fine dark gray sand. Gravels 1 1/2-inch minus well-graded angular and sub-rounded.	some twigs	no odor (0.0 ppm)	none observed	dark brown ---------- dark gray	Yes

APPENDIX E
LABORATORY REPORTS

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

Table E1: Laboratory Reports and Sample Index

Sorted by ALS Service Request Number and Lab Sample ID

Service Request	Lab Sample ID	RM11E Sample ID
K1311862	K1311862-001	RM11E-G069
	K1311862-002	RM11E-G070
	K1311862-003	RM11E-G071
	K1311862-004	RM11E-G072
	K1311862-005	RM11E-G073
	K1311862-006	RM11E-G074
K1311918	K1311918-001	RM11E-G076
	K1311918-002	RM11E-G077
	K1311918-003	RM11E-G082
	K1311918-004	RM11E-SL035
	K1311918-005	RM11E-SL036
	K1311918-006	RM11E-G079
	K1311918-007	RM11E-G075
	K1311918-008	RM11E-G068
	K1311918-009	RM11E-G979
	K1311918-010	RM11E-G579
K1312655	K1312655-001	RM11E-SL932
	K1312655-002	RM11E-SL032
	K1312655-003	RM11E-SL532
	K1312655-004	RM11E-SL033
	K1312655-005	RM11E-SL034
K1312731	K1312731-001	RM11E-MWS003d-5_10'
	K1312731-002	RM11E-MWS003d-10_15'
	K1312731-003	RM11E-MWS003d-15_20'
	K1312731-004	RM11E-MWS003d-20_25
	K1312731-005	RM11E-MWS003d-25_30'
	K1312731-006	RM11E-MWS003d-30_35
	K1312731-007	RM11E-MWS003d-5_18.7'

Sorted by Sample Matrix and Sample ID

RM11E Sample ID	Lab Sample ID	Sample Matrix
RM11E-G068	K1311918-008	Surface Sediment
RM11E-G069	K1311862-001	Surface Sediment
RM11E-G070	K1311862-002	Surface Sediment
RM11E-G071	K1311862-003	Surface Sediment
RM11E-G072	K1311862-004	Surface Sediment
	K1404419-003	Surface Sediment
RM11E-G073	K1311862-005	Surface Sediment
RM11E-G074	K1311862-006	Surface Sediment
RM11E-G075	K1311918-007	Surface Sediment
	K1404419-004	Surface Sediment
RM11E-G076	K1311918-001	Surface Sediment
RM11E-G077	K1311918-002	Surface Sediment
RM11E-G078	K1404420-001	Surface Sediment
RM11E-G079	K1311918-006	Surface Sediment
RM11E-G080	K1404420-002	Surface Sediment
RM11E-G081	K1404420-003	Surface Sediment
RM11E-G082	K1311918-003	Surface Sediment
RM11E-G083	K1404420-004	Surface Sediment
RM11E-G084	K1404420-005	Surface Sediment
RM11E-G085	K1404420-006	Surface Sediment
RM11E-G086	K1404420-007	Surface Sediment
RM11E-G087	K1404419-002	Surface Sediment
	K1404420-008	Surface Sediment
RM11E-G088	K1404419-001	Surface Sediment
	K1404420-009	Surface Sediment
RM11E-G089	K1404420-010	Surface Sediment
RM11E-G578	K1404420-011	Surface Sediment (FD)
RM11E-G579	K1311918-010	Surface Sediment (FD)

Table E1: Laboratory Reports and Sample Index

Sorted by ALS Service Request Number and Lab Sample ID		
Service Request	**Lab Sample ID**	**RM11E Sample ID**
	K1312731-008	RM11E-MWS003d-18.7_23.7'
K1312803	K1312803-001	RM11E-MWSS002S-5_10'
	K1312803-002	RM11E-MWSS002S-10_15'
	K1312803-003	RM11E-MWSS002S-15_20'
	K1312803-004	RM11E-MWSS002S-20_25'
	K1312803-005	RM11E-MWSS002S-5_20'
	K1312803-006	RM11E-MWSS002S-25_30'
K1312857	K1312857-001	RM11E-MWS001-5_10'
	K1312857-002	RM11E-MWS001-10_15'
	K1312857-003	RM11E-MWS001-15_20'
	K1312857-004	RM11E-MWS001-20_24'
	K1312857-005	RM11E-MWS001-5_24'
	K1312857-006	RM11E-MWS001-24_29'
	K1312857-007	RM11E-MWS001-29_34'
	K1312857-008	RM11E-MWS004-5_10'
	K1312857-009	RM11E-MWS004-10_15'
	K1312857-010	RM11E-MWS004-15_20'
	K1312857-011	RM11E-MWS004-20_25
	K1312857-012	RM11E-MWS004-5_24'
	K1312857-013	RM11E-MWS004-24_29'
	K1312857-014	RM11E-MWS004-30_35'
	K1312857-015	RM11E-MWS004-25_30'
	K1312857-016	*RM11E-MWS504-24_29'*
	K1312857-017	*RM11E-MWS904-24_29'*
	K1312857-018	RM11E-MWS005-5_10'
	K1312857-019	RM11E-MWS005-10_15'
	K1312857-020	RM11E-MWS005-15_20'
	K1312857-021	RM11E-MWS005-20_25

Sorted by Sample Matrix and Sample ID		
RM11E Sample ID	**Lab Sample ID**	**Sample Matrix**
RM11E-G978	K1404420-012	Surface Sediment (RB)
RM11E-G979	K1311918-009	Surface Sediment (RB)
RM11E-MULT1007-04-2014	K1403697-002	Groundwater
RM11E-MULT1007-12-2013	K1313248-003	Groundwater
RM11E-MULT89881-04-2014	K1403697-007	Groundwater
RM11E-MULT89881-12-2013	K1313208-001	Groundwater
RM11E-MW001-04-2014	K1403697-001	Groundwater
RM11E-MW001-12-2013	K1313401-001	Groundwater
RM11E-MW002s-04-2014	K1403697-008	Groundwater
RM11E-MW002s-12-2013	K1313248-004	Groundwater
RM11E-MW003d-04-2014	K1403697-006	Groundwater
RM11E-MW003d-12-2013	K1313248-005	Groundwater
RM11E-MW004-04-2014	K1403697-009	Groundwater
RM11E-MW004-12-2013	K1313248-002	Groundwater
RM11E-MW005-04-2014	K1403697-003	Groundwater
RM11E-MW005-12-2013	K1313248-001	Groundwater
RM11E-5MULT89881-12-2013	K1313208-002	Groundwater (FD)
RM11E-MW505-04-2014	K1403697-004	Groundwater (FD)
Trip Blank	K1313248-006	Groundwater (TB)
Trip Blank	K1313401-002	Groundwater (TB)
Trip Blank	K1403697-005	Groundwater (TB)
Trip Blank	K1403697-010	Groundwater (TB)
RM11E-MWS001-10_15'	K1312857-002	Subsurface Soil
RM11E-MWS001-15_20'	K1312857-003	Subsurface Soil
RM11E-MWS001-20_24'	K1312857-004	Subsurface Soil
RM11E-MWS001-24_29'	K1312857-006	Subsurface Soil
RM11E-MWS001-29_34'	K1312857-007	Subsurface Soil
RM11E-MWS001-5_10'	K1312857-001	Subsurface Soil

Table E1: Laboratory Reports and Sample Index

Sorted by ALS Service Request Number and Lab Sample ID		
Service Request	**Lab Sample ID**	**RM11E Sample ID**
	K1312857-022	RM11E-MWS005-25_30'
	K1312857-023	RM11E-MWS005-30_35'
	K1312857-024	RM11E-MWS005-5_21'
	K1312857-025	RM11E-MWS005-21_26'
	K1312857-026	RM11E-SL031
	K1312857-027	RM11E-SL028
	K1312857-028	RM11E-SL029
	K1312857-029	RM11E-SL030
K1313208	K1313208-001	RM11E-MULT89881-12-2013
	K1313208-002	RM11E-5MULT89881-12-2013
K1313248	K1313248-001	RM11E-MW005-12-2013
	K1313248-002	RM11E-MW004-12-2013
	K1313248-003	RM11E-MULT1007-12-2013
	K1313248-004	RM11E-MW002s-12-2013
	K1313248-005	RM11E-MW003d-12-2013
	K1313248-006	*Trip Blank*
K1313401	K1313401-001	RM11E-MW001-12-2013
	K1313401-002	*Trip Blank*
K1400182	K1400182-001	RM11E-SL031
K1403697	K1403697-001	RM11E-MW001-04-2014
	K1403697-002	RM11E-MULT1007-04-2014
	K1403697-003	RM11E-MW005-04-2014
	K1403697-004	RM11E-MW505-04-2014
	K1403697-005	*Trip Blank*
	K1403697-006	RM11E-MW003d-04-2014
	K1403697-007	RM11E-MULT89881-04-2014
	K1403697-008	RM11E-MW002s-04-2014
	K1403697-009	RM11E-MW004-04-2014

Sorted by Sample Matrix and Sample ID		
RM11E Sample ID	**Lab Sample ID**	**Sample Matrix**
RM11E-MWS001-5_24'	K1312857-005	Subsurface Soil
RM11E-MWS003d-10_15'	K1312731-002	Subsurface Soil
RM11E-MWS003d-15_20'	K1312731-003	Subsurface Soil
RM11E-MWS003d-18.7_23.7'	K1312731-008	Subsurface Soil
RM11E-MWS003d-20_25	K1312731-004	Subsurface Soil
RM11E-MWS003d-25_30'	K1312731-005	Subsurface Soil
RM11E-MWS003d-30_35	K1312731-006	Subsurface Soil
RM11E-MWS003d-5_10'	K1312731-001	Subsurface Soil
RM11E-MWS003d-5_18.7'	K1312731-007	Subsurface Soil
RM11E-MWS004-10_15'	K1312857-009	Subsurface Soil
RM11E-MWS004-15_20'	K1312857-010	Subsurface Soil
RM11E-MWS004-20_25	K1312857-011	Subsurface Soil
RM11E-MWS004-24_29'	K1312857-013	Subsurface Soil
RM11E-MWS004-25_30'	K1312857-015	Subsurface Soil
RM11E-MWS004-30_35'	K1312857-014	Subsurface Soil
RM11E-MWS004-5_10'	K1312857-008	Subsurface Soil
RM11E-MWS004-5_24'	K1312857-012	Subsurface Soil
RM11E-MWS005-10_15'	K1312857-019	Subsurface Soil
RM11E-MWS005-15_20'	K1312857-020	Subsurface Soil
RM11E-MWS005-20_25	K1312857-021	Subsurface Soil
RM11E-MWS005-21_26'	K1312857-025	Subsurface Soil
RM11E-MWS005-25_30'	K1312857-022	Subsurface Soil
RM11E-MWS005-30_35'	K1312857-023	Subsurface Soil
RM11E-MWS005-5_10'	K1312857-018	Subsurface Soil
RM11E-MWS005-5_21'	K1312857-024	Subsurface Soil
RM11E-MWSS002s-10_15'	K1312803-002	Subsurface Soil
RM11E-MWSS002S-15_20'	K1312803-003	Subsurface Soil
RM11E-MWSS002S-20_25'	K1312803-004	Subsurface Soil

Table E1: Laboratory Reports and Sample Index

Sorted by ALS Service Request Number and Lab Sample ID		
Service Request	**Lab Sample ID**	**RM11E Sample ID**
	K1403697-010	*Trip Blank*
K1404419	K1404419-001	RM11E-G088
	K1404419-002	RM11E-G087
	K1404419-003	RM11E-G072
	K1404419-004	RM11E-G075
K1404420	K1404420-001	RM11E-G078
	K1404420-002	RM11E-G080
	K1404420-003	RM11E-G081
	K1404420-004	RM11E-G083
	K1404420-005	RM11E-G084
	K1404420-006	RM11E-G085
	K1404420-007	RM11E-G086
	K1404420-008	RM11E-G087
	K1404420-009	RM11E-G088
	K1404420-010	RM11E-G089
	K1404420-011	RM11E-G578
	K1404420-012	RM11E-G978

Sorted by Sample Matrix and Sample ID		
RM11E Sample ID	**Lab Sample ID**	**Sample Matrix**
RM11E-MWSS002S-25_30'	K1312803-006	Subsurface Soil
RM11E-MWSS002S-5_10'	K1312803-001	Subsurface Soil
RM11E-MWSS002S-5_20'	K1312803-005	Subsurface Soil
RM11E-MWS504-24_29'	K1312857-016	Subsurface Soil (FD)
RM11E-MW904-24_29'	K1312857-017	Subsurface Soil (RB)
RM11E-SL028	K1312857-027	Surface Soil
RM11E-SL029	K1312857-028	Surface Soil
RM11E-SL030	K1312857-029	Surface Soil
RM11E-SL031	K1312857-026	Surface Soil
	K1400182-001	Surface Soil
RM11E-SL032	K1312655-002	Surface Soil
RM11E-SL033	K1312655-004	Surface Soil
RM11E-SL034	K1312655-005	Surface Soil
RM11E-SL035	K1311918-004	Surface Soil
RM11E-SL036	K1311918-005	Surface Soil
RM11E-SL532	K1312655-003	Surface Soil (FD)
RM11E-SL932	K1312655-001	Surface Soil (RB)

Notes:
FD = Field Duplicate
RB = Rinsate Blank
TB = Trip Blank
Samples that are on more than one ALS Service Request number are highlighted for reference.

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

November 21, 2013

Analytical Report for Service Request No: K1311862

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on October 31, 2013. For your reference, these analyses have been assigned our service request number K1311862.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

for G.S.

Gregory Salata, Ph.D.
Project Manager

GS/ln

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/ 487.002	**Date Received:**	10/31/13
Sample Matrix:	Sediment		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six sediment samples were received for analysis at ALS Environmental on 10/31/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C and frozen at –20°C as required upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1232 in CAL12822. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The initial analysis of the replicate matrix spikes for sample Batch QC (associated with extraction batch KWG1312651) resulted in failure of the closing Continuing Calibration Verification (CCV) to meet control criteria on both primary and confirmation columns. A re-analysis was performed, but produced similar results. Further analyses of the Batch QC and associated matrix spikes had not been completed as of the time of report production. At the request of the Project Chemist, the results from this extraction batch were reported without the associated replicate matrix spike results.

Sample Confirmation Notes:
The confirmation comparison criterion of 40% difference was exceeded for Aroclor 1254 in sample RM11E-G071. The lower of the two values was reported when there was an apparent interference from Aroclor 1260 on the alternate column that produced the higher value.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1016 and 1254 in sample RM11E-G069. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Approved by_____

Sample Notes and Discussion:
Multiple Aroclors were identified in several field samples: Aroclor 1242, Aroclor 1254, and/or Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

A review of the chromatograms for samples RM11E-G071 and RM11E-G074 indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Although the presence of Aroclor 1248 could not be ruled out, Aroclor 1242 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclors 1254 and 1260 were identified based on the presence of later eluting PCB peaks in the chromatogram.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254, and/or 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

K1311862

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Date 30-Oct-13 Page 1 of 1

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Erin Carroll Hughes

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals[2] (EPA 6020 & 7471A)	organics[3] (NWTPH-Dx)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Dioxins/Furans (1613B)	Archive Frozen	Archive Unfrozen			REMARKS
RM11E-G069	10/30/2013	10:23		Sediment	4	X	X	X	X									X				
RM11E-G070	10/30/2013	14:15		Sediment	4	X*	X*	X*	X*									X*				*Please hold until Erin confirms analysis.
RM11E-G071	10/30/2013	13:13		Sediment	4	X	X	X	X									X				
RM11E-G072	10/30/2013	14:40		Sediment	4	X	X	X	X									X				
RM11E-G073	10/30/2013	15:32		Sediment	4	X	X	X	X									X				
RM11E-G074	10/30/2013	16:47		Sediment	4	X	X	X	X									X				

Relinquished By	Received By
Erin Carroll Hughes	
Signature: Erin Carroll Hughes	Signature: [illegible]
Printed Name: GSI Water Solutions	Printed Name: S. Lewis
Firm: 10/30/13 19:14	Firm: ALS-Kelso
Date/Time	Date/Time: 10/31/13 1400

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
___ Standard (10 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report
___ II. Report (includes DUP, MS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____
Shipping #: _____
Condition: _____
Lab No: _____

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528

K1311862

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Date 30-Oct-13 Page 1 of 1

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax**: (503) 239-8940

Sampler's Signature: Erin Carroll Hughes

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals[2] (EPA 6020 & 7471A)	organics[3] (NWTPH-Dx)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Dioxins/Furans (1613B)	Archive Frozen	Archive Unfrozen			REMARKS
RM11E-G069	10/30/2013	10:23		Sediment	4	X	X	X	X									X				
RM11E-G070	10/30/2013	14:15		Sediment	4	X*	X*	X*	X*									X*				*Please hold until Erin confirms analysis.
RM11E-G071	10/30/2013	13:13		Sediment	4	X	X	X	X									X				
RM11E-G072	10/30/2013	14:40		Sediment	4	X	X	X	X									X				
RM11E-G073	10/30/2013	15:32		Sediment	4	X	X	X	X									X				
RM11E-G074	10/30/2013	16:47		Sediment	4	X	X	X	X									X				

Relinquished By	Received By
Erin Carroll Hughes	[illegible]
Signature: Erin Carroll Hughes	Signature: [illegible]
Printed Name: GSI Water Solutions	Printed Name: ALS-Kelso
Firm: 10/30/13 19:14	Firm: 10/31/13 1400
Date/Time	Date/Time

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
___ Standard (10 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report
___ II. Report (includes DUP, MS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____
Shipping #: _____
Condition: _____
Lab No: _____

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528

10

PC Greg

Cooler Receipt and Preservation Form

Client / Project: G 51 Service Request K13 11862

Received: October 31, 13 Opened: 10/31 By: SD Unloaded: 10/31 By: SD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2-Front 1-Side

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
3.6	3.6	3.5	3.5	0.0	322			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Total Solids

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/13
Sample Matrix:	Sediment	**Date Received:**	10/31/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	NA

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G069	K1311862-001	**56.4**	-	-	1	11/14/13 15:12	
RM11E-G070	K1311862-002	**39.1**	-	-	1	11/19/13 10:00	
RM11E-G071	K1311862-003	**66.0**	-	-	1	11/14/13 15:12	
RM11E-G072	K1311862-004	**56.3**	-	-	1	11/14/13 15:12	
RM11E-G073	K1311862-005	**75.1**	-	-	1	11/14/13 15:12	
RM11E-G074	K1311862-006	**63.5**	-	-	1	11/14/13 15:12	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/13
Date Received: 10/31/13
Date Analyzed: 11/14/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: RM11E-G074
Lab Code: K1311862-006

Units: Percent
Basis: NA

Analyte Name	MRL	MDL	Sample Result	RM11E-G074DUP Duplicate Sample K1311862-006DUP Result	RM11E-G074TRP Triplicate Sample K1311862-006TRP Result	Average	RSD	RSD Limit
Solids, Total			63.5	63.3	63.3	63.4	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

General Chemistry Parameters

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G069
Lab Code: K1311862-001

Sand Fraction: Weight (Grams)	20.2685
Sand Fraction: Weight Recovered (Grams)	20.1910
Sand Fraction: Percent Recovery	99.62

Weight as received (Grams)	49.5083
Percent Solids	56.4
Weight Oven-Dried (Grams)	27.9227

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0267	0.10
Gravel, Fine	2.00 mm	10	0.2234	0.80
Sand, Very Coarse	0.850 mm	20	0.1797	0.64
Sand, Coarse	0.425 mm	40	0.2018	0.72
Sand, Medium	0.250 mm	60	1.1427	4.09
Sand, Fine	0.106 mm	140	11.0246	39.48
Sand, Very Fine	0.075 mm	200	5.1171	18.33
Silt			7.1600	25.64
Clay			1.2900	4.62
		Total	26.3660	94.42

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G070
Lab Code: K1311862-002

Sand Fraction: Weight (Grams)	6.1687
Sand Fraction: Weight Recovered (Grams)	6.1379
Sand Fraction: Percent Recovery	99.50

Weight as received (Grams)	29.6590
Percent Solids	39.1
Weight Oven-Dried (Grams)	11.5967

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.2252	1.94
Gravel, Fine	2.00 mm	10	0.5542	4.78
Sand, Very Coarse	0.850 mm	20	0.8766	7.56
Sand, Coarse	0.425 mm	40	1.0075	8.69
Sand, Medium	0.250 mm	60	0.8788	7.58
Sand, Fine	0.106 mm	140	1.6184	13.96
Sand, Very Fine	0.075 mm	200	0.6391	5.51
Silt			6.0250	51.95
Clay			0.5450	4.70
		Total	12.3698	106.67

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G071
Lab Code: K1311862-003

Sand Fraction: Weight (Grams)	16.4364
Sand Fraction: Weight Recovered (Grams)	16.3772
Sand Fraction: Percent Recovery	99.64

Weight as received (Grams)	36.5895
Percent Solids	66.0
Weight Oven-Dried (Grams)	24.1491

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.1518	0.63
Gravel, Fine	2.00 mm	10	1.4828	6.14
Sand, Very Coarse	0.850 mm	20	1.1236	4.65
Sand, Coarse	0.425 mm	40	1.6095	6.66
Sand, Medium	0.250 mm	60	3.7959	15.72
Sand, Fine	0.106 mm	140	5.8744	24.33
Sand, Very Fine	0.075 mm	200	1.5181	6.29
Silt			5.7600	23.85
Clay			0.9400	3.89
		Total	22.2561	92.16

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G072
Lab Code: K1311862-004

Sand Fraction: Weight (Grams)	13.8419
Sand Fraction: Weight Recovered (Grams)	13.8833
Sand Fraction: Percent Recovery	100.30

Weight as received (Grams)	39.6671
Percent Solids	56.3
Weight Oven-Dried (Grams)	22.3326

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.5818	2.61
Gravel, Fine	2.00 mm	10	0.3804	1.70
Sand, Very Coarse	0.850 mm	20	0.3671	1.64
Sand, Coarse	0.425 mm	40	0.3056	1.37
Sand, Medium	0.250 mm	60	0.4986	2.23
Sand, Fine	0.106 mm	140	7.6739	34.36
Sand, Very Fine	0.075 mm	200	2.9585	13.25
Silt			7.2850	32.62
Clay			1.5550	6.96
		Total	21.6059	96.74

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G073
Lab Code: K1311862-005

Sand Fraction: Weight (Grams)	34.7439
Sand Fraction: Weight Recovered (Grams)	34.8260
Sand Fraction: Percent Recovery	100.24

Weight as received (Grams)	48.4795
Percent Solids	75.1
Weight Oven-Dried (Grams)	36.4081

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	16.5781	45.53
Gravel, Fine	2.00 mm	10	3.2931	9.04
Sand, Very Coarse	0.850 mm	20	0.9189	2.52
Sand, Coarse	0.425 mm	40	0.8255	2.27
Sand, Medium	0.250 mm	60	1.7843	4.90
Sand, Fine	0.106 mm	140	8.5847	23.58
Sand, Very Fine	0.075 mm	200	2.2144	6.08
Silt			2.0900	5.74
Clay			0.4950	1.36
		Total	36.7840	101.02

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G074
Lab Code: K1311862-006

Sand Fraction: Weight (Grams)	14.0780
Sand Fraction: Weight Recovered (Grams)	14.0596
Sand Fraction: Percent Recovery	99.87

Weight as received (Grams)	35.6554
Percent Solids	63.5
Weight Oven-Dried (Grams)	22.6412

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.5244	2.32
Sand, Very Coarse	0.850 mm	20	0.4281	1.89
Sand, Coarse	0.425 mm	40	0.8108	3.58
Sand, Medium	0.250 mm	60	2.1274	9.40
Sand, Fine	0.106 mm	140	6.2699	27.69
Sand, Very Fine	0.075 mm	200	2.5004	11.04
Silt			7.0000	30.92
Clay			1.2700	5.61
		Total	20.9310	92.45

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/23/2013
Sample Matrix:	Sediment	**Date Received:**	10/25/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1311437-016

Sand Fraction: Weight (Grams)	55.3096
Sand Fraction: Weight Recovered (Grams)	55.3476
Sand Fraction: Percent Recovery	100.07

Weight as received (Grams)	81.3032
Percent Solids	69.8
Weight Oven-Dried (Grams)	56.7496

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.4029	0.71
Gravel, Fine	2.00 mm	10	0.3273	0.58
Sand, Very Coarse	0.850 mm	20	1.0158	1.79
Sand, Coarse	0.425 mm	40	10.4210	18.36
Sand, Medium	0.250 mm	60	21.8564	38.51
Sand, Fine	0.106 mm	140	18.8368	33.19
Sand, Very Fine	0.075 mm	200	1.7838	3.14
Silt			2.2550	3.97
Clay			0.2300	0.41
		Total	57.1290	100.66

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/22/2013
Sample Matrix:	Sediment	**Date Received:**	10/24/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1311437-016 DUP

Sand Fraction: Weight (Grams)	50.6505
Sand Fraction: Weight Recovered (Grams)	50.6325
Sand Fraction: Percent Recovery	99.96

Weight as received (Grams)	73.8815
Percent Solids	69.8
Weight Oven-Dried (Grams)	51.5693

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.7679	1.49
Gravel, Fine	2.00 mm	10	0.2557	0.50
Sand, Very Coarse	0.850 mm	20	1.0718	2.08
Sand, Coarse	0.425 mm	40	9.8608	19.12
Sand, Medium	0.250 mm	60	19.5012	37.82
Sand, Fine	0.106 mm	140	16.7819	32.54
Sand, Very Fine	0.075 mm	200	1.6181	3.14
Silt			2.2350	4.33
Clay			0.1000	0.19
		Total	52.1924	101.21

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/13
Sample Matrix:	Sediment	**Date Received:**	10/31/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-G069	K1311862-001	**1.40**	0.050	0.020	1	11/11/13 10:00	11/11/13	
RM11E-G070	K1311862-002	**1.99**	0.050	0.020	1	11/11/13 10:00	11/11/13	
RM11E-G071	K1311862-003	**1.38**	0.050	0.020	1	11/11/13 10:00	11/11/13	
RM11E-G072	K1311862-004	**1.64**	0.050	0.020	1	11/11/13 10:00	11/11/13	
RM11E-G073	K1311862-005	**1.03**	0.050	0.020	1	11/11/13 10:00	11/11/13	
RM11E-G074	K1311862-006	**1.16**	0.050	0.020	1	11/11/13 10:00	11/11/13	
Method Blank	K1311862-MB	ND U	0.050	0.020	1	11/11/13 10:00	11/11/13	

ALS Group USA, Corp.
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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/13
Sample Matrix:	Sediment	**Date Received:**	10/31/13
		Date Analyzed:	11/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G069	**Units:**	Percent
Lab Code:	K1311862-001	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1311862-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	PSEP TOC	0.050	0.020	1.40	1.36	1.38	3	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/13
Sample Matrix:	Sediment	**Date Received:**	10/31/13
		Date Analyzed:	11/11/13
		Date Extracted:	11/11/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-G069	**Units:**	Percent
Lab Code:	K1311862-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1311862-001MS			Duplicate Matrix Spike K1311862-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	1.40	6.02	4.78	97	5.20	4.10	93	69-123	4	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Analyzed:**	11/11/13
Sample Matrix:	Sediment	**Date Extracted:**	11/11/13

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	368010

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1311862-LCS	0.297	0.275	108	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1311862
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	368010	KQ1313496-01	11/11/13 10:00	20.0	19.8	99	90-110
CCV2	368010	KQ1313496-02	11/11/13 10:00	20.0	19.8	99	90-110
CCV3	368010	KQ1313496-03	11/11/13 10:00	20.0	19.9	99	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1311862
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	368010	KQ1313496-04	11/11/13 10:00	0.050	0.020	ND	U
CCB2	368010	KQ1313496-05	11/11/13 10:00	0.050	0.020	ND	U
CCB3	368010	KQ1313496-06	11/11/13 10:00	0.050	0.020	ND	U

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Service Request: K1311862

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G069	K1311862-001	10/30/2013	10/31/2013
RM11E-G070	K1311862-002	10/30/2013	10/31/2013
RM11E-G071	K1311862-003	10/30/2013	10/31/2013
RM11E-G072	K1311862-004	10/30/2013	10/31/2013
RM11E-G073	K1311862-005	10/30/2013	10/31/2013
RM11E-G074	K1311862-006	10/30/2013	10/31/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Jeffrey M. Smith

Date: 11/20/13 Title: GC Analyst

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G069	**Units:**	ug/Kg
Lab Code:	K1311862-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	4.4	2.6	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	8.8	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	Ui	4.4	3.9	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**54**		4.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.4	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G070	**Units:**	ug/Kg
Lab Code:	K1311862-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1221	ND	U	7.6	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1232	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1242	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1248	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1254	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1260	**420**		4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1262	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1268	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G071
Lab Code: K1311862-003

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.6	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	**17**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**51**	P	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**110**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	86	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G072
Lab Code: K1311862-004

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	8.9	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**16**		4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**15**		4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.5	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	43-148	11/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G073	**Units:**	ug/Kg
Lab Code:	K1311862-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	6.7	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**2.7**	J	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**13**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	80	43-148	11/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G074	**Units:**	ug/Kg
Lab Code:	K1311862-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.9	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	**5.2**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**29**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**39**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG1312600-4
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	5.0	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	96	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312651-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1221	ND	U	5.0	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1232	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1242	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1248	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1254	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1260	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1262	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	
Aroclor 1268	ND	U	4.3	2.1	1	11/07/13	11/16/13	KWG1312651	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	93	43-148	11/16/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-G069	K1311862-001	79
RM11E-G070	K1311862-002	78
RM11E-G071	K1311862-003	86
RM11E-G072	K1311862-004	74
RM11E-G073	K1311862-005	80
RM11E-G074	K1311862-006	73
Batch QC	K1311918-004	80
Method Blank	KWG1312600-4	96
Method Blank	KWG1312651-4	93
Batch QCMS	KWG1312600-1	87
Batch QCDMS	KWG1312600-2	85
Lab Control Sample	KWG1312600-3	99
Lab Control Sample	KWG1312651-3	93

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311862
Date Extracted: 11/05/2013
Date Analyzed: 11/16/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K1311918-004

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low
Extraction Lot: KWG1312600

		Batch QCMS KWG1312600-1 Matrix Spike			Batch QCDMS KWG1312600-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	96.4	117	83	75.6	116	65	23-145	24	40
Aroclor 1260	12	112	117	86	92.9	116	70	24-148	18	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Extracted: 11/05/2013
Date Analyzed: 11/16/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1312600

	Lab Control Sample KWG1312600-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	117	200	58	42-122
Aroclor 1260	164	200	82	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311862
Date Extracted: 11/07/2013
Date Analyzed: 11/16/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1312651

	Lab Control Sample KWG1312651-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	155	200	77	42-122
Aroclor 1260	171	200	85	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/16/2013
		Time Analyzed:	11:46

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1312600-4	**File ID:**	J:\GC32\DATA\111613.B\1116F004.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312600

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312600-3	J:\GC32\DATA\111613.B\1116F003.D	11/16/13	11:25
RM11E-G069	K1311862-001	J:\GC32\DATA\111613.B\1116F005.D	11/16/13	12:08
RM11E-G071	K1311862-003	J:\GC32\DATA\111613.B\1116F006.D	11/16/13	12:29
RM11E-G072	K1311862-004	J:\GC32\DATA\111613.B\1116F007.D	11/16/13	12:50
RM11E-G073	K1311862-005	J:\GC32\DATA\111613.B\1116F008.D	11/16/13	13:11
RM11E-G074	K1311862-006	J:\GC32\DATA\111613.B\1116F009.D	11/16/13	13:33
Batch QC	K1311918-004	J:\GC32\DATA\111613.B\1116F015.D	11/16/13	15:42
Batch QCMS	KWG1312600-1	J:\GC32\DATA\111613.B\1116F016.D	11/16/13	16:04
Batch QCDMS	KWG1312600-2	J:\GC32\DATA\111613.B\1116F017.D	11/16/13	16:26

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/07/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/16/2013
		Time Analyzed:	19:04

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1312651-4	**File ID:**	J:\GC32\DATA\111613.B\1116F024.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312651

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312651-3	J:\GC32\DATA\111613.B\1116F023.D	11/16/13	18:41
RM11E-G070	K1311862-002	J:\GC32\DATA\111613.B\1116F025.D	11/16/13	19:27

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/16/2013
		Time Analyzed:	11:25

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1312600-3	**File ID:**	J:\GC32\DATA\111613.B\1116F003.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312600

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312600-4	J:\GC32\DATA\111613.B\1116F004.D	11/16/13	11:46
RM11E-G069	K1311862-001	J:\GC32\DATA\111613.B\1116F005.D	11/16/13	12:08
RM11E-G071	K1311862-003	J:\GC32\DATA\111613.B\1116F006.D	11/16/13	12:29
RM11E-G072	K1311862-004	J:\GC32\DATA\111613.B\1116F007.D	11/16/13	12:50
RM11E-G073	K1311862-005	J:\GC32\DATA\111613.B\1116F008.D	11/16/13	13:11
RM11E-G074	K1311862-006	J:\GC32\DATA\111613.B\1116F009.D	11/16/13	13:33
Batch QC	K1311918-004	J:\GC32\DATA\111613.B\1116F015.D	11/16/13	15:42
Batch QCMS	KWG1312600-1	J:\GC32\DATA\111613.B\1116F016.D	11/16/13	16:04
Batch QCDMS	KWG1312600-2	J:\GC32\DATA\111613.B\1116F017.D	11/16/13	16:26

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/07/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/16/2013
		Time Analyzed:	18:41

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1312651-3	**File ID:**	J:\GC32\DATA\111613.B\1116F023.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312651

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312651-4	J:\GC32\DATA\111613.B\1116F024.D	11/16/13	19:04
RM11E-G070	K1311862-002	J:\GC32\DATA\111613.B\1116F025.D	11/16/13	19:27

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.00E+5	B	5.0	91400	C	50	76300	D	100	71900	E	200	69500
	F	500	66100												
Aroclor 1016 {1}	A	25	2040	B	50	1870	C	500	1680	D	1000	1580	E	2000	1510
	F	5000	1340												
Aroclor 1016 {2}	A	25	1510	B	50	1590	C	500	1380	D	1000	1330	E	2000	1300
	F	5000	1150												
Aroclor 1016 {3}	A	25	5120	B	50	4510	C	500	4030	D	1000	3930	E	2000	3830
	F	5000	3540												
Aroclor 1016 {4}	A	25	3520	B	50	3350	C	500	2930	D	1000	2760	E	2000	2650
	F	5000	2420												
Aroclor 1016 {5}	A	25	2840	B	50	2650	C	500	2350	D	1000	2230	E	2000	2120
	F	5000	1950												
Aroclor 1260 {1}	A	25	2510	B	50	2480	C	500	2260	D	1000	2210	E	2000	2140
	F	5000	2040												
Aroclor 1260 {2}	A	25	3950	B	50	3950	C	500	3410	D	1000	3230	E	2000	3090
	F	5000	2890												
Aroclor 1260 {3}	A	25	4130	B	50	3980	C	500	3640	D	1000	3450	E	2000	3340
	F	5000	3130												
Aroclor 1260 {4}	A	25	9750	B	50	9000	C	500	7940	D	1000	7710	E	2000	7660
	F	5000	7490												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7750	B	50	7170	C	500	6330	D	1000	6020	E	2000	5900
	F	5000	5670												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	14.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.0		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	10.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.0		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	940	1670	1580	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	910	1380	1260	-9	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	890	4160	3720	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	890	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	900	2350	2120	-10	NA	± 100 %	AverageRF
Aroclor 1016	1000	910	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	1000	910	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	3420	3670	7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	3610	3810	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	8260	8450	2	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	990	6470	6430	-1	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	7.85E+5	B	5.0	7.15E+5	C	50	5.62E+5	D	100	5.31E+5	E	200	5.22E+5
Aroclor 1016 {1}	A	25	16500	B	50	15600	C	500	13200	D	1000	12300	E	2000	11800
	F	5000	10500												
Aroclor 1016 {2}	A	25	43600	B	50	40200	C	500	34100	D	1000	31800	E	2000	32600
	F	5000	30100												
Aroclor 1016 {3}	A	25	28800	B	50	26900	C	500	22000	D	1000	21000	E	2000	20500
	F	5000	18900												
Aroclor 1016 {4}	A	25	22700	B	50	20500	C	500	16600	D	1000	15700	E	2000	15200
	F	5000	13700												
Aroclor 1016 {5}	A	25	21900	B	50	19800	C	500	16600	D	1000	15600	E	2000	15200
	F	5000	13800												
Aroclor 1260 {1}	A	25	47900	B	50	43700	C	500	34600	D	1000	33200	E	2000	32500
	F	5000	29900												
Aroclor 1260 {2}	A	25	36100	B	50	32300	C	500	26900	D	1000	25400	E	2000	24600
	F	5000	22800												
Aroclor 1260 {3}	A	25	34100	B	50	33300	C	500	27600	D	1000	26400	E	2000	26000
	F	5000	24100												
Aroclor 1260 {4}	A	25	83800	B	50	75200	C	500	63200	D	1000	61100	E	2000	61700
	F	5000	59300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	55700	B	50	48100	C	500	41400	D	1000	39400	E	2000	38900
	F	5000	36200												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	19.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	17.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	15.0		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	17.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	18.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	19.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	18.3		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	16.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	900	13300	11900	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	35400	30200	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	840	23000	19400	-16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	830	17400	14400	-17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	850	17200	14600	-15	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	850	37000	31400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1000	28600	29700	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	67400	69500	3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1000	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F001.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73400	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	510	1670	1710	2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	1380	1350	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	4160	3960	-5	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	2940	2680	-9	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2110	-10	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-5	± 20 %	NA
Aroclor 1260 {1}	500	460	2270	2080	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3190	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	480	3610	3440	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7650	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6070	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F001.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	55	623000	683000	10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	610	13300	16200	22	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	530	35400	37300	5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	520	23000	23900	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	17400	17700	2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	17200	17500	2	NA	± 100 %	AverageRF
Aroclor 1016	500	530	NA	NA	NA	7	± 20 %	NA
Aroclor 1260 {1}	500	500	37000	36900	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	520	28000	29300	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	530	28600	30400	7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	530	67400	71700	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	540	43300	46800	8	NA	± 100 %	AverageRF
Aroclor 1260	500	530	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F013.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73100	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	1670	1750	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1380	1390	1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	4160	4180	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	2940	2760	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2130	-10	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	460	2270	2110	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3230	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	3610	3420	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7550	-9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6050	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F013.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	50	623000	620000	-1	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	600	13300	15900	19	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	35400	34600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	23000	23200	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	17400	17300	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	17200	16700	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	470	37000	35000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	28000	25800	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	510	28600	29100	2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	490	67400	65400	-3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	500	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	500	490	NA	NA	NA	-3	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F026.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	79200	74100	-6	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	530	1670	1780	6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	520	1380	1420	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	4160	4030	-3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	2940	2760	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	460	2350	2180	-7	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-1	± 20 %	NA
Aroclor 1260 {1}	500	470	2270	2110	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3240	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	480	3610	3440	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7640	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6090	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F026.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	50	623000	620000	0	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	600	13300	16100	21	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	35400	35000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	23000	23300	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	490	17400	17100	-2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	17200	16900	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	4	± 20 %	NA
Aroclor 1260 {1}	500	470	37000	35100	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	490	28000	27500	-2	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	490	28600	28000	-2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	500	67400	66900	-1	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	490	43300	42800	-1	NA	± 100 %	AverageRF
Aroclor 1260	500	490	NA	NA	NA	-2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311862

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1312889
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1116F001.D	Continuing Calibration Verification	KWG1312889-1	11/16/2013	10:43		11/16/2013	10:43
1116F002.D	Instrument Blank	KWG1312889-2	11/16/2013	11:04		11/16/2013	11:04
1116F003.D	Lab Control Sample	KWG1312600-3	11/16/2013	11:25		11/16/2013	11:25
1116F004.D	Method Blank	KWG1312600-4	11/16/2013	11:46		11/16/2013	11:46
1116F005.D	RM11E-G069	K1311862-001	11/16/2013	12:08		11/16/2013	12:08
1116F006.D	RM11E-G071	K1311862-003	11/16/2013	12:29		11/16/2013	12:29
1116F007.D	RM11E-G072	K1311862-004	11/16/2013	12:50		11/16/2013	12:50
1116F008.D	RM11E-G073	K1311862-005	11/16/2013	13:11		11/16/2013	13:11
1116F009.D	RM11E-G074	K1311862-006	11/16/2013	13:33		11/16/2013	13:33
1116F010.D	ZZZZZZ	ZZZZZZ	11/16/2013	13:54		11/16/2013	13:54
1116F011.D	ZZZZZZ	ZZZZZZ	11/16/2013	14:16		11/16/2013	14:16
1116F012.D	ZZZZZZ	ZZZZZZ	11/16/2013	14:37		11/16/2013	14:37
1116F013.D	Continuing Calibration Verification	KWG1312889-3	11/16/2013	14:59		11/16/2013	14:59
1116F014.D	Instrument Blank	KWG1312889-4	11/16/2013	15:21		11/16/2013	15:21
1116F015.D	Batch QC	K1311918-004	11/16/2013	15:42		11/16/2013	15:42
1116F016.D	Batch QCMS	KWG1312600-1	11/16/2013	16:04		11/16/2013	16:04
1116F017.D	Batch QCDMS	KWG1312600-2	11/16/2013	16:26		11/16/2013	16:26
1116F018.D	ZZZZZZ	ZZZZZZ	11/16/2013	16:48		11/16/2013	16:48
1116F020.D	ZZZZZZ	ZZZZZZ	11/16/2013	17:33		11/16/2013	17:33
1116F021.D	ZZZZZZ	ZZZZZZ	11/16/2013	17:56		11/16/2013	17:56
1116F022.D	ZZZZZZ	ZZZZZZ	11/16/2013	18:18		11/16/2013	18:18
1116F023.D	Lab Control Sample	KWG1312651-3	11/16/2013	18:41		11/16/2013	18:41
1116F024.D	Method Blank	KWG1312651-4	11/16/2013	19:04		11/16/2013	19:04
1116F025.D	RM11E-G070	K1311862-002	11/16/2013	19:27		11/16/2013	19:27
1116F026.D	Continuing Calibration Verification	KWG1312889-5	11/16/2013	19:50		11/16/2013	19:50
1116F027.D	Instrument Blank	KWG1312889-6	11/16/2013	20:13		11/16/2013	20:13

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Extracted: 11/05/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1312600
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G069	K1311862-001	10/30/13	10/31/13	40.406g	4mL	56.4	
RM11E-G071	K1311862-003	10/30/13	10/31/13	40.061g	4mL	66.0	
RM11E-G072	K1311862-004	10/30/13	10/31/13	40.007g	4mL	56.3	
RM11E-G073	K1311862-005	10/30/13	10/31/13	40.212g	4mL	75.1	
RM11E-G074	K1311862-006	10/30/13	10/31/13	40.256g	4mL	63.5	
Method Blank	KWG1312600-4	NA	NA	40.442g	4mL	NA	
Batch QC	K1311918-004	NA	NA	40.347g	4mL	85.1	
Batch QCMS	KWG1312600-1	NA	NA	40.337g	4mL	85.1	
Batch QCDMS	KWG1312600-2	NA	NA	40.442g	4mL	85.1	
Lab Control Sample	KWG1312600-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Extracted: 11/07/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1312651
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G070	K1311862-002	10/30/13	10/31/13	40.020g	2mL	33.1	
Method Blank	KWG1312651-4	NA	NA	40.166g	4mL	NA	
Lab Control Sample	KWG1312651-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G069	**Units:**	ug/Kg
Lab Code:	K1311862-001	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.4	2.1	54	60	10.5		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013
Date Extracted: 11/07/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G070
Lab Code: K1311862-002
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	420	420	0.0		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G071
Lab Code: K1311862-003

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	4.3	2.1	17	25	38.1		1	11/16/13
Aroclor 1254	4.3	2.1	51	78	41.9	P	1	11/16/13
Aroclor 1260	4.3	2.1	110	120	8.7		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311862
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/30/2013
Sample Matrix:	Sediment	**Date Received:**	10/31/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G072	**Units:**	ug/Kg
Lab Code:	K1311862-004	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.5	2.1	16	19	17.1		1	11/16/13
Aroclor 1260	4.5	2.1	15	15	0.0		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G073
Lab Code: K1311862-005
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	2.7	3.7	31.3	J	1	11/16/13
Aroclor 1260	4.3	2.1	13	13	0.0		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311862
Date Collected: 10/30/2013
Date Received: 10/31/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G074
Lab Code: K1311862-006
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	4.3	2.1	5.2	6.9	28.1		1	11/16/13
Aroclor 1254	4.3	2.1	29	43	38.9		1	11/16/13
Aroclor 1260	4.3	2.1	39	47	18.6		1	11/16/13

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

November 22, 2013

Analytical Report for Service Request No: K1311918

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on November 01, 2013. For your reference, these analyses have been assigned our service request number K1311918.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
10:55 am, Mar 06, 2014

GS/aj

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/ 487.002	**Date Received:**	11/01/13
Sample Matrix:	Sediment, Soil, Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Ten samples were received for analysis at ALS Environmental on 11/01/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C and frozen at –20°C as required upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Chromium, Lead and Nickel for sample RM11E-SL035 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for sample RM11E-SL035 was below the Method control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Lead and Nickel in sample RM11E-SL035 was outside the Method control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Approved by Gregory [illegible] 11/22/13

Pesticides by GC/MS/MS

Elevated Detection Limits:
The detection limit was elevated for all analytes in samples K1311918-001,-003,-008. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The samples were diluted to achieve optimal resolution of the target analytes.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1232 in CAL12822. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1107F003. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Sample Confirmation Notes:
The confirmation comparison criterion of 40% difference was exceeded for Aroclor 1254 in sample RM11E-G076; and for Aroclors 1242 and 1254 in sample RM11E-G068. The lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1221, 1232, 1242, and 1248 in sample RM11E-G979; for Aroclors 1016, 1232, and 1248 in sample RM11E-G076; and for Aroclors 1016, 1221, 1232, 1242, and 1248 in sample RM11E-G082. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

The detection limit was elevated for Aroclors 1016, 1221, 1232, 1242, 1248, and 1260 in Method Blank KWG1312457-4. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the normal limit. Note the level of background was relatively low compared to the normal detection limit, so the effect on the results was minimal. The results were flagged to indicate the interference.

The detection limit was elevated for Aroclor 1254 in samples RM11E-G082 and RM11E-G075. The chromatograms indicated the presence of Aroclor 1260 at a significantly higher concentration than the Aroclor 1254 peaks present. The interference from Aroclor 1260 prevented accurate identification and quantitation of Aroclor 1254 at the normal limit. The results were flagged to indicate the Aroclor interference.

Sample RM11E-G079 required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

Approved by Gregory Galatro 11/22/13

Sample Notes and Discussion:
Multiple Aroclors were identified in several field samples: Aroclor 1242, Aroclor 1254, and/or Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

A review of the chromatograms for sample RM11E-G068 indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Although the presence of Aroclor 1248 could not be ruled out, Aroclor 1242 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclors 1254 and 1260 were identified based on the presence of later eluting PCB peaks in the chromatogram.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254, and/or 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

No anomalies associated with the analysis of these samples were observed.

Approved by 11/22/13

Chain of Custody

Note Two Coolers per COC

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1311918

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

31-Oct-13

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax**: (503) 239-8940

Sampler's Signature: Erin Carroll Hughes

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals[2] (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Archive Frozen	Archive Unfrozen				REMARKS
RM11E-G076	10/31/2013	9:30		Sediment	4	X	X	X	X						X	X					
RM11E-G077	10/31/2013	10:12		Sediment	4	X	X	X	X						X	X					Time on bottles is 10:06, but actual time was 10:12. Please use 10:12 when logging into system.
RM11E-G082	10/31/2013	12:02		Sediment	4	X	X	X	X						X	X					
RM11E-SL035	10/31/2013	13:50		Soil	5	X	X	X	X	X	X	X	X	X	X	X					
RM11E-SL036	10/31/2013	15:20		Soil	5	X	X	X	X	X	X	X	X	X	X	X					
RM11E-G079	10/31/2013	15:43		Sediment	4	X	X	X	X						X	X					
RM11E-G075	10/31/2013	16:55		Sediment	4	X	X	X	X							X					
RM11E-G068	10/31/2013	18:00		Sediment	4	X	X	X	X							X					
RM11E-G979	10/31/2013	14:47		Water	3	X			X												
RM11E-G579	10/31/2013	15:43		Sediment	4	X	X	X	X							X					

Relinquished By	Received By
Erin Carroll Hughes	[illegible]
Signature: Erin Carroll Hughes	Signature: [illegible]
Printed Name: GSI Water Solutions	Printed Name: ALS-Kelso
Firm: 10/31/13 20:00	Firm: 11/1/13 1200
Date/Time	Date/Time

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
___ Standard (10 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
___ II. Report (includes DUP, MS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528

PC 65

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K13 11918

Received: NOV. 1, 2013 Opened: 11/1 By: SD Unloaded: 11/1 By: SD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* ____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 3 Front, 1-Back, 1-Side
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
2.4	2.4	3.1	3.1	0.0	333			
3.3	3.3	1.3	1.3	0.0	322			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* ____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N*
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: ~~Rec'd Sample id RMIIE-G074 Date 10/31/13 Time 0730. Not on chain~~ TA

Sample RMIIE-G579 has 2 Btls not 4 as on COC

Page ____ *of* ____

Total Solids

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/1/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G076	K1311918-001	**69.7**	-	-	1	11/14/13 18:30	
RM11E-G077	K1311918-002	**79.1**	-	-	1	11/14/13 18:30	
RM11E-G082	K1311918-003	**69.3**	-	-	1	11/14/13 18:30	
RM11E-G079	K1311918-006	**82.6**	-	-	1	11/14/13 18:30	
RM11E-G075	K1311918-007	**67.7**	-	-	1	11/14/13 18:30	
RM11E-G068	K1311918-008	**63.3**	-	-	1	11/14/13 18:30	
RM11E-G579	K1311918-010	**64.2**	-	-	1	11/14/13 18:30	

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Soil	**Date Received:**	11/1/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-SL035	K1311918-004	**85.1**	-	-	1	11/14/13 18:30	
RM11E-SL036	K1311918-005	**88.1**	-	-	1	11/14/13 18:30	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/1/13
		Date Analyzed:	11/14/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G068	**Units:**	Percent
Lab Code:	K1311918-008	**Basis:**	As Received

Analyte Name	MRL	MDL	Sample Result	RM11E-G068DUP Duplicate Sample K1311918-008DUP Result	RM11E-G068TRP Triplicate Sample K1311918-008TRP Result	Average	RSD	RSD Limit
Solids, Total			63.3	64.6	85.6	71.2	18	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

General Chemistry Parameters

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G076
Lab Code: K1311918-001

Sand Fraction: Weight (Grams)	21.1494
Sand Fraction: Weight Recovered (Grams)	21.3016
Sand Fraction: Percent Recovery	100.72

Weight as received (Grams)	33.5979
Percent Solids	69.7
Weight Oven-Dried (Grams)	23.4177

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.1481	0.63
Gravel, Fine	2.00 mm	10	1.5075	6.44
Sand, Very Coarse	0.850 mm	20	1.9281	8.23
Sand, Coarse	0.425 mm	40	5.0228	21.45
Sand, Medium	0.250 mm	60	5.3716	22.94
Sand, Fine	0.106 mm	140	6.7116	28.66
Sand, Very Fine	0.075 mm	200	0.5061	2.16
Silt			1.6500	7.05
Clay			0.4550	1.94
		Total	23.3008	99.50

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G077
Lab Code: K1311918-002

Sand Fraction: Weight (Grams)	50.5019
Sand Fraction: Weight Recovered (Grams)	50.7904
Sand Fraction: Percent Recovery	100.57

Weight as received (Grams)	63.8794
Percent Solids	79.1
Weight Oven-Dried (Grams)	50.5286

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	20.8371	41.24
Gravel, Fine	2.00 mm	10	4.1415	8.20
Sand, Very Coarse	0.850 mm	20	4.2381	8.39
Sand, Coarse	0.425 mm	40	8.9301	17.67
Sand, Medium	0.250 mm	60	7.1176	14.09
Sand, Fine	0.106 mm	140	4.6685	9.24
Sand, Very Fine	0.075 mm	200	0.5350	1.06
Silt			2.0200	4.00
Clay			0.5350	1.06
		Total	53.0229	104.95

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G082
Lab Code: K1311918-003

Sand Fraction: Weight (Grams)	43.4451
Sand Fraction: Weight Recovered (Grams)	43.7059
Sand Fraction: Percent Recovery	100.60

Weight as received (Grams)	60.6125
Percent Solids	69.3
Weight Oven-Dried (Grams)	42.0045

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	10.1303	24.12
Gravel, Fine	2.00 mm	10	1.9886	4.73
Sand, Very Coarse	0.850 mm	20	1.6020	3.81
Sand, Coarse	0.425 mm	40	4.9472	11.78
Sand, Medium	0.250 mm	60	9.4818	22.57
Sand, Fine	0.106 mm	140	13.2169	31.47
Sand, Very Fine	0.075 mm	200	1.7411	4.15
Silt			1.6050	3.82
Clay			0.4150	0.99
		Total	45.1279	107.44

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G079
Lab Code: K1311918-006

Sand Fraction: Weight (Grams)	39.4500
Sand Fraction: Weight Recovered (Grams)	39.5756
Sand Fraction: Percent Recovery	100.32

Weight as received (Grams)	51.2681
Percent Solids	82.6
Weight Oven-Dried (Grams)	42.3475

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	17.6298	41.63
Gravel, Fine	2.00 mm	10	2.9552	6.98
Sand, Very Coarse	0.850 mm	20	2.2459	5.30
Sand, Coarse	0.425 mm	40	5.3123	12.54
Sand, Medium	0.250 mm	60	6.4968	15.34
Sand, Fine	0.106 mm	140	4.0267	9.51
Sand, Very Fine	0.075 mm	200	0.5229	1.23
Silt			2.3500	5.55
Clay			0.7850	1.85
		Total	42.3246	99.93

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G075
Lab Code: K1311918-007

Sand Fraction: Weight (Grams)	29.1612
Sand Fraction: Weight Recovered (Grams)	29.2298
Sand Fraction: Percent Recovery	100.24

Weight as received (Grams)	42.4051
Percent Solids	67.7
Weight Oven-Dried (Grams)	28.7083

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	8.7090	30.34
Gravel, Fine	2.00 mm	10	2.1429	7.46
Sand, Very Coarse	0.850 mm	20	0.8644	3.01
Sand, Coarse	0.425 mm	40	1.4565	5.07
Sand, Medium	0.250 mm	60	6.2829	21.89
Sand, Fine	0.106 mm	140	8.0995	28.21
Sand, Very Fine	0.075 mm	200	1.2882	4.49
Silt			1.5250	5.31
Clay			0.5000	1.74
		Total	30.8684	107.52

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G068
Lab Code: K1311918-008

Sand Fraction: Weight (Grams)	19.0713
Sand Fraction: Weight Recovered (Grams)	19.1636
Sand Fraction: Percent Recovery	100.48

Weight as received (Grams)	41.2724
Percent Solids	63.3
Weight Oven-Dried (Grams)	26.1254

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.5424	2.08
Sand, Very Coarse	0.850 mm	20	1.6684	6.39
Sand, Coarse	0.425 mm	40	3.5251	13.49
Sand, Medium	0.250 mm	60	3.5358	13.53
Sand, Fine	0.106 mm	140	6.8313	26.15
Sand, Very Fine	0.075 mm	200	2.0020	7.66
Silt			6.9850	26.74
Clay			1.3850	5.30
		Total	26.4750	101.34

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/1/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-G579
Lab Code: K1311918-010

Sand Fraction: Weight (Grams)	40.9196
Sand Fraction: Weight Recovered (Grams)	41.2054
Sand Fraction: Percent Recovery	100.70

Weight as received (Grams)	52.7144
Percent Solids	64.2
Weight Oven-Dried (Grams)	41.1370

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	20.3754	49.53
Gravel, Fine	2.00 mm	10	1.8329	4.46
Sand, Very Coarse	0.850 mm	20	1.9942	4.85
Sand, Coarse	0.425 mm	40	6.0681	14.75
Sand, Medium	0.250 mm	60	6.0531	14.71
Sand, Fine	0.106 mm	140	4.0063	9.74
Sand, Very Fine	0.075 mm	200	0.5788	1.41
Silt			1.9600	4.76
Clay			0.7400	1.80
		Total	43.6088	106.01

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/23/2013
Sample Matrix:	Sediment	**Date Received:**	10/25/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1311437-016

Sand Fraction: Weight (Grams)	55.3096
Sand Fraction: Weight Recovered (Grams)	55.3476
Sand Fraction: Percent Recovery	100.07

Weight as received (Grams)	81.3032
Percent Solids	69.8
Weight Oven-Dried (Grams)	56.7496

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.4029	0.71
Gravel, Fine	2.00 mm	10	0.3273	0.58
Sand, Very Coarse	0.850 mm	20	1.0158	1.79
Sand, Coarse	0.425 mm	40	10.4210	18.36
Sand, Medium	0.250 mm	60	21.8564	38.51
Sand, Fine	0.106 mm	140	18.8368	33.19
Sand, Very Fine	0.075 mm	200	1.7838	3.14
Silt			2.2550	3.97
Clay			0.2300	0.41
		Total	57.1290	100.66

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/22/2013
Sample Matrix:	Sediment	**Date Received:**	10/24/2013
		Date Analyzed:	11/7/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1311437-016 DUP

Sand Fraction: Weight (Grams)	50.6505
Sand Fraction: Weight Recovered (Grams)	50.6325
Sand Fraction: Percent Recovery	99.96

Weight as received (Grams)	73.8815
Percent Solids	69.8
Weight Oven-Dried (Grams)	51.5693

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.7679	1.49
Gravel, Fine	2.00 mm	10	0.2557	0.50
Sand, Very Coarse	0.850 mm	20	1.0718	2.08
Sand, Coarse	0.425 mm	40	9.8608	19.12
Sand, Medium	0.250 mm	60	19.5012	37.82
Sand, Fine	0.106 mm	140	16.7819	32.54
Sand, Very Fine	0.075 mm	200	1.6181	3.14
Silt			2.2350	4.33
Clay			0.1000	0.19
		Total	52.1924	101.21

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/1/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-G076	K1311918-001	**0.974**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G077	K1311918-002	**0.280**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G082	K1311918-003	**0.626**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G079	K1311918-006	**0.491**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G075	K1311918-007	**0.685**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G068	K1311918-008	**0.865**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-G579	K1311918-010	**0.476**	0.050	0.020	1	11/13/13 09:00	11/12/13	
Method Blank	K1311918-MB4	ND U	0.050	0.020	1	11/13/13 09:00	11/12/13	

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Soil	**Date Received:**	11/1/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-SL035	K1311918-004	**0.523**	0.050	0.020	1	11/13/13 09:00	11/12/13	
RM11E-SL036	K1311918-005	**1.16**	0.050	0.020	1	11/13/13 09:00	11/12/13	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/1/13
		Date Analyzed:	11/13/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G076	**Units:**	Percent
Lab Code:	K1311918-001	**Basis:**	Dry, per Method

Analyte Name	MRL	MDL	Sample Result	RM11E-G076DUP Duplicate Sample K1311918-001DUP Result	RM11E-G076TRP Triplicate Sample K1311918-001TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	0.974	0.892	0.932	0.933	4	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/01/13
		Date Analyzed:	11/13/13
		Date Extracted:	11/12/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-G076	**Units:**	Percent
Lab Code:	K1311918-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1311918-001MS			Duplicate Matrix Spike K1311918-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.974	4.27	3.51	94	4.29	3.42	97	69-123	3	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Analyzed:**	11/13/13
Sample Matrix:	Sediment	**Date Extracted:**	11/12/13

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	368404

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1311918-LCS1	0.262	0.275	95	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1311918
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	368404	KQ1313631-01	11/13/13 09:00	20.0	19.7	98	90-110
CCV2	368404	KQ1313631-02	11/13/13 09:00	20.0	19.5	98	90-110
CCV3	368404	KQ1313631-03	11/13/13 09:00	20.0	19.8	99	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1311918
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	368404	KQ1313631-04	11/13/13 09:00	0.050	0.020	ND	U
CCB2	368404	KQ1313631-05	11/13/13 09:00	0.050	0.020	ND	U
CCB3	368404	KQ1313631-06	11/13/13 09:00	0.050	0.020	ND	U

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Water	**Date Received:**	11/1/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G979	K1311918-009	**0.45 J**	0.50	0.07	1	11/04/13 23:04	
Method Blank	K1311918-MB1	ND U	0.50	0.07	1	11/04/13 23:04	
Method Blank	K1311918-MB2	ND U	0.50	0.07	1	11/04/13 23:04	
Method Blank	K1311918-MB3	**0.08 J**	0.50	0.07	1	11/04/13 23:04	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Water	**Date Received:**	11/01/13
		Date Analyzed:	11/04/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G979	**Units:**	mg/L
Lab Code:	K1311918-009	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1311918-009DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.07	0.45	0.48	0.462	7	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/13
Sample Matrix:	Water	**Date Received:**	11/01/13
		Date Analyzed:	11/4/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-G979	**Units:**	mg/L
Lab Code:	K1311918-009	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1311918-009MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.45	24.8	25.0	97	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Analyzed:**	11/04/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	366853

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1311918-LCS2	17.2	18.1	95	83-117
Lab Control Sample	K1311918-LCS3	17.2	18.1	95	83-117
Lab Control Sample	K1311918-LCS4	17.1	18.1	95	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1311918
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	366853	KQ1313412-58	11/04/13 23:04	25.0	23.9	96	90-110
CCV2	366853	KQ1313412-59	11/04/13 23:04	25.0	23.7	95	90-110
CCV3	366853	KQ1313412-60	11/04/13 23:04	25.0	23.6	94	90-110
CCV4	366853	KQ1313412-61	11/04/13 23:04	25.0	23.9	96	90-110
CCV5	366853	KQ1313412-62	11/04/13 23:04	25.0	23.7	95	90-110
CCV6	366853	KQ1313412-63	11/04/13 23:04	25.0	23.3	93	90-110
CCV7	366853	KQ1313412-64	11/04/13 23:04	25.0	23.3	93	90-110
CCV8	366853	KQ1313412-65	11/04/13 23:04	25.0	23.3	93	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1311918
Project: RM11E Supplemental RI/FS Investigation/487.002

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	366853	KQ1313412-66	11/04/13 23:04	0.50	0.07	ND	U
CCB2	366853	KQ1313412-67	11/04/13 23:04	0.50	0.07	ND	U
CCB3	366853	KQ1313412-68	11/04/13 23:04	0.50	0.07	ND	U
CCB4	366853	KQ1313412-69	11/04/13 23:04	0.50	0.07	ND	U
CCB5	366853	KQ1313412-70	11/04/13 23:04	0.50	0.07	ND	U
CCB6	366853	KQ1313412-71	11/04/13 23:04	0.50	0.07	ND	U
CCB7	366853	KQ1313412-72	11/04/13 23:04	0.50	0.07	ND	U
CCB8	366853	KQ1313412-73	11/04/13 23:04	0.50	0.07	ND	U

Metals

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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental RI/FS Investigation
Project No.: 487.002

Service Request: K1311918

Sample Name:	Lab Code:
RM11E-SL035	K1311918-004
RM11E-SL035D	K1311918-004D
RM11E-SL035S	K1311918-004S
K1311918-004SD	K1311918-004SD
RM11E-SL036	K1311918-005
Method Blank	K1311918-MB

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1311918
Project No.: 487.002
Date Collected: 10/31/13
Project Name: RM11E Supplemental RI/FS Investi
Date Received: 11/01/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL035
Lab Code: K1311918-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.048	0.001	5.0	11/18/13	11/20/13	1.200		N
Arsenic	6020A	0.50	0.05	5.0	11/18/13	11/19/13	4.50		
Cadmium	6020A	0.020	0.004	5.0	11/18/13	11/19/13	0.067		
Chromium	6020A	1.99	0.15	50.0	11/18/13	11/19/13	154		
Copper	6020A	0.10	0.08	5.0	11/18/13	11/19/13	32.8		
Lead	6020A	0.498	0.060	50.0	11/18/13	11/19/13	218		*
Mercury	7471B	0.020	0.002	1.0	11/07/13	11/08/13	0.053		
Nickel	6020A	1.99	0.20	50.0	11/18/13	11/19/13	759		*
Zinc	6020A	5.0	2.0	50.0	11/18/13	11/19/13	136		

% Solids: 85.1

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1311918
Project No.: 487.002
Date Collected: 10/31/13
Project Name: RM11E Supplemental RI/FS Investi
Date Received: 11/01/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL036
Lab Code: K1311918-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.048	0.001	5.0	11/18/13	11/20/13	6.300		N
Arsenic	6020A	0.47	0.05	5.0	11/18/13	11/19/13	12.0		
Cadmium	6020A	0.019	0.004	5.0	11/18/13	11/19/13	0.128		
Chromium	6020A	1.89	0.14	50.0	11/18/13	11/19/13	186		
Copper	6020A	0.10	0.08	5.0	11/18/13	11/19/13	93.0		
Lead	6020A	0.473	0.057	50.0	11/18/13	11/19/13	178		*
Mercury	7471B	0.020	0.002	1.0	11/07/13	11/08/13	0.067		
Nickel	6020A	1.89	0.19	50.0	11/18/13	11/19/13	691		*
Zinc	6020A	4.7	1.9	50.0	11/18/13	11/19/13	254		

% Solids: 88.1

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1311918
Project No.: 487.002
Date Collected:
Project Name: RM11E Supplemental RI/FS Investi
Date Received:
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1311918-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.002	5.0	11/18/13	11/20/13	0.002	U	N
Arsenic	6020A	0.50	0.05	5.0	11/18/13	11/19/13	0.05	U	
Cadmium	6020A	0.020	0.004	5.0	11/18/13	11/19/13	0.004	U	
Chromium	6020A	0.20	0.02	5.0	11/18/13	11/19/13	0.03	J	
Copper	6020A	0.10	0.08	5.0	11/18/13	11/19/13	0.08	U	
Lead	6020A	0.050	0.006	5.0	11/18/13	11/19/13	0.008	J	*
Mercury	7471B	0.020	0.002	1.0	11/07/13	11/08/13	0.002	U	
Nickel	6020A	0.20	0.02	5.0	11/18/13	11/19/13	0.03	J	*
Zinc	6020A	0.5	0.2	5.0	11/18/13	11/19/13	0.2	U	

% Solids: 100.0

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	24.1	96	25.0	24.8	99	24.5	98	6020A
Arsenic	25.0	24.9	100	25.0	25.2	101	24.5	98	6020A
Cadmium	12.5	13.0	104	25.0	25.3	101	25.0	100	6020A
Chromium	10.0	10.0	100	25.0	25.1	100	25.5	102	6020A
Copper	12.5	12.1	97	25.0	25.0	100	24.2	97	6020A
Lead	25.0	25.4	102	25.0	25.1	100	25.2	101	6020A
Mercury	5.00	5.04	101	5.00	5.02	100	5.19	104	7471B
Nickel	25.0	24.1	96	25.0	24.9	100	25.1	100	6020A
Zinc	25.0	24.3	97	25.0	24.9	100	24.2	97	6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICV Source: **Inorganic Ventures** CCV Source: **CAS MIXED**

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Antimony				25.0	25.1	100	25.6	102	6020A
Arsenic				25.0	25.4	102			6020A
Cadmium				25.0	25.4	102			6020A
Chromium				25.0	25.8	103			6020A
Copper				25.0	25.0	100			6020A
Lead				25.0	25.2	101			6020A
Mercury				5.00	5.06	101			7471B
Nickel				25.0	25.6	102			6020A
Zinc				25.0	25.1	100			6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Antimony				25.0	25.6	102	26.4	106	6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Antimony				25.0	25.8	103			6020A

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1311918

Contract: 487.002 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Arsenic	0.97	1.00	97	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Cadmium	0.031	0.04	78	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Chromium	0.33	0.40	82	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Copper	0.19	0.20	95	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Lead	0.10	0.10	100	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Nickel	0.39	0.40	98	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
	Zinc	0.94	1.00	94	70.0 - 130.0	MS	11/19/13	10:45	111913CMS
LLCCVS									
	Arsenic	0.96	1.00	96	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Cadmium	0.038	0.04	95	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Chromium	0.45	0.40	112	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Copper	0.18	0.20	90	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Lead	0.11	0.10	110	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Nickel	0.46	0.40	115	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
	Zinc	0.94	1.00	94	70.0 - 130.0	MS	11/19/13	11:33	111913CMS
LLCCV2									
	Arsenic	1.03	1.00	103	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Cadmium	0.036	0.04	90	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Chromium	0.48	0.40	120	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Copper	0.19	0.20	95	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Lead	0.10	0.10	100	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Nickel	0.45	0.40	112	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
	Zinc	0.97	1.00	97	70.0 - 130.0	MS	11/19/13	12:07	111913CMS
LLICV1									
	Antimony	0.106	0.100	106	70.0 - 130.0	MS	11/20/13	20:07	112013Z
LLCCV1									
	Antimony	0.103	0.100	103	70.0 - 130.0	MS	11/20/13	21:37	112013Z
LLCCV2									
	Antimony	0.083	0.100	83	70.0 - 130.0	MS	11/20/13	22:18	112013Z

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1311918

Contract: 487.002 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV3									
	Antimony	0.120	0.100	120	70.0 - 130.0	MS	11/20/13	23:26	112013Z
LLCCV4									
	Antimony	0.079	0.100	79	70.0 - 130.0	MS	11/21/13	01:03	112013Z

Metals

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CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc Service Request: K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.198	99		

Metals

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BLANKS

Client: GSI Water Solutions, Inc Service Request: K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony	0.029	J	0.012	J	0.003	U	0.020	J	6020A
Arsenic	0.1	U	0.1	U	0.1	U	0.1	U	6020A
Cadmium	0.008	U	0.008	U	0.008	U	0.008	U	6020A
Chromium	0.03	U	-0.03	J	0.06	J	0.06	J	6020A
Copper	0.16	U	0.16	U	0.16	U	0.16	U	6020A
Lead	0.012	U	0.012	U	0.022	J	0.016	J	6020A
Mercury	0.020	U	0.020	U	0.020	U	0.020	U	7471B
Nickel	0.04	U	0.04	U	0.06	J	0.08	J	6020A
Zinc	0.40	U	0.40	U	0.40	U	0.40	U	6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.010	J	0.052	J	0.032	J	6020A

Metals

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BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.011	J					6020A

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICP ID Number: K-ICP-MS-02 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0.0	25.0	0.1	27.1	108			
Cadmium	0.0	25.0	0.3	25.7	103			
Chromium	0.0	50.0	0.5	49.3	99			
Copper	0.0	50.0	1.0	49.7	99			
Lead	0.0		0.1	0.1				
Nickel	0.0	50.0	2.7	51.3	103			
Zinc	0.0	25.0	2.8	25.9	104			

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

ICP ID Number: K-ICP-MS-04 **ICS Source:** Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.0		0.2	0.2				

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Metals

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SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002 **Units:** MG/KG

Project Name: RM11E Supplemental RI/FS Investi **Basis:** DRY

Matrix: SOIL **% Solids:** 85.1

Sample Name: RM11E-SL035S **Lab Code:** K1311918-004S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	34.850		1.199		95.536	35.2	N	6020A
Arsenic	75 - 125	43.9		4.50		49.79	79.1		6020A
Cadmium	75 - 125	4.57		0.067		4.98	90.4		6020A
Chromium		161		154		19.92	35.1		6020A
Copper	75 - 125	52.1		32.8		24.90	77.5		6020A
Lead		275		218		49.79	114.5		6020A
Mercury	80 - 120	0.602		0.053		0.50	109.8		7471B
Nickel		206		759		49.79	-1110.7		6020A
Zinc	75 - 125	191		136		49.79	110.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals

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SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002 **Units:** MG/KG

Project Name: RM11E Supplemental RI/FS Investi **Basis:** DRY

Matrix: SOIL **% Solids:** 85.1

Sample Name: K1311918-004SD **Lab Code:** K1311918-004SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.560		0.053		0.51	99.4		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals

- 5B -

POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002 **Units:** UG/L

Project Name: RM11E Supplemental RI/FS Investi **Basis:** DRY

Matrix: WATER

Sample Name: RM11E-SL035A **Lab Code:** K1311918-004A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	93.412		2.509		100	91		6020A
Arsenic	80 - 120	56.7		9.0		50.0	95		6020A
Cadmium	80 - 120	47.080		0.134		50.0	94		6020A
Chromium	80 - 120	81.33		30.86		50.0	101		6020A
Copper	80 - 120	110.40		65.80		50.0	89		6020A
Lead	80 - 120	93.28		43.71		50.0	99		6020A
Mercury	80 - 120	5.80		0.52		5.00	106		7471B
Nickel	80 - 120	196.00		152.40		50.0	87		6020A
Zinc	80 - 120	78.78		27.31		50.0	103		6020A

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Metals

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DUPLICATES

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project No.:	487.002	**Units:**	MG/KG
Project Name:	RM11E Supplemental RI/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	85.1

Sample Name: RM11E-SL035D **Lab Code:** K1311918-004D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	1.199		1.159		3.4		6020A
Arsenic	20	4.50		5.22		15		6020A
Cadmium		0.067		0.097		37		6020A
Chromium	20	154		143		7		6020A
Copper	20	32.8		39.2		18		6020A
Lead	20	218		398		58	*	6020A
Nickel	20	759		195		118	*	6020A
Zinc	20	136		151		10		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

ALS Group USA, Corp.
dba ALS Environmental

Metals

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DUPLICATES

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project No.:	487.002	**Units:**	MG/KG
Project Name:	RM11E Supplemental RI/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	85.1

Sample Name: K1311918-004SD **Lab Code:** K1311918-004SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.602		0.560		7.2		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
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LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1311918

Project No.: 487.002

Project Name: RM11E Supplemental RI/FS Investi

Aqueous LCS Source: **Solid LCS Source:** ERA D076-540

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C Limits		Solid (mg/kg) %R
Antimony				93.3	74.4	25	199	79.7
Arsenic				94.5	89.1	82	117	94.3
Cadmium				60.5	59.5	83	117	98.3
Chromium				70.4	64.8	82	118	92.0
Copper				79.6	74.7	84	116	93.8
Lead				91.8	89.0	82	118	96.9
Mercury				3.73	3.82	72	128	102.4
Nickel				57.6	55.1	83	117	95.7
Zinc				140	126	82	118	90.0

Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Service Request: K1311918

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G076	K1311918-001	10/31/2013	11/01/2013
RM11E-G077	K1311918-002	10/31/2013	11/01/2013
RM11E-G082	K1311918-003	10/31/2013	11/01/2013
RM11E-SL035	K1311918-004	10/31/2013	11/01/2013
RM11E-SL036	K1311918-005	10/31/2013	11/01/2013
RM11E-G068	K1311918-008	10/31/2013	11/01/2013
RM11E-SL035MS	KWG1312681-1	10/31/2013	11/01/2013
RM11E-SL035DMS	KWG1312681-2	10/31/2013	11/01/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Jerom Pet
Name: Jerome Peterson
Date: 11-22-13
Title: Scientist

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: RM11E-G076
Lab Code: K1311918-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.38**		0.29	0.14	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.29	0.18	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.29	0.16	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	**0.98**		0.29	0.13	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	**0.81**		0.29	0.23	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	**0.25**	J	0.29	0.23	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	**0.36**		0.29	0.16	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.29	0.15	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	**0.51**		0.29	0.13	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	**0.28**	J	0.29	0.12	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.80	0.19	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.29	0.12	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.29	0.20	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.80	0.52	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	69	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	95	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	91	8-146	11/20/13	Acceptable
S_Endrin-13C12	79	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	61	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	63	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G077	**Units:**	ug/Kg
Lab Code:	K1311918-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.079	0.079	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.094	0.094	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	**0.074**		0.063	0.035	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	**0.17**		0.070	0.070	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	ND	U	0.063	0.047	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	ND	U	0.063	0.062	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.097	0.097	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	ND	U	0.064	0.064	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	ND	U	0.063	0.058	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.20	0.077	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.063	0.031	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.20	0.13	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	65	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	91	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	91	8-146	11/20/13	Acceptable
S_Endrin-13C12	91	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	68	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	75	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G082	**Units:**	ug/Kg
Lab Code:	K1311918-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.26**	J	0.29	0.14	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.29	0.18	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.29	0.16	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	**0.95**		0.29	0.13	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	**0.67**		0.29	0.23	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	ND	U	0.29	0.23	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	**0.19**	J	0.29	0.16	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.29	0.15	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	**0.28**	J	0.29	0.13	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	**0.13**	J	0.29	0.12	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.80	0.19	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.29	0.12	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.29	0.20	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.80	0.52	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	71	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	105	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	91	8-146	11/20/13	Acceptable
S_Endrin-13C12	96	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	57	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	76	13-200	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.11	0.066	1	11/14/13	11/20/13	KWG1312681	
2,4'-DDE	ND	U	0.11	0.083	1	11/14/13	11/20/13	KWG1312681	
2,4'-DDT	ND	U	0.11	0.098	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDD	ND	U	0.11	0.037	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDE	ND	U	0.11	0.073	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDT	ND	U	0.11	0.049	1	11/14/13	11/20/13	KWG1312681	
alpha-Chlordane	ND	U	0.11	0.065	1	11/14/13	11/20/13	KWG1312681	
cis-Nonachlor	ND	U	0.11	0.11	1	11/14/13	11/20/13	KWG1312681	
gamma-Chlordane	ND	U	0.11	0.067	1	11/14/13	11/20/13	KWG1312681	
trans-Nonachlor	ND	U	0.11	0.061	1	11/14/13	11/20/13	KWG1312681	
Dieldrin	ND	U	0.21	0.081	1	11/14/13	11/20/13	KWG1312681	
gamma-BHC (Lindane)	ND	U	0.11	0.033	1	11/14/13	11/20/13	KWG1312681	
Heptachlor Epoxide	ND	U	0.11	0.077	1	11/14/13	11/20/13	KWG1312681	
Oxychlordane	ND	U	0.21	0.14	1	11/14/13	11/20/13	KWG1312681	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	75	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	97	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	105	8-146	11/20/13	Acceptable
S_Endrin-13C12	107	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	85	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	92	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: RM11E-SL036
Lab Code: K1311918-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.11	0.064	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.11	0.080	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.11	0.095	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	**0.070**	J	0.11	0.036	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	ND	U	0.11	0.071	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	**0.063**	J	0.11	0.048	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	ND	U	0.11	0.063	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.11	0.098	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	ND	U	0.11	0.065	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	ND	U	0.11	0.059	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.21	0.078	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.11	0.032	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.11	0.074	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.21	0.14	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	77	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	104	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	106	8-146	11/20/13	Acceptable
S_Endrin-13C12	111	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	76	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	85	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: RM11E-G068
Lab Code: K1311918-008

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.21**	J	0.31	0.14	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.31	0.18	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.31	0.16	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	**0.74**		0.31	0.13	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	**1.5**		0.31	0.23	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	ND	U	0.31	0.23	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	**0.28**	J	0.31	0.16	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.31	0.15	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	**0.47**		0.31	0.13	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	**0.15**	J	0.31	0.12	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.80	0.19	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.31	0.12	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.31	0.20	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.80	0.52	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	56	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	64	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	85	8-146	11/20/13	Acceptable
S_Endrin-13C12	85	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	56	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	62	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312337-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDE	ND	U	0.079	0.079	1	11/06/13	11/20/13	KWG1312337	
2,4'-DDT	ND	U	0.094	0.094	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDD	ND	U	0.050	0.035	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDE	ND	U	0.070	0.070	1	11/06/13	11/20/13	KWG1312337	
4,4'-DDT	ND	U	0.050	0.047	1	11/06/13	11/20/13	KWG1312337	
alpha-Chlordane	ND	U	0.062	0.062	1	11/06/13	11/20/13	KWG1312337	
cis-Nonachlor	ND	U	0.097	0.097	1	11/06/13	11/20/13	KWG1312337	
gamma-Chlordane	ND	U	0.064	0.064	1	11/06/13	11/20/13	KWG1312337	
trans-Nonachlor	ND	U	0.058	0.058	1	11/06/13	11/20/13	KWG1312337	
Dieldrin	ND	U	0.20	0.077	1	11/06/13	11/20/13	KWG1312337	
gamma-BHC (Lindane)	ND	U	0.050	0.031	1	11/06/13	11/20/13	KWG1312337	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/06/13	11/20/13	KWG1312337	
Oxychlordane	ND	U	0.20	0.13	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	87	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	109	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	118	8-146	11/20/13	Acceptable
S_Endrin-13C12	111	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	90	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	91	13-200	11/20/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312681-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.089	0.063	1	11/14/13	11/20/13	KWG1312681	
2,4'-DDE	ND	U	0.089	0.079	1	11/14/13	11/20/13	KWG1312681	
2,4'-DDT	ND	U	0.094	0.094	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDD	ND	U	0.089	0.035	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDE	ND	U	0.089	0.070	1	11/14/13	11/20/13	KWG1312681	
4,4'-DDT	ND	U	0.089	0.047	1	11/14/13	11/20/13	KWG1312681	
alpha-Chlordane	ND	U	0.089	0.062	1	11/14/13	11/20/13	KWG1312681	
cis-Nonachlor	ND	U	0.097	0.097	1	11/14/13	11/20/13	KWG1312681	
gamma-Chlordane	ND	U	0.089	0.064	1	11/14/13	11/20/13	KWG1312681	
trans-Nonachlor	ND	U	0.089	0.058	1	11/14/13	11/20/13	KWG1312681	
Dieldrin	ND	U	0.20	0.077	1	11/14/13	11/20/13	KWG1312681	
gamma-BHC (Lindane)	ND	U	0.089	0.031	1	11/14/13	11/20/13	KWG1312681	
Heptachlor Epoxide	ND	U	0.089	0.073	1	11/14/13	11/20/13	KWG1312681	
Oxychlordane	ND	U	0.20	0.13	1	11/14/13	11/20/13	KWG1312681	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	68	5-124	11/20/13	Acceptable
S_Oxychlordane-13C10	93	5-144	11/20/13	Acceptable
S_Heptachlrepox13C10	100	8-146	11/20/13	Acceptable
S_Endrin-13C12	100	20-157	11/20/13	Acceptable
S_4,4'DDD-d4	86	5-120	11/20/13	Acceptable
S_4,4'-DDT-d4	89	13-200	11/20/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5		Sur6	
RM11E-G076	K1311918-001	69	95	91	79	61	#	63	#
RM11E-G077	K1311918-002	65	91	91	91	68		75	
RM11E-G082	K1311918-003	71	105	91	96	57	#	76	#
RM11E-SL035	K1311918-004	75	97	105	107	85		92	
RM11E-SL036	K1311918-005	77	104	106	111	76		85	
RM11E-G068	K1311918-008	56	64	85	85	56	#	62	#
Method Blank	KWG1312337-5	87	109	118	111	90		91	
Method Blank	KWG1312681-5	68	93	100	100	86		89	
RM11E-SL035MS	KWG1312681-1	79	107	115	101	77		79	
RM11E-SL035DMS	KWG1312681-2	75	110	109	117	82		89	
Lab Control Sample	KWG1312337-3	70	90	93	94	74		74	
Duplicate Lab Control Sample	KWG1312337-4	77	105	101	102	84		87	
Lab Control Sample	KWG1312681-3	71	98	104	109	85		87	
Duplicate Lab Control Sample	KWG1312681-4	70	99	103	105	84		88	

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/20/2013
Time Analyzed: 15:50

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\112013\1120F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313024-1
Analysis Lot: KWG1313024

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	RT	Area	RT	Area	RT
	Results ==>	92,614	15.29	8,958	11.42	2,943	14.01
	Upper Limit ==>	185,228	15.79	17,916	11.92	5,886	14.51
	Lower Limit ==>	46,307	14.79	448	10.92	147	13.51
	ICAL Result ==>	98,955	15.29	9,004	11.42	2,699	14.01
Associated Analyses							
Method Blank	KWG1312337-5	127,931	15.29	10,465	11.42	4,111	14.01
Lab Control Sample	KWG1312337-3	121,769	15.29	8,023	11.42	3,232	14.01
Duplicate Lab Control Sample	KWG1312337-4	112,412	15.28	8,194	11.42	3,475	14.00
Method Blank	KWG1312681-5	112,036	15.29	7,203	11.42	3,060	14.01
Lab Control Sample	KWG1312681-3	106,466	15.28	7,123	11.42	3,069	14.01
Duplicate Lab Control Sample	KWG1312681-4	115,582	15.28	7,684	11.42	3,363	14.00
RM11E-SL035MS	KWG1312681-1	128,053	15.28	9,534	11.42	4,042	14.00
RM11E-SL035DMS	KWG1312681-2	124,977	15.29	8,796	11.42	4,035	14.01
RM11E-SL035	K1311918-004	117,064	15.29	8,242	11.42	3,343	14.00
RM11E-G077	K1311918-002	129,206	15.29	7,950	11.42	3,465	14.01
RM11E-SL036	K1311918-005	134,990	15.29	9,812	11.42	4,134	14.01
RM11E-G076	K1311918-001	151,185	15.29	2,473	11.42	1,057	14.01
RM11E-G082	K1311918-003	134,568	15.29	2,253	11.42	1,034	14.00
RM11E-G068	K1311918-008	131,046	15.28	1,719	11.41	612	14.00

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/20/2013
Time Analyzed: 15:50

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\112013\1120F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS:

Lab Code: KWG1313024-1
Analysis Lot: KWG1313024

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	4,336	14.10	1,998	16.44	19,589	16.98
	Upper Limit ==>	8,672	14.60	3,996	16.94	39,179	17.48
	Lower Limit ==>	217	13.60	100	15.94	979	16.48
	ICAL Result ==>	4,249	14.11	2,062	16.44	19,230	16.99
Associated Analyses							
Method Blank	KWG1312337-5	6,577	14.10	3,196	16.44	22,805	16.98
Lab Control Sample	KWG1312337-3	4,911	14.10	2,578	16.44	17,989	16.98
Duplicate Lab Control Sample	KWG1312337-4	4,909	14.10	2,576	16.43	18,813	16.98
Method Blank	KWG1312681-5	4,869	14.10	2,516	16.44	19,075	16.98
Lab Control Sample	KWG1312681-3	4,781	14.10	2,618	16.44	17,873	16.98
Duplicate Lab Control Sample	KWG1312681-4	5,164	14.10	2,720	16.44	19,158	16.98
RM11E-SL035MS	KWG1312681-1	6,417	14.10	2,904	16.44	19,563	16.98
RM11E-SL035DMS	KWG1312681-2	5,923	14.10	3,305	16.44	20,226	16.98
RM11E-SL035	K1311918-004	5,328	14.10	2,817	16.44	19,863	16.98
RM11E-G077	K1311918-002	5,083	14.10	2,633	16.44	17,394	16.98
RM11E-SL036	K1311918-005	6,201	14.10	3,381	16.43	20,392	16.98
RM11E-G076	K1311918-001	1,487	14.10	676	16.44	4,539	16.99
RM11E-G082	K1311918-003	1,325	14.10	725	16.44	3,782	16.98
RM11E-G068	K1311918-008	1,203	14.10	629	16.43	3,624	16.98

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/20/2013
Time Analyzed: 15:50

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\112013\1120F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313024-1
Analysis Lot: KWG1313024

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	12,201	18.00
	Upper Limit ==>	24,401	18.50
	Lower Limit ==>	610	17.50
	ICAL Result ==>	11,918	18.00
Associated Analyses			
Method Blank	KWG1312337-5	14,416	18.00
Lab Control Sample	KWG1312337-3	11,203	18.00
Duplicate Lab Control Sample	KWG1312337-4	12,108	18.00
Method Blank	KWG1312681-5	12,384	18.00
Lab Control Sample	KWG1312681-3	11,545	18.00
Duplicate Lab Control Sample	KWG1312681-4	12,577	18.00
RM11E-SL035MS	KWG1312681-1	12,607	18.00
RM11E-SL035DMS	KWG1312681-2	13,867	18.00
RM11E-SL035	K1311918-004	13,433	18.00
RM11E-G077	K1311918-002	11,994	18.00
RM11E-SL036	K1311918-005	14,227	18.00
RM11E-G076	K1311918-001	2,955	18.00
RM11E-G082	K1311918-003	3,189	18.00
RM11E-G068	K1311918-008	2,534	18.00

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/14/2013
Date Analyzed: 11/20/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name: RM11E-SL035
Lab Code: K1311918-004

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low
Extraction Lot: KWG1312681

		RM11E-SL035MS KWG1312681-1 Matrix Spike			RM11E-SL035DMS KWG1312681-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND	1.94	2.07	94	1.87	2.09	89	50-120	4	30
2,4'-DDE	ND	2.35	2.07	114	2.24	2.09	107	24-123	5	30
2,4'-DDT	ND	1.96	2.07	95	1.85	2.09	88	50-120	6	30
4,4'-DDD	ND	1.70	2.07	82	1.66	2.09	80	42-120	2	30
4,4'-DDE	ND	1.98	2.07	96	1.89	2.09	90	50-120	5	30
4,4'-DDT	ND	1.71	2.07	83	1.67	2.09	80	50-120	2	30
alpha-Chlordane	ND	1.85	2.07	89	1.83	2.09	88	50-120	1	30
cis-Nonachlor	ND	1.42	2.07	68	1.43	2.09	68	50-120	1	30
gamma-Chlordane	ND	1.87	2.07	90	1.84	2.09	88	50-120	2	30
trans-Nonachlor	ND	1.84	2.07	89	1.81	2.09	87	50-120	2	30
Dieldrin	ND	1.78	2.07	86	1.47	2.09	71	50-120	19	30
gamma-BHC (Lindane)	ND	1.74	2.07	84	1.73	2.09	83	50-120	1	30
Heptachlor Epoxide	ND	1.77	2.07	86	1.85	2.09	88	50-120	4	30
Oxychlordane	ND	1.77	2.07	86	1.75	2.09	84	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Extracted: 11/06/2013
Date Analyzed: 11/20/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1312337

	Lab Control Sample KWG1312337-3 Lab Control Spike			Duplicate Lab Control Sample KWG1312337-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.99	2.00	100	2.02	2.00	101	50-120	1	30
2,4'-DDE	2.33	2.00	117	2.37	2.00	119	24-123	2	30
2,4'-DDT	2.08	2.00	104	2.03	2.00	102	50-120	2	30
4,4'-DDD	1.80	2.00	90	1.85	2.00	92	42-120	3	30
4,4'-DDE	1.99	2.00	100	2.08	2.00	104	50-120	4	30
4,4'-DDT	1.84	2.00	92	1.83	2.00	92	50-120	1	30
alpha-Chlordane	2.06	2.00	103	2.04	2.00	102	50-120	1	30
cis-Nonachlor	1.74	2.00	87	1.70	2.00	85	50-120	2	30
gamma-Chlordane	2.03	2.00	102	1.98	2.00	99	50-120	3	30
trans-Nonachlor	2.10	2.00	105	2.05	2.00	102	50-120	2	30
Dieldrin	1.75	2.00	87	1.74	2.00	87	50-120	0	30
gamma-BHC (Lindane)	1.78	2.00	89	1.86	2.00	93	50-120	4	30
Heptachlor Epoxide	1.98	2.00	99	1.96	2.00	98	50-120	1	30
Oxychlordane	1.94	2.00	97	1.88	2.00	94	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/14/2013
Date Analyzed: 11/20/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1312681

	Lab Control Sample KWG1312681-3 Lab Control Spike			Duplicate Lab Control Sample KWG1312681-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.80	2.00	90	1.85	2.00	92	50-120	3	30
2,4'-DDE	2.05	2.00	103	2.07	2.00	103	24-123	1	30
2,4'-DDT	1.83	2.00	92	1.87	2.00	93	50-120	2	30
4,4'-DDD	1.65	2.00	82	1.68	2.00	84	42-120	2	30
4,4'-DDE	1.79	2.00	89	1.83	2.00	91	50-120	2	30
4,4'-DDT	1.67	2.00	84	1.69	2.00	85	50-120	1	30
alpha-Chlordane	1.89	2.00	95	1.89	2.00	95	50-120	0	30
cis-Nonachlor	1.56	2.00	78	1.62	2.00	81	50-120	3	30
gamma-Chlordane	1.86	2.00	93	1.86	2.00	93	50-120	0	30
trans-Nonachlor	1.91	2.00	96	1.92	2.00	96	50-120	0	30
Dieldrin	1.54	2.00	77	1.63	2.00	81	50-120	6	30
gamma-BHC (Lindane)	1.67	2.00	84	1.62	2.00	81	50-120	3	30
Heptachlor Epoxide	1.73	2.00	86	1.72	2.00	86	50-120	0	30
Oxychlordane	1.79	2.00	90	1.78	2.00	89	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/20/2013
		Time Analyzed:	16:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1312337-5	**File ID:**	J:\MS21\DATA\112013\1120F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312337

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312337-3	J:\MS21\DATA\112013\1120F021.D	11/20/13	16:46
Duplicate Lab Control Sample	KWG1312337-4	J:\MS21\DATA\112013\1120F022.D	11/20/13	17:14
RM11E-G077	K1311918-002	J:\MS21\DATA\112013\1120F029.D	11/20/13	20:25
RM11E-SL036	K1311918-005	J:\MS21\DATA\112013\1120F030.D	11/20/13	20:52
RM11E-G076	K1311918-001	J:\MS21\DATA\112013\1120F031.D	11/20/13	21:19
RM11E-G082	K1311918-003	J:\MS21\DATA\112013\1120F032.D	11/20/13	21:47
RM11E-G068	K1311918-008	J:\MS21\DATA\112013\1120F033.D	11/20/13	22:14

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013
		Time Analyzed:	17:42

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1312681-5	**File ID:**	J:\MS21\DATA\112013\1120F023.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312681

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312681-3	J:\MS21\DATA\112013\1120F024.D	11/20/13	18:09
Duplicate Lab Control Sample	KWG1312681-4	J:\MS21\DATA\112013\1120F025.D	11/20/13	18:36
RM11E-SL035MS	KWG1312681-1	J:\MS21\DATA\112013\1120F026.D	11/20/13	19:03
RM11E-SL035DMS	KWG1312681-2	J:\MS21\DATA\112013\1120F027.D	11/20/13	19:31
RM11E-SL035	K1311918-004	J:\MS21\DATA\112013\1120F028.D	11/20/13	19:58

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/20/2013
		Time Analyzed:	16:46

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1312337-3	**File ID:**	J:\MS21\DATA\112013\1120F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312337

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312337-5	J:\MS21\DATA\112013\1120F020.D	11/20/13	16:23
RM11E-G077	K1311918-002	J:\MS21\DATA\112013\1120F029.D	11/20/13	20:25
RM11E-SL036	K1311918-005	J:\MS21\DATA\112013\1120F030.D	11/20/13	20:52
RM11E-G076	K1311918-001	J:\MS21\DATA\112013\1120F031.D	11/20/13	21:19
RM11E-G082	K1311918-003	J:\MS21\DATA\112013\1120F032.D	11/20/13	21:47
RM11E-G068	K1311918-008	J:\MS21\DATA\112013\1120F033.D	11/20/13	22:14

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013
		Time Analyzed:	18:09

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1312681-3	**File ID:**	J:\MS21\DATA\112013\1120F024.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312681

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312681-5	J:\MS21\DATA\112013\1120F023.D	11/20/13	17:42
RM11E-SL035MS	KWG1312681-1	J:\MS21\DATA\112013\1120F026.D	11/20/13	19:03
RM11E-SL035DMS	KWG1312681-2	J:\MS21\DATA\112013\1120F027.D	11/20/13	19:31
RM11E-SL035	K1311918-004	J:\MS21\DATA\112013\1120F028.D	11/20/13	19:58

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12923
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\112013\1120F005.D	G	J:\MS21\Data\112013\1120F011.D
B	J:\MS21\Data\112013\1120F006.D	H	J:\MS21\Data\112013\1120F012.D
C	J:\MS21\Data\112013\1120F007.D	I	J:\MS21\Data\112013\1120F013.D
D	J:\MS21\Data\112013\1120F008.D	J	J:\MS21\Data\112013\1120F014.D
E	J:\MS21\Data\112013\1120F009.D		
F	J:\MS21\Data\112013\1120F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.963	B	1.0	0.865	C	2.0	0.966	D	5.0	0.867	E	10	0.922
	F	20	0.920	G	40	0.928	H	60	0.972	I	80	0.968	J	100	1.07
2,4'-DDE	A	0.50	0.742	B	1.0	0.596	C	2.0	0.624	D	5.0	0.586	E	10	0.613
	F	20	0.655	G	40	0.603	H	60	0.647	I	80	0.639	J	100	0.733
2,4'-DDT	A	0.50	1.03	B	1.0	0.907	C	2.0	0.980	D	5.0	0.948	E	10	1.00
	F	20	0.975	G	40	0.983	H	60	1.01	I	80	0.982	J	100	1.07
4,4'-DDD	A	0.50	1.14	B	1.0	0.957	C	2.0	1.02	D	5.0	0.952	E	10	0.968
	F	20	0.953	G	40	0.981	H	60	0.981	I	80	0.990	J	100	1.04
4,4'-DDE	A	0.50	0.586	B	1.0	0.508	C	2.0	0.554	D	5.0	0.528	E	10	0.564
	F	20	0.552	G	40	0.546	H	60	0.569	I	80	0.570	J	100	0.628
4,4'-DDT	A	0.50	1.18	B	1.0	1.03	C	2.0	1.16	D	5.0	1.13	E	10	1.16
	F	20	1.14	G	40	1.19	H	60	1.20	I	80	1.21	J	100	1.30
alpha-Chlordane	A	0.50	4.77	B	1.0	3.86	C	2.0	4.40	D	5.0	4.43	E	10	4.03
	F	20	4.32	G	40	3.93	H	60	4.18	I	80	3.61	J	100	3.80
cis-Nonachlor	A	0.50	3.19	B	1.0	3.19	C	2.0	3.09	D	5.0	2.99	E	10	2.79
	F	20	2.93	G	40	2.72	H	60	2.83	I	80	2.39	J	100	2.53
gamma-Chlordane	A	0.50	5.55	B	1.0	4.34	C	2.0	4.78	D	5.0	4.55	E	10	4.29
	F	20	4.53	G	40	4.04	H	60	4.19	I	80	3.66	J	100	3.87
trans-Nonachlor				B	1.0	2.97	C	2.0	2.83	D	5.0	2.91	E	10	2.76
	F	20	2.84	G	40	2.55	H	60	2.74	I	80	2.39	J	100	2.52
Dieldrin	A	0.50	1.34	B	1.0	1.29	C	2.0	1.23	D	5.0	1.16	E	10	1.08
	F	20	1.13	G	40	1.03	H	60	1.01	I	80	1.04	J	100	0.990
gamma-BHC (Lindane)	A	0.50	0.892	B	1.0	0.815	C	2.0	0.806	D	5.0	0.803	E	10	0.754
	F	20	0.761	G	40	0.755	H	60	0.763	I	80	0.776	J	100	0.780
Heptachlor Epoxide	A	0.50	0.942	B	1.0	1.21	C	2.0	1.26	D	5.0	1.16	E	10	1.18
	F	20	1.05	G	40	1.09	H	60	1.12	I	80	1.09	J	100	1.12
Oxychlordane				B	1.0	0.989	C	2.0	1.09	D	5.0	1.10	E	10	0.917
	F	20	0.869	G	40	0.906	H	60	0.870	I	80	0.790	J	100	0.735

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12923
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.459	B	20	0.544	C	20	0.449	D	20	0.487	E	20	0.471
	F	20	0.455	G	20	0.493	H	20	0.471	I	20	0.476	J	20	0.411
S_Oxychlordane-13C10	A	20	0.138	B	20	0.166	C	20	0.136	D	20	0.137	E	20	0.145
	F	20	0.136	G	20	0.150	H	20	0.146	I	20	0.164	J	20	0.152
S_Heptachlrepox13C10	A	20	0.218	B	20	0.263	C	20	0.207	D	20	0.229	E	20	0.206
	F	20	0.215	G	20	0.221	H	20	0.211	I	20	0.215	J	20	0.186
S_Endrin-13C12	A	20	0.121	B	20	0.124	C	20	0.106	D	20	0.110	E	20	0.109
	F	20	0.104	G	20	0.111	H	20	0.117	I	20	0.110	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.96	B	5.0	4.64	C	5.0	3.82	D	5.0	4.15	E	5.0	4.00
	F	5.0	3.89	G	5.0	3.99	H	5.0	4.00	I	5.0	3.80	J	5.0	3.46
S_4,4'-DDT-d4	A	5.0	2.47	B	5.0	2.92	C	5.0	2.30	D	5.0	2.51	E	5.0	2.40
	F	5.0	2.41	G	5.0	2.52	H	5.0	2.55	I	5.0	2.49	J	5.0	2.26

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12923
Instrument ID: MS21

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	6.2		≤ 20	0.944		.01
2,4'-DDE	MS	AverageRF	% RSD	8.4		≤ 20	0.644		.01
2,4'-DDT	MS	AverageRF	% RSD	4.5		≤ 20	0.988		.01
4,4'-DDD	MS	AverageRF	% RSD	5.7		≤ 20	0.998		.01
4,4'-DDE	MS	AverageRF	% RSD	5.8		≤ 20	0.561		.01
4,4'-DDT	MS	AverageRF	% RSD	5.8		≤ 20	1.17		.01
alpha-Chlordane	MS	AverageRF	% RSD	8.5		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.3		≤ 20	2.86		.01
gamma-Chlordane	MS	AverageRF	% RSD	12.1		≤ 20	4.38		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.1		≤ 20	2.72		.01
Dieldrin	MS	AverageRF	% RSD	10.8		≤ 20	1.13		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	5.3		≤ 20	0.790		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	7.9		≤ 20	1.12		.01
Oxychlordane	MS	AverageRF	% RSD	13.6		≤ 20	0.919		.01
S_GBHCD6	SURR	AverageRF	% RSD	7.3		≤ 20	0.472		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.6		≤ 20	0.147		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	9.1		≤ 20	0.217		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	5.8		≤ 20	0.113		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	7.5		≤ 20	3.97		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	7.3		≤ 20	2.48		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013
Date Analyzed: 11/20/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12923
Units: ng/ml

File ID: J:\MS21\Data\112013\1120F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	21	0.944	0.971	3	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.644	0.635	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.988	0.926	-6	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.998	0.941	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	19	0.561	0.546	-3	NA	± 25 %	AverageRF
4,4'-DDT	20	18	1.17	1.08	-8	NA	± 25 %	AverageRF
alpha-Chlordane	20	22	4.13	4.47	8	NA	± 25 %	AverageRF
cis-Nonachlor	20	23	2.86	3.35	17	NA	± 25 %	AverageRF
gamma-Chlordane	20	21	4.38	4.54	4	NA	± 25 %	AverageRF
trans-Nonachlor	20	22	2.72	3.01	11	NA	± 25 %	AverageRF
Dieldrin	20	18	1.13	1.01	-10	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	0.790	0.735	-7	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.12	1.11	-1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.919	0.894	-3	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/20/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 11/20/2013
Calibration ID: CAL12923
Analysis Lot: KWG1313024
Units: ng/ml

File ID: J:\MS21\DATA\112013\1120F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	17	.01	0.944	0.812	-14	NA	± 25 %	AverageRF
2,4'-DDE	20	18	.01	0.644	0.580	-10	NA	± 25 %	AverageRF
2,4'-DDT	20	18	.01	0.988	0.907	-8	NA	± 25 %	AverageRF
4,4'-DDD	20	17	.01	0.998	0.873	-13	NA	± 25 %	AverageRF
4,4'-DDE	20	17	.01	0.561	0.479	-15	NA	± 25 %	AverageRF
4,4'-DDT	20	18	.01	1.17	1.08	-8	NA	± 25 %	AverageRF
alpha-Chlordane	20	18	.01	4.13	3.67	-11	NA	± 25 %	AverageRF
cis-Nonachlor	20	17	.01	2.86	2.42	-16	NA	± 25 %	AverageRF
gamma-Chlordane	20	17	.01	4.38	3.78	-14	NA	± 25 %	AverageRF
trans-Nonachlor	20	17	.01	2.72	2.36	-13	NA	± 25 %	AverageRF
Dieldrin	20	18	.01	1.13	1.04	-8	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	18	.01	0.790	0.701	-11	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	18	.01	1.12	1.02	-9	NA	± 25 %	AverageRF
Oxychlordane	20	18	.01	0.919	0.836	-9	NA	± 25 %	AverageRF
S_GBHCD6	20	21	.01	0.472	0.484	3	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	22	.01	0.147	0.159	8	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	22	.01	0.217	0.234	8	NA	± 30 %	AverageRF
S_Endrin-13C12	20	19	.01	0.113	0.108	-4	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.3	.01	3.97	4.23	7	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.3	.01	2.48	2.63	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Service Request: K1311918

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2
Analysis Lot: KWG1313024
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1120F019.D	Continuing Calibration Verification	KWG1313024-1	11/20/2013	15:50		11/20/2013	15:50
1120F020.D	Method Blank	KWG1312337-5	11/20/2013	16:23		11/20/2013	16:23
1120F021.D	Lab Control Sample	KWG1312337-3	11/20/2013	16:46		11/20/2013	16:46
1120F022.D	Duplicate Lab Control Sample	KWG1312337-4	11/20/2013	17:14		11/20/2013	17:14
1120F023.D	Method Blank	KWG1312681-5	11/20/2013	17:42		11/20/2013	17:42
1120F024.D	Lab Control Sample	KWG1312681-3	11/20/2013	18:09		11/20/2013	18:09
1120F025.D	Duplicate Lab Control Sample	KWG1312681-4	11/20/2013	18:36		11/20/2013	18:36
1120F026.D	RM11E-SL035MS	KWG1312681-1	11/20/2013	19:03		11/20/2013	19:03
1120F027.D	RM11E-SL035DMS	KWG1312681-2	11/20/2013	19:31		11/20/2013	19:31
1120F028.D	RM11E-SL035	K1311918-004	11/20/2013	19:58		11/20/2013	19:58
1120F029.D	RM11E-G077	K1311918-002	11/20/2013	20:25		11/20/2013	20:25
1120F030.D	RM11E-SL036	K1311918-005	11/20/2013	20:52		11/20/2013	20:52
1120F031.D	RM11E-G076	K1311918-001	11/20/2013	21:19		11/20/2013	21:19
1120F032.D	RM11E-G082	K1311918-003	11/20/2013	21:47		11/20/2013	21:47
1120F033.D	RM11E-G068	K1311918-008	11/20/2013	22:14		11/20/2013	22:14
1120F034.D	ZZZZZZ	ZZZZZZ	11/20/2013	22:41		11/20/2013	22:41
1120F035.D	ZZZZZZ	ZZZZZZ	11/20/2013	23:08		11/20/2013	23:08
1120F036.D	ZZZZZZ	ZZZZZZ	11/20/2013	23:35		11/20/2013	23:35
1120F037.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:02		11/21/2013	00:02
1120F038.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:30		11/21/2013	00:30
1120F039.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:57		11/21/2013	00:57
1120F040.D	ZZZZZZ	ZZZZZZ	11/21/2013	01:24		11/21/2013	01:24
1120F041.D	ZZZZZZ	ZZZZZZ	11/21/2013	01:51		11/21/2013	01:51
1120F042.D	ZZZZZZ	ZZZZZZ	11/21/2013	02:18		11/21/2013	02:18
1120F043.D	ZZZZZZ	ZZZZZZ	11/21/2013	02:45		11/21/2013	02:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Extracted: 11/06/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1312337
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G076	K1311918-001	10/31/13	11/01/13	20.333g	1.0ml	69.7	
RM11E-G077	K1311918-002	10/31/13	11/01/13	20.212g	1.0ml	79.1	
RM11E-G082	K1311918-003	10/31/13	11/01/13	20.390g	1.0ml	69.3	
RM11E-SL036	K1311918-005	10/31/13	11/01/13	11.261g	1.0ml	88.1	
RM11E-G068	K1311918-008	10/31/13	11/01/13	20.450g	1.0ml	63.3	
Method Blank	KWG1312337-5	NA	NA	20.390g	1.0ml	NA	
Lab Control Sample	KWG1312337-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1312337-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/14/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1312681
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL035	K1311918-004	10/31/13	11/01/13	11.272g	1.0ml	85.1	
Method Blank	KWG1312681-5	NA	NA	11.347g	1.0ml	NA	
RM11E-SL035MS	KWG1312681-1	10/31/13	11/01/13	11.347g	1.0ml	85.1	
RM11E-SL035DMS	KWG1312681-2	10/31/13	11/01/13	11.245g	1.0ml	85.1	
Lab Control Sample	KWG1312681-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1312681-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G076	K1311918-001	10/31/2013	11/01/2013
RM11E-G077	K1311918-002	10/31/2013	11/01/2013
RM11E-G082	K1311918-003	10/31/2013	11/01/2013
RM11E-SL035	K1311918-004	10/31/2013	11/01/2013
RM11E-SL036	K1311918-005	10/31/2013	11/01/2013
RM11E-G079	K1311918-006	10/31/2013	11/01/2013
RM11E-G075	K1311918-007	10/31/2013	11/01/2013
RM11E-G068	K1311918-008	10/31/2013	11/01/2013
RM11E-G979	K1311918-009	10/31/2013	11/01/2013
RM11E-G579	K1311918-010	10/31/2013	11/01/2013
RM11E-SL035MS	KWG1312600-1	10/31/2013	11/01/2013
RM11E-SL035DMS	KWG1312600-2	10/31/2013	11/01/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Stacy M Smith

Date: 11/20/13 Title: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Water	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G979	**Units:**	ug/L
Lab Code:	K1311918-009	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1221	ND	Ui	0.010	0.0037	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1232	ND	Ui	0.0050	0.0023	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1242	ND	Ui	0.0050	0.0030	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1248	ND	Ui	0.0050	0.0018	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1254	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1260	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1262	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1268	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	61	39-140	11/08/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Storm water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1312457-4	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0050	0.0016	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1221	ND	Ui	0.0099	0.0071	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1232	ND	Ui	0.0050	0.0019	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1242	ND	Ui	0.0050	0.0012	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1248	ND	Ui	0.0050	0.0023	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1254	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1260	ND	Ui	0.0050	0.0012	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1262	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	
Aroclor 1268	ND	U	0.0050	0.00096	1	11/06/13	11/08/13	KWG1312457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	39-140	11/08/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G076	**Units:**	ug/Kg
Lab Code:	K1311918-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	4.3	2.6	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.2	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	Ui	4.3	3.7	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	Ui	5.8	5.8	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**16**	P	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**87**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G077	**Units:**	ug/Kg
Lab Code:	K1311918-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	6.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**280**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	77	43-148	11/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G082	**Units:**	ug/Kg
Lab Code:	K1311918-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	69	69	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	Ui	8.4	8.4	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	Ui	190	190	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	Ui	99	99	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	Ui	190	190	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	Ui	130	130	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**560**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-SL035
Lab Code: K1311918-004

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	5.9	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**17**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**12**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	80	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL036	**Units:**	ug/Kg
Lab Code:	K1311918-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	5.7	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**40**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**25**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	92	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G079	**Units:**	ug/Kg
Lab Code:	K1311918-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1221	ND	U	61	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1232	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1242	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1248	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1254	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1260	**2200**	D	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1262	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	
Aroclor 1268	ND	U	43	21	10	11/05/13	11/18/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	114	43-148	11/18/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G075	**Units:**	ug/Kg
Lab Code:	K1311918-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.4	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	Ui	5.3	5.3	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**39**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G068
Lab Code: K1311918-008

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.9	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	**7.7**	P	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	**28**	P	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**55**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	43-148	11/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G579	**Units:**	ug/Kg
Lab Code:	K1311918-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	7.8	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	**610**		4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	11/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG1312600-4

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1221	ND	U	5.0	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1232	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1242	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1248	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1254	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1260	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1262	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	
Aroclor 1268	ND	U	4.3	2.1	1	11/05/13	11/16/13	KWG1312600	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	96	43-148	11/16/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Water

Service Request: K1311918

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-G979	K1311918-009	61
Batch QC	K1311970-001	73
Method Blank	KWG1312457-4	74
Batch QCMS	KWG1312457-1	75
Batch QCDMS	KWG1312457-2	75
Lab Control Sample	KWG1312457-3	74

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-G076	K1311918-001	68
RM11E-G077	K1311918-002	77
RM11E-G082	K1311918-003	70
RM11E-SL035	K1311918-004	80
RM11E-SL036	K1311918-005	92
RM11E-G079	K1311918-006	114 D
RM11E-G075	K1311918-007	81
RM11E-G068	K1311918-008	76
RM11E-G579	K1311918-010	83
Method Blank	KWG1312600-4	96
RM11E-SL035MS	KWG1312600-1	87
RM11E-SL035DMS	KWG1312600-2	85
Lab Control Sample	KWG1312600-3	99

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Storm water	**Date Analyzed:**	11/08/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1311970-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312457

		Batch QCMS KWG1312457-1 Matrix Spike			Batch QCDMS KWG1312457-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	0.167	0.200	84	0.168	0.198	85	39-128	0	30
Aroclor 1260	ND	0.162	0.200	81	0.157	0.198	79	39-128	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/16/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312600

		RM11E-SL035MS KWG1312600-1 Matrix Spike			RM11E-SL035DMS KWG1312600-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	96.4	117	83	75.6	116	65	23-145	24	40
Aroclor 1260	12	112	117	86	92.9	116	70	24-148	18	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Storm water	**Date Analyzed:**	11/08/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Units:**	ug/L
Analysis Method:	8082A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1312457

	Lab Control Sample KWG1312457-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	0.180	0.200	90	60-103
Aroclor 1260	0.177	0.200	89	60-103

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/16/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1312600

	Lab Control Sample KWG1312600-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	117	200	58	42-122
Aroclor 1260	164	200	82	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Storm water	**Date Analyzed:**	11/08/2013
		Time Analyzed:	05:43

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1312457-4	**File ID:**	J:\GC22\DATA\110713UL.B\1107F006.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312457

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312457-3	J:\GC22\DATA\110713UL.B\1107F005.D	11/08/13	05:21
RM11E-G979	K1311918-009	J:\GC22\DATA\110713UL.B\1107F009.D	11/08/13	06:52
Batch QC	K1311970-001	J:\GC22\DATA\110713UL.B\1107F013.D	11/08/13	08:27
Batch QCMS	KWG1312457-1	J:\GC22\DATA\110713UL.B\1107F014.D	11/08/13	08:49
Batch QCDMS	KWG1312457-2	J:\GC22\DATA\110713UL.B\1107F015.D	11/08/13	09:12

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Extracted: 11/05/2013
Date Analyzed: 11/16/2013
Time Analyzed: 11:46

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG1312600-4

Instrument ID: GC32.i
File ID: J:\GC32\DATA\111613.B\1116F004.D

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low
Extraction Lot: KWG1312600

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312600-3	J:\GC32\DATA\111613.B\1116F003.D	11/16/13	11:25
RM11E-G076	K1311918-001	J:\GC32\DATA\111613.B\1116F010.D	11/16/13	13:54
RM11E-G077	K1311918-002	J:\GC32\DATA\111613.B\1116F011.D	11/16/13	14:16
RM11E-G082	K1311918-003	J:\GC32\DATA\111613.B\1116F012.D	11/16/13	14:37
RM11E-SL035	K1311918-004	J:\GC32\DATA\111613.B\1116F015.D	11/16/13	15:42
RM11E-SL035MS	KWG1312600-1	J:\GC32\DATA\111613.B\1116F016.D	11/16/13	16:04
RM11E-SL035DMS	KWG1312600-2	J:\GC32\DATA\111613.B\1116F017.D	11/16/13	16:26
RM11E-SL036	K1311918-005	J:\GC32\DATA\111613.B\1116F018.D	11/16/13	16:48
RM11E-G075	K1311918-007	J:\GC32\DATA\111613.B\1116F020.D	11/16/13	17:33
RM11E-G068	K1311918-008	J:\GC32\DATA\111613.B\1116F021.D	11/16/13	17:55
RM11E-G068	K1311918-008	J:\GC32\DATA\111613.B\1116F021.D	11/16/13	17:56
RM11E-G579	K1311918-010	J:\GC32\DATA\111613.B\1116F022.D	11/16/13	18:18
RM11E-G079	K1311918-006	J:\GC32\DATA\111713.B\1117F005.D	11/18/13	04:17

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Storm water	**Date Analyzed:**	11/08/2013
		Time Analyzed:	05:21

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC22.i
Lab Code:	KWG1312457-3	**File ID:**	J:\GC22\DATA\110713UL.B\1107F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312457

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312457-4	J:\GC22\DATA\110713UL.B\1107F006.D	11/08/13	05:43
RM11E-G979	K1311918-009	J:\GC22\DATA\110713UL.B\1107F009.D	11/08/13	06:52
Batch QC	K1311970-001	J:\GC22\DATA\110713UL.B\1107F013.D	11/08/13	08:27
Batch QCMS	KWG1312457-1	J:\GC22\DATA\110713UL.B\1107F014.D	11/08/13	08:49
Batch QCDMS	KWG1312457-2	J:\GC22\DATA\110713UL.B\1107F015.D	11/08/13	09:12

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/16/2013
		Time Analyzed:	11:25

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1312600-3	**File ID:**	J:\GC32\DATA\111613.B\1116F003.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1312600

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312600-4	J:\GC32\DATA\111613.B\1116F004.D	11/16/13	11:46
RM11E-G076	K1311918-001	J:\GC32\DATA\111613.B\1116F010.D	11/16/13	13:54
RM11E-G077	K1311918-002	J:\GC32\DATA\111613.B\1116F011.D	11/16/13	14:16
RM11E-G082	K1311918-003	J:\GC32\DATA\111613.B\1116F012.D	11/16/13	14:37
RM11E-SL035	K1311918-004	J:\GC32\DATA\111613.B\1116F015.D	11/16/13	15:42
RM11E-SL035MS	KWG1312600-1	J:\GC32\DATA\111613.B\1116F016.D	11/16/13	16:04
RM11E-SL035DMS	KWG1312600-2	J:\GC32\DATA\111613.B\1116F017.D	11/16/13	16:26
RM11E-SL036	K1311918-005	J:\GC32\DATA\111613.B\1116F018.D	11/16/13	16:48
RM11E-G075	K1311918-007	J:\GC32\DATA\111613.B\1116F020.D	11/16/13	17:33
RM11E-G068	K1311918-008	J:\GC32\DATA\111613.B\1116F021.D	11/16/13	17:55
RM11E-G068	K1311918-008	J:\GC32\DATA\111613.B\1116F021.D	11/16/13	17:56
RM11E-G579	K1311918-010	J:\GC32\DATA\111613.B\1116F022.D	11/16/13	18:18
RM11E-G079	K1311918-006	J:\GC32\DATA\111713.B\1117F005.D	11/18/13	04:17

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	7.97E+6	B	0.50	8.27E+6	C	5.0	8.08E+6	D	10	7.92E+6	E	20	7.42E+6
	F	50	7.26E+6												
Aroclor 1016 {1}	A	2.5	1.11E+5	B	5.0	1.12E+5	C	50	1.05E+5	D	100	1.04E+5	E	200	93000
	F	500	87600												
Aroclor 1016 {2}	A	2.5	3.79E+5	B	5.0	3.97E+5	C	50	3.68E+5	D	100	3.87E+5	E	200	3.42E+5
	F	500	3.67E+5												
Aroclor 1016 {3}	A	2.5	1.72E+5	B	5.0	1.93E+5	C	50	2.02E+5	D	100	1.93E+5	E	200	1.75E+5
	F	500	1.62E+5												
Aroclor 1016 {4}	A	2.5	2.08E+5	B	5.0	2.10E+5	C	50	2.15E+5	D	100	2.07E+5	E	200	1.90E+5
	F	500	1.78E+5												
Aroclor 1016 {5}	A	2.5	1.50E+5	B	5.0	1.54E+5	C	50	1.64E+5	D	100	1.59E+5	E	200	1.46E+5
	F	500	1.38E+5												
Aroclor 1260 {1}	A	2.5	2.52E+5	B	5.0	2.45E+5	C	50	2.56E+5	D	100	2.47E+5	E	200	2.39E+5
	F	500	2.33E+5												
Aroclor 1260 {2}	A	2.5	3.73E+5	B	5.0	3.70E+5	C	50	3.67E+5	D	100	3.58E+5	E	200	3.30E+5
	F	500	3.15E+5												
Aroclor 1260 {3}	A	2.5	3.82E+5	B	5.0	4.02E+5	C	50	4.07E+5	D	100	3.98E+5	E	200	3.71E+5
	F	500	3.58E+5												
Aroclor 1260 {4}	A	2.5	8.63E+5	B	5.0	8.81E+5	C	50	9.13E+5	D	100	9.25E+5	E	200	8.76E+5
	F	500	8.58E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.24E+5	B	5.0	6.87E+5	C	50	7.11E+5	D	100	7.04E+5	E	200	6.44E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	7.1		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	3.5		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	5.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	3.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	5.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	100	102000	103000	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	373000	382000	2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	183000	186000	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	201000	212000	5	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	120	152000	179000	18	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	90	245000	221000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	352000	390000	11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	386000	426000	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	886000	965000	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	669000	711000	6	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	8.26E+6	B	0.50	8.50E+6	C	5.0	8.66E+6	D	10	8.79E+6	E	20	8.42E+6
	F	50	8.58E+6												
Aroclor 1016 {1}	A	2.5	1.60E+5	B	5.0	1.74E+5	C	50	1.85E+5	D	100	1.83E+5	E	200	1.72E+5
	F	500	1.68E+5												
Aroclor 1016 {2}	A	2.5	2.67E+5	B	5.0	2.62E+5	C	50	2.60E+5	D	100	2.64E+5	E	200	2.51E+5
	F	500	2.52E+5												
Aroclor 1016 {3}	A	2.5	3.64E+5	B	5.0	3.71E+5	C	50	3.80E+5	D	100	3.85E+5	E	200	3.77E+5
	F	500	4.04E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	3.16E+5	C	50	3.10E+5	D	100	3.19E+5	E	200	3.07E+5
	F	500	3.08E+5												
Aroclor 1016 {5}	A	2.5	2.29E+5	B	5.0	2.29E+5	C	50	2.29E+5	D	100	2.29E+5	E	200	2.19E+5
	F	500	2.22E+5												
Aroclor 1260 {1}	A	2.5	2.28E+5	B	5.0	2.37E+5	C	50	2.46E+5	D	100	2.40E+5	E	200	2.34E+5
	F	500	2.35E+5												
Aroclor 1260 {2}	A	2.5	4.95E+5	B	5.0	4.45E+5	C	50	4.27E+5	D	100	4.13E+5	E	200	4.13E+5
	F	500	4.01E+5												
Aroclor 1260 {3}	A	2.5	4.09E+5	B	5.0	4.22E+5	C	50	4.28E+5	D	100	4.32E+5	E	200	4.17E+5
	F	500	4.19E+5												
Aroclor 1260 {4}	A	2.5	9.51E+5	B	5.0	9.41E+5	C	50	1.02E+6	D	100	1.06E+6	E	200	1.03E+6
	F	500	1.07E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.15E+5	B	5.0	6.26E+5	C	50	6.44E+5	D	100	6.58E+5	E	200	6.36E+5
	F	500	6.46E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	2.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	2.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	3.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	1.6		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	2.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	7.9		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	120	174000	200000	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	259000	269000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	380000	395000	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	313000	331000	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	100	226000	233000	3	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	110	237000	266000	12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	120	432000	517000	20	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	120	421000	490000	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	120	1010000	1180000	17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	638000	696000	9	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.00E+5	B	5.0	91400	C	50	76300	D	100	71900	E	200	69500
	F	500	66100												
Aroclor 1016 {1}	A	25	2040	B	50	1870	C	500	1680	D	1000	1580	E	2000	1510
	F	5000	1340												
Aroclor 1016 {2}	A	25	1510	B	50	1590	C	500	1380	D	1000	1330	E	2000	1300
	F	5000	1150												
Aroclor 1016 {3}	A	25	5120	B	50	4510	C	500	4030	D	1000	3930	E	2000	3830
	F	5000	3540												
Aroclor 1016 {4}	A	25	3520	B	50	3350	C	500	2930	D	1000	2760	E	2000	2650
	F	5000	2420												
Aroclor 1016 {5}	A	25	2840	B	50	2650	C	500	2350	D	1000	2230	E	2000	2120
	F	5000	1950												
Aroclor 1260 {1}	A	25	2510	B	50	2480	C	500	2260	D	1000	2210	E	2000	2140
	F	5000	2040												
Aroclor 1260 {2}	A	25	3950	B	50	3950	C	500	3410	D	1000	3230	E	2000	3090
	F	5000	2890												
Aroclor 1260 {3}	A	25	4130	B	50	3980	C	500	3640	D	1000	3450	E	2000	3340
	F	5000	3130												
Aroclor 1260 {4}	A	25	9750	B	50	9000	C	500	7940	D	1000	7710	E	2000	7660
	F	5000	7490												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7750	B	50	7170	C	500	6330	D	1000	6020	E	2000	5900
	F	5000	5670												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	14.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.0		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	10.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.0		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	940	1670	1580	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	910	1380	1260	-9	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	890	4160	3720	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	890	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	900	2350	2120	-10	NA	± 100 %	AverageRF
Aroclor 1016	1000	910	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	1000	910	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	3420	3670	7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	3610	3810	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	8260	8450	2	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	990	6470	6430	-1	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	7.85E+5	B	5.0	7.15E+5	C	50	5.62E+5	D	100	5.31E+5	E	200	5.22E+5
Aroclor 1016 {1}	A	25	16500	B	50	15600	C	500	13200	D	1000	12300	E	2000	11800
	F	5000	10500												
Aroclor 1016 {2}	A	25	43600	B	50	40200	C	500	34100	D	1000	31800	E	2000	32600
	F	5000	30100												
Aroclor 1016 {3}	A	25	28800	B	50	26900	C	500	22000	D	1000	21000	E	2000	20500
	F	5000	18900												
Aroclor 1016 {4}	A	25	22700	B	50	20500	C	500	16600	D	1000	15700	E	2000	15200
	F	5000	13700												
Aroclor 1016 {5}	A	25	21900	B	50	19800	C	500	16600	D	1000	15600	E	2000	15200
	F	5000	13800												
Aroclor 1260 {1}	A	25	47900	B	50	43700	C	500	34600	D	1000	33200	E	2000	32500
	F	5000	29900												
Aroclor 1260 {2}	A	25	36100	B	50	32300	C	500	26900	D	1000	25400	E	2000	24600
	F	5000	22800												
Aroclor 1260 {3}	A	25	34100	B	50	33300	C	500	27600	D	1000	26400	E	2000	26000
	F	5000	24100												
Aroclor 1260 {4}	A	25	83800	B	50	75200	C	500	63200	D	1000	61100	E	2000	61700
	F	5000	59300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	55700	B	50	48100	C	500	41400	D	1000	39400	E	2000	38900
	F	5000	36200												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	19.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	17.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	15.0		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	17.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	18.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	19.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	18.3		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	16.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	900	13300	11900	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	35400	30200	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	840	23000	19400	-16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	830	17400	14400	-17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	850	17200	14600	-15	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	850	37000	31400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1000	28600	29700	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	67400	69500	3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1000	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/08/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1312761
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\110713UL.B\1107F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.1	7820000	6330000	-19	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	65	102000	132000	30	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	57	373000	423000	13	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	60	183000	218000	19	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	54	201000	217000	8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	54	152000	165000	9	NA	± 100 %	AverageRF
Aroclor 1016	50	58	NA	NA	NA	16	± 20 %	NA
Aroclor 1260 {1}	50	44	245000	214000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	45	352000	316000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	43	386000	334000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	41	886000	722000	-18	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	40	669000	539000	-19	NA	± 100 %	AverageRF
Aroclor 1260	50	43	NA	NA	NA	-15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/08/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1312761
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\110713UL_R.B\1107F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	3.9	8530000	6660000	-22	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	50	174000	174000	0		NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	45	259000	234000	-10		NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	44	380000	333000	-12		NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	52	313000	323000	3		NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	50	226000	227000	0		NA	± 100 %	AverageRF
Aroclor 1016	50	48	NA	NA	NA		-4	± 20 %	NA
Aroclor 1260 {1}	50	48	237000	225000	-5		NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	45	432000	392000	-9		NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	44	421000	372000	-12		NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	41	1010000	826000	-18		NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	41	638000	522000	-18		NA	± 100 %	AverageRF
Aroclor 1260	50	44	NA	NA	NA		-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/08/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1312761
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\110713UL.B\1107F017.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.5	7820000	7000000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	65	102000	134000	31	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	52	373000	388000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	58	183000	211000	15	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	53	201000	213000	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	53	152000	161000	6	NA	± 100 %	AverageRF
Aroclor 1016	50	56	NA	NA	NA	12	± 20 %	NA
Aroclor 1260 {1}	50	46	245000	224000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	46	352000	321000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	45	386000	346000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	44	886000	786000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	44	669000	594000	-11	NA	± 100 %	AverageRF
Aroclor 1260	50	45	NA	NA	NA	-10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/08/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1312761
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\110713UL_R.B\1107F017.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.3	8530000	8960000	5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	53	174000	186000	7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	51	259000	264000	2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	49	380000	374000	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	51	313000	320000	3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	51	226000	229000	1	NA	± 100 %	AverageRF
Aroclor 1016	50	51	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	50	51	237000	244000	3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	51	432000	442000	2	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	52	421000	434000	3	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	51	1010000	1040000	2	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	52	638000	657000	3	NA	± 100 %	AverageRF
Aroclor 1260	50	51	NA	NA	NA	3	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F001.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73400	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	510	1670	1710	2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	1380	1350	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	4160	3960	-5	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	2940	2680	-9	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2110	-10	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-5	± 20 %	NA
Aroclor 1260 {1}	500	460	2270	2080	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3190	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	480	3610	3440	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7650	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6070	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F001.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	55	623000	683000	10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	610	13300	16200	22	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	530	35400	37300	5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	520	23000	23900	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	17400	17700	2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	17200	17500	2	NA	± 100 %	AverageRF
Aroclor 1016	500	530	NA	NA	NA	7	± 20 %	NA
Aroclor 1260 {1}	500	500	37000	36900	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	520	28000	29300	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	530	28600	30400	7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	530	67400	71700	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	540	43300	46800	8	NA	± 100 %	AverageRF
Aroclor 1260	500	530	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F013.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73100	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	1670	1750	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1380	1390	1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	4160	4180	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	2940	2760	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2130	-10	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	460	2270	2110	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3230	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	3610	3420	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7550	-9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6050	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F013.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	50	623000	620000	-1	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	600	13300	15900	19	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	35400	34600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	23000	23200	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	17400	17300	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	17200	16700	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	470	37000	35000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	28000	25800	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	510	28600	29100	2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	490	67400	65400	-3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	500	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	500	490	NA	NA	NA	-3	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613.B\1116F026.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	79200	74100	-6	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	530	1670	1780	6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	520	1380	1420	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	4160	4030	-3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	2940	2760	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	460	2350	2180	-7	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-1	± 20 %	NA
Aroclor 1260 {1}	500	470	2270	2110	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	3420	3240	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	480	3610	3440	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7640	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6090	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/16/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312889
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111613_R.B\1116F026.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	50	623000	620000	0	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	600	13300	16100	21	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	35400	35000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	23000	23300	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	490	17400	17100	-2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	17200	16900	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	4	± 20 %	NA
Aroclor 1260 {1}	500	470	37000	35100	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	490	28000	27500	-2	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	490	28600	28000	-2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	500	67400	66900	-1	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	490	43300	42800	-1	NA	± 100 %	AverageRF
Aroclor 1260	500	490	NA	NA	NA	-2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312909
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111713.B\1117F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73200	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	1670	1740	4	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	1380	1360	-1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	4160	4130	-1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	2940	2720	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2110	-11	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	500	460	2270	2080	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	3420	3170	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	3610	3390	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8260	7590	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6470	6040	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312909
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111713_R.B\1117F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	623000	603000	-3	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	570	13300	15300	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	35400	33300	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	23000	22600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	17400	16300	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	470	17200	16100	-6	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-1	± 20 %	NA
Aroclor 1260 {1}	500	450	37000	33100	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	28000	26500	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	480	28600	27600	-3	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	480	67400	64200	-5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	480	43300	41900	-3	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312909
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111713.B\1117F025.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	79200	75900	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	1670	1720	3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	1380	1350	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	500	4160	4180	0	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	2940	2770	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	450	2350	2140	-9	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	500	480	2270	2160	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	480	3420	3300	-4	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	490	3610	3540	-2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	480	8260	7850	-5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	480	6470	6250	-3	NA	± 100 %	AverageRF
Aroclor 1260	500	480	NA	NA	NA	-4	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1312909
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\111713_R.B\1117F025.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	54	623000	670000	8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	600	13300	16000	20	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	35400	35200	-1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	520	23000	23800	3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	17400	17300	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	500	17200	17100	0	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	4	± 20 %	NA
Aroclor 1260 {1}	500	490	37000	36300	-2	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	520	28000	29400	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	530	28600	30300	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	520	67400	69800	4	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	530	43300	46000	6	NA	± 100 %	AverageRF
Aroclor 1260	500	520	NA	NA	NA	4	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1312761
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1107F003.D	Continuing Calibration Verification	KWG1312761-1	11/8/2013	04:35		11/8/2013	04:35
1107F004.D	Instrument Blank	KWG1312761-2	11/8/2013	04:58		11/8/2013	04:58
1107F005.D	Lab Control Sample	KWG1312457-3	11/8/2013	05:21		11/8/2013	05:21
1107F006.D	Method Blank	KWG1312457-4	11/8/2013	05:43		11/8/2013	05:43
1107F007.D	ZZZZZZ	ZZZZZZ	11/8/2013	06:06		11/8/2013	06:06
1107F009.D	RM11E-G979	K1311918-009	11/8/2013	06:52		11/8/2013	06:52
1107F010.D	ZZZZZZ	ZZZZZZ	11/8/2013	07:15		11/8/2013	07:15
1107F011.D	ZZZZZZ	ZZZZZZ	11/8/2013	07:37		11/8/2013	07:37
1107F012.D	ZZZZZZ	ZZZZZZ	11/8/2013	08:00		11/8/2013	08:00
1107F013.D	Batch QC	K1311970-001	11/8/2013	08:27		11/8/2013	08:27
1107F014.D	Batch QCMS	KWG1312457-1	11/8/2013	08:49		11/8/2013	08:49
1107F015.D	Batch QCDMS	KWG1312457-2	11/8/2013	09:12		11/8/2013	09:12
1107F016.D	ZZZZZZ	ZZZZZZ	11/8/2013	09:38		11/8/2013	09:38
1107F017.D	Continuing Calibration Verification	KWG1312761-3	11/8/2013	10:01		11/8/2013	10:01
1107F018.D	Instrument Blank	KWG1312761-4	11/8/2013	10:24		11/8/2013	10:24
1107F019.D	ZZZZZZ	ZZZZZZ	11/8/2013	10:47		11/8/2013	10:47
1107F020.D	ZZZZZZ	ZZZZZZ	11/8/2013	11:10		11/8/2013	11:10
1107F021.D	ZZZZZZ	ZZZZZZ	11/8/2013	11:33		11/8/2013	11:33
1107F022.D	ZZZZZZ	ZZZZZZ	11/8/2013	11:55		11/8/2013	11:55
1107F023.D	ZZZZZZ	ZZZZZZ	11/8/2013	12:18		11/8/2013	12:18
1107F024.D	Continuing Calibration Verification	KWG1312761-5	11/8/2013	12:41		11/8/2013	12:41
1107F025.D	Instrument Blank	KWG1312761-6	11/8/2013	13:04		11/8/2013	13:04

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1312889
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1116F001.D	Continuing Calibration Verification	KWG1312889-1	11/16/2013	10:43		11/16/2013	10:43
1116F002.D	Instrument Blank	KWG1312889-2	11/16/2013	11:04		11/16/2013	11:04
1116F003.D	Lab Control Sample	KWG1312600-3	11/16/2013	11:25		11/16/2013	11:25
1116F004.D	Method Blank	KWG1312600-4	11/16/2013	11:46		11/16/2013	11:46
1116F005.D	ZZZZZZ	ZZZZZZ	11/16/2013	12:08		11/16/2013	12:08
1116F006.D	ZZZZZZ	ZZZZZZ	11/16/2013	12:29		11/16/2013	12:29
1116F007.D	ZZZZZZ	ZZZZZZ	11/16/2013	12:50		11/16/2013	12:50
1116F008.D	ZZZZZZ	ZZZZZZ	11/16/2013	13:11		11/16/2013	13:11
1116F009.D	ZZZZZZ	ZZZZZZ	11/16/2013	13:33		11/16/2013	13:33
1116F010.D	RM11E-G076	K1311918-001	11/16/2013	13:54		11/16/2013	13:54
1116F011.D	RM11E-G077	K1311918-002	11/16/2013	14:16		11/16/2013	14:16
1116F012.D	RM11E-G082	K1311918-003	11/16/2013	14:37		11/16/2013	14:37
1116F013.D	Continuing Calibration Verification	KWG1312889-3	11/16/2013	14:59		11/16/2013	14:59
1116F014.D	Instrument Blank	KWG1312889-4	11/16/2013	15:21		11/16/2013	15:21
1116F015.D	RM11E-SL035	K1311918-004	11/16/2013	15:42		11/16/2013	15:42
1116F016.D	RM11E-SL035MS	KWG1312600-1	11/16/2013	16:04		11/16/2013	16:04
1116F017.D	RM11E-SL035DMS	KWG1312600-2	11/16/2013	16:26		11/16/2013	16:26
1116F018.D	RM11E-SL036	K1311918-005	11/16/2013	16:48		11/16/2013	16:48
1116F020.D	RM11E-G075	K1311918-007	11/16/2013	17:33		11/16/2013	17:33
1116F021.D	RM11E-G068	K1311918-008	11/16/2013	17:56		11/16/2013	17:56
1116F022.D	RM11E-G579	K1311918-010	11/16/2013	18:18		11/16/2013	18:18
1116F023.D	ZZZZZZ	ZZZZZZ	11/16/2013	18:41		11/16/2013	18:41
1116F024.D	ZZZZZZ	ZZZZZZ	11/16/2013	19:04		11/16/2013	19:04
1116F025.D	ZZZZZZ	ZZZZZZ	11/16/2013	19:27		11/16/2013	19:27
1116F026.D	Continuing Calibration Verification	KWG1312889-5	11/16/2013	19:50		11/16/2013	19:50
1116F027.D	Instrument Blank	KWG1312889-6	11/16/2013	20:13		11/16/2013	20:13

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1312909
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1117F003.D	Continuing Calibration Verification	KWG1312909-1	11/18/2013	03:34		11/18/2013	03:34
1117F004.D	Instrument Blank	KWG1312909-2	11/18/2013	03:55		11/18/2013	03:55
1117F005.D	RM11E-G079	K1311918-006	11/18/2013	04:17		11/18/2013	04:17
1117F017.D	ZZZZZZ	ZZZZZZ	11/18/2013	08:24		11/18/2013	08:24
1117F021.D	ZZZZZZ	ZZZZZZ	11/18/2013	09:46		11/18/2013	09:46
1117F025.D	Continuing Calibration Verification	KWG1312909-3	11/18/2013	11:09		11/18/2013	11:09
1117F026.D	Instrument Blank	KWG1312909-4	11/18/2013	11:30		11/18/2013	11:30
1117F027.D	ZZZZZZ	ZZZZZZ	11/18/2013	11:51		11/18/2013	11:51
1117F031.D	Continuing Calibration Verification	KWG1312909-5	11/18/2013	13:14		11/18/2013	13:14
1117F032.D	Instrument Blank	KWG1312909-6	11/18/2013	13:35		11/18/2013	13:35

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Water

Service Request: K1311918
Date Extracted: 11/06/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1312457
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G979	K1311918-009	10/31/13	11/01/13	1000mL	2mL	NA	
Method Blank	KWG1312457-4	NA	NA	1020mL	2mL	NA	
Batch QC	K1311970-001	NA	NA	1000mL	2mL	NA	
Batch QCMS	KWG1312457-1	NA	NA	1000mL	2mL	NA	
Batch QCDMS	KWG1312457-2	NA	NA	1010mL	2mL	NA	
Lab Control Sample	KWG1312457-3	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Extracted: 11/05/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1312600
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G076	K1311918-001	10/31/13	11/01/13	40.042g	4mL	69.7	
RM11E-G077	K1311918-002	10/31/13	11/01/13	40.091g	4mL	79.1	
RM11E-G082	K1311918-003	10/31/13	11/01/13	40.230g	4mL	69.3	
RM11E-SL035	K1311918-004	10/31/13	11/01/13	40.347g	4mL	85.1	
RM11E-SL036	K1311918-005	10/31/13	11/01/13	40.279g	4mL	88.1	
RM11E-G079	K1311918-006	10/31/13	11/01/13	40.098g	4mL	82.6	
RM11E-G075	K1311918-007	10/31/13	11/01/13	40.029g	4mL	67.7	
RM11E-G068	K1311918-008	10/31/13	11/01/13	40.159g	4mL	63.3	
RM11E-G068RE	K1311918-008	10/31/13	11/01/13	40.159g	4mL	63.3	
RM11E-G579	K1311918-010	10/31/13	11/01/13	40.029g	4mL	64.2	
Method Blank	KWG1312600-4	NA	NA	40.442g	4mL	NA	
RM11E-SL035MS	KWG1312600-1	10/31/13	11/01/13	40.337g	4mL	85.1	
RM11E-SL035DMS	KWG1312600-2	10/31/13	11/01/13	40.442g	4mL	85.1	
Lab Control Sample	KWG1312600-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G076
Lab Code: K1311918-001
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	16	25	43.9	P	1	11/16/13
Aroclor 1260	4.3	2.1	87	90	3.4		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G077	**Units:**	ug/Kg
Lab Code:	K1311918-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	280	300	6.9		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G082
Lab Code: K1311918-003
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	560	610	8.5		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	17	19	11.1		1	11/16/13
Aroclor 1260	4.3	2.1	12	14	15.4		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL036	**Units:**	ug/Kg
Lab Code:	K1311918-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	40	43	7.2		1	11/16/13
Aroclor 1260	4.3	2.1	25	29	14.8		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G079
Lab Code: K1311918-006
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	43	21	2200	2200	0.0	D	10	11/18/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G075	**Units:**	ug/Kg
Lab Code:	K1311918-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	39	41	5.0		1	11/16/13

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Collected: 10/31/2013
Date Received: 11/01/2013
Date Extracted: 11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-G068
Lab Code: K1311918-008
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	4.3	2.1	7.7	13	51.2	P	1	11/16/13
Aroclor 1254	4.3	2.1	28	59	71.3	P	1	11/16/13
Aroclor 1260	4.3	2.1	55	64	15.1		1	11/16/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013
		Date Extracted:	11/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G579	**Units:**	ug/Kg
Lab Code:	K1311918-010	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	610	620	1.6		1	11/16/13

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL035	K1311918-004	10/31/2013	11/01/2013
RM11E-SL036	K1311918-005	10/31/2013	11/01/2013
RM11E-SL035MS	KWG1312339-1	10/31/2013	11/01/2013
RM11E-SL035DMS	KWG1312339-2	10/31/2013	11/01/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Degen

Date: 11/21/13 Title: Sys Supervisor

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**16**		11	3.1	1	11/05/13	11/11/13	KWG1312339	
2-Methylnaphthalene	**13**		11	3.0	1	11/05/13	11/11/13	KWG1312339	
Acenaphthylene	**5.5**	J	11	2.8	1	11/05/13	11/11/13	KWG1312339	
Acenaphthene	**4.2**	J	11	3.4	1	11/05/13	11/11/13	KWG1312339	
Fluorene	**4.0**	J	11	3.5	1	11/05/13	11/11/13	KWG1312339	
Phenanthrene	**61**		11	3.8	1	11/05/13	11/11/13	KWG1312339	
Anthracene	**9.2**	J	11	3.4	1	11/05/13	11/11/13	KWG1312339	
Fluoranthene	**120**		11	3.9	1	11/05/13	11/11/13	KWG1312339	
Pyrene	**100**		11	3.9	1	11/05/13	11/11/13	KWG1312339	
Benz(a)anthracene	**36**		11	3.8	1	11/05/13	11/11/13	KWG1312339	
Chrysene	**65**		11	4.4	1	11/05/13	11/11/13	KWG1312339	
Hexachlorobenzene	ND	U	11	3.5	1	11/05/13	11/11/13	KWG1312339	
Pentachlorophenol	ND	U	110	5.6	1	11/05/13	11/11/13	KWG1312339	
Bis(2-ethylhexyl) Phthalate	**20**	J	110	9.4	1	11/05/13	11/11/13	KWG1312339	
Benzo(b)fluoranthene	**72**		11	3.6	1	11/05/13	11/11/13	KWG1312339	
Benzo(k)fluoranthene	**24**		11	4.2	1	11/05/13	11/11/13	KWG1312339	
Benzo(a)pyrene	**43**		11	3.8	1	11/05/13	11/11/13	KWG1312339	
Indeno(1,2,3-cd)pyrene	**37**		11	3.4	1	11/05/13	11/11/13	KWG1312339	
Dibenz(a,h)anthracene	**9.2**	J	11	3.2	1	11/05/13	11/11/13	KWG1312339	
Benzo(g,h,i)perylene	**34**		11	3.9	1	11/05/13	11/11/13	KWG1312339	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	51	27-91	11/11/13	Acceptable
2-Fluorobiphenyl	51	25-97	11/11/13	Acceptable
2,4,6-Tribromophenol	57	10-119	11/11/13	Acceptable
Terphenyl-d14	68	33-129	11/11/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL036	**Units:**	ug/Kg
Lab Code:	K1311918-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**130**		11	3.0	1	11/05/13	11/11/13	KWG1312339	
2-Methylnaphthalene	**81**		11	2.9	1	11/05/13	11/11/13	KWG1312339	
Acenaphthylene	**38**		11	2.7	1	11/05/13	11/11/13	KWG1312339	
Acenaphthene	**21**		11	3.3	1	11/05/13	11/11/13	KWG1312339	
Fluorene	**31**		11	3.4	1	11/05/13	11/11/13	KWG1312339	
Phenanthrene	**690**		11	3.7	1	11/05/13	11/11/13	KWG1312339	
Anthracene	**58**		11	3.3	1	11/05/13	11/11/13	KWG1312339	
Fluoranthene	**570**		11	3.8	1	11/05/13	11/11/13	KWG1312339	
Pyrene	**480**		11	3.8	1	11/05/13	11/11/13	KWG1312339	
Benz(a)anthracene	**130**		11	3.7	1	11/05/13	11/11/13	KWG1312339	
Chrysene	**230**		11	4.2	1	11/05/13	11/11/13	KWG1312339	
Hexachlorobenzene	ND	U	11	3.4	1	11/05/13	11/11/13	KWG1312339	
Pentachlorophenol	ND	U	110	5.4	1	11/05/13	11/11/13	KWG1312339	
Bis(2-ethylhexyl) Phthalate	**31**	J	110	9.1	1	11/05/13	11/11/13	KWG1312339	
Benzo(b)fluoranthene	**230**		11	3.5	1	11/05/13	11/11/13	KWG1312339	
Benzo(k)fluoranthene	**87**		11	4.1	1	11/05/13	11/11/13	KWG1312339	
Benzo(a)pyrene	**180**		11	3.7	1	11/05/13	11/11/13	KWG1312339	
Indeno(1,2,3-cd)pyrene	**130**		11	3.3	1	11/05/13	11/11/13	KWG1312339	
Dibenz(a,h)anthracene	**24**		11	3.1	1	11/05/13	11/11/13	KWG1312339	
Benzo(g,h,i)perylene	**120**		11	3.8	1	11/05/13	11/11/13	KWG1312339	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	62	27-91	11/11/13	Acceptable
2-Fluorobiphenyl	62	25-97	11/11/13	Acceptable
2,4,6-Tribromophenol	65	10-119	11/11/13	Acceptable
Terphenyl-d14	69	33-129	11/11/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312339-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	9.0	2.9	1	11/05/13	11/11/13	KWG1312339	
2-Methylnaphthalene	ND	U	9.0	2.8	1	11/05/13	11/11/13	KWG1312339	
Acenaphthylene	ND	U	9.0	2.6	1	11/05/13	11/11/13	KWG1312339	
Acenaphthene	ND	U	9.0	3.2	1	11/05/13	11/11/13	KWG1312339	
Fluorene	ND	U	9.0	3.3	1	11/05/13	11/11/13	KWG1312339	
Phenanthrene	ND	U	9.0	3.6	1	11/05/13	11/11/13	KWG1312339	
Anthracene	ND	U	9.0	3.2	1	11/05/13	11/11/13	KWG1312339	
Fluoranthene	ND	U	9.0	3.7	1	11/05/13	11/11/13	KWG1312339	
Pyrene	ND	U	9.0	3.7	1	11/05/13	11/11/13	KWG1312339	
Benz(a)anthracene	ND	U	9.0	3.6	1	11/05/13	11/11/13	KWG1312339	
Chrysene	ND	U	9.0	4.1	1	11/05/13	11/11/13	KWG1312339	
Hexachlorobenzene	ND	U	9.0	3.3	1	11/05/13	11/11/13	KWG1312339	
Pentachlorophenol	ND	U	90	5.3	1	11/05/13	11/11/13	KWG1312339	
Bis(2-ethylhexyl) Phthalate	ND	U	90	8.9	1	11/05/13	11/11/13	KWG1312339	
Benzo(b)fluoranthene	ND	U	9.0	3.4	1	11/05/13	11/11/13	KWG1312339	
Benzo(k)fluoranthene	ND	U	9.0	4.0	1	11/05/13	11/11/13	KWG1312339	
Benzo(a)pyrene	ND	U	9.0	3.6	1	11/05/13	11/11/13	KWG1312339	
Indeno(1,2,3-cd)pyrene	ND	U	9.0	3.2	1	11/05/13	11/11/13	KWG1312339	
Dibenz(a,h)anthracene	ND	U	9.0	3.0	1	11/05/13	11/11/13	KWG1312339	
Benzo(g,h,i)perylene	ND	U	9.0	3.7	1	11/05/13	11/11/13	KWG1312339	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	43	27-91	11/11/13	Acceptable
2-Fluorobiphenyl	39	25-97	11/11/13	Acceptable
2,4,6-Tribromophenol	39	10-119	11/11/13	Acceptable
Terphenyl-d14	50	33-129	11/11/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-SL035	K1311918-004	51	51	57	68
RM11E-SL036	K1311918-005	62	62	65	69
Method Blank	KWG1312339-5	43	39	39	50
RM11E-SL035MS	KWG1312339-1	54	53	56	65
RM11E-SL035DMS	KWG1312339-2	54	52	62	73
Lab Control Sample	KWG1312339-3	56	55	59	68
Duplicate Lab Control Sample	KWG1312339-4	56	54	56	68

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	27-91
Sur2 =	2-Fluorobiphenyl	25-97
Sur3 =	2,4,6-Tribromophenol	10-119
Sur4 =	Terphenyl-d14	33-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/11/2013
Time Analyzed: 12:38

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\111113\1111F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1312614-2
Analysis Lot: KWG1312614

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	851,182	10.99	451,041	13.86	850,758	16.30
	Upper Limit ==>	1,702,364	11.49	902,082	14.36	1,701,516	16.80
	Lower Limit ==>	425,591	10.49	225,521	13.36	425,379	15.80
	ICAL Result ==>	828,624	11.03	438,580	13.89	864,261	16.34
Associated Analyses							
Method Blank	KWG1312339-5	845,416	10.99	455,236	13.85	805,585	16.30
Lab Control Sample	KWG1312339-3	849,882	10.99	452,300	13.85	842,554	16.30
Duplicate Lab Control Sample	KWG1312339-4	825,651	10.99	435,630	13.84	843,002	16.30
RM11E-SL035MS	KWG1312339-1	833,564	11.00	448,464	13.85	803,552	16.31
RM11E-SL035DMS	KWG1312339-2	789,869	10.99	430,392	13.85	788,556	16.31
RM11E-SL035	K1311918-004	798,789	11.00	437,582	13.85	776,778	16.30
RM11E-SL036	K1311918-005	769,698	10.99	428,112	13.85	763,979	16.31

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/11/2013
Time Analyzed: 12:38

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\111113\1111F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1312614-2
Analysis Lot: KWG1312614

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	773,960	21.00	573,718	24.74
	Upper Limit ==>	1,547,920	21.50	1,147,436	25.24
	Lower Limit ==>	386,980	20.50	286,859	24.24
	ICAL Result ==>	750,961	21.06	581,334	24.80
Associated Analyses					
Method Blank	KWG1312339-5	718,833	20.99	588,363	24.74
Lab Control Sample	KWG1312339-3	755,825	20.99	604,706	24.74
Duplicate Lab Control Sample	KWG1312339-4	730,153	20.98	567,177	24.74
RM11E-SL035MS	KWG1312339-1	760,054	21.02	585,105	24.77
RM11E-SL035DMS	KWG1312339-2	689,047	21.01	541,914	24.77
RM11E-SL035	K1311918-004	691,607	21.00	541,189	24.76
RM11E-SL036	K1311918-005	722,864	21.02	587,393	24.79

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/05/2013
Date Analyzed: 11/11/2013

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-SL035
Lab Code: K1311918-004

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270D

Level: Low
Extraction Lot: KWG1312339

		RM11E-SL035MS KWG1312339-1 Matrix Spike			RM11E-SL035DMS KWG1312339-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	16	147	262	50	130	263	43	12-104	13	40
2-Methylnaphthalene	13	161	262	56	147	263	51	19-99	9	40
Acenaphthylene	5.5	165	262	61	136	263	50	20-106	19	40
Acenaphthene	4.2	148	262	55	129	263	48	10-132	13	40
Fluorene	4.0	153	262	57	133	263	49	12-129	14	40
Phenanthrene	61	234	262	66	191	263	49	15-121	20	40
Anthracene	9.2	187	262	68	168	263	61	14-113	11	40
Fluoranthene	120	293	262	67	209	263	35	10-142	33	40
Pyrene	100	286	262	70	222	263	46	17-129	25	40
Benz(a)anthracene	36	244	262	79	200	263	62	10-137	20	40
Chrysene	65	271	262	79	218	263	58	10-146	22	40
Hexachlorobenzene	ND	183	262	70	167	263	63	30-106	9	40
Pentachlorophenol	ND	159	262	61	153	263	58	10-123	3	40
Bis(2-ethylhexyl) Phthalate	20	207	262	71	198	263	68	20-138	4	40
Benzo(b)fluoranthene	72	284	262	81	216	263	55	23-122	27	40
Benzo(k)fluoranthene	24	217	262	74	196	263	66	28-119	10	40
Benzo(a)pyrene	43	270	262	87	206	263	62	13-126	27	40
Indeno(1,2,3-cd)pyrene	37	267	262	88	216	263	68	22-129	21	40
Dibenz(a,h)anthracene	9.2	208	262	76	192	263	69	27-123	8	40
Benzo(g,h,i)perylene	34	246	262	81	203	263	64	20-121	19	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/05/2013
Date Analyzed: 11/11/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1312339

	Lab Control Sample KWG1312339-3 Lab Control Spike			Duplicate Lab Control Sample KWG1312339-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	127	250	51	135	250	54	27-93	6	40
2-Methylnaphthalene	140	250	56	150	250	60	27-96	7	40
Acenaphthylene	147	250	59	155	250	62	33-99	6	40
Acenaphthene	134	250	54	142	250	57	32-91	6	40
Fluorene	132	250	53	143	250	57	32-96	7	40
Phenanthrene	146	250	58	157	250	63	39-98	7	40
Anthracene	151	250	60	156	250	62	40-98	3	40
Fluoranthene	165	250	66	172	250	69	42-104	4	40
Pyrene	173	250	69	188	250	75	45-106	8	40
Benz(a)anthracene	165	250	66	176	250	70	44-108	6	40
Chrysene	174	250	69	189	250	76	46-108	9	40
Hexachlorobenzene	158	250	63	155	250	62	40-99	2	40
Pentachlorophenol	141	250	56	148	250	59	21-97	5	40
Bis(2-ethylhexyl) Phthalate	171	250	68	193	250	77	47-110	12	40
Benzo(b)fluoranthene	158	250	63	180	250	72	46-106	13	40
Benzo(k)fluoranthene	172	250	69	190	250	76	47-107	10	40
Benzo(a)pyrene	162	250	65	189	250	76	42-110	16	40
Indeno(1,2,3-cd)pyrene	166	250	66	190	250	76	47-109	14	40
Dibenz(a,h)anthracene	159	250	64	180	250	72	47-106	12	40
Benzo(g,h,i)perylene	160	250	64	183	250	73	44-108	14	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/11/2013
		Time Analyzed:	15:09

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1312339-5	**File ID:**	J:\MS06\DATA\111113\1111F008.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1312339

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312339-3	J:\MS06\DATA\111113\1111F009.D	11/11/13	15:46
Duplicate Lab Control Sample	KWG1312339-4	J:\MS06\DATA\111113\1111F010.D	11/11/13	16:24
RM11E-SL035MS	KWG1312339-1	J:\MS06\DATA\111113\1111F014.D	11/11/13	18:55
RM11E-SL035DMS	KWG1312339-2	J:\MS06\DATA\111113\1111F015.D	11/11/13	19:33
RM11E-SL035	K1311918-004	J:\MS06\DATA\111113\1111F016.D	11/11/13	20:10
RM11E-SL036	K1311918-005	J:\MS06\DATA\111113\1111F017.D	11/11/13	20:48

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/05/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/11/2013
		Time Analyzed:	15:46

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1312339-3	**File ID:**	J:\MS06\DATA\111113\1111F009.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1312339

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312339-5	J:\MS06\DATA\111113\1111F008.D	11/11/13	15:09
RM11E-SL035MS	KWG1312339-1	J:\MS06\DATA\111113\1111F014.D	11/11/13	18:55
RM11E-SL035DMS	KWG1312339-2	J:\MS06\DATA\111113\1111F015.D	11/11/13	19:33
RM11E-SL035	K1311918-004	J:\MS06\DATA\111113\1111F016.D	11/11/13	20:10
RM11E-SL036	K1311918-005	J:\MS06\DATA\111113\1111F017.D	11/11/13	20:48

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/11/2013
Time Analyzed: 12:01

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\111113\1111F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1312614

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	38.9	149311	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	40.9	157148	PASS
127	198	25	75	45.6	175313	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	384085	PASS
199	198	5	9	6.6	25418	PASS
275	198	10	30	21.8	83799	PASS
365	198	1	100	3.5	13566	PASS
441	443	0	100	74.8	41971	PASS
442	198	40	110	71.1	273112	PASS
443	442	15	24	20.6	56142	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1312614-2	J:\MS06\DATA\111113\1111F004.D	11/11/2013	12:38	
Method Blank	KWG1312339-5	J:\MS06\DATA\111113\1111F008.D	11/11/2013	15:09	
Lab Control Sample	KWG1312339-3	J:\MS06\DATA\111113\1111F009.D	11/11/2013	15:46	
Duplicate Lab Control Sample	KWG1312339-4	J:\MS06\DATA\111113\1111F010.D	11/11/2013	16:24	
RM11E-SL035MS	KWG1312339-1	J:\MS06\DATA\111113\1111F014.D	11/11/2013	18:55	
RM11E-SL035DMS	KWG1312339-2	J:\MS06\DATA\111113\1111F015.D	11/11/2013	19:33	
RM11E-SL035	K1311918-004	J:\MS06\DATA\111113\1111F016.D	11/11/2013	20:10	
RM11E-SL036	K1311918-005	J:\MS06\DATA\111113\1111F017.D	11/11/2013	20:48	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/07/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12899
Instrument ID: MS06

Column: MS

Level ID	File ID
A	J:\MS06\DATA\110713\1107F007.D
B	J:\MS06\DATA\110713\1107F008.D
C	J:\MS06\DATA\110713\1107F009.D
D	J:\MS06\DATA\110713\1107F010.D
E	J:\MS06\DATA\110713\1107F011.D
F	J:\MS06\DATA\110713\1107F012.D
G	J:\MS06\DATA\110713\1107F013.D
H	J:\MS06\DATA\110713\1107F014.D
I	J:\MS06\DATA\110713\1107F015.D
J	J:\MS06\DATA\110713\1107F016.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.08	B	100	1.21	C	200	1.08	D	500	1.05	E	1000	1.08
	F	2000	1.05	G	3000	1.10	H	5000	1.15	I	7000	1.13	J	10000	1.16
2-Methylnaphthalene	A	50	0.483	B	100	0.564	C	200	0.540	D	500	0.508	E	1000	0.550
	F	2000	0.541	G	3000	0.548	H	5000	0.569	I	7000	0.609	J	10000	0.627
Acenaphthylene	A	50	1.89	B	100	2.00	C	200	1.88	D	500	1.79	E	1000	1.70
	F	2000	1.76	G	3000	1.85	H	5000	2.08	I	7000	2.04	J	10000	1.99
Acenaphthene	A	50	1.06	B	100	1.15	C	200	1.07	D	500	1.05	E	1000	1.07
	F	2000	1.10	G	3000	1.08	H	5000	1.14	I	7000	1.18	J	10000	1.18
Fluorene	A	50	1.40	B	100	1.46	C	200	1.40	D	500	1.43	E	1000	1.40
	F	2000	1.39	G	3000	1.48	H	5000	1.58	I	7000	1.61	J	10000	1.54
Phenanthrene	A	50	1.08	B	100	1.08	C	200	1.05	D	500	1.01	E	1000	1.00
	F	2000	1.00	G	3000	1.06	H	5000	1.08	I	7000	1.09	J	10000	1.13
Anthracene	A	50	0.985	B	100	1.12	C	200	1.08	D	500	1.03	E	1000	1.05
	F	2000	1.05	G	3000	1.12	H	5000	1.14	I	7000	1.16	J	10000	1.15
Fluoranthene	A	50	1.23	B	100	1.25	C	200	1.21	D	500	1.14	E	1000	1.10
	F	2000	1.12	G	3000	1.17	H	5000	1.21	I	7000	1.20	J	10000	1.25
Pyrene	A	50	1.37	B	100	1.45	C	200	1.41	D	500	1.27	E	1000	1.29
	F	2000	1.25	G	3000	1.36	H	5000	1.38	I	7000	1.36	J	10000	1.35
Benz(a)anthracene	A	50	1.21	B	100	1.17	C	200	1.20	D	500	1.09	E	1000	1.12
	F	2000	1.09	G	3000	1.12	H	5000	1.17	I	7000	1.18	J	10000	1.20
Chrysene	A	50	1.08	B	100	1.07	C	200	1.07	D	500	1.04	E	1000	1.04
	F	2000	1.03	G	3000	1.04	H	5000	1.12	I	7000	1.09	J	10000	1.12
Hexachlorobenzene				B	100	0.234	C	200	0.240	D	500	0.219	E	1000	0.225
	F	2000	0.224	G	3000	0.239	H	5000	0.248	I	7000	0.256	J	10000	0.276
Pentachlorophenol										D	500	0.0787	E	1000	0.0935
	F	2000	0.107	G	3000	0.123	H	5000	0.137	I	7000	0.146	J	10000	0.165
Bis(2-ethylhexyl) Phthalate							C	200	0.913	D	500	0.839	E	1000	0.824
	F	2000	0.818	G	3000	0.834	H	5000	0.870	I	7000	0.861	J	10000	0.887

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/07/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12899
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	1.17	B	100	1.21	C	200	1.20	D	500	1.11	E	1000	1.09
	F	2000	1.12	G	3000	1.12	H	5000	1.19	I	7000	1.23	J	10000	1.34
Benzo(k)fluoranthene	A	50	1.10	B	100	1.15	C	200	1.15	D	500	1.11	E	1000	1.12
	F	2000	1.11	G	3000	1.17	H	5000	1.23	I	7000	1.25	J	10000	1.25
Benzo(a)pyrene	A	50	1.11	B	100	1.14	C	200	1.10	D	500	1.05	E	1000	1.02
	F	2000	1.01	G	3000	1.01	H	5000	1.06	I	7000	1.09	J	10000	1.14
Indeno(1,2,3-cd)pyrene	A	50	0.905	B	100	0.944	C	200	0.905	D	500	0.885	E	1000	0.887
	F	2000	0.900	G	3000	0.901	H	5000	0.969	I	7000	0.989	J	10000	1.05
Dibenz(a,h)anthracene	A	50	0.966	B	100	1.08	C	200	1.03	D	500	0.977	E	1000	0.975
	F	2000	0.986	G	3000	0.978	H	5000	1.06	I	7000	1.06	J	10000	1.13
Benzo(g,h,i)perylene	A	50	1.06	B	100	1.06	C	200	1.09	D	500	0.975	E	1000	1.01
	F	2000	0.983	G	3000	0.989	H	5000	1.05	I	7000	1.05	J	10000	1.11
Nitrobenzene-d5				B	100	1.18	C	200	1.19	D	500	1.18	E	1000	1.23
	F	2000	1.22	G	3000	1.15	H	5000	1.23	I	7000	1.08	J	10000	1.22
2-Fluorobiphenyl				B	100	1.51	C	200	1.47	D	500	1.52	E	1000	1.44
	F	2000	1.45	G	3000	1.45	H	5000	1.57	I	7000	1.47	J	10000	1.49
2,4,6-Tribromophenol				B	100	0.137	C	200	0.134	D	500	0.132	E	1000	0.137
	F	2000	0.138	G	3000	0.145	H	5000	0.156	I	7000	0.164	J	10000	0.179
Terphenyl-d14				B	100	0.947	C	200	0.929	D	500	0.868	E	1000	0.877
	F	2000	0.837	G	3000	0.907	H	5000	0.930	I	7000	0.941	J	10000	0.956

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/07/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12899
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	4.8		≤ 20	1.11		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	7.7		≤ 20	0.554		0.300
Acenaphthylene	MS	AverageRF	% RSD	6.8		≤ 20	1.90		0.900
Acenaphthene	MS	AverageRF	% RSD	4.5		≤ 20	1.11		0.700
Fluorene	MS	AverageRF	% RSD	5.5		≤ 20	1.47		0.800
Phenanthrene	MS	AverageRF	% RSD	4.0		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	5.3		≤ 20	1.09		0.600
Fluoranthene	MS	AverageRF	% RSD	4.5		≤ 20	1.19		0.600
Pyrene	MS	AverageRF	% RSD	4.6		≤ 20	1.35		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	4.0		≤ 20	1.16		0.600
Chrysene	MS	AverageRF	% RSD	3.2		≤ 20	1.07		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	7.4		≤ 20	0.240		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.121		0.050
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	3.9		≤ 20	0.856		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	6.3		≤ 20	1.18		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	4.9		≤ 20	1.16		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	4.7		≤ 20	1.07		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	5.8		≤ 20	0.933		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	5.4		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	4.4		≤ 20	1.04		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	4.1		≤ 20	1.19		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	2.9		≤ 20	1.49		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	11.0		≤ 20	0.147		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	4.5		≤ 20	0.910		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/07/2013
Date Analyzed: 11/07/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12899
Units: ng/ml

File ID: J:\MS06\DATA\110713\1107F017.D
J:\MS06\DATA\110713\1107F018.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3300	1.11	1.22	10	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3500	0.554	0.637	15	NA	± 30 %	AverageRF
Acenaphthylene	3000	3200	1.90	2.03	7	NA	± 30 %	AverageRF
Acenaphthene	3000	3300	1.11	1.22	10	NA	± 30 %	AverageRF
Fluorene	3000	3300	1.47	1.62	10	NA	± 30 %	AverageRF
Phenanthrene	3000	3200	1.06	1.12	6	NA	± 30 %	AverageRF
Anthracene	3000	3200	1.09	1.15	6	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.19	1.20	1	NA	± 30 %	AverageRF
Pyrene	3000	3300	1.35	1.47	9	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.16	1.10	-5	NA	± 30 %	AverageRF
Chrysene	3000	3200	1.07	1.13	6	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3200	0.240	0.257	7	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3300	0.121	0.135	NA	9	± 30 %	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.856	0.914	7	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3200	1.18	1.25	6	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3200	1.16	1.23	6	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3400	1.07	1.21	13	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3300	0.933	1.01	9	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3000	1.02	1.03	0	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	3100	1.04	1.07	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/11/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 11/07/2013
Calibration ID: CAL12899
Analysis Lot: KWG1312614
Units: ng/ml

File ID: J:\MS06\DATA\111113\1111F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	0.700	1.11	1.14	3	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3400	0.300	0.554	0.626	13	NA	± 20 %	AverageRF
Acenaphthylene	3000	3400	0.900	1.90	2.15	13	NA	± 20 %	AverageRF
Acenaphthene	3000	3200	0.700	1.11	1.18	6	NA	± 20 %	AverageRF
Fluorene	3000	3100	0.800	1.47	1.53	4	NA	± 20 %	AverageRF
Phenanthrene	3000	3100	0.600	1.06	1.11	4	NA	± 20 %	AverageRF
Anthracene	3000	3200	0.600	1.09	1.14	5	NA	± 20 %	AverageRF
Fluoranthene	3000	3100	0.600	1.19	1.23	3	NA	± 20 %	AverageRF
Pyrene	3000	3200	0.600	1.35	1.44	7	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	3100	0.600	1.16	1.18	2	NA	± 20 %	AverageRF
Chrysene	3000	3100	0.600	1.07	1.12	5	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	3200	0.100	0.240	0.259	8	NA	± 20 %	AverageRF
Pentachlorophenol	3000	3000	0.050	0.121	0.120	NA	-1	± 20 %	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3100	0.010	0.856	0.884	3	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3100	0.600	1.18	1.22	4	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	3300	0.600	1.16	1.28	10	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3200	0.600	1.07	1.15	8	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3200	0.500	0.933	1.00	7	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	3100	0.400	1.02	1.06	4	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	3100	0.500	1.04	1.07	3	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3100	0.01	1.19	1.23	4	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	3100	0.01	1.49	1.52	2	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	3000	0.01	0.147	0.145	-2	NA	± 20 %	AverageRF
Terphenyl-d14	3000	3100	0.01	0.910	0.927	2	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D

Analysis Lot: KWG1312614
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1111F003.D	GC/MS Tuning - Generic	KWG1312614-1	11/11/2013	12:01		11/11/2013	12:29
1111F004.D	Continuing Calibration Verification	KWG1312614-2	11/11/2013	12:38		11/11/2013	13:06
1111F005.D	ZZZZZZ	ZZZZZZ	11/11/2013	13:16		11/11/2013	13:44
1111F006.D	ZZZZZZ	ZZZZZZ	11/11/2013	13:53		11/11/2013	14:21
1111F007.D	ZZZZZZ	ZZZZZZ	11/11/2013	14:31		11/11/2013	14:59
1111F008.D	Method Blank	KWG1312339-5	11/11/2013	15:09		11/11/2013	15:37
1111F009.D	Lab Control Sample	KWG1312339-3	11/11/2013	15:46		11/11/2013	16:14
1111F010.D	Duplicate Lab Control Sample	KWG1312339-4	11/11/2013	16:24		11/11/2013	16:52
1111F011.D	ZZZZZZ	ZZZZZZ	11/11/2013	17:02		11/11/2013	17:30
1111F012.D	ZZZZZZ	ZZZZZZ	11/11/2013	17:40		11/11/2013	18:08
1111F013.D	ZZZZZZ	ZZZZZZ	11/11/2013	18:17		11/11/2013	18:45
1111F014.D	RM11E-SL035MS	KWG1312339-1	11/11/2013	18:55		11/11/2013	19:23
1111F015.D	RM11E-SL035DMS	KWG1312339-2	11/11/2013	19:33		11/11/2013	20:01
1111F016.D	RM11E-SL035	K1311918-004	11/11/2013	20:10		11/11/2013	20:38
1111F017.D	RM11E-SL036	K1311918-005	11/11/2013	20:48		11/11/2013	21:16
1111F018.D	ZZZZZZ	ZZZZZZ	11/11/2013	21:26		11/11/2013	21:54
1111F019.D	ZZZZZZ	ZZZZZZ	11/11/2013	22:03		11/11/2013	22:31
1111F020.D	ZZZZZZ	ZZZZZZ	11/11/2013	22:41		11/11/2013	23:09
1111F021.D	ZZZZZZ	ZZZZZZ	11/11/2013	23:18		11/11/2013	23:46

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/05/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1312339
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL035	K1311918-004	10/31/13	11/01/13	22.392g	2ml	85.1	
RM11E-SL036	K1311918-005	10/31/13	11/01/13	22.330g	2ml	88.1	
Method Blank	KWG1312339-5	NA	NA	22.441g	2ml	NA	
RM11E-SL035MS	KWG1312339-1	10/31/13	11/01/13	22.441g	2ml	85.1	
RM11E-SL035DMS	KWG1312339-2	10/31/13	11/01/13	22.368g	2ml	85.1	
Lab Control Sample	KWG1312339-3	NA	NA	20.000g	2ml	NA	
Duplicate Lab Control Sample	KWG1312339-4	NA	NA	20.000g	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 5, 2014

Analytical Report for Service Request No: K1311918
Revised Service Request No: K1311918.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on November 01, 2013. For your reference, these analyses have been assigned our service request number K1311918.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
10:55 am, Mar 06, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G076	K1311918-001	10/31/2013	11/01/2013
RM11E-G077	K1311918-002	10/31/2013	11/01/2013
RM11E-G082	K1311918-003	10/31/2013	11/01/2013
RM11E-SL035	K1311918-004	10/31/2013	11/01/2013
RM11E-SL036	K1311918-005	10/31/2013	11/01/2013
RM11E-G068	K1311918-008	10/31/2013	11/01/2013
RM11E-SL035MS	KWG1312681-1	10/31/2013	11/01/2013
RM11E-SL035DMS	KWG1312681-2	10/31/2013	11/01/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G076	**Units:**	ug/Kg
Lab Code:	K1311918-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.36**		0.092	0.092	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	22	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G077	**Units:**	ug/Kg
Lab Code:	K1311918-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.10**		0.092	0.092	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	59	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G082	**Units:**	ug/Kg
Lab Code:	K1311918-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.18**		0.092	0.092	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	16	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.11	0.096	1	11/14/13	11/20/13	KWG1312681	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	67	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Soil	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL036	**Units:**	ug/Kg
Lab Code:	K1311918-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.16**		0.11	0.093	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	77	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G068	**Units:**	ug/Kg
Lab Code:	K1311918-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.47**		0.092	0.092	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	13	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312337-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/06/13	11/20/13	KWG1312337	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	72	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1312681-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/14/13	11/20/13	KWG1312681	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	53	5-120	11/20/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-G076	K1311918-001	22
RM11E-G077	K1311918-002	59
RM11E-G082	K1311918-003	16
RM11E-SL035	K1311918-004	67
RM11E-SL036	K1311918-005	77
RM11E-G068	K1311918-008	13
Method Blank	KWG1312337-5	72
Method Blank	KWG1312681-5	53
RM11E-SL035MS	KWG1312681-1	68
RM11E-SL035DMS	KWG1312681-2	66
Lab Control Sample	KWG1312337-3	59
Duplicate Lab Control Sample	KWG1312337-4	67
Lab Control Sample	KWG1312681-3	62
Duplicate Lab Control Sample	KWG1312681-4	57

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Analyzed:**	11/20/2013
		Time Analyzed:	15:50

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\112013\1120F019.D	**Lab Code:**	KWG1313024-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313024
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	92,614	15.29	15,296	11.02
	Upper Limit ==>	185,228	15.79	76,478	11.52
	Lower Limit ==>	46,307	14.79	765	10.52
	ICAL Result ==>	98,955	15.29	14,967	11.02
Associated Analyses					
Method Blank	KWG1312337-5	127,931	15.29	14,522	11.02
Lab Control Sample	KWG1312337-3	121,769	15.29	11,450	11.02
Duplicate Lab Control Sample	KWG1312337-4	112,412	15.28	11,851	11.02
Method Blank	KWG1312681-5	112,036	15.29	9,475	11.02
Lab Control Sample	KWG1312681-3	106,466	15.28	10,403	11.02
Duplicate Lab Control Sample	KWG1312681-4	115,582	15.28	10,489	11.02
RM11E-SL035MS	KWG1312681-1	128,053	15.28	13,801	11.02
RM11E-SL035DMS	KWG1312681-2	124,977	15.29	13,014	11.02
RM11E-SL035	K1311918-004	117,064	15.29	12,510	11.02
RM11E-G077	K1311918-002	129,206	15.29	12,019	11.02
RM11E-SL036	K1311918-005	134,990	15.29	16,538	11.02
RM11E-G076	K1311918-001	151,185	15.29	5,232	11.02
RM11E-G082	K1311918-003	134,568	15.29	3,327	11.02
RM11E-G068	K1311918-008	131,046	15.28	2,626	11.02

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL035	**Units:**	ug/Kg
Lab Code:	K1311918-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312681

		RM11E-SL035MS KWG1312681-1 Matrix Spike			RM11E-SL035DMS KWG1312681-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	ND	1.87	2.07	91	1.84	2.09	88	50-120	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/20/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1312337

	Lab Control Sample KWG1312337-3 Lab Control Spike			Duplicate Lab Control Sample KWG1312337-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	1.93	2.00	97	2.00	2.00	100	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1312681

	Lab Control Sample KWG1312681-3 Lab Control Spike			Duplicate Lab Control Sample KWG1312681-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	1.75	2.00	87	1.86	2.00	93	50-120	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/20/2013
		Time Analyzed:	16:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1312337-5	**File ID:**	J:\MS21\DATA\112013\1120F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312337

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312337-3	J:\MS21\DATA\112013\1120F021.D	11/20/13	16:46
Duplicate Lab Control Sample	KWG1312337-4	J:\MS21\DATA\112013\1120F022.D	11/20/13	17:14
RM11E-G077	K1311918-002	J:\MS21\DATA\112013\1120F029.D	11/20/13	20:25
RM11E-SL036	K1311918-005	J:\MS21\DATA\112013\1120F030.D	11/20/13	20:52
RM11E-G076	K1311918-001	J:\MS21\DATA\112013\1120F031.D	11/20/13	21:19
RM11E-G082	K1311918-003	J:\MS21\DATA\112013\1120F032.D	11/20/13	21:47
RM11E-G068	K1311918-008	J:\MS21\DATA\112013\1120F033.D	11/20/13	22:14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013
		Time Analyzed:	17:42

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1312681-5	**File ID:**	J:\MS21\DATA\112013\1120F023.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312681

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1312681-3	J:\MS21\DATA\112013\1120F024.D	11/20/13	18:09
Duplicate Lab Control Sample	KWG1312681-4	J:\MS21\DATA\112013\1120F025.D	11/20/13	18:36
RM11E-SL035MS	KWG1312681-1	J:\MS21\DATA\112013\1120F026.D	11/20/13	19:03
RM11E-SL035DMS	KWG1312681-2	J:\MS21\DATA\112013\1120F027.D	11/20/13	19:31
RM11E-SL035	K1311918-004	J:\MS21\DATA\112013\1120F028.D	11/20/13	19:58

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/06/2013
Sample Matrix:	Sediment	**Date Analyzed:**	11/20/2013
		Time Analyzed:	16:46

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1312337-3	**File ID:**	J:\MS21\DATA\112013\1120F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312337

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312337-5	J:\MS21\DATA\112013\1120F020.D	11/20/13	16:23
RM11E-G077	K1311918-002	J:\MS21\DATA\112013\1120F029.D	11/20/13	20:25
RM11E-SL036	K1311918-005	J:\MS21\DATA\112013\1120F030.D	11/20/13	20:52
RM11E-G076	K1311918-001	J:\MS21\DATA\112013\1120F031.D	11/20/13	21:19
RM11E-G082	K1311918-003	J:\MS21\DATA\112013\1120F032.D	11/20/13	21:47
RM11E-G068	K1311918-008	J:\MS21\DATA\112013\1120F033.D	11/20/13	22:14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1311918
Project:	RM11E Supplemental RI/FS Investigation/487.002	**Date Extracted:**	11/14/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/20/2013
		Time Analyzed:	18:09

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1312681-3	**File ID:**	J:\MS21\DATA\112013\1120F024.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1312681

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1312681-5	J:\MS21\DATA\112013\1120F023.D	11/20/13	17:42
RM11E-SL035MS	KWG1312681-1	J:\MS21\DATA\112013\1120F026.D	11/20/13	19:03
RM11E-SL035DMS	KWG1312681-2	J:\MS21\DATA\112013\1120F027.D	11/20/13	19:31
RM11E-SL035	K1311918-004	J:\MS21\DATA\112013\1120F028.D	11/20/13	19:58

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12923
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\112013\1120F005.D	G	J:\MS21\Data\112013\1120F011.D
B	J:\MS21\Data\112013\1120F006.D	H	J:\MS21\Data\112013\1120F012.D
C	J:\MS21\Data\112013\1120F007.D	I	J:\MS21\Data\112013\1120F013.D
D	J:\MS21\Data\112013\1120F008.D	J	J:\MS21\Data\112013\1120F014.D
E	J:\MS21\Data\112013\1120F009.D		
F	J:\MS21\Data\112013\1120F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.19	C	2.0	1.21	D	5.0	1.05	E	10	1.03
	F	20	0.983	G	40	0.953	H	60	0.886	I	80	0.867	J	100	0.849
S_HXCBZ13C6	A	20	0.716	B	20	0.862	C	20	0.686	D	20	0.773	E	20	0.742
	F	20	0.756	G	20	0.831	H	20	0.855	I	20	0.892	J	20	0.804

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12923
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	13.1		≤ 20	1.00		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	8.6		≤ 20	0.792		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Calibration Date: 11/20/2013
Date Analyzed: 11/20/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12923
Units: ng/ml

File ID: J:\MS21\Data\112013\1120F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	1.00	0.962	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002

Service Request: K1311918
Date Analyzed: 11/20/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 11/20/2013
Calibration ID: CAL12923
Analysis Lot: KWG1313024
Units: ng/ml

File ID: J:\MS21\DATA\112013\1120F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	18	.01	1.00	0.908	-9	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	21	.01	0.792	0.826	4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1311918
Project: RM11E Supplemental RI/FS Investigation/487.002

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313024
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1120F019.D	Continuing Calibration Verification	KWG1313024-1	11/20/2013	15:50		11/20/2013	15:50
1120F020.D	Method Blank	KWG1312337-5	11/20/2013	16:23		11/20/2013	16:23
1120F021.D	Lab Control Sample	KWG1312337-3	11/20/2013	16:46		11/20/2013	16:46
1120F022.D	Duplicate Lab Control Sample	KWG1312337-4	11/20/2013	17:14		11/20/2013	17:14
1120F023.D	Method Blank	KWG1312681-5	11/20/2013	17:42		11/20/2013	17:42
1120F024.D	Lab Control Sample	KWG1312681-3	11/20/2013	18:09		11/20/2013	18:09
1120F025.D	Duplicate Lab Control Sample	KWG1312681-4	11/20/2013	18:36		11/20/2013	18:36
1120F026.D	RM11E-SL035MS	KWG1312681-1	11/20/2013	19:03		11/20/2013	19:03
1120F027.D	RM11E-SL035DMS	KWG1312681-2	11/20/2013	19:31		11/20/2013	19:31
1120F028.D	RM11E-SL035	K1311918-004	11/20/2013	19:58		11/20/2013	19:58
1120F029.D	RM11E-G077	K1311918-002	11/20/2013	20:25		11/20/2013	20:25
1120F030.D	RM11E-SL036	K1311918-005	11/20/2013	20:52		11/20/2013	20:52
1120F031.D	RM11E-G076	K1311918-001	11/20/2013	21:19		11/20/2013	21:19
1120F032.D	RM11E-G082	K1311918-003	11/20/2013	21:47		11/20/2013	21:47
1120F033.D	RM11E-G068	K1311918-008	11/20/2013	22:14		11/20/2013	22:14
1120F034.D	ZZZZZZ	ZZZZZZ	11/20/2013	22:41		11/20/2013	22:41
1120F035.D	ZZZZZZ	ZZZZZZ	11/20/2013	23:08		11/20/2013	23:08
1120F036.D	ZZZZZZ	ZZZZZZ	11/20/2013	23:35		11/20/2013	23:35
1120F037.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:02		11/21/2013	00:02
1120F038.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:30		11/21/2013	00:30
1120F039.D	ZZZZZZ	ZZZZZZ	11/21/2013	00:57		11/21/2013	00:57
1120F040.D	ZZZZZZ	ZZZZZZ	11/21/2013	01:24		11/21/2013	01:24
1120F041.D	ZZZZZZ	ZZZZZZ	11/21/2013	01:51		11/21/2013	01:51
1120F042.D	ZZZZZZ	ZZZZZZ	11/21/2013	02:18		11/21/2013	02:18
1120F043.D	ZZZZZZ	ZZZZZZ	11/21/2013	02:45		11/21/2013	02:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Sediment

Service Request: K1311918
Date Extracted: 11/06/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1312337
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G076	K1311918-001	10/31/13	11/01/13	20.333g	1.0ml	69.7	
RM11E-G077	K1311918-002	10/31/13	11/01/13	20.212g	1.0ml	79.1	
RM11E-G082	K1311918-003	10/31/13	11/01/13	20.390g	1.0ml	69.3	
RM11E-SL036	K1311918-005	10/31/13	11/01/13	11.261g	1.0ml	88.1	
RM11E-G068	K1311918-008	10/31/13	11/01/13	20.450g	1.0ml	63.3	
Method Blank	KWG1312337-5	NA	NA	20.390g	1.0ml	NA	
Lab Control Sample	KWG1312337-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1312337-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002
Sample Matrix: Soil

Service Request: K1311918
Date Extracted: 11/14/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1312681
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL035	K1311918-004	10/31/13	11/01/13	11.272g	1.0ml	85.1	
Method Blank	KWG1312681-5	NA	NA	11.347g	1.0ml	NA	
RM11E-SL035MS	KWG1312681-1	10/31/13	11/01/13	11.347g	1.0ml	85.1	
RM11E-SL035DMS	KWG1312681-2	10/31/13	11/01/13	11.245g	1.0ml	85.1	
Lab Control Sample	KWG1312681-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1312681-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F028.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 19:58	**Quant Date:**	11/20/2013 19:58	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-004			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312681	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1303545	**Prep Date:**	11/14/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F023.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.29	0.00	117064	116.30	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	12510	13.50	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	12510	13.50	67	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	414	0.6603	0.096	U	

Prep Amount:	11.272 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	85.1 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F029.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 20:25	**Quant Date:**	11/20/2013 20:25	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-002			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SEDIMENT
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312337	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1301264	**Prep Date:**	11/06/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.29	0.00	129206	128.36	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	12019	11.75	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	12019	11.75	59	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	964	1.60	0.10		

Prep Amount:	20.212 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	79.1 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F030.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 20:52	**Quant Date:**	11/20/2013 20:52	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-005			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312337	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1301267	**Prep Date:**	11/06/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.29	0.00	134990	134.10	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	16538	15.48	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	16538	15.48	77	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	1309	1.58	0.16		

Prep Amount:	11.261 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	88.1 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F031.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 21:19	**Quant Date:**	11/20/2013 21:19	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-001			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SEDIMENT
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312337	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1301263	**Prep Date:**	11/06/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.29	0.00	151185	150.19	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	5232	4.37	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	5232	4.37	22	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	1339	5.11	0.36		

Prep Amount:	20.333 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	69.7 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F032.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 21:47	**Quant Date:**	11/20/2013 21:47	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SEDIMENT
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312337	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1301265	**Prep Date:**	11/06/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.29	0.00	134568	133.69	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	3327	3.12	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	3327	3.12	16	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	425	2.55	0.18		

Prep Amount:	20.390 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	69.3 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\112013\1120F033.D			**Instrument:**	MS21
Acqu Date:	11/20/2013 22:14	**Quant Date:**	11/20/2013 22:14	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1311918-008			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SEDIMENT
Prod Code:	Pesticides Pest	**Collect Date:**	10/31/2013	**Receive Date:**	11/01/2013

Analysis Lot:	KWG1313024	**Prep Lot:**	KWG1312337	**Report Group:**	K1311918
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1301268	**Prep Date:**	11/06/2013		

Quant Method:		**Calibration ID:**	CAL12923
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\112013\1120F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.28	-0.01	131046	130.19	OK
1	Hexachlorobenzene-13C6	11.02c	0.00	2626	2.53	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.02c	0.00	0.00	2626	2.53	13	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.02c		0.00	806	6.13	0.47		

Prep Amount:	20.450 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	63.3 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

December 12, 2013

Analytical Report for Service Request No: K1312655

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on November 19, 2013. For your reference, these analyses have been assigned our service request number K1312655.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
11:06 am, Mar 06, 2014

GS/ln

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/19/13
Sample Matrix:	Water and Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and four soil samples were received for analysis at ALS Environmental on 11/19/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C and frozen at –20°C as required upon receipt at the laboratory.

General Chemistry Parameters

Total Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample RM11E-SL932 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Total Metals (Water)

No anomalies associated with the analysis of these samples were observed.

Total Metals (Soils)

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Copper, Lead and Zinc for sample RM11E-SL032 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for sample RM11E-SL032 was below the Method control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

Approved by [illegible] 12/16/13

The matrix spike recovery of Chromium for sample RM11E-SL032 was outside control criteria. However, the analyzed concentration in this sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Copper, Lead and Zinc in sample RM11E-SL032 was outside the Method control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) in sample RM11E-SL032 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1232 in CAL12822 and for Aroclor 1221 in CAL12952. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1126F113. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Elevated Detection Limits:
The detection limit was elevated for Aroclor 1268 in sample RM11E-SL532. The chromatogram indicated the presence of Aroclor 1260 at a significantly higher concentration than the Aroclor 1268 peaks present. The interference from Aroclor 1260 prevented accurate identification and quantitation of Aroclor 1268 at the normal limit. The result was flagged to indicate the Aroclor interference.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) for extraction lot KWG1313212. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for this batch.

Approved by Gregory Lalatta 12/16/13

The soil samples in this data set appear to have been subjected to environmental stresses such as weathering, causing pattern degradation and changing the peak ratios. When pattern degradation occurs, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care was taken to report the Aroclor(s) with the best pattern match.

Multiple Aroclors were identified in samples RM11E-SL032, RM11E-SL532, and RM11E-SL033: Aroclor 1254, Aroclor 1260, and/or Aroclor 1268. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1254, 1260, and/or 1268 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS26\1204F004.D: Indeno(1,2,3-cd)pyrene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\1204F003.D: Pentachlorophenol. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Surrogate Exceptions:
The control criteria for the surrogates in sample RM11E-SL033 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Indeno(1,2,3-cd)pyrene for sample Batch QC was above the upper control criterion. The matrix spike outlier suggested a potential high bias in this matrix. The analyte in question was not detected in the associated field sample. The data quality was not significantly affected. No further corrective action was appropriate.

The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample RM11D-SL032MS was outside control criteria. Recoveries in the replicate Laboratory Control Samples (LCS/DLCS) were acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for Bis(2-ethylhexyl) Phthalate in the replicate matrix spike analyses of sample RM11D-SL032 was outside control criteria. All spike recoveries and the RPD in the associated replicate Laboratory Control Samples (LCS/DLCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Benzo(b)fluoranthene and Indeno(1,2,3-cd)pyrene in the replicate Laboratory Control Samples (LCS/DLCS) KWG1313013-3 and KWG1313013-4. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Approved by Regory Dalatto 12/16/13

Elevated Detection Limits:
The detection limits were elevated for all soil samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions.

No other anomalies associated with the analysis of these samples were observed.

Approved by 12/16/13

Chain of Custody

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Erin Carroll Hughes

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-SL032	11/18/13	12:10		~~Soil~~ Water	9	X			X	X	X	X	X	X	X	X					K1312655
RM11E-SL031	11/18/13	12:50		Soil	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-SL032	11/18/13	13:00		Soil	2	X	X		X	X	X	X	X	X	X	X					
RM11E-SL033	11/18/13	14:45		Soil	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-SL034	11/18/13	15:45		Soil	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-																					
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Relinquished By	Received By
Signature: Erin Carroll Hughes	Signature: [illegible]
Printed Name: GSI Water Solutions	Printed Name: Les Kennedy
Firm: 11/18/13	Firm: ALS
Date/Time	Date/Time: 11/19/13 1345

TURNAROUND REQUIREMENTS

- ___ 24 hr ___ 48 hr ___ 5 day
- X Standard (21 days)
- ___ Provide Verbal Preliminary Results
- ___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

- ___ I. Routine Report
- X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
- X III. Data Validation Report (includes All Raw Data)
- ___ RWQCB (MDLs/PQLs/TRACE//)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

PC Gvog

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K1312655

Received: 11/19/13 Opened: 11/19/13 By: ll Unloaded: 11/19/13 By: ll

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.3	0.6	6.1	6.4	+0.3	341			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Total Solids

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013	11/25/2013	84.2	
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013	11/25/2013	82.6	
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013	11/25/2013	85.2	
RM11E-SL094	K1312655-005	11/18/2013	11/19/2013	11/25/2013	75.3	

General Chemistry Parameters

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Soil	**Date Received:**	11/19/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-SL032	K1312655-002	**1.70**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL532	K1312655-003	**1.82**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL033	K1312655-004	**1.70**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL034	K1312655-005	**2.75**	0.050	0.020	1	11/27/13 08:00	11/26/13	
Method Blank	K1312655-MB4	ND U	0.050	0.020	1	11/27/13 08:00	11/26/13	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Collected: 11/18/13
Date Received: 11/19/13
Date Analyzed: 11/27/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: RM11E-SL032
Lab Code: K1312655-002

Units: Percent
Basis: Dry, per Method

Analyte Name	MRL	MDL	Sample Result	RM11E-SL032DUP Duplicate Sample K1312655-002DUP Result	RM11E-SL032TRP Triplicate Sample K1312655-002TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	1.70	1.55	1.59	1.61	5	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Soil	**Date Received:**	11/19/13
		Date Analyzed:	11/27/13
		Date Extracted:	11/26/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-SL032	**Units:**	Percent
Lab Code:	K1312655-002	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1312655-002MS			Duplicate Matrix Spike K1312655-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	1.70	4.90	3.42	93	4.85	3.10	102	69-123	9	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	11/27/13
Sample Matrix:	Soil	**Date Extracted:**	11/26/13

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	370819

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1312655-LCS1	0.266	0.275	97	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	370819	KQ1314276-01	11/27/13 08:00	20.0	19.8	99	90-110
CCV2	370819	KQ1314276-02	11/27/13 08:00	20.0	19.8	99	90-110
CCV3	370819	KQ1314276-03	11/27/13 08:00	20.0	19.7	98	90-110
CCV4	370819	KQ1314276-04	11/27/13 08:00	20.0	19.7	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	370819	KQ1314276-05	11/27/13 08:00	0.050	0.020	ND	U
CCB2	370819	KQ1314276-06	11/27/13 08:00	0.050	0.020	ND	U
CCB3	370819	KQ1314276-07	11/27/13 08:00	0.050	0.020	ND	U
CCB4	370819	KQ1314276-08	11/27/13 08:00	0.050	0.020	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Water	**Date Received:**	11/19/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-SL932	K1312655-001	**0.19 J**	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312655-MB1	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312655-MB2	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312655-MB3	ND U	0.50	0.07	1	12/03/13 01:27	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Water	**Date Received:**	11/19/13
		Date Analyzed:	12/03/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-SL932	**Units:**	mg/L
Lab Code:	K1312655-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1312655-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.07	0.19	0.17	0.178	11 *	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Water	**Date Received:**	11/19/13
		Date Analyzed:	12/3/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-SL932	**Units:**	mg/L
Lab Code:	K1312655-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1312655-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.19 J	24.3	25.0	96	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	370951

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1312655-LCS2	17.0	18.1	94	83-117
Lab Control Sample	K1312655-LCS3	16.8	18.1	93	83-117
Lab Control Sample	K1312655-LCS4	16.8	18.1	93	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	370951	KQ1314427-58	12/03/13 01:27	25.0	24.5	98	90-110
CCV2	370951	KQ1314427-59	12/03/13 01:27	25.0	24.6	99	90-110
CCV3	370951	KQ1314427-60	12/03/13 01:27	25.0	24.5	98	90-110
CCV4	370951	KQ1314427-61	12/03/13 01:27	25.0	23.9	96	90-110
CCV5	370951	KQ1314427-62	12/03/13 01:27	25.0	24.2	97	90-110
CCV6	370951	KQ1314427-63	12/03/13 01:27	25.0	24.6	99	90-110
CCV7	370951	KQ1314427-64	12/03/13 01:27	25.0	24.2	97	90-110
CCV8	370951	KQ1314427-65	12/03/13 01:27	25.0	24.1	97	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	370951	KQ1314427-66	12/03/13 01:27	0.50	0.07	ND	U
CCB2	370951	KQ1314427-67	12/03/13 01:27	0.50	0.07	0.11	J
CCB3	370951	KQ1314427-68	12/03/13 01:27	0.50	0.07	ND	U
CCB4	370951	KQ1314427-69	12/03/13 01:27	0.50	0.07	ND	U
CCB5	370951	KQ1314427-70	12/03/13 01:27	0.50	0.07	ND	U
CCB6	370951	KQ1314427-71	12/03/13 01:27	0.50	0.07	0.13	J
CCB7	370951	KQ1314427-72	12/03/13 01:27	0.50	0.07	ND	U
CCB8	370951	KQ1314427-73	12/03/13 01:27	0.50	0.07	ND	U

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/13
Sample Matrix:	Soil	**Date Received:**	11/19/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-SL032	K1312655-002	**83.3**	-	-	1	11/22/13 16:00	
RM11E-SL532	K1312655-003	**82.9**	-	-	1	11/22/13 16:00	
RM11E-SL033	K1312655-004	**85.6**	-	-	1	11/22/13 16:00	
RM11E-SL034	K1312655-005	**72.6**	-	-	1	11/22/13 16:00	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Collected: 11/18/13
Date Received: 11/19/13
Date Analyzed: 11/22/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: RM11E-SL032
Lab Code: K1312655-002

Units: Percent
Basis: As Received

Analyte Name	MRL	MDL	Sample Result	RM11E-SL032DUP Duplicate Sample K1312655-002DUP Result	RM11E-SL032TRP Triplicate Sample K1312655-002TRP Result	Average	RSD	RSD Limit
Solids, Total			83.3	81.8	83.5	82.9	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental RI/FS Investigation
Project No.: 487.002.004

Service Request: K1312655

Sample Name:	Lab Code:
RM11E-SL932	K1312655-001
RM11E-SL932D	K1312655-001D
RM11E-SL932S	K1312655-001S
Method Blank	K1312655-MB

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project No.:	487.002.004	**Date Collected:**	11/18/13
Project Name:	RM11E Supplemental RI/FS Investi	**Date Received:**	11/19/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-SL932 **Lab Code:** K1312655-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.03	J	
Arsenic	6020A	0.50	0.07	1.0	12/05/13	12/10/13	0.07	U	
Barium	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.12		
Beryllium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Cadmium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.027		
Calcium	6010C	20.0	0.9	1.0	12/05/13	12/06/13	14.0	J	
Chromium	6020A	0.20	0.04	1.0	12/05/13	12/10/13	0.24		
Cobalt	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Copper	6020A	0.10	0.02	1.0	12/05/13	12/10/13	0.07	J	
Iron	6010C	20.0	3.0	1.0	12/05/13	12/06/13	5.3	J	
Lead	6020A	0.020	0.005	1.0	12/05/13	12/10/13	0.019	J	
Magnesium	6010C	5.0	0.3	1.0	12/05/13	12/06/13	1.8	J	
Manganese	6020A	0.050	0.006	1.0	12/05/13	12/10/13	0.283		
Mercury	7470A	0.20	0.02	1.0	11/22/13	11/25/13	0.02	U	
Nickel	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.06	J	
Potassium	6010C	200	60.0	1.0	12/05/13	12/06/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/05/13	12/06/13	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.07	J	
Zinc	6020A	0.50	0.20	1.0	12/05/13	12/10/13	1.16		

Comments:

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Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project No.:	487.002.004	**Date Collected:**	
Project Name:	RM11E Supplemental RI/FS Investi	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1312655-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	U	
Arsenic	6020A	0.50	0.07	1.0	12/05/13	12/10/13	0.07	U	
Barium	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	U	
Beryllium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Cadmium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Calcium	6010C	20.0	0.9	1.0	12/05/13	12/06/13	1.0	J	
Chromium	6020A	0.20	0.04	1.0	12/05/13	12/10/13	0.14	J	
Cobalt	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Copper	6020A	0.10	0.02	1.0	12/05/13	12/10/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/05/13	12/06/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/05/13	12/10/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/05/13	12/06/13	0.3	J	
Manganese	6020A	0.050	0.006	1.0	12/05/13	12/10/13	0.006	J	
Mercury	7470A	0.20	0.02	1.0	11/22/13	11/25/13	0.02	U	
Nickel	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.03	U	
Potassium	6010C	200	60.0	1.0	12/05/13	12/06/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/05/13	12/06/13	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.05	J	
Zinc	6020A	0.50	0.20	1.0	12/05/13	12/10/13	0.28	J	

Comments:

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Metals
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SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental RI/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-SL932S **Lab Code:** K1312655-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	53.8		0.03	J	50.00	107.5		6020A
Arsenic	75 - 125	52.6		0.07	U	50.00	105.2		6020A
Barium	75 - 125	104		0.12		100.00	103.9		6020A
Beryllium	75 - 125	2.640		0.003	U	2.50	105.6		6020A
Cadmium	75 - 125	26.6		0.027		25.00	106.3		6020A
Calcium	75 - 125	10200		14.0	J	10000.00	101.9		6010C
Chromium	75 - 125	10.8		0.24		10.00	105.6		6020A
Cobalt	75 - 125	26.3		0.003	U	25.00	105.2		6020A
Copper	75 - 125	13.1		0.07	J	12.50	104.2		6020A
Iron	75 - 125	1010		5.3	J	1000.00	100.5		6010C
Lead	75 - 125	52.6		0.019	J	50.00	105.2		6020A
Magnesium	75 - 125	10100		1.8	J	10000.00	101.0		6010C
Manganese	75 - 125	26.9		0.283		25.00	106.5		6020A
Mercury	76 - 126	0.98		0.02	U	1.00	98.0		7470A
Nickel	75 - 125	26.2		0.06	J	25.00	104.6		6020A
Potassium	75 - 125	10100		60.0	U	10000.00	101.0		6010C
Sodium	75 - 125	10200		20.0	U	10000.00	102.0		6010C
Vanadium	75 - 125	26.1		0.07	J	25.00	104.1		6020A
Zinc	75 - 125	28.7		1.16		25.00	110.2		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental RI/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-SL932A **Lab Code:** K1312655-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	20.50		0.03		20	102		6020A
Arsenic	80 - 120	20.29		0.07		20	101		6020A
Barium	80 - 120	20.92		0.12		20	104		6020A
Beryllium	80 - 120	21.580		0.003		20	108		6020A
Cadmium	80 - 120	20.550		0.027		20	103		6020A
Calcium	80 - 120	13300.0		14.0		12500	106		6010C
Chromium	80 - 120	21.31		0.24		20	105		6020A
Cobalt	80 - 120	20.880		0.003		20	104		6020A
Copper	80 - 120	20.70		0.07		20	103		6020A
Iron	80 - 120	2606.0		5.3		2500	104		6010C
Lead	80 - 120	20.660		0.019		20	103		6020A
Magnesium	80 - 120	13130.0		1.8		12500	105		6010C
Manganese	80 - 120	21.480		0.283		20	106		6020A
Mercury	80 - 120	1.01		0.02		1.0	101		7470A
Nickel	80 - 120	20.67		0.06		20	103		6020A
Potassium	80 - 120	12810.0		60.0		12500	102		6010C
Sodium	80 - 120	13270.0		20.0		12500	106		6010C
Vanadium	80 - 120	21.12		0.07		20	105		6020A
Zinc	80 - 120	21.2		1.2		20	100		6020A

Metals

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DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental RI/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-SL932D **Lab Code:** K1312655-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.03	J	0.02	U	200.0		6020A
Arsenic		0.07	U	0.07	U			6020A
Barium		0.12		0.12		0.0		6020A
Beryllium		0.003	U	0.003	U			6020A
Cadmium		0.027		0.026		3.8		6020A
Calcium		14.0	J	12.5	J	11.3		6010C
Chromium		0.24		0.23		4.3		6020A
Cobalt		0.003	U	0.003	U			6020A
Copper		0.07	J	0.07	J	0.0		6020A
Iron		5.3	J	5.5	J	3.7		6010C
Lead		0.019	J	0.021		10.0		6020A
Magnesium		1.8	J	1.0	J	57.1		6010C
Manganese	20	0.283		0.285		0.7		6020A
Mercury		0.02	U	0.02	U			7470A
Nickel		0.06	J	0.05	J	18.2		6020A
Potassium		60.0	U	60.0	U			6010C
Sodium		20.0	U	21.0	J	200.0		6010C
Vanadium		0.07	J	0.06	J	15.4		6020A
Zinc		1.16		1.27		9.1		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004

Project Name: RM11E Supplemental RI/FS Investi

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	50	53.6	107.2					
Arsenic	50	53.0	106.0					
Barium	100	104	104.0					
Beryllium	2.5	2.550	102.0					
Cadmium	25	26.6	106.4					
Calcium	12500	12600	100.8					
Chromium	10	10.7	107.0					
Cobalt	25	26.2	104.8					
Copper	12.5	12.9	103.2					
Iron	2500	2480	99.2					
Lead	50	52.2	104.4					
Magnesium	12500	12500	100.0					
Manganese	25	26.6	106.4					
Mercury	5.0	4.96	99.2					
Nickel	25	26.1	104.4					
Potassium	12500	12300	98.4					
Sodium	12500	12600	100.8					
Vanadium	25	25.5	102.0					
Zinc	25	27.7	110.8					

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental R1/FS Investigation
Project No.: 487.002.004

Service Request: K1312655

Sample Name:	Lab Code:
RM11E-SL032	K1312655-002
RM11E-SL032D	K1312655-002D
RM11E-SL032S	K1312655-002S
RM11E-SL032SD	K1312655-002SD
RM11E-SL532	K1312655-003
RM11E-SL033	K1312655-004
RM11E-SL034	K1312655-005
Method Blank	K1312655-MB

Comments:

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Metals
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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312655
Date Collected: 11/18/13
Date Received: 11/19/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL032
Lab Code: K1312655-002

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.039	0.007	5.0	11/27/13	12/05/13	1.12		N
Arsenic	6020A	0.40	0.05	5.0	11/27/13	12/10/13	5.38		
Cadmium	6020A	0.016	0.002	5.0	11/27/13	12/10/13	0.707		
Chromium	6020A	0.16	0.02	5.0	11/27/13	12/10/13	54.2		N
Copper	6020A	0.08	0.04	5.0	11/27/13	12/10/13	96.5		*
Lead	6020A	0.040	0.007	5.0	11/27/13	12/10/13	180		*
Mercury	7471B	0.020	0.002	1.0	11/27/13	12/02/13	0.107		
Nickel	6020A	0.16	0.02	5.0	11/27/13	12/10/13	56.9		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	385		*

% Solids: 83.3

Comments:

Metals
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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312655
Project No.: 487.002.004
Date Collected: 11/18/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/19/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL532
Lab Code: K1312655-003

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.041	0.007	5.0	11/27/13	12/05/13	1.88		N
Arsenic	6020A	0.44	0.05	5.0	11/27/13	12/10/13	5.78		
Cadmium	6020A	0.018	0.003	5.0	11/27/13	12/10/13	0.612		
Chromium	6020A	0.18	0.03	5.0	11/27/13	12/10/13	61.4		N
Copper	6020A	0.09	0.04	5.0	11/27/13	12/10/13	112		*
Lead	6020A	0.044	0.008	5.0	11/27/13	12/10/13	124		*
Mercury	7471B	0.097	0.010	5.0	11/27/13	12/02/13	2.10		
Nickel	6020A	0.18	0.03	5.0	11/27/13	12/10/13	64.4		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	378		*

% Solids: 82.9

Comments:

Metals
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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312655
Date Collected: 11/18/13
Date Received: 11/19/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL033
Lab Code: K1312655-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.045	0.008	5.0	11/27/13	12/05/13	0.342		N
Arsenic	6020A	0.43	0.05	5.0	11/27/13	12/10/13	6.99		
Cadmium	6020A	0.017	0.003	5.0	11/27/13	12/10/13	0.477		
Chromium	6020A	0.17	0.03	5.0	11/27/13	12/10/13	16.4		N
Copper	6020A	0.09	0.04	5.0	11/27/13	12/10/13	44.4		*
Lead	6020A	0.043	0.008	5.0	11/27/13	12/10/13	86.1		*
Mercury	7471B	0.020	0.002	1.0	11/27/13	12/02/13	0.395		
Nickel	6020A	0.17	0.03	5.0	11/27/13	12/10/13	18.2		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	282		*

% Solids: 85.6

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312655
Date Collected: 11/18/13
Date Received: 11/19/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL034
Lab Code: K1312655-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.047	0.008	5.0	11/27/13	12/05/13	0.176		N
Arsenic	6020A	0.41	0.05	5.0	11/27/13	12/10/13	3.33		
Cadmium	6020A	0.016	0.002	5.0	11/27/13	12/10/13	0.241		
Chromium	6020A	0.16	0.02	5.0	11/27/13	12/10/13	17.4		N
Copper	6020A	0.08	0.04	5.0	11/27/13	12/10/13	24.8		*
Lead	6020A	0.041	0.007	5.0	11/27/13	12/10/13	14.5		*
Mercury	7471B	0.019	0.002	1.0	11/27/13	12/02/13	0.019		
Nickel	6020A	0.16	0.02	5.0	11/27/13	12/10/13	25.5		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	129		*

% Solids: 72.6

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312655
Project No.: 487.002.004
Date Collected:
Project Name: RM11E Supplemental R1/FS Investi
Date Received:
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1312655-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.009	5.0	11/27/13	12/05/13	0.009	U	N
Arsenic	6020A	0.50	0.06	5.0	11/27/13	12/10/13	0.06	U	
Cadmium	6020A	0.020	0.003	5.0	11/27/13	12/10/13	0.003	U	
Chromium	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.04	J	N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	0.05	U	*
Lead	6020A	0.050	0.009	5.0	11/27/13	12/10/13	0.009	U	*
Mercury	7471B	0.020	0.002	1.0	11/27/13	12/02/13	0.002	U	
Nickel	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.03	J	
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	0.4	J	*

% Solids: 100.0

Comments:

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004 **Units:** MG/KG

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: SOIL **% Solids:** 83.3

Sample Name: RM11E-SL032S **Lab Code:** K1312655-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	24.1		1.12		77.95	29.5	N	6020A
Arsenic	75 - 125	41.3		5.38		38.23	94.0		6020A
Cadmium	75 - 125	4.46		0.707		3.82	98.2		6020A
Chromium	75 - 125	73.9		54.2		15.29	128.8	N	6020A
Copper		116		96.5		19.12	102.0		6020A
Lead		171		180		38.23	-23.5		6020A
Mercury	80 - 120	0.608		0.107		0.49	102.2		7471B
Nickel	75 - 125	88.5		56.9		38.23	82.7		6020A
Zinc		441		385		38.23	146.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1312655
Project No.: 487.002.004
Units: MG/KG
Project Name: RM11E Supplemental R1/FS Investi
Basis: DRY
Matrix: SOIL
% Solids: 83.3

Sample Name: RM11E-SL032SD
Lab Code: K1312655-002SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.619		0.107		0.49	104.5		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: WATER

Sample Name: RM11E-SL032A **Lab Code:** K1312655-002A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	51.95		2.83		50.0	98		6020A
Arsenic	80 - 120	60.69		13.43		50.0	95		6020A
Cadmium	80 - 120	49.385		1.767		50.0	95		6020A
Chromium	80 - 120	183.24		135.48		50.0	96		6020A
Copper	80 - 120	288.33		241.15		50.0	94		6020A
Lead	80 - 120	498.65		450.16		50.0	97		6020A
Nickel	80 - 120	189.26		142.09		50.0	94		6020A
Zinc	80 - 120	1009.2		962.7		50.0	93		6020A

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Metals
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DUPLICATES

Client: GSI Water Solutions, Inc
Service Request: K1312655
Project No.: 487.002.004
Units: MG/KG
Project Name: RM11E Supplemental R1/FS Investi
Basis: DRY
Matrix: SOIL
% Solids: 83.3

Sample Name: RM11E-SL032D
Lab Code: K1312655-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	1.12		0.943		17.2		6020A
Arsenic	20	5.38		4.84		10.6		6020A
Cadmium	20	0.707		0.707		0.0		6020A
Chromium	20	54.2		50.5		7.1		6020A
Copper	20	96.5		124		24.9	*	6020A
Lead	20	180		122		38.4	*	6020A
Nickel	20	56.9		49.0		14.9		6020A
Zinc	20	385		602		44.0	*	6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

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Metals

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DUPLICATES

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project No.:	487.002.004	**Units:**	MG/KG
Project Name:	RM11E Supplemental R1/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	83.3

Sample Name: RM11E-SL032SD **Lab Code:** K1312655-002SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.608		0.619		1.8		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1312655

Project No.: 487.002.004

Project Name: RM11E Supplemental R1/FS Investi

Aqueous LCS Source: **Solid LCS Source:** ERA D076-540

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C Limits		%R
Antimony				93.3	73.2	25	199	78.5
Arsenic				94.5	95.3	82	117	100.8
Cadmium				60.5	62.8	83	117	103.8
Chromium				70.4	67.9	82	118	96.4
Copper				79.6	79.5	84	116	99.9
Lead				91.8	93.2	82	118	101.5
Mercury				3.73	3.26	72	128	87.4
Nickel				57.6	59.2	83	117	102.8
Zinc				140	140	82	118	100.0

Chlorinated Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312655

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL932	K1312655-001	11/18/2013	11/19/2013
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013
RM11E-SL034	K1312655-005	11/18/2013	11/19/2013
RM11E-SL532MS	KWG1313003-1	11/18/2013	11/19/2013
RM11E-SL532DMS	KWG1313003-2	11/18/2013	11/19/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Jerome Peterson
Name: Jerome Peterson
Date: 12-9-2013
Title: Scientist

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Water	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL932	**Units:**	ng/L
Lab Code:	K1312655-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.54	0.12	1	11/22/13	12/04/13	KWG1313028	
2,4'-DDE	ND	U	0.54	0.12	1	11/22/13	12/04/13	KWG1313028	
2,4'-DDT	ND	U	0.54	0.093	1	11/22/13	12/04/13	KWG1313028	
4,4'-DDD	ND	U	0.54	0.11	1	11/22/13	12/04/13	KWG1313028	
4,4'-DDE	ND	U	0.54	0.080	1	11/22/13	12/04/13	KWG1313028	
4,4'-DDT	ND	U	0.54	0.094	1	11/22/13	12/04/13	KWG1313028	
alpha-Chlordane	ND	U	0.54	0.14	1	11/22/13	12/04/13	KWG1313028	
cis-Nonachlor	ND	U	0.54	0.19	1	11/22/13	12/04/13	KWG1313028	*
gamma-Chlordane	ND	U	0.54	0.19	1	11/22/13	12/04/13	KWG1313028	
trans-Nonachlor	ND	U	0.54	0.13	1	11/22/13	12/04/13	KWG1313028	
Dieldrin	ND	U	5.4	0.79	1	11/22/13	12/04/13	KWG1313028	
gamma-BHC (Lindane)	**6.3**		0.54	0.32	1	11/22/13	12/04/13	KWG1313028	
Heptachlor Epoxide	ND	U	1.1	0.18	1	11/22/13	12/04/13	KWG1313028	
Oxychlordane	ND	U	5.4	2.2	1	11/22/13	12/04/13	KWG1313028	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	78	5-124	12/04/13	Acceptable
S_Oxychlordane-13C10	100	5-144	12/04/13	Acceptable
S_Heptachlrepox13C10	83	8-146	12/04/13	Acceptable
S_Endrin-13C12	101	20-157	12/04/13	Acceptable
S_4,4'DDD-d4	88	5-120	12/04/13	Acceptable
S_4,4'-DDT-d4	97	13-200	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Storm water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313028-5	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	11/22/13	12/03/13	KWG1313028	
2,4'-DDE	ND	U	0.50	0.11	1	11/22/13	12/03/13	KWG1313028	
2,4'-DDT	ND	U	0.50	0.087	1	11/22/13	12/03/13	KWG1313028	
4,4'-DDD	ND	U	0.50	0.10	1	11/22/13	12/03/13	KWG1313028	
4,4'-DDE	ND	U	0.50	0.075	1	11/22/13	12/03/13	KWG1313028	
4,4'-DDT	ND	U	0.50	0.088	1	11/22/13	12/03/13	KWG1313028	
alpha-Chlordane	ND	U	0.50	0.13	1	11/22/13	12/03/13	KWG1313028	
cis-Nonachlor	ND	U	0.50	0.17	1	11/22/13	12/03/13	KWG1313028	*
gamma-Chlordane	ND	U	0.50	0.17	1	11/22/13	12/03/13	KWG1313028	
trans-Nonachlor	ND	U	0.50	0.12	1	11/22/13	12/03/13	KWG1313028	
Dieldrin	ND	U	5.0	0.74	1	11/22/13	12/03/13	KWG1313028	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	11/22/13	12/03/13	KWG1313028	
Heptachlor Epoxide	ND	U	0.99	0.16	1	11/22/13	12/03/13	KWG1313028	
Oxychlordane	ND	U	5.0	2.0	1	11/22/13	12/03/13	KWG1313028	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	70	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	80	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	83	8-146	12/03/13	Acceptable
S_Endrin-13C12	90	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	92	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	96	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL032	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.098**		0.063	0.063	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDT	**0.24**		0.094	0.094	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDD	**0.26**		0.060	0.035	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDE	**0.32**		0.070	0.070	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDT	**1.6**		0.060	0.047	1	11/21/13	12/04/13	KWG1313003	
alpha-Chlordane	**0.56**		0.062	0.062	1	11/21/13	12/04/13	KWG1313003	
cis-Nonachlor	**0.32**		0.097	0.097	1	11/21/13	12/04/13	KWG1313003	
gamma-Chlordane	**0.68**		0.064	0.064	1	11/21/13	12/04/13	KWG1313003	
trans-Nonachlor	**0.85**		0.060	0.058	1	11/21/13	12/04/13	KWG1313003	
Dieldrin	**2.9**		0.20	0.077	1	11/21/13	12/04/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.060	0.031	1	11/21/13	12/04/13	KWG1313003	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/21/13	12/04/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	108	5-124	12/04/13	Acceptable
S_Oxychlordane-13C10	108	5-144	12/04/13	Acceptable
S_Heptachlrepox13C10	83	8-146	12/04/13	Acceptable
S_Endrin-13C12	83	20-157	12/04/13	Acceptable
S_4,4'DDD-d4	73	5-120	12/04/13	Acceptable
S_4,4'-DDT-d4	94	13-200	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.080**		0.063	0.063	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDT	**0.18**		0.094	0.094	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDD	**0.23**		0.061	0.035	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDE	**0.31**		0.070	0.070	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDT	**1.9**		0.061	0.047	1	11/21/13	12/03/13	KWG1313003	
alpha-Chlordane	**0.58**		0.062	0.062	1	11/21/13	12/03/13	KWG1313003	
cis-Nonachlor	**0.31**		0.097	0.097	1	11/21/13	12/03/13	KWG1313003	
gamma-Chlordane	**0.68**		0.064	0.064	1	11/21/13	12/03/13	KWG1313003	
trans-Nonachlor	**0.84**		0.061	0.058	1	11/21/13	12/03/13	KWG1313003	
Dieldrin	**0.30**		0.20	0.077	1	11/21/13	12/03/13	KWG1313003	
gamma-BHC (Lindane)	**0.062**		0.061	0.031	1	11/21/13	12/03/13	KWG1313003	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/21/13	12/03/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	111	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	115	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	88	8-146	12/03/13	Acceptable
S_Endrin-13C12	83	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	79	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	90	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL033	**Units:**	ug/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.073**		0.063	0.063	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDT	**0.45**		0.094	0.094	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDD	**0.31**		0.059	0.035	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDE	**1.0**		0.070	0.070	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDT	**3.9**		0.059	0.047	1	11/21/13	12/04/13	KWG1313003	
alpha-Chlordane	**1.2**		0.062	0.062	1	11/21/13	12/04/13	KWG1313003	
cis-Nonachlor	**0.21**		0.097	0.097	1	11/21/13	12/04/13	KWG1313003	
gamma-Chlordane	**1.6**		0.064	0.064	1	11/21/13	12/04/13	KWG1313003	
trans-Nonachlor	**0.71**		0.059	0.058	1	11/21/13	12/04/13	KWG1313003	
Dieldrin	ND	Ui	0.26	0.26	1	11/21/13	12/04/13	KWG1313003	
gamma-BHC (Lindane)	**0.042**	J	0.059	0.031	1	11/21/13	12/04/13	KWG1313003	
Heptachlor Epoxide	**0.094**		0.073	0.073	1	11/21/13	12/04/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	102	5-124	12/04/13	Acceptable
S_Oxychlordane-13C10	112	5-144	12/04/13	Acceptable
S_Heptachlrepox13C10	84	8-146	12/04/13	Acceptable
S_Endrin-13C12	84	20-157	12/04/13	Acceptable
S_4,4'DDD-d4	76	5-120	12/04/13	Acceptable
S_4,4'-DDT-d4	108	13-200	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL034	**Units:**	ug/Kg
Lab Code:	K1312655-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	Ui	0.093	0.093	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDE	ND	Ui	0.079	0.079	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDT	**0.17**		0.094	0.094	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDD	**0.13**		0.066	0.035	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDE	**0.44**		0.070	0.070	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDT	**0.87**		0.066	0.047	1	11/21/13	12/04/13	KWG1313003	
alpha-Chlordane	**0.29**		0.066	0.062	1	11/21/13	12/04/13	KWG1313003	
cis-Nonachlor	**0.11**		0.097	0.097	1	11/21/13	12/04/13	KWG1313003	
gamma-Chlordane	**0.26**		0.066	0.064	1	11/21/13	12/04/13	KWG1313003	
trans-Nonachlor	**0.37**		0.066	0.058	1	11/21/13	12/04/13	KWG1313003	
Dieldrin	**0.13**	J	0.20	0.077	1	11/21/13	12/04/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.066	0.031	1	11/21/13	12/04/13	KWG1313003	
Heptachlor Epoxide	ND	Ui	0.073	0.073	1	11/21/13	12/04/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	123	5-124	12/04/13	Acceptable
S_Oxychlordane-13C10	120	5-144	12/04/13	Acceptable
S_Heptachlrepox13C10	97	8-146	12/04/13	Acceptable
S_Endrin-13C12	102	20-157	12/04/13	Acceptable
S_4,4'DDD-d4	85	5-120	12/04/13	Acceptable
S_4,4'-DDT-d4	120	13-200	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Collected: NA
Date Received: NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: Method Blank
Lab Code: KWG1313003-5

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDT	ND	U	0.094	0.094	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDD	ND	U	0.050	0.035	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDE	ND	U	0.070	0.070	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDT	ND	U	0.050	0.047	1	11/21/13	12/03/13	KWG1313003	
alpha-Chlordane	ND	U	0.062	0.062	1	11/21/13	12/03/13	KWG1313003	
cis-Nonachlor	ND	U	0.097	0.097	1	11/21/13	12/03/13	KWG1313003	
gamma-Chlordane	ND	U	0.064	0.064	1	11/21/13	12/03/13	KWG1313003	
trans-Nonachlor	ND	U	0.058	0.058	1	11/21/13	12/03/13	KWG1313003	
Dieldrin	ND	U	0.20	0.077	1	11/21/13	12/03/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.050	0.031	1	11/21/13	12/03/13	KWG1313003	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/21/13	12/03/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	67	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	70	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	77	8-146	12/03/13	Acceptable
S_Endrin-13C12	79	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	81	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	81	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-SL932	K1312655-001	78	100	83	101	88	97
Batch QC	K1312733-001	112	112	83	89	78	90
Method Blank	KWG1313028-5	70	80	83	90	92	96
Batch QCMS	KWG1313028-1	115	124	93	95	80	95
Batch QCDMS	KWG1313028-2	110	121	91	98	82	95
Lab Control Sample	KWG1313028-3	67	82	76	82	82	82
Duplicate Lab Control Sample	KWG1313028-4	63	76	79	87	84	90

Surrogate Recovery Control Limits (%)

Sur1 = S_GBHCD6	5-124	Sur5 = S_4,4'DDD-d4	5-120
Sur2 = S_Oxychlordane-13C10	5-144	Sur6 = S_4,4'-DDT-d4	13-200
Sur3 = S_Heptachlrepox13C10	8-146		
Sur4 = S_Endrin-13C12	20-157		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-SL032	K1312655-002	108	108	83	83	73	94
RM11E-SL532	K1312655-003	111	115	88	83	79	90
RM11E-SL033	K1312655-004	102	112	84	84	76	108
RM11E-SL034	K1312655-005	123	120	97	102	85	120
Method Blank	KWG1313003-5	67	70	77	79	81	81
RM11E-SL532MS	KWG1313003-1	88	86	77	80	73	82
RM11E-SL532DMS	KWG1313003-2	87	87	70	78	68	77
Lab Control Sample	KWG1313003-3	74	80	82	85	88	91
Duplicate Lab Control Sample	KWG1313003-4	70	82	80	80	86	88

Surrogate Recovery Control Limits (%)

Sur1 = S_GBHCD6	5-124	Sur5 = S_4,4'DDD-d4	5-120
Sur2 = S_Oxychlordane-13C10	5-144	Sur6 = S_4,4'-DDT-d4	13-200
Sur3 = S_Heptachlrepox13C10	8-146		
Sur4 = S_Endrin-13C12	20-157		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS:

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	RT	Area	RT	Area	RT
	Results ==>	62,259	15.30	5,903	11.42	1,847	14.02
	Upper Limit ==>	124,517	15.80	11,807	11.92	3,694	14.52
	Lower Limit ==>	31,129	14.80	295	10.92	92	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313003-5	62,533	15.30	3,931	11.42	1,244	14.02
Lab Control Sample	KWG1313003-3	62,458	15.30	4,310	11.42	1,424	14.02
Duplicate Lab Control Sample	KWG1313003-4	64,777	15.30	4,226	11.42	1,508	14.02
Method Blank	KWG1313028-5	70,299	15.30	4,587	11.42	1,591	14.02
Lab Control Sample	KWG1313028-3	72,351	15.30	4,518	11.42	1,678	14.01
Duplicate Lab Control Sample	KWG1313028-4	72,844	15.30	4,274	11.42	1,576	14.02
RM11E-SL532MS	KWG1313003-1	75,792	15.30	6,273	11.42	1,864	14.02
RM11E-SL532DMS	KWG1313003-2	69,656	15.31	5,690	11.42	1,731	14.02
RM11E-SL532	K1312655-003	61,957	15.32	6,444	11.42	2,034	14.02
Batch QCMS	KWG1313028-1	70,573	15.32	7,616	11.43	2,496	14.02
Batch QCDMS	KWG1313028-2	72,247	15.32	7,444	11.42	2,494	14.02
Batch QC	K1312733-001	68,510	15.32	7,192	11.43	2,192	14.03
RM11E-SL932	K1312655-001	67,707	15.31	4,969	11.42	1,927	14.02
RM11E-SL032	K1312655-002	65,765	15.32	6,687	11.42	2,016	14.02
RM11E-SL033	K1312655-004	58,949	15.33	5,627	11.43	1,885	14.03

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	2,609	14.11	1,400	16.45	9,772	17.00
	Upper Limit ==>	5,218	14.61	2,800	16.95	19,543	17.50
	Lower Limit ==>	130	13.61	70	15.95	489	16.50
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313003-5	1,985	14.11	1,076	16.45	7,712	17.00
Lab Control Sample	KWG1313003-3	2,094	14.11	1,158	16.45	8,323	17.00
Duplicate Lab Control Sample	KWG1313003-4	2,134	14.11	1,134	16.45	8,427	17.00
Method Blank	KWG1313028-5	2,403	14.11	1,375	16.45	9,882	16.99
Lab Control Sample	KWG1313028-3	2,262	14.11	1,290	16.45	8,978	16.99
Duplicate Lab Control Sample	KWG1313028-4	2,364	14.11	1,386	16.45	9,316	16.99
RM11E-SL532MS	KWG1313003-1	2,394	14.11	1,314	16.45	8,467	17.01
RM11E-SL532DMS	KWG1313003-2	1,995	14.12	1,186	16.46	7,173	17.01
RM11E-SL532	K1312655-003	2,232	14.13	1,118	16.46	7,431	17.02
Batch QCMS	KWG1313028-1	2,688	14.13	1,457	16.46	8,615	17.02
Batch QCDMS	KWG1313028-2	2,698	14.13	1,544	16.46	9,001	17.02
Batch QC	K1312733-001	2,322	14.13	1,335	16.47	8,108	17.02
RM11E-SL932	K1312655-001	2,291	14.12	1,488	16.46	9,080	17.01
RM11E-SL032	K1312655-002	2,227	14.13	1,192	16.47	7,309	17.03
RM11E-SL033	K1312655-004	2,027	14.13	1,074	16.47	6,823	17.03

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,310	18.00
	Upper Limit ==>	12,621	18.50
	Lower Limit ==>	316	17.50
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313003-5	4,899	18.00
Lab Control Sample	KWG1313003-3	5,454	18.01
Duplicate Lab Control Sample	KWG1313003-4	5,498	18.01
Method Blank	KWG1313028-5	6,487	18.00
Lab Control Sample	KWG1313028-3	5,723	18.00
Duplicate Lab Control Sample	KWG1313028-4	6,311	18.00
RM11E-SL532MS	KWG1313003-1	5,966	18.02
RM11E-SL532DMS	KWG1313003-2	5,168	18.04
RM11E-SL532	K1312655-003	5,362	18.04
Batch QCMS	KWG1313028-1	6,462	18.04
Batch QCDMS	KWG1313028-2	6,646	18.04
Batch QC	K1312733-001	5,917	18.04
RM11E-SL932	K1312655-001	6,323	18.02
RM11E-SL032	K1312655-002	5,970	18.04
RM11E-SL033	K1312655-004	6,144	18.04

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/04/2013
		Time Analyzed:	09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120413\1204F004.D	**Lab Code:**	KWG1313419-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313419
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	66,716	15.31	6,767	11.42	2,434	14.02
	Upper Limit ==>	133,431	15.81	13,535	11.92	4,868	14.52
	Lower Limit ==>	33,358	14.81	338	10.92	122	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
RM11E-SL034	K1312655-005	51,987	15.34	6,001	11.43	1,774	14.03

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120413\1204F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313419-1
Analysis Lot: KWG1313419

		Ieptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	2,750	14.12	1,607	16.46	10,355	17.01
	Upper Limit ==>	5,500	14.62	3,213	16.96	20,710	17.51
	Lower Limit ==>	138	13.62	80	15.96	518	16.51
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
RM11E-SL034	K1312655-005	2,068	14.14	1,152	16.48	6,690	17.04

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120413\1204F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313419-1
Analysis Lot: KWG1313419

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,977	18.02
	Upper Limit ==>	13,953	18.52
	Lower Limit ==>	349	17.52
	ICAL Result ==>	6,386	18.01
Associated Analyses			
RM11E-SL034	K1312655-005	6,016	18.06

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Storm water

Service Request: K1312655
Date Extracted: 11/22/2013
Date Analyzed: 12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name: Batch QC
Lab Code: K1312733-001

Units: ng/L
Basis: NA

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Level: Low
Extraction Lot: KWG1313028

		Batch QCMS KWG1313028-1 Matrix Spike			Batch QCDMS KWG1313028-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	0.24	24.3	20.0	120	23.6	19.6	119	50-120	3	30
2,4'-DDE	ND	24.0	20.0	120	23.3	19.6	119	24-123	3	30
2,4'-DDT	ND	22.4	20.0	112	22.9	19.6	117	50-120	2	30
4,4'-DDD	0.19	23.2	20.0	115	22.2	19.6	112	42-120	4	30
4,4'-DDE	0.41	22.9	20.0	113	22.0	19.6	110	50-120	4	30
4,4'-DDT	1.0	25.0	20.0	120	24.3	19.6	119	50-120	3	30
alpha-Chlordane	ND	14.8	20.0	74	15.4	19.6	79	50-120	4	30
cis-Nonachlor	ND	13.8	20.0	69	14.0	19.6	71	50-120	2	30
gamma-Chlordane	ND	15.1	20.0	76	15.6	19.6	80	50-120	3	30
trans-Nonachlor	ND	15.2	20.0	76	15.4	19.6	79	50-120	1	30
Dieldrin	ND	18.5	20.0	92	17.4	19.6	89	50-120	6	30
gamma-BHC (Lindane)	0.47	23.1	20.0	113	23.5	19.6	117	50-120	2	30
Heptachlor Epoxide	ND	21.2	20.0	106	22.3	19.6	114	50-120	5	30
Oxychlordane	ND	20.3	20.0	101	21.3	19.6	109	50-120	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

		RM11E-SL532MS KWG1313003-1 Matrix Spike			RM11E-SL532DMS KWG1313003-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	0.080	1.35	1.20	106	1.77	1.20	141 *	50-120	27	30
2,4'-DDE	ND	1.26	1.20	105	1.54	1.20	128 *	24-123	20	30
2,4'-DDT	0.18	1.43	1.20	105	1.74	1.20	130 *	50-120	19	30
4,4'-DDD	0.23	1.44	1.20	102	1.94	1.20	143 *	42-120	29	30
4,4'-DDE	0.31	1.48	1.20	97	1.89	1.20	131 *	50-120	24	30
4,4'-DDT	1.9	3.26	1.20	112	3.27	1.20	113	50-120	0	30
alpha-Chlordane	0.58	1.72	1.20	95	1.86	1.20	107	50-120	8	30
cis-Nonachlor	0.31	1.43	1.20	93	1.53	1.20	101	50-120	7	30
gamma-Chlordane	0.68	1.85	1.20	98	2.05	1.20	114	50-120	11	30
trans-Nonachlor	0.84	2.06	1.20	102	2.21	1.20	115	50-120	7	30
Dieldrin	0.30	1.53	1.20	103	1.41	1.20	93	50-120	8	30
gamma-BHC (Lindane)	0.062	1.33	1.20	106	1.65	1.20	132 *	50-120	21	30
Heptachlor Epoxide	ND	1.52	1.20	127 *	1.76	1.20	146 *	50-120	15	30
Oxychlordane	ND	1.43	1.20	120	1.70	1.20	141 *	50-120	17	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Storm water

Service Request: K1312655
Date Extracted: 11/22/2013
Date Analyzed: 12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1313028

	Lab Control Sample KWG1313028-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313028-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	20.8	20.0	104	21.0	20.0	105	50-120	1	30
2,4'-DDE	21.3	20.0	107	20.6	20.0	103	24-123	3	30
2,4'-DDT	21.0	20.0	105	20.4	20.0	102	50-120	3	30
4,4'-DDD	20.9	20.0	104	21.5	20.0	108	42-120	3	30
4,4'-DDE	20.9	20.0	105	20.9	20.0	105	50-120	0	30
4,4'-DDT	21.2	20.0	106	21.5	20.0	107	50-120	1	30
alpha-Chlordane	21.2	20.0	106	22.5	20.0	112	50-120	6	30
cis-Nonachlor	21.3	20.0	107	24.5	20.0	122 *	50-120	14	30
gamma-Chlordane	21.5	20.0	107	22.5	20.0	113	50-120	5	30
trans-Nonachlor	22.3	20.0	111	23.9	20.0	120	50-120	7	30
Dieldrin	22.7	20.0	113	21.0	20.0	105	50-120	7	30
gamma-BHC (Lindane)	20.9	20.0	104	21.7	20.0	109	50-120	4	30
Heptachlor Epoxide	22.7	20.0	114	21.0	20.0	105	50-120	8	30
Oxychlordane	21.7	20.0	108	21.8	20.0	109	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013
Date Analyzed: 12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313003

	Lab Control Sample KWG1313003-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313003-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.97	2.00	99	2.03	2.00	101	50-120	3	30
2,4'-DDE	2.00	2.00	100	2.06	2.00	103	24-123	3	30
2,4'-DDT	1.97	2.00	98	2.02	2.00	101	50-120	3	30
4,4'-DDD	2.00	2.00	100	2.04	2.00	102	42-120	2	30
4,4'-DDE	2.04	2.00	102	2.10	2.00	105	50-120	3	30
4,4'-DDT	2.01	2.00	100	2.11	2.00	105	50-120	5	30
alpha-Chlordane	2.12	2.00	106	2.12	2.00	106	50-120	0	30
cis-Nonachlor	2.21	2.00	110	2.18	2.00	109	50-120	1	30
gamma-Chlordane	2.14	2.00	107	2.09	2.00	104	50-120	2	30
trans-Nonachlor	2.17	2.00	109	2.13	2.00	106	50-120	2	30
Dieldrin	2.27	2.00	114	2.20	2.00	110	50-120	3	30
gamma-BHC (Lindane)	2.00	2.00	100	2.09	2.00	105	50-120	5	30
Heptachlor Epoxide	2.21	2.00	110	2.14	2.00	107	50-120	3	30
Oxychlordane	2.03	2.00	102	1.96	2.00	98	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	17:52

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313028-5	**File ID:**	J:\MS21\DATA\120313\1203F023.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313028

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313028-3	J:\MS21\DATA\120313\1203F024.D	12/03/13	18:19
Duplicate Lab Control Sample	KWG1313028-4	J:\MS21\DATA\120313\1203F025.D	12/03/13	18:46
Batch QCMS	KWG1313028-1	J:\MS21\DATA\120313\1203F033.D	12/03/13	22:23
Batch QCDMS	KWG1313028-2	J:\MS21\DATA\120313\1203F034.D	12/03/13	22:50
Batch QC	K1312733-001	J:\MS21\DATA\120313\1203F035.D	12/03/13	23:17
RM11E-SL932	K1312655-001	J:\MS21\DATA\120313\1203F037.D	12/04/13	00:11

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:31

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313003-5	**File ID:**	J:\MS21\DATA\120313\1203F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313003-3	J:\MS21\DATA\120313\1203F021.D	12/03/13	16:58
Duplicate Lab Control Sample	KWG1313003-4	J:\MS21\DATA\120313\1203F022.D	12/03/13	17:25
RM11E-SL532MS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
RM11E-SL532DMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
RM11E-SL532	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-SL032	K1312655-002	J:\MS21\DATA\120313\1203F038.D	12/04/13	00:38
RM11E-SL033	K1312655-004	J:\MS21\DATA\120313\1203F039.D	12/04/13	01:05
RM11E-SL034	K1312655-005	J:\MS21\DATA\120413\1204F009.D	12/04/13	11:57

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	18:19

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313028-3	**File ID:**	J:\MS21\DATA\120313\1203F024.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313028

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313028-5	J:\MS21\DATA\120313\1203F023.D	12/03/13	17:52
Batch QCMS	KWG1313028-1	J:\MS21\DATA\120313\1203F033.D	12/03/13	22:23
Batch QCDMS	KWG1313028-2	J:\MS21\DATA\120313\1203F034.D	12/03/13	22:50
Batch QC	K1312733-001	J:\MS21\DATA\120313\1203F035.D	12/03/13	23:17
RM11E-SL932	K1312655-001	J:\MS21\DATA\120313\1203F037.D	12/04/13	00:11

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013
Date Analyzed: 12/03/2013
Time Analyzed: 16:58

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name: Lab Control Sample
Lab Code: KWG1313003-3

Instrument ID: MS21
File ID: J:\MS21\DATA\120313\1203F021.D

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low
Extraction Lot: KWG1313003

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313003-5	J:\MS21\DATA\120313\1203F020.D	12/03/13	16:31
RM11E-SL532MS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
RM11E-SL532DMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
RM11E-SL532	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-SL032	K1312655-002	J:\MS21\DATA\120313\1203F038.D	12/04/13	00:38
RM11E-SL033	K1312655-004	J:\MS21\DATA\120313\1203F039.D	12/04/13	01:05
RM11E-SL034	K1312655-005	J:\MS21\DATA\120413\1204F009.D	12/04/13	11:57

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D
B	J:\MS21\Data\120313\1203F006.D
C	J:\MS21\Data\120313\1203F007.D
D	J:\MS21\Data\120313\1203F008.D
E	J:\MS21\Data\120313\1203F009.D
F	J:\MS21\Data\120313\1203F010.D
G	J:\MS21\Data\120313\1203F011.D
H	J:\MS21\Data\120313\1203F012.D
I	J:\MS21\Data\120313\1203F013.D
J	J:\MS21\Data\120313\1203F014.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.896	B	1.0	0.956	C	2.0	0.939	D	5.0	0.960	E	10	0.952
	F	20	0.901	G	40	0.936	H	60	0.977	I	80	0.998	J	100	1.03
2,4'-DDE	A	0.50	0.754	B	1.0	0.744	C	2.0	0.771	D	5.0	0.757	E	10	0.765
	F	20	0.695	G	40	0.734	H	60	0.757	I	80	0.776	J	100	0.785
2,4'-DDT	A	0.50	1.00	B	1.0	0.980	C	2.0	0.965	D	5.0	0.974	E	10	1.02
	F	20	0.945	G	40	0.987	H	60	1.01	I	80	1.01	J	100	1.01
4,4'-DDD	A	0.50	0.965	B	1.0	0.880	C	2.0	0.865	D	5.0	0.926	E	10	0.916
	F	20	0.850	G	40	0.876	H	60	0.906	I	80	0.918	J	100	0.949
4,4'-DDE	A	0.50	0.514	B	1.0	0.550	C	2.0	0.567	D	5.0	0.562	E	10	0.568
	F	20	0.524	G	40	0.541	H	60	0.559	I	80	0.567	J	100	0.574
4,4'-DDT	A	0.50	0.988	B	1.0	0.943	C	2.0	1.00	D	5.0	1.01	E	10	1.02
	F	20	0.985	G	40	1.04	H	60	1.07	I	80	1.09	J	100	1.11
alpha-Chlordane	A	0.50	4.25	B	1.0	4.59	C	2.0	4.19	D	5.0	4.22	E	10	4.25
	F	20	4.30	G	40	3.95	H	60	3.91	I	80	3.71	J	100	3.91
cis-Nonachlor	A	0.50	1.93	B	1.0	2.44	C	2.0	2.19	D	5.0	2.17	E	10	2.27
	F	20	2.28	G	40	2.00	H	60	1.98	I	80	1.83	J	100	1.97
gamma-Chlordane	A	0.50	4.50	B	1.0	4.99	C	2.0	4.24	D	5.0	4.52	E	10	4.56
	F	20	4.50	G	40	4.20	H	60	4.14	I	80	3.94	J	100	4.12
trans-Nonachlor	A	0.50	2.19	B	1.0	2.79	C	2.0	2.52	D	5.0	2.56	E	10	2.70
	F	20	2.72	G	40	2.49	H	60	2.43	I	80	2.32	J	100	2.44
Dieldrin				B	1.0	1.04	C	2.0	0.972	D	5.0	1.12	E	10	1.14
	F	20	1.02	G	40	1.01	H	60	1.06	I	80	1.10	J	100	1.07
gamma-BHC (Lindane)	A	0.50	0.635	B	1.0	0.586	C	2.0	0.598	D	5.0	0.546	E	10	0.564
	F	20	0.540	G	40	0.580	H	60	0.561	I	80	0.569	J	100	0.576
Heptachlor Epoxide				B	1.0	1.14	C	2.0	1.01	D	5.0	1.09	E	10	1.18
	F	20	1.12	G	40	1.10	H	60	1.11	I	80	1.08	J	100	1.07
Oxychlordane				B	1.0	1.00	C	2.0	0.948	D	5.0	1.03	E	10	0.982
	F	20	0.983	G	40	0.882	H	60	0.832	I	80	0.804	J	100	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.474	B	20	0.447	C	20	0.457	D	20	0.474	E	20	0.483
	F	20	0.477	G	20	0.454	H	20	0.471	I	20	0.484	J	20	0.472
S_Oxychlordane-13C10	A	20	0.144	B	20	0.126	C	20	0.141	D	20	0.136	E	20	0.136
	F	20	0.131	G	20	0.144	H	20	0.148	I	20	0.164	J	20	0.154
S_Heptachlrepox13C10	A	20	0.198	B	20	0.199	C	20	0.207	D	20	0.202	E	20	0.201
	F	20	0.196	G	20	0.204	H	20	0.203	I	20	0.224	J	20	0.215
S_Endrin-13C12	A	20	0.107	B	20	0.108	C	20	0.104	D	20	0.106	E	20	0.106
	F	20	0.113	G	20	0.115	H	20	0.107	I	20	0.109	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.05	B	5.0	2.97	C	5.0	2.99	D	5.0	2.96	E	5.0	3.01
	F	5.0	3.22	G	5.0	3.03	H	5.0	3.02	I	5.0	3.09	J	5.0	3.08
S_4,4'-DDT-d4	A	5.0	1.78	B	5.0	1.83	C	5.0	1.79	D	5.0	1.88	E	5.0	1.87
	F	5.0	2.05	G	5.0	1.95	H	5.0	1.97	I	5.0	2.07	J	5.0	2.09

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.3		≤ 20	0.954		.01
2,4'-DDE	MS	AverageRF	% RSD	3.4		≤ 20	0.754		.01
2,4'-DDT	MS	AverageRF	% RSD	2.4		≤ 20	0.990		.01
4,4'-DDD	MS	AverageRF	% RSD	4.1		≤ 20	0.905		.01
4,4'-DDE	MS	AverageRF	% RSD	3.7		≤ 20	0.553		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.03		.01
alpha-Chlordane	MS	AverageRF	% RSD	6.2		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.2		≤ 20	2.11		.01
gamma-Chlordane	MS	AverageRF	% RSD	6.9		≤ 20	4.37		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.4		≤ 20	2.52		.01
Dieldrin	MS	AverageRF	% RSD	5.3		≤ 20	1.06		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	4.7		≤ 20	0.575		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.1		≤ 20	1.10		.01
Oxychlordane	MS	AverageRF	% RSD	9.1		≤ 20	0.923		.01
S_GBHCD6	SURR	AverageRF	% RSD	2.6		≤ 20	0.469		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.9		≤ 20	0.142		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	4.2		≤ 20	0.205		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	3.2		≤ 20	0.109		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.5		≤ 20	3.04		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	5.9		≤ 20	1.93		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.954	0.940	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.754	0.745	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.990	0.936	-5	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.905	0.851	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.553	0.544	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.03	0.970	-5	NA	± 25 %	AverageRF
alpha-Chlordane	20	20	4.13	4.13	0	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	2.11	2.16	3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	4.37	4.37	0	NA	± 25 %	AverageRF
trans-Nonachlor	20	20	2.52	2.50	-1	NA	± 25 %	AverageRF
Dieldrin	20	20	1.06	1.04	-2	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.575	0.565	-2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.10	1.11	1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.923	0.875	-5	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313406
Units: ng/ml

File ID: J:\MS21\DATA\120313\1203F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.954	0.897	-6	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.728	-3	NA	± 25 %	AverageRF
2,4'-DDT	20	19	.01	0.990	0.935	-6	NA	± 25 %	AverageRF
4,4'-DDD	20	19	.01	0.905	0.852	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.553	0.519	-6	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.03	0.980	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	4.13	3.92	-5	NA	± 25 %	AverageRF
cis-Nonachlor	20	19	.01	2.11	1.96	-7	NA	± 25 %	AverageRF
gamma-Chlordane	20	19	.01	4.37	4.12	-6	NA	± 25 %	AverageRF
trans-Nonachlor	20	19	.01	2.52	2.44	-3	NA	± 25 %	AverageRF
Dieldrin	20	19	.01	1.06	0.998	-6	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.575	0.543	-6	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.11	0	NA	± 25 %	AverageRF
Oxychlordane	20	19	.01	0.923	0.862	-7	NA	± 25 %	AverageRF
S_GBHCD6	20	20	.01	0.469	0.474	1	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	21	.01	0.142	0.148	4	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	20	.01	0.205	0.210	2	NA	± 30 %	AverageRF
S_Endrin-13C12	20	21	.01	0.109	0.112	3	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.2	.01	3.04	3.14	3	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.3	.01	1.93	2.03	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313419
Units: ng/ml

File ID: J:\MS21\DATA\120413\1204F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	.01	0.954	0.934	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.703	-7	NA	± 25 %	AverageRF
2,4'-DDT	20	20	.01	0.990	0.982	-1	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.918	1	NA	± 25 %	AverageRF
4,4'-DDE	20	18	.01	0.553	0.509	-8	NA	± 25 %	AverageRF
4,4'-DDT	20	20	.01	1.03	1.02	0	NA	± 25 %	AverageRF
alpha-Chlordane	20	15	.01	4.13	3.15	-24	NA	± 25 %	AverageRF
cis-Nonachlor	20	15	.01	2.11	1.63	-23	NA	± 25 %	AverageRF
gamma-Chlordane	20	15	.01	4.37	3.32	-24	NA	± 25 %	AverageRF
trans-Nonachlor	20	15	.01	2.52	1.93	-23	NA	± 25 %	AverageRF
Dieldrin	20	17	.01	1.06	0.894	-16	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	21	.01	0.575	0.590	3	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	21	.01	1.10	1.14	4	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	0.923	0.901	-2	NA	± 25 %	AverageRF
S_GBHCD6	20	22	.01	0.469	0.507	8	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	26	.01	0.142	0.182	28	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	20	.01	0.205	0.206	1	NA	± 30 %	AverageRF
S_Endrin-13C12	20	22	.01	0.109	0.120	11	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.1	.01	3.04	3.10	2	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.4	.01	1.93	2.09	9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	Method Blank	KWG1313003-5	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	Lab Control Sample	KWG1313003-3	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	Duplicate Lab Control Sample	KWG1313003-4	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	Method Blank	KWG1313028-5	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	Lab Control Sample	KWG1313028-3	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	Duplicate Lab Control Sample	KWG1313028-4	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	RM11E-SL532MS	KWG1313003-1	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	RM11E-SL532DMS	KWG1313003-2	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	RM11E-SL532	K1312655-003	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	Batch QCMS	KWG1313028-1	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	Batch QCDMS	KWG1313028-2	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	Batch QC	K1312733-001	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	RM11E-SL932	K1312655-001	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	RM11E-SL032	K1312655-002	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	RM11E-SL033	K1312655-004	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313419
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F004.D	Continuing Calibration Verification	KWG1313419-1	12/4/2013	09:34		12/4/2013	09:34
1204F005.D	Instrument Blank	KWG1313419-2	12/4/2013	10:06		12/4/2013	10:06
1204F006.D	ZZZZZZ	ZZZZZZ	12/4/2013	10:38		12/4/2013	10:38
1204F007.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:02		12/4/2013	11:02
1204F008.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:30		12/4/2013	11:30
1204F009.D	RM11E-SL034	K1312655-005	12/4/2013	11:57		12/4/2013	11:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/22/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313028
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL932	K1312655-001	11/18/13	11/19/13	940ml	1.0ml	NA	
Method Blank	KWG1313028-5	NA	NA	1020ml	1.0ml	NA	
Batch QC	K1312733-001	NA	NA	1010ml	1.0ml	NA	
Batch QCMS	KWG1313028-1	NA	NA	1000ml	1.0ml	NA	
Batch QCDMS	KWG1313028-2	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313028-3	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313028-4	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313003
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL032	K1312655-002	11/18/13	11/19/13	20.058g	1.0ml	84.2	
RM11E-SL532	K1312655-003	11/18/13	11/19/13	20.141g	1.0ml	82.6	
RM11E-SL033	K1312655-004	11/18/13	11/19/13	20.200g	1.0ml	85.2	
RM11E-SL034	K1312655-005	11/18/13	11/19/13	20.280g	1.0ml	75.3	
Method Blank	KWG1313003-5	NA	NA	20.280g	1.0ml	NA	
RM11E-SL532MS	KWG1313003-1	11/18/13	11/19/13	20.209g	1.0ml	82.6	
RM11E-SL532DMS	KWG1313003-2	11/18/13	11/19/13	20.152g	1.0ml	82.6	
Lab Control Sample	KWG1313003-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313003-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Diesel and Residual Range Organics

Organic Analysis:
Diesel and Residual Range Organics - Silica Gel Treated

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312655

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL932	K1312655-001	11/18/2013	11/19/2013
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013
RM11E-SL034	K1312655-005	11/18/2013	11/19/2013
RM11E-SL032	KWG1313250-4	11/18/2013	11/19/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Lorem E Portwood Name: Lorem Portwood

Date: 12/1/13 Title:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Water	**Date Received:**	11/19/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-SL932	**Units:**	ug/L
Lab Code:	K1312655-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**20**	J	270	12	1	11/26/13	11/27/13	KWG1313234	
Residual Range Organics (RRO)	ND	U	270	21	1	11/26/13	11/27/13	KWG1313234	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	103	50-150	11/27/13	Acceptable
n-Triacontane	119	50-150	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313234-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**19**	J	240	11	1	11/26/13	11/27/13	KWG1313234	
Residual Range Organics (RRO)	ND	U	240	19	1	11/26/13	11/27/13	KWG1313234	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	97	50-150	11/27/13	Acceptable
n-Triacontane	102	50-150	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL032	**Units:**	mg/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**24**	J	30	2.2	1	11/22/13	11/25/13	KWG1313250	
Residual Range Organics (RRO)	**150**	O	30	4.6	1	11/22/13	11/25/13	KWG1313250	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	108	50-150	11/25/13	Acceptable
n-Triacontane	111	50-150	11/25/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL532	**Units:**	mg/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**22**	J	31	2.2	1	11/22/13	11/25/13	KWG1313250	
Residual Range Organics (RRO)	**130**	O	31	4.7	1	11/22/13	11/25/13	KWG1313250	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	110	50-150	11/25/13	Acceptable
n-Triacontane	113	50-150	11/25/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL033	**Units:**	mg/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**30**	J	30	2.2	1	11/22/13	11/25/13	KWG1313250	
Residual Range Organics (RRO)	**160**	O	30	4.6	1	11/22/13	11/25/13	KWG1313250	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	112	50-150	11/25/13	Acceptable
n-Triacontane	116	50-150	11/25/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL034	**Units:**	mg/Kg
Lab Code:	K1312655-005	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**61**	H	34	2.4	1	11/22/13	11/25/13	KWG1313250	
Residual Range Organics (RRO)	**310**	O	34	5.2	1	11/22/13	11/25/13	KWG1313250	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	104	50-150	11/25/13	Acceptable
n-Triacontane	113	50-150	11/25/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1313250-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1.8	1	11/22/13	11/25/13	KWG1313250	
Residual Range Organics (RRO)	ND	U	25	3.9	1	11/22/13	11/25/13	KWG1313250	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	109	50-150	11/25/13	Acceptable
n-Triacontane	103	50-150	11/25/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-SL932	K1312655-001	103	119
Batch QC	K1312728-002	128	123
Batch QC	K1312730-001	113	123
Batch QCDUP	KWG1313234-1	100	109
Batch QCDUP	KWG1313234-2	113	111
Method Blank	KWG1313234-4	97	102
Lab Control Sample	KWG1313234-3	90	92

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil
Service Request: K1312655

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-SL032	K1312655-002	108	111
RM11E-SL532	K1312655-003	110	113
RM11E-SL033	K1312655-004	112	116
RM11E-SL034	K1312655-005	104	113
RM11E-SL032DUP	KWG1313250-4	105	111
Method Blank	KWG1313250-3	109	103
Lab Control Sample	KWG1313250-1	116	110
Duplicate Lab Control Sample	KWG1313250-2	109	105

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1312730-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313234-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	260	12	17	16	17	9 #	30
Residual Range Organics (RRO)	260	20	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/26/2013
Date Analyzed: 11/27/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name: Batch QC
Lab Code: K1312728-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Level: Low
Extraction Lot: KWG1313234

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313234-2 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	240	11	3100	3200	3200	3	30
Residual Range Organics (RRO)	240	19	150	170	160	10 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/25/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL032	**Units:**	mg/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313250

Analyte Name	MRL	MDL	Sample Result	RM11E-SL032DUP KWG1313250-4 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	30	2.2	24	28	26	15 #	40
Residual Range Organics (RRO)	30	4.7	150	190	170	19	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/26/2013
Date Analyzed: 11/27/2013

Lab Control Spike Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313234

	Lab Control Sample KWG1313234-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	1270	1600	79	46-140
Residual Range Organics (RRO)	770	800	96	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/25/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313250

	Lab Control Sample KWG1313250-1 **Lab Control Spike**			Duplicate Lab Control Sample KWG1313250-2 **Duplicate Lab Control Spike**					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	291	267	109	259	267	97	42-134	11	40
Residual Range Organics (RRO)	157	133	118	145	133	109	48-141	8	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	19:30

Method Blank Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313234-4	**File ID:**	J:\GC21\DATA\112713F\1127F050.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313234-3	J:\GC21\DATA\112713F\1127F048.D	11/27/13	19:08
RM11E-SL932	K1312655-001	J:\GC21\DATA\112713F\1127F052.D	11/27/13	19:53
Batch QC	K1312728-002	J:\GC21\DATA\112713F\1127F054.D	11/27/13	20:15
Batch QCDUP	KWG1313234-2	J:\GC21\DATA\112713F\1127F056.D	11/27/13	20:37
Batch QC	K1312730-001	J:\GC21\DATA\112713F\1127F058.D	11/27/13	20:59
Batch QCDUP	KWG1313234-1	J:\GC21\DATA\112713F\1127F060.D	11/27/13	21:22

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/25/2013
		Time Analyzed:	18:38

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313250-3	**File ID:**	J:\GC21\DATA\112513F\1125F052.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313250

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313250-1	J:\GC21\DATA\112513F\1125F048.D	11/25/13	17:53
Duplicate Lab Control Sample	KWG1313250-2	J:\GC21\DATA\112513F\1125F050.D	11/25/13	18:15
RM11E-SL032	K1312655-002	J:\GC21\DATA\112513F\1125F054.D	11/25/13	19:00
RM11E-SL032DUP	KWG1313250-4	J:\GC21\DATA\112513F\1125F056.D	11/25/13	19:23
RM11E-SL033	K1312655-004	J:\GC21\DATA\112513F\1125F058.D	11/25/13	19:45
RM11E-SL034	K1312655-005	J:\GC21\DATA\112513F\1125F060.D	11/25/13	20:07
RM11E-SL532	K1312655-003	J:\GC21\DATA\112513F\1125F062.D	11/25/13	20:29

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	19:08

Lab Control Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313234-3	**File ID:**	J:\GC21\DATA\112713F\1127F048.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313234-4	J:\GC21\DATA\112713F\1127F050.D	11/27/13	19:30
RM11E-SL932	K1312655-001	J:\GC21\DATA\112713F\1127F052.D	11/27/13	19:53
Batch QC	K1312728-002	J:\GC21\DATA\112713F\1127F054.D	11/27/13	20:15
Batch QCDUP	KWG1313234-2	J:\GC21\DATA\112713F\1127F056.D	11/27/13	20:37
Batch QC	K1312730-001	J:\GC21\DATA\112713F\1127F058.D	11/27/13	20:59
Batch QCDUP	KWG1313234-1	J:\GC21\DATA\112713F\1127F060.D	11/27/13	21:22

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Soil	**Date Analyzed:**	11/25/2013
		Time Analyzed:	17:53

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313250-1	**File ID:**	J:\GC21\DATA\112513F\1125F048.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313250

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313250-3	J:\GC21\DATA\112513F\1125F052.D	11/25/13	18:38
RM11E-SL032	K1312655-002	J:\GC21\DATA\112513F\1125F054.D	11/25/13	19:00
RM11E-SL032DUP	KWG1313250-4	J:\GC21\DATA\112513F\1125F056.D	11/25/13	19:23
RM11E-SL033	K1312655-004	J:\GC21\DATA\112513F\1125F058.D	11/25/13	19:45
RM11E-SL034	K1312655-005	J:\GC21\DATA\112513F\1125F060.D	11/25/13	20:07
RM11E-SL532	K1312655-003	J:\GC21\DATA\112513F\1125F062.D	11/25/13	20:29

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\091013F\0910F072.D	I	J:\GC21\DATA\091013F\0910F096.D
B	J:\GC21\DATA\091013F\0910F074.D	J	J:\GC21\DATA\091013F\0910F098.D
C	J:\GC21\DATA\091013F\0910F076.D	K	J:\GC21\DATA\091013F\0910F100.D
D	J:\GC21\DATA\091013F\0910F078.D	L	J:\GC21\DATA\091013F\0910F102.D
E	J:\GC21\DATA\091013F\0910F080.D	M	J:\GC21\DATA\091013F\0910F104.D
F	J:\GC21\DATA\091013F\0910F082.D	N	J:\GC21\DATA\091013F\0910F106.D
G	J:\GC21\DATA\091013F\0910F092.D		
H	J:\GC21\DATA\091013F\0910F094.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
				G	20	1010	H	50	924	I	200	965	J	500	972
	K	2000	989	L	5000	1030	M	20000	916	N	50000	920			
Residual Range Organics (RRO)	A	20	968	B	50	756	C	200	699	D	500	627	E	2000	615
	F	5000	588												
o-Terphenyl															
				G	1.0	1300	H	2.5	1190	I	10	1260	J	25	1280
	K	100	1280	L	250	1330									
n-Triacontane															
				G	1.0	938	H	2.5	919	I	10	1050	J	25	1080
	K	100	1070	L	250	1160									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	4.4		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.999		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	3.8		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	8.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	09/10/2013
		Date Analyzed:	09/11/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL12766
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\091013F\0910F088.D J:\GC21\DATA\091013F\0910F110.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	964	0	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	709	599	NA	-1	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/25/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313214
Units: ppm

File ID: J:\GC21\DATA\112513F\1125F042.D
J:\GC21\DATA\112513F\1125F044.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	997	3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	709	635	NA	5	± 15 %	Linear
o-Terphenyl	50	53	1270	1360	7	NA	± 15 %	AverageRF
n-Triacontane	50	53	1040	1100	6	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/25/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313214
Units: ppm

File ID: J:\GC21\DATA\112513F\1125F064.D
J:\GC21\DATA\112513F\1125F066.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	1000	4	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	709	655	NA	8	± 15 %	Linear
o-Terphenyl	50	54	1270	1360	7	NA	± 15 %	AverageRF
n-Triacontane	50	56	1040	1160	12	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313301
Units: ppm

File ID: J:\GC21\DATA\112713F\1127F042.D
J:\GC21\DATA\112713F\1127F044.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	965	1030	6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	709	591	NA	-2	± 15 %	Linear
o-Terphenyl	50	55	1270	1400	10	NA	± 15 %	AverageRF
n-Triacontane	50	57	1040	1190	15	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	11/27/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	09/10/2013
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL12766
		Analysis Lot:	KWG1313301
		Units:	ppm
File ID:	J:\GC21\DATA\112713F\1127F066.D J:\GC21\DATA\112713F\1127F068.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	965	894	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	709	599	NA	-1	± 15 %	Linear
o-Terphenyl	50	48	1270	1230	-3	NA	± 15 %	AverageRF
n-Triacontane	50	50	1040	1040	1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313214
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1125F042.D	Continuing Calibration Verification	KWG1313214-9	11/25/2013	16:46		11/25/2013	17:02
1125F044.D	Continuing Calibration Verification	KWG1313214-9	11/25/2013	17:08		11/25/2013	17:24
1125F046.D	Instrument Blank	KWG1313214-11	11/25/2013	17:30		11/25/2013	17:46
1125F048.D	Lab Control Sample	KWG1313250-1	11/25/2013	17:53		11/25/2013	18:09
1125F050.D	Duplicate Lab Control Sample	KWG1313250-2	11/25/2013	18:15		11/25/2013	18:31
1125F052.D	Method Blank	KWG1313250-3	11/25/2013	18:38		11/25/2013	18:54
1125F054.D	RM11E-SL032	K1312655-002	11/25/2013	19:00		11/25/2013	19:16
1125F056.D	RM11E-SL032DUP	KWG1313250-4	11/25/2013	19:23		11/25/2013	19:39
1125F058.D	RM11E-SL033	K1312655-004	11/25/2013	19:45		11/25/2013	20:01
1125F060.D	RM11E-SL034	K1312655-005	11/25/2013	20:07		11/25/2013	20:23
1125F062.D	RM11E-SL532	K1312655-003	11/25/2013	20:29		11/25/2013	20:45
1125F064.D	Continuing Calibration Verification	KWG1313214-10	11/25/2013	20:52		11/25/2013	21:08
1125F066.D	Continuing Calibration Verification	KWG1313214-10	11/25/2013	21:14		11/25/2013	21:30
1125F068.D	Instrument Blank	KWG1313214-12	11/25/2013	21:36		11/25/2013	21:52
1125F088.D	Continuing Calibration Verification	KWG1313214-5	11/26/2013	01:19		11/26/2013	01:35
1125F090.D	Continuing Calibration Verification	KWG1313214-5	11/26/2013	01:41		11/26/2013	01:57
1125F092.D	Instrument Blank	KWG1313214-7	11/26/2013	02:04		11/26/2013	02:20
1125F094.D	ZZZZZZ	ZZZZZZ	11/26/2013	02:26		11/26/2013	02:42
1125F096.D	ZZZZZZ	ZZZZZZ	11/26/2013	02:48		11/26/2013	03:04
1125F098.D	ZZZZZZ	ZZZZZZ	11/26/2013	03:11		11/26/2013	03:27
1125F100.D	ZZZZZZ	ZZZZZZ	11/26/2013	03:33		11/26/2013	03:49
1125F102.D	ZZZZZZ	ZZZZZZ	11/26/2013	03:55		11/26/2013	04:11
1125F104.D	ZZZZZZ	ZZZZZZ	11/26/2013	04:18		11/26/2013	04:34
1125F106.D	ZZZZZZ	ZZZZZZ	11/26/2013	04:40		11/26/2013	04:56
1125F108.D	ZZZZZZ	ZZZZZZ	11/26/2013	05:02		11/26/2013	05:18
1125F110.D	ZZZZZZ	ZZZZZZ	11/26/2013	05:24		11/26/2013	05:40
1125F112.D	Continuing Calibration Verification	KWG1313214-1	11/26/2013	05:46		11/26/2013	06:02
1125F114.D	Continuing Calibration Verification	KWG1313214-1	11/26/2013	06:08		11/26/2013	06:24
1125F116.D	Instrument Blank	KWG1313214-3	11/26/2013	06:31		11/26/2013	06:47
1125F118.D	ZZZZZZ	ZZZZZZ	11/26/2013	06:53		11/26/2013	07:09
1125F120.D	ZZZZZZ	ZZZZZZ	11/26/2013	07:15		11/26/2013	07:31
1125F122.D	ZZZZZZ	ZZZZZZ	11/26/2013	07:37		11/26/2013	07:53
1125F124.D	ZZZZZZ	ZZZZZZ	11/26/2013	07:59		11/26/2013	08:15
1125F126.D	ZZZZZZ	ZZZZZZ	11/26/2013	08:21		11/26/2013	08:37

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313214
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1125F128.D	ZZZZZZ	ZZZZZZ	11/26/2013	08:43		11/26/2013	08:59
1125F130.D	ZZZZZZ	ZZZZZZ	11/26/2013	09:06		11/26/2013	09:22
1125F132.D	ZZZZZZ	ZZZZZZ	11/26/2013	09:28		11/26/2013	09:44
1125F134.D	ZZZZZZ	ZZZZZZ	11/26/2013	09:51		11/26/2013	10:07
1125F136.D	Continuing Calibration Verification	KWG1313214-2	11/26/2013	10:14		11/26/2013	10:30
1125F138.D	Continuing Calibration Verification	KWG1313214-2	11/26/2013	10:36		11/26/2013	10:52
1125F140.D	Instrument Blank	KWG1313214-4	11/26/2013	10:58		11/26/2013	11:14
1125F142.D	ZZZZZZ	ZZZZZZ	11/26/2013	11:21		11/26/2013	11:37
1125F144.D	ZZZZZZ	ZZZZZZ	11/26/2013	11:43		11/26/2013	11:59
1125F146.D	ZZZZZZ	ZZZZZZ	11/26/2013	12:05		11/26/2013	12:21
1125F148.D	ZZZZZZ	ZZZZZZ	11/26/2013	12:27		11/26/2013	12:43
1125F150.D	ZZZZZZ	ZZZZZZ	11/26/2013	12:49		11/26/2013	13:05
1125F152.D	Continuing Calibration Verification	KWG1313214-6	11/26/2013	13:11		11/26/2013	13:27
1125F154.D	Continuing Calibration Verification	KWG1313214-6	11/26/2013	13:33		11/26/2013	13:49
1125F156.D	Instrument Blank	KWG1313214-8	11/26/2013	13:56		11/26/2013	14:12

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313301
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1127F018.D	Continuing Calibration Verification	KWG1313301-1	11/27/2013	13:35		11/27/2013	13:51
1127F020.D	Continuing Calibration Verification	KWG1313301-1	11/27/2013	13:57		11/27/2013	14:13
1127F024.D	Instrument Blank	KWG1313301-2	11/27/2013	14:42		11/27/2013	14:58
1127F034.D	ZZZZZZ	ZZZZZZ	11/27/2013	16:33		11/27/2013	16:49
1127F036.D	ZZZZZZ	ZZZZZZ	11/27/2013	16:55		11/27/2013	17:11
1127F038.D	ZZZZZZ	ZZZZZZ	11/27/2013	17:17		11/27/2013	17:33
1127F040.D	ZZZZZZ	ZZZZZZ	11/27/2013	17:39		11/27/2013	17:55
1127F042.D	Continuing Calibration Verification	KWG1313301-3	11/27/2013	18:01		11/27/2013	18:17
1127F044.D	Continuing Calibration Verification	KWG1313301-3	11/27/2013	18:24		11/27/2013	18:40
1127F046.D	Instrument Blank	KWG1313301-4	11/27/2013	18:46		11/27/2013	19:02
1127F048.D	Lab Control Sample	KWG1313234-3	11/27/2013	19:08		11/27/2013	19:24
1127F050.D	Method Blank	KWG1313234-4	11/27/2013	19:30		11/27/2013	19:46
1127F052.D	RM11E-SL932	K1312655-001	11/27/2013	19:53		11/27/2013	20:09
1127F054.D	Batch QC	K1312728-002	11/27/2013	20:15		11/27/2013	20:31
1127F056.D	Batch QCDUP	KWG1313234-2	11/27/2013	20:37		11/27/2013	20:53
1127F058.D	Batch QC	K1312730-001	11/27/2013	20:59		11/27/2013	21:15
1127F060.D	Batch QCDUP	KWG1313234-1	11/27/2013	21:22		11/27/2013	21:38
1127F062.D	ZZZZZZ	ZZZZZZ	11/27/2013	21:44		11/27/2013	22:00
1127F064.D	ZZZZZZ	ZZZZZZ	11/27/2013	22:06		11/27/2013	22:22
1127F066.D	Continuing Calibration Verification	KWG1313301-5	11/27/2013	22:28		11/27/2013	22:44
1127F068.D	Continuing Calibration Verification	KWG1313301-5	11/27/2013	22:50		11/27/2013	23:06
1127F070.D	Instrument Blank	KWG1313301-6	11/27/2013	23:13		11/27/2013	23:29
1127F072.D	ZZZZZZ	ZZZZZZ	11/27/2013	23:35		11/27/2013	23:51
1127F074.D	ZZZZZZ	ZZZZZZ	11/27/2013	23:57		11/28/2013	00:13
1127F076.D	ZZZZZZ	ZZZZZZ	11/28/2013	00:19		11/28/2013	00:35
1127F078.D	ZZZZZZ	ZZZZZZ	11/28/2013	00:41		11/28/2013	00:57
1127F080.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:04		11/28/2013	01:20
1127F082.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:26		11/28/2013	01:42
1127F084.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:48		11/28/2013	02:04
1127F086.D	ZZZZZZ	ZZZZZZ	11/28/2013	02:10		11/28/2013	02:26
1127F088.D	ZZZZZZ	ZZZZZZ	11/28/2013	02:32		11/28/2013	02:48
1127F090.D	Continuing Calibration Verification	KWG1313301-7	11/28/2013	02:54		11/28/2013	03:10
1127F092.D	Continuing Calibration Verification	KWG1313301-7	11/28/2013	03:17		11/28/2013	03:33
1127F094.D	Instrument Blank	KWG1313301-8	11/28/2013	03:39		11/28/2013	03:55

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313301
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1127F096.D	ZZZZZZ	ZZZZZZ	11/28/2013	04:01		11/28/2013	04:17
1127F098.D	ZZZZZZ	ZZZZZZ	11/28/2013	04:23		11/28/2013	04:39
1127F100.D	Continuing Calibration Verification	KWG1313301-9	11/28/2013	04:45		11/28/2013	05:01
1127F102.D	Continuing Calibration Verification	KWG1313301-9	11/28/2013	05:07		11/28/2013	05:23
1127F104.D	Instrument Blank	KWG1313301-10	11/28/2013	05:30		11/28/2013	05:46

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/26/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313234
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL932	K1312655-001	11/18/13	11/19/13	475mL	1mL	NA	
Batch QCDUP	KWG1313234-1	NA	NA	495mL	1mL	NA	
Batch QCDUP	KWG1313234-2	NA	NA	1060mL	2mL	NA	
Method Blank	KWG1313234-4	NA	NA	1060mL	2mL	NA	
Batch QC	K1312728-002	NA	NA	1040mL	2mL	NA	
Batch QC	K1312730-001	NA	NA	495mL	1mL	NA	
Lab Control Sample	KWG1313234-3	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/22/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313250
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL032	K1312655-002	11/18/13	11/19/13	30.270g	10mL	84.2	
RM11E-SL532	K1312655-003	11/18/13	11/19/13	30.208g	10mL	82.6	
RM11E-SL033	K1312655-004	11/18/13	11/19/13	30.117g	10mL	85.2	
RM11E-SL034	K1312655-005	11/18/13	11/19/13	30.141g	10mL	75.3	
RM11E-SL032DUP	KWG1313250-4	11/18/13	11/19/13	30.131g	10mL	84.2	
Method Blank	KWG1313250-3	NA	NA	30.270g	10mL	NA	
Lab Control Sample	KWG1313250-1	NA	NA	30.000g	10mL	NA	
Duplicate Lab Control Sample	KWG1313250-2	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312655

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL932	K1312655-001	11/18/2013	11/19/2013
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013
RM11E-SL034	K1312655-005	11/18/2013	11/19/2013
RM11E-SL032MS	KWG1313282-1	11/18/2013	11/19/2013
RM11E-SL032DMS	KWG1313282-2	11/18/2013	11/19/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Jeffrey M. Smith

Date: 12/09/13 Title: QC Analyst

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Water	**Date Received:**	11/19/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL932	**Units:**	ug/L
Lab Code:	K1312655-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1221	ND	U	0.11	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1232	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1242	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1248	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1254	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1260	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1262	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1268	ND	U	0.053	0.0098	1	11/25/13	11/27/13	KWG1313212	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	36-113	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313212-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1221	ND	U	0.10	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1232	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1242	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1248	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1254	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1260	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1262	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1268	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	36-113	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL032	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1221	ND	U	7.9	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1232	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1242	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1248	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1254	**8.7**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1260	**24**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1262	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1268	**7.0**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1221	ND	U	8.0	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1232	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1242	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1248	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1254	**9.1**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1260	**25**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1262	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1268	ND	Ui	4.3	3.9	1	11/24/13	12/05/13	KWG1313282	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	85	43-148	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL033	**Units:**	ug/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1221	ND	U	7.8	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1232	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1242	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1248	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1254	**94**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1260	**69**		4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1262	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1268	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	43-148	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL034	**Units:**	ug/Kg
Lab Code:	K1312655-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1221	ND	U	6.7	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1232	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1242	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1248	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1254	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1260	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1262	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1268	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	43-148	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313282-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1221	ND	U	5.0	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1232	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1242	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1248	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1254	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1260	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1262	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	
Aroclor 1268	ND	U	4.3	2.1	1	11/24/13	12/05/13	KWG1313282	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	43-148	12/05/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-SL932	K1312655-001	78
Method Blank	KWG1313212-3	68
Lab Control Sample	KWG1313212-1	71
Duplicate Lab Control Sample	KWG1313212-2	67

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 36-113

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-SL032	K1312655-002	83
RM11E-SL532	K1312655-003	85
RM11E-SL033	K1312655-004	79
RM11E-SL034	K1312655-005	75
Method Blank	KWG1313282-4	81
RM11E-SL032MS	KWG1313282-1	78
RM11E-SL032DMS	KWG1313282-2	85
Lab Control Sample	KWG1313282-3	74

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/24/2013
Date Analyzed: 12/05/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-SL032
Lab Code: K1312655-002

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low
Extraction Lot: KWG1313282

		RM11E-SL032MS KWG1313282-1 Matrix Spike			RM11E-SL032DMS KWG1313282-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	80.1	156	51	95.0	156	61	23-145	17	40
Aroclor 1260	24	109	156	54	122	156	63	24-148	11	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Units:**	ug/L
Analysis Method:	8082A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313212

	Lab Control Sample KWG1313212-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313212-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	1.46	2.00	73	1.41	2.00	70	41-113	4	30
Aroclor 1260	1.54	2.00	77	1.58	2.00	79	47-117	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/24/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/05/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313282

	Lab Control Sample KWG1313282-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	106	200	53	42-122
Aroclor 1260	144	200	72	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	14:03

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313212-3	**File ID:**	J:\GC32\DATA\112613A.B\1126F110.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313212

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313212-1	J:\GC32\DATA\112613A.B\1126F108.D	11/27/13	13:20
Duplicate Lab Control Sample	KWG1313212-2	J:\GC32\DATA\112613A.B\1126F109.D	11/27/13	13:42
RM11E-SL932	K1312655-001	J:\GC32\DATA\112613A.B\1126F111.D	11/27/13	14:24

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/24/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/05/2013
		Time Analyzed:	08:31

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313282-4	**File ID:**	J:\GC32\DATA\120413A.B\1204F104.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313282

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313282-3	J:\GC32\DATA\120413A.B\1204F103.D	12/05/13	08:08
RM11E-SL032	K1312655-002	J:\GC32\DATA\120413A.B\1204F106.D	12/05/13	09:17
RM11E-SL032MS	KWG1313282-1	J:\GC32\DATA\120413A.B\1204F110.D	12/05/13	10:43
RM11E-SL032DMS	KWG1313282-2	J:\GC32\DATA\120413A.B\1204F114.D	12/05/13	12:09
RM11E-SL532	K1312655-003	J:\GC32\DATA\120413A.B\1204F118.D	12/05/13	13:35
RM11E-SL033	K1312655-004	J:\GC32\DATA\120413A.B\1204F122.D	12/05/13	15:02
RM11E-SL034	K1312655-005	J:\GC32\DATA\120413A.B\1204F123.D	12/05/13	15:25

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	13:20

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313212-1	**File ID:**	J:\GC32\DATA\112613A.B\1126F108.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313212

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313212-3	J:\GC32\DATA\112613A.B\1126F110.D	11/27/13	14:03
RM11E-SL932	K1312655-001	J:\GC32\DATA\112613A.B\1126F111.D	11/27/13	14:24

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/24/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/05/2013
		Time Analyzed:	08:08

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313282-3	**File ID:**	J:\GC32\DATA\120413A.B\1204F103.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313282

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313282-4	J:\GC32\DATA\120413A.B\1204F104.D	12/05/13	08:31
RM11E-SL032	K1312655-002	J:\GC32\DATA\120413A.B\1204F106.D	12/05/13	09:17
RM11E-SL032MS	KWG1313282-1	J:\GC32\DATA\120413A.B\1204F110.D	12/05/13	10:43
RM11E-SL032DMS	KWG1313282-2	J:\GC32\DATA\120413A.B\1204F114.D	12/05/13	12:09
RM11E-SL532	K1312655-003	J:\GC32\DATA\120413A.B\1204F118.D	12/05/13	13:35
RM11E-SL033	K1312655-004	J:\GC32\DATA\120413A.B\1204F122.D	12/05/13	15:02
RM11E-SL034	K1312655-005	J:\GC32\DATA\120413A.B\1204F123.D	12/05/13	15:25

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID	Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F005.D	Q	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F021.D
B	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F006.D	R	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F022.D
C	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F007.D	S	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F023.D
D	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F008.D	T	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F024.D
E	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F009.D	U	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F025.D
F	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F010.D	V	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F026.D
G	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F011.D	W	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F027.D
H	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F012.D	X	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F028.D
I	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F013.D	Y	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F029.D
J	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F014.D	Z	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F030.D
K	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F015.D	AA	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F031.D
L	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F016.D	AB	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F032.D
M	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F017.D	AC	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F033.D
N	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F018.D	AD	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F034.D
O	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F019.D		
P	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F020.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.00E+5	B	5.0	91400	C	50	76300	D	100	71900	E	200	69500
	F	500	66100												
Aroclor 1016 {1}	A	25	2040	B	50	1870	C	500	1680	D	1000	1580	E	2000	1510
	F	5000	1340												
Aroclor 1016 {2}	A	25	1510	B	50	1590	C	500	1380	D	1000	1330	E	2000	1300
	F	5000	1150												
Aroclor 1016 {3}	A	25	5120	B	50	4510	C	500	4030	D	1000	3930	E	2000	3830
	F	5000	3540												
Aroclor 1016 {4}	A	25	3520	B	50	3350	C	500	2930	D	1000	2760	E	2000	2650
	F	5000	2420												
Aroclor 1016 {5}	A	25	2840	B	50	2650	C	500	2350	D	1000	2230	E	2000	2120
	F	5000	1950												
Aroclor 1260 {1}	A	25	2510	B	50	2480	C	500	2260	D	1000	2210	E	2000	2140
	F	5000	2040												
Aroclor 1260 {2}	A	25	3950	B	50	3950	C	500	3410	D	1000	3230	E	2000	3090
	F	5000	2890												
Aroclor 1260 {3}	A	25	4130	B	50	3980	C	500	3640	D	1000	3450	E	2000	3340
	F	5000	3130												
Aroclor 1260 {4}	A	25	9750	B	50	9000	C	500	7940	D	1000	7710	E	2000	7660
	F	5000	7490												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7750	B	50	7170	C	500	6330	D	1000	6020	E	2000	5900
	F	5000	5670												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	14.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.0		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	10.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.0		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	940	1670	1580	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	910	1380	1260	-9	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	890	4160	3720	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	890	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	900	2350	2120	-10	NA	± 100 %	AverageRF
Aroclor 1016	1000	910	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	1000	910	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	3420	3670	7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	3610	3810	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	8260	8450	2	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	990	6470	6430	-1	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	7.85E+5	B	5.0	7.15E+5	C	50	5.62E+5	D	100	5.31E+5	E	200	5.22E+5
Aroclor 1016 {1}	A	25	16500	B	50	15600	C	500	13200	D	1000	12300	E	2000	11800
	F	5000	10500												
Aroclor 1016 {2}	A	25	43600	B	50	40200	C	500	34100	D	1000	31800	E	2000	32600
	F	5000	30100												
Aroclor 1016 {3}	A	25	28800	B	50	26900	C	500	22000	D	1000	21000	E	2000	20500
	F	5000	18900												
Aroclor 1016 {4}	A	25	22700	B	50	20500	C	500	16600	D	1000	15700	E	2000	15200
	F	5000	13700												
Aroclor 1016 {5}	A	25	21900	B	50	19800	C	500	16600	D	1000	15600	E	2000	15200
	F	5000	13800												
Aroclor 1260 {1}	A	25	47900	B	50	43700	C	500	34600	D	1000	33200	E	2000	32500
	F	5000	29900												
Aroclor 1260 {2}	A	25	36100	B	50	32300	C	500	26900	D	1000	25400	E	2000	24600
	F	5000	22800												
Aroclor 1260 {3}	A	25	34100	B	50	33300	C	500	27600	D	1000	26400	E	2000	26000
	F	5000	24100												
Aroclor 1260 {4}	A	25	83800	B	50	75200	C	500	63200	D	1000	61100	E	2000	61700
	F	5000	59300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	55700	B	50	48100	C	500	41400	D	1000	39400	E	2000	38900
	F	5000	36200												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	19.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	17.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	15.0		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	17.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	18.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	19.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	18.3		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	16.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	900	13300	11900	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	35400	30200	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	840	23000	19400	-16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	830	17400	14400	-17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	850	17200	14600	-15	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	850	37000	31400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1000	28600	29700	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	67400	69500	3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1000	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	93800	B	5.0	88900	C	50	75500	D	100	71400	E	200	66800
	F	500	63100												
Aroclor 1016 {1}	A	25	2760	B	50	2600	C	500	2340	D	1000	2140	E	2000	1960
	F	5000	1840												
Aroclor 1016 {2}	A	25	2230	B	50	2150	C	500	1970	D	1000	1810	E	2000	1720
	F	5000	1590												
Aroclor 1016 {3}	A	25	6770	B	50	6340	C	500	6200	D	1000	5760	E	2000	5370
	F	5000	5280												
Aroclor 1016 {4}	A	25	4740	B	50	4460	C	500	4050	D	1000	3780	E	2000	3590
	F	5000	3450												
Aroclor 1016 {5}	A	25	3620	B	50	3560	C	500	3180	D	1000	2980	E	2000	2830
	F	5000	2710												
Aroclor 1260 {1}	A	25	2830	B	50	2820	C	500	2770	D	1000	2720	E	2000	2670
	F	5000	2530												
Aroclor 1260 {2}	A	25	4540	B	50	4440	C	500	4050	D	1000	3920	E	2000	3740
	F	5000	3480												
Aroclor 1260 {3}	A	25	4470	B	50	4560	C	500	4100	D	1000	3990	E	2000	3850
	F	5000	3630												
Aroclor 1260 {4}	A	25	9850	B	50	9590	C	500	8750	D	1000	8720	E	2000	8590
	F	5000	8360												

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7400	B	50	7330	C	500	6600	D	1000	6440	E	2000	6230
	F	5000	5990												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	13.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	10.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	8.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	6.7		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F148.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	890	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	1910	1620	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	780	5950	4630	-22	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	850	4010	3390	-15	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	880	3150	2760	-12	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	1000	2720	2720	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4030	4780	19	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1200	4100	4740	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	8980	10300	14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	6670	7390	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.27E+6	B	5.0	1.21E+6	C	50	9.81E+5	D	100	9.42E+5	E	200	9.01E+5
	F	500	8.84E+5												
Aroclor 1016 {1}	A	25	39300	B	50	37000	C	500	32500	D	1000	30200	E	2000	28000
	F	5000	26600												
Aroclor 1016 {2}	A	25	55800	B	50	51500	C	500	44600	D	1000	41800	E	2000	38400
	F	5000	36000												
Aroclor 1016 {3}	A	25	59000	B	50	58800	C	500	52100	D	1000	49800	E	2000	47700
	F	5000	48100												
Aroclor 1016 {4}	A	25	44800	B	50	43900	C	500	39100	D	1000	36600	E	2000	35600
	F	5000	34900												
Aroclor 1016 {5}	A	25	42900	B	50	42600	C	500	38500	D	1000	36500	E	2000	35900
	F	5000	34900												
Aroclor 1260 {1}	A	25	53800	B	50	47200	C	500	38300	D	1000	37800	E	2000	36200
	F	5000	34900												
Aroclor 1260 {2}	A	25	65500	B	50	63500	C	500	55900	D	1000	55000	E	2000	54600
	F	5000	52700												
Aroclor 1260 {3}	A	25	60400	B	50	61900	C	500	54900	D	1000	54000	E	2000	53400
	F	5000	52000												
Aroclor 1260 {4}	A	25	1.47E+5	B	50	1.35E+5	C	500	1.22E+5	D	1000	1.24E+5	E	2000	1.24E+5
	F	5000	1.25E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	93700	B	50	85900	C	500	76300	D	1000	74800	E	2000	72800
	F	5000	72300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	10.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	8.9		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	18.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	7.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	7.5		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F148.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	840	32300	27000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	840	44700	37500	-16	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	880	52600	46200	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	860	39200	33800	-14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	890	38500	34200	-11	NA	± 100 %	AverageRF
Aroclor 1016	1000	860	NA	NA	NA	-14	± 20 %	NA
Aroclor 1260 {1}	1000	970	41400	40200	-3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	57900	68300	18	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	56100	63800	14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	130000	149000	15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	79300	85100	7	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A.B\1126F101.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	43	79200	67400	-15	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	440	1670	1480	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	440	1380	1210	-12	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	460	4160	3800	-9	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	420	2940	2460	-16	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	410	2350	1920	-18	NA	± 100 %	AverageRF
Aroclor 1016	500	430	NA	NA	NA	-13	± 20 %	NA
Aroclor 1260 {1}	500	420	2270	1920	-16	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	3420	2960	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	3610	3160	-12	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8260	7050	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	430	6470	5570	-14	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A_R.B\1126F101.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	55	623000	685000	10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	570	13300	15200	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	35400	35600	1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	23000	23300	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	17400	17400	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	500	17200	17000	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	490	37000	36600	-1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	530	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	540	28600	30800	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	530	67400	71300	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	530	43300	46200	7	NA	± 100 %	AverageRF
Aroclor 1260	500	520	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A.B\1126F113.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73100	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	490	1670	1630	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	1380	1300	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	450	4160	3740	-10	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	440	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	430	2350	2030	-14	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	500	450	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	3420	3150	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	460	3610	3350	-7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	8260	7470	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6470	5910	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-9	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A_R.B\1126F113.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	61	623000	755000	21	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	620	13300	16600	25		NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	530	35400	37600	6		NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	550	23000	25200	10		NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	17400	18500	6		NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	17200	18200	6		NA	± 100 %	AverageRF
Aroclor 1016	500	550	NA	NA	NA		11	± 20 %	NA
Aroclor 1260 {1}	500	530	37000	39300	6		NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	570	28000	31900	14		NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	590	28600	33400	17		NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	580	67400	77700	15		NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	590	43300	51300	19		NA	± 100 %	AverageRF
Aroclor 1260	500	570	NA	NA	NA		14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313513
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120413A.B\1204F101.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	49	76600	75200	-2	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	500	2280	2280	0	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1910	1910	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	470	5950	5610	-6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	490	4010	3930	-2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	500	3150	3130	0	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	470	2720	2530	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	4030	3730	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	460	4100	3800	-7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8980	8210	-9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	6670	6320	-5	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313513
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120413A_R.B\1204F101.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	1030000	972000	-6	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	500	32300	32500	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	44700	43900	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	520	52600	54200	3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	39200	39200	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	38500	39300	2	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	1	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	37200	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	450	57900	52200	-10	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	460	56100	51700	-8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	130000	117000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	74500	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-9	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313513
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120413A.B\1204F124.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	49	76600	75400	-2	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	2280	2380	4	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	520	1910	1980	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	5950	5860	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	490	4010	3960	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	3150	3080	-2	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	1	± 20 %	NA
Aroclor 1260 {1}	500	430	2720	2350	-14	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	4030	3450	-14	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	4100	3600	-12	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	440	8980	7830	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6670	6150	-8	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313513
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120413A_R.B\1204F124.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	1030000	943000	-9	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	530	32300	34200	6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	44700	43700	-2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	52600	53500	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	39200	38800	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	500	38500	38300	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	1	± 20 %	NA
Aroclor 1260 {1}	500	400	41400	33200	-20	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	57900	48200	-17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	56100	48900	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	420	130000	109000	-16	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	440	79300	69700	-12	NA	± 100 %	AverageRF
Aroclor 1260	500	420	NA	NA	NA	-16	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313385
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1126F101.D	Continuing Calibration Verification	KWG1313385-1	11/27/2013	10:52		11/27/2013	10:52
1126F102.D	Instrument Blank	KWG1313385-2	11/27/2013	11:13		11/27/2013	11:13
1126F103.D	ZZZZZZ	ZZZZZZ	11/27/2013	11:34		11/27/2013	11:34
1126F104.D	ZZZZZZ	ZZZZZZ	11/27/2013	11:56		11/27/2013	11:56
1126F105.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:17		11/27/2013	12:17
1126F106.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:38		11/27/2013	12:38
1126F107.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:59		11/27/2013	12:59
1126F108.D	Lab Control Sample	KWG1313212-1	11/27/2013	13:20		11/27/2013	13:20
1126F109.D	Duplicate Lab Control Sample	KWG1313212-2	11/27/2013	13:42		11/27/2013	13:42
1126F110.D	Method Blank	KWG1313212-3	11/27/2013	14:03		11/27/2013	14:03
1126F111.D	RM11E-SL932	K1312655-001	11/27/2013	14:24		11/27/2013	14:24
1126F112.D	ZZZZZZ	ZZZZZZ	11/27/2013	14:45		11/27/2013	14:45
1126F113.D	Continuing Calibration Verification	KWG1313385-3	11/27/2013	15:07		11/27/2013	15:07
1126F114.D	Instrument Blank	KWG1313385-4	11/27/2013	15:28		11/27/2013	15:28

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313513
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F101.D	Continuing Calibration Verification	KWG1313513-1	12/5/2013	07:23		12/5/2013	07:23
1204F102.D	Instrument Blank	KWG1313513-2	12/5/2013	07:46		12/5/2013	07:46
1204F103.D	Lab Control Sample	KWG1313282-3	12/5/2013	08:08		12/5/2013	08:08
1204F104.D	Method Blank	KWG1313282-4	12/5/2013	08:31		12/5/2013	08:31
1204F105.D	ZZZZZZ	ZZZZZZ	12/5/2013	08:54		12/5/2013	08:54
1204F106.D	RM11E-SL032	K1312655-002	12/5/2013	09:17		12/5/2013	09:17
1204F110.D	RM11E-SL032MS	KWG1313282-1	12/5/2013	10:43		12/5/2013	10:43
1204F114.D	RM11E-SL032DMS	KWG1313282-2	12/5/2013	12:09		12/5/2013	12:09
1204F118.D	RM11E-SL532	K1312655-003	12/5/2013	13:35		12/5/2013	13:35
1204F122.D	RM11E-SL033	K1312655-004	12/5/2013	15:02		12/5/2013	15:02
1204F123.D	RM11E-SL034	K1312655-005	12/5/2013	15:25		12/5/2013	15:25
1204F124.D	Continuing Calibration Verification	KWG1313513-3	12/5/2013	15:49		12/5/2013	15:49
1204F125.D	Instrument Blank	KWG1313513-4	12/5/2013	16:13		12/5/2013	16:13

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/25/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1313212
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL932	K1312655-001	11/18/13	11/19/13	960mL	2mL	NA	
Method Blank	KWG1313212-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313212-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313212-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/24/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1313282
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL032	K1312655-002	11/18/13	11/19/13	30.240g	4mL	84.2	
RM11E-SL532	K1312655-003	11/18/13	11/19/13	30.458g	4mL	82.6	
RM11E-SL033	K1312655-004	11/18/13	11/19/13	30.167g	4mL	85.2	
RM11E-SL034	K1312655-005	11/18/13	11/19/13	40.071g	4mL	75.3	
Method Blank	KWG1313282-4	NA	NA	40.274g	4mL	NA	
RM11E-SL032MS	KWG1313282-1	11/18/13	11/19/13	30.496g	4mL	84.2	
RM11E-SL032DMS	KWG1313282-2	11/18/13	11/19/13	30.480g	4mL	84.2	
Lab Control Sample	KWG1313282-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Collected: 11/18/2013
Date Received: 11/19/2013
Date Extracted: 11/24/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-SL032
Lab Code: K1312655-002
Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	8.7	11	23.4		1	12/05/13
Aroclor 1260	4.3	2.1	24	26	8.0		1	12/05/13
Aroclor 1268	4.3	2.1	7.0	7.2	2.8		1	12/05/13

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013
		Date Extracted:	11/24/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	9.1	10	9.4		1	12/05/13
Aroclor 1260	4.3	2.1	25	26	3.9		1	12/05/13

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013
		Date Extracted:	11/24/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL033	**Units:**	ug/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	94	120	24.3		1	12/05/13
Aroclor 1260	4.3	2.1	69	70	1.4		1	12/05/13

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312655

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL932	K1312655-001	11/18/2013	11/19/2013
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013
RM11E-SL034	K1312655-005	11/18/2013	11/19/2013
RM11E-SL032MS	KWG1313002-1	11/18/2013	11/19/2013
RM11E-SL032DMS	KWG1313002-2	11/18/2013	11/19/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: Carl Dagen

Date: 12/12/13 Title: Sr. Project Engineer

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Water	**Date Received:**	11/19/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL932	**Units:**	ug/L
Lab Code:	K1312655-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.094**	J	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
2-Methylnaphthalene	**0.032**	J	0.20	0.027	1	11/21/13	12/04/13	KWG1313013	
Acenaphthylene	ND	U	0.20	0.015	1	11/21/13	12/04/13	KWG1313013	
Acenaphthene	ND	U	0.20	0.026	1	11/21/13	12/04/13	KWG1313013	
Fluorene	ND	U	0.20	0.027	1	11/21/13	12/04/13	KWG1313013	
Hexachlorobenzene	ND	U	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
Pentachlorophenol	ND	U	1.0	0.34	1	11/21/13	12/04/13	KWG1313013	
Phenanthrene	ND	U	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
Anthracene	ND	U	0.20	0.024	1	11/21/13	12/04/13	KWG1313013	
Fluoranthene	ND	U	0.20	0.020	1	11/21/13	12/04/13	KWG1313013	
Pyrene	ND	U	0.20	0.019	1	11/21/13	12/04/13	KWG1313013	
Benz(a)anthracene	ND	U	0.20	0.018	1	11/21/13	12/04/13	KWG1313013	
Chrysene	ND	U	0.20	0.028	1	11/21/13	12/04/13	KWG1313013	
Bis(2-ethylhexyl) Phthalate	**0.56**	J	1.0	0.13	1	11/21/13	12/04/13	KWG1313013	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	11/21/13	12/04/13	KWG1313013	*
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	11/21/13	12/04/13	KWG1313013	
Benzo(a)pyrene	ND	U	0.20	0.031	1	11/21/13	12/04/13	KWG1313013	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	11/21/13	12/04/13	KWG1313013	*
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	11/21/13	12/04/13	KWG1313013	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	11/21/13	12/04/13	KWG1313013	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	66	26-110	12/04/13	Acceptable
2-Fluorobiphenyl	65	31-94	12/04/13	Acceptable
2,4,6-Tribromophenol	75	23-127	12/04/13	Acceptable
Terphenyl-d14	91	40-127	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313013-5	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
2-Methylnaphthalene	ND	U	0.20	0.027	1	11/21/13	12/04/13	KWG1313013	
Acenaphthylene	ND	U	0.20	0.015	1	11/21/13	12/04/13	KWG1313013	
Acenaphthene	ND	U	0.20	0.026	1	11/21/13	12/04/13	KWG1313013	
Fluorene	ND	U	0.20	0.027	1	11/21/13	12/04/13	KWG1313013	
Hexachlorobenzene	ND	U	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
Pentachlorophenol	ND	U	0.96	0.34	1	11/21/13	12/04/13	KWG1313013	
Phenanthrene	ND	U	0.20	0.022	1	11/21/13	12/04/13	KWG1313013	
Anthracene	ND	U	0.20	0.024	1	11/21/13	12/04/13	KWG1313013	
Fluoranthene	ND	U	0.20	0.020	1	11/21/13	12/04/13	KWG1313013	
Pyrene	ND	U	0.20	0.019	1	11/21/13	12/04/13	KWG1313013	
Benz(a)anthracene	ND	U	0.20	0.018	1	11/21/13	12/04/13	KWG1313013	
Chrysene	ND	U	0.20	0.028	1	11/21/13	12/04/13	KWG1313013	
Bis(2-ethylhexyl) Phthalate	ND	U	0.96	0.13	1	11/21/13	12/04/13	KWG1313013	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	11/21/13	12/04/13	KWG1313013	*
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	11/21/13	12/04/13	KWG1313013	
Benzo(a)pyrene	ND	U	0.20	0.031	1	11/21/13	12/04/13	KWG1313013	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	11/21/13	12/04/13	KWG1313013	*
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	11/21/13	12/04/13	KWG1313013	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	11/21/13	12/04/13	KWG1313013	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	74	26-110	12/04/13	Acceptable
2-Fluorobiphenyl	80	31-94	12/04/13	Acceptable
2,4,6-Tribromophenol	71	23-127	12/04/13	Acceptable
Terphenyl-d14	95	40-127	12/04/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL032	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	30	15	5	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	30	14	5	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	**39**	D	30	13	5	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	30	16	5	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	30	17	5	11/21/13	12/04/13	KWG1313002	
Phenanthrene	**150**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Anthracene	**59**	D	30	16	5	11/21/13	12/04/13	KWG1313002	
Fluoranthene	**370**	D	30	19	5	11/21/13	12/04/13	KWG1313002	
Pyrene	**370**	D	30	19	5	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	**170**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Chrysene	**260**	D	30	21	5	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	30	17	5	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	**68**	JD	300	27	5	11/21/13	12/04/13	KWG1313002	*
Bis(2-ethylhexyl) Phthalate	**92**	JD	300	45	5	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	**330**	D	30	17	5	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	**110**	D	30	20	5	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	**210**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	**240**	D	30	16	5	11/21/13	12/04/13	KWG1313002	
Dibenz(a,h)anthracene	**38**	D	30	15	5	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	**210**	D	30	19	5	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	56	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	66	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	73	10-119	12/04/13	Acceptable
Terphenyl-d14	67	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	30	15	5	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	30	14	5	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	**33**	D	30	13	5	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	30	16	5	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	30	17	5	11/21/13	12/04/13	KWG1313002	
Phenanthrene	**160**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Anthracene	**49**	D	30	16	5	11/21/13	12/04/13	KWG1313002	
Fluoranthene	**400**	D	30	19	5	11/21/13	12/04/13	KWG1313002	
Pyrene	**450**	D	30	19	5	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	**190**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Chrysene	**280**	D	30	21	5	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	30	17	5	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	**120**	JD	300	27	5	11/21/13	12/04/13	KWG1313002	
Bis(2-ethylhexyl) Phthalate	**170**	JD	300	45	5	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	**410**	D	30	17	5	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	**110**	D	30	20	5	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	**250**	D	30	18	5	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	**340**	D	30	16	5	11/21/13	12/04/13	KWG1313002	*
Dibenz(a,h)anthracene	**39**	D	30	15	5	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	**170**	D	30	19	5	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	36	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	59	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	62	10-119	12/04/13	Acceptable
Terphenyl-d14	78	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL033	**Units:**	ug/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	120	58	20	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	120	56	20	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	ND	U	120	52	20	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	120	64	20	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	120	66	20	11/21/13	12/04/13	KWG1313002	
Phenanthrene	**500**	D	120	72	20	11/21/13	12/04/13	KWG1313002	
Anthracene	**93**	JD	120	64	20	11/21/13	12/04/13	KWG1313002	
Fluoranthene	**1000**	D	120	74	20	11/21/13	12/04/13	KWG1313002	
Pyrene	**1100**	D	120	74	20	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	**430**	D	120	72	20	11/21/13	12/04/13	KWG1313002	
Chrysene	**530**	D	120	82	20	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	120	66	20	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	ND	U	1200	110	20	11/21/13	12/04/13	KWG1313002	
Bis(2-ethylhexyl) Phthalate	ND	U	1200	180	20	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	**760**	D	120	68	20	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	**220**	D	120	80	20	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	**610**	D	120	72	20	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	**810**	D	120	64	20	11/21/13	12/04/13	KWG1313002	*
Dibenz(a,h)anthracene	**99**	JD	120	60	20	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	**400**	D	120	74	20	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	45	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	65	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	56	10-119	12/04/13	Acceptable
Terphenyl-d14	80	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL034	**Units:**	ug/Kg
Lab Code:	K1312655-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	33	15	5	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	33	14	5	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	ND	U	33	13	5	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	33	16	5	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	33	17	5	11/21/13	12/04/13	KWG1313002	
Phenanthrene	**28**	JD	33	18	5	11/21/13	12/04/13	KWG1313002	
Anthracene	ND	U	33	16	5	11/21/13	12/04/13	KWG1313002	
Fluoranthene	**60**	D	33	19	5	11/21/13	12/04/13	KWG1313002	
Pyrene	**69**	D	33	19	5	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	**27**	JD	33	18	5	11/21/13	12/04/13	KWG1313002	
Chrysene	**52**	D	33	21	5	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	33	17	5	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	**99**	JD	330	27	5	11/21/13	12/04/13	KWG1313002	
Bis(2-ethylhexyl) Phthalate	**240**	JD	330	45	5	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	**69**	D	33	17	5	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	ND	U	33	20	5	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	**37**	D	33	18	5	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	**65**	D	33	16	5	11/21/13	12/04/13	KWG1313002	*
Dibenz(a,h)anthracene	ND	U	33	15	5	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	**36**	D	33	19	5	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	38	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	59	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	66	10-119	12/04/13	Acceptable
Terphenyl-d14	76	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313002-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.0	2.9	1	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	5.0	2.8	1	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	ND	U	5.0	2.6	1	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	5.0	3.3	1	11/21/13	12/04/13	KWG1313002	
Phenanthrene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Anthracene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluoranthene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	
Pyrene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Chrysene	ND	U	5.0	4.1	1	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	5.0	3.3	1	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	ND	U	50	5.3	1	11/21/13	12/04/13	KWG1313002	*
Bis(2-ethylhexyl) Phthalate	ND	U	50	8.9	1	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	ND	U	5.0	3.4	1	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	ND	U	5.0	4.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Dibenz(a,h)anthracene	ND	U	5.0	3.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	58	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	56	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	43	10-119	12/04/13	Acceptable
Terphenyl-d14	64	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Storm water

Service Request: K1312655

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
Batch QC	K1312589-001	80	75	105	89
RM11E-SL932	K1312655-001	66	65	75	91
Method Blank	KWG1313013-5	74	80	71	95
Batch QCMS	KWG1313013-1	74	75	102	79
Batch QCDMS	KWG1313013-2	74	76	101	64
Lab Control Sample	KWG1313013-3	77	77	84	86
Duplicate Lab Control Sample	KWG1313013-4	88	82	89	91

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	26-110
Sur2 =	2-Fluorobiphenyl	31-94
Sur3 =	2,4,6-Tribromophenol	23-127
Sur4 =	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-SL032	K1312655-002	56 D	66 D	73 D	67 D
RM11E-SL532	K1312655-003	36 D	59 D	62 D	78 D
RM11E-SL033	K1312655-004	45 D #	65 D #	56 D #	80 D #
RM11E-SL034	K1312655-005	38 D	59 D	66 D	76 D
Method Blank	KWG1313002-5	58	56	43	64
RM11E-SL032MS	KWG1313002-1	55 D	52 D	59 D	63 D
RM11E-SL032DMS	KWG1313002-2	58 D	52 D	54 D	60 D
Lab Control Sample	KWG1313002-3	43	40	40	46
Duplicate Lab Control Sample	KWG1313002-4	62	51	52	64

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	27-91
Sur2 =	2-Fluorobiphenyl	25-97
Sur3 =	2,4,6-Tribromophenol	10-119
Sur4 =	Terphenyl-d14	33-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 11:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS26\DATA\120413\1204F004.D
Instrument ID: MS26
Analysis Method: 8270D

Lab Code: KWG1313458-2
Analysis Lot: KWG1313458

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	535,056	7.08	308,060	10.02	604,333	13.46
	Upper Limit ==>	1,070,112	7.58	616,120	10.52	1,208,666	13.96
	Lower Limit ==>	267,528	6.58	154,030	9.52	302,167	12.96
	ICAL Result ==>	587,905	7.15	317,140	10.18	604,801	13.55
Associated Analyses							
Method Blank	KWG1313013-5	433,479	7.08	225,736	10.02	404,528	13.46
Lab Control Sample	KWG1313013-3	444,738	7.08	248,533	10.02	469,121	13.46
Duplicate Lab Control Sample	KWG1313013-4	507,950	7.08	290,911	10.02	550,144	13.46
Batch QCMS	KWG1313013-1	499,647	7.08	290,051	10.02	563,985	13.47
Batch QCDMS	KWG1313013-2	498,192	7.08	294,601	10.03	575,836	13.47
Batch QC	K1312589-001	495,127	7.08	293,739	10.03	571,690	13.47
RM11E-SL532	K1312655-003	460,193	7.08	279,551	10.03	519,022	13.46
RM11E-SL033	K1312655-004	461,711	7.08	277,567	10.03	492,608	13.47
RM11E-SL034	K1312655-005	474,677	7.08	278,433	10.03	507,766	13.46
RM11E-SL932	K1312655-001	474,209	7.08	279,150	10.03	493,898	13.47

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 11:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS26\DATA\120413\1204F004.D
Instrument ID: MS26
Analysis Method: 8270D

Lab Code: KWG1313458-2
Analysis Lot: KWG1313458

		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT
	Results ==>	616,513	17.25	562,856	20.04
	Upper Limit ==>	1,233,026	17.75	1,125,712	20.54
	Lower Limit ==>	308,257	16.75	281,428	19.54
	ICAL Result ==>	640,853	17.34	564,363	20.22
Associated Analyses					
Method Blank	KWG1313013-5	400,770	17.25	359,966	20.04
Lab Control Sample	KWG1313013-3	478,751	17.25	423,731	20.05
Duplicate Lab Control Sample	KWG1313013-4	537,469	17.25	473,405	20.04
Batch QCMS	KWG1313013-1	593,551	17.25	548,295	20.07
Batch QCDMS	KWG1313013-2	591,659	17.25	547,820	20.07
Batch QC	K1312589-001	588,941	17.25	538,719	20.07
RM11E-SL532	K1312655-003	511,217	17.25	505,838	20.07
RM11E-SL033	K1312655-004	483,891	17.25	483,429	20.06
RM11E-SL034	K1312655-005	499,474	17.25	494,943	20.07
RM11E-SL932	K1312655-001	433,666	17.25	404,428	20.06

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/04/2013
		Time Analyzed:	13:23

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\120413\1204F003.D	**Lab Code:**	KWG1313505-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1313505
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	428,410	10.65	241,857	13.48	463,692	15.91
	Upper Limit ==>	856,820	11.15	483,714	13.98	927,384	16.41
	Lower Limit ==>	214,205	10.15	120,929	12.98	231,846	15.41
	ICAL Result ==>	411,958	10.64	230,718	13.49	428,281	15.92
Associated Analyses							
Method Blank	KWG1313002-5	377,623	10.64	204,506	13.48	388,978	15.91
Lab Control Sample	KWG1313002-3	423,868	10.65	221,092	13.48	403,400	15.91
Duplicate Lab Control Sample	KWG1313002-4	391,453	10.64	228,170	13.48	407,464	15.91
RM11E-SL032MS	KWG1313002-1	401,409	10.63	228,228	13.48	402,347	15.91
RM11E-SL032DMS	KWG1313002-2	422,256	10.64	220,467	13.48	393,159	15.91
RM11E-SL032	K1312655-002	411,954	10.65	207,631	13.48	387,075	15.92

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 13:23

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120413\1204F003.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313505-2
Analysis Lot: KWG1313505

		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT
	Results ==>	459,774	20.46	328,714	24.13
	Upper Limit ==>	919,548	20.96	657,428	24.63
	Lower Limit ==>	229,887	19.96	164,357	23.63
	ICAL Result ==>	442,598	20.46	342,958	24.13
Associated Analyses					
Method Blank	KWG1313002-5	386,256	20.44	292,781	24.12
Lab Control Sample	KWG1313002-3	405,062	20.46	307,189	24.12
Duplicate Lab Control Sample	KWG1313002-4	397,606	20.45	296,855	24.13
RM11E-SL032MS	KWG1313002-1	391,264	20.46	294,091	24.16
RM11E-SL032DMS	KWG1313002-2	383,871	20.47	299,464	24.17
RM11E-SL032	K1312655-002	385,396	20.48	320,652	24.19

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1312589-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313013

		Batch QCMS KWG1313013-1 Matrix Spike			Batch QCDMS KWG1313013-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	0.049	3.28	4.76	68	3.14	4.95	62	44-97	4	30
2-Methylnaphthalene	ND	3.98	4.76	84	3.96	4.95	80	16-128	0	30
Acenaphthylene	0.035	4.36	4.76	91	4.33	4.95	87	52-108	1	30
Acenaphthene	ND	4.12	4.76	87	4.11	4.95	83	48-102	0	30
Fluorene	ND	4.45	4.76	93	4.35	4.95	88	48-105	2	30
Hexachlorobenzene	ND	4.38	4.76	92	4.09	4.95	83	47-101	7	30
Pentachlorophenol	0.69	6.30	4.76	118	6.34	4.95	114	39-123	1	30
Phenanthrene	0.085	4.61	4.76	95	4.41	4.95	87	52-104	5	30
Anthracene	0.026	3.96	4.76	83	3.85	4.95	77	48-103	3	30
Fluoranthene	0.16	4.55	4.76	92	4.19	4.95	82	53-107	8	30
Pyrene	0.25	4.70	4.76	94	4.52	4.95	86	51-109	4	30
Benz(a)anthracene	0.063	4.49	4.76	93	4.34	4.95	86	58-106	4	30
Chrysene	0.11	3.97	4.76	81	3.83	4.95	75	57-108	4	30
Bis(2-ethylhexyl) Phthalate	2.3	6.56	4.76	89	6.16	4.95	77	42-133	6	30
Benzo(b)fluoranthene	0.14	5.40	4.76	110	5.15	4.95	101	57-110	5	30
Benzo(k)fluoranthene	0.038	3.64	4.76	76	3.47	4.95	69	56-109	5	30
Benzo(a)pyrene	0.086	4.43	4.76	91	4.31	4.95	85	48-107	3	30
Indeno(1,2,3-cd)pyrene	0.18	6.18	4.76	126 *	6.07	4.95	119 *	56-110	2	30
Dibenz(a,h)anthracene	ND	4.64	4.76	97	4.39	4.95	89	56-108	6	30
Benzo(g,h,i)perylene	0.12	3.87	4.76	79	3.73	4.95	73	56-111	4	30

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL032	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

		RM11E-SL032MS KWG1313002-1 Matrix Spike			RM11E-SL032DMS KWG1313002-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	101	147	68	85.2	147	58	12-104	17	40
2-Methylnaphthalene	ND	97.8	147	66	87.0	147	59	19-99	12	40
Acenaphthylene	39	130	147	62	116	147	52	20-106	12	40
Acenaphthene	ND	105	147	71	99.7	147	68	10-132	5	40
Fluorene	ND	105	147	72	97.7	147	66	12-129	8	40
Phenanthrene	150	295	147	97	206	147	37	15-121	35	40
Anthracene	59	151	147	62	136	147	52	14-113	10	40
Fluoranthene	370	473	147	73	382	147	11	10-142	21	40
Pyrene	370	541	147	117	412	147	30	17-129	27	40
Benz(a)anthracene	170	273	147	70	224	147	37	10-137	19	40
Chrysene	260	364	147	68	319	147	38	10-146	13	40
Hexachlorobenzene	ND	94.0	147	64	89.9	147	61	30-106	4	40
Pentachlorophenol	68	165	147	66	187	147	81	10-123	13	40
Bis(2-ethylhexyl) Phthalate	92	302	147	142 *	172	147	54	20-138	55 *	40
Benzo(b)fluoranthene	330	445	147	77	388	147	38	23-122	14	40
Benzo(k)fluoranthene	110	226	147	78	203	147	62	28-119	11	40
Benzo(a)pyrene	210	354	147	99	291	147	56	13-126	20	40
Indeno(1,2,3-cd)pyrene	240	316	147	52	298	147	40	22-129	6	40
Dibenz(a,h)anthracene	38	137	147	68	123	147	58	27-123	11	40
Benzo(g,h,i)perylene	210	322	147	78	297	147	61	20-121	8	40

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/21/2013
Date Analyzed: 12/04/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313013

	Lab Control Sample KWG1313013-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313013-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.58	5.00	72	3.53	5.00	71	43-98	1	30
2-Methylnaphthalene	3.94	5.00	79	3.97	5.00	79	38-102	1	30
Acenaphthylene	4.76	5.00	95	4.69	5.00	94	52-108	1	30
Acenaphthene	4.20	5.00	84	4.15	5.00	83	48-102	1	30
Fluorene	4.37	5.00	87	4.31	5.00	86	51-106	1	30
Hexachlorobenzene	4.60	5.00	92	4.49	5.00	90	55-105	3	30
Pentachlorophenol	3.80	5.00	76	3.72	5.00	74	33-106	2	30
Phenanthrene	4.63	5.00	93	4.49	5.00	90	56-103	3	30
Anthracene	4.46	5.00	89	4.32	5.00	86	55-103	3	30
Fluoranthene	4.59	5.00	92	4.37	5.00	87	56-110	5	30
Pyrene	5.02	5.00	100	5.01	5.00	100	59-109	0	30
Benz(a)anthracene	4.80	5.00	96	4.72	5.00	94	61-104	2	30
Chrysene	4.23	5.00	85	4.10	5.00	82	61-107	3	30
Bis(2-ethylhexyl) Phthalate	4.62	5.00	92	4.55	5.00	91	61-118	1	30
Benzo(b)fluoranthene	5.42	5.00	108 *	5.40	5.00	108 *	62-107	1	30
Benzo(k)fluoranthene	4.07	5.00	81	3.94	5.00	79	63-108	3	30
Benzo(a)pyrene	4.97	5.00	99	4.91	5.00	98	56-105	1	30
Indeno(1,2,3-cd)pyrene	6.57	5.00	131 *	6.53	5.00	131 *	63-108	1	30
Dibenz(a,h)anthracene	5.12	5.00	102	4.98	5.00	100	62-108	3	30
Benzo(g,h,i)perylene	4.32	5.00	86	4.21	5.00	84	62-108	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013
Date Analyzed: 12/04/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313002

	Lab Control Sample KWG1313002-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313002-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	95.8	250	38	137	250	55	27-93	35	40
2-Methylnaphthalene	94.9	250	38	133	250	53	27-96	33	40
Acenaphthylene	106	250	42	135	250	54	33-99	24	40
Acenaphthene	114	250	46	137	250	55	32-91	18	40
Fluorene	102	250	41	133	250	53	32-96	26	40
Phenanthrene	114	250	45	140	250	56	39-98	21	40
Anthracene	117	250	47	144	250	58	40-98	21	40
Fluoranthene	136	250	54	160	250	64	42-104	16	40
Pyrene	137	250	55	172	250	69	45-106	23	40
Benz(a)anthracene	138	250	55	167	250	67	44-108	19	40
Chrysene	138	250	55	170	250	68	46-108	21	40
Hexachlorobenzene	117	250	47	137	250	55	40-99	16	40
Pentachlorophenol	77.0	250	31	100	250	40	21-97	26	40
Bis(2-ethylhexyl) Phthalate	145	250	58	172	250	69	47-110	17	40
Benzo(b)fluoranthene	141	250	56	176	250	70	46-106	22	40
Benzo(k)fluoranthene	139	250	55	172	250	69	47-107	21	40
Benzo(a)pyrene	143	250	57	173	250	69	42-110	19	40
Indeno(1,2,3-cd)pyrene	139	250	55	174	250	70	47-109	23	40
Dibenz(a,h)anthracene	127	250	51	167	250	67	47-106	27	40
Benzo(g,h,i)perylene	134	250	53	177	250	71	44-108	28	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013
		Time Analyzed:	13:38

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1313013-5	**File ID:**	J:\MS26\DATA\120413\1204F008.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313013

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313013-3	J:\MS26\DATA\120413\1204F009.D	12/04/13	14:11
Duplicate Lab Control Sample	KWG1313013-4	J:\MS26\DATA\120413\1204F010.D	12/04/13	14:43
Batch QCMS	KWG1313013-1	J:\MS26\DATA\120413\1204F011.D	12/04/13	15:15
Batch QCDMS	KWG1313013-2	J:\MS26\DATA\120413\1204F012.D	12/04/13	15:47
Batch QC	K1312589-001	J:\MS26\DATA\120413\1204F013.D	12/04/13	16:20
RM11E-SL932	K1312655-001	J:\MS26\DATA\120413\1204F025.D	12/04/13	22:46

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013
		Time Analyzed:	16:00

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313002-5	**File ID:**	J:\MS06\DATA\120413\1204F007.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313002-3	J:\MS06\DATA\120413\1204F008.D	12/04/13	16:38
Duplicate Lab Control Sample	KWG1313002-4	J:\MS06\DATA\120413\1204F009.D	12/04/13	17:15
RM11E-SL032MS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/13	17:53
RM11E-SL032DMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/13	18:30
RM11E-SL032	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/13	19:07
RM11E-SL532	K1312655-003	J:\MS26\DATA\120413\1204F022.D	12/04/13	21:10
RM11E-SL033	K1312655-004	J:\MS26\DATA\120413\1204F023.D	12/04/13	21:42
RM11E-SL034	K1312655-005	J:\MS26\DATA\120413\1204F024.D	12/04/13	22:14

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013
		Time Analyzed:	14:11

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1313013-3	**File ID:**	J:\MS26\DATA\120413\1204F009.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313013

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313013-5	J:\MS26\DATA\120413\1204F008.D	12/04/13	13:38
Batch QCMS	KWG1313013-1	J:\MS26\DATA\120413\1204F011.D	12/04/13	15:15
Batch QCDMS	KWG1313013-2	J:\MS26\DATA\120413\1204F012.D	12/04/13	15:47
Batch QC	K1312589-001	J:\MS26\DATA\120413\1204F013.D	12/04/13	16:20
RM11E-SL932	K1312655-001	J:\MS26\DATA\120413\1204F025.D	12/04/13	22:46

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013
		Time Analyzed:	16:38

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313002-3	**File ID:**	J:\MS06\DATA\120413\1204F008.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313002-5	J:\MS06\DATA\120413\1204F007.D	12/04/13	16:00
RM11E-SL032MS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/13	17:53
RM11E-SL032DMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/13	18:30
RM11E-SL032	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/13	19:07
RM11E-SL532	K1312655-003	J:\MS26\DATA\120413\1204F022.D	12/04/13	21:10
RM11E-SL033	K1312655-004	J:\MS26\DATA\120413\1204F023.D	12/04/13	21:42
RM11E-SL034	K1312655-005	J:\MS26\DATA\120413\1204F024.D	12/04/13	22:14

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 10:57

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS26\DATA\120413\1204F003.D
Instrument ID: MS26
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313458

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.3	243029	PASS
68	69	0	2	1.6	4821	PASS
69	198	0	100	20.4	305121	PASS
70	69	0	2	0.5	1609	PASS
127	198	10	80	37.6	562133	PASS
197	198	0	2	0.2	2437	PASS
198	442	30	100	43.9	1494016	PASS
199	198	5	9	6.7	100173	PASS
275	198	10	60	34.0	507306	PASS
365	442	1	50	2.0	69522	PASS
441	443	0	100	76.7	501824	PASS
442	442	100	100	100.0	3403605	PASS
443	442	15	24	19.2	654080	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313458-2	J:\MS26\DATA\120413\1204F004.D	12/04/2013	11:30	
Method Blank	KWG1313013-5	J:\MS26\DATA\120413\1204F008.D	12/04/2013	13:38	
Lab Control Sample	KWG1313013-3	J:\MS26\DATA\120413\1204F009.D	12/04/2013	14:11	
Duplicate Lab Control Sample	KWG1313013-4	J:\MS26\DATA\120413\1204F010.D	12/04/2013	14:43	
Batch QCMS	KWG1313013-1	J:\MS26\DATA\120413\1204F011.D	12/04/2013	15:15	
Batch QCDMS	KWG1313013-2	J:\MS26\DATA\120413\1204F012.D	12/04/2013	15:47	
Batch QC	K1312589-001	J:\MS26\DATA\120413\1204F013.D	12/04/2013	16:20	
RM11E-SL532	K1312655-003	J:\MS26\DATA\120413\1204F022.D	12/04/2013	21:10	
RM11E-SL033	K1312655-004	J:\MS26\DATA\120413\1204F023.D	12/04/2013	21:42	
RM11E-SL034	K1312655-005	J:\MS26\DATA\120413\1204F024.D	12/04/2013	22:14	
RM11E-SL932	K1312655-001	J:\MS26\DATA\120413\1204F025.D	12/04/2013	22:46	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013
Time Analyzed: 12:45

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120413\1204F002.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313505

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	48.7	86943	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	46.7	83396	PASS
70	69	0	2	0.2	176	PASS
127	198	25	75	50.9	90933	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	178664	PASS
199	198	5	9	8.3	14811	PASS
275	198	10	30	24.7	44066	PASS
365	198	1	100	7.7	13718	PASS
441	443	0	100	71.9	14879	PASS
442	198	40	110	58.9	105205	PASS
443	442	15	24	19.7	20694	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313505-2	J:\MS06\DATA\120413\1204F003.D	12/04/2013	13:23	
Method Blank	KWG1313002-5	J:\MS06\DATA\120413\1204F007.D	12/04/2013	16:00	
Lab Control Sample	KWG1313002-3	J:\MS06\DATA\120413\1204F008.D	12/04/2013	16:38	
Duplicate Lab Control Sample	KWG1313002-4	J:\MS06\DATA\120413\1204F009.D	12/04/2013	17:15	
RM11E-SL032MS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/2013	17:53	
RM11E-SL032DMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/2013	18:30	
RM11E-SL032	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/2013	19:07	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\120313\1203F005.D	G	J:\MS06\DATA\120313\1203F011.D
B	J:\MS06\DATA\120313\1203F006.D	H	J:\MS06\DATA\120313\1203F012.D
C	J:\MS06\DATA\120313\1203F007.D	I	J:\MS06\DATA\120313\1203F013.D
D	J:\MS06\DATA\120313\1203F008.D	J	J:\MS06\DATA\120313\1203F014.D
E	J:\MS06\DATA\120313\1203F009.D		
F	J:\MS06\DATA\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	0.991	B	100	1.06	C	200	1.09	D	500	1.18	E	1000	1.20
	F	2000	1.23	G	3000	1.23	H	5000	1.26	I	7000	1.30	J	10000	1.30
2-Methylnaphthalene	A	50	0.555	B	100	0.614	C	200	0.585	D	500	0.649	E	1000	0.690
	F	2000	0.707	G	3000	0.685	H	5000	0.709	I	7000	0.737	J	10000	0.742
Acenaphthylene	A	50	1.63	B	100	2.02	C	200	1.89	D	500	2.02	E	1000	2.22
	F	2000	2.07	G	3000	2.16	H	5000	2.38	I	7000	2.42	J	10000	2.27
Acenaphthene	A	50	0.906	B	100	1.01	C	200	1.04	D	500	1.10	E	1000	1.18
	F	2000	1.10	G	3000	1.20	H	5000	1.30	I	7000	1.38	J	10000	1.31
Fluorene	A	50	1.17	B	100	1.42	C	200	1.40	D	500	1.44	E	1000	1.47
	F	2000	1.48	G	3000	1.51	H	5000	1.69	I	7000	1.76	J	10000	1.65
Hexachlorobenzene				B	100	0.240	C	200	0.271	D	500	0.244	E	1000	0.284
	F	2000	0.280	G	3000	0.274	H	5000	0.297	I	7000	0.299	J	10000	0.317
Pentachlorophenol										D	500	0.133	E	1000	0.175
	F	2000	0.179	G	3000	0.181	H	5000	0.213	I	7000	0.205	J	10000	0.222
Phenanthrene	A	50	1.11	B	100	1.15	C	200	1.03	D	500	1.06	E	1000	1.14
	F	2000	1.11	G	3000	1.16	H	5000	1.27	I	7000	1.23	J	10000	1.34
Anthracene	A	50	1.13	B	100	1.03	C	200	1.07	D	500	1.11	E	1000	1.18
	F	2000	1.19	G	3000	1.21	H	5000	1.34	I	7000	1.32	J	10000	1.38
Fluoranthene	A	50	0.951	B	100	1.29	C	200	1.25	D	500	1.13	E	1000	1.30
	F	2000	1.30	G	3000	1.34	H	5000	1.44	I	7000	1.41	J	10000	1.52
Pyrene	A	50	1.11	B	100	1.46	C	200	1.32	D	500	1.36	E	1000	1.38
	F	2000	1.41	G	3000	1.42	H	5000	1.51	I	7000	1.40	J	10000	1.35
Benz(a)anthracene	A	50	1.11	B	100	1.17	C	200	1.10	D	500	1.16	E	1000	1.18
	F	2000	1.21	G	3000	1.24	H	5000	1.36	I	7000	1.26	J	10000	1.19
Chrysene	A	50	1.07	B	100	1.09	C	200	1.12	D	500	1.12	E	1000	1.18
	F	2000	1.17	G	3000	1.15	H	5000	1.24	I	7000	1.15	J	10000	1.05
Bis(2-ethylhexyl) Phthalate							C	200	1.04	D	500	0.950	E	1000	1.01
	F	2000	1.05	G	3000	1.04	H	5000	1.13	I	7000	1.04	J	10000	0.945

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.979	B	100	1.01	C	200	0.977	D	500	1.11	E	1000	1.12
	F	2000	1.19	G	3000	1.22	H	5000	1.41	I	7000	1.41	J	10000	1.49
Benzo(k)fluoranthene	A	50	0.916	B	100	1.28	C	200	1.09	D	500	1.25	E	1000	1.20
	F	2000	1.23	G	3000	1.30	H	5000	1.42	I	7000	1.32	J	10000	1.30
Benzo(a)pyrene	A	50	0.879	B	100	1.04	C	200	0.897	D	500	1.01	E	1000	1.04
	F	2000	1.09	G	3000	1.16	H	5000	1.26	I	7000	1.24	J	10000	1.28
Indeno(1,2,3-cd)pyrene	A	50	0.710	B	100	0.822	C	200	0.729	D	500	0.865	E	1000	0.890
	F	2000	0.943	G	3000	0.964	H	5000	1.09	I	7000	1.09	J	10000	1.20
Dibenz(a,h)anthracene				B	100	0.873	C	200	0.866	D	500	0.931	E	1000	0.980
	F	2000	1.04	G	3000	1.05	H	5000	1.14	I	7000	1.13	J	10000	1.18
Benzo(g,h,i)perylene	A	50	0.875	B	100	0.937	C	200	0.956	D	500	1.03	E	1000	1.02
	F	2000	1.09	G	3000	1.07	H	5000	1.17	I	7000	1.14	J	10000	1.17
Nitrobenzene-d5				B	100	1.37	C	200	1.08	D	500	1.36	E	1000	1.28
	F	2000	1.39	G	3000	1.49	H	5000	1.53	I	7000	1.50	J	10000	1.49
2-Fluorobiphenyl				B	100	1.33	C	200	1.67	D	500	1.49	E	1000	1.58
	F	2000	1.46	G	3000	1.55	H	5000	1.72	I	7000	1.74	J	10000	1.63
2,4,6-Tribromophenol							C	200	0.142	D	500	0.143	E	1000	0.145
	F	2000	0.149	G	3000	0.158	H	5000	0.173	I	7000	0.173	J	10000	0.189
Terphenyl-d14				B	100	0.942	C	200	0.846	D	500	0.902	E	1000	0.893
	F	2000	0.925	G	3000	0.921	H	5000	1.02	I	7000	0.934	J	10000	0.857

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	8.8		≤ 20	1.19		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.6		≤ 20	0.667		0.300
Acenaphthylene	MS	AverageRF	% RSD	11.2		≤ 20	2.11		0.900
Acenaphthene	MS	AverageRF	% RSD	12.8		≤ 20	1.15		0.700
Fluorene	MS	AverageRF	% RSD	11.3		≤ 20	1.50		0.800
Hexachlorobenzene	MS	AverageRF	% RSD	8.9		≤ 20	0.279		0.100
Pentachlorophenol	MS	AverageRF	% RSD	16.0		≤ 20	0.187		0.050
Phenanthrene	MS	AverageRF	% RSD	8.1		≤ 20	1.16		0.600
Anthracene	MS	AverageRF	% RSD	9.9		≤ 20	1.19		0.600
Fluoranthene	MS	AverageRF	% RSD	12.5		≤ 20	1.29		0.600
Pyrene	MS	AverageRF	% RSD	7.8		≤ 20	1.37		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	6.4		≤ 20	1.20		0.600
Chrysene	MS	AverageRF	% RSD	5.0		≤ 20	1.13		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	5.8		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	15.9		≤ 20	1.19		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	11.4		≤ 20	1.23		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.2		≤ 20	1.09		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	17.2		≤ 20	0.930		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	11.5		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.6		≤ 20	1.05		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	10.3		≤ 20	1.39		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	8.4		≤ 20	1.57		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	10.9		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	5.5		≤ 20	0.915		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12950
Units: ng/ml

File ID: J:\MS06\DATA\120313\1203F015.D
J:\MS06\DATA\120313\1203F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	1.19	1.22	3	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3100	0.667	0.689	3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.11	1.91	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	3000	1.15	1.15	0	NA	± 30 %	AverageRF
Fluorene	3000	3000	1.50	1.52	1	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2900	0.279	0.269	-4	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.187	0.198	6	NA	± 30 %	AverageRF
Phenanthrene	3000	3000	1.16	1.15	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	1.19	1.21	1	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.29	1.29	0	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.36	-1	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.20	1.13	-6	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.13	1.08	-5	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	1.02	0.991	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.19	1.32	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.23	1.17	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3200	1.09	1.14	5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.930	0.888	-4	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	1.02	1.00	-2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2900	1.05	1.00	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS26\DATA\102513\1025F023.D	G	J:\MS26\DATA\102513\1025F029.D
B	J:\MS26\DATA\102513\1025F024.D	H	J:\MS26\DATA\102513\1025F030.D
C	J:\MS26\DATA\102513\1025F025.D	I	J:\MS26\DATA\102513\1025F031.D
D	J:\MS26\DATA\102513\1025F026.D	J	J:\MS26\DATA\102513\1025F032.D
E	J:\MS26\DATA\102513\1025F027.D		
F	J:\MS26\DATA\102513\1025F028.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.06	B	100	1.12	C	200	1.08	D	500	1.04	E	1000	1.04
	F	2000	1.00	G	3000	0.992	H	5000	0.976	I	7000	0.940	J	10000	0.905
2-Methylnaphthalene	A	50	0.428	B	100	0.516	C	200	0.508	D	500	0.527	E	1000	0.555
	F	2000	0.570	G	3000	0.563	H	5000	0.559	I	7000	0.544	J	10000	0.530
Acenaphthylene	A	50	1.55	B	100	1.69	C	200	1.59	D	500	1.57	E	1000	1.75
	F	2000	1.73	G	3000	1.84	H	5000	1.93	I	7000	1.92	J	10000	1.90
Acenaphthene	A	50	1.03	B	100	1.17	C	200	1.19	D	500	1.11	E	1000	1.15
	F	2000	1.10	G	3000	1.10	H	5000	1.11	I	7000	1.10	J	10000	1.09
Fluorene	A	50	1.36	B	100	1.49	C	200	1.48	D	500	1.43	E	1000	1.46
	F	2000	1.39	G	3000	1.39	H	5000	1.40	I	7000	1.38	J	10000	1.36
Hexachlorobenzene				B	100	0.402	C	200	0.380	D	500	0.371	E	1000	0.374
	F	2000	0.350	G	3000	0.350	H	5000	0.345	I	7000	0.335	J	10000	0.329
Pentachlorophenol										D	500	0.107	E	1000	0.126
	F	2000	0.150	G	3000	0.159	H	5000	0.179	I	7000	0.186	J	10000	0.194
Phenanthrene	A	50	1.03	B	100	1.17	C	200	1.09	D	500	1.07	E	1000	1.10
	F	2000	1.05	G	3000	1.05	H	5000	1.03	I	7000	1.00	J	10000	0.970
Anthracene	A	50	1.05	B	100	1.15	C	200	1.08	D	500	1.08	E	1000	1.11
	F	2000	1.07	G	3000	1.07	H	5000	1.06	I	7000	1.02	J	10000	0.984
Fluoranthene	A	50	1.20	B	100	1.29	C	200	1.22	D	500	1.21	E	1000	1.24
	F	2000	1.18	G	3000	1.19	H	5000	1.19	I	7000	1.15	J	10000	1.09
Pyrene	A	50	1.20	B	100	1.27	C	200	1.20	D	500	1.17	E	1000	1.17
	F	2000	1.16	G	3000	1.15	H	5000	1.11	I	7000	1.07	J	10000	1.06
Benz(a)anthracene	A	50	0.939	B	100	0.975	C	200	0.940	D	500	0.909	E	1000	0.933
	F	2000	0.940	G	3000	0.963	H	5000	0.975	I	7000	0.972	J	10000	0.978
Chrysene	A	50	1.16	B	100	1.19	C	200	1.17	D	500	1.11	E	1000	1.08
	F	2000	1.04	G	3000	1.05	H	5000	1.05	I	7000	1.00	J	10000	1.01
Bis(2-ethylhexyl) Phthalate				B	100	0.695	C	200	0.669	D	500	0.676	E	1000	0.696
	F	2000	0.705	G	3000	0.705	H	5000	0.693	I	7000	0.687	J	10000	0.687

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.788	B	100	0.794	C	200	0.818	D	500	0.845	E	1000	0.881
	F	2000	0.928	G	3000	0.980	H	5000	1.02	I	7000	1.04	J	10000	1.07
Benzo(k)fluoranthene	A	50	1.44	B	100	1.51	C	200	1.52	D	500	1.34	E	1000	1.32
	F	2000	1.22	G	3000	1.27	H	5000	1.23	I	7000	1.20	J	10000	1.19
Benzo(a)pyrene	A	50	0.803	B	100	0.794	C	200	0.797	D	500	0.791	E	1000	0.931
	F	2000	0.926	G	3000	0.958	H	5000	0.977	I	7000	0.974	J	10000	0.991
Indeno(1,2,3-cd)pyrene				B	100	0.486	C	200	0.451	D	500	0.508	E	1000	0.528
	F	2000	0.609	G	3000	0.664	H	5000	0.769						
Dibenz(a,h)anthracene	A	50	0.815	B	100	0.973	C	200	0.903	D	500	0.889	E	1000	0.929
	F	2000	0.942	G	3000	0.987	H	5000	1.02	I	7000	1.02	J	10000	1.04
Benzo(g,h,i)perylene	A	50	1.21	B	100	1.27	C	200	1.23	D	500	1.13	E	1000	1.16
	F	2000	1.12	G	3000	1.16	H	5000	1.13	I	7000	1.11	J	10000	1.11
Nitrobenzene-d5				B	100	1.05	C	200	0.952	D	500	0.960	E	1000	0.973
	F	2000	1.01	G	3000	0.975	H	5000	0.978	I	7000	0.974	J	10000	0.983
2-Fluorobiphenyl				B	100	1.37	C	200	1.43	D	500	1.45	E	1000	1.62
	F	2000	1.52	G	3000	1.52	H	5000	1.52	I	7000	1.49	J	10000	1.47
2,4,6-Tribromophenol							C	200	0.149	D	500	0.174	E	1000	0.190
	F	2000	0.196	G	3000	0.204	H	5000	0.214	I	7000	0.214	J	10000	0.217
Terphenyl-d14				B	100	1.02	C	200	0.981	D	500	0.929	E	1000	0.912
	F	2000	0.878	G	3000	0.881	H	5000	0.861	I	7000	0.839	J	10000	0.832

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† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	6.6		≤ 20	1.02		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	7.8		≤ 20	0.530		0.300
Acenaphthylene	MS	AverageRF	% RSD	8.4		≤ 20	1.75		0.900
Acenaphthene	MS	AverageRF	% RSD	4.1		≤ 20	1.12		0.700
Fluorene	MS	AverageRF	% RSD	3.4		≤ 20	1.41		0.800
Hexachlorobenzene	MS	AverageRF	% RSD	6.6		≤ 20	0.359		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.157		0.050
Phenanthrene	MS	AverageRF	% RSD	5.3		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	4.1		≤ 20	1.07		0.600
Fluoranthene	MS	AverageRF	% RSD	4.5		≤ 20	1.19		0.600
Pyrene	MS	AverageRF	% RSD	5.4		≤ 20	1.16		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	2.5		≤ 20	0.952		0.600
Chrysene	MS	AverageRF	% RSD	6.3		≤ 20	1.09		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	1.7		≤ 20	0.690		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	11.7		≤ 20	0.917		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	9.5		≤ 20	1.32		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	9.7		≤ 20	0.894		0.600
Indeno(1,2,3-cd)pyrene	MS	Quadratic	COD	1.000		≥ 0.990	0.574		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	7.3		≤ 20	0.951		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	4.8		≤ 20	1.16		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	2.8		≤ 20	0.983		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	4.7		≤ 20	1.49		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	12.1		≤ 20	0.195		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	7.1		≤ 20	0.904		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 10/25/2013
Date Analyzed: 10/26/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12868
Units: ng/ml

File ID: J:\MS26\DATA\102513\1025F033.D
J:\MS26\DATA\102513\1025F034.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3200	1.02	1.09	8	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3600	0.530	0.638	20	NA	± 30 %	AverageRF
Acenaphthylene	3000	3400	1.75	1.98	13	NA	± 30 %	AverageRF
Acenaphthene	3000	3300	1.12	1.22	10	NA	± 30 %	AverageRF
Fluorene	3000	3200	1.41	1.53	8	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3200	0.359	0.380	6	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.157	0.180	NA	8	± 30 %	Quadratic
Phenanthrene	3000	3200	1.06	1.13	7	NA	± 30 %	AverageRF
Anthracene	3000	3300	1.07	1.16	8	NA	± 30 %	AverageRF
Fluoranthene	3000	3200	1.19	1.28	7	NA	± 30 %	AverageRF
Pyrene	3000	3300	1.16	1.27	10	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	3000	0.952	0.953	0	NA	± 30 %	AverageRF
Chrysene	3000	3100	1.09	1.11	2	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3300	0.690	0.748	8	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3600	0.917	1.10	20	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.32	1.27	-4	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3600	0.894	1.08	21	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3400	0.574	0.765	NA	12	± 30 %	Quadratic
Dibenz(a,h)anthracene	3000	3200	0.951	1.03	8	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	3100	1.16	1.20	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 10/25/2013
Calibration ID: CAL12868
Analysis Lot: KWG1313458
Units: ng/ml

File ID: J:\MS26\DATA\120413\1204F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	0.700	1.02	0.971	-4	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3300	0.300	0.530	0.585	10	NA	± 20 %	AverageRF
Acenaphthylene	3000	3200	0.900	1.75	1.86	6	NA	± 20 %	AverageRF
Acenaphthene	3000	2900	0.700	1.12	1.07	-4	NA	± 20 %	AverageRF
Fluorene	3000	2900	0.800	1.41	1.37	-3	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2900	0.100	0.359	0.346	-4	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2500	0.050	0.157	0.133	NA	-17	± 20 %	Quadratic
Phenanthrene	3000	2800	0.600	1.06	1.00	-5	NA	± 20 %	AverageRF
Anthracene	3000	2900	0.600	1.07	1.02	-4	NA	± 20 %	AverageRF
Fluoranthene	3000	2900	0.600	1.19	1.14	-5	NA	± 20 %	AverageRF
Pyrene	3000	3200	0.600	1.16	1.22	5	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	3100	0.600	0.952	0.978	3	NA	± 20 %	AverageRF
Chrysene	3000	2600	0.600	1.09	0.951	-13	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3100	0.010	0.690	0.713	3	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3300	0.600	0.917	1.02	12	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2500	0.600	1.32	1.08	-18	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3200	0.600	0.894	0.953	7	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3900	0.500	0.574	0.928	NA	30 *	± 20 %	Quadratic
Dibenz(a,h)anthracene	3000	3100	0.400	0.951	0.982	3	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2600	0.500	1.16	1.00	-14	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	2800	0.01	0.983	0.914	-7	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2800	0.01	1.49	1.38	-7	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.195	0.179	-8	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2900	0.01	0.904	0.864	-4	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313505
Units: ng/ml

File ID: J:\MS06\DATA\120413\1204F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2800	0.700	1.19	1.09	-8	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2700	0.300	0.667	0.600	-10	NA	± 20 %	AverageRF
Acenaphthylene	3000	2700	0.900	2.11	1.92	-9	NA	± 20 %	AverageRF
Acenaphthene	3000	2800	0.700	1.15	1.09	-5	NA	± 20 %	AverageRF
Fluorene	3000	2800	0.800	1.50	1.40	-6	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2600	0.100	0.279	0.240	-14	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2300	0.050	0.187	0.141	-25 *	NA	± 20 %	AverageRF
Phenanthrene	3000	2500	0.600	1.16	0.971	-16	NA	± 20 %	AverageRF
Anthracene	3000	2500	0.600	1.19	1.02	-15	NA	± 20 %	AverageRF
Fluoranthene	3000	2600	0.600	1.29	1.13	-13	NA	± 20 %	AverageRF
Pyrene	3000	2700	0.600	1.37	1.25	-9	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2700	0.600	1.20	1.09	-9	NA	± 20 %	AverageRF
Chrysene	3000	2700	0.600	1.13	1.01	-11	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2700	0.010	1.02	0.936	-9	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	2900	0.600	1.19	1.14	-4	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2900	0.600	1.23	1.19	-3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3000	0.600	1.09	1.08	-1	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.500	0.930	0.910	-2	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2700	0.400	1.02	0.915	-10	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.500	1.05	0.976	-7	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	2800	0.01	1.39	1.29	-7	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2700	0.01	1.57	1.39	-11	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2500	0.01	0.159	0.132	-17	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2700	0.01	0.915	0.829	-9	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313505
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F002.D	GC/MS Tuning - Generic	KWG1313505-1	12/4/2013	12:45		12/4/2013	13:13
1204F003.D	Continuing Calibration Verification	KWG1313505-2	12/4/2013	13:23		12/4/2013	13:52
1204F004.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:07		12/4/2013	14:35
1204F005.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:45		12/4/2013	15:13
1204F006.D	ZZZZZZ	ZZZZZZ	12/4/2013	15:23		12/4/2013	15:52
1204F007.D	Method Blank	KWG1313002-5	12/4/2013	16:00		12/4/2013	16:28
1204F008.D	Lab Control Sample	KWG1313002-3	12/4/2013	16:38		12/4/2013	17:07
1204F009.D	Duplicate Lab Control Sample	KWG1313002-4	12/4/2013	17:15		12/4/2013	17:43
1204F010.D	RM11E-SL032MS	KWG1313002-1	12/4/2013	17:53		12/4/2013	18:22
1204F011.D	RM11E-SL032DMS	KWG1313002-2	12/4/2013	18:30		12/4/2013	18:58
1204F012.D	RM11E-SL032	K1312655-002	12/4/2013	19:07		12/4/2013	19:35
1204F013.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:45		12/4/2013	20:13
1204F014.D	ZZZZZZ	ZZZZZZ	12/4/2013	20:22		12/4/2013	20:51
1204F015.D	ZZZZZZ	ZZZZZZ	12/4/2013	20:59		12/4/2013	21:27
1204F016.D	ZZZZZZ	ZZZZZZ	12/4/2013	21:37		12/4/2013	22:06
1204F017.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:14		12/4/2013	22:43
1204F018.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:51		12/4/2013	23:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313458
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F003.D	GC/MS Tuning - Generic	KWG1313458-1	12/4/2013	10:57		12/4/2013	11:21
1204F004.D	Continuing Calibration Verification	KWG1313458-2	12/4/2013	11:30		12/4/2013	11:54
1204F005.D	ZZZZZZ	ZZZZZZ	12/4/2013	12:02		12/4/2013	12:26
1204F006.D	ZZZZZZ	ZZZZZZ	12/4/2013	12:34		12/4/2013	12:58
1204F007.D	ZZZZZZ	ZZZZZZ	12/4/2013	13:06		12/4/2013	13:30
1204F008.D	Method Blank	KWG1313013-5	12/4/2013	13:38		12/4/2013	14:02
1204F009.D	Lab Control Sample	KWG1313013-3	12/4/2013	14:11		12/4/2013	14:35
1204F010.D	Duplicate Lab Control Sample	KWG1313013-4	12/4/2013	14:43		12/4/2013	15:07
1204F011.D	Batch QCMS	KWG1313013-1	12/4/2013	15:15		12/4/2013	15:39
1204F012.D	Batch QCDMS	KWG1313013-2	12/4/2013	15:47		12/4/2013	16:11
1204F013.D	Batch QC	K1312589-001	12/4/2013	16:20		12/4/2013	16:44
1204F014.D	ZZZZZZ	ZZZZZZ	12/4/2013	16:52		12/4/2013	17:16
1204F015.D	ZZZZZZ	ZZZZZZ	12/4/2013	17:24		12/4/2013	17:48
1204F016.D	ZZZZZZ	ZZZZZZ	12/4/2013	17:56		12/4/2013	18:20
1204F017.D	ZZZZZZ	ZZZZZZ	12/4/2013	18:29		12/4/2013	18:53
1204F018.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:01		12/4/2013	19:25
1204F019.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:33		12/4/2013	19:57
1204F020.D	ZZZZZZ	ZZZZZZ	12/4/2013	20:05		12/4/2013	20:29
1204F021.D	ZZZZZZ	ZZZZZZ	12/4/2013	20:37		12/4/2013	21:01
1204F022.D	RM11E-SL532	K1312655-003	12/4/2013	21:10		12/4/2013	21:34
1204F023.D	RM11E-SL033	K1312655-004	12/4/2013	21:42		12/4/2013	22:06
1204F024.D	RM11E-SL034	K1312655-005	12/4/2013	22:14		12/4/2013	22:38
1204F025.D	RM11E-SL932	K1312655-001	12/4/2013	22:46		12/4/2013	23:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/21/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Extraction Lot: KWG1313013
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL932	K1312655-001	11/18/13	11/19/13	1000ml	2ml	NA	
Method Blank	KWG1313013-5	NA	NA	1050ml	2ml	NA	
Batch QC	K1312589-001	NA	NA	1000ml	2ml	NA	
Batch QCMS	KWG1313013-1	NA	NA	1050ml	2ml	NA	
Batch QCDMS	KWG1313013-2	NA	NA	1010ml	2ml	NA	
Lab Control Sample	KWG1313013-3	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1313013-4	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1313002
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL032	K1312655-002	11/18/13	11/19/13	40.311g	2ml	84.2	
RM11E-SL532	K1312655-003	11/18/13	11/19/13	40.418g	2ml	82.6	
RM11E-SL033	K1312655-004	11/18/13	11/19/13	40.373g	2ml	85.2	
RM11E-SL034	K1312655-005	11/18/13	11/19/13	40.259g	2ml	75.3	
Method Blank	KWG1313002-5	NA	NA	40.418g	2ml	NA	
RM11E-SL032MS	KWG1313002-1	11/18/13	11/19/13	40.331g	2ml	84.2	
RM11E-SL032DMS	KWG1313002-2	11/18/13	11/19/13	40.317g	2ml	84.2	
Lab Control Sample	KWG1313002-3	NA	NA	20.000g	2ml	NA	
Duplicate Lab Control Sample	KWG1313002-4	NA	NA	20.000g	2mi	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 5, 2014

Analytical Report for Service Request No: K1312655
Revised Service Request No: K1312655.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on November 19, 2013. For your reference, these analyses have been assigned our service request number K1312655.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
11:07 am, Mar 06, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/19/13
Sample Matrix:	Water and Soil		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and four soil samples were received for analysis at ALS Environmental on 11/19/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C and frozen at –20°C as required upon receipt at the laboratory.

Chlorinated Pesticides by GC/MS/MS

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Hexachlorobenzene for sample RM11E-SL532DMS was outside the control limits listed in the results summary. The limits are default values in use until sufficient statistical control limits are generated. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312655

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL932	K1312655-001	11/18/2013	11/19/2013
RM11E-SL032	K1312655-002	11/18/2013	11/19/2013
RM11E-SL532	K1312655-003	11/18/2013	11/19/2013
RM11E-SL033	K1312655-004	11/18/2013	11/19/2013
RM11E-SL034	K1312655-005	11/18/2013	11/19/2013
RM11E-SL532MS	KWG1313003-1	11/18/2013	11/19/2013
RM11E-SL532DMS	KWG1313003-2	11/18/2013	11/19/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Water	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL932	**Units:**	ng/L
Lab Code:	K1312655-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.1	0.29	1	11/22/13	12/04/13	KWG1313028	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	63	5-120	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Storm water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313028-5	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.99	0.27	1	11/22/13	12/03/13	KWG1313028	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	54	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL032	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.15**		0.092	0.092	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	93	5-120	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.16**		0.092	0.092	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	87	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL033	**Units:**	ug/Kg
Lab Code:	K1312655-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.28**		0.092	0.092	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	89	5-120	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/18/2013
Sample Matrix:	Soil	**Date Received:**	11/19/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL034	**Units:**	ug/Kg
Lab Code:	K1312655-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.23**		0.092	0.092	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	99	5-120	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313003-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	51	5-120	12/03/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-SL932	K1312655-001	63
Batch QC	K1312733-001	83
Method Blank	KWG1313028-5	54
Batch QCMS	KWG1313028-1	89
Batch QCDMS	KWG1313028-2	86
Lab Control Sample	KWG1313028-3	57
Duplicate Lab Control Sample	KWG1313028-4	53

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-SL032	K1312655-002	93
RM11E-SL532	K1312655-003	87
RM11E-SL033	K1312655-004	89
RM11E-SL034	K1312655-005	99
Method Blank	KWG1313003-5	51
RM11E-SL532MS	KWG1313003-1	77
RM11E-SL532DMS	KWG1313003-2	78
Lab Control Sample	KWG1313003-3	54
Duplicate Lab Control Sample	KWG1313003-4	52

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120313\1203F019.D	**Lab Code:**	KWG1313406-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313406
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	62,259	15.30	9,119	11.03
	Upper Limit ==>	124,517	15.80	45,597	11.53
	Lower Limit ==>	31,129	14.80	456	10.53
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313003-5	62,533	15.30	4,742	11.03
Lab Control Sample	KWG1313003-3	62,458	15.30	5,013	11.03
Duplicate Lab Control Sample	KWG1313003-4	64,777	15.30	4,944	11.03
Method Blank	KWG1313028-5	70,299	15.30	5,607	11.03
Lab Control Sample	KWG1313028-3	72,351	15.30	6,057	11.03
Duplicate Lab Control Sample	KWG1313028-4	72,844	15.30	5,714	11.03
RM11E-SL532MS	KWG1313003-1	75,792	15.30	8,604	11.03
RM11E-SL532DMS	KWG1313003-2	69,656	15.31	8,010	11.03
RM11E-SL532	K1312655-003	61,957	15.32	7,966	11.04
Batch QCMS	KWG1313028-1	70,573	15.32	9,304	11.04
Batch QCDMS	KWG1313028-2	72,247	15.32	9,201	11.04
Batch QC	K1312733-001	68,510	15.32	8,393	11.04
RM11E-SL932	K1312655-001	67,707	15.31	6,293	11.03
RM11E-SL032	K1312655-002	65,765	15.32	9,051	11.03
RM11E-SL033	K1312655-004	58,949	15.33	7,752	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/04/2013
		Time Analyzed:	09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120413\1204F004.D	**Lab Code:**	KWG1313419-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313419
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	66,716	15.31	9,819	11.03
	Upper Limit ==>	133,431	15.81	49,096	11.53
	Lower Limit ==>	33,358	14.81	491	10.53
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
RM11E-SL034	K1312655-005	51,987	15.34	7,658	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	K1312733-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313028

		Batch QCMS KWG1313028-1 Matrix Spike			Batch QCDMS KWG1313028-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	0.49	24.1	20.0	118	23.7	19.6	119	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL532	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

		RM11E-SL532MS KWG1313003-1 Matrix Spike			RM11E-SL532DMS KWG1313003-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	0.16	1.44	1.20	107	1.73	1.20	131 *	50-120	18	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Storm water

Service Request: K1312655
Date Extracted: 11/22/2013
Date Analyzed: 12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1313028

	Lab Control Sample KWG1313028-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313028-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	21.9	20.0	110	22.4	20.0	112	50-120	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013
Date Analyzed: 12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313003

	Lab Control Sample KWG1313003-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313003-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	2.12	2.00	106	2.07	2.00	104	50-120	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	17:52

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313028-5	**File ID:**	J:\MS21\DATA\120313\1203F023.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313028

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313028-3	J:\MS21\DATA\120313\1203F024.D	12/03/13	18:19
Duplicate Lab Control Sample	KWG1313028-4	J:\MS21\DATA\120313\1203F025.D	12/03/13	18:46
Batch QCMS	KWG1313028-1	J:\MS21\DATA\120313\1203F033.D	12/03/13	22:23
Batch QCDMS	KWG1313028-2	J:\MS21\DATA\120313\1203F034.D	12/03/13	22:50
Batch QC	K1312733-001	J:\MS21\DATA\120313\1203F035.D	12/03/13	23:17
RM11E-SL932	K1312655-001	J:\MS21\DATA\120313\1203F037.D	12/04/13	00:11

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:31

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313003-5	**File ID:**	J:\MS21\DATA\120313\1203F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313003-3	J:\MS21\DATA\120313\1203F021.D	12/03/13	16:58
Duplicate Lab Control Sample	KWG1313003-4	J:\MS21\DATA\120313\1203F022.D	12/03/13	17:25
RM11E-SL532MS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
RM11E-SL532DMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
RM11E-SL532	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-SL032	K1312655-002	J:\MS21\DATA\120313\1203F038.D	12/04/13	00:38
RM11E-SL033	K1312655-004	J:\MS21\DATA\120313\1203F039.D	12/04/13	01:05
RM11E-SL034	K1312655-005	J:\MS21\DATA\120413\1204F009.D	12/04/13	11:57

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/22/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	18:19

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313028-3	**File ID:**	J:\MS21\DATA\120313\1203F024.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313028

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313028-5	J:\MS21\DATA\120313\1203F023.D	12/03/13	17:52
Batch QCMS	KWG1313028-1	J:\MS21\DATA\120313\1203F033.D	12/03/13	22:23
Batch QCDMS	KWG1313028-2	J:\MS21\DATA\120313\1203F034.D	12/03/13	22:50
Batch QC	K1312733-001	J:\MS21\DATA\120313\1203F035.D	12/03/13	23:17
RM11E-SL932	K1312655-001	J:\MS21\DATA\120313\1203F037.D	12/04/13	00:11

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312655
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:58

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313003-3	**File ID:**	J:\MS21\DATA\120313\1203F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313003-5	J:\MS21\DATA\120313\1203F020.D	12/03/13	16:31
RM11E-SL532MS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
RM11E-SL532DMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
RM11E-SL532	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-SL032	K1312655-002	J:\MS21\DATA\120313\1203F038.D	12/04/13	00:38
RM11E-SL033	K1312655-004	J:\MS21\DATA\120313\1203F039.D	12/04/13	01:05
RM11E-SL034	K1312655-005	J:\MS21\DATA\120413\1204F009.D	12/04/13	11:57

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D
B	J:\MS21\Data\120313\1203F006.D
C	J:\MS21\Data\120313\1203F007.D
D	J:\MS21\Data\120313\1203F008.D
E	J:\MS21\Data\120313\1203F009.D
F	J:\MS21\Data\120313\1203F010.D
G	J:\MS21\Data\120313\1203F011.D
H	J:\MS21\Data\120313\1203F012.D
I	J:\MS21\Data\120313\1203F013.D
J	J:\MS21\Data\120313\1203F014.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.04	C	2.0	0.998	D	5.0	0.991	E	10	0.942
	F	20	0.900	G	40	0.882	H	60	0.863	I	80	0.835	J	100	0.837
S_HXCBZ13C6	A	20	0.675	B	20	0.679	C	20	0.701	D	20	0.697	E	20	0.733
	F	20	0.735	G	20	0.758	H	20	0.775	I	20	0.839	J	20	0.814

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.1		≤20	0.921		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	7.6		≤20	0.741		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.921	0.880	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313406
Units: ng/ml

File ID: J:\MS21\DATA\120313\1203F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	.01	0.921	0.892	-3	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	20	.01	0.741	0.732	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313419
Units: ng/ml

File ID: J:\MS21\DATA\120413\1204F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.921	0.943	2	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	20	.01	0.741	0.736	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312655
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	Method Blank	KWG1313003-5	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	Lab Control Sample	KWG1313003-3	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	Duplicate Lab Control Sample	KWG1313003-4	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	Method Blank	KWG1313028-5	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	Lab Control Sample	KWG1313028-3	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	Duplicate Lab Control Sample	KWG1313028-4	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	RM11E-SL532MS	KWG1313003-1	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	RM11E-SL532DMS	KWG1313003-2	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	RM11E-SL532	K1312655-003	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	Batch QCMS	KWG1313028-1	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	Batch QCDMS	KWG1313028-2	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	Batch QC	K1312733-001	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	RM11E-SL932	K1312655-001	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	RM11E-SL032	K1312655-002	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	RM11E-SL033	K1312655-004	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312655

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313419
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F004.D	Continuing Calibration Verification	KWG1313419-1	12/4/2013	09:34		12/4/2013	09:34
1204F005.D	Instrument Blank	KWG1313419-2	12/4/2013	10:06		12/4/2013	10:06
1204F006.D	ZZZZZZ	ZZZZZZ	12/4/2013	10:38		12/4/2013	10:38
1204F007.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:02		12/4/2013	11:02
1204F008.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:30		12/4/2013	11:30
1204F009.D	RM11E-SL034	K1312655-005	12/4/2013	11:57		12/4/2013	11:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312655
Date Extracted: 11/22/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313028
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL932	K1312655-001	11/18/13	11/19/13	940ml	1.0ml	NA	
Method Blank	KWG1313028-5	NA	NA	1020ml	1.0ml	NA	
Batch QC	K1312733-001	NA	NA	1010ml	1.0ml	NA	
Batch QCMS	KWG1313028-1	NA	NA	1000ml	1.0ml	NA	
Batch QCDMS	KWG1313028-2	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313028-3	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313028-4	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312655
Date Extracted: 11/21/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313003
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL032	K1312655-002	11/18/13	11/19/13	20.058g	1.0ml	84.2	
RM11E-SL532	K1312655-003	11/18/13	11/19/13	20.141g	1.0ml	82.6	
RM11E-SL033	K1312655-004	11/18/13	11/19/13	20.200g	1.0ml	85.2	
RM11E-SL034	K1312655-005	11/18/13	11/19/13	20.280g	1.0ml	75.3	
Method Blank	KWG1313003-5	NA	NA	20.280g	1.0ml	NA	
RM11E-SL532MS	KWG1313003-1	11/18/13	11/19/13	20.209g	1.0ml	82.6	
RM11E-SL532DMS	KWG1313003-2	11/18/13	11/19/13	20.152g	1.0ml	82.6	
Lab Control Sample	KWG1313003-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313003-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Quantitation Report

Data File:	J:\MS21\DATA\120313\1203F037.D			**Instrument:**	MS21
Acqu Date:	12/04/2013 00:11	**Quant Date:**	12/04/2013 00:11	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1312655-001			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	Pesticides Pest	**Collect Date:**	11/18/2013	**Receive Date:**	11/19/2013

Analysis Lot:	KWG1313406	**Prep Lot:**	KWG1313028	**Report Group:**	K1312655
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3535A		
Prep Ref:	1306347	**Prep Date:**	11/22/2013		

Quant Method:		**Calibration ID:**	CAL12946
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15964
		Method ID:	MJ961
MB Ref:	J:\MS21\DATA\120313\1203F023.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.31	0.02	67707	105.91	OK
1	Hexachlorobenzene-13C6	11.03c	0.00	6293	12.55	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.03c	0.00	0.00	6293	12.55	63	5-120	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.04	0.01	0.00	69	0.2376	0.29	U	

Prep Amount:	940 ml	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\120313\1203F038.D			**Instrument:**	MS21
Acqu Date:	12/04/2013 00:38	**Quant Date:**	12/04/2013 00:38	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1312655-002			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	11/18/2013	**Receive Date:**	11/19/2013

Analysis Lot:	KWG1313406	**Prep Lot:**	KWG1313003	**Report Group:**	K1312655
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1306209	**Prep Date:**	11/21/2013		

Quant Method:		**Calibration ID:**	CAL12946
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\120313\1203F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.32	0.02	65765	102.87	OK
1	Hexachlorobenzene-13C6	11.03c	0.00	9051	18.58	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.03c	0.00	0.00	9051	18.58	93	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.04	0.01	0.00	1085	2.60	0.15		

Prep Amount:	20.058 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	84.2 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\120313\1203F032.D			**Instrument:**	MS21
Acqu Date:	12/03/2013 21:55	**Quant Date:**	12/03/2013 21:55	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1312655-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	11/18/2013	**Receive Date:**	11/19/2013

Analysis Lot:	KWG1313406	**Prep Lot:**	KWG1313003	**Report Group:**	K1312655
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1306210	**Prep Date:**	11/21/2013		

Quant Method:		**Calibration ID:**	CAL12946
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\120313\1203F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.32	0.02	61957	96.91	OK
1	Hexachlorobenzene-13C6	11.04c	0.01	7966	17.36	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.04c	0.01	0.00	7966	17.36	87	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.04c	0.01	0.00	987	2.69	0.16		

Prep Amount:	20.141 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	82.6 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\120313\1203F039.D			**Instrument:**	MS21
Acqu Date:	12/04/2013 01:05	**Quant Date:**	12/04/2013 01:05	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1312655-004			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	11/18/2013	**Receive Date:**	11/19/2013

Analysis Lot:	KWG1313406	**Prep Lot:**	KWG1313003	**Report Group:**	K1312655
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1306211	**Prep Date:**	11/21/2013		

Quant Method:		**Calibration ID:**	CAL12946
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\120313\1203F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.33	0.03	58949	92.21	OK
1	Hexachlorobenzene-13C6	11.04c	0.01	7752	17.75	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.04c	0.01	0.00	7752	17.75	89	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.04	0.02	0.00	1692	4.74	0.28		

Prep Amount:	20.200 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	85.2 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Data File:	J:\MS21\DATA\120413\1204F009.D			**Instrument:**	MS21
Acqu Date:	12/04/2013 11:57	**Quant Date:**	12/04/2013 11:57	**Vial:**	
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1312655-005			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	SOIL
Prod Code:	Pesticides Pest	**Collect Date:**	11/18/2013	**Receive Date:**	11/19/2013

Analysis Lot:	KWG1313419	**Prep Lot:**	KWG1313003	**Report Group:**	K1312655
Analysis Method:	CAS SOC-PESTMS2	**Prep Method:**	EPA 3541		
Prep Ref:	1306208	**Prep Date:**	11/21/2013		

Quant Method:		**Calibration ID:**	CAL12946
Title:	Chlorinated Pesticides by HRGC/MS/MS	**Report List ID:**	LJ15965
		Method ID:	MJ962
MB Ref:	J:\MS21\DATA\120313\1203F020.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Response	Solution Conc	Area Criteria
0	Pyrene-d10	15.34	0.02	51987	81.32	OK
1	Hexachlorobenzene-13C6	11.04c	0.01	7658	19.89	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	S_HXCBZ13C6	11.04c	0.01	0.00	7658	19.89	99	5-120	OK

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Response	Solution Conc	Final Conc	Q	Rpt?
7	Hexachlorobenzene	11.04	0.01	0.00	1222	3.46	0.23		

Prep Amount:	20.280 g	**Dilution:**	1.0
Prep Final Vol:	1.0 ml	**Unit Factor:**	1
Solids:	75.3 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Samples archived at ALS

No analysis conducted

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

December 13, 2013

Analytical Report for Service Request No: K1312803

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on November 21, 2013. For your reference, these analyses have been assigned our service request number K1312803.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
10:02 am, Mar 06, 2014

GS/ln

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/21/13
Sample Matrix:	Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six soil samples were received for analysis at ALS Environmental on 11/21/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C and frozen at –20°C is required upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Copper, Lead and Zinc for the Batch QC1 sample were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for the Batch QC1 sample was below the Method control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

The matrix spike recovery of Chromium for the Batch QC1 sample was outside control criteria. However, the analyzed concentration in this sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Copper, Lead and Zinc in the Batch QC1 sample was outside the Method control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Approved by Reagan Galatis 12/16/13

Diesel Range Organics by Method NWTPH-Dx

Surrogate Exceptions:
The upper control criterion was exceeded for o-Terphenyl and n-Triacontane in sample Batch QCDup KWG1313276-3. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following analytes in Matrix Spike (MS) Batch QCMS and Matrix Spike Duplicate (MSD) Batch QCDMS list 2,4'-DDD, 2,4;-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, gamma-BHC, Heptachlor Epoxide, and Oxychlordane. All recoveries were within the QC limits in the associated LCS/DLCS demonstrating that the analysis was in control. The error associated with elevated recovery suggests a high bias in this matrix. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1221 in CAL12952. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Sample Confirmation Notes:
The confirmation comparison criterion of 40% difference was exceeded for Aroclor 1242 and Aroclor 1254 in sample RM11E-MWS002s-5_20'. The lower of the two values was reported because no evidence of a matrix interference was observed or if there was an apparent interference on the alternate column that produced the higher value.

Sample Notes and Discussion:
The samples in this data set appear to have been subjected to environmental stresses such as weathering, causing pattern degradation and changing the peak ratios. When pattern degradation occurs, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, differentiating amongst the similar elution patterns of Aroclors 1016, 1232, 1242, and 1248 can be difficult. Care was taken to report the Aroclor(s) with the best pattern match.

Three Aroclors were identified in sample RM11E-MWS002s-5_20': Aroclor 1242, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

Approved by Gregory Galata 12/16/13

A review of the sample chromatograms indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Although the presence of Aroclor 1248 could not be ruled out, Aroclor 1242 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclors 1254 and 1260 were identified based on the presence of later eluting PCB peaks in the chromatogram.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254, and 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\1204F003.D: Pentachlorophenol. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QCMS (KWG1313002-1) was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for Bis(2-ethylhexyl) Phthalate in the replicate matrix spike analyses of Batch QC was outside control criteria. All spike recoveries in the associated replicate Laboratory Control Samples (LCS/DLCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for all analytes in sample RM11E-MWS002s-5_20'. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The reporting limits were adjusted to reflect the dilution.

The detection limit was elevated for all analytes in samples Batch QC, Batch QCMS, and Batch QCDMS. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ 12/16/13

Chain of Custody

K1312803

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin - GSI

Analysis Requested

Sample I.D.	~~Date~~	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-MW5002S-5-10'		1340		S	2												X				
RM11E-MW5002S-10-15'		1350			2												X				
RM11E-MW5002S-15'-20'		1405			2												X				
RM11E-MW5002S-20-25'		1440			3	X	X	X	X	X	X	X	X	X	X	X	X				0-5' of Native Alluvium
RM11E-MW5002S-5-20'		1445			3	X	X	X	X	X	X	X	X	X	X	X	X				unsaturated fill composite
RM11E-MW5002S-25-30'		1450			2												X				
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
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Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [signature]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: A Rystrica
Firm: Groundwater Solutions Inc	Firm: 4/21/13 1230
Date/Time	Date/Time

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

- ___ 24 hr ___ 48 hr ___ 5 day
- X Standard (21 days)
- ___ Provide Verbal Preliminary Results
- ___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

- ___ I. Routine Report
- X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
- X III. Data Validation Report (includes All Raw Data)
- ___ RWQCB (MDLs/PQLs/TRACE/!)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

PC 6/1/09

Cooler Receipt and Preservation Form

Client / Project: GW Solutions Service Request *K13* 12803

Received: 11/21/13 Opened: 11/21/13 By: [illegible] Unloaded: 11/21/13 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 Front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.2	0.2	1.4	1.4	0.0	333			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry Parameters

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013
		Date Analyzed:	11/26/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS002s-20_25'
Lab Code: K1312803-004

Sand Fraction: Weight (Grams)	19.6634
Sand Fraction: Weight Recovered (Grams)	19.4664
Sand Fraction: Percent Recovery	99.00

Weight as received (Grams)	44.1239
Percent Solids	69.0
Weight Oven-Dried (Grams)	30.4455

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	5.8393	19.18
Gravel, Fine	2.00 mm	10	5.7521	18.89
Sand, Very Coarse	0.850 mm	20	1.8575	6.10
Sand, Coarse	0.425 mm	40	0.8518	2.80
Sand, Medium	0.250 mm	60	0.5840	1.92
Sand, Fine	0.106 mm	140	1.8614	6.11
Sand, Very Fine	0.075 mm	200	1.2773	4.20
Silt			7.8600	25.82
Clay			3.3900	11.13
		Total	29.2734	96.15

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013
		Date Analyzed:	11/26/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS002s-5_20'
Lab Code: K1312803-005

Sand Fraction: Weight (Grams)	31.4591
Sand Fraction: Weight Recovered (Grams)	31.6614
Sand Fraction: Percent Recovery	100.64

Weight as received (Grams)	54.2482
Percent Solids	78.8
Weight Oven-Dried (Grams)	42.7476

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	12.3069	28.79
Gravel, Fine	2.00 mm	10	6.1297	14.34
Sand, Very Coarse	0.850 mm	20	4.3233	10.11
Sand, Coarse	0.425 mm	40	2.7935	6.53
Sand, Medium	0.250 mm	60	2.0205	4.73
Sand, Fine	0.106 mm	140	2.5621	5.99
Sand, Very Fine	0.075 mm	200	0.8756	2.05
Silt			9.1850	21.49
Clay			0.6600	1.54
		Total	40.8566	95.57

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Analyzed:	11/26/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1312628-004

Sand Fraction: Weight (Grams)	57.3291
Sand Fraction: Weight Recovered (Grams)	57.3400
Sand Fraction: Percent Recovery	100.02

Weight as received (Grams)	72.9009
Percent Solids	77.4
Weight Oven-Dried (Grams)	56.4253

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	8.4700	15.01
Gravel, Fine	2.00 mm	10	5.3522	9.49
Sand, Very Coarse	0.850 mm	20	9.8602	17.47
Sand, Coarse	0.425 mm	40	12.2902	21.78
Sand, Medium	0.250 mm	60	11.8803	21.05
Sand, Fine	0.106 mm	140	8.8451	15.68
Sand, Very Fine	0.075 mm	200	0.6050	1.07
Silt			0.4850	0.86
Clay			0.0450	0.08
		Total	57.8330	102.49

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Analyzed:	11/26/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: BatchQC
Lab Code: K1312628-004 dup

Sand Fraction: Weight (Grams)	72.5763
Sand Fraction: Weight Recovered (Grams)	72.5340
Sand Fraction: Percent Recovery	99.94

Weight as received (Grams)	93.4131
Percent Solids	77.4
Weight Oven-Dried (Grams)	72.3017

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	10.4192	14.41
Gravel, Fine	2.00 mm	10	6.5019	8.99
Sand, Very Coarse	0.850 mm	20	12.0008	16.60
Sand, Coarse	0.425 mm	40	14.4785	20.03
Sand, Medium	0.250 mm	60	16.4076	22.69
Sand, Fine	0.106 mm	140	11.6909	16.17
Sand, Very Fine	0.075 mm	200	0.9140	1.26
Silt			0.7050	0.98
Clay			0.0500	0.07
		Total	73.1679	101.20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/13
Sample Matrix:	Soil	**Date Received:**	11/21/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-MWS002s-20_25'	K1312803-004	**0.692**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS002s-5_20'	K1312803-005	**0.879**	0.050	0.020	1	11/27/13 08:00	11/26/13	
Method Blank	K1312803-MB	ND U	0.050	0.020	1	11/27/13 08:00	11/26/13	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Collected: NA
Date Received: NA
Date Analyzed: 11/27/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1312655-002

Units: Percent
Basis: Dry, per Method

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1312655-002DUP Result	Batch QCTRP Triplicate Sample K1312655-002TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	1.70	1.55	1.59	1.61	5	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	N/A
Sample Matrix:	Soil	**Date Received:**	N/A
		Date Analyzed:	11/27/13
		Date Extracted:	11/26/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1312655-002	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1312655-002MS			Duplicate Matrix Spike K1312655-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	1.70	4.90	3.42	93	4.85	3.10	102	69-123	9	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	11/27/13
Sample Matrix:	Soil	**Date Extracted:**	11/26/13

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	370819

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1312803-LCS	0.266	0.275	97	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	370819	KQ1314276-01	11/27/13 08:00	20.0	19.8	99	90-110
CCV2	370819	KQ1314276-02	11/27/13 08:00	20.0	19.8	99	90-110
CCV3	370819	KQ1314276-03	11/27/13 08:00	20.0	19.7	98	90-110
CCV4	370819	KQ1314276-04	11/27/13 08:00	20.0	19.7	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	370819	KQ1314276-05	11/27/13 08:00	0.050	0.020	ND	U
CCB2	370819	KQ1314276-06	11/27/13 08:00	0.050	0.020	ND	U
CCB3	370819	KQ1314276-07	11/27/13 08:00	0.050	0.020	ND	U
CCB4	370819	KQ1314276-08	11/27/13 08:00	0.050	0.020	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/13
Sample Matrix:	Soil	**Date Received:**	11/21/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MWS002s-20_25'	K1312803-004	**69.0**	-	-	1	11/22/13 16:00	
RM11E-MWS002s-5_20'	K1312803-005	**78.8**	-	-	1	11/22/13 16:00	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Analyzed:	11/22/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1312655-002	**Basis:**	As Received

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1312655-002DUP Result	Batch QCTRP Triplicate Sample K1312655-002TRP Result	Average	RSD	RSD Limit
Solids, Total			83.3	81.8	83.5	82.9	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Metals

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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental R1/FS Investigation
Project No.: 487.002.004

Service Request: K1312803

Sample Name:	Lab Code:
Batch QC1D	K1312655-002D
Batch QC1S	K1312655-002S
RM11E-MWS002s-20_25'	K1312803-004
RM11E-MWS002s-20_25'S	K1312803-004S
RM11E-MWS002s-20_25'SD	K1312803-004SD
RM11E-MWS002s-5_20'	K1312803-005
Method Blank	K1312803-MB

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312803
Date Collected: 11/20/13
Date Received: 11/21/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS002s-20_25'
Lab Code: K1312803-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.047	0.009	5.0	11/27/13	12/05/13	0.046	J	N
Arsenic	6020A	0.47	0.06	5.0	11/27/13	12/10/13	3.61		
Cadmium	6020A	0.019	0.003	5.0	11/27/13	12/10/13	0.082		
Chromium	6020A	0.19	0.03	5.0	11/27/13	12/10/13	30.3		N
Copper	6020A	0.09	0.05	5.0	11/27/13	12/10/13	27.2		*
Lead	6020A	0.046	0.008	5.0	11/27/13	12/10/13	13.5		*
Mercury	7471B	0.019	0.002	1.0	11/27/13	12/02/13	0.081		
Nickel	6020A	0.19	0.03	5.0	11/27/13	12/10/13	25.0		
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	63.4		*

% Solids: 69.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312803
Project No.: 487.002.004
Date Collected: 11/20/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/21/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS002s-5_20'
Lab Code: K1312803-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.039	0.007	5.0	11/27/13	12/05/13	0.430		N
Arsenic	6020A	0.36	0.04	5.0	11/27/13	12/10/13	5.46		
Cadmium	6020A	0.014	0.002	5.0	11/27/13	12/10/13	0.398		
Chromium	6020A	0.14	0.02	5.0	11/27/13	12/10/13	38.3		N
Copper	6020A	0.07	0.04	5.0	11/27/13	12/10/13	89.0		*
Lead	6020A	0.036	0.006	5.0	11/27/13	12/10/13	142		*
Mercury	7471B	0.018	0.002	1.0	11/27/13	12/02/13	0.306		
Nickel	6020A	0.14	0.02	5.0	11/27/13	12/10/13	35.6		
Zinc	6020A	0.4	0.1	5.0	11/27/13	12/10/13	224		*

% Solids: 78.8

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312803
Project No.: 487.002.004
Date Collected:
Project Name: RM11E Supplemental R1/FS Investi
Date Received:
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1312803-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.009	5.0	11/27/13	12/05/13	0.009	U	N
Arsenic	6020A	0.50	0.06	5.0	11/27/13	12/10/13	0.06	U	
Cadmium	6020A	0.020	0.003	5.0	11/27/13	12/10/13	0.003	U	
Chromium	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.04	J	N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	0.05	U	*
Lead	6020A	0.050	0.009	5.0	11/27/13	12/10/13	0.009	U	*
Mercury	7471B	0.020	0.002	1.0	11/27/13	12/02/13	0.002	U	
Nickel	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.03	J	
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	0.4	J	*

% Solids: 100.0

Comments:

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Metals

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SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312803

Project No.: 487.002.004 **Units:** MG/KG

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: SOIL **% Solids:** 83.3

Sample Name: Batch QC1S **Lab Code:** K1312655-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	24.1		1.12		77.95	29.5	N	6020A
Arsenic	75 - 125	41.3		5.38		38.23	94.0		6020A
Cadmium	75 - 125	4.46		0.707		3.82	98.2		6020A
Chromium	75 - 125	73.9		54.2		15.29	128.8	N	6020A
Copper		116		96.5		19.12	102.0		6020A
Lead		171		180		38.23	-23.5		6020A
Nickel	75 - 125	88.5		56.9		38.23	82.7		6020A
Zinc		441		385		38.23	146.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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SPIKE SAMPLE RECOVERY

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project No.:	487.002.004	**Units:**	MG/KG
Project Name:	RM11E Supplemental R1/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	69.0

Sample Name: RM11E-MWS002s-20_25'S **Lab Code:** K1312803-004S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.564		0.081		0.48	100.6		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1312803
Project No.: 487.002.004
Units: MG/KG
Project Name: RM11E Supplemental R1/FS Investi
Basis: DRY
Matrix: SOIL
% Solids: 69.0

Sample Name: RM11E-MWS002s-20_25'SD
Lab Code: K1312803-004SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.552		0.081		0.49	96.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312803

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: WATER

Sample Name: Batch QC1A **Lab Code:** K1312655-002A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	51.95		2.83		50.0	98		6020A
Arsenic	80 - 120	60.69		13.43		50.0	95		6020A
Cadmium	80 - 120	49.385		1.767		50.0	95		6020A
Chromium	80 - 120	183.24		135.48		50.0	96		6020A
Copper	80 - 120	288.33		241.15		50.0	94		6020A
Lead	80 - 120	498.65		450.16		50.0	97		6020A
Nickel	80 - 120	189.26		142.09		50.0	94		6020A
Zinc	80 - 120	1009.2		962.7		50.0	93		6020A

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Metals
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DUPLICATES

Client: GSI Water Solutions, Inc
Service Request: K1312803
Project No.: 487.002.004
Units: MG/KG
Project Name: RM11E Supplemental R1/FS Investi
Basis: DRY
Matrix: SOIL
% Solids: 83.3

Sample Name: Batch QC1D
Lab Code: K1312655-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	1.12		0.943		17.2		6020A
Arsenic	20	5.38		4.84		10.6		6020A
Cadmium	20	0.707		0.707		0.0		6020A
Chromium	20	54.2		50.5		7.1		6020A
Copper	20	96.5		124		24.9	*	6020A
Lead	20	180		122		38.4	*	6020A
Nickel	20	56.9		49.0		14.9		6020A
Zinc	20	385		602		44.0	*	6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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DUPLICATES

Client: GSI Water Solutions, Inc
Service Request: K1312803
Project No.: 487.002.004
Units: MG/KG
Project Name: RM11E Supplemental R1/FS Investi
Basis: DRY
Matrix: SOIL
% Solids: 69.0

Sample Name: RM11E-MWS002s-20_25'SD **Lab Code:** K1312803-004SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.564		0.552		2.2		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1312803

Project No.: 487.002.004

Project Name: RM11E Supplemental R1/FS Investi

Aqueous LCS Source: **Solid LCS Source:** ERA D076-540

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Antimony				93.3	73.2	25	199	78.5
Arsenic				94.5	95.3	82	117	100.8
Cadmium				60.5	62.8	83	117	103.8
Chromium				70.4	67.9	82	118	96.4
Copper				79.6	79.5	84	116	99.9
Lead				91.8	93.2	82	118	101.5
Mercury				3.73	3.26	72	128	87.4
Nickel				57.6	59.2	83	117	102.8
Zinc				140	140	82	118	100.0

Chlorinated Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312803

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS002s-20_25'	K1312803-004	11/20/2013	11/21/2013
RM11E-MWS002s-5_20'	K1312803-005	11/20/2013	11/21/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Jerome Peterson
Name: Jerome Peterson
Date: Scientist 12-9-2013
Title: Scientist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS002s-20_25'	**Units:**	ug/Kg
Lab Code:	K1312803-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.072	0.063	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDT	ND	U	0.094	0.094	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDD	ND	U	0.072	0.035	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDE	ND	U	0.072	0.070	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDT	**0.11**		0.072	0.047	1	11/21/13	12/03/13	KWG1313003	
alpha-Chlordane	ND	U	0.072	0.062	1	11/21/13	12/03/13	KWG1313003	
cis-Nonachlor	ND	U	0.097	0.097	1	11/21/13	12/03/13	KWG1313003	
gamma-Chlordane	ND	U	0.072	0.064	1	11/21/13	12/03/13	KWG1313003	
trans-Nonachlor	ND	U	0.072	0.058	1	11/21/13	12/03/13	KWG1313003	
Dieldrin	ND	U	0.20	0.077	1	11/21/13	12/03/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.072	0.031	1	11/21/13	12/03/13	KWG1313003	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/21/13	12/03/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	52	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	76	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	65	8-146	12/03/13	Acceptable
S_Endrin-13C12	77	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	66	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	72	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	ug/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.29**		0.063	0.063	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/04/13	KWG1313003	
2,4'-DDT	**2.2**		0.094	0.094	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDD	**1.3**		0.063	0.035	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDE	**1.9**		0.070	0.070	1	11/21/13	12/04/13	KWG1313003	
4,4'-DDT	**19**		0.26	0.23	1	11/21/13	12/04/13	KWG1313003	
alpha-Chlordane	**3.5**		0.063	0.062	1	11/21/13	12/04/13	KWG1313003	
cis-Nonachlor	**0.55**		0.097	0.097	1	11/21/13	12/04/13	KWG1313003	
gamma-Chlordane	**5.6**		0.064	0.064	1	11/21/13	12/04/13	KWG1313003	
trans-Nonachlor	**1.8**		0.063	0.058	1	11/21/13	12/04/13	KWG1313003	
Dieldrin	**3.1**		0.20	0.077	1	11/21/13	12/04/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.063	0.031	1	11/21/13	12/04/13	KWG1313003	
Heptachlor Epoxide	**0.41**		0.073	0.073	1	11/21/13	12/04/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	106	5-124	12/04/13	Acceptable
S_Oxychlordane-13C10	116	5-144	12/04/13	Acceptable
S_Heptachlrepox13C10	88	8-146	12/04/13	Acceptable
S_Endrin-13C12	89	20-157	12/04/13	Acceptable
S_4,4'DDD-d4	81	5-120	12/04/13	Acceptable
S_4,4'-DDT-d4	89	13-200	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313003-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDE	ND	U	0.079	0.079	1	11/21/13	12/03/13	KWG1313003	
2,4'-DDT	ND	U	0.094	0.094	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDD	ND	U	0.050	0.035	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDE	ND	U	0.070	0.070	1	11/21/13	12/03/13	KWG1313003	
4,4'-DDT	ND	U	0.050	0.047	1	11/21/13	12/03/13	KWG1313003	
alpha-Chlordane	ND	U	0.062	0.062	1	11/21/13	12/03/13	KWG1313003	
cis-Nonachlor	ND	U	0.097	0.097	1	11/21/13	12/03/13	KWG1313003	
gamma-Chlordane	ND	U	0.064	0.064	1	11/21/13	12/03/13	KWG1313003	
trans-Nonachlor	ND	U	0.058	0.058	1	11/21/13	12/03/13	KWG1313003	
Dieldrin	ND	U	0.20	0.077	1	11/21/13	12/03/13	KWG1313003	
gamma-BHC (Lindane)	ND	U	0.050	0.031	1	11/21/13	12/03/13	KWG1313003	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/21/13	12/03/13	KWG1313003	
Oxychlordane	ND	U	0.20	0.13	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	67	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	70	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	77	8-146	12/03/13	Acceptable
S_Endrin-13C12	79	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	81	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	81	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
Batch QC	K1312655-003	111	115	88	83	79	90
RM11E-MWS002s-20_25'	K1312803-004	52	76	65	77	66	72
RM11E-MWS002s-5_20'	K1312803-005	106	116	88	89	81	89
Method Blank	KWG1313003-5	67	70	77	79	81	81
Batch QCMS	KWG1313003-1	88	86	77	80	73	82
Batch QCDMS	KWG1313003-2	87	87	70	78	68	77
Lab Control Sample	KWG1313003-3	74	80	82	85	88	91
Duplicate Lab Control Sample	KWG1313003-4	70	82	80	80	86	88

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120313\1203F019.D	**Lab Code:**	KWG1313406-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313406
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	62,259	15.30	5,903	11.42	1,847	14.02
	Upper Limit ==>	124,517	15.80	11,807	11.92	3,694	14.52
	Lower Limit ==>	31,129	14.80	295	10.92	92	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313003-5	62,533	15.30	3,931	11.42	1,244	14.02
Lab Control Sample	KWG1313003-3	62,458	15.30	4,310	11.42	1,424	14.02
Duplicate Lab Control Sample	KWG1313003-4	64,777	15.30	4,226	11.42	1,508	14.02
Batch QCMS	KWG1313003-1	75,792	15.30	6,273	11.42	1,864	14.02
Batch QCDMS	KWG1313003-2	69,656	15.31	5,690	11.42	1,731	14.02
Batch QC	K1312655-003	61,957	15.32	6,444	11.42	2,034	14.02
RM11E-MWS002s-20_25'	K1312803-004	65,749	15.31	3,230	11.42	1,414	14.02
RM11E-MWS002s-5_20'	K1312803-005	64,915	15.33	6,450	11.43	2,136	14.03

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	2,609	14.11	1,400	16.45	9,772	17.00
	Upper Limit ==>	5,218	14.61	2,800	16.95	19,543	17.50
	Lower Limit ==>	130	13.61	70	15.95	489	16.50
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313003-5	1,985	14.11	1,076	16.45	7,712	17.00
Lab Control Sample	KWG1313003-3	2,094	14.11	1,158	16.45	8,323	17.00
Duplicate Lab Control Sample	KWG1313003-4	2,134	14.11	1,134	16.45	8,427	17.00
Batch QCMS	KWG1313003-1	2,394	14.11	1,314	16.45	8,467	17.01
Batch QCDMS	KWG1313003-2	1,995	14.12	1,186	16.46	7,173	17.01
Batch QC	K1312655-003	2,232	14.13	1,118	16.46	7,431	17.02
RM11E-MWS002s-20_25'	K1312803-004	1,757	14.12	1,101	16.46	6,596	17.01
RM11E-MWS002s-5_20'	K1312803-005	2,331	14.13	1,253	16.47	7,986	17.03

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,310	18.00
	Upper Limit ==>	12,621	18.50
	Lower Limit ==>	316	17.50
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313003-5	4,899	18.00
Lab Control Sample	KWG1313003-3	5,454	18.01
Duplicate Lab Control Sample	KWG1313003-4	5,498	18.01
Batch QCMS	KWG1313003-1	5,966	18.02
Batch QCDMS	KWG1313003-2	5,168	18.04
Batch QC	K1312655-003	5,362	18.04
RM11E-MWS002s-20_25'	K1312803-004	4,588	18.03
RM11E-MWS002s-5_20'	K1312803-005	5,571	18.05

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/04/2013
		Time Analyzed:	09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120413\1204F004.D	**Lab Code:**	KWG1313419-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313419
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	66,716	15.31	6,767	11.42	2,434	14.02
	Upper Limit ==>	133,431	15.81	13,535	11.92	4,868	14.52
	Lower Limit ==>	33,358	14.81	338	10.92	122	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
RM11E-MWS002s-5_20'RE	K1312803-005	65,062	15.31	1,344	11.42	558	14.02

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013
Time Analyzed: 09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120413\1204F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313419-1
Analysis Lot: KWG1313419

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	2,750	14.12	1,607	16.46	10,355	17.01
	Upper Limit ==>	5,500	14.62	3,213	16.96	20,710	17.51
	Lower Limit ==>	138	13.62	80	15.96	518	16.51
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
RM11E-MWS002s-5_20'RE	K1312803-005	601	14.12	329	16.46	2,114	17.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013
Time Analyzed: 09:34

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120413\1204F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313419-1
Analysis Lot: KWG1313419

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,977	18.02
	Upper Limit ==>	13,953	18.52
	Lower Limit ==>	349	17.52
	ICAL Result ==>	6,386	18.01
Associated Analyses			
RM11E-MWS002s-5_20'RE	K1312803-005	1,440	18.03

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

		Batch QCMS KWG1313003-1 Matrix Spike			Batch QCDMS KWG1313003-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	0.080	1.35	1.20	106	1.77	1.20	141 *	50-120	27	30
2,4'-DDE	ND	1.26	1.20	105	1.54	1.20	128 *	24-123	20	30
2,4'-DDT	0.18	1.43	1.20	105	1.74	1.20	130 *	50-120	19	30
4,4'-DDD	0.23	1.44	1.20	102	1.94	1.20	143 *	42-120	29	30
4,4'-DDE	0.31	1.48	1.20	97	1.89	1.20	131 *	50-120	24	30
4,4'-DDT	1.9	3.26	1.20	112	3.27	1.20	113	50-120	0	30
alpha-Chlordane	0.58	1.72	1.20	95	1.86	1.20	107	50-120	8	30
cis-Nonachlor	0.31	1.43	1.20	93	1.53	1.20	101	50-120	7	30
gamma-Chlordane	0.68	1.85	1.20	98	2.05	1.20	114	50-120	11	30
trans-Nonachlor	0.84	2.06	1.20	102	2.21	1.20	115	50-120	7	30
Dieldrin	0.30	1.53	1.20	103	1.41	1.20	93	50-120	8	30
gamma-BHC (Lindane)	0.062	1.33	1.20	106	1.65	1.20	132 *	50-120	21	30
Heptachlor Epoxide	ND	1.52	1.20	127 *	1.76	1.20	146 *	50-120	15	30
Oxychlordane	ND	1.43	1.20	120	1.70	1.20	141 *	50-120	17	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313003

	Lab Control Sample KWG1313003-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313003-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.97	2.00	99	2.03	2.00	101	50-120	3	30
2,4'-DDE	2.00	2.00	100	2.06	2.00	103	24-123	3	30
2,4'-DDT	1.97	2.00	98	2.02	2.00	101	50-120	3	30
4,4'-DDD	2.00	2.00	100	2.04	2.00	102	42-120	2	30
4,4'-DDE	2.04	2.00	102	2.10	2.00	105	50-120	3	30
4,4'-DDT	2.01	2.00	100	2.11	2.00	105	50-120	5	30
alpha-Chlordane	2.12	2.00	106	2.12	2.00	106	50-120	0	30
cis-Nonachlor	2.21	2.00	110	2.18	2.00	109	50-120	1	30
gamma-Chlordane	2.14	2.00	107	2.09	2.00	104	50-120	2	30
trans-Nonachlor	2.17	2.00	109	2.13	2.00	106	50-120	2	30
Dieldrin	2.27	2.00	114	2.20	2.00	110	50-120	3	30
gamma-BHC (Lindane)	2.00	2.00	100	2.09	2.00	105	50-120	5	30
Heptachlor Epoxide	2.21	2.00	110	2.14	2.00	107	50-120	3	30
Oxychlordane	2.03	2.00	102	1.96	2.00	98	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/21/2013
Date Analyzed: 12/03/2013
Time Analyzed: 16:31

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name: Method Blank
Lab Code: KWG1313003-5

Instrument ID: MS21
File ID: J:\MS21\DATA\120313\1203F020.D

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low
Extraction Lot: KWG1313003

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313003-3	J:\MS21\DATA\120313\1203F021.D	12/03/13	16:58
Duplicate Lab Control Sample	KWG1313003-4	J:\MS21\DATA\120313\1203F022.D	12/03/13	17:25
Batch QCMS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
Batch QCDMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
Batch QC	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-MWS002s-20_25'	K1312803-004	J:\MS21\DATA\120313\1203F036.D	12/03/13	23:44
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120313\1203F040.D	12/04/13	01:32
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120413\1204F006.D	12/04/13	10:38

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:58

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313003-3	**File ID:**	J:\MS21\DATA\120313\1203F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313003-5	J:\MS21\DATA\120313\1203F020.D	12/03/13	16:31
Batch QCMS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
Batch QCDMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
Batch QC	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-MWS002s-20_25'	K1312803-004	J:\MS21\DATA\120313\1203F036.D	12/03/13	23:44
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120313\1203F040.D	12/04/13	01:32
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120413\1204F006.D	12/04/13	10:38

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.896	B	1.0	0.956	C	2.0	0.939	D	5.0	0.960	E	10	0.952
	F	20	0.901	G	40	0.936	H	60	0.977	I	80	0.998	J	100	1.03
2,4'-DDE	A	0.50	0.754	B	1.0	0.744	C	2.0	0.771	D	5.0	0.757	E	10	0.765
	F	20	0.695	G	40	0.734	H	60	0.757	I	80	0.776	J	100	0.785
2,4'-DDT	A	0.50	1.00	B	1.0	0.980	C	2.0	0.965	D	5.0	0.974	E	10	1.02
	F	20	0.945	G	40	0.987	H	60	1.01	I	80	1.01	J	100	1.01
4,4'-DDD	A	0.50	0.965	B	1.0	0.880	C	2.0	0.865	D	5.0	0.926	E	10	0.916
	F	20	0.850	G	40	0.876	H	60	0.906	I	80	0.918	J	100	0.949
4,4'-DDE	A	0.50	0.514	B	1.0	0.550	C	2.0	0.567	D	5.0	0.562	E	10	0.568
	F	20	0.524	G	40	0.541	H	60	0.559	I	80	0.567	J	100	0.574
4,4'-DDT	A	0.50	0.988	B	1.0	0.943	C	2.0	1.00	D	5.0	1.01	E	10	1.02
	F	20	0.985	G	40	1.04	H	60	1.07	I	80	1.09	J	100	1.11
alpha-Chlordane	A	0.50	4.25	B	1.0	4.59	C	2.0	4.19	D	5.0	4.22	E	10	4.25
	F	20	4.30	G	40	3.95	H	60	3.91	I	80	3.71	J	100	3.91
cis-Nonachlor	A	0.50	1.93	B	1.0	2.44	C	2.0	2.19	D	5.0	2.17	E	10	2.27
	F	20	2.28	G	40	2.00	H	60	1.98	I	80	1.83	J	100	1.97
gamma-Chlordane	A	0.50	4.50	B	1.0	4.99	C	2.0	4.24	D	5.0	4.52	E	10	4.56
	F	20	4.50	G	40	4.20	H	60	4.14	I	80	3.94	J	100	4.12
trans-Nonachlor	A	0.50	2.19	B	1.0	2.79	C	2.0	2.52	D	5.0	2.56	E	10	2.70
	F	20	2.72	G	40	2.49	H	60	2.43	I	80	2.32	J	100	2.44
Dieldrin				B	1.0	1.04	C	2.0	0.972	D	5.0	1.12	E	10	1.14
	F	20	1.02	G	40	1.01	H	60	1.06	I	80	1.10	J	100	1.07
gamma-BHC (Lindane)	A	0.50	0.635	B	1.0	0.586	C	2.0	0.598	D	5.0	0.546	E	10	0.564
	F	20	0.540	G	40	0.580	H	60	0.561	I	80	0.569	J	100	0.576
Heptachlor Epoxide				B	1.0	1.14	C	2.0	1.01	D	5.0	1.09	E	10	1.18
	F	20	1.12	G	40	1.10	H	60	1.11	I	80	1.08	J	100	1.07
Oxychlordane				B	1.0	1.00	C	2.0	0.948	D	5.0	1.03	E	10	0.982
	F	20	0.983	G	40	0.882	H	60	0.832	I	80	0.804	J	100	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.474	B	20	0.447	C	20	0.457	D	20	0.474	E	20	0.483
	F	20	0.477	G	20	0.454	H	20	0.471	I	20	0.484	J	20	0.472
S_Oxychlordane-13C10	A	20	0.144	B	20	0.126	C	20	0.141	D	20	0.136	E	20	0.136
	F	20	0.131	G	20	0.144	H	20	0.148	I	20	0.164	J	20	0.154
S_Heptachlrepox13C10	A	20	0.198	B	20	0.199	C	20	0.207	D	20	0.202	E	20	0.201
	F	20	0.196	G	20	0.204	H	20	0.203	I	20	0.224	J	20	0.215
S_Endrin-13C12	A	20	0.107	B	20	0.108	C	20	0.104	D	20	0.106	E	20	0.106
	F	20	0.113	G	20	0.115	H	20	0.107	I	20	0.109	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.05	B	5.0	2.97	C	5.0	2.99	D	5.0	2.96	E	5.0	3.01
	F	5.0	3.22	G	5.0	3.03	H	5.0	3.02	I	5.0	3.09	J	5.0	3.08
S_4,4'-DDT-d4	A	5.0	1.78	B	5.0	1.83	C	5.0	1.79	D	5.0	1.88	E	5.0	1.87
	F	5.0	2.05	G	5.0	1.95	H	5.0	1.97	I	5.0	2.07	J	5.0	2.09

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.3		≤ 20	0.954		.01
2,4'-DDE	MS	AverageRF	% RSD	3.4		≤ 20	0.754		.01
2,4'-DDT	MS	AverageRF	% RSD	2.4		≤ 20	0.990		.01
4,4'-DDD	MS	AverageRF	% RSD	4.1		≤ 20	0.905		.01
4,4'-DDE	MS	AverageRF	% RSD	3.7		≤ 20	0.553		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.03		.01
alpha-Chlordane	MS	AverageRF	% RSD	6.2		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.2		≤ 20	2.11		.01
gamma-Chlordane	MS	AverageRF	% RSD	6.9		≤ 20	4.37		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.4		≤ 20	2.52		.01
Dieldrin	MS	AverageRF	% RSD	5.3		≤ 20	1.06		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	4.7		≤ 20	0.575		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.1		≤ 20	1.10		.01
Oxychlordane	MS	AverageRF	% RSD	9.1		≤ 20	0.923		.01
S_GBHCD6	SURR	AverageRF	% RSD	2.6		≤ 20	0.469		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.9		≤ 20	0.142		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	4.2		≤ 20	0.205		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	3.2		≤ 20	0.109		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.5		≤ 20	3.04		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	5.9		≤ 20	1.93		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.954	0.940	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.754	0.745	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.990	0.936	-5	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.905	0.851	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.553	0.544	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.03	0.970	-5	NA	± 25 %	AverageRF
alpha-Chlordane	20	20	4.13	4.13	0	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	2.11	2.16	3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	4.37	4.37	0	NA	± 25 %	AverageRF
trans-Nonachlor	20	20	2.52	2.50	-1	NA	± 25 %	AverageRF
Dieldrin	20	20	1.06	1.04	-2	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.575	0.565	-2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.10	1.11	1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.923	0.875	-5	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313406
Units: ng/ml

File ID: J:\MS21\DATA\120313\1203F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.954	0.897	-6	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.728	-3	NA	± 25 %	AverageRF
2,4'-DDT	20	19	.01	0.990	0.935	-6	NA	± 25 %	AverageRF
4,4'-DDD	20	19	.01	0.905	0.852	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.553	0.519	-6	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.03	0.980	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	4.13	3.92	-5	NA	± 25 %	AverageRF
cis-Nonachlor	20	19	.01	2.11	1.96	-7	NA	± 25 %	AverageRF
gamma-Chlordane	20	19	.01	4.37	4.12	-6	NA	± 25 %	AverageRF
trans-Nonachlor	20	19	.01	2.52	2.44	-3	NA	± 25 %	AverageRF
Dieldrin	20	19	.01	1.06	0.998	-6	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.575	0.543	-6	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.11	0	NA	± 25 %	AverageRF
Oxychlordane	20	19	.01	0.923	0.862	-7	NA	± 25 %	AverageRF
S_GBHCD6	20	20	.01	0.469	0.474	1	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	21	.01	0.142	0.148	4	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	20	.01	0.205	0.210	2	NA	± 30 %	AverageRF
S_Endrin-13C12	20	21	.01	0.109	0.112	3	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.2	.01	3.04	3.14	3	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.3	.01	1.93	2.03	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313419
Units: ng/ml

File ID: J:\MS21\DATA\120413\1204F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	.01	0.954	0.934	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.703	-7	NA	± 25 %	AverageRF
2,4'-DDT	20	20	.01	0.990	0.982	-1	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.918	1	NA	± 25 %	AverageRF
4,4'-DDE	20	18	.01	0.553	0.509	-8	NA	± 25 %	AverageRF
4,4'-DDT	20	20	.01	1.03	1.02	0	NA	± 25 %	AverageRF
alpha-Chlordane	20	15	.01	4.13	3.15	-24	NA	± 25 %	AverageRF
cis-Nonachlor	20	15	.01	2.11	1.63	-23	NA	± 25 %	AverageRF
gamma-Chlordane	20	15	.01	4.37	3.32	-24	NA	± 25 %	AverageRF
trans-Nonachlor	20	15	.01	2.52	1.93	-23	NA	± 25 %	AverageRF
Dieldrin	20	17	.01	1.06	0.894	-16	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	21	.01	0.575	0.590	3	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	21	.01	1.10	1.14	4	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	0.923	0.901	-2	NA	± 25 %	AverageRF
S_GBHCD6	20	22	.01	0.469	0.507	8	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	26	.01	0.142	0.182	28	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	20	.01	0.205	0.206	1	NA	± 30 %	AverageRF
S_Endrin-13C12	20	22	.01	0.109	0.120	11	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.1	.01	3.04	3.10	2	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.4	.01	1.93	2.09	9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	Method Blank	KWG1313003-5	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	Lab Control Sample	KWG1313003-3	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	Duplicate Lab Control Sample	KWG1313003-4	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	Batch QCMS	KWG1313003-1	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	Batch QCDMS	KWG1313003-2	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	Batch QC	K1312655-003	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	RM11E-MWS002s-20_25'	K1312803-004	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	RM11E-MWS002s-5_20'	K1312803-005	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313419
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F004.D	Continuing Calibration Verification	KWG1313419-1	12/4/2013	09:34		12/4/2013	09:34
1204F005.D	Instrument Blank	KWG1313419-2	12/4/2013	10:06		12/4/2013	10:06
1204F006.D	RM11E-MWS002s-5_20'	K1312803-005	12/4/2013	10:38		12/4/2013	10:38
1204F007.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:02		12/4/2013	11:02
1204F008.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:30		12/4/2013	11:30
1204F009.D	ZZZZZZ	ZZZZZZ	12/4/2013	11:57		12/4/2013	11:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/21/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313003
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS002s-20_25'	K1312803-004	11/20/13	11/21/13	20.165g	1.0ml	69.0	
RM11E-MWS002s-5_20'	K1312803-005	11/20/13	11/21/13	20.195g	1.0ml	78.8	
RM11E-MWS002s-5_20'RE	K1312803-005	11/20/13	11/21/13	20.195g	1.0ml	78.8	
Method Blank	KWG1313003-5	NA	NA	20.280g	1.0ml	NA	
Batch QC	K1312655-003	NA	NA	20.141g	1.0ml	82.6	
Batch QCMS	KWG1313003-1	NA	NA	20.209g	1.0ml	82.6	
Batch QCDMS	KWG1313003-2	NA	NA	20.152g	1.0ml	82.6	
Lab Control Sample	KWG1313003-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313003-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Diesel and Residual Range Organics

Organic Analysis:
Diesel and Residual Range Organics - Silica Gel Treated

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312803

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS002s-20_25'	K1312803-004	11/20/2013	11/21/2013
RM11E-MWS002s-5_20'	K1312803-005	11/20/2013	11/21/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Lorna Patterson Name: Lorna Patterson

Date: 12/11/13 Title:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS002s-20_25'	**Units:**	mg/Kg
Lab Code:	K1312803-004	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	37	2.6	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	ND	U	150	5.7	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	12/03/13	Acceptable
n-Triacontane	77	50-150	12/03/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	mg/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**33**	H	32	2.3	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**220**	O	130	5.0	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	50-150	12/03/13	Acceptable
n-Triacontane	96	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1313276-6	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1.8	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	ND	U	99	3.9	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/03/13	Acceptable
n-Triacontane	81	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1		Sur2	
RM11E-MWS002s-20_25'	K1312803-004	82		77	
RM11E-MWS002s-5_20'	K1312803-005	91		96	
Batch QC	K1312857-028	110		114	
Batch QC	K1312857-029	72		70	
Batch QCDUP	KWG1313276-3	204	*	199	*
Batch QCDUP	KWG1313276-4	91		99	
Method Blank	KWG1313276-6	87		81	
Lab Control Sample	KWG1313276-5	85		83	

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/05/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313276-3 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	30	2.2	11	ND	NC	NC	40
Residual Range Organics (RRO)	120	4.7	110	ND	NC	NC	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313276-4 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	28	2.0	17	23	20	32 #	40
Residual Range Organics (RRO)	120	4.4	260	360	310	32	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3541	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313276

	Lab Control Sample KWG1313276-5 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	212	267	80	42-134
Residual Range Organics (RRO)	121	133	91	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	13:52

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313276-6	**File ID:**	J:\GC21\DATA\120313F\1203F024.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313276-5	J:\GC21\DATA\120313F\1203F022.D	12/03/13	13:29
RM11E-MWS002s-20_25'	K1312803-004	J:\GC21\DATA\120313F\1203F030.D	12/03/13	14:59
RM11E-MWS002s-5_20'	K1312803-005	J:\GC21\DATA\120313F\1203F032.D	12/03/13	15:21
Batch QC	K1312857-028	J:\GC21\DATA\120313F\1203F046.D	12/03/13	18:00
Batch QCDUP	KWG1313276-4	J:\GC21\DATA\120313F\1203F048.D	12/03/13	18:22
Batch QC	K1312857-029	J:\GC21\DATA\120513F\1205F038.D	12/05/13	14:24
Batch QCDUP	KWG1313276-3	J:\GC21\DATA\120513F\1205F040.D	12/05/13	14:46

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	13:29

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313276-5	**File ID:**	J:\GC21\DATA\120313F\1203F022.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313276-6	J:\GC21\DATA\120313F\1203F024.D	12/03/13	13:52
RM11E-MWS002s-20_25'	K1312803-004	J:\GC21\DATA\120313F\1203F030.D	12/03/13	14:59
RM11E-MWS002s-5_20'	K1312803-005	J:\GC21\DATA\120313F\1203F032.D	12/03/13	15:21
Batch QC	K1312857-028	J:\GC21\DATA\120313F\1203F046.D	12/03/13	18:00
Batch QCDUP	KWG1313276-4	J:\GC21\DATA\120313F\1203F048.D	12/03/13	18:22
Batch QC	K1312857-029	J:\GC21\DATA\120513F\1205F038.D	12/05/13	14:24
Batch QCDUP	KWG1313276-3	J:\GC21\DATA\120513F\1205F040.D	12/05/13	14:46

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\091013F\0910F072.D	I	J:\GC21\DATA\091013F\0910F096.D
B	J:\GC21\DATA\091013F\0910F074.D	J	J:\GC21\DATA\091013F\0910F098.D
C	J:\GC21\DATA\091013F\0910F076.D	K	J:\GC21\DATA\091013F\0910F100.D
D	J:\GC21\DATA\091013F\0910F078.D	L	J:\GC21\DATA\091013F\0910F102.D
E	J:\GC21\DATA\091013F\0910F080.D	M	J:\GC21\DATA\091013F\0910F104.D
F	J:\GC21\DATA\091013F\0910F082.D	N	J:\GC21\DATA\091013F\0910F106.D
G	J:\GC21\DATA\091013F\0910F092.D		
H	J:\GC21\DATA\091013F\0910F094.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
				G	20	1010	H	50	924	I	200	965	J	500	972
	K	2000	989	L	5000	1030	M	20000	916	N	50000	920			
Residual Range Organics (RRO)	A	20	968	B	50	756	C	200	699	D	500	627	E	2000	615
	F	5000	588												
o-Terphenyl															
				G	1.0	1300	H	2.5	1190	I	10	1260	J	25	1280
	K	100	1280	L	250	1330									
n-Triacontane															
				G	1.0	938	H	2.5	919	I	10	1050	J	25	1080
	K	100	1070	L	250	1160									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	4.4		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.999		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	3.8		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	8.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	09/10/2013
		Date Analyzed:	09/11/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL12766
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\091013F\0910F088.D J:\GC21\DATA\091013F\0910F110.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	964	0	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	709	599	NA	-1	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313400
Units: ppm

File ID: J:\GC21\DATA\120313F\1203F016.D
J:\GC21\DATA\120313F\1203F018.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	972	1	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	930	709	565	NA	-7	± 15 %	Linear
o-Terphenyl	50	52	1270	1320	4	NA	± 15 %	AverageRF
n-Triacontane	50	48	1040	1000	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	09/10/2013
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL12766
		Analysis Lot:	KWG1313400
		Units:	ppm
File ID:	J:\GC21\DATA\120313F\1203F050.D J:\GC21\DATA\120313F\1203F052.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	965	938	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	709	610	NA	1	± 15 %	Linear
o-Terphenyl	50	50	1270	1280	1	NA	± 15 %	AverageRF
n-Triacontane	50	52	1040	1070	4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313547
Units: ppm

File ID: J:\GC21\DATA\120513F\1205F032.D
J:\GC21\DATA\120513F\1205F034.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	965	945	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	950	709	574	NA	-5	± 15 %	Linear
o-Terphenyl	50	52	1270	1310	3	NA	± 15 %	AverageRF
n-Triacontane	50	49	1040	1010	-2	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313547
Units: ppm

File ID: J:\GC21\DATA\120513F\1205F054.D
J:\GC21\DATA\120513F\1205F056.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	940	965	903	-6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	709	595	NA	-2	± 15 %	Linear
o-Terphenyl	50	49	1270	1240	-3	NA	± 15 %	AverageRF
n-Triacontane	50	50	1040	1030	-1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313400
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F016.D	Continuing Calibration Verification	KWG1313400-1	12/3/2013	12:05		12/3/2013	12:21
1203F018.D	Continuing Calibration Verification	KWG1313400-1	12/3/2013	12:38		12/3/2013	12:54
1203F020.D	Instrument Blank	KWG1313400-5	12/3/2013	13:07		12/3/2013	13:23
1203F022.D	Lab Control Sample	KWG1313276-5	12/3/2013	13:29		12/3/2013	13:45
1203F024.D	Method Blank	KWG1313276-6	12/3/2013	13:52		12/3/2013	14:08
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	14:14		12/3/2013	14:30
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	14:37		12/3/2013	14:53
1203F030.D	RM11E-MWS002s-20_25'	K1312803-004	12/3/2013	14:59		12/3/2013	15:15
1203F032.D	RM11E-MWS002s-5_20'	K1312803-005	12/3/2013	15:21		12/3/2013	15:37
1203F034.D	ZZZZZZ	ZZZZZZ	12/3/2013	15:44		12/3/2013	16:00
1203F036.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:06		12/3/2013	16:22
1203F038.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:29		12/3/2013	16:45
1203F040.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:52		12/3/2013	17:08
1203F042.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:15		12/3/2013	17:31
1203F044.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:37		12/3/2013	17:53
1203F046.D	Batch QC	K1312857-028	12/3/2013	18:00		12/3/2013	18:16
1203F048.D	Batch QCDUP	KWG1313276-4	12/3/2013	18:22		12/3/2013	18:38
1203F050.D	Continuing Calibration Verification	KWG1313400-2	12/3/2013	18:45		12/3/2013	19:01
1203F052.D	Continuing Calibration Verification	KWG1313400-2	12/3/2013	19:07		12/3/2013	19:23
1203F054.D	Instrument Blank	KWG1313400-6	12/3/2013	19:29		12/3/2013	19:45
1203F088.D	Continuing Calibration Verification	KWG1313400-3	12/4/2013	01:48		12/4/2013	02:04
1203F090.D	Continuing Calibration Verification	KWG1313400-3	12/4/2013	02:11		12/4/2013	02:27
1203F092.D	Instrument Blank	KWG1313400-7	12/4/2013	02:33		12/4/2013	02:49
1203F094.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:55		12/4/2013	03:11
1203F096.D	ZZZZZZ	ZZZZZZ	12/4/2013	03:17		12/4/2013	03:33
1203F098.D	ZZZZZZ	ZZZZZZ	12/4/2013	03:40		12/4/2013	03:56
1203F100.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:02		12/4/2013	04:18
1203F102.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:24		12/4/2013	04:40
1203F104.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:46		12/4/2013	05:02
1203F106.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:08		12/4/2013	05:24
1203F108.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:31		12/4/2013	05:47
1203F110.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:54		12/4/2013	06:10
1203F112.D	Continuing Calibration Verification	KWG1313400-4	12/4/2013	06:16		12/4/2013	06:32
1203F114.D	Continuing Calibration Verification	KWG1313400-4	12/4/2013	06:38		12/4/2013	06:54

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313400
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
I203F116.D	Instrument Blank	KWG1313400-8	12/4/2013	07:00		12/4/2013	07:16

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313547
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1205F014.D	Continuing Calibration Verification	KWG1313547-1	12/5/2013	09:57		12/5/2013	10:13
1205F016.D	Continuing Calibration Verification	KWG1313547-1	12/5/2013	10:19		12/5/2013	10:35
1205F018.D	Instrument Blank	KWG1313547-2	12/5/2013	10:41		12/5/2013	10:57
1205F020.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:04		12/5/2013	11:20
1205F022.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:26		12/5/2013	11:42
1205F024.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:48		12/5/2013	12:04
1205F026.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:11		12/5/2013	12:27
1205F028.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:33		12/5/2013	12:49
1205F030.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:55		12/5/2013	13:11
1205F032.D	Continuing Calibration Verification	KWG1313547-3	12/5/2013	13:17		12/5/2013	13:33
1205F034.D	Continuing Calibration Verification	KWG1313547-3	12/5/2013	13:39		12/5/2013	13:55
1205F036.D	Instrument Blank	KWG1313547-4	12/5/2013	14:01		12/5/2013	14:17
1205F038.D	Batch QC	K1312857-029	12/5/2013	14:24		12/5/2013	14:40
1205F040.D	Batch QCDUP	KWG1313276-3	12/5/2013	14:46		12/5/2013	15:02
1205F042.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:08		12/5/2013	15:24
1205F044.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:30		12/5/2013	15:46
1205F046.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:52		12/5/2013	16:08
1205F048.D	ZZZZZZ	ZZZZZZ	12/5/2013	16:14		12/5/2013	16:30
1205F050.D	ZZZZZZ	ZZZZZZ	12/5/2013	16:37		12/5/2013	16:53
1205F052.D	ZZZZZZ	ZZZZZZ	12/5/2013	16:59		12/5/2013	17:15
1205F054.D	Continuing Calibration Verification	KWG1313547-5	12/5/2013	17:21		12/5/2013	17:37
1205F056.D	Continuing Calibration Verification	KWG1313547-5	12/5/2013	17:44		12/5/2013	18:00
1205F060.D	Instrument Blank	KWG1313547-6	12/5/2013	18:29		12/5/2013	18:45
1205F062.D	ZZZZZZ	ZZZZZZ	12/5/2013	18:51		12/5/2013	19:07
1205F064.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:13		12/5/2013	19:29
1205F066.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:35		12/5/2013	19:51
1205F068.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:58		12/5/2013	20:14
1205F070.D	ZZZZZZ	ZZZZZZ	12/5/2013	20:20		12/5/2013	20:36
1205F072.D	ZZZZZZ	ZZZZZZ	12/5/2013	20:43		12/5/2013	20:59
1205F074.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:05		12/5/2013	21:21
1205F076.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:27		12/5/2013	21:43
1205F078.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:49		12/5/2013	22:05
1205F080.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:11		12/5/2013	22:27
1205F082.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:34		12/5/2013	22:50

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313547
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1205F084.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:56		12/5/2013	23:12
1205F086.D	Continuing Calibration Verification	KWG1313547-7	12/5/2013	23:19		12/5/2013	23:35
1205F088.D	Continuing Calibration Verification	KWG1313547-7	12/5/2013	23:41		12/5/2013	23:57
1205F090.D	Instrument Blank	KWG1313547-8	12/6/2013	00:03		12/6/2013	00:19
1205F092.D	ZZZZZZ	ZZZZZZ	12/6/2013	00:25		12/6/2013	00:41
1205F094.D	ZZZZZZ	ZZZZZZ	12/6/2013	00:48		12/6/2013	01:04
1205F096.D	ZZZZZZ	ZZZZZZ	12/6/2013	01:10		12/6/2013	01:26
1205F098.D	ZZZZZZ	ZZZZZZ	12/6/2013	01:33		12/6/2013	01:49
1205F100.D	Continuing Calibration Verification	KWG1313547-9	12/6/2013	01:55		12/6/2013	02:11
1205F102.D	Continuing Calibration Verification	KWG1313547-9	12/6/2013	02:17		12/6/2013	02:33
1205F104.D	Instrument Blank	KWG1313547-10	12/6/2013	02:40		12/6/2013	02:56

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/26/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313276
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS002s-20_25'	K1312803-004	11/20/13	11/21/13	30.147g	10mL	69.0	
RM11E-MWS002s-5_20'	K1312803-005	11/20/13	11/21/13	30.070g	10mL	78.8	
Batch QCDUP	KWG1313276-3	NA	NA	30.039g	10mL	84.2	
Batch QCDUP	KWG1313276-4	NA	NA	30.428g	10mL	89.0	
Method Blank	KWG1313276-6	NA	NA	30.436g	10mL	NA	
Batch QC	K1312857-028	NA	NA	30.304g	10mL	89.0	
Batch QC	K1312857-029	NA	NA	30.405g	10mL	84.2	
Lab Control Sample	KWG1313276-5	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312803

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS002s-20_25'	K1312803-004	11/20/2013	11/21/2013
RM11E-MWS002s-5_20'	K1312803-005	11/20/2013	11/21/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS002s-20_25'	**Units:**	ug/Kg
Lab Code:	K1312803-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	7.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	ug/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	6.4	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	**4.4**	P	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	**8.2**	P	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	**34**		4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313283-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	5.0	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MWS002s-20_25'	K1312803-004	74
RM11E-MWS002s-5_20'	K1312803-005	71
Batch QC	K1312857-026	78
Method Blank	KWG1313283-4	83
Batch QCMS	KWG1313283-1	76
Batch QCDMS	KWG1313283-2	74
Lab Control Sample	KWG1313283-3	73

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/10/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

		Batch QCMS KWG1313283-1 Matrix Spike			Batch QCDMS KWG1313283-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	82.6	147	56	91.0	148	62	23-145	10	40
Aroclor 1260	14	102	147	60	102	148	60	24-148	0	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/25/2013
Date Analyzed: 12/07/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313283

	Lab Control Sample KWG1313283-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	88.2	200	44	42-122
Aroclor 1260	131	200	66	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:46

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-4	**File ID:**	J:\GC32\DATA\120613.B\1206F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313283-3	J:\GC32\DATA\120613.B\1206F005.D	12/07/13	03:25
RM11E-MWS002s-20_25'	K1312803-004	J:\GC32\DATA\120613.B\1206F007.D	12/07/13	04:07
RM11E-MWS002s-5_20'	K1312803-005	J:\GC32\DATA\120613.B\1206F008.D	12/07/13	04:28
Batch QC	K1312857-026	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
Batch QCMS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
Batch QCDMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:25

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-3	**File ID:**	J:\GC32\DATA\120613.B\1206F005.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313283-4	J:\GC32\DATA\120613.B\1206F006.D	12/07/13	03:46
RM11E-MWS002s-20_25'	K1312803-004	J:\GC32\DATA\120613.B\1206F007.D	12/07/13	04:07
RM11E-MWS002s-5_20'	K1312803-005	J:\GC32\DATA\120613.B\1206F008.D	12/07/13	04:28
Batch QC	K1312857-026	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
Batch QCMS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
Batch QCDMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	93800	B	5.0	88900	C	50	75500	D	100	71400	E	200	66800
	F	500	63100												
Aroclor 1016 {1}	A	25	2760	B	50	2600	C	500	2340	D	1000	2140	E	2000	1960
	F	5000	1840												
Aroclor 1016 {2}	A	25	2230	B	50	2150	C	500	1970	D	1000	1810	E	2000	1720
	F	5000	1590												
Aroclor 1016 {3}	A	25	6770	B	50	6340	C	500	6200	D	1000	5760	E	2000	5370
	F	5000	5280												
Aroclor 1016 {4}	A	25	4740	B	50	4460	C	500	4050	D	1000	3780	E	2000	3590
	F	5000	3450												
Aroclor 1016 {5}	A	25	3620	B	50	3560	C	500	3180	D	1000	2980	E	2000	2830
	F	5000	2710												
Aroclor 1260 {1}	A	25	2830	B	50	2820	C	500	2770	D	1000	2720	E	2000	2670
	F	5000	2530												
Aroclor 1260 {2}	A	25	4540	B	50	4440	C	500	4050	D	1000	3920	E	2000	3740
	F	5000	3480												
Aroclor 1260 {3}	A	25	4470	B	50	4560	C	500	4100	D	1000	3990	E	2000	3850
	F	5000	3630												
Aroclor 1260 {4}	A	25	9850	B	50	9590	C	500	8750	D	1000	8720	E	2000	8590
	F	5000	8360												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7400	B	50	7330	C	500	6600	D	1000	6440	E	2000	6230
	F	5000	5990												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	13.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	10.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	8.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	6.7		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F148.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	890	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	1910	1620	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	780	5950	4630	-22	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	850	4010	3390	-15	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	880	3150	2760	-12	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	1000	2720	2720	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4030	4780	19	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1200	4100	4740	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	8980	10300	14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	6670	7390	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	12	± 20 %	NA

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† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.27E+6	B	5.0	1.21E+6	C	50	9.81E+5	D	100	9.42E+5	E	200	9.01E+5
	F	500	8.84E+5												
Aroclor 1016 {1}	A	25	39300	B	50	37000	C	500	32500	D	1000	30200	E	2000	28000
	F	5000	26600												
Aroclor 1016 {2}	A	25	55800	B	50	51500	C	500	44600	D	1000	41800	E	2000	38400
	F	5000	36000												
Aroclor 1016 {3}	A	25	59000	B	50	58800	C	500	52100	D	1000	49800	E	2000	47700
	F	5000	48100												
Aroclor 1016 {4}	A	25	44800	B	50	43900	C	500	39100	D	1000	36600	E	2000	35600
	F	5000	34900												
Aroclor 1016 {5}	A	25	42900	B	50	42600	C	500	38500	D	1000	36500	E	2000	35900
	F	5000	34900												
Aroclor 1260 {1}	A	25	53800	B	50	47200	C	500	38300	D	1000	37800	E	2000	36200
	F	5000	34900												
Aroclor 1260 {2}	A	25	65500	B	50	63500	C	500	55900	D	1000	55000	E	2000	54600
	F	5000	52700												
Aroclor 1260 {3}	A	25	60400	B	50	61900	C	500	54900	D	1000	54000	E	2000	53400
	F	5000	52000												
Aroclor 1260 {4}	A	25	1.47E+5	B	50	1.35E+5	C	500	1.22E+5	D	1000	1.24E+5	E	2000	1.24E+5
	F	5000	1.25E+5												

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Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	93700	B	50	85900	C	500	76300	D	1000	74800	E	2000	72800
	F	5000	72300												

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Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	10.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	8.9		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	18.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	7.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	7.5		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.9		≤ 20

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F148.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	840	32300	27000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	840	44700	37500	-16	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	880	52600	46200	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	860	39200	33800	-14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	890	38500	34200	-11	NA	± 100 %	AverageRF
Aroclor 1016	1000	860	NA	NA	NA	-14	± 20 %	NA
Aroclor 1260 {1}	1000	970	41400	40200	-3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	57900	68300	18	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	56100	63800	14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	130000	149000	15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	79300	85100	7	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA

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† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	76600	72900	-5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	440	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	1910	1790	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	460	5950	5460	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3700	-8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3050	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	440	2720	2420	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	450	4030	3590	-11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	4100	3670	-10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	440	8980	7880	-12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6670	6090	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	1030000	989000	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	480	32300	31200	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	41800	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	52600	56100	7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	540	39200	42100	7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	540	38500	41300	7	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	470	41400	39300	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	57900	54000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	56100	52900	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	130000	120000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	75100	-5	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F014.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71400	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	500	2280	2260	-1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1910	1910	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	5950	5710	-4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	4010	3880	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3030	-4	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	410	2720	2260	-17	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3360	-17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3500	-15	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7680	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F014.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	1030000	960000	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	32300	33300	3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	44700	44600	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	52600	54000	3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	39200	40000	2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	38500	39100	1	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	420	41400	35100	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	57900	50500	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	56100	51000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	130000	116000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	74000	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F004.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	45	76600	69000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	470	2280	2130	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	460	1910	1770	-7	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	450	5950	5330	-10	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3710	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	2990	-5	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	450	2720	2430	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	4030	3530	-12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	4100	3570	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7660	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	440	6670	5880	-12	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-13	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F004.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	898000	-13	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	490	32300	31500	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	42000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	52600	51600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	39200	38000	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	38500	37800	-2	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	37500	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	56100	48300	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	420	130000	108000	-17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	430	79300	68100	-14	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F026.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71300	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	2280	2380	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	510	1910	1960	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	470	5950	5590	-6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	4010	3970	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	3150	3060	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	0	± 20 %	NA
Aroclor 1260 {1}	500	430	2720	2330	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3390	-16	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3540	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7710	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F026.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	912000	-12	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	590	32300	38000	18	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	550	44700	49300	10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	560	52600	58600	11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	39200	41600	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	38500	40800	6	NA	± 100 %	AverageRF
Aroclor 1016	500	550	NA	NA	NA	10	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	36800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49800	-14	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	56100	49800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	130000	113000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	79300	71700	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313732
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F003.D	Continuing Calibration Verification	KWG1313732-1	12/7/2013	02:42		12/7/2013	02:42
1206F004.D	Instrument Blank	KWG1313732-2	12/7/2013	03:03		12/7/2013	03:03
1206F005.D	Lab Control Sample	KWG1313283-3	12/7/2013	03:25		12/7/2013	03:25
1206F006.D	Method Blank	KWG1313283-4	12/7/2013	03:46		12/7/2013	03:46
1206F007.D	RM11E-MWS002s-20_25'	K1312803-004	12/7/2013	04:07		12/7/2013	04:07
1206F008.D	RM11E-MWS002s-5_20'	K1312803-005	12/7/2013	04:28		12/7/2013	04:28
1206F009.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:49		12/7/2013	04:49
1206F010.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:11		12/7/2013	05:11
1206F011.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:32		12/7/2013	05:32
1206F012.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:53		12/7/2013	05:53
1206F013.D	ZZZZZZ	ZZZZZZ	12/7/2013	06:14		12/7/2013	06:14
1206F014.D	Continuing Calibration Verification	KWG1313732-3	12/7/2013	06:36		12/7/2013	06:36
1206F015.D	Instrument Blank	KWG1313732-4	12/7/2013	06:57		12/7/2013	06:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313733
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F004.D	Continuing Calibration Verification	KWG1313733-1	12/10/2013	17:38		12/10/2013	17:38
1210F005.D	Instrument Blank	KWG1313733-2	12/10/2013	18:00		12/10/2013	18:00
1210F006.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:21		12/10/2013	18:21
1210F010.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:43		12/10/2013	19:43
1210F014.D	Batch QC	K1312857-026	12/10/2013	21:06		12/10/2013	21:06
1210F018.D	Batch QCMS	KWG1313283-1	12/10/2013	22:27		12/10/2013	22:27
1210F022.D	Batch QCDMS	KWG1313283-2	12/10/2013	23:49		12/10/2013	23:49
1210F026.D	Continuing Calibration Verification	KWG1313733-3	12/11/2013	01:10		12/11/2013	01:10
1210F027.D	Instrument Blank	KWG1313733-4	12/11/2013	01:31		12/11/2013	01:31
1210F028.D	ZZZZZZ	ZZZZZZ	12/11/2013	01:52		12/11/2013	01:52
1210F032.D	ZZZZZZ	ZZZZZZ	12/11/2013	03:13		12/11/2013	03:13
1210F036.D	ZZZZZZ	ZZZZZZ	12/11/2013	04:35		12/11/2013	04:35
1210F040.D	Continuing Calibration Verification	KWG1313733-5	12/11/2013	05:56		12/11/2013	05:56
1210F041.D	Instrument Blank	KWG1313733-6	12/11/2013	06:17		12/11/2013	06:17

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/25/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1313283
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS002s-20_25'	K1312803-004	11/20/13	11/21/13	40.009g	4mL	69.0	
RM11E-MWS002s-5_20'	K1312803-005	11/20/13	11/21/13	40.034g	4mL	78.8	
Method Blank	KWG1313283-4	NA	NA	40.381g	4mL	NA	
Batch QC	K1312857-026	NA	NA	30.367g	4mL	90.2	
Batch QCMS	KWG1313283-1	NA	NA	30.149g	4mL	90.2	
Batch QCDMS	KWG1313283-2	NA	NA	30.023g	4mL	90.2	
Lab Control Sample	KWG1313283-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	ug/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	4.3	2.1	4.4	8.1	59.2	P	1	12/07/13
Aroclor 1254	4.3	2.1	8.2	16	64.5	P	1	12/07/13
Aroclor 1260	4.3	2.1	34	35	2.9		1	12/07/13

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1312803

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS002s-20_25'	K1312803-004	11/20/2013	11/21/2013
RM11E-MWS002s-5_20'	K1312803-005	11/20/2013	11/21/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Karin Bailey
Name: Karin Bailey
Date: 12/11/13
Title: Scientist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS002s-20_25'	**Units:**	ug/Kg
Lab Code:	K1312803-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.3	2.9	1	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	7.3	2.8	1	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	ND	U	7.3	2.6	1	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	7.3	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	7.3	3.3	1	11/21/13	12/04/13	KWG1313002	
Phenanthrene	ND	U	7.3	3.6	1	11/21/13	12/04/13	KWG1313002	
Anthracene	ND	U	7.3	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluoranthene	ND	U	7.3	3.7	1	11/21/13	12/04/13	KWG1313002	
Pyrene	ND	U	7.3	3.7	1	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	ND	U	7.3	3.6	1	11/21/13	12/04/13	KWG1313002	
Chrysene	ND	U	7.3	4.1	1	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	7.3	3.3	1	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	ND	U	73	5.3	1	11/21/13	12/04/13	KWG1313002	*
Bis(2-ethylhexyl) Phthalate	ND	U	73	8.9	1	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	ND	U	7.3	3.4	1	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	ND	U	7.3	4.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	ND	U	7.3	3.6	1	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	ND	U	7.3	3.2	1	11/21/13	12/04/13	KWG1313002	
Dibenz(a,h)anthracene	ND	U	7.3	3.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	ND	U	7.3	3.7	1	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	33	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	29	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	29	10-119	12/04/13	Acceptable
Terphenyl-d14	39	33-129	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	ug/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	32	15	5	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	32	14	5	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	**30**	JD	32	13	5	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	32	16	5	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	32	17	5	11/21/13	12/04/13	KWG1313002	
Phenanthrene	**44**	D	32	18	5	11/21/13	12/04/13	KWG1313002	
Anthracene	**23**	JD	32	16	5	11/21/13	12/04/13	KWG1313002	
Fluoranthene	**81**	D	32	19	5	11/21/13	12/04/13	KWG1313002	
Pyrene	**110**	D	32	19	5	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	**47**	D	32	18	5	11/21/13	12/04/13	KWG1313002	
Chrysene	**70**	D	32	21	5	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	32	17	5	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	ND	U	320	27	5	11/21/13	12/04/13	KWG1313002	*
Bis(2-ethylhexyl) Phthalate	**1100**	D	320	45	5	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	**100**	D	32	17	5	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	**40**	D	32	20	5	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	**110**	D	32	18	5	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	**95**	D	32	16	5	11/21/13	12/04/13	KWG1313002	
Dibenz(a,h)anthracene	**20**	JD	32	15	5	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	**110**	D	32	19	5	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	63	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	59	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	50	10-119	12/04/13	Acceptable
Terphenyl-d14	62	33-129	12/04/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313002-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.0	2.9	1	11/21/13	12/04/13	KWG1313002	
2-Methylnaphthalene	ND	U	5.0	2.8	1	11/21/13	12/04/13	KWG1313002	
Acenaphthylene	ND	U	5.0	2.6	1	11/21/13	12/04/13	KWG1313002	
Acenaphthene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluorene	ND	U	5.0	3.3	1	11/21/13	12/04/13	KWG1313002	
Phenanthrene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Anthracene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Fluoranthene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	
Pyrene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	
Benz(a)anthracene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Chrysene	ND	U	5.0	4.1	1	11/21/13	12/04/13	KWG1313002	
Hexachlorobenzene	ND	U	5.0	3.3	1	11/21/13	12/04/13	KWG1313002	
Pentachlorophenol	ND	U	50	5.3	1	11/21/13	12/04/13	KWG1313002	*
Bis(2-ethylhexyl) Phthalate	ND	U	50	8.9	1	11/21/13	12/04/13	KWG1313002	
Benzo(b)fluoranthene	ND	U	5.0	3.4	1	11/21/13	12/04/13	KWG1313002	
Benzo(k)fluoranthene	ND	U	5.0	4.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(a)pyrene	ND	U	5.0	3.6	1	11/21/13	12/04/13	KWG1313002	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	3.2	1	11/21/13	12/04/13	KWG1313002	
Dibenz(a,h)anthracene	ND	U	5.0	3.0	1	11/21/13	12/04/13	KWG1313002	
Benzo(g,h,i)perylene	ND	U	5.0	3.7	1	11/21/13	12/04/13	KWG1313002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	58	27-91	12/04/13	Acceptable
2-Fluorobiphenyl	56	25-97	12/04/13	Acceptable
2,4,6-Tribromophenol	43	10-119	12/04/13	Acceptable
Terphenyl-d14	64	33-129	12/04/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
Batch QC	K1312655-002	56 D	66 D	73 D	67 D
RM11E-MWS002s-20_25'	K1312803-004	33	29	29	39
RM11E-MWS002s-5_20'	K1312803-005	63 D	59 D	50 D	62 D
Method Blank	KWG1313002-5	58	56	43	64
Batch QCMS	KWG1313002-1	55 D	52 D	59 D	63 D
Batch QCDMS	KWG1313002-2	58 D	52 D	54 D	60 D
Lab Control Sample	KWG1313002-3	43	40	40	46
Duplicate Lab Control Sample	KWG1313002-4	62	51	52	64

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	27-91
Sur2 =	2-Fluorobiphenyl	25-97
Sur3 =	2,4,6-Tribromophenol	10-119
Sur4 =	Terphenyl-d14	33-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013
Time Analyzed: 13:23

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120413\1204F003.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313505-2
Analysis Lot: KWG1313505

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	428,410	10.65	241,857	13.48	463,692	15.91
	Upper Limit ==>	856,820	11.15	483,714	13.98	927,384	16.41
	Lower Limit ==>	214,205	10.15	120,929	12.98	231,846	15.41
	ICAL Result ==>	411,958	10.64	230,718	13.49	428,281	15.92
Associated Analyses							
Method Blank	KWG1313002-5	377,623	10.64	204,506	13.48	388,978	15.91
Lab Control Sample	KWG1313002-3	423,868	10.65	221,092	13.48	403,400	15.91
Duplicate Lab Control Sample	KWG1313002-4	391,453	10.64	228,170	13.48	407,464	15.91
Batch QCMS	KWG1313002-1	401,409	10.63	228,228	13.48	402,347	15.91
Batch QCDMS	KWG1313002-2	422,256	10.64	220,467	13.48	393,159	15.91
Batch QC	K1312655-002	411,954	10.65	207,631	13.48	387,075	15.92
RM11E-MWS002s-20_25'	K1312803-004	401,818	10.65	216,209	13.49	397,739	15.93
RM11E-MWS002s-5_20'	K1312803-005	362,734	10.65	201,212	13.49	387,010	15.93

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013
Time Analyzed: 13:23

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120413\1204F003.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313505-2
Analysis Lot: KWG1313505

		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT
	Results ==>	459,774	20.46	328,714	24.13
	Upper Limit ==>	919,548	20.96	657,428	24.63
	Lower Limit ==>	229,887	19.96	164,357	23.63
	ICAL Result ==>	442,598	20.46	342,958	24.13
Associated Analyses					
Method Blank	KWG1313002-5	386,256	20.44	292,781	24.12
Lab Control Sample	KWG1313002-3	405,062	20.46	307,189	24.12
Duplicate Lab Control Sample	KWG1313002-4	397,606	20.45	296,855	24.13
Batch QCMS	KWG1313002-1	391,264	20.46	294,091	24.16
Batch QCDMS	KWG1313002-2	383,871	20.47	299,464	24.17
Batch QC	K1312655-002	385,396	20.48	320,652	24.19
RM11E-MWS002s-20_25'	K1312803-004	353,534	20.47	287,661	24.16
RM11E-MWS002s-5_20'	K1312803-005	334,434	20.48	272,543	24.18

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1312655-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

		Batch QCMS KWG1313002-1 Matrix Spike			Batch QCDMS KWG1313002-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	101	147	68	85.2	147	58	12-104	17	40
2-Methylnaphthalene	ND	97.8	147	66	87.0	147	59	19-99	12	40
Acenaphthylene	39	130	147	62	116	147	52	20-106	12	40
Acenaphthene	ND	105	147	71	99.7	147	68	10-132	5	40
Fluorene	ND	105	147	72	97.7	147	66	12-129	8	40
Phenanthrene	150	295	147	97	206	147	37	15-121	35	40
Anthracene	59	151	147	62	136	147	52	14-113	10	40
Fluoranthene	370	473	147	73	382	147	11	10-142	21	40
Pyrene	370	541	147	117	412	147	30	17-129	27	40
Benz(a)anthracene	170	273	147	70	224	147	37	10-137	19	40
Chrysene	260	364	147	68	319	147	38	10-146	13	40
Hexachlorobenzene	ND	94.0	147	64	89.9	147	61	30-106	4	40
Pentachlorophenol	68	165	147	66	187	147	81	10-123	13	40
Bis(2-ethylhexyl) Phthalate	92	302	147	142 *	172	147	54	20-138	55 *	40
Benzo(b)fluoranthene	330	445	147	77	388	147	38	23-122	14	40
Benzo(k)fluoranthene	110	226	147	78	203	147	62	28-119	11	40
Benzo(a)pyrene	210	354	147	99	291	147	56	13-126	20	40
Indeno(1,2,3-cd)pyrene	240	316	147	52	298	147	40	22-129	6	40
Dibenz(a,h)anthracene	38	137	147	68	123	147	58	27-123	11	40
Benzo(g,h,i)perylene	210	322	147	78	297	147	61	20-121	8	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313002

	Lab Control Sample KWG1313002-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313002-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	95.8	250	38	137	250	55	27-93	35	40
2-Methylnaphthalene	94.9	250	38	133	250	53	27-96	33	40
Acenaphthylene	106	250	42	135	250	54	33-99	24	40
Acenaphthene	114	250	46	137	250	55	32-91	18	40
Fluorene	102	250	41	133	250	53	32-96	26	40
Phenanthrene	114	250	45	140	250	56	39-98	21	40
Anthracene	117	250	47	144	250	58	40-98	21	40
Fluoranthene	136	250	54	160	250	64	42-104	16	40
Pyrene	137	250	55	172	250	69	45-106	23	40
Benz(a)anthracene	138	250	55	167	250	67	44-108	19	40
Chrysene	138	250	55	170	250	68	46-108	21	40
Hexachlorobenzene	117	250	47	137	250	55	40-99	16	40
Pentachlorophenol	77.0	250	31	100	250	40	21-97	26	40
Bis(2-ethylhexyl) Phthalate	145	250	58	172	250	69	47-110	17	40
Benzo(b)fluoranthene	141	250	56	176	250	70	46-106	22	40
Benzo(k)fluoranthene	139	250	55	172	250	69	47-107	21	40
Benzo(a)pyrene	143	250	57	173	250	69	42-110	19	40
Indeno(1,2,3-cd)pyrene	139	250	55	174	250	70	47-109	23	40
Dibenz(a,h)anthracene	127	250	51	167	250	67	47-106	27	40
Benzo(g,h,i)perylene	134	250	53	177	250	71	44-108	28	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013
		Time Analyzed:	16:00

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313002-5	**File ID:**	J:\MS06\DATA\120413\1204F007.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313002-3	J:\MS06\DATA\120413\1204F008.D	12/04/13	16:38
Duplicate Lab Control Sample	KWG1313002-4	J:\MS06\DATA\120413\1204F009.D	12/04/13	17:15
Batch QCMS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/13	17:53
Batch QCDMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/13	18:30
Batch QC	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/13	19:07
RM11E-MWS002s-20_25'	K1312803-004	J:\MS06\DATA\120413\1204F014.D	12/04/13	20:22
RM11E-MWS002s-5_20'	K1312803-005	J:\MS06\DATA\120413\1204F015.D	12/04/13	20:59

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/04/2013
		Time Analyzed:	16:38

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313002-3	**File ID:**	J:\MS06\DATA\120413\1204F008.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313002

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313002-5	J:\MS06\DATA\120413\1204F007.D	12/04/13	16:00
Batch QCMS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/13	17:53
Batch QCDMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/13	18:30
Batch QC	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/13	19:07
RM11E-MWS002s-20_25'	K1312803-004	J:\MS06\DATA\120413\1204F014.D	12/04/13	20:22
RM11E-MWS002s-5_20'	K1312803-005	J:\MS06\DATA\120413\1204F015.D	12/04/13	20:59

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013
Time Analyzed: 12:45

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120413\1204F002.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313505

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	48.7	86943	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	46.7	83396	PASS
70	69	0	2	0.2	176	PASS
127	198	25	75	50.9	90933	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	178664	PASS
199	198	5	9	8.3	14811	PASS
275	198	10	30	24.7	44066	PASS
365	198	1	100	7.7	13718	PASS
441	443	0	100	71.9	14879	PASS
442	198	40	110	58.9	105205	PASS
443	442	15	24	19.7	20694	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313505-2	J:\MS06\DATA\120413\1204F003.D	12/04/2013	13:23	
Method Blank	KWG1313002-5	J:\MS06\DATA\120413\1204F007.D	12/04/2013	16:00	
Lab Control Sample	KWG1313002-3	J:\MS06\DATA\120413\1204F008.D	12/04/2013	16:38	
Duplicate Lab Control Sample	KWG1313002-4	J:\MS06\DATA\120413\1204F009.D	12/04/2013	17:15	
Batch QCMS	KWG1313002-1	J:\MS06\DATA\120413\1204F010.D	12/04/2013	17:53	
Batch QCDMS	KWG1313002-2	J:\MS06\DATA\120413\1204F011.D	12/04/2013	18:30	
Batch QC	K1312655-002	J:\MS06\DATA\120413\1204F012.D	12/04/2013	19:07	
RM11E-MWS002s-20_25'	K1312803-004	J:\MS06\DATA\120413\1204F014.D	12/04/2013	20:22	
RM11E-MWS002s-5_20'	K1312803-005	J:\MS06\DATA\120413\1204F015.D	12/04/2013	20:59	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\120313\1203F005.D	G	J:\MS06\DATA\120313\1203F011.D
B	J:\MS06\DATA\120313\1203F006.D	H	J:\MS06\DATA\120313\1203F012.D
C	J:\MS06\DATA\120313\1203F007.D	I	J:\MS06\DATA\120313\1203F013.D
D	J:\MS06\DATA\120313\1203F008.D	J	J:\MS06\DATA\120313\1203F014.D
E	J:\MS06\DATA\120313\1203F009.D		
F	J:\MS06\DATA\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	0.991	B	100	1.06	C	200	1.09	D	500	1.18	E	1000	1.20
	F	2000	1.23	G	3000	1.23	H	5000	1.26	I	7000	1.30	J	10000	1.30
2-Methylnaphthalene	A	50	0.555	B	100	0.614	C	200	0.585	D	500	0.649	E	1000	0.690
	F	2000	0.707	G	3000	0.685	H	5000	0.709	I	7000	0.737	J	10000	0.742
Acenaphthylene	A	50	1.63	B	100	2.02	C	200	1.89	D	500	2.02	E	1000	2.22
	F	2000	2.07	G	3000	2.16	H	5000	2.38	I	7000	2.42	J	10000	2.27
Acenaphthene	A	50	0.906	B	100	1.01	C	200	1.04	D	500	1.10	E	1000	1.18
	F	2000	1.10	G	3000	1.20	H	5000	1.30	I	7000	1.38	J	10000	1.31
Fluorene	A	50	1.17	B	100	1.42	C	200	1.40	D	500	1.44	E	1000	1.47
	F	2000	1.48	G	3000	1.51	H	5000	1.69	I	7000	1.76	J	10000	1.65
Phenanthrene	A	50	1.11	B	100	1.15	C	200	1.03	D	500	1.06	E	1000	1.14
	F	2000	1.11	G	3000	1.16	H	5000	1.27	I	7000	1.23	J	10000	1.34
Anthracene	A	50	1.13	B	100	1.03	C	200	1.07	D	500	1.11	E	1000	1.18
	F	2000	1.19	G	3000	1.21	H	5000	1.34	I	7000	1.32	J	10000	1.38
Fluoranthene	A	50	0.951	B	100	1.29	C	200	1.25	D	500	1.13	E	1000	1.30
	F	2000	1.30	G	3000	1.34	H	5000	1.44	I	7000	1.41	J	10000	1.52
Pyrene	A	50	1.11	B	100	1.46	C	200	1.32	D	500	1.36	E	1000	1.38
	F	2000	1.41	G	3000	1.42	H	5000	1.51	I	7000	1.40	J	10000	1.35
Benz(a)anthracene	A	50	1.11	B	100	1.17	C	200	1.10	D	500	1.16	E	1000	1.18
	F	2000	1.21	G	3000	1.24	H	5000	1.36	I	7000	1.26	J	10000	1.19
Chrysene	A	50	1.07	B	100	1.09	C	200	1.12	D	500	1.12	E	1000	1.18
	F	2000	1.17	G	3000	1.15	H	5000	1.24	I	7000	1.15	J	10000	1.05
Hexachlorobenzene				B	100	0.240	C	200	0.271	D	500	0.244	E	1000	0.284
	F	2000	0.280	G	3000	0.274	H	5000	0.297	I	7000	0.299	J	10000	0.317
Pentachlorophenol										D	500	0.133	E	1000	0.175
	F	2000	0.179	G	3000	0.181	H	5000	0.213	I	7000	0.205	J	10000	0.222
Bis(2-ethylhexyl) Phthalate							C	200	1.04	D	500	0.950	E	1000	1.01
	F	2000	1.05	G	3000	1.04	H	5000	1.13	I	7000	1.04	J	10000	0.945

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.979	B	100	1.01	C	200	0.977	D	500	1.11	E	1000	1.12
	F	2000	1.19	G	3000	1.22	H	5000	1.41	I	7000	1.41	J	10000	1.49
Benzo(k)fluoranthene	A	50	0.916	B	100	1.28	C	200	1.09	D	500	1.25	E	1000	1.20
	F	2000	1.23	G	3000	1.30	H	5000	1.42	I	7000	1.32	J	10000	1.30
Benzo(a)pyrene	A	50	0.879	B	100	1.04	C	200	0.897	D	500	1.01	E	1000	1.04
	F	2000	1.09	G	3000	1.16	H	5000	1.26	I	7000	1.24	J	10000	1.28
Indeno(1,2,3-cd)pyrene	A	50	0.710	B	100	0.822	C	200	0.729	D	500	0.865	E	1000	0.890
	F	2000	0.943	G	3000	0.964	H	5000	1.09	I	7000	1.09	J	10000	1.20
Dibenz(a,h)anthracene				B	100	0.873	C	200	0.866	D	500	0.931	E	1000	0.980
	F	2000	1.04	G	3000	1.05	H	5000	1.14	I	7000	1.13	J	10000	1.18
Benzo(g,h,i)perylene	A	50	0.875	B	100	0.937	C	200	0.956	D	500	1.03	E	1000	1.02
	F	2000	1.09	G	3000	1.07	H	5000	1.17	I	7000	1.14	J	10000	1.17
Nitrobenzene-d5				B	100	1.37	C	200	1.08	D	500	1.36	E	1000	1.28
	F	2000	1.39	G	3000	1.49	H	5000	1.53	I	7000	1.50	J	10000	1.49
2-Fluorobiphenyl				B	100	1.33	C	200	1.67	D	500	1.49	E	1000	1.58
	F	2000	1.46	G	3000	1.55	H	5000	1.72	I	7000	1.74	J	10000	1.63
2,4,6-Tribromophenol							C	200	0.142	D	500	0.143	E	1000	0.145
	F	2000	0.149	G	3000	0.158	H	5000	0.173	I	7000	0.173	J	10000	0.189
Terphenyl-d14				B	100	0.942	C	200	0.846	D	500	0.902	E	1000	0.893
	F	2000	0.925	G	3000	0.921	H	5000	1.02	I	7000	0.934	J	10000	0.857

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	8.8		≤ 20	1.19		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.6		≤ 20	0.667		0.300
Acenaphthylene	MS	AverageRF	% RSD	11.2		≤ 20	2.11		0.900
Acenaphthene	MS	AverageRF	% RSD	12.8		≤ 20	1.15		0.700
Fluorene	MS	AverageRF	% RSD	11.3		≤ 20	1.50		0.800
Phenanthrene	MS	AverageRF	% RSD	8.1		≤ 20	1.16		0.600
Anthracene	MS	AverageRF	% RSD	9.9		≤ 20	1.19		0.600
Fluoranthene	MS	AverageRF	% RSD	12.5		≤ 20	1.29		0.600
Pyrene	MS	AverageRF	% RSD	7.8		≤ 20	1.37		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	6.4		≤ 20	1.20		0.600
Chrysene	MS	AverageRF	% RSD	5.0		≤ 20	1.13		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	8.9		≤ 20	0.279		0.100
Pentachlorophenol	MS	AverageRF	% RSD	16.0		≤ 20	0.187		0.050
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	5.8		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	15.9		≤ 20	1.19		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	11.4		≤ 20	1.23		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.2		≤ 20	1.09		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	17.2		≤ 20	0.930		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	11.5		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.6		≤ 20	1.05		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	10.3		≤ 20	1.39		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	8.4		≤ 20	1.57		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	10.9		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	5.5		≤ 20	0.915		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12950
Units: ng/ml

File ID: J:\MS06\DATA\120313\1203F015.D
J:\MS06\DATA\120313\1203F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	1.19	1.22	3	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3100	0.667	0.689	3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.11	1.91	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	3000	1.15	1.15	0	NA	± 30 %	AverageRF
Fluorene	3000	3000	1.50	1.52	1	NA	± 30 %	AverageRF
Phenanthrene	3000	3000	1.16	1.15	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	1.19	1.21	1	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.29	1.29	0	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.36	-1	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.20	1.13	-6	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.13	1.08	-5	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2900	0.279	0.269	-4	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.187	0.198	6	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	1.02	0.991	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.19	1.32	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.23	1.17	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3200	1.09	1.14	5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.930	0.888	-4	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	1.02	1.00	-2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2900	1.05	1.00	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313505
Units: ng/ml

File ID: J:\MS06\DATA\120413\1204F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2800	0.700	1.19	1.09	-8	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2700	0.300	0.667	0.600	-10	NA	± 20 %	AverageRF
Acenaphthylene	3000	2700	0.900	2.11	1.92	-9	NA	± 20 %	AverageRF
Acenaphthene	3000	2800	0.700	1.15	1.09	-5	NA	± 20 %	AverageRF
Fluorene	3000	2800	0.800	1.50	1.40	-6	NA	± 20 %	AverageRF
Phenanthrene	3000	2500	0.600	1.16	0.971	-16	NA	± 20 %	AverageRF
Anthracene	3000	2500	0.600	1.19	1.02	-15	NA	± 20 %	AverageRF
Fluoranthene	3000	2600	0.600	1.29	1.13	-13	NA	± 20 %	AverageRF
Pyrene	3000	2700	0.600	1.37	1.25	-9	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2700	0.600	1.20	1.09	-9	NA	± 20 %	AverageRF
Chrysene	3000	2700	0.600	1.13	1.01	-11	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2600	0.100	0.279	0.240	-14	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2300	0.050	0.187	0.141	-25 *	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2700	0.010	1.02	0.936	-9	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	2900	0.600	1.19	1.14	-4	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2900	0.600	1.23	1.19	-3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3000	0.600	1.09	1.08	-1	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.500	0.930	0.910	-2	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2700	0.400	1.02	0.915	-10	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.500	1.05	0.976	-7	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	2800	0.01	1.39	1.29	-7	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2700	0.01	1.57	1.39	-11	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2500	0.01	0.159	0.132	-17	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2700	0.01	0.915	0.829	-9	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313505
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F002.D	GC/MS Tuning - Generic	KWG1313505-1	12/4/2013	12:45		12/4/2013	13:13
1204F003.D	Continuing Calibration Verification	KWG1313505-2	12/4/2013	13:23		12/4/2013	13:52
1204F004.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:07		12/4/2013	14:35
1204F005.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:45		12/4/2013	15:13
1204F006.D	ZZZZZZ	ZZZZZZ	12/4/2013	15:23		12/4/2013	15:52
1204F007.D	Method Blank	KWG1313002-5	12/4/2013	16:00		12/4/2013	16:28
1204F008.D	Lab Control Sample	KWG1313002-3	12/4/2013	16:38		12/4/2013	17:07
1204F009.D	Duplicate Lab Control Sample	KWG1313002-4	12/4/2013	17:15		12/4/2013	17:43
1204F010.D	Batch QCMS	KWG1313002-1	12/4/2013	17:53		12/4/2013	18:22
1204F011.D	Batch QCDMS	KWG1313002-2	12/4/2013	18:30		12/4/2013	18:58
1204F012.D	Batch QC	K1312655-002	12/4/2013	19:07		12/4/2013	19:35
1204F013.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:45		12/4/2013	20:13
1204F014.D	RM11E-MWS002s-20_25'	K1312803-004	12/4/2013	20:22		12/4/2013	20:51
1204F015.D	RM11E-MWS002s-5_20'	K1312803-005	12/4/2013	20:59		12/4/2013	21:27
1204F016.D	ZZZZZZ	ZZZZZZ	12/4/2013	21:37		12/4/2013	22:06
1204F017.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:14		12/4/2013	22:43
1204F018.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:51		12/4/2013	23:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312803
Date Extracted: 11/21/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1313002
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS002s-20_25'	K1312803-004	11/20/13	11/21/13	40.073g	2ml	69.0	
RM11E-MWS002s-5_20'	K1312803-005	11/20/13	11/21/13	40.170g	2ml	78.8	
Method Blank	KWG1313002-5	NA	NA	40.418g	2ml	NA	
Batch QC	K1312655-002	NA	NA	40.311g	2ml	84.2	
Batch QCMS	KWG1313002-1	NA	NA	40.331g	2ml	84.2	
Batch QCDMS	KWG1313002-2	NA	NA	40.317g	2ml	84.2	
Lab Control Sample	KWG1313002-3	NA	NA	20.000g	2ml	NA	
Duplicate Lab Control Sample	KWG1313002-4	NA	NA	20.000g	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 4, 2014 Analytical Report for Service Request No: K1312803

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on November 21, 2013. For your reference, these analyses have been assigned our service request number K1312803.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
10:02 am, Mar 06, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/21/13
Sample Matrix:	Soil		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six soil samples were received for analysis at ALS Environmental on 11/21/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C and frozen at –20°C is required upon receipt at the laboratory.

Chlorinated Pesticides by GC/MS/MS

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Hexachlorobenzene for sample Batch QCDMS was outside the control limits listed in the results summary. The limits are default values in use until sufficient statistical control limits are generated. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS002s-20_25'	K1312803-004	11/20/2013	11/21/2013
RM11E-MWS002s-5_20'	K1312803-005	11/20/2013	11/21/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS002s-20_25'	**Units:**	ug/Kg
Lab Code:	K1312803-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	37	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	11/20/2013
Sample Matrix:	Soil	**Date Received:**	11/21/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS002s-5_20'	**Units:**	ug/Kg
Lab Code:	K1312803-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**1.3**		0.092	0.092	1	11/21/13	12/04/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	89	5-120	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313003-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/21/13	12/03/13	KWG1313003	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	51	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004		
Sample Matrix:	Soil		

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	Percent
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Sur1
Batch QC	K1312655-003	87
RM11E-MWS002s-20_25'	K1312803-004	37
RM11E-MWS002s-5_20'	K1312803-005	89
Method Blank	KWG1313003-5	51
Batch QCMS	KWG1313003-1	77
Batch QCDMS	KWG1313003-2	78
Lab Control Sample	KWG1313003-3	54
Duplicate Lab Control Sample	KWG1313003-4	52

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120313\1203F019.D	**Lab Code:**	KWG1313406-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313406
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	62,259	15.30	9,119	11.03
	Upper Limit ==>	124,517	15.80	45,597	11.53
	Lower Limit ==>	31,129	14.80	456	10.53
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313003-5	62,533	15.30	4,742	11.03
Lab Control Sample	KWG1313003-3	62,458	15.30	5,013	11.03
Duplicate Lab Control Sample	KWG1313003-4	64,777	15.30	4,944	11.03
Batch QCMS	KWG1313003-1	75,792	15.30	8,604	11.03
Batch QCDMS	KWG1313003-2	69,656	15.31	8,010	11.03
Batch QC	K1312655-003	61,957	15.32	7,966	11.04
RM11E-MWS002s-20_25'	K1312803-004	65,749	15.31	3,566	11.04
RM11E-MWS002s-5_20'	K1312803-005	64,915	15.33	8,560	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1312655-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

		Batch QCMS KWG1313003-1 Matrix Spike			Batch QCDMS KWG1313003-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	0.16	1.44	1.20	107	1.73	1.20	131 *	50-120	18	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313003

	Lab Control Sample KWG1313003-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313003-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	2.12	2.00	106	2.07	2.00	104	50-120	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:31

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313003-5	**File ID:**	J:\MS21\DATA\120313\1203F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313003-3	J:\MS21\DATA\120313\1203F021.D	12/03/13	16:58
Duplicate Lab Control Sample	KWG1313003-4	J:\MS21\DATA\120313\1203F022.D	12/03/13	17:25
Batch QCMS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
Batch QCDMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
Batch QC	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-MWS002s-20_25'	K1312803-004	J:\MS21\DATA\120313\1203F036.D	12/03/13	23:44
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120313\1203F040.D	12/04/13	01:32

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:58

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313003-3	**File ID:**	J:\MS21\DATA\120313\1203F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313003

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313003-5	J:\MS21\DATA\120313\1203F020.D	12/03/13	16:31
Batch QCMS	KWG1313003-1	J:\MS21\DATA\120313\1203F030.D	12/03/13	21:01
Batch QCDMS	KWG1313003-2	J:\MS21\DATA\120313\1203F031.D	12/03/13	21:28
Batch QC	K1312655-003	J:\MS21\DATA\120313\1203F032.D	12/03/13	21:55
RM11E-MWS002s-20_25'	K1312803-004	J:\MS21\DATA\120313\1203F036.D	12/03/13	23:44
RM11E-MWS002s-5_20'	K1312803-005	J:\MS21\DATA\120313\1203F040.D	12/04/13	01:32

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.04	C	2.0	0.998	D	5.0	0.991	E	10	0.942
	F	20	0.900	G	40	0.882	H	60	0.863	1	80	0.835	J	100	0.837
S_HXCBZ13C6	A	20	0.675	B	20	0.679	C	20	0.701	D	20	0.697	E	20	0.733
	F	20	0.735	G	20	0.758	H	20	0.775	I	20	0.839	J	20	0.814

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1312803
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.1		≤20	0.921		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	7.6		≤20	0.741		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	12/03/2013
		Date Analyzed:	12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL12946
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.921	0.880	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313406
		Units:	ng/ml
File ID:	J:\MS21\DATA\120313\1203F019.D		

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	.01	0.921	0.892	-3	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	20	.01	0.741	0.732	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312803
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	Method Blank	KWG1313003-5	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	Lab Control Sample	KWG1313003-3	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	Duplicate Lab Control Sample	KWG1313003-4	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	ZZZZZZ	ZZZZZZ	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	ZZZZZZ	ZZZZZZ	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	Batch QCMS	KWG1313003-1	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	Batch QCDMS	KWG1313003-2	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	Batch QC	K1312655-003	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	RM11E-MWS002s-20_25'	K1312803-004	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	RM11E-MWS002s-5_20'	K1312803-005	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312803
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	11/21/2013
Sample Matrix:	Soil		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1313003
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS002s-20_25'	K1312803-004	11/20/13	11/21/13	20.165g	1.0ml	69.0	
RM11E-MWS002s-5_20'	K1312803-005	11/20/13	11/21/13	20.195g	1.0ml	78.8	
Method Blank	KWG1313003-5	NA	NA	20.280g	1.0ml	NA	
Batch QC	K1312655-003	NA	NA	20.141g	1.0ml	82.6	
Batch QCMS	KWG1313003-1	NA	NA	20.209g	1.0ml	82.6	
Batch QCDMS	KWG1313003-2	NA	NA	20.152g	1.0ml	82.6	
Lab Control Sample	KWG1313003-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313003-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

December 16, 2013

Analytical Report for Service Request No: K1312857

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental R1/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on November 01, 2013. For your reference, these analyses have been assigned our service request number K1312857.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
9:51 am, Mar 06, 2014

GS/ln

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1312857
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/21/13 to 11/22/13
Sample Matrix:	Water and Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and twenty-nine soil samples were received for analysis at ALS Environmental between 11/21/13 and 11/22/13. Except as noted on the cooler receipt and preservation form included in this data package the samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C or frozen at –20°C as required upon receipt at the laboratory. Additional instructions were received from Erin Carroll Hughes via e-mail on November 27, December 2, and December 4, 2013.

General Chemistry Parameters

Particle Size Determination by ASTM D422M:
The RPD for RM11E-MWS001-24_29' and its-Dup was over the acceptable limits for the fraction retained on the 2.00 mm at 110%. No material was retained on the 4.75mm sieve. This fraction was less than 1% of the total sample so RPD limit is not applicable and is presented with narration.

No other anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Copper, Lead and Zinc for the Batch QC1 sample were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for the Batch QC1 sample was below the Method control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

The matrix spike recovery of Chromium for the Batch QC1 sample was outside control criteria. However, the analyzed concentration in this sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Approved by Stephanie Gallatin 12/16/13

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Copper, Lead and Zinc in the Batch QC1 sample was outside the Method control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by EPA Method 8015

Surrogate Exceptions:
The upper control criterion was exceeded for o-terphenyl and n-triacontane in sample RM11E-SL030 Duplicate. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) in sample RM11E-SL029 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Organochlorine Pesticides

Elevated Detection Limits:
The detection limit for 2,4'-DDT in Samples K1312857-005 and K1312857-027 were raised due to matrix interference.

The detection limit for 2,4'-DDD in Sample K1312857-029 was raised due to matrix interference.

The detection limit for 4,4'-DDT in Sample K1312857-030 was raised due to matrix interference.

The detection limit was elevated for all analytes in samples K1312857-024,-024MS,-024DMS. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The sample was first analyzed undiluted. The results of the undiluted analysis indicated the need to perform a dilution.

Surrogate Exceptions:
The upper control criterion was exceeded for Oxychlordane-13C10 in samples K1312857-024 and K1312857-024DMS, most likely due to matrix affects. No further corrective action was appropriate.

Holding Time Exceptions:
Sample K1312857-030 was added to this work order after normal holding times had expired. A frozen aliquot of the sample was used for analysis.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of several analytes for sample RM11EMWS005-05_21' were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a both a low or high bias in this matrix depending on which analyte. No further corrective action was appropriate.

Approved by Gregory Latta 12/16/13

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for 2,4'-DDD in the replicate matrix spike analyses of RM11EMWS005-05_21' was outside control criteria. In general, the RPD was relatively high for all spiked compounds. All spike recoveries in the associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1232 in CAL12822 and for Aroclor 1221 in CAL12952. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Continuing Calibration Verification (CCV) Exceptions:
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the CCV criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1126F113. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Sample Confirmation Notes:
The confirmation comparison criterion of 40% difference was exceeded for Aroclor 1254 in sample RM11E-SL028. The lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

Elevated Detection Limits:
Sample RM11E-MWS001-5_24' required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

The detection limit was elevated for Aroclor 1254 in sample RM11E-MWS001-24_29'. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compound at the normal limit. The result was flagged to indicate the matrix interference.

The detection limit was elevated for one target Aroclor in a few field samples. The chromatograms indicated the presence of one Aroclor at a significantly higher concentration than the lesser Aroclor peaks present. The interference from larger quantity Aroclor prevented accurate identification and quantitation of the lesser Aroclor at the normal limit. The results were flagged to indicate the Aroclor interference.

Sample Notes and Discussion:
Several soil samples in this data set appear to have been subjected to environmental stresses such as weathering, causing pattern degradation and changing the peak ratios. When pattern degradation occurs, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, differentiating amongst the similar elution patterns of Aroclors 1016, 1232, 1242, and 1248 can be difficult. Care was taken to report the Aroclor(s) with the best pattern match for each sample.

Two Aroclors were identified in a couple field samples: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective.

Approved by 12/16/13

A review of the sample chromatograms indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Although the presence of Aroclor 1248 could not be ruled out, Aroclor 1242 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclors 1254 and 1260 were identified based on the presence of later eluting PCB peaks in the chromatogram.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254, and/or 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Matrix Spike Recovery Exceptions:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for the water sample.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Continuing Calibration Verification (CCV) Exceptions:
Indeno(1,2,3-cd)pyrene was flagged as outside the control criterion for CCV MS26\1204F004.D. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Surrogate Exceptions:
The control criteria for 2,4,6-Tribromophenol in sample RM11E-MWS001-5_24' were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The advisory criterion was exceeded for Benzo(k)fluoranthene in Laboratory Control Sample (LCS) KWG1313137-1. As per the ALS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

The upper control criterion was exceeded for Indeno(1,2,3-cd)pyrene in Duplicate Laboratory Control Sample (DLCS) KWG1313137-2. The analyte in question was not detected in the associated field sample. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limits were elevated for in numerous soil samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions.

No other anomalies associated with the analysis of these samples were observed.

Approved by Gregory Latta 12/16/3

Chain of Custody

K1312857

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

NOTE: ALL SAMPLES COLLECTED 11-21-13 unless noted in 'REMARKS'

Sample I.D.	~~Date~~	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-MWS001-05_10'				S	2												X				
RM11E-MWS001-10_15'					2												X				
RM11E-MWS001-15_20'					2												X				
RM11E-MWS001-20_24'					2												X				
RM11E-MWS001-5_24'					3	X	X	X	X	X	X	X	X	X	X	X	X				Clnsaturated Fill Composite
RM11E-MWS001-24_29'					3	X	X	X	X	X	X	X	X	X	X	X	X				Upper 5 feet Native Alluvium
RM11E-																					
RM11E-																					
RM11E-~~MWS001-~~																					
RM11E-~~MWS001-30_35'~~																					
RM11E-MWS001-29_34'		0815			2												X				Collected 11-22-13
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					

Relinquished By	Received By
Signature Peter Pellegrin / Erin Carroll Hughes	Signature SDavis
Printed Name PETER PELLEGRIN / GSI Water Solutions	Printed Name SDAVIS
Firm GSI	Firm ALS-Kelso
Date/Time 11-22-13 0900	Date/Time 11/22/13 1500

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____
Shipping #: _____
Condition: _____
Lab No: _____

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

12

K1312857

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin – GSI

Analysis Requested

Sample I.D.	~~Date~~	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-MWS004-05-10'		0950		S	2												X				
RM11E-MWS004-10-15'		1000			2												X				
RM11E-MWS004-15-20'		1055			2												X				
RM11E-MWS004-20-25		1100			2												X				
RM11E-MWS004-05-24		1120			3	X	X	X	X	X	X	X	X	X	X	X	X				Unsaturated Fill composite
RM11E-MWS004-24-29		1130			3	X	X	X	X	X	X	X	X	X	X	X	X				Upper 5 Feet Native Alluvium
RM11E-MWS004-30-35		1245			2												X				
RM11E-MWS004-25-30		1225			2												X				
RM11E-MWS5-24-29		1115			~~2~~	X	X	~~N/C~~	X	X	X	X	X	X	X	X					(2 CONTAINERS)
RM11E-								NO													
RM11E-									PP.												
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					

NOTE: ALL SAMPLES Collected 11-21-13

Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [illegible]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: SIDWIS
Firm: Groundwater Solutions Inc	Firm: ALS-Kelso
Date/Time: 11-22-13 : 0900	Date/Time: 11/22/13 1820

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

13

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1312857

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin—GSI

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-MWS9	11-21-13	1145		W	9	X			X	X	X	X	X	X	X	X					Collected before MWS004-24-29'
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
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RM11E-																					

Relinquished By	Received By
Signature Peter Pellegrin Erin Carroll Hughes	Signature SIKUIO
Printed Name PETER PELLEGRIN GSI Water Solutions	Printed Name SIKUIS
Firm GSI	Firm ALS Kelso
Date/Time 11-22-13 : 0900	Date/Time 11/22/13 (0900)

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

PC Gvelly

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K13 12657

Received: 11/22/13 Opened: 11/22/13 By: AC Unloaded: 11/22/13 By: AC

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 6 FRONT 3 BACK

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.2	1.2	N/A	—	0.0	336			
3.2	3.2	1.8	1.8	0.0	334			
4.7	4.9			0.2	276			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Logged times off sample containers

~~Did not receive sample id. RMIE-MW5S, 0 FA~~

Page ____ *of* ____

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1312874

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen	Archive FROZEN			REMARKS
RM11E-MWS005	05-10'	1100		S	2													X			
RM11E-MWS005	10-15	1115			2													X			
RM11E-MWS005	15-20	1135			2													X			
RM11E-MWS005	20-25	1200			2													X			
RM11E-MWS005	25-30'	1155			2													X			
RM11E-MWS005	30-35'	1215			2													X			
RM11E-MWS005	05-21'	1145			3	X	X	X	X	X	X	X	X	X	X	X	X	X			Unsaturated Fill Composite
RM11E-MWS005	21-26	1150			3	X	X	X	X	X	X	X	X	X	X	X	X	X			Upper 5-Feet native Alluvium
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					

NOTE: ALL Samples collected 11-22-13

Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [illegible]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: [illegible] ALS
Firm: Groundwater Solutions Inc	Firm: 11/22/13 1630
Date/Time: 11-22-13 1530	Date/Time:

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____
Shipping #: _____
Condition: _____
Lab No: _____

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

ALS

Cooler Receipt and Preservation Form

12857 PC Greg

Client / Project: GSI Service Request K13 ~~12874~~

Received: Nov. 22, 2013 Opened: 11/22 By: [illegible] Unloaded: _____ By: _____

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2-Front Ea. cooler

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
2.7	2.7	2.6	2.6	0.0	334			
2.3	2.2			-0.1	339			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was Cl2/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

1C13128759

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-SL031	11-22-13	0915		S	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-SL028	↓	1300		↓	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-SL029	↓	1400		↓	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-SL030	↓	1425		↓	3	X	X		X	X	X	X	X	X	X	X	X				
RM11E-																					
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Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [illegible]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: [illegible]
Firm: Groundwater Solutions Inc	Firm: ALS-Kelso
Date/Time	Date/Time: 11/22/13 430

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

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PC Greg

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request *K13* 12875

Received: Nov. 22, 2013 Opened: 11/22 By: SD Unloaded: _____ By: _____

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2-Front Ea. Cooler

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
2.7	2.7	2.6	2.6	0.0	324			
2.3	2.2			-0.1	339			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Gregory Salata

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Wednesday, November 27, 2013 11:21 AM
To: Lisa Bohannon
Cc: Dave Livesay; Gregory Salata
Subject: RE: Sample Confirmation from ALS Environmental for RM11E Supplemental R1/FS Investigation (K1312857)

Thank you! Really appreciate you putting these on a single sample receipt.

I have a few changes to make to the receipt, all of which resulted from errors on the COC, and not your login.

1. Please change sample ID for K1312857-016 from 'RM11E-MWS5-24_29' to 'RM11E-MWS**504**-24_29'
2. Please change sample ID for K1312857-017 from 'RM11E-MW-S9' to 'RM11E-MWS**904-24_29**'
3. Please remove the PCB and metals analysis from sample 'K1312857-026' (RM11E-SL031)

If you have any questions, don't hesitate to ask.

Thanks again and have a nice Thanksgiving Holiday.

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

GSI Water Solutions, Inc.

Please note my new name and email (echughes@gsiws.com)

From: Lisa Bohannon [mailto:Lisa.Bohannon@alsglobal.com]
Sent: Tuesday, November 26, 2013 4:26 PM
To: Erin Carroll Hughes
Subject: Sample Confirmation from ALS Environmental for RM11E Supplemental R1/FS Investigation (K1312857)

Please note ALS Kelso laboratory will be closed for the Thanksgiving Holiday November 28-30.

Lisa Bohannon

ALS Life Sciences Division | Environmental

1317 S. 13th Avenue
Kelso , WA 98626 USA

Phone 360.577.7222
Fax 360.636.1068

****
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****

ALS Group: Click here to report this email as spam.

Gregory Salata

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Monday, December 02, 2013 3:20 PM
To: Gregory Salata
Cc: Dave Livesay; James J. Mc Ateer, Jr.
Subject: RM11E Pesticide Analysis: K1311918
Attachments: 11918coc.pdf

Hello, Greg.

I am taking a closer look at the data package for K1311918 and noticed that the high-res pesticide analysis results were provided for sample RM11E-G068 rather than sample RM11E-G079 as indicated on the COC (attached).

Can you please correct this error by analyzing the RM11E-G079 sample for high-res pesticides (preferably rushed analysis) and not charge us for the pesticide analysis that was conducted on RM11E-G068?

Please let me know if you have any questions or concerns,

Thanks,

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

GSI Water Solutions, Inc.

Please note my new name and email (echughes@gsiws.com)

ALS Group: Click here to report this email as spam.

Gregory Salata

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Wednesday, December 04, 2013 10:48 AM
To: Gregory Salata
Subject: RE: Sample Confirmation from ALS Environmental for RM11E Supplemental R1/FS Investigation (K1312857)

Importance: High

Thanks, Greg.

Caught another change. The bank soil samples RM11E-SL031, -SL028, -SL029, and -SL030 do not need the grain-size analysis (as shown on the COC image below). So please remove that analysis from those four samples. The rest looks good to me. Thank you.

GSI Water Solutions, Inc. **CHAIN OF CUSTODY / LABORATORY AN**

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrini

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides EPA 1699A
RM11E-SL031	11-22-13	0915		S	3	X	X		X	X	X	X	X	X	X
RM11E-SL028		1300			3	X	X		X	X	X	X	X	X	X
RM11E-SL029		1400			3	X	X		X	X	X	X	X	X	X
RM11E-SL030		1425			3	X	X		X	X	X	X	X	X	X
RM11E-															
RM11E-															
RM11E-															
RM11E-															
RM11E-															

Erin Carroll Hughes

Please note my new name and email (echughes@gsiws.com)

-----Original Message-----
From: gregory.salata@alsglobal.com [mailto:gregory.salata@alsglobal.com]
Sent: Tuesday, December 03, 2013 4:55 PM
To: Erin Carroll Hughes
Subject: Sample Confirmation from ALS Environmental for RM11E Supplemental R1/FS Investigation (K1312857)

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ALS Group: Click here to report this email as spam.

General Chemistry Parameters

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS001-5_24'
Lab Code: K1312857-005

Sand Fraction: Weight (Grams)	25.5862
Sand Fraction: Weight Recovered (Grams)	25.4922
Sand Fraction: Percent Recovery	99.63

Weight as received (Grams)	44.1191
Percent Solids	83.0
Weight Oven-Dried (Grams)	36.6189

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	14.6687	40.06
Gravel, Fine	2.00 mm	10	1.8564	5.07
Sand, Very Coarse	0.850 mm	20	1.6967	4.63
Sand, Coarse	0.425 mm	40	1.1857	3.24
Sand, Medium	0.250 mm	60	1.6406	4.48
Sand, Fine	0.106 mm	140	2.6115	7.13
Sand, Very Fine	0.075 mm	200	1.2730	3.48
Silt			9.2400	25.23
Clay			3.4100	9.31
		Total	37.5826	102.63

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS001-24_29'
Lab Code: K1312857-006

Sand Fraction: Weight (Grams)	16.0246
Sand Fraction: Weight Recovered (Grams)	15.9380
Sand Fraction: Percent Recovery	99.46

Weight as received (Grams)	31.2717
Percent Solids	72.4
Weight Oven-Dried (Grams)	22.6407

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.2251	0.99
Sand, Very Coarse	0.850 mm	20	0.3069	1.36
Sand, Coarse	0.425 mm	40	0.6809	3.01
Sand, Medium	0.250 mm	60	3.5512	15.69
Sand, Fine	0.106 mm	140	8.6942	38.40
Sand, Very Fine	0.075 mm	200	1.7083	7.55
Silt			5.8300	25.75
Clay			1.9700	8.70
		Total	22.9666	101.45

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS004-05_24'
Lab Code: K1312857-012

Sand Fraction: Weight (Grams)	5.8334
Sand Fraction: Weight Recovered (Grams)	5.7922
Sand Fraction: Percent Recovery	99.29

Weight as received (Grams)	30.8605
Percent Solids	80.2
Weight Oven-Dried (Grams)	24.7501

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.4548	1.84
Gravel, Fine	2.00 mm	10	0.4584	1.85
Sand, Very Coarse	0.850 mm	20	0.4454	1.80
Sand, Coarse	0.425 mm	40	0.4789	1.93
Sand, Medium	0.250 mm	60	0.6195	2.50
Sand, Fine	0.106 mm	140	1.5177	6.13
Sand, Very Fine	0.075 mm	200	1.3495	5.45
Silt			12.9300	52.24
Clay			5.4550	22.04
		Total	23.7092	95.78

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS004-24_29'
Lab Code: K1312857-013

Sand Fraction: Weight (Grams)	1.9163
Sand Fraction: Weight Recovered (Grams)	1.8617
Sand Fraction: Percent Recovery	97.15

Weight as received (Grams)	29.4881
Percent Solids	70.9
Weight Oven-Dried (Grams)	20.9071

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0043	0.02
Sand, Very Coarse	0.850 mm	20	0.1062	0.51
Sand, Coarse	0.425 mm	40	0.2253	1.08
Sand, Medium	0.250 mm	60	0.2129	1.02
Sand, Fine	0.106 mm	140	0.5525	2.64
Sand, Very Fine	0.075 mm	200	0.4918	2.35
Silt			17.0400	81.50
Clay			2.6550	12.70
		Total	21.2880	101.82

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS005-05_21'
Lab Code: K1312857-024

Sand Fraction: Weight (Grams)	12.0009
Sand Fraction: Weight Recovered (Grams)	11.9162
Sand Fraction: Percent Recovery	99.29

Weight as received (Grams)	29.6246
Percent Solids	80.5
Weight Oven-Dried (Grams)	23.8478

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	6.5975	27.67
Gravel, Fine	2.00 mm	10	1.1188	4.69
Sand, Very Coarse	0.850 mm	20	0.7442	3.12
Sand, Coarse	0.425 mm	40	0.5220	2.19
Sand, Medium	0.250 mm	60	0.3596	1.51
Sand, Fine	0.106 mm	140	0.9595	4.02
Sand, Very Fine	0.075 mm	200	1.1179	4.69
Silt			9.5550	40.07
Clay			3.5850	15.03
		Total	24.5595	102.99

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS005-21_26'
Lab Code: K1312857-025

Sand Fraction: Weight (Grams)	8.5304
Sand Fraction: Weight Recovered (Grams)	8.4258
Sand Fraction: Percent Recovery	98.77

Weight as received (Grams)	20.6915
Percent Solids	72.3
Weight Oven-Dried (Grams)	14.9600

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.6190	4.14
Gravel, Fine	2.00 mm	10	0.1068	0.71
Sand, Very Coarse	0.850 mm	20	0.2138	1.43
Sand, Coarse	0.425 mm	40	0.2087	1.40
Sand, Medium	0.250 mm	60	0.8227	5.50
Sand, Fine	0.106 mm	140	4.4276	29.60
Sand, Very Fine	0.075 mm	200	1.4887	9.95
Silt			5.4250	36.26
Clay			1.5450	10.33
		Total	14.8573	99.32

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.(	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Analyzed:	12/5/2013

Particle Size Determination
ASTM Method D422 Modified

Sample Name: RM11E-MWS001-24_29'
Lab Code: K1312857-006 dup

Sand Fraction: Weight (Grams)	13.5273
Sand Fraction: Weight Recovered (Grams)	13.5602
Sand Fraction: Percent Recovery	100.24

Weight as received (Grams)	27.2394
Percent Solids	72.4
Weight Oven-Dried (Grams)	19.7213

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0581	0.29
Sand, Very Coarse	0.850 mm	20	0.2920	1.48
Sand, Coarse	0.425 mm	40	0.6149	3.12
Sand, Medium	0.250 mm	60	3.1744	16.10
Sand, Fine	0.106 mm	140	7.6298	38.69
Sand, Very Fine	0.075 mm	200	1.4132	7.17
Silt			5.1900	26.32
Clay			1.7500	8.87
		Total	20.1224	102.04

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/13 - 11/22/13
Sample Matrix:	Soil	**Date Received:**	11/22/13
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-MWS001-5_24'	K1312857-005	**0.760**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS001-24_29'	K1312857-006	**0.531**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS004-05_24'	K1312857-012	**0.468**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS004-24_29'	K1312857-013	**0.080**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS504-24_29'	K1312857-016	**0.113**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS005-05_21'	K1312857-024	**1.23**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-MWS005-21_26'	K1312857-025	**1.85**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL031	K1312857-026	**0.412**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL028	K1312857-027	**1.89**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL029	K1312857-028	**0.618**	0.050	0.020	1	11/27/13 08:00	11/26/13	
RM11E-SL030	K1312857-029	**0.944**	0.050	0.020	1	11/27/13 08:00	11/26/13	
Method Blank	K1312857-MB5	ND U	0.050	0.020	1	11/27/13 08:00	11/26/13	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Collected: NA
Date Received: NA
Date Analyzed: 11/27/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1312655-002

Units: Percent
Basis: Dry, per Method

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1312655-002DUP Result	Batch QCTRP Triplicate Sample K1312655-002TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	1.70	1.55	1.59	1.61	5	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	N/A
Sample Matrix:	Soil	**Date Received:**	N/A
		Date Analyzed:	11/27/13
		Date Extracted:	11/26/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1312655-002	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1312655-002MS			Duplicate Matrix Spike K1312655-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	1.70	4.90	3.42	93	4.85	3.10	102	69-123	9	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	11/27/13
Sample Matrix:	Soil	**Date Extracted:**	11/26/13

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	370819

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1312857-LCS1	0.266	0.275	97	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	370819	KQ1314276-01	11/27/13 08:00	20.0	19.8	99	90-110
CCV2	370819	KQ1314276-02	11/27/13 08:00	20.0	19.8	99	90-110
CCV3	370819	KQ1314276-03	11/27/13 08:00	20.0	19.7	98	90-110
CCV4	370819	KQ1314276-04	11/27/13 08:00	20.0	19.7	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	370819	KQ1314276-05	11/27/13 08:00	0.050	0.020	ND	U
CCB2	370819	KQ1314276-06	11/27/13 08:00	0.050	0.020	ND	U
CCB3	370819	KQ1314276-07	11/27/13 08:00	0.050	0.020	ND	U
CCB4	370819	KQ1314276-08	11/27/13 08:00	0.050	0.020	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/13
Sample Matrix:	Water	**Date Received:**	11/22/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MWS904-24_29'	K1312857-017	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312857-MB1	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312857-MB2	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312857-MB3	ND U	0.50	0.07	1	12/03/13 01:27	
Method Blank	K1312857-MB4	ND U	0.50	0.07	1	12/06/13 01:27	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/13
Sample Matrix:	Water	**Date Received:**	11/22/13
		Date Analyzed:	12/03/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MWS904-24_29'	**Units:**	mg/L
Lab Code:	K1312857-017	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1312857-017DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.07	ND	ND	NC	NC	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/13
Sample Matrix:	Water	**Date Received:**	11/22/13
		Date Analyzed:	12/3/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-MWS904-24_29'	**Units:**	mg/L
Lab Code:	K1312857-017	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1312857-017MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	ND U	24.1	25.0	96	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/03/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	370951

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1312857-LCS2	17.0	18.1	94	83-117
Lab Control Sample	K1312857-LCS3	16.8	18.1	93	83-117
Lab Control Sample	K1312857-LCS4	16.8	18.1	93	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	370951	KQ1314427-58	12/03/13 01:27	25.0	24.5	98	90-110
CCV2	370951	KQ1314427-59	12/03/13 01:27	25.0	24.6	99	90-110
CCV3	370951	KQ1314427-60	12/03/13 01:27	25.0	24.5	98	90-110
CCV4	370951	KQ1314427-61	12/03/13 01:27	25.0	23.9	96	90-110
CCV5	370951	KQ1314427-62	12/03/13 01:27	25.0	24.2	97	90-110
CCV6	370951	KQ1314427-63	12/03/13 01:27	25.0	24.6	99	90-110
CCV7	370951	KQ1314427-64	12/03/13 01:27	25.0	24.2	97	90-110
CCV8	370951	KQ1314427-65	12/03/13 01:27	25.0	24.1	97	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	370951	KQ1314427-66	12/03/13 01:27	0.50	0.07	ND	U
CCB2	370951	KQ1314427-67	12/03/13 01:27	0.50	0.07	0.11	J
CCB3	370951	KQ1314427-68	12/03/13 01:27	0.50	0.07	ND	U
CCB4	370951	KQ1314427-69	12/03/13 01:27	0.50	0.07	ND	U
CCB5	370951	KQ1314427-70	12/03/13 01:27	0.50	0.07	ND	U
CCB6	370951	KQ1314427-71	12/03/13 01:27	0.50	0.07	0.13	J
CCB7	370951	KQ1314427-72	12/03/13 01:27	0.50	0.07	ND	U
CCB8	370951	KQ1314427-73	12/03/13 01:27	0.50	0.07	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/13 - 11/22/13
Sample Matrix:	Soil	**Date Received:**	11/22/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MWS001-5_24'	K1312857-005	**83.0**	-	-	1	12/02/13 09:00	
RM11E-MWS001-24_29'	K1312857-006	**72.4**	-	-	1	12/02/13 09:00	
RM11E-MWS004-05_24'	K1312857-012	**80.2**	-	-	1	12/03/13 13:44	
RM11E-MWS004-24_29'	K1312857-013	**70.9**	-	-	1	12/03/13 13:44	
RM11E-MWS504-24_29'	K1312857-016	**70.6**	-	-	1	12/03/13 13:44	
RM11E-MWS005-05_21'	K1312857-024	**80.5**	-	-	1	12/02/13 09:00	
RM11E-MWS005-21_26'	K1312857-025	**72.3**	-	-	1	12/02/13 09:00	
RM11E-SL031	K1312857-026	**90.2**	-	-	1	12/02/13 09:00	
RM11E-SL028	K1312857-027	**85.5**	-	-	1	12/02/13 09:00	
RM11E-SL029	K1312857-028	**89.0**	-	-	1	12/02/13 09:00	
RM11E-SL030	K1312857-029	**84.2**	-	-	1	12/02/13 09:00	

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	10/31/13
Sample Matrix:	Sediment	**Date Received:**	11/1/13
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G079	K1312857-030	**80.5**	-	-	1	12/03/13 13:44	

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Collected: 11/21/13
Date Received: 11/22/13
Date Analyzed: 12/ 2/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: RM11E-MWS001-24_29'
Lab Code: K1312857-006

Units: Percent
Basis: As Received

Analyte Name	MRL	MDL	Sample Result	RM11E-MWS001-24_29'DUP Duplicate Sample K1312857-006DUP Result	RM11E-MWS001-24_29'TRP Triplicate Sample K1312857-006TRP Result	Average	RSD	RSD Limit
Solids, Total			72.4	72.5	72.9	72.6	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Sediment

Service Request: K1312857
Date Collected: 10/31/13
Date Received: 11/1/13
Date Analyzed: 12/ 3/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name: RM11E-G079
Lab Code: K1312857-030

Units: Percent
Basis: As Received

Analyte Name	MRL	MDL	Sample Result	RM11E-G079DUP Duplicate Sample K1312857-030DUP Result	RM11E-G079TRP Triplicate Sample K1312857-030TRP Result	Average	RSD	RSD Limit
Solids, Total			80.5	78.7	77.5	78.9	2	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Metals

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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental R1/FS Investigation
Project No.: 487.002.004

Service Request: K1312857

Sample Name:	Lab Code:
Batch QC1D	K1312655-001D
Batch QC1S	K1312655-001S
RM11E-MWS904-24_29'	K1312857-017
RM11E-MWS904-24_29'D	K1312857-017D
RM11E-MWS904-24_29'S	K1312857-017S
Method Blank	K1312857-MB

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project No.:	487.002.004	**Date Collected:**	11/21/13
Project Name:	RM11E Supplemental R1/FS Investi	**Date Received:**	11/22/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MWS904-24_29' **Lab Code:** K1312857-017

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	U	
Arsenic	6020A	0.50	0.07	1.0	12/05/13	12/10/13	0.07	U	
Barium	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	J	
Beryllium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Cadmium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Calcium	6010C	20.0	0.9	1.0	12/05/13	12/06/13	7.6	J	
Chromium	6020A	0.20	0.04	1.0	12/05/13	12/10/13	0.26		
Cobalt	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Copper	6020A	0.10	0.02	1.0	12/05/13	12/10/13	0.05	J	
Iron	6010C	20.0	3.0	1.0	12/05/13	12/06/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/05/13	12/10/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/05/13	12/06/13	1.3	J	
Manganese	6020A	0.050	0.006	1.0	12/05/13	12/10/13	0.107		
Mercury	7470A	0.20	0.02	1.0	11/26/13	11/27/13	0.02	U	
Nickel	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.04	J	
Potassium	6010C	200	60.0	1.0	12/05/13	12/06/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/05/13	12/06/13	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.06	J	
Zinc	6020A	0.50	0.20	1.0	12/05/13	12/10/13	0.35	J	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1312857
Project No.:	487.002.004	Date Collected:	
Project Name:	RM11E Supplemental R1/FS Investi	Date Received:	
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: Method Blank Lab Code: K1312857-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	U	
Arsenic	6020A	0.50	0.07	1.0	12/05/13	12/10/13	0.07	U	
Barium	6020A	0.05	0.02	1.0	12/05/13	12/10/13	0.02	U	
Beryllium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Cadmium	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Calcium	6010C	20.0	0.9	1.0	12/05/13	12/06/13	1.0	J	
Chromium	6020A	0.20	0.04	1.0	12/05/13	12/10/13	0.14	J	
Cobalt	6020A	0.020	0.003	1.0	12/05/13	12/10/13	0.003	U	
Copper	6020A	0.10	0.02	1.0	12/05/13	12/10/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/05/13	12/06/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/05/13	12/10/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/05/13	12/06/13	0.3	J	
Manganese	6020A	0.050	0.006	1.0	12/05/13	12/10/13	0.006	J	
Mercury	7470A	0.20	0.02	1.0	11/26/13	11/27/13	0.02	U	
Nickel	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.03	U	
Potassium	6010C	200	60.0	1.0	12/05/13	12/06/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/05/13	12/06/13	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	12/05/13	12/10/13	0.05	J	
Zinc	6020A	0.50	0.20	1.0	12/05/13	12/10/13	0.28	J	

Comments:

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Metals
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SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1S **Lab Code:** K1312655-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	53.8		0.03	J	50.00	107.5		6020A
Arsenic	75 - 125	52.6		0.07	U	50.00	105.2		6020A
Barium	75 - 125	104		0.12		100.00	103.9		6020A
Beryllium	75 - 125	2.640		0.003	U	2.50	105.6		6020A
Cadmium	75 - 125	26.6		0.027		25.00	106.3		6020A
Calcium	75 - 125	10200		14.0	J	10000.00	101.9		6010C
Chromium	75 - 125	10.8		0.24		10.00	105.6		6020A
Cobalt	75 - 125	26.3		0.003	U	25.00	105.2		6020A
Copper	75 - 125	13.1		0.07	J	12.50	104.2		6020A
Iron	75 - 125	1010		5.3	J	1000.00	100.5		6010C
Lead	75 - 125	52.6		0.019	J	50.00	105.2		6020A
Magnesium	75 - 125	10100		1.8	J	10000.00	101.0		6010C
Manganese	75 - 125	26.9		0.283		25.00	106.5		6020A
Nickel	75 - 125	26.2		0.06	J	25.00	104.6		6020A
Potassium	75 - 125	10100		60.0	U	10000.00	101.0		6010C
Sodium	75 - 125	10200		20.0	U	10000.00	102.0		6010C
Vanadium	75 - 125	26.1		0.07	J	25.00	104.1		6020A
Zinc	75 - 125	28.7		1.16		25.00	110.2		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

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Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MWS904-24_29'S **Lab Code:** K1312857-017S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	1.03		0.02	U	1.00	103.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1A **Lab Code:** K1312655-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	20.50		0.03		20	102		6020A
Arsenic	80 - 120	20.29		0.07		20	101		6020A
Barium	80 - 120	20.92		0.12		20	104		6020A
Beryllium	80 - 120	21.580		0.003		20	108		6020A
Cadmium	80 - 120	20.550		0.027		20	103		6020A
Calcium	80 - 120	13300.0		14.0		12500	106		6010C
Chromium	80 - 120	21.31		0.24		20	105		6020A
Cobalt	80 - 120	20.880		0.003		20	104		6020A
Copper	80 - 120	20.70		0.07		20	103		6020A
Iron	80 - 120	2606.0		5.3		2500	104		6010C
Lead	80 - 120	20.660		0.019		20	103		6020A
Magnesium	80 - 120	13130.0		1.8		12500	105		6010C
Manganese	80 - 120	21.480		0.283		20	106		6020A
Nickel	80 - 120	20.67		0.06		20	103		6020A
Potassium	80 - 120	12810.0		60.0		12500	102		6010C
Sodium	80 - 120	13270.0		20.0		12500	106		6010C
Vanadium	80 - 120	21.12		0.07		20	105		6020A
Zinc	80 - 120	21.2		1.2		20	100		6020A

Metals

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POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MWS904-24_29'A **Lab Code:** K1312857-017A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.99		0.02		1.0	99		7470A

Metals

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DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1D **Lab Code:** K1312655-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.03	J	0.02	U	200.0		6020A
Arsenic		0.07	U	0.07	U			6020A
Barium		0.12		0.12		0.0		6020A
Beryllium		0.003	U	0.003	U			6020A
Cadmium		0.027		0.026		3.8		6020A
Calcium		14.0	J	12.5	J	11.3		6010C
Chromium		0.24		0.23		4.3		6020A
Cobalt		0.003	U	0.003	U			6020A
Copper		0.07	J	0.07	J	0.0		6020A
Iron		5.3	J	5.5	J	3.7		6010C
Lead		0.019	J	0.021		10.0		6020A
Magnesium		1.8	J	1.0	J	57.1		6010C
Manganese	20	0.283		0.285		0.7		6020A
Nickel		0.06	J	0.05	J	18.2		6020A
Potassium		60.0	U	60.0	U			6010C
Sodium		20.0	U	21.0	J	200.0		6010C
Vanadium		0.07	J	0.06	J	15.4		6020A
Zinc		1.16		1.27		9.1		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MWS904-24_29'D **Lab Code:** K1312857-017D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.02	U	0.02	U			7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004

Project Name: RM11E Supplemental R1/FS Investi

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	50	53.6	107.2					
Arsenic	50	53.0	106.0					
Barium	100	104	104.0					
Beryllium	2.5	2.550	102.0					
Cadmium	25	26.6	106.4					
Calcium	12500	12600	100.8					
Chromium	10	10.7	107.0					
Cobalt	25	26.2	104.8					
Copper	12.5	12.9	103.2					
Iron	2500	2480	99.2					
Lead	50	52.2	104.4					
Magnesium	12500	12500	100.0					
Manganese	25	26.6	106.4					
Mercury	5	5.24	104.8					
Nickel	25	26.1	104.4					
Potassium	12500	12300	98.4					
Sodium	12500	12600	100.8					
Vanadium	25	25.5	102.0					
Zinc	25	27.7	110.8					

Metals

ALS Group USA, Corp.
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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplemental R1/FS Investigation
Project No.: 487.002.004

Service Request: K1312857

Sample Name:	Lab Code:
Batch QC1D	K1312655-002D
Batch QC1S	K1312655-002S
RM11E-MWS001-5_24'	K1312857-005
RM11E-MWS001-5_24'D	K1312857-005D
RM11E-MWS001-5_24'S	K1312857-005S
RM11E-MWS001-24_29'	K1312857-006
RM11E-MWS004-05_24'	K1312857-012
RM11E-MWS004-24_29'	K1312857-013
RM11E-MWS504-24_29'	K1312857-016
RM11E-MWS005-05_21'	K1312857-024
RM11E-MWS005-21_26'	K1312857-025
RM11E-SL031	K1312857-026
RM11E-SL028	K1312857-027
RM11E-SL029	K1312857-028
RM11E-SL030	K1312857-029
Method Blank	K1312857-MB

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/21/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS001-5_24'
Lab Code: K1312857-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.048	0.009	5.0	11/27/13	12/05/13	0.629		N
Arsenic	6020A	0.43	0.05	5.0	11/27/13	12/10/13	6.54		
Cadmium	6020A	0.017	0.003	5.0	11/27/13	12/10/13	0.535		
Chromium	6020A	0.17	0.03	5.0	11/27/13	12/10/13	20.6		N
Copper	6020A	0.09	0.04	5.0	11/27/13	12/10/13	146		*
Lead	6020A	0.043	0.008	5.0	11/27/13	12/10/13	551		*
Mercury	7471B	0.019	0.002	1.0	11/26/13	11/27/13	0.096		
Nickel	6020A	0.17	0.03	5.0	11/27/13	12/10/13	18.1		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	269		*

% Solids: 83.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312857
Date Collected: 11/21/13
Date Received: 11/22/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS001-24_29'
Lab Code: K1312857-006

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.033	0.006	5.0	11/27/13	12/05/13	0.147		N
Arsenic	6020A	0.34	0.04	5.0	11/27/13	12/10/13	2.17		
Cadmium	6020A	0.014	0.002	5.0	11/27/13	12/10/13	0.099		
Chromium	6020A	0.14	0.02	5.0	11/27/13	12/10/13	19.5		N
Copper	6020A	0.07	0.03	5.0	11/27/13	12/10/13	22.8		*
Lead	6020A	0.034	0.006	5.0	11/27/13	12/10/13	32.0		*
Mercury	7471B	0.021	0.002	1.0	11/26/13	11/27/13	0.075		
Nickel	6020A	0.14	0.02	5.0	11/27/13	12/10/13	20.7		
Zinc	6020A	0.3	0.1	5.0	11/27/13	12/10/13	62.8		*

% Solids: 72.4

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/21/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS004-05_24'
Lab Code: K1312857-012

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.043	0.008	5.0	11/27/13	12/05/13	0.490		N
Arsenic	6020A	0.48	0.06	5.0	11/27/13	12/10/13	8.52		
Cadmium	6020A	0.019	0.003	5.0	11/27/13	12/10/13	0.301		
Chromium	6020A	0.19	0.03	5.0	11/27/13	12/10/13	19.9		N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	35.7		*
Lead	6020A	0.048	0.009	5.0	11/27/13	12/10/13	106		*
Mercury	7471B	0.021	0.002	1.0	11/26/13	11/27/13	0.232		
Nickel	6020A	0.19	0.03	5.0	11/27/13	12/10/13	17.9		
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	138		*

% Solids: 80.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312857
Date Collected: 11/21/13
Date Received: 11/22/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS004-24_29'
Lab Code: K1312857-013

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.033	0.006	5.0	11/27/13	12/05/13	0.163		N
Arsenic	6020A	0.34	0.04	5.0	11/27/13	12/10/13	5.21		
Cadmium	6020A	0.014	0.002	5.0	11/27/13	12/10/13	0.175		
Chromium	6020A	0.14	0.02	5.0	11/27/13	12/10/13	13.7		N
Copper	6020A	0.07	0.03	5.0	11/27/13	12/10/13	22.3		*
Lead	6020A	0.034	0.006	5.0	11/27/13	12/10/13	13.7		*
Mercury	7471B	0.022	0.002	1.0	11/26/13	11/27/13	0.026		
Nickel	6020A	0.14	0.02	5.0	11/27/13	12/10/13	17.6		
Zinc	6020A	0.3	0.1	5.0	11/27/13	12/10/13	66.7		*

% Solids: 70.9

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312857
Date Collected: 11/21/13
Date Received: 11/22/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS504-24_29'
Lab Code: K1312857-016

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.038	0.007	5.0	11/27/13	12/05/13	0.160		N
Arsenic	6020A	0.37	0.04	5.0	11/27/13	12/10/13	4.84		
Cadmium	6020A	0.015	0.002	5.0	11/27/13	12/10/13	0.185		
Chromium	6020A	0.15	0.02	5.0	11/27/13	12/10/13	14.2		N
Copper	6020A	0.07	0.04	5.0	11/27/13	12/10/13	22.6		*
Lead	6020A	0.037	0.007	5.0	11/27/13	12/10/13	14.0		*
Mercury	7471B	0.017	0.002	1.0	11/26/13	11/27/13	0.023		
Nickel	6020A	0.15	0.02	5.0	11/27/13	12/10/13	18.2		
Zinc	6020A	0.4	0.1	5.0	11/27/13	12/10/13	68.8		*

% Solids: 70.6

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/22/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS005-05_21'
Lab Code: K1312857-024

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.047	0.008	5.0	11/27/13	12/05/13	0.451		N
Arsenic	6020A	0.44	0.05	5.0	11/27/13	12/10/13	7.07		
Cadmium	6020A	0.017	0.003	5.0	11/27/13	12/10/13	0.251		
Chromium	6020A	0.18	0.03	5.0	11/27/13	12/10/13	23.5		N
Copper	6020A	0.09	0.04	5.0	11/27/13	12/10/13	34.2		
Lead	6020A	0.044	0.008	5.0	11/27/13	12/10/13	54.5		*
Mercury	7471B	0.020	0.002	1.0	11/26/13	11/27/13	0.061		
Nickel	6020A	0.18	0.03	5.0	11/27/13	12/10/13	18.4		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	121		*

% Solids: 80.5

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/22/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-MWS005-21_26'
Lab Code: K1312857-025

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.051	0.009	5.0	11/27/13	12/05/13	0.288		N
Arsenic	6020A	0.42	0.05	5.0	11/27/13	12/10/13	3.30		
Cadmium	6020A	0.017	0.003	5.0	11/27/13	12/10/13	0.116		
Chromium	6020A	0.17	0.03	5.0	11/27/13	12/10/13	20.9		N
Copper	6020A	0.09	0.04	5.0	11/27/13	12/10/13	34.7		
Lead	6020A	0.042	0.008	5.0	11/27/13	12/10/13	38.6		*
Mercury	7471B	0.022	0.002	1.0	11/26/13	11/27/13	0.064		
Nickel	6020A	0.17	0.03	5.0	11/27/13	12/10/13	23.9		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	73.7		*

% Solids: 72.3

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312857
Date Collected: 11/22/13
Date Received: 11/22/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL031
Lab Code: K1312857-026

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.041	0.007	5.0	11/27/13	12/05/13	0.609		N
Arsenic	6020A	0.50	0.06	5.0	11/27/13	12/10/13	3.14		
Cadmium	6020A	0.020	0.003	5.0	11/27/13	12/10/13	0.262		
Chromium	6020A	0.20	0.03	5.0	11/27/13	12/10/13	46.8		N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	33.7		
Lead	6020A	0.049	0.009	5.0	11/27/13	12/10/13	39.7		*
Mercury	7471B	0.020	0.002	1.0	11/26/13	11/27/13	0.060		
Nickel	6020A	0.20	0.03	5.0	11/27/13	12/10/13	54.0		
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	85.6		*

% Solids: 90.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project No.: 487.002.004
Project Name: RM11E Supplemental R1/FS Investi
Matrix: SOIL

Service Request: K1312857
Date Collected: 11/22/13
Date Received: 11/22/13
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL028
Lab Code: K1312857-027

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.040	0.007	5.0	11/27/13	12/05/13	0.208		N
Arsenic	6020A	0.45	0.05	5.0	11/27/13	12/10/13	6.37		
Cadmium	6020A	0.018	0.003	5.0	11/27/13	12/10/13	0.231		
Chromium	6020A	0.18	0.03	5.0	11/27/13	12/10/13	15.9		N
Copper	6020A	0.09	0.05	5.0	11/27/13	12/10/13	28.6		
Lead	6020A	0.045	0.008	5.0	11/27/13	12/10/13	21.5		*
Mercury	7471B	0.020	0.002	1.0	11/26/13	11/27/13	0.021		
Nickel	6020A	0.18	0.03	5.0	11/27/13	12/10/13	26.7		
Zinc	6020A	0.4	0.2	5.0	11/27/13	12/10/13	85.9		*

% Solids: 85.5

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/22/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL029
Lab Code: K1312857-028

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.038	0.007	5.0	11/27/13	12/05/13	0.115		N
Arsenic	6020A	0.36	0.04	5.0	11/27/13	12/10/13	4.38		
Cadmium	6020A	0.014	0.002	5.0	11/27/13	12/10/13	0.397		
Chromium	6020A	0.15	0.02	5.0	11/27/13	12/10/13	13.8		N
Copper	6020A	0.07	0.04	5.0	11/27/13	12/10/13	34.0		
Lead	6020A	0.036	0.007	5.0	11/27/13	12/10/13	76.1		*
Mercury	7471B	0.019	0.002	1.0	11/26/13	11/27/13	0.070		
Nickel	6020A	0.15	0.02	5.0	11/27/13	12/10/13	14.0		
Zinc	6020A	0.4	0.1	5.0	11/27/13	12/10/13	126		*

% Solids: 89.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected: 11/22/13
Project Name: RM11E Supplemental R1/FS Investi
Date Received: 11/22/13
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: RM11E-SL030
Lab Code: K1312857-029

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.009	5.0	11/27/13	12/05/13	0.275		N
Arsenic	6020A	0.48	0.06	5.0	11/27/13	12/10/13	3.36		
Cadmium	6020A	0.019	0.003	5.0	11/27/13	12/10/13	0.197		
Chromium	6020A	0.19	0.03	5.0	11/27/13	12/10/13	13.2		N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	25.5		
Lead	6020A	0.048	0.009	5.0	11/27/13	12/10/13	43.6		*
Mercury	7471B	0.019	0.002	1.0	11/26/13	11/27/13	0.029		
Nickel	6020A	0.19	0.03	5.0	11/27/13	12/10/13	14.7		
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	77.6		*

% Solids: 84.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1312857
Project No.: 487.002.004
Date Collected:
Project Name: RM11E Supplemental R1/FS Investi
Date Received:
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1312857-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.009	5.0	11/27/13	12/05/13	0.009	U	N
Arsenic	6020A	0.50	0.06	5.0	11/27/13	12/10/13	0.06	U	
Cadmium	6020A	0.020	0.003	5.0	11/27/13	12/10/13	0.003	U	
Chromium	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.04	J	N
Copper	6020A	0.10	0.05	5.0	11/27/13	12/10/13	0.05	U	*
Lead	6020A	0.050	0.009	5.0	11/27/13	12/10/13	0.009	U	*
Mercury	7471B	0.020	0.002	1.0	11/26/13	11/27/13	0.002	U	
Nickel	6020A	0.20	0.03	5.0	11/27/13	12/10/13	0.03	J	
Zinc	6020A	0.5	0.2	5.0	11/27/13	12/10/13	0.4	J	*

% Solids: 100.0

Comments:

ALS Group USA, Corp.
dba ALS Environmental

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** MG/KG

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: SOIL **% Solids:** 83.3

Sample Name: Batch QC1S **Lab Code:** K1312655-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	24.1		1.12		77.95	29.5	N	6020A
Arsenic	75 - 125	41.3		5.38		38.23	94.0		6020A
Cadmium	75 - 125	4.46		0.707		3.82	98.2		6020A
Chromium	75 - 125	73.9		54.2		15.29	128.8	N	6020A
Copper		116		96.5		19.12	102.0		6020A
Lead		171		180		38.23	-23.5		6020A
Nickel	75 - 125	88.5		56.9		38.23	82.7		6020A
Zinc		441		385		38.23	146.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project No.:	487.002.004	**Units:**	MG/KG
Project Name:	RM11E Supplemental R1/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	83.0

Sample Name: RM11E-MWS001-5_24'S **Lab Code:** K1312857-005S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.585		0.096		0.48	101.9		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: WATER

Sample Name: Batch QC1A **Lab Code:** K1312655-002A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	51.95		2.83		50.0	98		6020A
Arsenic	80 - 120	60.69		13.43		50.0	95		6020A
Cadmium	80 - 120	49.385		1.767		50.0	95		6020A
Chromium	80 - 120	183.24		135.48		50.0	96		6020A
Copper	80 - 120	288.33		241.15		50.0	94		6020A
Lead	80 - 120	498.65		450.16		50.0	97		6020A
Nickel	80 - 120	189.26		142.09		50.0	94		6020A
Zinc	80 - 120	1009.2		962.7		50.0	93		6020A

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplemental R1/FS Investi **Basis:** DRY

Matrix: WATER

Sample Name: RM11E-MWS001-5_24'A **Lab Code:** K1312857-005A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	5.99		1.01		5.00	100		7471B

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Metals

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DUPLICATES

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project No.:	487.002.004	**Units:**	MG/KG
Project Name:	RM11E Supplemental R1/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	83.3

Sample Name: Batch QC1D **Lab Code:** K1312655-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	1.12		0.943		17.2		6020A
Arsenic	20	5.38		4.84		10.6		6020A
Cadmium	20	0.707		0.707		0.0		6020A
Chromium	20	54.2		50.5		7.1		6020A
Copper	20	96.5		124		24.9	*	6020A
Lead	20	180		122		38.4	*	6020A
Nickel	20	56.9		49.0		14.9		6020A
Zinc	20	385		602		44.0	*	6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

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Metals

- 6 -

DUPLICATES

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project No.:	487.002.004	**Units:**	MG/KG
Project Name:	RM11E Supplemental R1/FS Investi	**Basis:**	DRY
Matrix:	SOIL	**% Solids:**	83.0

Sample Name: RM11E-MWS001-5_24'D **Lab Code:** K1312857-005D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.096		0.101		5.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1312857

Project No.: 487.002.004

Project Name: RM11E Supplemental R1/FS Investi

Aqueous LCS Source: **Solid LCS Source:** ERA D076-540

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C Limits		%R
Antimony				93.3	73.2	25	199	78.5
Arsenic				94.5	95.3	82	117	100.8
Cadmium				60.5	62.8	83	117	103.8
Chromium				70.4	67.9	82	118	96.4
Copper				79.6	79.5	84	116	99.9
Lead				91.8	93.2	82	118	101.5
Mercury				3.73	3.52	72	128	94.4
Nickel				57.6	59.2	83	117	102.8
Zinc				140	140	82	118	100.0

Chlorinated Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Service Request: K1312857

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS001-5_24'	K1312857-005	11/21/2013	11/22/2013
RM11E-MWS001-24_29'	K1312857-006	11/21/2013	11/22/2013
RM11E-MWS004-05_24'	K1312857-012	11/21/2013	11/22/2013
RM11E-MWS004-24_29'	K1312857-013	11/21/2013	11/22/2013
RM11E-MWS504-24_29'	K1312857-016	11/21/2013	11/22/2013
RM11E-MWS005-05_21'	K1312857-024	11/22/2013	11/22/2013
RM11E-MWS005-21_26'	K1312857-025	11/22/2013	11/22/2013
RM11E-SL031	K1312857-026	11/22/2013	11/22/2013
RM11E-SL028	K1312857-027	11/22/2013	11/22/2013
RM11E-SL029	K1312857-028	11/22/2013	11/22/2013
RM11E-SL030	K1312857-029	11/22/2013	11/22/2013
RM11E-G079	K1312857-030	10/31/2013	11/01/2013
RM11E-MWS005-05_21'MS	KWG1313175-1	11/22/2013	11/22/2013
RM11E-MWS005-05_21'DMS	KWG1313175-2	11/22/2013	11/22/2013
RM11E-G079MS	KWG1313368-1	10/31/2013	11/01/2013
RM11E-G079DMS	KWG1313368-2	10/31/2013	11/01/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Jerome Peterson
Name: Jerome Peterson
Date: 12·16·13
Title: Scientist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS001-5_24'	**Units:**	ug/Kg
Lab Code:	K1312857-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.14**		0.063	0.063	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	ND	Ui	0.15	0.15	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**0.66**		0.060	0.035	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	**0.41**		0.070	0.070	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	**0.69**		0.060	0.047	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	**0.10**		0.062	0.062	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	**0.15**		0.064	0.064	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	ND	U	0.060	0.058	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.060	0.031	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	118	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	141	5-144	12/09/13	Acceptable
S_Heptachlrepox13C10	76	8-146	12/09/13	Acceptable
S_Endrin-13C12	79	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	85	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	108	13-200	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS001-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.069	0.063	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**0.19**		0.069	0.035	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	**0.076**		0.070	0.070	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	**1.3**		0.069	0.047	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	**0.079**		0.069	0.062	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	**0.12**		0.069	0.064	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	ND	U	0.069	0.058	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.069	0.031	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	89	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	134	5-144	12/09/13	Acceptable
S_Heptachlrepox13C10	96	8-146	12/09/13	Acceptable
S_Endrin-13C12	106	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	87	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	97	13-200	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS004-05_24'	**Units:**	ug/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.69**		0.063	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	**1.7**		0.062	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	**0.48**		0.070	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	**0.22**		0.062	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	**0.12**		0.062	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	**0.14**		0.064	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	ND	U	0.062	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.062	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	101	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	129	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	87	8-146	12/06/13	Acceptable
S_Endrin-13C12	106	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	85	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	93	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS004-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.071	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	**0.036**	J	0.071	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	ND	U	0.071	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	ND	U	0.071	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	ND	U	0.071	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	ND	U	0.071	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	ND	U	0.071	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.071	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	84	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	121	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	85	8-146	12/06/13	Acceptable
S_Endrin-13C12	105	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	91	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	95	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS504-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.071	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	**0.097**		0.071	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	ND	U	0.071	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	ND	U	0.071	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	ND	U	0.071	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	ND	U	0.071	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	ND	U	0.071	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.071	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	77	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	108	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	79	8-146	12/06/13	Acceptable
S_Endrin-13C12	91	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	84	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	88	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.63	0.63	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.79	0.79	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	ND	U	0.94	0.94	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**1.2**		0.62	0.35	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	ND	U	0.70	0.70	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	ND	U	0.62	0.47	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	ND	U	0.62	0.62	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	ND	U	0.97	0.97	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	ND	U	0.64	0.64	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	ND	U	0.62	0.58	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	ND	U	2.0	0.77	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.62	0.31	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.73	0.73	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	2.0	1.3	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	98	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	156	5-144	12/09/13	Outside Control Limits
S_Heptachlrepox13C10	81	8-146	12/09/13	Acceptable
S_Endrin-13C12	98	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	95	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	95	13-200	12/09/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Collected: 11/22/2013
Date Received: 11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: RM11E-MWS005-21_26'
Lab Code: K1312857-025

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.069	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	**0.041**	J	0.069	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	ND	U	0.070	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	ND	U	0.069	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	ND	U	0.069	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	ND	U	0.069	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	ND	U	0.069	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.069	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	120	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	132	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	91	8-146	12/06/13	Acceptable
S_Endrin-13C12	90	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	83	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	96	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL031	**Units:**	ug/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	**0.072**		0.056	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	**0.16**		0.070	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	**0.47**		0.056	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	**0.29**		0.062	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	**0.12**		0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	**0.37**		0.064	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	**0.36**		0.058	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.056	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	123	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	131	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	93	8-146	12/06/13	Acceptable
S_Endrin-13C12	102	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	86	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	101	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL028	**Units:**	ug/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**0.077**		0.063	0.063	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	ND	Ui	0.17	0.17	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**0.20**		0.059	0.035	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	**0.66**		0.070	0.070	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	**0.75**		0.059	0.047	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	**0.83**		0.062	0.062	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	**0.30**		0.097	0.097	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	**1.0**		0.064	0.064	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	**0.87**		0.059	0.058	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	**0.43**		0.20	0.077	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.059	0.031	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	**0.087**		0.073	0.073	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	110	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	115	5-144	12/09/13	Acceptable
S_Heptachlrepox13C10	100	8-146	12/09/13	Acceptable
S_Endrin-13C12	95	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	81	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	94	13-200	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL029	**Units:**	ug/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	**0.33**		0.094	0.094	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**0.15**		0.057	0.035	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	**0.41**		0.070	0.070	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	**2.2**		0.057	0.047	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	**0.12**		0.062	0.062	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	**0.16**		0.064	0.064	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	**0.079**		0.058	0.058	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.057	0.031	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	**0.093**		0.073	0.073	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	114	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	115	5-144	12/09/13	Acceptable
S_Heptachlrepox13C10	86	8-146	12/09/13	Acceptable
S_Endrin-13C12	99	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	80	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	89	13-200	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL030	**Units:**	ug/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	Ui	0.34	0.34	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/09/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDD	**0.59**		0.059	0.035	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDE	**0.27**		0.070	0.070	1	11/26/13	12/09/13	KWG1313175	
4,4'-DDT	**0.37**		0.059	0.047	1	11/26/13	12/09/13	KWG1313175	
alpha-Chlordane	**0.11**		0.062	0.062	1	11/26/13	12/09/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/09/13	KWG1313175	
gamma-Chlordane	**0.15**		0.064	0.064	1	11/26/13	12/09/13	KWG1313175	
trans-Nonachlor	**0.092**		0.059	0.058	1	11/26/13	12/09/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/09/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.059	0.031	1	11/26/13	12/09/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/09/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	123	5-124	12/09/13	Acceptable
S_Oxychlordane-13C10	142	5-144	12/09/13	Acceptable
S_Heptachlrepox13C10	91	8-146	12/09/13	Acceptable
S_Endrin-13C12	103	20-157	12/09/13	Acceptable
S_4,4'DDD-d4	92	5-120	12/09/13	Acceptable
S_4,4'-DDT-d4	102	13-200	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G079	**Units:**	ug/Kg
Lab Code:	K1312857-030	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	12/03/13	12/10/13	KWG1313368	*
2,4'-DDE	ND	U	0.079	0.079	1	12/03/13	12/10/13	KWG1313368	*
2,4'-DDT	ND	U	0.094	0.094	1	12/03/13	12/10/13	KWG1313368	*
4,4'-DDD	**0.30**		0.062	0.035	1	12/03/13	12/10/13	KWG1313368	*
4,4'-DDE	**0.23**		0.070	0.070	1	12/03/13	12/10/13	KWG1313368	*
4,4'-DDT	ND	Ui	0.11	0.11	1	12/03/13	12/10/13	KWG1313368	*
alpha-Chlordane	ND	U	0.062	0.062	1	12/03/13	12/10/13	KWG1313368	*
cis-Nonachlor	ND	U	0.097	0.097	1	12/03/13	12/10/13	KWG1313368	*
gamma-Chlordane	ND	U	0.064	0.064	1	12/03/13	12/10/13	KWG1313368	*
trans-Nonachlor	ND	U	0.062	0.058	1	12/03/13	12/10/13	KWG1313368	*
Dieldrin	ND	U	0.20	0.077	1	12/03/13	12/10/13	KWG1313368	*
gamma-BHC (Lindane)	ND	U	0.062	0.031	1	12/03/13	12/10/13	KWG1313368	*
Heptachlor Epoxide	ND	U	0.073	0.073	1	12/03/13	12/10/13	KWG1313368	*
Oxychlordane	ND	U	0.20	0.13	1	12/03/13	12/10/13	KWG1313368	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	94	5-124	12/10/13	Acceptable
S_Oxychlordane-13C10	117	5-144	12/10/13	Acceptable
S_Heptachlrepox13C10	113	8-146	12/10/13	Acceptable
S_Endrin-13C12	105	20-157	12/10/13	Acceptable
S_4,4'DDD-d4	88	5-120	12/10/13	Acceptable
S_4,4'-DDT-d4	104	13-200	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313175-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDE	ND	U	0.079	0.079	1	11/26/13	12/06/13	KWG1313175	
2,4'-DDT	ND	U	0.094	0.094	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDD	ND	U	0.050	0.035	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDE	ND	U	0.070	0.070	1	11/26/13	12/06/13	KWG1313175	
4,4'-DDT	ND	U	0.050	0.047	1	11/26/13	12/06/13	KWG1313175	
alpha-Chlordane	ND	U	0.062	0.062	1	11/26/13	12/06/13	KWG1313175	
cis-Nonachlor	ND	U	0.097	0.097	1	11/26/13	12/06/13	KWG1313175	
gamma-Chlordane	ND	U	0.064	0.064	1	11/26/13	12/06/13	KWG1313175	
trans-Nonachlor	ND	U	0.058	0.058	1	11/26/13	12/06/13	KWG1313175	
Dieldrin	ND	U	0.20	0.077	1	11/26/13	12/06/13	KWG1313175	
gamma-BHC (Lindane)	ND	U	0.050	0.031	1	11/26/13	12/06/13	KWG1313175	
Heptachlor Epoxide	ND	U	0.073	0.073	1	11/26/13	12/06/13	KWG1313175	
Oxychlordane	ND	U	0.20	0.13	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	85	5-124	12/06/13	Acceptable
S_Oxychlordane-13C10	103	5-144	12/06/13	Acceptable
S_Heptachlrepox13C10	94	8-146	12/06/13	Acceptable
S_Endrin-13C12	91	20-157	12/06/13	Acceptable
S_4,4'DDD-d4	92	5-120	12/06/13	Acceptable
S_4,4'-DDT-d4	90	13-200	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313368-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	12/03/13	12/10/13	KWG1313368	
2,4'-DDE	ND	U	0.079	0.079	1	12/03/13	12/10/13	KWG1313368	
2,4'-DDT	ND	U	0.094	0.094	1	12/03/13	12/10/13	KWG1313368	
4,4'-DDD	ND	U	0.049	0.035	1	12/03/13	12/10/13	KWG1313368	
4,4'-DDE	ND	U	0.070	0.070	1	12/03/13	12/10/13	KWG1313368	
4,4'-DDT	ND	U	0.049	0.047	1	12/03/13	12/10/13	KWG1313368	
alpha-Chlordane	ND	U	0.062	0.062	1	12/03/13	12/10/13	KWG1313368	
cis-Nonachlor	ND	U	0.097	0.097	1	12/03/13	12/10/13	KWG1313368	
gamma-Chlordane	ND	U	0.064	0.064	1	12/03/13	12/10/13	KWG1313368	
trans-Nonachlor	ND	U	0.058	0.058	1	12/03/13	12/10/13	KWG1313368	
Dieldrin	ND	U	0.20	0.077	1	12/03/13	12/10/13	KWG1313368	
gamma-BHC (Lindane)	ND	U	0.049	0.031	1	12/03/13	12/10/13	KWG1313368	
Heptachlor Epoxide	ND	U	0.073	0.073	1	12/03/13	12/10/13	KWG1313368	
Oxychlordane	ND	U	0.20	0.13	1	12/03/13	12/10/13	KWG1313368	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	85	5-124	12/10/13	Acceptable
S_Oxychlordane-13C10	107	5-144	12/10/13	Acceptable
S_Heptachlrepox13C10	115	8-146	12/10/13	Acceptable
S_Endrin-13C12	102	20-157	12/10/13	Acceptable
S_4,4'DDD-d4	88	5-120	12/10/13	Acceptable
S_4,4'-DDT-d4	81	13-200	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-MWS001-5_24'	K1312857-005	118	141	76	79	85	108
RM11E-MWS001-24_29'	K1312857-006	89	134	96	106	87	97
RM11E-MWS004-05_24'	K1312857-012	101	129	87	106	85	93
RM11E-MWS004-24_29'	K1312857-013	84	121	85	105	91	95
RM11E-MWS504-24_29'	K1312857-016	77	108	79	91	84	88
RM11E-MWS005-05_21'	K1312857-024	98 #	156 #	81 #	98 #	95 #	95 #
RM11E-MWS005-21_26'	K1312857-025	120	132	91	90	83	96
RM11E-SL031	K1312857-026	123	131	93	102	86	101
RM11E-SL028	K1312857-027	110	115	100	95	81	94
RM11E-SL029	K1312857-028	114	115	86	99	80	89
RM11E-SL030	K1312857-029	123	142	91	103	92	102
RM11E-G079	K1312857-030	94	117	113	105	88	104
Method Blank	KWG1313175-5	85	103	94	91	92	90
Method Blank	KWG1313368-5	85	107	115	102	88	81
RM11E-MWS005-05_21'MS	KWG1313175-1	105 #	128 #	91 #	119 #	76 #	83 #
RM11E-MWS005-05_21'DMS	KWG1313175-2	103 #	160 #	95 #	112 #	96 #	87 #
RM11E-G079MS	KWG1313368-1	84	109	106	104	84	88
RM11E-G079DMS	KWG1313368-2	80	109	90	92	79	97
Lab Control Sample	KWG1313175-3	101	123	107	102	99	97
Duplicate Lab Control Sample	KWG1313175-4	66	80	74	77	70	71
Lab Control Sample	KWG1313368-3	75	105	104	92	84	82
Duplicate Lab Control Sample	KWG1313368-4	69	101	101	89	83	80

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/06/2013
		Time Analyzed:	10:10

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120613\1206F004.D	**Lab Code:**	KWG1313576-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313576
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	72,580	15.33	7,520	11.44	2,437	14.03
	Upper Limit ==>	145,160	15.83	15,041	11.94	4,874	14.53
	Lower Limit ==>	36,290	14.83	376	10.94	122	13.53
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313175-5	63,490	15.34	5,085	11.44	1,865	14.04
Lab Control Sample	KWG1313175-3	59,326	15.34	5,632	11.44	2,071	14.05
Duplicate Lab Control Sample	KWG1313175-4	65,286	15.34	4,056	11.44	1,480	14.04
RM11E-MWS005-05_21'MS	KWG1313175-1	30,105*	15.42	4,632*	11.47	1,310*	14.10
RM11E-MWS005-05_21'DMS	KWG1313175-2	30,639*	15.45	4,292*	11.49	1,529*	14.11
RM11E-MWS005-05_21'	K1312857-024	28,099*	15.47	3,555*	11.50	1,195*	14.13
RM11E-MWS004-05_24'	K1312857-012	55,146	15.39	5,247	11.47	2,024	14.08
RM11E-MWS004-24_29'	K1312857-013	51,022	15.38	4,025	11.47	1,758	14.06
RM11E-MWS504-24_29'	K1312857-016	53,866	15.37	3,894	11.46	1,662	14.06
RM11E-MWS005-21_26'	K1312857-025	59,161	15.39	6,651	11.46	2,225	14.06
RM11E-SL031	K1312857-026	60,167	15.38	6,943	11.46	2,250	14.06

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/06/2013
		Time Analyzed:	10:10

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120613\1206F004.D	**Lab Code:**	KWG1313576-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313576
Analysis Method:	CAS SOC-PESTMS		

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	3,122	14.14	1,646	16.47	10,367	17.03
	Upper Limit ==>	6,245	14.64	3,291	16.97	20,735	17.53
	Lower Limit ==>	156	13.64	82	15.97	518	16.53
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313175-5	2,452	14.15	1,252	16.49	8,880	17.04
Lab Control Sample	KWG1313175-3	2,595	14.15	1,318	16.49	8,952	17.04
Duplicate Lab Control Sample	KWG1313175-4	1,993	14.15	1,090	16.48	6,971	17.04
RM11E-MWS005-05_21'MS	KWG1313175-1	1,237*	14.20	640*	16.58	3,800*	17.15
RM11E-MWS005-05_21'DMS	KWG1313175-2	1,296*	14.21	661*	16.59	3,706*	17.17
RM11E-MWS005-05_21'	K1312857-024	1,095*	14.23	571*	16.61	2,701*	17.19
RM11E-MWS004-05_24'	K1312857-012	1,973	14.18	1,267	16.54	7,165	17.09
RM11E-MWS004-24_29'	K1312857-013	1,782	14.17	1,167	16.52	7,025	17.08
RM11E-MWS504-24_29'	K1312857-016	1,737	14.17	1,065	16.51	6,864	17.07
RM11E-MWS005-21_26'	K1312857-025	2,208	14.17	1,156	16.53	7,456	17.09
RM11E-SL031	K1312857-026	2,306	14.17	1,335	16.52	7,841	17.08

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/06/2013
Time Analyzed: 10:10

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120613\1206F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313576-1
Analysis Lot: KWG1313576

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,260	18.04
	Upper Limit ==>	12,521	18.54
	Lower Limit ==>	313	17.54
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313175-5	5,513	18.06
Lab Control Sample	KWG1313175-3	5,528	18.05
Duplicate Lab Control Sample	KWG1313175-4	4,461	18.05
RM11E-MWS005-05_21'MS	KWG1313175-1	2,737*	18.20
RM11E-MWS005-05_21'DMS	KWG1313175-2	2,699*	18.19
RM11E-MWS005-05_21'	K1312857-024	2,033*	18.21
RM11E-MWS004-05_24'	K1312857-012	4,942	18.12
RM11E-MWS004-24_29'	K1312857-013	4,667	18.09
RM11E-MWS504-24_29'	K1312857-016	4,581	18.09
RM11E-MWS005-21_26'	K1312857-025	5,452	18.10
RM11E-SL031	K1312857-026	5,864	18.10

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/09/2013
		Time Analyzed:	13:06

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120913\1209F004.D	**Lab Code:**	KWG1313599-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313599
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	60,969	15.30	5,317	11.42	2,038	14.02
	Upper Limit ==>	121,938	15.80	10,635	11.92	4,075	14.52
	Lower Limit ==>	30,485	14.80	266	10.92	102	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
RM11E-SL028	K1312857-027	61,036	15.32	6,299	11.42	1,995	14.02
RM11E-SL029	K1312857-028	56,139	15.34	6,010	11.44	1,845	14.03
RM11E-SL030	K1312857-029	50,025	15.36	5,786	11.44	2,023	14.04
RM11E-MWS005-05_21'MS	KWG1313175-1	47,539	15.36	468	11.45	173	14.05
RM11E-MWS005-05_21'DMS	KWG1313175-2	48,493	15.35	470	11.44	221	14.04
RM11E-MWS005-05_21'RE	K1312857-024	48,730	15.35	450	11.44	217	14.04
RM11E-MWS001-5_24'	K1312857-005	43,994	15.38	4,859	11.45	1,768	14.06
RM11E-MWS001-24_29'	K1312857-006	42,954	15.34	3,594	11.44	1,640	14.04

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/09/2013
Time Analyzed: 13:06

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120913\1209F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313599-1
Analysis Lot: KWG1313599

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	2,574	14.11	1,351	16.45	8,056	17.01
	Upper Limit ==>	5,148	14.61	2,702	16.95	16,113	17.51
	Lower Limit ==>	129	13.61	68	15.95	403	16.51
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
RM11E-SL028	K1312857-027	2,503	14.12	1,260	16.46	7,487	17.02
RM11E-SL029	K1312857-028	1,971	14.14	1,204	16.49	6,789	17.05
RM11E-SL030	K1312857-029	1,865	14.15	1,123	16.50	7,032	17.06
RM11E-MWS005-05_21'MS	KWG1313175-1	178	14.15	123	16.50	548	17.05
RM11E-MWS005-05_21'DMS	KWG1313175-2	189	14.15	118	16.49	708	17.05
RM11E-MWS005-05_21'RE	K1312857-024	162	14.15	104	16.49	703	17.05
RM11E-MWS001-5_24'	K1312857-005	1,371	14.15	756	16.51	5,682	17.08
RM11E-MWS001-24_29'	K1312857-006	1,692	14.14	987	16.49	5,655	17.05

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/09/2013
Time Analyzed: 13:06

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120913\1209F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS:

Lab Code: KWG1313599-1
Analysis Lot: KWG1313599

	4,4'-DDT-d4	
	Area	**RT**
Results ==>	4,762	18.02
Upper Limit ==>	9,525	18.52
Lower Limit ==>	238	17.52
ICAL Result ==>	6,386	18.01

Associated Analyses

RM11E-SL028	K1312857-027	5,517	18.04
RM11E-SL029	K1312857-028	4,797	18.08
RM11E-SL030	K1312857-029	4,905	18.08
RM11E-MWS005-05_21'MS	KWG1313175-1	380	18.08
RM11E-MWS005-05_21'DMS	KWG1313175-2	405	18.07
RM11E-MWS005-05_21'RE	K1312857-024	448	18.07
RM11E-MWS001-5_24'	K1312857-005	4,560	18.09
RM11E-MWS001-24_29'	K1312857-006	4,008	18.06

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013
		Time Analyzed:	16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\121013\1210F005.D	**Lab Code:**	KWG1313638-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313638
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	54,042	15.32	5,801	11.42	1,922	14.02
	Upper Limit ==>	108,084	15.82	11,602	11.92	3,843	14.52
	Lower Limit ==>	27,021	14.82	290	10.92	96	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313368-5	58,140	15.32	4,613	11.42	1,778	14.02
Lab Control Sample	KWG1313368-3	57,091	15.32	4,015	11.42	1,704	14.02
Duplicate Lab Control Sample	KWG1313368-4	56,733	15.32	3,694	11.42	1,636	14.02
RM11E-G079	K1312857-030	56,148	15.33	4,976	11.43	1,873	14.03
RM11E-G079MS	KWG1313368-1	57,060	15.34	4,480	11.43	1,766	14.03
RM11E-G079DMS	KWG1313368-2	53,143	15.34	3,980	11.43	1,647	14.03

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013
		Time Analyzed:	16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\121013\1210F005.D	**Lab Code:**	KWG1313638-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313638
Analysis Method:	CAS SOC-PESTMS		

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	2,866	14.12	1,360	16.46	7,614	17.01
	Upper Limit ==>	5,732	14.62	2,721	16.96	15,228	17.51
	Lower Limit ==>	143	13.62	68	15.96	381	16.51
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313368-5	2,736	14.12	1,296	16.46	7,780	17.01
Lab Control Sample	KWG1313368-3	2,437	14.12	1,148	16.46	7,302	17.01
Duplicate Lab Control Sample	KWG1313368-4	2,341	14.12	1,105	16.46	7,181	17.01
RM11E-G079	K1312857-030	2,590	14.13	1,280	16.47	7,518	17.03
RM11E-G079MS	KWG1313368-1	2,474	14.14	1,292	16.48	7,307	17.03
RM11E-G079DMS	KWG1313368-2	1,965	14.14	1,062	16.47	6,376	17.04

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013
Time Analyzed: 16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\121013\1210F005.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313638-1
Analysis Lot: KWG1313638

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	4,311	18.03
	Upper Limit ==>	8,623	18.53
	Lower Limit ==>	216	17.53
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313368-5	4,563	18.03
Lab Control Sample	KWG1313368-3	4,496	18.03
Duplicate Lab Control Sample	KWG1313368-4	4,387	18.03
RM11E-G079	K1312857-030	5,612	18.04
RM11E-G079MS	KWG1313368-1	4,825	18.05
RM11E-G079DMS	KWG1313368-2	4,974	18.05

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/09/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

		RM11E-MWS005-05_21'MS KWG1313175-1 Matrix Spike			RM11E-MWS005-05_21'DMS KWG1313175-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND	2.86	1.23	233 *	1.76	1.23	144 *	50-120	47 *	30
2,4'-DDE	ND	1.43	1.23	116	1.18	1.23	96	24-123	19	30
2,4'-DDT	ND	1.59	1.23	130 *	1.32	1.23	108	50-120	19	30
4,4'-DDD	1.2	2.79	1.23	128 *	2.51	1.23	106	42-120	11	30
4,4'-DDE	ND	1.67	1.23	136 *	1.55	1.23	126 *	50-120	7	30
4,4'-DDT	ND	2.25	1.23	183 *	2.27	1.23	185 *	50-120	1	30
alpha-Chlordane	ND	0.778	1.23	63	0.721	1.23	59	50-120	8	30
cis-Nonachlor	ND	ND	1.23	0 *	ND	1.23	0 *	50-120	NC	30
gamma-Chlordane	ND	0.879	1.23	72	0.743	1.23	61	50-120	17	30
trans-Nonachlor	ND	0.782	1.23	64	0.743	1.23	61	50-120	5	30
Dieldrin	ND	ND	1.23	0 *	ND	1.23	0 *	50-120	NC	30
gamma-BHC (Lindane)	ND	1.68	1.23	137 *	1.59	1.23	130 *	50-120	6	30
Heptachlor Epoxide	ND	1.30	1.23	106	1.41	1.23	115	50-120	8	30
Oxychlordane	ND	ND	1.23	0 *	ND	1.23	0 *	50-120	NC	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G079	**Units:**	ug/Kg
Lab Code:	K1312857-030	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

		RM11E-G079MS KWG1313368-1 Matrix Spike			RM11E-G079DMS KWG1313368-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND	1.21	1.22	99	1.19	1.22	98	50-120	1	30
2,4'-DDE	ND	1.13	1.22	93	1.14	1.22	94	24-123	1	30
2,4'-DDT	ND	1.13	1.22	92	0.988	1.22	81	50-120	13	30
4,4'-DDD	0.30	1.54	1.22	102	1.43	1.22	93	42-120	8	30
4,4'-DDE	0.23	1.34	1.22	90	1.34	1.22	91	50-120	0	30
4,4'-DDT	ND	1.37	1.22	112 #	1.21	1.22	100 #	50-120	12	30
alpha-Chlordane	ND	0.943	1.22	77	0.874	1.22	72	50-120	8	30
cis-Nonachlor	ND	0.848	1.22	69	0.834	1.22	69	50-120	2	30
gamma-Chlordane	ND	0.994	1.22	81	0.909	1.22	75	50-120	9	30
trans-Nonachlor	ND	0.921	1.22	75	0.863	1.22	71	50-120	7	30
Dieldrin	ND	1.05	1.22	86	0.956	1.22	79	50-120	9	30
gamma-BHC (Lindane)	ND	1.18	1.22	96	1.14	1.22	94	50-120	3	30
Heptachlor Epoxide	ND	1.07	1.22	87	1.23	1.22	101	50-120	14	30
Oxychlordane	ND	1.16	1.22	95	1.02	1.22	84	50-120	13	30

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313175

	Lab Control Sample KWG1313175-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313175-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.99	2.00	100	2.07	2.00	104	50-120	4	30
2,4'-DDE	1.90	2.00	95	1.96	2.00	98	24-123	3	30
2,4'-DDT	2.12	2.00	106	2.11	2.00	106	50-120	0	30
4,4'-DDD	2.01	2.00	100	2.12	2.00	106	42-120	5	30
4,4'-DDE	1.81	2.00	90	1.92	2.00	96	50-120	6	30
4,4'-DDT	2.06	2.00	103	2.10	2.00	105	50-120	2	30
alpha-Chlordane	1.65	2.00	82	1.74	2.00	87	50-120	6	30
cis-Nonachlor	1.69	2.00	85	1.82	2.00	91	50-120	7	30
gamma-Chlordane	1.69	2.00	84	1.81	2.00	91	50-120	7	30
trans-Nonachlor	1.72	2.00	86	1.88	2.00	94	50-120	9	30
Dieldrin	1.86	2.00	93	1.79	2.00	90	50-120	4	30
gamma-BHC (Lindane)	1.94	2.00	97	2.04	2.00	102	50-120	5	30
Heptachlor Epoxide	2.08	2.00	104	1.97	2.00	98	50-120	6	30
Oxychlordane	2.02	2.00	101	2.08	2.00	104	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Sediment

Service Request: K1312857
Date Extracted: 12/03/2013
Date Analyzed: 12/10/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313368

	Lab Control Sample KWG1313368-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313368-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.76	2.00	88	1.72	2.00	86	50-120	2	30
2,4'-DDE	1.75	2.00	88	1.70	2.00	85	24-123	3	30
2,4'-DDT	1.83	2.00	91	1.78	2.00	89	50-120	3	30
4,4'-DDD	1.82	2.00	91	1.76	2.00	88	42-120	3	30
4,4'-DDE	1.77	2.00	88	1.71	2.00	86	50-120	3	30
4,4'-DDT	1.83	2.00	91	1.78	2.00	89	50-120	3	30
alpha-Chlordane	1.58	2.00	79	1.55	2.00	77	50-120	2	30
cis-Nonachlor	1.60	2.00	80	1.58	2.00	79	50-120	2	30
gamma-Chlordane	1.58	2.00	79	1.59	2.00	80	50-120	1	30
trans-Nonachlor	1.56	2.00	78	1.53	2.00	76	50-120	3	30
Dieldrin	1.76	2.00	88	1.70	2.00	85	50-120	4	30
gamma-BHC (Lindane)	1.84	2.00	92	1.86	2.00	93	50-120	1	30
Heptachlor Epoxide	1.83	2.00	91	1.80	2.00	90	50-120	2	30
Oxychlordane	1.82	2.00	91	1.88	2.00	94	50-120	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013
		Time Analyzed:	15:16

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313175-5	**File ID:**	J:\MS21\DATA\120613\1206F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313175-3	J:\MS21\DATA\120613\1206F007.D	12/06/13	15:55
Duplicate Lab Control Sample	KWG1313175-4	J:\MS21\DATA\120613\1206F008.D	12/06/13	16:20
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120613\1206F009.D	12/06/13	16:47
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120613\1206F010.D	12/06/13	17:15
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120613\1206F011.D	12/06/13	17:42
RM11E-MWS004-05_24'	K1312857-012	J:\MS21\DATA\120613\1206F014.D	12/06/13	19:04
RM11E-MWS004-24_29'	K1312857-013	J:\MS21\DATA\120613\1206F015.D	12/06/13	19:32
RM11E-MWS504-24_29'	K1312857-016	J:\MS21\DATA\120613\1206F016.D	12/06/13	19:59
RM11E-MWS005-21_26'	K1312857-025	J:\MS21\DATA\120613\1206F017.D	12/06/13	20:26
RM11E-SL031	K1312857-026	J:\MS21\DATA\120613\1206F018.D	12/06/13	20:53
RM11E-SL028	K1312857-027	J:\MS21\DATA\120913\1209F006.D	12/09/13	14:00
RM11E-SL029	K1312857-028	J:\MS21\DATA\120913\1209F007.D	12/09/13	14:27
RM11E-SL030	K1312857-029	J:\MS21\DATA\120913\1209F008.D	12/09/13	14:54
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120913\1209F009.D	12/09/13	15:21
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120913\1209F010.D	12/09/13	15:48
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120913\1209F011.D	12/09/13	16:16
RM11E-MWS001-5_24'	K1312857-005	J:\MS21\DATA\120913\1209F012.D	12/09/13	16:43
RM11E-MWS001-24_29'	K1312857-006	J:\MS21\DATA\120913\1209F013.D	12/09/13	17:10

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013
		Time Analyzed:	18:43

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313368-5	**File ID:**	J:\MS21\DATA\121013\1210F009.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313368-3	J:\MS21\DATA\121013\1210F010.D	12/10/13	19:11
Duplicate Lab Control Sample	KWG1313368-4	J:\MS21\DATA\121013\1210F011.D	12/10/13	19:38
RM11E-G079	K1312857-030	J:\MS21\DATA\121013\1210F015.D	12/10/13	21:27
RM11E-G079MS	KWG1313368-1	J:\MS21\DATA\121013\1210F016.D	12/10/13	21:54
RM11E-G079DMS	KWG1313368-2	J:\MS21\DATA\121013\1210F017.D	12/10/13	22:21

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013
		Time Analyzed:	15:55

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313175-3	**File ID:**	J:\MS21\DATA\120613\1206F007.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313175-5	J:\MS21\DATA\120613\1206F006.D	12/06/13	15:16
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120613\1206F009.D	12/06/13	16:47
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120613\1206F010.D	12/06/13	17:15
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120613\1206F011.D	12/06/13	17:42
RM11E-MWS004-05_24'	K1312857-012	J:\MS21\DATA\120613\1206F014.D	12/06/13	19:04
RM11E-MWS004-24_29'	K1312857-013	J:\MS21\DATA\120613\1206F015.D	12/06/13	19:32
RM11E-MWS504-24_29'	K1312857-016	J:\MS21\DATA\120613\1206F016.D	12/06/13	19:59
RM11E-MWS005-21_26'	K1312857-025	J:\MS21\DATA\120613\1206F017.D	12/06/13	20:26
RM11E-SL031	K1312857-026	J:\MS21\DATA\120613\1206F018.D	12/06/13	20:53
RM11E-SL028	K1312857-027	J:\MS21\DATA\120913\1209F006.D	12/09/13	14:00
RM11E-SL029	K1312857-028	J:\MS21\DATA\120913\1209F007.D	12/09/13	14:27
RM11E-SL030	K1312857-029	J:\MS21\DATA\120913\1209F008.D	12/09/13	14:54
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120913\1209F009.D	12/09/13	15:21
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120913\1209F010.D	12/09/13	15:48
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120913\1209F011.D	12/09/13	16:16
RM11E-MWS001-5_24'	K1312857-005	J:\MS21\DATA\120913\1209F012.D	12/09/13	16:43
RM11E-MWS001-24_29'	K1312857-006	J:\MS21\DATA\120913\1209F013.D	12/09/13	17:10

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013
		Time Analyzed:	19:11

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313368-3	**File ID:**	J:\MS21\DATA\121013\1210F010.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313368-5	J:\MS21\DATA\121013\1210F009.D	12/10/13	18:43
RM11E-G079	K1312857-030	J:\MS21\DATA\121013\1210F015.D	12/10/13	21:27
RM11E-G079MS	KWG1313368-1	J:\MS21\DATA\121013\1210F016.D	12/10/13	21:54
RM11E-G079DMS	KWG1313368-2	J:\MS21\DATA\121013\1210F017.D	12/10/13	22:21

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D
B	J:\MS21\Data\120313\1203F006.D
C	J:\MS21\Data\120313\1203F007.D
D	J:\MS21\Data\120313\1203F008.D
E	J:\MS21\Data\120313\1203F009.D
F	J:\MS21\Data\120313\1203F010.D
G	J:\MS21\Data\120313\1203F011.D
H	J:\MS21\Data\120313\1203F012.D
I	J:\MS21\Data\120313\1203F013.D
J	J:\MS21\Data\120313\1203F014.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.896	B	1.0	0.956	C	2.0	0.939	D	5.0	0.960	E	10	0.952
	F	20	0.901	G	40	0.936	H	60	0.977	I	80	0.998	J	100	1.03
2,4'-DDE	A	0.50	0.754	B	1.0	0.744	C	2.0	0.771	D	5.0	0.757	E	10	0.765
	F	20	0.695	G	40	0.734	H	60	0.757	I	80	0.776	J	100	0.785
2,4'-DDT	A	0.50	1.00	B	1.0	0.980	C	2.0	0.965	D	5.0	0.974	E	10	1.02
	F	20	0.945	G	40	0.987	H	60	1.01	I	80	1.01	J	100	1.01
4,4'-DDD	A	0.50	0.965	B	1.0	0.880	C	2.0	0.865	D	5.0	0.926	E	10	0.916
	F	20	0.850	G	40	0.876	H	60	0.906	I	80	0.918	J	100	0.949
4,4'-DDE	A	0.50	0.514	B	1.0	0.550	C	2.0	0.567	D	5.0	0.562	E	10	0.568
	F	20	0.524	G	40	0.541	H	60	0.559	I	80	0.567	J	100	0.574
4,4'-DDT	A	0.50	0.988	B	1.0	0.943	C	2.0	1.00	D	5.0	1.01	E	10	1.02
	F	20	0.985	G	40	1.04	H	60	1.07	I	80	1.09	J	100	1.11
alpha-Chlordane	A	0.50	4.25	B	1.0	4.59	C	2.0	4.19	D	5.0	4.22	E	10	4.25
	F	20	4.30	G	40	3.95	H	60	3.91	I	80	3.71	J	100	3.91
cis-Nonachlor	A	0.50	1.93	B	1.0	2.44	C	2.0	2.19	D	5.0	2.17	E	10	2.27
	F	20	2.28	G	40	2.00	H	60	1.98	I	80	1.83	J	100	1.97
gamma-Chlordane	A	0.50	4.50	B	1.0	4.99	C	2.0	4.24	D	5.0	4.52	E	10	4.56
	F	20	4.50	G	40	4.20	H	60	4.14	I	80	3.94	J	100	4.12
trans-Nonachlor	A	0.50	2.19	B	1.0	2.79	C	2.0	2.52	D	5.0	2.56	E	10	2.70
	F	20	2.72	G	40	2.49	H	60	2.43	I	80	2.32	J	100	2.44
Dieldrin				B	1.0	1.04	C	2.0	0.972	D	5.0	1.12	E	10	1.14
	F	20	1.02	G	40	1.01	H	60	1.06	I	80	1.10	J	100	1.07
gamma-BHC (Lindane)	A	0.50	0.635	B	1.0	0.586	C	2.0	0.598	D	5.0	0.546	E	10	0.564
	F	20	0.540	G	40	0.580	H	60	0.561	I	80	0.569	J	100	0.576
Heptachlor Epoxide				B	1.0	1.14	C	2.0	1.01	D	5.0	1.09	E	10	1.18
	F	20	1.12	G	40	1.10	H	60	1.11	I	80	1.08	J	100	1.07
Oxychlordane				B	1.0	1.00	C	2.0	0.948	D	5.0	1.03	E	10	0.982
	F	20	0.983	G	40	0.882	H	60	0.832	I	80	0.804	J	100	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.474	B	20	0.447	C	20	0.457	D	20	0.474	E	20	0.483
	F	20	0.477	G	20	0.454	H	20	0.471	I	20	0.484	J	20	0.472
S_Oxychlordane-13C10	A	20	0.144	B	20	0.126	C	20	0.141	D	20	0.136	E	20	0.136
	F	20	0.131	G	20	0.144	H	20	0.148	I	20	0.164	J	20	0.154
S_Heptachlrepox13C10	A	20	0.198	B	20	0.199	C	20	0.207	D	20	0.202	E	20	0.201
	F	20	0.196	G	20	0.204	H	20	0.203	I	20	0.224	J	20	0.215
S_Endrin-13C12	A	20	0.107	B	20	0.108	C	20	0.104	D	20	0.106	E	20	0.106
	F	20	0.113	G	20	0.115	H	20	0.107	I	20	0.109	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.05	B	5.0	2.97	C	5.0	2.99	D	5.0	2.96	E	5.0	3.01
	F	5.0	3.22	G	5.0	3.03	H	5.0	3.02	I	5.0	3.09	J	5.0	3.08
S_4,4'-DDT-d4	A	5.0	1.78	B	5.0	1.83	C	5.0	1.79	D	5.0	1.88	E	5.0	1.87
	F	5.0	2.05	G	5.0	1.95	H	5.0	1.97	I	5.0	2.07	J	5.0	2.09

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.3		≤ 20	0.954		.01
2,4'-DDE	MS	AverageRF	% RSD	3.4		≤ 20	0.754		.01
2,4'-DDT	MS	AverageRF	% RSD	2.4		≤ 20	0.990		.01
4,4'-DDD	MS	AverageRF	% RSD	4.1		≤ 20	0.905		.01
4,4'-DDE	MS	AverageRF	% RSD	3.7		≤ 20	0.553		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.03		.01
alpha-Chlordane	MS	AverageRF	% RSD	6.2		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.2		≤ 20	2.11		.01
gamma-Chlordane	MS	AverageRF	% RSD	6.9		≤ 20	4.37		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.4		≤ 20	2.52		.01
Dieldrin	MS	AverageRF	% RSD	5.3		≤ 20	1.06		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	4.7		≤ 20	0.575		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.1		≤ 20	1.10		.01
Oxychlordane	MS	AverageRF	% RSD	9.1		≤ 20	0.923		.01
S_GBHCD6	SURR	AverageRF	% RSD	2.6		≤ 20	0.469		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.9		≤ 20	0.142		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	4.2		≤ 20	0.205		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	3.2		≤ 20	0.109		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.5		≤ 20	3.04		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	5.9		≤ 20	1.93		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.954	0.940	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.754	0.745	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.990	0.936	-5	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.905	0.851	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.553	0.544	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.03	0.970	-5	NA	± 25 %	AverageRF
alpha-Chlordane	20	20	4.13	4.13	0	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	2.11	2.16	3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	4.37	4.37	0	NA	± 25 %	AverageRF
trans-Nonachlor	20	20	2.52	2.50	-1	NA	± 25 %	AverageRF
Dieldrin	20	20	1.06	1.04	-2	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.575	0.565	-2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.10	1.11	1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.923	0.875	-5	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/06/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313576
Units: ng/ml

File ID: J:\MS21\DATA\120613\1206F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.954	0.928	-3	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.722	-4	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	0.990	1.03	4	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.892	-1	NA	± 25 %	AverageRF
4,4'-DDE	20	18	.01	0.553	0.508	-8	NA	± 25 %	AverageRF
4,4'-DDT	20	20	.01	1.03	1.03	0	NA	± 25 %	AverageRF
alpha-Chlordane	20	16	.01	4.13	3.35	-19	NA	± 25 %	AverageRF
cis-Nonachlor	20	16	.01	2.11	1.70	-19	NA	± 25 %	AverageRF
gamma-Chlordane	20	16	.01	4.37	3.59	-18	NA	± 25 %	AverageRF
trans-Nonachlor	20	17	.01	2.52	2.15	-15	NA	± 25 %	AverageRF
Dieldrin	20	17	.01	1.06	0.924	-13	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.575	0.553	-4	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.08	-2	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	0.923	0.904	-2	NA	± 25 %	AverageRF
S_GBHCD6	20	22	.01	0.469	0.518	10	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	24	.01	0.142	0.168	18	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	21	.01	0.205	0.215	5	NA	± 30 %	AverageRF
S_Endrin-13C12	20	21	.01	0.109	0.113	4	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.7	.01	3.04	2.86	-6	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	4.5	.01	1.93	1.73	-10	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/09/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313599
Units: ng/ml

File ID: J:\MS21\DATA\120913\1209F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	.01	0.954	0.951	0	NA	± 25 %	AverageRF
2,4'-DDE	20	20	.01	0.754	0.753	0	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	0.990	1.04	5	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.897	-1	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.553	0.525	-5	NA	± 25 %	AverageRF
4,4'-DDT	20	20	.01	1.03	1.03	1	NA	± 25 %	AverageRF
alpha-Chlordane	20	17	.01	4.13	3.45	-16	NA	± 25 %	AverageRF
cis-Nonachlor	20	17	.01	2.11	1.74	-17	NA	± 25 %	AverageRF
gamma-Chlordane	20	17	.01	4.37	3.65	-16	NA	± 25 %	AverageRF
trans-Nonachlor	20	17	.01	2.52	2.11	-16	NA	± 25 %	AverageRF
Dieldrin	20	16	.01	1.06	0.858	-19	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.575	0.557	-3	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.13	2	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	0.923	0.907	-2	NA	± 25 %	AverageRF
S_GBHCD6	20	19	.01	0.469	0.436	-7	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	23	.01	0.142	0.167	17	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	21	.01	0.205	0.211	3	NA	± 30 %	AverageRF
S_Endrin-13C12	20	20	.01	0.109	0.111	2	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.3	.01	3.04	2.64	-13	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	4.1	.01	1.93	1.56	-19	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313638
Units: ng/ml

File ID: J:\MS21\DATA\121013\1210F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	.01	0.954	0.938	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	21	.01	0.754	0.785	4	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	0.990	1.05	6	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.894	-1	NA	± 25 %	AverageRF
4,4'-DDE	20	20	.01	0.553	0.540	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.03	0.985	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	4.13	3.83	-7	NA	± 25 %	AverageRF
cis-Nonachlor	20	16	.01	2.11	1.72	-18	NA	± 25 %	AverageRF
gamma-Chlordane	20	19	.01	4.37	4.08	-7	NA	± 25 %	AverageRF
trans-Nonachlor	20	18	.01	2.52	2.22	-12	NA	± 25 %	AverageRF
Dieldrin	20	17	.01	1.06	0.903	-15	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	.01	0.575	0.585	2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.13	2	NA	± 25 %	AverageRF
Oxychlordane	20	21	.01	0.923	0.958	4	NA	± 25 %	AverageRF
S_GBHCD6	20	23	.01	0.469	0.537	14	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	25	.01	0.142	0.178	25	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	26	.01	0.205	0.265	29	NA	± 30 %	AverageRF
S_Endrin-13C12	20	23	.01	0.109	0.126	16	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.6	.01	3.04	2.82	-7	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	4.1	.01	1.93	1.60	-17	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313576
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F004.D	Continuing Calibration Verification	KWG1313576-1	12/6/2013	10:10		12/6/2013	10:10
1206F005.D	Instrument Blank	KWG1313576-2	12/6/2013	12:10		12/6/2013	12:10
1206F006.D	Method Blank	KWG1313175-5	12/6/2013	15:16		12/6/2013	15:16
1206F007.D	Lab Control Sample	KWG1313175-3	12/6/2013	15:55		12/6/2013	15:55
1206F008.D	Duplicate Lab Control Sample	KWG1313175-4	12/6/2013	16:20		12/6/2013	16:20
1206F009.D	RM11E-MWS005-05_21'MS	KWG1313175-1	12/6/2013	16:47		12/6/2013	16:47
1206F010.D	RM11E-MWS005-05_21'DMS	KWG1313175-2	12/6/2013	17:15		12/6/2013	17:15
1206F011.D	RM11E-MWS005-05_21'	K1312857-024	12/6/2013	17:42		12/6/2013	17:42
1206F012.D	ZZZZZZ	ZZZZZZ	12/6/2013	18:10		12/6/2013	18:10
1206F013.D	ZZZZZZ	ZZZZZZ	12/6/2013	18:37		12/6/2013	18:37
1206F014.D	RM11E-MWS004-05_24'	K1312857-012	12/6/2013	19:04		12/6/2013	19:04
1206F015.D	RM11E-MWS004-24_29'	K1312857-013	12/6/2013	19:32		12/6/2013	19:32
1206F016.D	RM11E-MWS504-24_29'	K1312857-016	12/6/2013	19:59		12/6/2013	19:59
1206F017.D	RM11E-MWS005-21_26'	K1312857-025	12/6/2013	20:26		12/6/2013	20:26
1206F018.D	RM11E-SL031	K1312857-026	12/6/2013	20:53		12/6/2013	20:53

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313599
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1209F004.D	Continuing Calibration Verification	KWG1313599-1	12/9/2013	13:06		12/9/2013	13:06
1209F005.D	Instrument Blank	KWG1313599-2	12/9/2013	13:37		12/9/2013	13:37
1209F006.D	RM11E-SL028	K1312857-027	12/9/2013	14:00		12/9/2013	14:00
1209F007.D	RM11E-SL029	K1312857-028	12/9/2013	14:27		12/9/2013	14:27
1209F008.D	RM11E-SL030	K1312857-029	12/9/2013	14:54		12/9/2013	14:54
1209F009.D	RM11E-MWS005-05_21'MS	KWG1313175-1	12/9/2013	15:21		12/9/2013	15:21
1209F010.D	RM11E-MWS005-05_21'DMS	KWG1313175-2	12/9/2013	15:48		12/9/2013	15:48
1209F011.D	RM11E-MWS005-05_21'	K1312857-024	12/9/2013	16:16		12/9/2013	16:16
1209F012.D	RM11E-MWS001-5_24'	K1312857-005	12/9/2013	16:43		12/9/2013	16:43
1209F013.D	RM11E-MWS001-24_29'	K1312857-006	12/9/2013	17:10		12/9/2013	17:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313638
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F005.D	Continuing Calibration Verification	KWG1313638-1	12/10/2013	16:45		12/10/2013	16:45
1210F006.D	ZZZZZZ	ZZZZZZ	12/10/2013	17:25		12/10/2013	17:25
1210F007.D	ZZZZZZ	ZZZZZZ	12/10/2013	17:49		12/10/2013	17:49
1210F008.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:16		12/10/2013	18:16
1210F009.D	Method Blank	KWG1313368-5	12/10/2013	18:43		12/10/2013	18:43
1210F010.D	Lab Control Sample	KWG1313368-3	12/10/2013	19:11		12/10/2013	19:11
1210F011.D	Duplicate Lab Control Sample	KWG1313368-4	12/10/2013	19:38		12/10/2013	19:38
1210F012.D	ZZZZZZ	ZZZZZZ	12/10/2013	20:05		12/10/2013	20:05
1210F013.D	ZZZZZZ	ZZZZZZ	12/10/2013	20:32		12/10/2013	20:32
1210F014.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:00		12/10/2013	21:00
1210F015.D	RM11E-G079	K1312857-030	12/10/2013	21:27		12/10/2013	21:27
1210F016.D	RM11E-G079MS	KWG1313368-1	12/10/2013	21:54		12/10/2013	21:54
1210F017.D	RM11E-G079DMS	KWG1313368-2	12/10/2013	22:21		12/10/2013	22:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Extracted: 11/26/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313175
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS001-5_24'	K1312857-005	11/21/13	11/22/13	20.330g	1.0ml	83	
RM11E-MWS001-24_29'	K1312857-006	11/21/13	11/22/13	20.220g	1.0ml	72.4	
RM11E-MWS004-05_24'	K1312857-012	11/21/13	11/22/13	20.356g	1.0ml	80.2	
RM11E-MWS004-24_29'	K1312857-013	11/21/13	11/22/13	20.040g	1.0ml	70.9	
RM11E-MWS504-24_29'	K1312857-016	11/21/13	11/22/13	20.038g	1.0ml	70.6	
RM11E-MWS005-05_21'RE	K1312857-024	11/22/13	11/22/13	20.177g	1.0ml	80.5	
RM11E-MWS005-05_21'	K1312857-024	11/22/13	11/22/13	20.177g	1.0ml	80.5	
RM11E-MWS005-21_26'	K1312857-025	11/22/13	11/22/13	20.168g	1.0ml	72.3	
RM11E-SL031	K1312857-026	11/22/13	11/22/13	20.142g	1.0ml	90.2	
RM11E-SL028	K1312857-027	11/22/13	11/22/13	20.117g	1.0ml	85.5	
RM11E-SL029	K1312857-028	11/22/13	11/22/13	20.022g	1.0ml	89	
RM11E-SL030	K1312857-029	11/22/13	11/22/13	20.303g	1.0ml	84.2	
Method Blank	KWG1313175-5	NA	NA	20.356g	1.0ml	NA	
RM11E-MWS005-05_21'MS	KWG1313175-1	11/22/13	11/22/13	20.231g	1.0ml	80.5	
RM11E-MWS005-05_21'DMS	KWG1313175-2	11/22/13	11/22/13	20.280g	1.0ml	80.5	
Lab Control Sample	KWG1313175-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313175-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Sediment

Service Request: K1312857
Date Extracted: 12/03/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313368
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G079	K1312857-030	10/31/13	11/01/13	20.245g	1.0ml	80.5	*
Method Blank	KWG1313368-5	NA	NA	20.414g	1.0ml	NA	
RM11E-G079MS	KWG1313368-1	10/31/13	11/01/13	20.299g	1.0ml	80.5	
RM11E-G079DMS	KWG1313368-2	10/31/13	11/01/13	20.414g	1.0ml	80.5	
Lab Control Sample	KWG1313368-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313368-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Chlorinated Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Service Request: K1312857

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS904-24_29'	K1312857-017	11/21/2013	11/22/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: Jerome Peterson

Date: 12-9-2013 Title: Scientist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Water	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS904-24_29'	**Units:**	ng/L
Lab Code:	K1312857-017	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	11/27/13	12/03/13	KWG1313244	
2,4'-DDE	ND	U	0.50	0.11	1	11/27/13	12/03/13	KWG1313244	
2,4'-DDT	ND	U	0.50	0.087	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDD	ND	U	0.50	0.10	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDE	ND	U	0.50	0.075	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDT	ND	U	0.50	0.088	1	11/27/13	12/03/13	KWG1313244	
alpha-Chlordane	ND	U	0.50	0.13	1	11/27/13	12/03/13	KWG1313244	
cis-Nonachlor	ND	U	0.50	0.17	1	11/27/13	12/03/13	KWG1313244	
gamma-Chlordane	ND	U	0.50	0.17	1	11/27/13	12/03/13	KWG1313244	
trans-Nonachlor	ND	U	0.50	0.12	1	11/27/13	12/03/13	KWG1313244	
Dieldrin	ND	U	5.0	0.74	1	11/27/13	12/03/13	KWG1313244	
gamma-BHC (Lindane)	**4.9**		0.50	0.30	1	11/27/13	12/03/13	KWG1313244	
Heptachlor Epoxide	ND	U	1.0	0.16	1	11/27/13	12/03/13	KWG1313244	
Oxychlordane	ND	U	5.0	2.0	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	78	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	83	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	84	8-146	12/03/13	Acceptable
S_Endrin-13C12	87	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	88	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	92	13-200	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313244-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	11/27/13	12/03/13	KWG1313244	
2,4'-DDE	ND	U	0.50	0.11	1	11/27/13	12/03/13	KWG1313244	
2,4'-DDT	ND	U	0.50	0.087	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDD	ND	U	0.50	0.10	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDE	ND	U	0.50	0.075	1	11/27/13	12/03/13	KWG1313244	
4,4'-DDT	ND	U	0.50	0.088	1	11/27/13	12/03/13	KWG1313244	
alpha-Chlordane	ND	U	0.50	0.13	1	11/27/13	12/03/13	KWG1313244	
cis-Nonachlor	ND	U	0.50	0.17	1	11/27/13	12/03/13	KWG1313244	
gamma-Chlordane	ND	U	0.50	0.17	1	11/27/13	12/03/13	KWG1313244	
trans-Nonachlor	ND	U	0.50	0.12	1	11/27/13	12/03/13	KWG1313244	
Dieldrin	ND	U	5.0	0.74	1	11/27/13	12/03/13	KWG1313244	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	11/27/13	12/03/13	KWG1313244	
Heptachlor Epoxide	ND	U	1.0	0.16	1	11/27/13	12/03/13	KWG1313244	
Oxychlordane	ND	U	5.0	2.0	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	68	5-124	12/03/13	Acceptable
S_Oxychlordane-13C10	78	5-144	12/03/13	Acceptable
S_Heptachlrepox13C10	79	8-146	12/03/13	Acceptable
S_Endrin-13C12	85	20-157	12/03/13	Acceptable
S_4,4'DDD-d4	85	5-120	12/03/13	Acceptable
S_4,4'-DDT-d4	87	13-200	12/03/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water
Service Request: K1312857

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-MWS904-24_29'	K1312857-017	78	83	84	87	88	92
Method Blank	KWG1313244-3	68	78	79	85	85	87
Lab Control Sample	KWG1313244-1	75	90	83	89	90	96
Duplicate Lab Control Sample	KWG1313244-2	76	85	81	87	86	87

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120313\1203F019.D	**Lab Code:**	KWG1313406-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313406
Analysis Method:	CAS SOC-PESTMS		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	62,259	15.30	5,903	11.42	1,847	14.02
	Upper Limit ==>	124,517	15.80	11,807	11.92	3,694	14.52
	Lower Limit ==>	31,129	14.80	295	10.92	92	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313244-3	74,423	15.30	4,755	11.42	1,662	14.01
Lab Control Sample	KWG1313244-1	68,296	15.30	4,783	11.42	1,744	14.01
Duplicate Lab Control Sample	KWG1313244-2	70,224	15.30	5,005	11.42	1,696	14.01
RM11E-MWS904-24_29'	K1312857-017	68,454	15.30	5,005	11.42	1,616	14.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS:

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	2,609	14.11	1,400	16.45	9,772	17.00
	Upper Limit ==>	5,218	14.61	2,800	16.95	19,543	17.50
	Lower Limit ==>	130	13.61	70	15.95	489	16.50
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313244-3	2,406	14.11	1,377	16.45	9,637	16.99
Lab Control Sample	KWG1313244-1	2,327	14.11	1,328	16.44	9,348	16.99
Duplicate Lab Control Sample	KWG1313244-2	2,346	14.11	1,335	16.44	9,196	16.99
RM11E-MWS904-24_29'	K1312857-017	2,356	14.11	1,301	16.44	9,208	16.99

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/03/2013
Time Analyzed: 16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\120313\1203F019.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313406-1
Analysis Lot: KWG1313406

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	6,310	18.00
	Upper Limit ==>	12,621	18.50
	Lower Limit ==>	316	17.50
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313244-3	6,205	18.00
Lab Control Sample	KWG1313244-1	6,306	18.00
Duplicate Lab Control Sample	KWG1313244-2	5,865	18.00
RM11E-MWS904-24_29'	K1312857-017	6,069	18.00

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857
Date Extracted: 11/27/2013
Date Analyzed: 12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1313244

	Lab Control Sample KWG1313244-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313244-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	18.8	20.0	94	18.6	20.0	93	50-120	1	30
2,4'-DDE	17.9	20.0	89	18.2	20.0	91	24-123	2	30
2,4'-DDT	18.5	20.0	92	19.4	20.0	97	50-120	5	30
4,4'-DDD	19.1	20.0	96	18.8	20.0	94	42-120	2	30
4,4'-DDE	18.2	20.0	91	17.9	20.0	90	50-120	1	30
4,4'-DDT	19.3	20.0	97	19.9	20.0	99	50-120	3	30
alpha-Chlordane	18.0	20.0	90	18.6	20.0	93	50-120	3	30
cis-Nonachlor	19.8	20.0	99	18.9	20.0	94	50-120	5	30
gamma-Chlordane	17.9	20.0	90	18.7	20.0	94	50-120	4	30
trans-Nonachlor	18.6	20.0	93	19.8	20.0	99	50-120	6	30
Dieldrin	19.9	20.0	100	18.8	20.0	94	50-120	6	30
gamma-BHC (Lindane)	19.3	20.0	96	18.8	20.0	94	50-120	3	30
Heptachlor Epoxide	19.9	20.0	99	21.0	20.0	105	50-120	5	30
Oxychlordane	17.9	20.0	90	21.1	20.0	106	50-120	16	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	19:13

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313244-3	**File ID:**	J:\MS21\DATA\120313\1203F026.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313244

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313244-1	J:\MS21\DATA\120313\1203F027.D	12/03/13	19:40
Duplicate Lab Control Sample	KWG1313244-2	J:\MS21\DATA\120313\1203F028.D	12/03/13	20:07
RM11E-MWS904-24_29'	K1312857-017	J:\MS21\DATA\120313\1203F029.D	12/03/13	20:34

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	19:40

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313244-1	**File ID:**	J:\MS21\DATA\120313\1203F027.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313244

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313244-3	J:\MS21\DATA\120313\1203F026.D	12/03/13	19:13
RM11E-MWS904-24_29'	K1312857-017	J:\MS21\DATA\120313\1203F029.D	12/03/13	20:34

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.896	B	1.0	0.956	C	2.0	0.939	D	5.0	0.960	E	10	0.952
	F	20	0.901	G	40	0.936	H	60	0.977	I	80	0.998	J	100	1.03
2,4'-DDE	A	0.50	0.754	B	1.0	0.744	C	2.0	0.771	D	5.0	0.757	E	10	0.765
	F	20	0.695	G	40	0.734	H	60	0.757	I	80	0.776	J	100	0.785
2,4'-DDT	A	0.50	1.00	B	1.0	0.980	C	2.0	0.965	D	5.0	0.974	E	10	1.02
	F	20	0.945	G	40	0.987	H	60	1.01	I	80	1.01	J	100	1.01
4,4'-DDD	A	0.50	0.965	B	1.0	0.880	C	2.0	0.865	D	5.0	0.926	E	10	0.916
	F	20	0.850	G	40	0.876	H	60	0.906	I	80	0.918	J	100	0.949
4,4'-DDE	A	0.50	0.514	B	1.0	0.550	C	2.0	0.567	D	5.0	0.562	E	10	0.568
	F	20	0.524	G	40	0.541	H	60	0.559	I	80	0.567	J	100	0.574
4,4'-DDT	A	0.50	0.988	B	1.0	0.943	C	2.0	1.00	D	5.0	1.01	E	10	1.02
	F	20	0.985	G	40	1.04	H	60	1.07	I	80	1.09	J	100	1.11
alpha-Chlordane	A	0.50	4.25	B	1.0	4.59	C	2.0	4.19	D	5.0	4.22	E	10	4.25
	F	20	4.30	G	40	3.95	H	60	3.91	I	80	3.71	J	100	3.91
cis-Nonachlor	A	0.50	1.93	B	1.0	2.44	C	2.0	2.19	D	5.0	2.17	E	10	2.27
	F	20	2.28	G	40	2.00	H	60	1.98	I	80	1.83	J	100	1.97
gamma-Chlordane	A	0.50	4.50	B	1.0	4.99	C	2.0	4.24	D	5.0	4.52	E	10	4.56
	F	20	4.50	G	40	4.20	H	60	4.14	I	80	3.94	J	100	4.12
trans-Nonachlor	A	0.50	2.19	B	1.0	2.79	C	2.0	2.52	D	5.0	2.56	E	10	2.70
	F	20	2.72	G	40	2.49	H	60	2.43	I	80	2.32	J	100	2.44
Dieldrin				B	1.0	1.04	C	2.0	0.972	D	5.0	1.12	E	10	1.14
	F	20	1.02	G	40	1.01	H	60	1.06	I	80	1.10	J	100	1.07
gamma-BHC (Lindane)	A	0.50	0.635	B	1.0	0.586	C	2.0	0.598	D	5.0	0.546	E	10	0.564
	F	20	0.540	G	40	0.580	H	60	0.561	I	80	0.569	J	100	0.576
Heptachlor Epoxide				B	1.0	1.14	C	2.0	1.01	D	5.0	1.09	E	10	1.18
	F	20	1.12	G	40	1.10	H	60	1.11	I	80	1.08	J	100	1.07
Oxychlordane				B	1.0	1.00	C	2.0	0.948	D	5.0	1.03	E	10	0.982
	F	20	0.983	G	40	0.882	H	60	0.832	I	80	0.804	J	100	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.474	B	20	0.447	C	20	0.457	D	20	0.474	E	20	0.483
	F	20	0.477	G	20	0.454	H	20	0.471	I	20	0.484	J	20	0.472
S_Oxychlordane-13C10	A	20	0.144	B	20	0.126	C	20	0.141	D	20	0.136	E	20	0.136
	F	20	0.131	G	20	0.144	H	20	0.148	I	20	0.164	J	20	0.154
S_Heptachlrepox13C10	A	20	0.198	B	20	0.199	C	20	0.207	D	20	0.202	E	20	0.201
	F	20	0.196	G	20	0.204	H	20	0.203	I	20	0.224	J	20	0.215
S_Endrin-13C12	A	20	0.107	B	20	0.108	C	20	0.104	D	20	0.106	E	20	0.106
	F	20	0.113	G	20	0.115	H	20	0.107	I	20	0.109	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.05	B	5.0	2.97	C	5.0	2.99	D	5.0	2.96	E	5.0	3.01
	F	5.0	3.22	G	5.0	3.03	H	5.0	3.02	I	5.0	3.09	J	5.0	3.08
S_4,4'-DDT-d4	A	5.0	1.78	B	5.0	1.83	C	5.0	1.79	D	5.0	1.88	E	5.0	1.87
	F	5.0	2.05	G	5.0	1.95	H	5.0	1.97	I	5.0	2.07	J	5.0	2.09

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.3		≤ 20	0.954		.01
2,4'-DDE	MS	AverageRF	% RSD	3.4		≤ 20	0.754		.01
2,4'-DDT	MS	AverageRF	% RSD	2.4		≤ 20	0.990		.01
4,4'-DDD	MS	AverageRF	% RSD	4.1		≤ 20	0.905		.01
4,4'-DDE	MS	AverageRF	% RSD	3.7		≤ 20	0.553		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.03		.01
alpha-Chlordane	MS	AverageRF	% RSD	6.2		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.2		≤ 20	2.11		.01
gamma-Chlordane	MS	AverageRF	% RSD	6.9		≤ 20	4.37		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.4		≤ 20	2.52		.01
Dieldrin	MS	AverageRF	% RSD	5.3		≤ 20	1.06		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	4.7		≤ 20	0.575		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.1		≤ 20	1.10		.01
Oxychlordane	MS	AverageRF	% RSD	9.1		≤ 20	0.923		.01
S_GBHCD6	SURR	AverageRF	% RSD	2.6		≤ 20	0.469		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.9		≤ 20	0.142		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	4.2		≤ 20	0.205		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	3.2		≤ 20	0.109		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.5		≤ 20	3.04		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	5.9		≤ 20	1.93		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.954	0.940	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.754	0.745	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.990	0.936	-5	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.905	0.851	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.553	0.544	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.03	0.970	-5	NA	± 25 %	AverageRF
alpha-Chlordane	20	20	4.13	4.13	0	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	2.11	2.16	3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	4.37	4.37	0	NA	± 25 %	AverageRF
trans-Nonachlor	20	20	2.52	2.50	-1	NA	± 25 %	AverageRF
Dieldrin	20	20	1.06	1.04	-2	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.575	0.565	-2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.10	1.11	1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.923	0.875	-5	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313406
Units: ng/ml

File ID: J:\MS21\DATA\120313\1203F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.954	0.897	-6	NA	± 25 %	AverageRF
2,4'-DDE	20	19	.01	0.754	0.728	-3	NA	± 25 %	AverageRF
2,4'-DDT	20	19	.01	0.990	0.935	-6	NA	± 25 %	AverageRF
4,4'-DDD	20	19	.01	0.905	0.852	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.553	0.519	-6	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.03	0.980	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	4.13	3.92	-5	NA	± 25 %	AverageRF
cis-Nonachlor	20	19	.01	2.11	1.96	-7	NA	± 25 %	AverageRF
gamma-Chlordane	20	19	.01	4.37	4.12	-6	NA	± 25 %	AverageRF
trans-Nonachlor	20	19	.01	2.52	2.44	-3	NA	± 25 %	AverageRF
Dieldrin	20	19	.01	1.06	0.998	-6	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.575	0.543	-6	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.11	0	NA	± 25 %	AverageRF
Oxychlordane	20	19	.01	0.923	0.862	-7	NA	± 25 %	AverageRF
S_GBHCD6	20	20	.01	0.469	0.474	1	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	21	.01	0.142	0.148	4	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	20	.01	0.205	0.210	2	NA	± 30 %	AverageRF
S_Endrin-13C12	20	21	.01	0.109	0.112	3	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.2	.01	3.04	3.14	3	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.3	.01	1.93	2.03	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	Method Blank	KWG1313244-3	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	Lab Control Sample	KWG1313244-1	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	Duplicate Lab Control Sample	KWG1313244-2	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	RM11E-MWS904-24_29'	K1312857-017	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857
Date Extracted: 11/27/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313244
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS904-24_29'	K1312857-017	11/21/13	11/22/13	1000ml	1.0ml	NA	
Method Blank	KWG1313244-3	NA	NA	1000ml	1.0ml	NA	
Lab Control Sample	KWG1313244-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313244-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Diesel and Residual Range Organics

Organic Analysis:
Diesel and Residual Range Organics - Silica Gel Treated

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS001-5_24'	K1312857-005	11/21/2013	11/22/2013
RM11E-MWS001-24_29'	K1312857-006	11/21/2013	11/22/2013
RM11E-MWS004-05_24'	K1312857-012	11/21/2013	11/22/2013
RM11E-MWS004-24_29'	K1312857-013	11/21/2013	11/22/2013
RM11E-MWS504-24_29'	K1312857-016	11/21/2013	11/22/2013
RM11E-MWS904-24_29'	K1312857-017	11/21/2013	11/22/2013
RM11E-MWS005-05_21'	K1312857-024	11/22/2013	11/22/2013
RM11E-MWS005-21_26'	K1312857-025	11/22/2013	11/22/2013
RM11E-SL031	K1312857-026	11/22/2013	11/22/2013
RM11E-SL028	K1312857-027	11/22/2013	11/22/2013
RM11E-SL029	K1312857-028	11/22/2013	11/22/2013
RM11E-SL030	K1312857-029	11/22/2013	11/22/2013
RM11E-SL030	KWG1313276-3	11/22/2013	11/22/2013
RM11E-SL029	KWG1313276-4	11/22/2013	11/22/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Lorn E Portwood

Name: Loren Portwood

Date: 12/11/13

Title:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Water	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MWS904-24_29'	**Units:**	ug/L
Lab Code:	K1312857-017	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**19**	J	270	12	1	11/26/13	11/27/13	KWG1313234	
Residual Range Organics (RRO)	ND	U	270	21	1	11/26/13	11/27/13	KWG1313234	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	107	50-150	11/27/13	Acceptable
n-Triacontane	117	50-150	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313234-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**19**	J	240	11	1	11/26/13	11/27/13	KWG1313234	
Residual Range Organics (RRO)	ND	U	240	19	1	11/26/13	11/27/13	KWG1313234	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	97	50-150	11/27/13	Acceptable
n-Triacontane	102	50-150	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS001-5_24'	**Units:**	mg/Kg
Lab Code:	K1312857-005	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**140**	Y	30	2.2	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**190**	O	120	4.7	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	12/03/13	Acceptable
n-Triacontane	96	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS001-24_29'	**Units:**	mg/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**24**	J	35	2.5	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**79**	J	140	5.4	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	12/03/13	Acceptable
n-Triacontane	88	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS004-05_24'	**Units:**	mg/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**20**	J	31	2.3	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**37**	J	130	4.9	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	96	50-150	12/03/13	Acceptable
n-Triacontane	102	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS004-24_29'	**Units:**	mg/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2.6**	J	36	2.6	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	ND	U	150	5.5	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	12/03/13	Acceptable
n-Triacontane	90	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS504-24_29'	**Units:**	mg/Kg
Lab Code:	K1312857-016	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**3.9**	J	35	2.6	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	ND	U	140	5.5	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/03/13	Acceptable
n-Triacontane	80	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS005-05_21'	**Units:**	mg/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**280**	Y	31	2.3	1	11/26/13	12/05/13	KWG1313276	
Residual Range Organics (RRO)	**1400**	O	130	4.9	1	11/26/13	12/05/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	96	50-150	12/05/13	Acceptable
n-Triacontane	123	50-150	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MWS005-21_26'	**Units:**	mg/Kg
Lab Code:	K1312857-025	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**55**	H	35	2.5	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**150**	O	140	5.4	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	88	50-150	12/03/13	Acceptable
n-Triacontane	92	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL031	**Units:**	mg/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**19**	J	28	2.0	1	11/26/13	12/05/13	KWG1313276	
Residual Range Organics (RRO)	**160**	O	120	4.3	1	11/26/13	12/05/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	107	50-150	12/05/13	Acceptable
n-Triacontane	109	50-150	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL028	**Units:**	mg/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**17**	J	30	2.1	1	11/26/13	12/05/13	KWG1313276	
Residual Range Organics (RRO)	**300**	O	120	4.6	1	11/26/13	12/05/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	12/05/13	Acceptable
n-Triacontane	90	50-150	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL029	**Units:**	mg/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**17**	J	28	2.1	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	**260**	O	120	4.4	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	110	50-150	12/03/13	Acceptable
n-Triacontane	114	50-150	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL030	**Units:**	mg/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**11**	J	30	2.2	1	11/26/13	12/05/13	KWG1313276	
Residual Range Organics (RRO)	**110**	J	120	4.6	1	11/26/13	12/05/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	72	50-150	12/05/13	Acceptable
n-Triacontane	70	50-150	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1313276-6	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1.8	1	11/26/13	12/03/13	KWG1313276	
Residual Range Organics (RRO)	ND	U	99	3.9	1	11/26/13	12/03/13	KWG1313276	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/03/13	Acceptable
n-Triacontane	81	50-150	12/03/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
Batch QC	K1312728-002	128	123
Batch QC	K1312730-001	113	123
RM11E-MWS904-24_29'	K1312857-017	107	117
Batch QCDUP	KWG1313234-1	100	109
Batch QCDUP	KWG1313234-2	113	111
Method Blank	KWG1313234-4	97	102
Lab Control Sample	KWG1313234-3	90	92

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1		Sur2	
RM11E-MWS001-5_24'	K1312857-005	94		96	
RM11E-MWS001-24_29'	K1312857-006	84		88	
RM11E-MWS004-05_24'	K1312857-012	96		102	
RM11E-MWS004-24_29'	K1312857-013	95		90	
RM11E-MWS504-24_29'	K1312857-016	87		80	
RM11E-MWS005-05_21'	K1312857-024	96		123	
RM11E-MWS005-21_26'	K1312857-025	88		92	
RM11E-SL031	K1312857-026	107		109	
RM11E-SL028	K1312857-027	84		90	
RM11E-SL029	K1312857-028	110		114	
RM11E-SL030	K1312857-029	72		70	
RM11E-SL030DUP	KWG1313276-3	204	*	199	*
RM11E-SL029DUP	KWG1313276-4	91		99	
Method Blank	KWG1313276-6	87		81	
Lab Control Sample	KWG1313276-5	85		83	

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1312730-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313234-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	260	12	17	16	17	9 #	30
Residual Range Organics (RRO)	260	20	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1312728-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313234-2 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	240	11	3100	3200	3200	3	30
Residual Range Organics (RRO)	240	19	150	170	160	10 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/05/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL030	**Units:**	mg/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

Analyte Name	MRL	MDL	Sample Result	RM11E-SL030DUP KWG1313276-3 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	30	2.2	11	ND	NC	NC	40
Residual Range Organics (RRO)	120	4.7	110	ND	NC	NC	40

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-SL029	**Units:**	mg/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

Analyte Name	MRL	MDL	Sample Result	RM11E-SL029DUP KWG1313276-4 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	28	2.0	17	23.3	20	32 #	40
Residual Range Organics (RRO)	120	4.4	260	361	310	32	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Lab Control Spike Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	NWTPH-Dx	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313234

	Lab Control Sample KWG1313234-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	1270	1600	79	46-140
Residual Range Organics (RRO)	770	800	96	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3541	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313276

	Lab Control Sample KWG1313276-5 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	212	267	80	42-134
Residual Range Organics (RRO)	121	133	91	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	19:30

Method Blank Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313234-4	**File ID:**	J:\GC21\DATA\112713F\1127F050.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313234-3	J:\GC21\DATA\112713F\1127F048.D	11/27/13	19:08
Batch QC	K1312728-002	J:\GC21\DATA\112713F\1127F054.D	11/27/13	20:15
Batch QCDUP	KWG1313234-2	J:\GC21\DATA\112713F\1127F056.D	11/27/13	20:37
Batch QC	K1312730-001	J:\GC21\DATA\112713F\1127F058.D	11/27/13	20:59
Batch QCDUP	KWG1313234-1	J:\GC21\DATA\112713F\1127F060.D	11/27/13	21:22
RM11E-MWS904-24_29'	K1312857-017	J:\GC21\DATA\112713F\1127F072.D	11/27/13	23:35

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	13:52

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313276-6	**File ID:**	J:\GC21\DATA\120313F\1203F024.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313276-5	J:\GC21\DATA\120313F\1203F022.D	12/03/13	13:29
RM11E-MWS001-5_24'	K1312857-005	J:\GC21\DATA\120313F\1203F034.D	12/03/13	15:44
RM11E-MWS001-24_29'	K1312857-006	J:\GC21\DATA\120313F\1203F036.D	12/03/13	16:06
RM11E-MWS004-05_24'	K1312857-012	J:\GC21\DATA\120313F\1203F038.D	12/03/13	16:29
RM11E-MWS004-24_29'	K1312857-013	J:\GC21\DATA\120313F\1203F040.D	12/03/13	16:52
RM11E-MWS504-24_29'	K1312857-016	J:\GC21\DATA\120313F\1203F042.D	12/03/13	17:15
RM11E-MWS005-21_26'	K1312857-025	J:\GC21\DATA\120313F\1203F044.D	12/03/13	17:37
RM11E-SL029	K1312857-028	J:\GC21\DATA\120313F\1203F046.D	12/03/13	18:00
RM11E-SL029DUP	KWG1313276-4	J:\GC21\DATA\120313F\1203F048.D	12/03/13	18:22
RM11E-SL030	K1312857-029	J:\GC21\DATA\120513F\1205F038.D	12/05/13	14:24
RM11E-SL030DUP	KWG1313276-3	J:\GC21\DATA\120513F\1205F040.D	12/05/13	14:46
RM11E-SL031	K1312857-026	J:\GC21\DATA\120513F\1205F048.D	12/05/13	16:14
RM11E-SL028	K1312857-027	J:\GC21\DATA\120513F\1205F050.D	12/05/13	16:37
RM11E-MWS005-05_21'	K1312857-024	J:\GC21\DATA\120513F\1205F052.D	12/05/13	16:59

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	19:08

Lab Control Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313234-3	**File ID:**	J:\GC21\DATA\112713F\1127F048.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313234

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313234-4	J:\GC21\DATA\112713F\1127F050.D	11/27/13	19:30
Batch QC	K1312728-002	J:\GC21\DATA\112713F\1127F054.D	11/27/13	20:15
Batch QCDUP	KWG1313234-2	J:\GC21\DATA\112713F\1127F056.D	11/27/13	20:37
Batch QC	K1312730-001	J:\GC21\DATA\112713F\1127F058.D	11/27/13	20:59
Batch QCDUP	KWG1313234-1	J:\GC21\DATA\112713F\1127F060.D	11/27/13	21:22
RM11E-MWS904-24_29'	K1312857-017	J:\GC21\DATA\112713F\1127F072.D	11/27/13	23:35

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/03/2013
		Time Analyzed:	13:29

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313276-5	**File ID:**	J:\GC21\DATA\120313F\1203F022.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313276

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313276-6	J:\GC21\DATA\120313F\1203F024.D	12/03/13	13:52
RM11E-MWS001-5_24'	K1312857-005	J:\GC21\DATA\120313F\1203F034.D	12/03/13	15:44
RM11E-MWS001-24_29'	K1312857-006	J:\GC21\DATA\120313F\1203F036.D	12/03/13	16:06
RM11E-MWS004-05_24'	K1312857-012	J:\GC21\DATA\120313F\1203F038.D	12/03/13	16:29
RM11E-MWS004-24_29'	K1312857-013	J:\GC21\DATA\120313F\1203F040.D	12/03/13	16:52
RM11E-MWS504-24_29'	K1312857-016	J:\GC21\DATA\120313F\1203F042.D	12/03/13	17:15
RM11E-MWS005-21_26'	K1312857-025	J:\GC21\DATA\120313F\1203F044.D	12/03/13	17:37
RM11E-SL029	K1312857-028	J:\GC21\DATA\120313F\1203F046.D	12/03/13	18:00
RM11E-SL029DUP	KWG1313276-4	J:\GC21\DATA\120313F\1203F048.D	12/03/13	18:22
RM11E-SL030	K1312857-029	J:\GC21\DATA\120513F\1205F038.D	12/05/13	14:24
RM11E-SL030DUP	KWG1313276-3	J:\GC21\DATA\120513F\1205F040.D	12/05/13	14:46
RM11E-SL031	K1312857-026	J:\GC21\DATA\120513F\1205F048.D	12/05/13	16:14
RM11E-SL028	K1312857-027	J:\GC21\DATA\120513F\1205F050.D	12/05/13	16:37
RM11E-MWS005-05_21'	K1312857-024	J:\GC21\DATA\120513F\1205F052.D	12/05/13	16:59

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\091013F\0910F072.D	I	J:\GC21\DATA\091013F\0910F096.D
B	J:\GC21\DATA\091013F\0910F074.D	J	J:\GC21\DATA\091013F\0910F098.D
C	J:\GC21\DATA\091013F\0910F076.D	K	J:\GC21\DATA\091013F\0910F100.D
D	J:\GC21\DATA\091013F\0910F078.D	L	J:\GC21\DATA\091013F\0910F102.D
E	J:\GC21\DATA\091013F\0910F080.D	M	J:\GC21\DATA\091013F\0910F104.D
F	J:\GC21\DATA\091013F\0910F082.D	N	J:\GC21\DATA\091013F\0910F106.D
G	J:\GC21\DATA\091013F\0910F092.D		
H	J:\GC21\DATA\091013F\0910F094.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
				G	20	1010	H	50	924	I	200	965	J	500	972
	K	2000	989	L	5000	1030	M	20000	916	N	50000	920			
Residual Range Organics (RRO)	A	20	968	B	50	756	C	200	699	D	500	627	E	2000	615
	F	5000	588												
o-Terphenyl															
				G	1.0	1300	H	2.5	1190	I	10	1260	J	25	1280
	K	100	1280	L	250	1330									
n-Triacontane															
				G	1.0	938	H	2.5	919	I	10	1050	J	25	1080
	K	100	1070	L	250	1160									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 09/10/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12766
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	4.4		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.999		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	3.8		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	8.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Calibration Date:**	09/10/2013
		Date Analyzed:	09/11/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL12766
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\091013F\0910F088.D J:\GC21\DATA\091013F\0910F110.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	964	0	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	709	599	NA	-1	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313301
Units: ppm

File ID: J:\GC21\DATA\112713F\1127F042.D
J:\GC21\DATA\112713F\1127F044.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	965	1030	6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	709	591	NA	-2	± 15 %	Linear
o-Terphenyl	50	55	1270	1400	10	NA	± 15 %	AverageRF
n-Triacontane	50	57	1040	1190	15	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313301
Units: ppm

File ID: J:\GC21\DATA\112713F\1127F066.D
J:\GC21\DATA\112713F\1127F068.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	965	894	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	709	599	NA	-1	± 15 %	Linear
o-Terphenyl	50	48	1270	1230	-3	NA	± 15 %	AverageRF
n-Triacontane	50	50	1040	1040	1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/28/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313301
Units: ppm

File ID: J:\GC21\DATA\112713F\1127F090.D
J:\GC21\DATA\112713F\1127F092.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	965	944	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	970	709	589	NA	-3	± 15 %	Linear
o-Terphenyl	50	51	1270	1290	1	NA	± 15 %	AverageRF
n-Triacontane	50	51	1040	1050	2	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313400
Units: ppm

File ID: J:\GC21\DATA\120313F\1203F016.D
J:\GC21\DATA\120313F\1203F018.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	965	972	1	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	930	709	565	NA	-7	± 15 %	Linear
o-Terphenyl	50	52	1270	1320	4	NA	± 15 %	AverageRF
n-Triacontane	50	48	1040	1000	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/03/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313400
Units: ppm

File ID: J:\GC21\DATA\120313F\1203F050.D
J:\GC21\DATA\120313F\1203F052.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	965	938	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	709	610	NA	1	± 15 %	Linear
o-Terphenyl	50	50	1270	1280	1	NA	± 15 %	AverageRF
n-Triacontane	50	52	1040	1070	4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313547
Units: ppm

File ID: J:\GC21\DATA\120513F\1205F032.D
J:\GC21\DATA\120513F\1205F034.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	965	945	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	950	709	574	NA	-5	± 15 %	Linear
o-Terphenyl	50	52	1270	1310	3	NA	± 15 %	AverageRF
n-Triacontane	50	49	1040	1010	-2	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 09/10/2013
Calibration ID: CAL12766
Analysis Lot: KWG1313547
Units: ppm

File ID: J:\GC21\DATA\120513F\1205F054.D
J:\GC21\DATA\120513F\1205F056.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	940	965	903	-6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	709	595	NA	-2	± 15 %	Linear
o-Terphenyl	50	49	1270	1240	-3	NA	± 15 %	AverageRF
n-Triacontane	50	50	1040	1030	-1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313301
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1127F018.D	Continuing Calibration Verification	KWG1313301-1	11/27/2013	13:35		11/27/2013	13:51
1127F020.D	Continuing Calibration Verification	KWG1313301-1	11/27/2013	13:57		11/27/2013	14:13
1127F024.D	Instrument Blank	KWG1313301-2	11/27/2013	14:42		11/27/2013	14:58
1127F034.D	ZZZZZZ	ZZZZZZ	11/27/2013	16:33		11/27/2013	16:49
1127F036.D	ZZZZZZ	ZZZZZZ	11/27/2013	16:55		11/27/2013	17:11
1127F038.D	ZZZZZZ	ZZZZZZ	11/27/2013	17:17		11/27/2013	17:33
1127F040.D	ZZZZZZ	ZZZZZZ	11/27/2013	17:39		11/27/2013	17:55
1127F042.D	Continuing Calibration Verification	KWG1313301-3	11/27/2013	18:01		11/27/2013	18:17
1127F044.D	Continuing Calibration Verification	KWG1313301-3	11/27/2013	18:24		11/27/2013	18:40
1127F046.D	Instrument Blank	KWG1313301-4	11/27/2013	18:46		11/27/2013	19:02
1127F048.D	Lab Control Sample	KWG1313234-3	11/27/2013	19:08		11/27/2013	19:24
1127F050.D	Method Blank	KWG1313234-4	11/27/2013	19:30		11/27/2013	19:46
1127F052.D	ZZZZZZ	ZZZZZZ	11/27/2013	19:53		11/27/2013	20:09
1127F054.D	Batch QC	K1312728-002	11/27/2013	20:15		11/27/2013	20:31
1127F056.D	Batch QCDUP	KWG1313234-2	11/27/2013	20:37		11/27/2013	20:53
1127F058.D	Batch QC	K1312730-001	11/27/2013	20:59		11/27/2013	21:15
1127F060.D	Batch QCDUP	KWG1313234-1	11/27/2013	21:22		11/27/2013	21:38
1127F062.D	ZZZZZZ	ZZZZZZ	11/27/2013	21:44		11/27/2013	22:00
1127F064.D	ZZZZZZ	ZZZZZZ	11/27/2013	22:06		11/27/2013	22:22
1127F066.D	Continuing Calibration Verification	KWG1313301-5	11/27/2013	22:28		11/27/2013	22:44
1127F068.D	Continuing Calibration Verification	KWG1313301-5	11/27/2013	22:50		11/27/2013	23:06
1127F070.D	Instrument Blank	KWG1313301-6	11/27/2013	23:13		11/27/2013	23:29
1127F072.D	RM11E-MWS904-24_29'	K1312857-017	11/27/2013	23:35		11/27/2013	23:51
1127F074.D	ZZZZZZ	ZZZZZZ	11/27/2013	23:57		11/28/2013	00:13
1127F076.D	ZZZZZZ	ZZZZZZ	11/28/2013	00:19		11/28/2013	00:35
1127F078.D	ZZZZZZ	ZZZZZZ	11/28/2013	00:41		11/28/2013	00:57
1127F080.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:04		11/28/2013	01:20
1127F082.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:26		11/28/2013	01:42
1127F084.D	ZZZZZZ	ZZZZZZ	11/28/2013	01:48		11/28/2013	02:04
1127F086.D	ZZZZZZ	ZZZZZZ	11/28/2013	02:10		11/28/2013	02:26
1127F088.D	ZZZZZZ	ZZZZZZ	11/28/2013	02:32		11/28/2013	02:48
1127F090.D	Continuing Calibration Verification	KWG1313301-7	11/28/2013	02:54		11/28/2013	03:10
1127F092.D	Continuing Calibration Verification	KWG1313301-7	11/28/2013	03:17		11/28/2013	03:33
1127F094.D	Instrument Blank	KWG1313301-8	11/28/2013	03:39		11/28/2013	03:55

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313301
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1127F096.D	ZZZZZZ	ZZZZZZ	11/28/2013	04:01		11/28/2013	04:17
1127F098.D	ZZZZZZ	ZZZZZZ	11/28/2013	04:23		11/28/2013	04:39
1127F100.D	Continuing Calibration Verification	KWG1313301-9	11/28/2013	04:45		11/28/2013	05:01
1127F102.D	Continuing Calibration Verification	KWG1313301-9	11/28/2013	05:07		11/28/2013	05:23
1127F104.D	Instrument Blank	KWG1313301-10	11/28/2013	05:30		11/28/2013	05:46

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313400
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F016.D	Continuing Calibration Verification	KWG1313400-1	12/3/2013	12:05		12/3/2013	12:21
1203F018.D	Continuing Calibration Verification	KWG1313400-1	12/3/2013	12:38		12/3/2013	12:54
1203F020.D	Instrument Blank	KWG1313400-5	12/3/2013	13:07		12/3/2013	13:23
1203F022.D	Lab Control Sample	KWG1313276-5	12/3/2013	13:29		12/3/2013	13:45
1203F024.D	Method Blank	KWG1313276-6	12/3/2013	13:52		12/3/2013	14:08
1203F026.D	ZZZZZZ	ZZZZZZ	12/3/2013	14:14		12/3/2013	14:30
1203F028.D	ZZZZZZ	ZZZZZZ	12/3/2013	14:37		12/3/2013	14:53
1203F030.D	ZZZZZZ	ZZZZZZ	12/3/2013	14:59		12/3/2013	15:15
1203F032.D	ZZZZZZ	ZZZZZZ	12/3/2013	15:21		12/3/2013	15:37
1203F034.D	RM11E-MWS001-5_24'	K1312857-005	12/3/2013	15:44		12/3/2013	16:00
1203F036.D	RM11E-MWS001-24_29'	K1312857-006	12/3/2013	16:06		12/3/2013	16:22
1203F038.D	RM11E-MWS004-05_24'	K1312857-012	12/3/2013	16:29		12/3/2013	16:45
1203F040.D	RM11E-MWS004-24_29'	K1312857-013	12/3/2013	16:52		12/3/2013	17:08
1203F042.D	RM11E-MWS504-24_29'	K1312857-016	12/3/2013	17:15		12/3/2013	17:31
1203F044.D	RM11E-MWS005-21_26'	K1312857-025	12/3/2013	17:37		12/3/2013	17:53
1203F046.D	RM11E-SL029	K1312857-028	12/3/2013	18:00		12/3/2013	18:16
1203F048.D	RM11E-SL029DUP	KWG1313276-4	12/3/2013	18:22		12/3/2013	18:38
1203F050.D	Continuing Calibration Verification	KWG1313400-2	12/3/2013	18:45		12/3/2013	19:01
1203F052.D	Continuing Calibration Verification	KWG1313400-2	12/3/2013	19:07		12/3/2013	19:23
1203F054.D	Instrument Blank	KWG1313400-6	12/3/2013	19:29		12/3/2013	19:45
1203F088.D	Continuing Calibration Verification	KWG1313400-3	12/4/2013	01:48		12/4/2013	02:04
1203F090.D	Continuing Calibration Verification	KWG1313400-3	12/4/2013	02:11		12/4/2013	02:27
1203F092.D	Instrument Blank	KWG1313400-7	12/4/2013	02:33		12/4/2013	02:49
1203F094.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:55		12/4/2013	03:11
1203F096.D	ZZZZZZ	ZZZZZZ	12/4/2013	03:17		12/4/2013	03:33
1203F098.D	ZZZZZZ	ZZZZZZ	12/4/2013	03:40		12/4/2013	03:56
1203F100.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:02		12/4/2013	04:18
1203F102.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:24		12/4/2013	04:40
1203F104.D	ZZZZZZ	ZZZZZZ	12/4/2013	04:46		12/4/2013	05:02
1203F106.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:08		12/4/2013	05:24
1203F108.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:31		12/4/2013	05:47
1203F110.D	ZZZZZZ	ZZZZZZ	12/4/2013	05:54		12/4/2013	06:10
1203F112.D	Continuing Calibration Verification	KWG1313400-4	12/4/2013	06:16		12/4/2013	06:32
1203F114.D	Continuing Calibration Verification	KWG1313400-4	12/4/2013	06:38		12/4/2013	06:54

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313400
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F116.D	Instrument Blank	KWG1313400-8	12/4/2013	07:00		12/4/2013	07:16

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313547
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1205F014.D	Continuing Calibration Verification	KWG1313547-1	12/5/2013	09:57		12/5/2013	10:13
1205F016.D	Continuing Calibration Verification	KWG1313547-1	12/5/2013	10:19		12/5/2013	10:35
1205F018.D	Instrument Blank	KWG1313547-2	12/5/2013	10:41		12/5/2013	10:57
1205F020.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:04		12/5/2013	11:20
1205F022.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:26		12/5/2013	11:42
1205F024.D	ZZZZZZ	ZZZZZZ	12/5/2013	11:48		12/5/2013	12:04
1205F026.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:11		12/5/2013	12:27
1205F028.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:33		12/5/2013	12:49
1205F030.D	ZZZZZZ	ZZZZZZ	12/5/2013	12:55		12/5/2013	13:11
1205F032.D	Continuing Calibration Verification	KWG1313547-3	12/5/2013	13:17		12/5/2013	13:33
1205F034.D	Continuing Calibration Verification	KWG1313547-3	12/5/2013	13:39		12/5/2013	13:55
1205F036.D	Instrument Blank	KWG1313547-4	12/5/2013	14:01		12/5/2013	14:17
1205F038.D	RM11E-SL030	K1312857-029	12/5/2013	14:24		12/5/2013	14:40
1205F040.D	RM11E-SL030DUP	KWG1313276-3	12/5/2013	14:46		12/5/2013	15:02
1205F042.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:08		12/5/2013	15:24
1205F044.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:30		12/5/2013	15:46
1205F046.D	ZZZZZZ	ZZZZZZ	12/5/2013	15:52		12/5/2013	16:08
1205F048.D	RM11E-SL031	K1312857-026	12/5/2013	16:14		12/5/2013	16:30
1205F050.D	RM11E-SL028	K1312857-027	12/5/2013	16:37		12/5/2013	16:53
1205F052.D	RM11E-MWS005-05_21'	K1312857-024	12/5/2013	16:59		12/5/2013	17:15
1205F054.D	Continuing Calibration Verification	KWG1313547-5	12/5/2013	17:21		12/5/2013	17:37
1205F056.D	Continuing Calibration Verification	KWG1313547-5	12/5/2013	17:44		12/5/2013	18:00
1205F060.D	Instrument Blank	KWG1313547-6	12/5/2013	18:29		12/5/2013	18:45
1205F062.D	ZZZZZZ	ZZZZZZ	12/5/2013	18:51		12/5/2013	19:07
1205F064.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:13		12/5/2013	19:29
1205F066.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:35		12/5/2013	19:51
1205F068.D	ZZZZZZ	ZZZZZZ	12/5/2013	19:58		12/5/2013	20:14
1205F070.D	ZZZZZZ	ZZZZZZ	12/5/2013	20:20		12/5/2013	20:36
1205F072.D	ZZZZZZ	ZZZZZZ	12/5/2013	20:43		12/5/2013	20:59
1205F074.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:05		12/5/2013	21:21
1205F076.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:27		12/5/2013	21:43
1205F078.D	ZZZZZZ	ZZZZZZ	12/5/2013	21:49		12/5/2013	22:05
1205F080.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:11		12/5/2013	22:27
1205F082.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:34		12/5/2013	22:50

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313547
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1205F084.D	ZZZZZZ	ZZZZZZ	12/5/2013	22:56		12/5/2013	23:12
1205F086.D	Continuing Calibration Verification	KWG1313547-7	12/5/2013	23:19		12/5/2013	23:35
1205F088.D	Continuing Calibration Verification	KWG1313547-7	12/5/2013	23:41		12/5/2013	23:57
1205F090.D	Instrument Blank	KWG1313547-8	12/6/2013	00:03		12/6/2013	00:19
1205F092.D	ZZZZZZ	ZZZZZZ	12/6/2013	00:25		12/6/2013	00:41
1205F094.D	ZZZZZZ	ZZZZZZ	12/6/2013	00:48		12/6/2013	01:04
1205F096.D	ZZZZZZ	ZZZZZZ	12/6/2013	01:10		12/6/2013	01:26
1205F098.D	ZZZZZZ	ZZZZZZ	12/6/2013	01:33		12/6/2013	01:49
1205F100.D	Continuing Calibration Verification	KWG1313547-9	12/6/2013	01:55		12/6/2013	02:11
1205F102.D	Continuing Calibration Verification	KWG1313547-9	12/6/2013	02:17		12/6/2013	02:33
1205F104.D	Instrument Blank	KWG1313547-10	12/6/2013	02:40		12/6/2013	02:56

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857
Date Extracted: 11/26/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313234
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS904-24_29'	K1312857-017	11/21/13	11/22/13	470mL	1mL	NA	
Batch QCDUP	KWG1313234-1	NA	NA	495mL	1mL	NA	
Batch QCDUP	KWG1313234-2	NA	NA	1060mL	2mL	NA	
Method Blank	KWG1313234-4	NA	NA	1060mL	2mL	NA	
Batch QC	K1312728-002	NA	NA	1040mL	2mL	NA	
Batch QC	K1312730-001	NA	NA	495mL	1mL	NA	
Lab Control Sample	KWG1313234-3	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Extracted: 11/26/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313276
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS001-5_24'	K1312857-005	11/21/13	11/22/13	30.300g	10mL	83.0	
RM11E-MWS001-24_29'	K1312857-006	11/21/13	11/22/13	30.248g	10mL	72.4	
RM11E-MWS004-05_24'	K1312857-012	11/21/13	11/22/13	30.323g	10mL	80.2	
RM11E-MWS004-24_29'	K1312857-013	11/21/13	11/22/13	30.034g	10mL	70.9	
RM11E-MWS504-24_29'	K1312857-016	11/21/13	11/22/13	30.436g	10mL	70.6	
RM11E-MWS005-05_21'	K1312857-024	11/22/13	11/22/13	30.078g	10mL	80.5	
RM11E-MWS005-21_26'	K1312857-025	11/22/13	11/22/13	30.421g	10mL	72.3	
RM11E-SL031	K1312857-026	11/22/13	11/22/13	30.202g	10mL	90.2	
RM11E-SL028	K1312857-027	11/22/13	11/22/13	30.234g	10mL	85.5	
RM11E-SL029	K1312857-028	11/22/13	11/22/13	30.304g	10mL	89.0	
RM11E-SL030	K1312857-029	11/22/13	11/22/13	30.405g	10mL	84.2	
RM11E-SL030DUP	KWG1313276-3	11/22/13	11/22/13	30.039g	10mL	84.2	
RM11E-SL029DUP	KWG1313276-4	11/22/13	11/22/13	30.428g	10mL	89.0	
Method Blank	KWG1313276-6	NA	NA	30.436g	10mL	NA	
Lab Control Sample	KWG1313276-5	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS001-5_24'	K1312857-005	11/21/2013	11/22/2013
RM11E-MWS001-24_29'	K1312857-006	11/21/2013	11/22/2013
RM11E-MWS004-05_24'	K1312857-012	11/21/2013	11/22/2013
RM11E-MWS004-24_29'	K1312857-013	11/21/2013	11/22/2013
RM11E-MWS504-24_29'	K1312857-016	11/21/2013	11/22/2013
RM11E-MWS904-24_29'	K1312857-017	11/21/2013	11/22/2013
RM11E-MWS005-05_21'	K1312857-024	11/22/2013	11/22/2013
RM11E-MWS005-21_26'	K1312857-025	11/22/2013	11/22/2013
RM11E-SL028	K1312857-027	11/22/2013	11/22/2013
RM11E-SL029	K1312857-028	11/22/2013	11/22/2013
RM11E-SL030	K1312857-029	11/22/2013	11/22/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Shane Mina

Date: _____ Title: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Water	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS904-24_29'	**Units:**	ug/L
Lab Code:	K1312857-017	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1221	ND	U	0.11	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1232	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1242	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1248	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1254	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1260	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1262	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1268	ND	U	0.054	0.011	1	11/25/13	11/27/13	KWG1313212	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	69	36-113	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313212-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1221	ND	U	0.10	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1232	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1242	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1248	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1254	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1260	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1262	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	
Aroclor 1268	ND	U	0.050	0.0094	1	11/25/13	11/27/13	KWG1313212	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	36-113	11/27/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS001-5_24'	**Units:**	ug/Kg
Lab Code:	K1312857-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	30	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	Ui	26	26	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	**360**	D	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	**190**	D	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	22	11	5	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	22	11	5	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	80	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS001-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	7.0	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	Ui	7.0	7.0	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	**21**		4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS004-05_24'	**Units:**	ug/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	8.4	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	**8.2**		4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS004-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	7.1	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	69	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS504-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	7.1	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	43-148	12/07/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1221	ND	U	8.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1254	**70**		4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1260	ND	Ui	22	22	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	65	43-148	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS005-21_26'	**Units:**	ug/Kg
Lab Code:	K1312857-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1221	ND	U	9.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1232	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1242	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1248	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1254	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1260	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1262	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1268	ND	U	4.7	2.1	1	11/25/13	12/10/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	72	43-148	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL028	**Units:**	ug/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1221	ND	U	7.8	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1254	**6.8**	P	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1260	**18**		4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	43-148	12/11/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL029	**Units:**	ug/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1221	ND	U	7.5	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1260	2.6	J	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	43-148	12/11/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL030	**Units:**	ug/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1221	ND	U	7.9	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1260	**5.4**		4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/11/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	43-148	12/11/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313283-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	5.0	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	12/07/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MWS904-24_29'	K1312857-017	69
Method Blank	KWG1313212-3	68
Lab Control Sample	KWG1313212-1	71
Duplicate Lab Control Sample	KWG1313212-2	67

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 36-113

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MWS001-5_24'	K1312857-005	80 D
RM11E-MWS001-24_29'	K1312857-006	71
RM11E-MWS004-05_24'	K1312857-012	70
RM11E-MWS004-24_29'	K1312857-013	69
RM11E-MWS504-24_29'	K1312857-016	76
RM11E-MWS005-05_21'	K1312857-024	65
RM11E-MWS005-21_26'	K1312857-025	72
Batch QC	K1312857-026	78
RM11E-SL028	K1312857-027	79
RM11E-SL029	K1312857-028	78
RM11E-SL030	K1312857-029	70
Method Blank	KWG1313283-4	83
Batch QCMS	KWG1313283-1	76
Batch QCDMS	KWG1313283-2	74
Lab Control Sample	KWG1313283-3	73

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/10/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

		Batch QCMS KWG1313283-1 Matrix Spike			Batch QCDMS KWG1313283-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	82.6	147	56	91.0	148	62	23-145	10	40
Aroclor 1260	14	102	147	60	102	148	60	24-148	0	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Units:**	ug/L
Analysis Method:	8082A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313212

	Lab Control Sample KWG1313212-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313212-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	1.46	2.00	73	1.41	2.00	70	41-113	4	30
Aroclor 1260	1.54	2.00	77	1.58	2.00	79	47-117	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Extracted: 11/25/2013
Date Analyzed: 12/07/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313283

	Lab Control Sample KWG1313283-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	88.2	200	44	42-122
Aroclor 1260	131	200	66	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	14:03

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313212-3	**File ID:**	J:\GC32\DATA\112613A.B\1126F110.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313212

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313212-1	J:\GC32\DATA\112613A.B\1126F108.D	11/27/13	13:20
Duplicate Lab Control Sample	KWG1313212-2	J:\GC32\DATA\112613A.B\1126F109.D	11/27/13	13:42
RM11E-MWS904-24_29'	K1312857-017	J:\GC32\DATA\112613A.B\1126F112.D	11/27/13	14:45

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:46

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-4	**File ID:**	J:\GC32\DATA\120613.B\1206F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313283-3	J:\GC32\DATA\120613.B\1206F005.D	12/07/13	03:25
RM11E-MWS001-5_24'	K1312857-005	J:\GC32\DATA\120613.B\1206F009.D	12/07/13	04:49
RM11E-MWS001-24_29'	K1312857-006	J:\GC32\DATA\120613.B\1206F010.D	12/07/13	05:11
RM11E-MWS004-05_24'	K1312857-012	J:\GC32\DATA\120613.B\1206F011.D	12/07/13	05:32
RM11E-MWS004-24_29'	K1312857-013	J:\GC32\DATA\120613.B\1206F012.D	12/07/13	05:53
RM11E-MWS504-24_29'	K1312857-016	J:\GC32\DATA\120613.B\1206F013.D	12/07/13	06:14
RM11E-MWS005-05_21'	K1312857-024	J:\GC32\DATA\121013.B\1210F006.D	12/10/13	18:21
RM11E-MWS005-21_26'	K1312857-025	J:\GC32\DATA\121013.B\1210F010.D	12/10/13	19:43
Batch QC	K1312857-026	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
Batch QCMS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
Batch QCDMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49
RM11E-SL028	K1312857-027	J:\GC32\DATA\121013.B\1210F028.D	12/11/13	01:52
RM11E-SL029	K1312857-028	J:\GC32\DATA\121013.B\1210F032.D	12/11/13	03:13
RM11E-SL030	K1312857-029	J:\GC32\DATA\121013.B\1210F036.D	12/11/13	04:35

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	11/27/2013
		Time Analyzed:	13:20

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313212-1	**File ID:**	J:\GC32\DATA\112613A.B\1126F108.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313212

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313212-3	J:\GC32\DATA\112613A.B\1126F110.D	11/27/13	14:03
RM11E-MWS904-24_29'	K1312857-017	J:\GC32\DATA\112613A.B\1126F112.D	11/27/13	14:45

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:25

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-3	**File ID:**	J:\GC32\DATA\120613.B\1206F005.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313283-4	J:\GC32\DATA\120613.B\1206F006.D	12/07/13	03:46
RM11E-MWS001-5_24'	K1312857-005	J:\GC32\DATA\120613.B\1206F009.D	12/07/13	04:49
RM11E-MWS001-24_29'	K1312857-006	J:\GC32\DATA\120613.B\1206F010.D	12/07/13	05:11
RM11E-MWS004-05_24'	K1312857-012	J:\GC32\DATA\120613.B\1206F011.D	12/07/13	05:32
RM11E-MWS004-24_29'	K1312857-013	J:\GC32\DATA\120613.B\1206F012.D	12/07/13	05:53
RM11E-MWS504-24_29'	K1312857-016	J:\GC32\DATA\120613.B\1206F013.D	12/07/13	06:14
RM11E-MWS005-05_21'	K1312857-024	J:\GC32\DATA\121013.B\1210F006.D	12/10/13	18:21
RM11E-MWS005-21_26'	K1312857-025	J:\GC32\DATA\121013.B\1210F010.D	12/10/13	19:43
Batch QC	K1312857-026	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
Batch QCMS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
Batch QCDMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49
RM11E-SL028	K1312857-027	J:\GC32\DATA\121013.B\1210F028.D	12/11/13	01:52
RM11E-SL029	K1312857-028	J:\GC32\DATA\121013.B\1210F032.D	12/11/13	03:13
RM11E-SL030	K1312857-029	J:\GC32\DATA\121013.B\1210F036.D	12/11/13	04:35

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F005.D
B	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F006.D
C	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F007.D
D	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F008.D
E	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F009.D
F	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F010.D
G	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F011.D
H	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F012.D
I	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F013.D
J	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F014.D
K	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F015.D
L	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F016.D
M	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F017.D
N	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F018.D
O	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F019.D
P	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F020.D
Q	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F021.D
R	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F022.D
S	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F023.D
T	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F024.D
U	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F025.D
V	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F026.D
W	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F027.D
X	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F028.D
Y	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F029.D
Z	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F030.D
AA	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F031.D
AB	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F032.D
AC	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F033.D
AD	\\cash1\acqudata\GC32\Data\100213CAL.b\1002F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.00E+5	B	5.0	91400	C	50	76300	D	100	71900	E	200	69500
	F	500	66100												
Aroclor 1016 {1}	A	25	2040	B	50	1870	C	500	1680	D	1000	1580	E	2000	1510
	F	5000	1340												
Aroclor 1016 {2}	A	25	1510	B	50	1590	C	500	1380	D	1000	1330	E	2000	1300
	F	5000	1150												
Aroclor 1016 {3}	A	25	5120	B	50	4510	C	500	4030	D	1000	3930	E	2000	3830
	F	5000	3540												
Aroclor 1016 {4}	A	25	3520	B	50	3350	C	500	2930	D	1000	2760	E	2000	2650
	F	5000	2420												
Aroclor 1016 {5}	A	25	2840	B	50	2650	C	500	2350	D	1000	2230	E	2000	2120
	F	5000	1950												
Aroclor 1260 {1}	A	25	2510	B	50	2480	C	500	2260	D	1000	2210	E	2000	2140
	F	5000	2040												
Aroclor 1260 {2}	A	25	3950	B	50	3950	C	500	3410	D	1000	3230	E	2000	3090
	F	5000	2890												
Aroclor 1260 {3}	A	25	4130	B	50	3980	C	500	3640	D	1000	3450	E	2000	3340
	F	5000	3130												
Aroclor 1260 {4}	A	25	9750	B	50	9000	C	500	7940	D	1000	7710	E	2000	7660
	F	5000	7490												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7750	B	50	7170	C	500	6330	D	1000	6020	E	2000	5900
	F	5000	5670												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	14.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.0		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	10.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.0		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL.b\1002F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	940	1670	1580	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	910	1380	1260	-9	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	890	4160	3720	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	890	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	900	2350	2120	-10	NA	± 100 %	AverageRF
Aroclor 1016	1000	910	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	1000	910	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	3420	3670	7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	3610	3810	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	8260	8450	2	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	990	6470	6430	-1	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID	Level ID	File ID
A	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F005.D	Q	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F021.D
B	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F006.D	R	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F022.D
C	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F007.D	S	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F023.D
D	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F008.D	T	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F024.D
E	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F009.D	U	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F025.D
F	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F010.D	V	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F026.D
G	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F011.D	W	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F027.D
H	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F012.D	X	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F028.D
I	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F013.D	Y	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F029.D
J	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F014.D	Z	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F030.D
K	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F015.D	AA	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F031.D
L	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F016.D	AB	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F032.D
M	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F017.D	AC	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F033.D
N	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F018.D	AD	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F034.D
O	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F019.D		
P	\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F020.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	7.85E+5	B	5.0	7.15E+5	C	50	5.62E+5	D	100	5.31E+5	E	200	5.22E+5
Aroclor 1016 {1}	A	25	16500	B	50	15600	C	500	13200	D	1000	12300	E	2000	11800
	F	5000	10500												
Aroclor 1016 {2}	A	25	43600	B	50	40200	C	500	34100	D	1000	31800	E	2000	32600
	F	5000	30100												
Aroclor 1016 {3}	A	25	28800	B	50	26900	C	500	22000	D	1000	21000	E	2000	20500
	F	5000	18900												
Aroclor 1016 {4}	A	25	22700	B	50	20500	C	500	16600	D	1000	15700	E	2000	15200
	F	5000	13700												
Aroclor 1016 {5}	A	25	21900	B	50	19800	C	500	16600	D	1000	15600	E	2000	15200
	F	5000	13800												
Aroclor 1260 {1}	A	25	47900	B	50	43700	C	500	34600	D	1000	33200	E	2000	32500
	F	5000	29900												
Aroclor 1260 {2}	A	25	36100	B	50	32300	C	500	26900	D	1000	25400	E	2000	24600
	F	5000	22800												
Aroclor 1260 {3}	A	25	34100	B	50	33300	C	500	27600	D	1000	26400	E	2000	26000
	F	5000	24100												
Aroclor 1260 {4}	A	25	83800	B	50	75200	C	500	63200	D	1000	61100	E	2000	61700
	F	5000	59300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	55700	B	50	48100	C	500	41400	D	1000	39400	E	2000	38900
	F	5000	36200												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12822
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	19.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	17.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	15.0		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	17.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	18.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	19.3		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	18.3		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	16.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/03/2013
Date Analyzed: 10/03/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12822
Units: ng/mL

File ID: \\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F035.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F036.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F037.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F038.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F039.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F040.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F041.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F042.D
\\cash1\acqudata\GC32\Data\100213CAL_r.b\1002F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	900	13300	11900	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	35400	30200	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	840	23000	19400	-16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	830	17400	14400	-17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	850	17200	14600	-15	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	850	37000	31400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1000	28600	29700	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1000	67400	69500	3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1000	43300	43400	0	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	93800	B	5.0	88900	C	50	75500	D	100	71400	E	200	66800
	F	500	63100												
Aroclor 1016 {1}	A	25	2760	B	50	2600	C	500	2340	D	1000	2140	E	2000	1960
	F	5000	1840												
Aroclor 1016 {2}	A	25	2230	B	50	2150	C	500	1970	D	1000	1810	E	2000	1720
	F	5000	1590												
Aroclor 1016 {3}	A	25	6770	B	50	6340	C	500	6200	D	1000	5760	E	2000	5370
	F	5000	5280												
Aroclor 1016 {4}	A	25	4740	B	50	4460	C	500	4050	D	1000	3780	E	2000	3590
	F	5000	3450												
Aroclor 1016 {5}	A	25	3620	B	50	3560	C	500	3180	D	1000	2980	E	2000	2830
	F	5000	2710												
Aroclor 1260 {1}	A	25	2830	B	50	2820	C	500	2770	D	1000	2720	E	2000	2670
	F	5000	2530												
Aroclor 1260 {2}	A	25	4540	B	50	4440	C	500	4050	D	1000	3920	E	2000	3740
	F	5000	3480												
Aroclor 1260 {3}	A	25	4470	B	50	4560	C	500	4100	D	1000	3990	E	2000	3850
	F	5000	3630												
Aroclor 1260 {4}	A	25	9850	B	50	9590	C	500	8750	D	1000	8720	E	2000	8590
	F	5000	8360												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7400	B	50	7330	C	500	6600	D	1000	6440	E	2000	6230
	F	5000	5990												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	13.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	10.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	8.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	6.7		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID: \\cash1\acqudata\GC32\Data\120313CAL.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F148.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	890	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	1910	1620	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	780	5950	4630	-22	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	850	4010	3390	-15	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	880	3150	2760	-12	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	1000	2720	2720	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4030	4780	19	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1200	4100	4740	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	8980	10300	14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	6670	7390	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.27E+6	B	5.0	1.21E+6	C	50	9.81E+5	D	100	9.42E+5	E	200	9.01E+5
	F	500	8.84E+5												
Aroclor 1016 {1}	A	25	39300	B	50	37000	C	500	32500	D	1000	30200	E	2000	28000
	F	5000	26600												
Aroclor 1016 {2}	A	25	55800	B	50	51500	C	500	44600	D	1000	41800	E	2000	38400
	F	5000	36000												
Aroclor 1016 {3}	A	25	59000	B	50	58800	C	500	52100	D	1000	49800	E	2000	47700
	F	5000	48100												
Aroclor 1016 {4}	A	25	44800	B	50	43900	C	500	39100	D	1000	36600	E	2000	35600
	F	5000	34900												
Aroclor 1016 {5}	A	25	42900	B	50	42600	C	500	38500	D	1000	36500	E	2000	35900
	F	5000	34900												
Aroclor 1260 {1}	A	25	53800	B	50	47200	C	500	38300	D	1000	37800	E	2000	36200
	F	5000	34900												
Aroclor 1260 {2}	A	25	65500	B	50	63500	C	500	55900	D	1000	55000	E	2000	54600
	F	5000	52700												
Aroclor 1260 {3}	A	25	60400	B	50	61900	C	500	54900	D	1000	54000	E	2000	53400
	F	5000	52000												
Aroclor 1260 {4}	A	25	1.47E+5	B	50	1.35E+5	C	500	1.22E+5	D	1000	1.24E+5	E	2000	1.24E+5
	F	5000	1.25E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	93700	B	50	85900	C	500	76300	D	1000	74800	E	2000	72800
	F	5000	72300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	10.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	8.9		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	18.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	7.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	7.5		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F148.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	840	32300	27000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	840	44700	37500	-16	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	880	52600	46200	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	860	39200	33800	-14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	890	38500	34200	-11	NA	± 100 %	AverageRF
Aroclor 1016	1000	860	NA	NA	NA	-14	± 20 %	NA
Aroclor 1260 {1}	1000	970	41400	40200	-3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	57900	68300	18	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	56100	63800	14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	130000	149000	15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	79300	85100	7	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A.B\1126F101.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	43	79200	67400	-15	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	440	1670	1480	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	440	1380	1210	-12	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	460	4160	3800	-9	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	420	2940	2460	-16	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	410	2350	1920	-18	NA	± 100 %	AverageRF
Aroclor 1016	500	430	NA	NA	NA	-13	± 20 %	NA
Aroclor 1260 {1}	500	420	2270	1920	-16	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	3420	2960	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	3610	3160	-12	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8260	7050	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	430	6470	5570	-14	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A_R.B\1126F101.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	55	623000	685000	10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	570	13300	15200	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	35400	35600	1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	23000	23300	1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	17400	17400	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	500	17200	17000	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	490	37000	36600	-1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	530	28000	29500	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	540	28600	30800	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	530	67400	71300	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	530	43300	46200	7	NA	± 100 %	AverageRF
Aroclor 1260	500	520	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A.B\1126F113.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	79200	73100	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	490	1670	1630	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	1380	1300	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	450	4160	3740	-10	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	440	2940	2610	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	430	2350	2030	-14	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-9	± 20 %	NA
Aroclor 1260 {1}	500	450	2270	2060	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	3420	3150	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	460	3610	3350	-7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	8260	7470	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6470	5910	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-9	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 11/27/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 10/03/2013
Calibration ID: CAL12822
Analysis Lot: KWG1313385
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\112613A_R.B\1126F113.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	61	623000	755000	21	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	620	13300	16600	25		NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	530	35400	37600	6		NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	550	23000	25200	10		NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	17400	18500	6		NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	17200	18200	6		NA	± 100 %	AverageRF
Aroclor 1016	500	550	NA	NA	NA		11	± 20 %	NA
Aroclor 1260 {1}	500	530	37000	39300	6		NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	570	28000	31900	14		NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	590	28600	33400	17		NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	580	67400	77700	15		NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	590	43300	51300	19		NA	± 100 %	AverageRF
Aroclor 1260	500	570	NA	NA	NA		14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	76600	72900	-5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	440	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	1910	1790	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	460	5950	5460	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3700	-8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3050	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	440	2720	2420	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	450	4030	3590	-11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	4100	3670	-10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	440	8980	7880	-12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6670	6090	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	1030000	989000	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	480	32300	31200	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	41800	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	52600	56100	7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	540	39200	42100	7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	540	38500	41300	7	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	470	41400	39300	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	57900	54000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	56100	52900	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	130000	120000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	75100	-5	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F014.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71400	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	500	2280	2260	-1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1910	1910	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	5950	5710	-4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	4010	3880	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3030	-4	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	410	2720	2260	-17	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3360	-17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3500	-15	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7680	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F014.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	1030000	960000	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	32300	33300	3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	44700	44600	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	52600	54000	3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	39200	40000	2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	38500	39100	1	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	420	41400	35100	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	57900	50500	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	56100	51000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	130000	116000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	74000	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F004.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	45	76600	69000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	470	2280	2130	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	460	1910	1770	-7	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	450	5950	5330	-10	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3710	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	2990	-5	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	450	2720	2430	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	4030	3530	-12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	4100	3570	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7660	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	440	6670	5880	-12	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-13	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F004.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	898000	-13	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	490	32300	31500	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	42000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	52600	51600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	39200	38000	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	38500	37800	-2	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	37500	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	56100	48300	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	420	130000	108000	-17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	430	79300	68100	-14	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F026.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71300	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	2280	2380	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	510	1910	1960	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	470	5950	5590	-6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	4010	3970	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	3150	3060	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	0	± 20 %	NA
Aroclor 1260 {1}	500	430	2720	2330	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3390	-16	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3540	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7710	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F026.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	912000	-12	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	590	32300	38000	18	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	550	44700	49300	10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	560	52600	58600	11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	39200	41600	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	38500	40800	6	NA	± 100 %	AverageRF
Aroclor 1016	500	550	NA	NA	NA	10	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	36800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49800	-14	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	56100	49800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	130000	113000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	79300	71700	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F040.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	76600	73600	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	450	2280	2070	-9	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	460	1910	1760	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	5950	5820	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	470	4010	3770	-6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	3150	3060	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	470	NA	NA	NA	-6	± 20 %	NA
Aroclor 1260 {1}	500	470	2720	2580	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	4030	3750	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	460	4100	3800	-7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	8980	8260	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	480	6670	6350	-5	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F040.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	45	1030000	925000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	510	32300	32700	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	490	44700	44000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	52600	55500	6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	39200	40300	3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	520	38500	40300	5	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	500	41400	41300	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	460	57900	53300	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	56100	52500	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	440	130000	114000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	79300	72000	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	460	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313385
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1126F101.D	Continuing Calibration Verification	KWG1313385-1	11/27/2013	10:52		11/27/2013	10:52
1126F102.D	Instrument Blank	KWG1313385-2	11/27/2013	11:13		11/27/2013	11:13
1126F103.D	ZZZZZZ	ZZZZZZ	11/27/2013	11:34		11/27/2013	11:34
1126F104.D	ZZZZZZ	ZZZZZZ	11/27/2013	11:56		11/27/2013	11:56
1126F105.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:17		11/27/2013	12:17
1126F106.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:38		11/27/2013	12:38
1126F107.D	ZZZZZZ	ZZZZZZ	11/27/2013	12:59		11/27/2013	12:59
1126F108.D	Lab Control Sample	KWG1313212-1	11/27/2013	13:20		11/27/2013	13:20
1126F109.D	Duplicate Lab Control Sample	KWG1313212-2	11/27/2013	13:42		11/27/2013	13:42
1126F110.D	Method Blank	KWG1313212-3	11/27/2013	14:03		11/27/2013	14:03
1126F111.D	ZZZZZZ	ZZZZZZ	11/27/2013	14:24		11/27/2013	14:24
1126F112.D	RM11E-MWS904-24_29'	K1312857-017	11/27/2013	14:45		11/27/2013	14:45
1126F113.D	Continuing Calibration Verification	KWG1313385-3	11/27/2013	15:07		11/27/2013	15:07
1126F114.D	Instrument Blank	KWG1313385-4	11/27/2013	15:28		11/27/2013	15:28

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313732
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F003.D	Continuing Calibration Verification	KWG1313732-1	12/7/2013	02:42		12/7/2013	02:42
1206F004.D	Instrument Blank	KWG1313732-2	12/7/2013	03:03		12/7/2013	03:03
1206F005.D	Lab Control Sample	KWG1313283-3	12/7/2013	03:25		12/7/2013	03:25
1206F006.D	Method Blank	KWG1313283-4	12/7/2013	03:46		12/7/2013	03:46
1206F007.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:07		12/7/2013	04:07
1206F008.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:28		12/7/2013	04:28
1206F009.D	RM11E-MWS001-5_24'	K1312857-005	12/7/2013	04:49		12/7/2013	04:49
1206F010.D	RM11E-MWS001-24_29'	K1312857-006	12/7/2013	05:11		12/7/2013	05:11
1206F011.D	RM11E-MWS004-05_24'	K1312857-012	12/7/2013	05:32		12/7/2013	05:32
1206F012.D	RM11E-MWS004-24_29'	K1312857-013	12/7/2013	05:53		12/7/2013	05:53
1206F013.D	RM11E-MWS504-24_29'	K1312857-016	12/7/2013	06:14		12/7/2013	06:14
1206F014.D	Continuing Calibration Verification	KWG1313732-3	12/7/2013	06:36		12/7/2013	06:36
1206F015.D	Instrument Blank	KWG1313732-4	12/7/2013	06:57		12/7/2013	06:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313733
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F004.D	Continuing Calibration Verification	KWG1313733-1	12/10/2013	17:38		12/10/2013	17:38
1210F005.D	Instrument Blank	KWG1313733-2	12/10/2013	18:00		12/10/2013	18:00
1210F006.D	RM11E-MWS005-05_21'	K1312857-024	12/10/2013	18:21		12/10/2013	18:21
1210F010.D	RM11E-MWS005-21_26'	K1312857-025	12/10/2013	19:43		12/10/2013	19:43
1210F014.D	Batch QC	K1312857-026	12/10/2013	21:06		12/10/2013	21:06
1210F018.D	Batch QCMS	KWG1313283-1	12/10/2013	22:27		12/10/2013	22:27
1210F022.D	Batch QCDMS	KWG1313283-2	12/10/2013	23:49		12/10/2013	23:49
1210F026.D	Continuing Calibration Verification	KWG1313733-3	12/11/2013	01:10		12/11/2013	01:10
1210F027.D	Instrument Blank	KWG1313733-4	12/11/2013	01:31		12/11/2013	01:31
1210F028.D	RM11E-SL028	K1312857-027	12/11/2013	01:52		12/11/2013	01:52
1210F032.D	RM11E-SL029	K1312857-028	12/11/2013	03:13		12/11/2013	03:13
1210F036.D	RM11E-SL030	K1312857-029	12/11/2013	04:35		12/11/2013	04:35
1210F040.D	Continuing Calibration Verification	KWG1313733-5	12/11/2013	05:56		12/11/2013	05:56
1210F041.D	Instrument Blank	KWG1313733-6	12/11/2013	06:17		12/11/2013	06:17

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857
Date Extracted: 11/25/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1313212
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS904-24_29'	K1312857-017	11/21/13	11/22/13	940mL	2mL	NA	
Method Blank	KWG1313212-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313212-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313212-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Extracted: 11/25/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1313283
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS001-5_24'	K1312857-005	11/21/13	11/22/13	40.339g	4mL	83.0	
RM11E-MWS001-24_29'	K1312857-006	11/21/13	11/22/13	40.002g	4mL	72.4	
RM11E-MWS004-05_24'	K1312857-012	11/21/13	11/22/13	30.007g	4mL	80.2	
RM11E-MWS004-24_29'	K1312857-013	11/21/13	11/22/13	40.151g	4mL	70.9	
RM11E-MWS504-24_29'	K1312857-016	11/21/13	11/22/13	40.381g	4mL	70.6	
RM11E-MWS005-05_21'	K1312857-024	11/22/13	11/22/13	30.256g	4mL	80.5	
RM11E-MWS005-21_26'	K1312857-025	11/22/13	11/22/13	30.033g	4mL	72.3	
RM11E-SL028	K1312857-027	11/22/13	11/22/13	30.148g	4mL	85.5	
RM11E-SL029	K1312857-028	11/22/13	11/22/13	30.234g	4mL	89.0	
RM11E-SL030	K1312857-029	11/22/13	11/22/13	30.213g	4mL	84.2	
Method Blank	KWG1313283-4	NA	NA	40.381g	4mL	NA	
Batch QC	K1312857-026	NA	NA	30.367g	4mL	90.2	
Batch QCMS	KWG1313283-1	NA	NA	30.149g	4mL	90.2	
Batch QCDMS	KWG1313283-2	NA	NA	30.023g	4mL	90.2	
Lab Control Sample	KWG1313283-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS001-5_24'	**Units:**	ug/Kg
Lab Code:	K1312857-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	22	11	360	390	8.0	D	5	12/07/13
Aroclor 1260	22	11	190	210	10.0	D	5	12/07/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS001-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	21	24	13.3		1	12/07/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS004-05_24'	**Units:**	ug/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1248	4.3	2.1	8.2	8.8	7.1		1	12/07/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	70	99	34.3		1	12/10/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL028	**Units:**	ug/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	6.8	11	47.2	P	1	12/11/13
Aroclor 1260	4.3	2.1	18	18	0.0		1	12/11/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL029	**Units:**	ug/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	2.6	2.8	7.4	J	1	12/11/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013
		Date Extracted:	11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL030	**Units:**	ug/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	5.4	5.8	7.1		1	12/11/13

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Service Request: K1312857

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS001-5_24'	K1312857-005	11/21/2013	11/22/2013
RM11E-MWS001-24_29'	K1312857-006	11/21/2013	11/22/2013
RM11E-MWS004-05_24'	K1312857-012	11/21/2013	11/22/2013
RM11E-MWS004-24_29'	K1312857-013	11/21/2013	11/22/2013
RM11E-MWS504-24_29'	K1312857-016	11/21/2013	11/22/2013
RM11E-MWS904-24_29'	K1312857-017	11/21/2013	11/22/2013
RM11E-MWS005-05_21'	K1312857-024	11/22/2013	11/22/2013
RM11E-MWS005-21_26'	K1312857-025	11/22/2013	11/22/2013
RM11E-SL031	K1312857-026	11/22/2013	11/22/2013
RM11E-SL028	K1312857-027	11/22/2013	11/22/2013
RM11E-SL029	K1312857-028	11/22/2013	11/22/2013
RM11E-SL030	K1312857-029	11/22/2013	11/22/2013
RM11E-MWS004-24_29'MS	KWG1313114-1	11/21/2013	11/22/2013
RM11E-MWS004-24_29'DMS	KWG1313114-2	11/21/2013	11/22/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: Carl Degner

Date: 12/16/13 Title: SVOC Supervisor

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Water	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS904-24_29'	**Units:**	ug/L
Lab Code:	K1312857-017	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.065**	J	0.22	0.024	1	11/25/13	12/04/13	KWG1313137	
2-Methylnaphthalene	ND	U	0.22	0.029	1	11/25/13	12/04/13	KWG1313137	
Acenaphthylene	ND	U	0.22	0.016	1	11/25/13	12/04/13	KWG1313137	
Acenaphthene	ND	U	0.22	0.028	1	11/25/13	12/04/13	KWG1313137	
Fluorene	ND	U	0.22	0.029	1	11/25/13	12/04/13	KWG1313137	
Hexachlorobenzene	ND	U	0.22	0.024	1	11/25/13	12/04/13	KWG1313137	
Pentachlorophenol	ND	U	1.1	0.37	1	11/25/13	12/04/13	KWG1313137	
Phenanthrene	ND	U	0.22	0.024	1	11/25/13	12/04/13	KWG1313137	
Anthracene	ND	U	0.22	0.026	1	11/25/13	12/04/13	KWG1313137	
Fluoranthene	ND	U	0.22	0.022	1	11/25/13	12/04/13	KWG1313137	
Pyrene	ND	U	0.22	0.021	1	11/25/13	12/04/13	KWG1313137	
Benz(a)anthracene	ND	U	0.22	0.020	1	11/25/13	12/04/13	KWG1313137	
Chrysene	ND	U	0.22	0.030	1	11/25/13	12/04/13	KWG1313137	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	11/25/13	12/04/13	KWG1313137	
Benzo(b)fluoranthene	ND	U	0.22	0.019	1	11/25/13	12/04/13	KWG1313137	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	11/25/13	12/04/13	KWG1313137	*
Benzo(a)pyrene	ND	U	0.22	0.033	1	11/25/13	12/04/13	KWG1313137	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	11/25/13	12/04/13	KWG1313137	*
Dibenz(a,h)anthracene	ND	U	0.22	0.019	1	11/25/13	12/04/13	KWG1313137	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	11/25/13	12/04/13	KWG1313137	
Perylene	ND	U	0.22	0.22	1	11/25/13	12/04/13	KWG1313137	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	74	26-110	12/04/13	Acceptable
2-Fluorobiphenyl	75	31-94	12/04/13	Acceptable
2,4,6-Tribromophenol	80	23-127	12/04/13	Acceptable
Terphenyl-d14	91	40-127	12/04/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313137-3	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.19	0.022	1	11/25/13	12/04/13	KWG1313137	
2-Methylnaphthalene	ND	U	0.19	0.027	1	11/25/13	12/04/13	KWG1313137	
Acenaphthylene	ND	U	0.19	0.015	1	11/25/13	12/04/13	KWG1313137	
Acenaphthene	ND	U	0.19	0.026	1	11/25/13	12/04/13	KWG1313137	
Fluorene	ND	U	0.19	0.027	1	11/25/13	12/04/13	KWG1313137	
Hexachlorobenzene	ND	U	0.19	0.022	1	11/25/13	12/04/13	KWG1313137	
Pentachlorophenol	ND	U	0.95	0.34	1	11/25/13	12/04/13	KWG1313137	
Phenanthrene	ND	U	0.19	0.022	1	11/25/13	12/04/13	KWG1313137	
Anthracene	ND	U	0.19	0.024	1	11/25/13	12/04/13	KWG1313137	
Fluoranthene	ND	U	0.19	0.020	1	11/25/13	12/04/13	KWG1313137	
Pyrene	ND	U	0.19	0.019	1	11/25/13	12/04/13	KWG1313137	
Benz(a)anthracene	ND	U	0.19	0.018	1	11/25/13	12/04/13	KWG1313137	
Chrysene	ND	U	0.19	0.028	1	11/25/13	12/04/13	KWG1313137	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	11/25/13	12/04/13	KWG1313137	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	11/25/13	12/04/13	KWG1313137	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	11/25/13	12/04/13	KWG1313137	*
Benzo(a)pyrene	ND	U	0.19	0.031	1	11/25/13	12/04/13	KWG1313137	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	11/25/13	12/04/13	KWG1313137	*
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	11/25/13	12/04/13	KWG1313137	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	11/25/13	12/04/13	KWG1313137	
Perylene	ND	U	0.19	0.19	1	11/25/13	12/04/13	KWG1313137	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	87	26-110	12/04/13	Acceptable
2-Fluorobiphenyl	83	31-94	12/04/13	Acceptable
2,4,6-Tribromophenol	77	23-127	12/04/13	Acceptable
Terphenyl-d14	96	40-127	12/04/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Collected: 11/21/2013
Date Received: 11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-MWS001-5_24'
Lab Code: K1312857-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	61	29	10	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	61	28	10	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	**30**	JD	61	26	10	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	61	32	10	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	61	33	10	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**210**	D	61	36	10	11/25/13	12/05/13	KWG1313114	
Anthracene	**53**	JD	61	32	10	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**250**	D	61	37	10	11/25/13	12/05/13	KWG1313114	
Pyrene	**370**	D	61	37	10	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**170**	D	61	36	10	11/25/13	12/05/13	KWG1313114	
Chrysene	**240**	D	61	41	10	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	61	33	10	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	610	53	10	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	**210**	JD	610	89	10	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**200**	D	61	34	10	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	**66**	D	61	40	10	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**160**	D	61	36	10	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**120**	D	61	32	10	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	61	30	10	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**130**	D	61	37	10	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	72	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	65	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	0	10-119	12/05/13	Outside Control Limits
Terphenyl-d14	66	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS001-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**12**		6.9	2.9	1	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	6.9	2.8	1	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	**6.3**	J	6.9	2.6	1	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	6.9	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	6.9	3.3	1	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**18**		6.9	3.6	1	11/25/13	12/05/13	KWG1313114	
Anthracene	**4.8**	J	6.9	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**29**		6.9	3.7	1	11/25/13	12/05/13	KWG1313114	
Pyrene	**25**		6.9	3.7	1	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**14**		6.9	3.6	1	11/25/13	12/05/13	KWG1313114	
Chrysene	**15**		6.9	4.1	1	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	6.9	3.3	1	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	69	5.3	1	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	**66**	J	69	8.9	1	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**21**		6.9	3.4	1	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	**6.2**	J	6.9	4.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**14**		6.9	3.6	1	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**11**		6.9	3.2	1	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	6.9	3.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**12**		6.9	3.7	1	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	48	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	52	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	52	10-119	12/05/13	Acceptable
Terphenyl-d14	50	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS004-05_24'	**Units:**	ug/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**11**		6.2	2.9	1	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	**8.9**		6.2	2.8	1	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	**6.5**		6.2	2.6	1	11/25/13	12/05/13	KWG1313114	
Acenaphthene	**4.7**	J	6.2	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluorene	**5.1**	J	6.2	3.3	1	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**27**		6.2	3.6	1	11/25/13	12/05/13	KWG1313114	
Anthracene	**11**		6.2	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**51**		6.2	3.7	1	11/25/13	12/05/13	KWG1313114	
Pyrene	**50**		6.2	3.7	1	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**22**		6.2	3.6	1	11/25/13	12/05/13	KWG1313114	
Chrysene	**28**		6.2	4.1	1	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	6.2	3.3	1	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	62	5.3	1	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	62	8.9	1	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**33**		6.2	3.4	1	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	**10**		6.2	4.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**28**		6.2	3.6	1	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**23**		6.2	3.2	1	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	6.2	3.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**24**		6.2	3.7	1	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	44	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	46	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	20	10-119	12/05/13	Acceptable
Terphenyl-d14	52	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS004-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.1	2.9	1	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	7.1	2.8	1	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	7.1	2.6	1	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	7.1	3.3	1	11/25/13	12/05/13	KWG1313114	
Phenanthrene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluoranthene	ND	U	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	
Pyrene	**4.7**	J	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Chrysene	ND	U	7.1	4.1	1	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	7.1	3.3	1	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	71	5.3	1	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	71	8.9	1	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	ND	U	7.1	3.4	1	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	7.1	4.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	7.1	3.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	ND	U	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	39	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	39	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	41	10-119	12/05/13	Acceptable
Terphenyl-d14	46	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS504-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.1	2.9	1	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	7.1	2.8	1	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	7.1	2.6	1	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	7.1	3.3	1	11/25/13	12/05/13	KWG1313114	
Phenanthrene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluoranthene	ND	U	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	
Pyrene	ND	U	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Chrysene	ND	U	7.1	4.1	1	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	7.1	3.3	1	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	71	5.3	1	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	71	8.9	1	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	ND	U	7.1	3.4	1	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	7.1	4.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	ND	U	7.1	3.6	1	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	ND	U	7.1	3.2	1	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	7.1	3.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	ND	U	7.1	3.7	1	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	55	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	47	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	51	10-119	12/05/13	Acceptable
Terphenyl-d14	57	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	62	29	10	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	62	28	10	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	62	26	10	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	62	32	10	11/25/13	12/05/13	KWG1313114	
Fluorene	**63**	D	62	33	10	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**160**	D	62	36	10	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	62	32	10	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**73**	D	62	37	10	11/25/13	12/05/13	KWG1313114	
Pyrene	**110**	D	62	37	10	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**54**	JD	62	36	10	11/25/13	12/05/13	KWG1313114	
Chrysene	**120**	D	62	41	10	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	62	33	10	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	620	53	10	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	**94**	JD	620	89	10	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	ND	U	62	34	10	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	62	40	10	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	ND	U	62	36	10	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	ND	U	62	32	10	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	62	30	10	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	ND	U	62	37	10	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	74	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	56	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	48	10-119	12/05/13	Acceptable
Terphenyl-d14	56	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS005-21_26'	**Units:**	ug/Kg
Lab Code:	K1312857-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**45**	D	35	15	5	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	**18**	JD	35	14	5	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	**20**	JD	35	13	5	11/25/13	12/05/13	KWG1313114	
Acenaphthene	**20**	JD	35	16	5	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	35	17	5	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**130**	D	35	18	5	11/25/13	12/05/13	KWG1313114	
Anthracene	**31**	JD	35	16	5	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**130**	D	35	19	5	11/25/13	12/05/13	KWG1313114	
Pyrene	**160**	D	35	19	5	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**67**	D	35	18	5	11/25/13	12/05/13	KWG1313114	
Chrysene	**70**	D	35	21	5	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	35	17	5	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	350	27	5	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	350	45	5	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**78**	D	35	17	5	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	**21**	JD	35	20	5	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**80**	D	35	18	5	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**49**	D	35	16	5	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	35	15	5	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**60**	D	35	19	5	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	60	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	45	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	66	10-119	12/05/13	Acceptable
Terphenyl-d14	64	33-129	12/05/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL031	**Units:**	ug/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	28	15	5	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	28	14	5	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	28	13	5	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	28	16	5	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	28	17	5	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**20**	JD	28	18	5	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	28	16	5	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**65**	D	28	19	5	11/25/13	12/05/13	KWG1313114	
Pyrene	**86**	D	28	19	5	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**82**	D	28	18	5	11/25/13	12/05/13	KWG1313114	
Chrysene	**110**	D	28	21	5	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	28	17	5	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	280	27	5	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	280	45	5	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**210**	D	28	17	5	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	**64**	D	28	20	5	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**160**	D	28	18	5	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**150**	D	28	16	5	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	**35**	D	28	15	5	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**150**	D	28	19	5	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	53	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	57	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	64	10-119	12/05/13	Acceptable
Terphenyl-d14	64	33-129	12/05/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL028	**Units:**	ug/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	58	29	10	11/25/13	12/10/13	KWG1313114	
2-Methylnaphthalene	ND	U	58	28	10	11/25/13	12/10/13	KWG1313114	
Acenaphthylene	**56**	JD	58	26	10	11/25/13	12/10/13	KWG1313114	
Acenaphthene	ND	U	58	32	10	11/25/13	12/10/13	KWG1313114	
Fluorene	ND	U	58	33	10	11/25/13	12/10/13	KWG1313114	
Phenanthrene	**260**	D	58	36	10	11/25/13	12/10/13	KWG1313114	
Anthracene	**63**	D	58	32	10	11/25/13	12/10/13	KWG1313114	
Fluoranthene	**430**	D	58	37	10	11/25/13	12/10/13	KWG1313114	
Pyrene	**580**	D	58	37	10	11/25/13	12/10/13	KWG1313114	
Benz(a)anthracene	**190**	D	58	36	10	11/25/13	12/10/13	KWG1313114	
Chrysene	**240**	D	58	41	10	11/25/13	12/10/13	KWG1313114	
Hexachlorobenzene	ND	U	58	33	10	11/25/13	12/10/13	KWG1313114	
Pentachlorophenol	ND	U	580	53	10	11/25/13	12/10/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	580	89	10	11/25/13	12/10/13	KWG1313114	
Benzo(b)fluoranthene	**300**	D	58	34	10	11/25/13	12/10/13	KWG1313114	
Benzo(k)fluoranthene	**84**	D	58	40	10	11/25/13	12/10/13	KWG1313114	
Benzo(a)pyrene	**290**	D	58	36	10	11/25/13	12/10/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**320**	D	58	32	10	11/25/13	12/10/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	58	30	10	11/25/13	12/10/13	KWG1313114	
Benzo(g,h,i)perylene	**360**	D	58	37	10	11/25/13	12/10/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	64	27-91	12/10/13	Acceptable
2-Fluorobiphenyl	53	25-97	12/10/13	Acceptable
2,4,6-Tribromophenol	62	10-119	12/10/13	Acceptable
Terphenyl-d14	63	33-129	12/10/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL029	**Units:**	ug/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	57	29	10	11/25/13	12/10/13	KWG1313114	
2-Methylnaphthalene	ND	U	57	28	10	11/25/13	12/10/13	KWG1313114	
Acenaphthylene	ND	U	57	26	10	11/25/13	12/10/13	KWG1313114	
Acenaphthene	ND	U	57	32	10	11/25/13	12/10/13	KWG1313114	
Fluorene	ND	U	57	33	10	11/25/13	12/10/13	KWG1313114	
Phenanthrene	ND	U	57	36	10	11/25/13	12/10/13	KWG1313114	
Anthracene	ND	U	57	32	10	11/25/13	12/10/13	KWG1313114	
Fluoranthene	ND	U	57	37	10	11/25/13	12/10/13	KWG1313114	
Pyrene	ND	U	57	37	10	11/25/13	12/10/13	KWG1313114	
Benz(a)anthracene	ND	U	57	36	10	11/25/13	12/10/13	KWG1313114	
Chrysene	ND	U	57	41	10	11/25/13	12/10/13	KWG1313114	
Hexachlorobenzene	ND	U	57	33	10	11/25/13	12/10/13	KWG1313114	
Pentachlorophenol	ND	U	570	53	10	11/25/13	12/10/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	570	89	10	11/25/13	12/10/13	KWG1313114	
Benzo(b)fluoranthene	ND	U	57	34	10	11/25/13	12/10/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	57	40	10	11/25/13	12/10/13	KWG1313114	
Benzo(a)pyrene	ND	U	57	36	10	11/25/13	12/10/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	ND	U	57	32	10	11/25/13	12/10/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	57	30	10	11/25/13	12/10/13	KWG1313114	
Benzo(g,h,i)perylene	ND	U	57	37	10	11/25/13	12/10/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	55	27-91	12/10/13	Acceptable
2-Fluorobiphenyl	53	25-97	12/10/13	Acceptable
2,4,6-Tribromophenol	56	10-119	12/10/13	Acceptable
Terphenyl-d14	63	33-129	12/10/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-SL030	**Units:**	ug/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	30	15	5	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	30	14	5	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	30	13	5	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	30	16	5	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	30	17	5	11/25/13	12/05/13	KWG1313114	
Phenanthrene	**35**	D	30	18	5	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	30	16	5	11/25/13	12/05/13	KWG1313114	
Fluoranthene	**47**	D	30	19	5	11/25/13	12/05/13	KWG1313114	
Pyrene	**51**	D	30	19	5	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	**26**	JD	30	18	5	11/25/13	12/05/13	KWG1313114	
Chrysene	**35**	D	30	21	5	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	30	17	5	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	300	27	5	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	300	45	5	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	**46**	D	30	17	5	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	30	20	5	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	**39**	D	30	18	5	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	**33**	D	30	16	5	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	30	15	5	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	**46**	D	30	19	5	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	62	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	58	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	51	10-119	12/05/13	Acceptable
Terphenyl-d14	56	33-129	12/05/13	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313114-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.0	2.9	1	11/25/13	12/05/13	KWG1313114	
2-Methylnaphthalene	ND	U	5.0	2.8	1	11/25/13	12/05/13	KWG1313114	
Acenaphthylene	ND	U	5.0	2.6	1	11/25/13	12/05/13	KWG1313114	
Acenaphthene	ND	U	5.0	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluorene	ND	U	5.0	3.3	1	11/25/13	12/05/13	KWG1313114	
Phenanthrene	ND	U	5.0	3.6	1	11/25/13	12/05/13	KWG1313114	
Anthracene	ND	U	5.0	3.2	1	11/25/13	12/05/13	KWG1313114	
Fluoranthene	ND	U	5.0	3.7	1	11/25/13	12/05/13	KWG1313114	
Pyrene	ND	U	5.0	3.7	1	11/25/13	12/05/13	KWG1313114	
Benz(a)anthracene	ND	U	5.0	3.6	1	11/25/13	12/05/13	KWG1313114	
Chrysene	ND	U	5.0	4.1	1	11/25/13	12/05/13	KWG1313114	
Hexachlorobenzene	ND	U	5.0	3.3	1	11/25/13	12/05/13	KWG1313114	
Pentachlorophenol	ND	U	50	5.3	1	11/25/13	12/05/13	KWG1313114	
Bis(2-ethylhexyl) Phthalate	ND	U	50	8.9	1	11/25/13	12/05/13	KWG1313114	
Benzo(b)fluoranthene	ND	U	5.0	3.4	1	11/25/13	12/05/13	KWG1313114	
Benzo(k)fluoranthene	ND	U	5.0	4.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(a)pyrene	ND	U	5.0	3.6	1	11/25/13	12/05/13	KWG1313114	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	3.2	1	11/25/13	12/05/13	KWG1313114	
Dibenz(a,h)anthracene	ND	U	5.0	3.0	1	11/25/13	12/05/13	KWG1313114	
Benzo(g,h,i)perylene	ND	U	5.0	3.7	1	11/25/13	12/05/13	KWG1313114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	67	27-91	12/05/13	Acceptable
2-Fluorobiphenyl	64	25-97	12/05/13	Acceptable
2,4,6-Tribromophenol	60	10-119	12/05/13	Acceptable
Terphenyl-d14	69	33-129	12/05/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-MWS904-24_29'	K1312857-017	74	75	80	91
Method Blank	KWG1313137-3	87	83	77	96
Lab Control Sample	KWG1313137-1	86	80	86	87
Duplicate Lab Control Sample	KWG1313137-2	82	78	83	85

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	26-110
Sur2 =	2-Fluorobiphenyl	31-94
Sur3 =	2,4,6-Tribromophenol	23-127
Sur4 =	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-MWS001-5_24'	K1312857-005	72 D	65 D	0 D *	66 D
RM11E-MWS001-24_29'	K1312857-006	48	52	52	50
RM11E-MWS004-05_24'	K1312857-012	44	46	20	52
RM11E-MWS004-24_29'	K1312857-013	39	39	41	46
RM11E-MWS504-24_29'	K1312857-016	55	47	51	57
RM11E-MWS005-05_21'	K1312857-024	74 D	56 D	48 D	56 D
RM11E-MWS005-21_26'	K1312857-025	60 D	45 D	66 D	64 D
RM11E-SL031	K1312857-026	53 D	57 D	64 D	64 D
RM11E-SL028	K1312857-027	64 D	53 D	62 D	63 D
RM11E-SL029	K1312857-028	55 D	53 D	56 D	63 D
RM11E-SL030	K1312857-029	62 D	58 D	51 D	56 D
Method Blank	KWG1313114-5	67	64	60	69
RM11E-MWS004-24_29'MS	KWG1313114-1	51	49	49	52
RM11E-MWS004-24_29'DMS	KWG1313114-2	40	36	44	46
Lab Control Sample	KWG1313114-3	61	49	58	59
Duplicate Lab Control Sample	KWG1313114-4	57	53	64	61

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	27-91
Sur2 =	2-Fluorobiphenyl	25-97
Sur3 =	2,4,6-Tribromophenol	10-119
Sur4 =	Terphenyl-d14	33-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/04/2013
		Time Analyzed:	11:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS26\DATA\120413\1204F004.D	**Lab Code:**	KWG1313458-2
Instrument ID:	MS26	**Analysis Lot:**	KWG1313458
Analysis Method:	8270D		

		1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	150,739	5.62	535,056	7.08	308,060	10.02
	Upper Limit ==>	301,478	6.12	1,070,112	7.58	616,120	10.52
	Lower Limit ==>	75,370	5.12	267,528	6.58	154,030	9.52
	ICAL Result ==>	172,819	5.71	587,905	7.15	317,140	10.18
Associated Analyses							
Method Blank	KWG1313137-3	142,773	5.62	498,241	7.08	272,369	10.02
Lab Control Sample	KWG1313137-1	145,842	5.62	523,094	7.08	293,319	10.02
Duplicate Lab Control Sample	KWG1313137-2	143,723	5.62	505,600	7.08	290,585	10.02
RM11E-MWS904-24_29'	K1312857-017	137,051	5.62	483,383	7.08	268,659	10.03

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/04/2013
Time Analyzed: 11:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS26\DATA\120413\1204F004.D
Instrument ID: MS26
Analysis Method: 8270D

Lab Code: KWG1313458-2
Analysis Lot: KWG1313458

		Phenanthrene-d10		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	604,333	13.46	616,513	17.25	562,856	20.04
	Upper Limit ==>	1,208,666	13.96	1,233,026	17.75	1,125,712	20.54
	Lower Limit ==>	302,167	12.96	308,257	16.75	281,428	19.54
	ICAL Result ==>	604,801	13.55	640,853	17.34	564,363	20.22
Associated Analyses							
Method Blank	KWG1313137-3	510,213	13.46	485,040	17.24	437,694	20.04
Lab Control Sample	KWG1313137-1	560,208	13.46	542,635	17.24	503,759	20.04
Duplicate Lab Control Sample	KWG1313137-2	550,454	13.46	540,482	17.25	484,459	20.05
RM11E-MWS904-24_29'	K1312857-017	489,725	13.47	434,167	17.25	401,133	20.06

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/05/2013
		Time Analyzed:	13:06

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\120513\1205F004.D	**Lab Code:**	KWG1313575-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1313575
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	427,497	10.64	244,896	13.48	442,265	15.92
	Upper Limit ==>	854,994	11.14	489,792	13.98	884,530	16.42
	Lower Limit ==>	213,749	10.14	122,448	12.98	221,133	15.42
	ICAL Result ==>	411,958	10.64	230,718	13.49	428,281	15.92
Associated Analyses							
Method Blank	KWG1313114-5	383,171	10.63	201,278	13.48	403,249	15.91
Lab Control Sample	KWG1313114-3	407,356	10.64	224,557	13.48	415,649	15.91
Duplicate Lab Control Sample	KWG1313114-4	386,771	10.63	228,589	13.48	396,678	15.91
RM11E-MWS004-24_29'MS	KWG1313114-1	392,380	10.64	209,575	13.47	396,982	15.91
RM11E-MWS004-24_29'DMS	KWG1313114-2	395,815	10.63	229,781	13.48	407,337	15.91
RM11E-MWS004-24_29'	K1312857-013	373,210	10.64	198,837	13.47	381,336	15.91
RM11E-MWS001-24_29'	K1312857-006	374,491	10.64	191,838	13.47	363,433	15.91
RM11E-MWS004-05_24'	K1312857-012	391,899	10.64	208,929	13.48	392,425	15.93
RM11E-MWS504-24_29'	K1312857-016	375,258	10.65	206,410	13.49	374,692	15.93
RM11E-MWS005-21_26'	K1312857-025	370,851	10.64	226,776	13.49	371,255	15.92
RM11E-SL031	K1312857-026	370,907	10.65	197,209	13.48	386,895	15.93
RM11E-SL030	K1312857-029	364,326	10.65	192,911	13.48	371,483	15.93
RM11E-MWS001-5_24'	K1312857-005	377,553	10.66	187,844	13.49	361,744	15.93
RM11E-MWS005-05_21'	K1312857-024	361,151	10.65	205,340	13.50	389,882	15.93

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/05/2013
Time Analyzed: 13:06

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120513\1205F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313575-2
Analysis Lot: KWG1313575

		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT
	Results ==>	480,603	20.47	341,912	24.15
	Upper Limit ==>	961,206	20.97	683,824	24.65
	Lower Limit ==>	240,302	19.97	170,956	23.65
	ICAL Result ==>	442,598	20.46	342,958	24.13
Associated Analyses					
Method Blank	KWG1313114-5	390,145	20.45	324,899	24.13
Lab Control Sample	KWG1313114-3	431,773	20.46	321,084	24.14
Duplicate Lab Control Sample	KWG1313114-4	409,598	20.46	314,579	24.14
RM11E-MWS004-24_29'MS	KWG1313114-1	382,338	20.46	304,092	24.14
RM11E-MWS004-24_29'DMS	KWG1313114-2	394,476	20.46	321,880	24.14
RM11E-MWS004-24_29'	K1312857-013	354,623	20.45	307,754	24.13
RM11E-MWS001-24_29'	K1312857-006	444,868	20.47	341,967	24.18
RM11E-MWS004-05_24'	K1312857-012	408,719	20.48	322,574	24.20
RM11E-MWS504-24_29'	K1312857-016	355,430	20.47	291,935	24.15
RM11E-MWS005-21_26'	K1312857-025	371,469	20.48	292,473	24.19
RM11E-SL031	K1312857-026	360,365	20.48	303,867	24.18
RM11E-SL030	K1312857-029	360,945	20.48	297,340	24.19
RM11E-MWS001-5_24'	K1312857-005	352,192	20.50	295,563	24.20
RM11E-MWS005-05_21'	K1312857-024	397,705	20.52	304,865	24.26

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013
		Time Analyzed:	11:07

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\121013\1210F004.D	**Lab Code:**	KWG1313648-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1313648
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	491,145	10.62	258,544	13.47	511,670	15.90
	Upper Limit ==>	982,290	11.12	517,088	13.97	1,023,340	16.40
	Lower Limit ==>	245,573	10.12	129,272	12.97	255,835	15.40
	ICAL Result ==>	411,958	10.64	230,718	13.49	428,281	15.92
Associated Analyses							
RM11E-SL029	K1312857-028	359,151	10.63	196,017	13.46	369,198	15.90
RM11E-SL028	K1312857-027	410,290	10.63	232,318	13.47	390,660	15.90

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013
Time Analyzed: 11:07

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121013\1210F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313648-2
Analysis Lot: KWG1313648

		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT
	Results ==>	537,877	20.45	384,015	24.13
	Upper Limit ==>	1,075,754	20.95	768,030	24.63
	Lower Limit ==>	268,939	19.95	192,008	23.63
	ICAL Result ==>	442,598	20.46	342,958	24.13
Associated Analyses					
RM11E-SL029	K1312857-028	316,373	20.45	278,193	24.16
RM11E-SL028	K1312857-027	348,605	20.45	297,898	24.17

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/05/2013

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MWS004-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313114

		RM11E-MWS004-24_29'MS KWG1313114-1 Matrix Spike			RM11E-MWS004-24_29'DMS KWG1313114-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	84.2	175	48	64.4	175	37	12-104	27	40
2-Methylnaphthalene	ND	80.1	175	46	65.9	175	38	19-99	19	40
Acenaphthylene	ND	86.5	175	49	66.2	175	38	20-106	27	40
Acenaphthene	ND	86.3	175	49	72.1	175	41	10-132	18	40
Fluorene	ND	92.5	175	53	70.9	175	40	12-129	26	40
Phenanthrene	ND	93.7	175	53	77.5	175	44	15-121	19	40
Anthracene	ND	92.3	175	53	81.0	175	46	14-113	13	40
Fluoranthene	ND	101	175	58	86.8	175	50	10-142	15	40
Pyrene	4.7	107	175	58	95.0	175	51	17-129	12	40
Benz(a)anthracene	ND	102	175	58	89.4	175	51	10-137	14	40
Chrysene	ND	103	175	59	88.4	175	50	10-146	15	40
Hexachlorobenzene	ND	92.3	175	53	81.3	175	46	30-106	13	40
Pentachlorophenol	ND	82.3	175	47	72.6	175	41	10-123	13	40
Bis(2-ethylhexyl) Phthalate	ND	101	175	58	91.9	175	52	20-138	10	40
Benzo(b)fluoranthene	ND	105	175	60	89.8	175	51	23-122	16	40
Benzo(k)fluoranthene	ND	100	175	57	85.0	175	48	28-119	17	40
Benzo(a)pyrene	ND	98.7	175	56	84.8	175	48	13-126	15	40
Indeno(1,2,3-cd)pyrene	ND	105	175	60	88.8	175	51	22-129	16	40
Dibenz(a,h)anthracene	ND	99.6	175	57	84.3	175	48	27-123	17	40
Benzo(g,h,i)perylene	ND	101	175	58	83.7	175	48	20-121	19	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3520C	**Units:**	ug/L
Analysis Method:	8270D	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313137

	Lab Control Sample KWG1313137-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313137-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.32	5.00	66	3.27	5.00	65	43-98	1	30
2-Methylnaphthalene	3.74	5.00	75	3.72	5.00	74	38-102	0	30
Acenaphthylene	4.41	5.00	88	4.19	5.00	84	52-108	5	30
Acenaphthene	3.87	5.00	77	3.74	5.00	75	48-102	3	30
Fluorene	3.93	5.00	79	3.83	5.00	77	51-106	3	30
Hexachlorobenzene	3.39	5.00	68	3.86	5.00	77	55-105	13	30
Pentachlorophenol	3.56	5.00	71	3.42	5.00	68	33-106	4	30
Phenanthrene	3.88	5.00	78	3.96	5.00	79	56-103	2	30
Anthracene	3.45	5.00	69	3.77	5.00	75	55-103	9	30
Fluoranthene	3.53	5.00	71	3.85	5.00	77	56-110	9	30
Pyrene	4.06	5.00	81	4.37	5.00	87	59-109	7	30
Benz(a)anthracene	3.66	5.00	73	4.10	5.00	82	61-104	11	30
Chrysene	3.13	5.00	63	3.54	5.00	71	61-107	12	30
Bis(2-ethylhexyl) Phthalate	3.90	5.00	78	4.09	5.00	82	61-118	5	30
Benzo(b)fluoranthene	3.98	5.00	80	4.48	5.00	90	62-107	12	30
Benzo(k)fluoranthene	2.85	5.00	57 *	3.29	5.00	66	63-108	15	30
Benzo(a)pyrene	3.63	5.00	73	4.14	5.00	83	56-105	13	30
Indeno(1,2,3-cd)pyrene	5.12	5.00	102	5.68	5.00	114 *	63-108	10	30
Dibenz(a,h)anthracene	3.61	5.00	72	4.18	5.00	84	62-108	15	30
Benzo(g,h,i)perylene	3.14	5.00	63	3.59	5.00	72	62-108	13	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/05/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313114

	Lab Control Sample KWG1313114-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313114-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	138	250	55	146	250	58	27-93	6	40
2-Methylnaphthalene	143	250	57	147	250	59	27-96	3	40
Acenaphthylene	150	250	60	149	250	59	33-99	1	40
Acenaphthene	151	250	60	148	250	59	32-91	2	40
Fluorene	156	250	62	165	250	66	32-96	5	40
Phenanthrene	160	250	64	175	250	70	39-98	9	40
Anthracene	164	250	66	177	250	71	40-98	7	40
Fluoranthene	175	250	70	182	250	73	42-104	4	40
Pyrene	175	250	70	188	250	75	45-106	7	40
Benz(a)anthracene	177	250	71	187	250	75	44-108	6	40
Chrysene	172	250	69	180	250	72	46-108	4	40
Hexachlorobenzene	169	250	68	168	250	67	40-99	1	40
Pentachlorophenol	149	250	60	169	250	68	21-97	13	40
Bis(2-ethylhexyl) Phthalate	178	250	71	191	250	76	47-110	7	40
Benzo(b)fluoranthene	184	250	74	189	250	76	46-106	3	40
Benzo(k)fluoranthene	177	250	71	187	250	75	47-107	5	40
Benzo(a)pyrene	189	250	76	191	250	76	42-110	1	40
Indeno(1,2,3-cd)pyrene	192	250	77	196	250	78	47-109	2	40
Dibenz(a,h)anthracene	176	250	71	180	250	72	47-106	2	40
Benzo(g,h,i)perylene	177	250	71	184	250	74	44-108	4	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013
		Time Analyzed:	12:02

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1313137-3	**File ID:**	J:\MS26\DATA\120413\1204F005.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313137

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313137-1	J:\MS26\DATA\120413\1204F006.D	12/04/13	12:34
Duplicate Lab Control Sample	KWG1313137-2	J:\MS26\DATA\120413\1204F007.D	12/04/13	13:06
RM11E-MWS904-24_29'	K1312857-017	J:\MS26\DATA\120413\1204F021.D	12/04/13	20:37

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/05/2013
		Time Analyzed:	15:38

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313114-5	**File ID:**	J:\MS06\DATA\120513\1205F008.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313114

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313114-3	J:\MS06\DATA\120513\1205F009.D	12/05/13	16:15
Duplicate Lab Control Sample	KWG1313114-4	J:\MS06\DATA\120513\1205F010.D	12/05/13	16:55
RM11E-MWS004-24_29'MS	KWG1313114-1	J:\MS06\DATA\120513\1205F011.D	12/05/13	17:33
RM11E-MWS004-24_29'DMS	KWG1313114-2	J:\MS06\DATA\120513\1205F012.D	12/05/13	18:11
RM11E-MWS004-24_29'	K1312857-013	J:\MS06\DATA\120513\1205F013.D	12/05/13	18:49
RM11E-MWS001-24_29'	K1312857-006	J:\MS06\DATA\120513\1205F014.D	12/05/13	19:27
RM11E-MWS004-05_24'	K1312857-012	J:\MS06\DATA\120513\1205F015.D	12/05/13	20:05
RM11E-MWS504-24_29'	K1312857-016	J:\MS06\DATA\120513\1205F016.D	12/05/13	20:44
RM11E-MWS005-21_26'	K1312857-025	J:\MS06\DATA\120513\1205F017.D	12/05/13	21:22
RM11E-SL031	K1312857-026	J:\MS06\DATA\120513\1205F018.D	12/05/13	21:59
RM11E-SL030	K1312857-029	J:\MS06\DATA\120513\1205F019.D	12/05/13	22:37
RM11E-MWS001-5_24'	K1312857-005	J:\MS06\DATA\120513\1205F020.D	12/05/13	23:17
RM11E-MWS005-05_21'	K1312857-024	J:\MS06\DATA\120513\1205F021.D	12/05/13	23:55
RM11E-SL029	K1312857-028	J:\MS06\DATA\121013\1210F014.D	12/10/13	17:36
RM11E-SL028	K1312857-027	J:\MS06\DATA\121013\1210F015.D	12/10/13	18:14

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Water	**Date Analyzed:**	12/04/2013
		Time Analyzed:	12:34

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1313137-1	**File ID:**	J:\MS26\DATA\120413\1204F006.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313137

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313137-3	J:\MS26\DATA\120413\1204F005.D	12/04/13	12:02
RM11E-MWS904-24_29'	K1312857-017	J:\MS26\DATA\120413\1204F021.D	12/04/13	20:37

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/05/2013
		Time Analyzed:	16:15

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313114-3	**File ID:**	J:\MS06\DATA\120513\1205F009.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313114

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313114-5	J:\MS06\DATA\120513\1205F008.D	12/05/13	15:38
RM11E-MWS004-24_29'MS	KWG1313114-1	J:\MS06\DATA\120513\1205F011.D	12/05/13	17:33
RM11E-MWS004-24_29'DMS	KWG1313114-2	J:\MS06\DATA\120513\1205F012.D	12/05/13	18:11
RM11E-MWS004-24_29'	K1312857-013	J:\MS06\DATA\120513\1205F013.D	12/05/13	18:49
RM11E-MWS001-24_29'	K1312857-006	J:\MS06\DATA\120513\1205F014.D	12/05/13	19:27
RM11E-MWS004-05_24'	K1312857-012	J:\MS06\DATA\120513\1205F015.D	12/05/13	20:05
RM11E-MWS504-24_29'	K1312857-016	J:\MS06\DATA\120513\1205F016.D	12/05/13	20:44
RM11E-MWS005-21_26'	K1312857-025	J:\MS06\DATA\120513\1205F017.D	12/05/13	21:22
RM11E-SL031	K1312857-026	J:\MS06\DATA\120513\1205F018.D	12/05/13	21:59
RM11E-SL030	K1312857-029	J:\MS06\DATA\120513\1205F019.D	12/05/13	22:37
RM11E-MWS001-5_24'	K1312857-005	J:\MS06\DATA\120513\1205F020.D	12/05/13	23:17
RM11E-MWS005-05_21'	K1312857-024	J:\MS06\DATA\120513\1205F021.D	12/05/13	23:55
RM11E-SL029	K1312857-028	J:\MS06\DATA\121013\1210F014.D	12/10/13	17:36
RM11E-SL028	K1312857-027	J:\MS06\DATA\121013\1210F015.D	12/10/13	18:14

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/04/2013
Time Analyzed: 10:57

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS26\DATA\120413\1204F003.D
Instrument ID: MS26
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313458

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.3	243029	PASS
68	69	0	2	1.6	4821	PASS
69	198	0	100	20.4	305121	PASS
70	69	0	2	0.5	1609	PASS
127	198	10	80	37.6	562133	PASS
197	198	0	2	0.2	2437	PASS
198	442	30	100	43.9	1494016	PASS
199	198	5	9	6.7	100173	PASS
275	198	10	60	34.0	507306	PASS
365	442	1	50	2.0	69522	PASS
441	443	0	100	76.7	501824	PASS
442	442	100	100	100.0	3403605	PASS
443	442	15	24	19.2	654080	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313458-2	J:\MS26\DATA\120413\1204F004.D	12/04/2013	11:30	
Method Blank	KWG1313137-3	J:\MS26\DATA\120413\1204F005.D	12/04/2013	12:02	
Lab Control Sample	KWG1313137-1	J:\MS26\DATA\120413\1204F006.D	12/04/2013	12:34	
Duplicate Lab Control Sample	KWG1313137-2	J:\MS26\DATA\120413\1204F007.D	12/04/2013	13:06	
RM11E-MWS904-24_29'	K1312857-017	J:\MS26\DATA\120413\1204F021.D	12/04/2013	20:37	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/05/2013
Time Analyzed: 12:29

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\120513\1205F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313575

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
70	69	0	2	0.7	537	PASS
127	198	25	75	51.0	94085	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	184317	PASS
199	198	5	9	6.7	12433	PASS
275	198	10	30	25.4	46792	PASS
365	198	1	100	5.5	10214	PASS
441	443	0	100	77.1	16260	PASS
442	198	40	110	54.3	100082	PASS
443	442	15	24	21.1	21085	PASS
51	198	30	80	48.9	90220	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	39.9	73500	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313575-2	J:\MS06\DATA\120513\1205F004.D	12/05/2013	13:06	
Method Blank	KWG1313114-5	J:\MS06\DATA\120513\1205F008.D	12/05/2013	15:38	
Lab Control Sample	KWG1313114-3	J:\MS06\DATA\120513\1205F009.D	12/05/2013	16:15	
Duplicate Lab Control Sample	KWG1313114-4	J:\MS06\DATA\120513\1205F010.D	12/05/2013	16:55	
RM11E-MWS004-24_29'MS	KWG1313114-1	J:\MS06\DATA\120513\1205F011.D	12/05/2013	17:33	
RM11E-MWS004-24_29'DMS	KWG1313114-2	J:\MS06\DATA\120513\1205F012.D	12/05/2013	18:11	
RM11E-MWS004-24_29'	K1312857-013	J:\MS06\DATA\120513\1205F013.D	12/05/2013	18:49	
RM11E-MWS001-24_29'	K1312857-006	J:\MS06\DATA\120513\1205F014.D	12/05/2013	19:27	
RM11E-MWS004-05_24'	K1312857-012	J:\MS06\DATA\120513\1205F015.D	12/05/2013	20:05	
RM11E-MWS504-24_29'	K1312857-016	J:\MS06\DATA\120513\1205F016.D	12/05/2013	20:44	
RM11E-MWS005-21_26'	K1312857-025	J:\MS06\DATA\120513\1205F017.D	12/05/2013	21:22	
RM11E-SL031	K1312857-026	J:\MS06\DATA\120513\1205F018.D	12/05/2013	21:59	
RM11E-SL030	K1312857-029	J:\MS06\DATA\120513\1205F019.D	12/05/2013	22:37	
RM11E-MWS001-5_24'	K1312857-005	J:\MS06\DATA\120513\1205F020.D	12/05/2013	23:17	
RM11E-MWS005-05_21'	K1312857-024	J:\MS06\DATA\120513\1205F021.D	12/05/2013	23:55	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013
Time Analyzed: 10:27

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121013\1210F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313648

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	53.8	114002	PASS
68	69	0	2	0.5	461	PASS
69	198	0	100	47.8	101341	PASS
70	69	0	2	0.0	44	PASS
127	198	25	75	55.9	118424	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	211925	PASS
199	198	5	9	7.4	15717	PASS
275	198	10	30	23.5	49863	PASS
365	198	1	100	6.3	13246	PASS
441	443	0	100	81.8	14712	PASS
442	198	40	110	45.0	95391	PASS
443	442	15	24	18.8	17981	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313648-2	J:\MS06\DATA\121013\1210F004.D	12/10/2013	11:07	
RM11E-SL029	K1312857-028	J:\MS06\DATA\121013\1210F014.D	12/10/2013	17:36	
RM11E-SL028	K1312857-027	J:\MS06\DATA\121013\1210F015.D	12/10/2013	18:14	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Level ID	File ID
A	J:\MS06\DATA\120313\1203F005.D
B	J:\MS06\DATA\120313\1203F006.D
C	J:\MS06\DATA\120313\1203F007.D
D	J:\MS06\DATA\120313\1203F008.D
E	J:\MS06\DATA\120313\1203F009.D
F	J:\MS06\DATA\120313\1203F010.D
G	J:\MS06\DATA\120313\1203F011.D
H	J:\MS06\DATA\120313\1203F012.D
I	J:\MS06\DATA\120313\1203F013.D
J	J:\MS06\DATA\120313\1203F014.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	0.991	B	100	1.06	C	200	1.09	D	500	1.18	E	1000	1.20
	F	2000	1.23	G	3000	1.23	H	5000	1.26	I	7000	1.30	J	10000	1.30
2-Methylnaphthalene	A	50	0.555	B	100	0.614	C	200	0.585	D	500	0.649	E	1000	0.690
	F	2000	0.707	G	3000	0.685	H	5000	0.709	I	7000	0.737	J	10000	0.742
Acenaphthylene	A	50	1.63	B	100	2.02	C	200	1.89	D	500	2.02	E	1000	2.22
	F	2000	2.07	G	3000	2.16	H	5000	2.38	I	7000	2.42	J	10000	2.27
Acenaphthene	A	50	0.906	B	100	1.01	C	200	1.04	D	500	1.10	E	1000	1.18
	F	2000	1.10	G	3000	1.20	H	5000	1.30	I	7000	1.38	J	10000	1.31
Fluorene	A	50	1.17	B	100	1.42	C	200	1.40	D	500	1.44	E	1000	1.47
	F	2000	1.48	G	3000	1.51	H	5000	1.69	I	7000	1.76	J	10000	1.65
Phenanthrene	A	50	1.11	B	100	1.15	C	200	1.03	D	500	1.06	E	1000	1.14
	F	2000	1.11	G	3000	1.16	H	5000	1.27	I	7000	1.23	J	10000	1.34
Anthracene	A	50	1.13	B	100	1.03	C	200	1.07	D	500	1.11	E	1000	1.18
	F	2000	1.19	G	3000	1.21	H	5000	1.34	I	7000	1.32	J	10000	1.38
Fluoranthene	A	50	0.951	B	100	1.29	C	200	1.25	D	500	1.13	E	1000	1.30
	F	2000	1.30	G	3000	1.34	H	5000	1.44	I	7000	1.41	J	10000	1.52
Pyrene	A	50	1.11	B	100	1.46	C	200	1.32	D	500	1.36	E	1000	1.38
	F	2000	1.41	G	3000	1.42	H	5000	1.51	I	7000	1.40	J	10000	1.35
Benz(a)anthracene	A	50	1.11	B	100	1.17	C	200	1.10	D	500	1.16	E	1000	1.18
	F	2000	1.21	G	3000	1.24	H	5000	1.36	I	7000	1.26	J	10000	1.19
Chrysene	A	50	1.07	B	100	1.09	C	200	1.12	D	500	1.12	E	1000	1.18
	F	2000	1.17	G	3000	1.15	H	5000	1.24	I	7000	1.15	J	10000	1.05
Hexachlorobenzene				B	100	0.240	C	200	0.271	D	500	0.244	E	1000	0.284
	F	2000	0.280	G	3000	0.274	H	5000	0.297	I	7000	0.299	J	10000	0.317
Pentachlorophenol										D	500	0.133	E	1000	0.175
	F	2000	0.179	G	3000	0.181	H	5000	0.213	I	7000	0.205	J	10000	0.222
Bis(2-ethylhexyl) Phthalate							C	200	1.04	D	500	0.950	E	1000	1.01
	F	2000	1.05	G	3000	1.04	H	5000	1.13	I	7000	1.04	J	10000	0.945

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.979	B	100	1.01	C	200	0.977	D	500	1.11	E	1000	1.12
	F	2000	1.19	G	3000	1.22	H	5000	1.41	I	7000	1.41	J	10000	1.49
Benzo(k)fluoranthene	A	50	0.916	B	100	1.28	C	200	1.09	D	500	1.25	E	1000	1.20
	F	2000	1.23	G	3000	1.30	H	5000	1.42	I	7000	1.32	J	10000	1.30
Benzo(a)pyrene	A	50	0.879	B	100	1.04	C	200	0.897	D	500	1.01	E	1000	1.04
	F	2000	1.09	G	3000	1.16	H	5000	1.26	I	7000	1.24	J	10000	1.28
Indeno(1,2,3-cd)pyrene	A	50	0.710	B	100	0.822	C	200	0.729	D	500	0.865	E	1000	0.890
	F	2000	0.943	G	3000	0.964	H	5000	1.09	I	7000	1.09	J	10000	1.20
Dibenz(a,h)anthracene				B	100	0.873	C	200	0.866	D	500	0.931	E	1000	0.980
	F	2000	1.04	G	3000	1.05	H	5000	1.14	I	7000	1.13	J	10000	1.18
Benzo(g,h,i)perylene	A	50	0.875	B	100	0.937	C	200	0.956	D	500	1.03	E	1000	1.02
	F	2000	1.09	G	3000	1.07	H	5000	1.17	I	7000	1.14	J	10000	1.17
Nitrobenzene-d5				B	100	1.37	C	200	1.08	D	500	1.36	E	1000	1.28
	F	2000	1.39	G	3000	1.49	H	5000	1.53	I	7000	1.50	J	10000	1.49
2-Fluorobiphenyl				B	100	1.33	C	200	1.67	D	500	1.49	E	1000	1.58
	F	2000	1.46	G	3000	1.55	H	5000	1.72	I	7000	1.74	J	10000	1.63
2,4,6-Tribromophenol							C	200	0.142	D	500	0.143	E	1000	0.145
	F	2000	0.149	G	3000	0.158	H	5000	0.173	I	7000	0.173	J	10000	0.189
Terphenyl-d14				B	100	0.942	C	200	0.846	D	500	0.902	E	1000	0.893
	F	2000	0.925	G	3000	0.921	H	5000	1.02	I	7000	0.934	J	10000	0.857

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	8.8		≤ 20	1.19		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.6		≤ 20	0.667		0.300
Acenaphthylene	MS	AverageRF	% RSD	11.2		≤ 20	2.11		0.900
Acenaphthene	MS	AverageRF	% RSD	12.8		≤ 20	1.15		0.700
Fluorene	MS	AverageRF	% RSD	11.3		≤ 20	1.50		0.800
Phenanthrene	MS	AverageRF	% RSD	8.1		≤ 20	1.16		0.600
Anthracene	MS	AverageRF	% RSD	9.9		≤ 20	1.19		0.600
Fluoranthene	MS	AverageRF	% RSD	12.5		≤ 20	1.29		0.600
Pyrene	MS	AverageRF	% RSD	7.8		≤ 20	1.37		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	6.4		≤ 20	1.20		0.600
Chrysene	MS	AverageRF	% RSD	5.0		≤ 20	1.13		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	8.9		≤ 20	0.279		0.100
Pentachlorophenol	MS	AverageRF	% RSD	16.0		≤ 20	0.187		0.050
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	5.8		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	15.9		≤ 20	1.19		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	11.4		≤ 20	1.23		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.2		≤ 20	1.09		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	17.2		≤ 20	0.930		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	11.5		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.6		≤ 20	1.05		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	10.3		≤ 20	1.39		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	8.4		≤ 20	1.57		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	10.9		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	5.5		≤ 20	0.915		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12950
Units: ng/ml

File ID: J:\MS06\DATA\120313\1203F015.D
J:\MS06\DATA\120313\1203F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	1.19	1.22	3	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3100	0.667	0.689	3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.11	1.91	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	3000	1.15	1.15	0	NA	± 30 %	AverageRF
Fluorene	3000	3000	1.50	1.52	1	NA	± 30 %	AverageRF
Phenanthrene	3000	3000	1.16	1.15	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	1.19	1.21	1	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.29	1.29	0	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.36	-1	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.20	1.13	-6	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.13	1.08	-5	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2900	0.279	0.269	-4	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.187	0.198	6	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	1.02	0.991	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.19	1.32	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.23	1.17	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3200	1.09	1.14	5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.930	0.888	-4	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	1.02	1.00	-2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2900	1.05	1.00	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\102513\1025F023.D
B	J:\MS26\DATA\102513\1025F024.D
C	J:\MS26\DATA\102513\1025F025.D
D	J:\MS26\DATA\102513\1025F026.D
E	J:\MS26\DATA\102513\1025F027.D
F	J:\MS26\DATA\102513\1025F028.D
G	J:\MS26\DATA\102513\1025F029.D
H	J:\MS26\DATA\102513\1025F030.D
I	J:\MS26\DATA\102513\1025F031.D
J	J:\MS26\DATA\102513\1025F032.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.06	B	100	1.12	C	200	1.08	D	500	1.04	E	1000	1.04
	F	2000	1.00	G	3000	0.992	H	5000	0.976	I	7000	0.940	J	10000	0.905
2-Methylnaphthalene	A	50	0.428	B	100	0.516	C	200	0.508	D	500	0.527	E	1000	0.555
	F	2000	0.570	G	3000	0.563	H	5000	0.559	I	7000	0.544	J	10000	0.530
Acenaphthylene	A	50	1.55	B	100	1.69	C	200	1.59	D	500	1.57	E	1000	1.75
	F	2000	1.73	G	3000	1.84	H	5000	1.93	I	7000	1.92	J	10000	1.90
Acenaphthene	A	50	1.03	B	100	1.17	C	200	1.19	D	500	1.11	E	1000	1.15
	F	2000	1.10	G	3000	1.10	H	5000	1.11	I	7000	1.10	J	10000	1.09
Fluorene	A	50	1.36	B	100	1.49	C	200	1.48	D	500	1.43	E	1000	1.46
	F	2000	1.39	G	3000	1.39	H	5000	1.40	I	7000	1.38	J	10000	1.36
Hexachlorobenzene				B	100	0.402	C	200	0.380	D	500	0.371	E	1000	0.374
	F	2000	0.350	G	3000	0.350	H	5000	0.345	I	7000	0.335	J	10000	0.329
Pentachlorophenol										D	500	0.107	E	1000	0.126
	F	2000	0.150	G	3000	0.159	H	5000	0.179	I	7000	0.186	J	10000	0.194
Phenanthrene	A	50	1.03	B	100	1.17	C	200	1.09	D	500	1.07	E	1000	1.10
	F	2000	1.05	G	3000	1.05	H	5000	1.03	I	7000	1.00	J	10000	0.970
Anthracene	A	50	1.05	B	100	1.15	C	200	1.08	D	500	1.08	E	1000	1.11
	F	2000	1.07	G	3000	1.07	H	5000	1.06	I	7000	1.02	J	10000	0.984
Fluoranthene	A	50	1.20	B	100	1.29	C	200	1.22	D	500	1.21	E	1000	1.24
	F	2000	1.18	G	3000	1.19	H	5000	1.19	I	7000	1.15	J	10000	1.09
Pyrene	A	50	1.20	B	100	1.27	C	200	1.20	D	500	1.17	E	1000	1.17
	F	2000	1.16	G	3000	1.15	H	5000	1.11	I	7000	1.07	J	10000	1.06
Benz(a)anthracene	A	50	0.939	B	100	0.975	C	200	0.940	D	500	0.909	E	1000	0.933
	F	2000	0.940	G	3000	0.963	H	5000	0.975	I	7000	0.972	J	10000	0.978
Chrysene	A	50	1.16	B	100	1.19	C	200	1.17	D	500	1.11	E	1000	1.08
	F	2000	1.04	G	3000	1.05	H	5000	1.05	I	7000	1.00	J	10000	1.01
Bis(2-ethylhexyl) Phthalate				B	100	0.695	C	200	0.669	D	500	0.676	E	1000	0.696
	F	2000	0.705	G	3000	0.705	H	5000	0.693	I	7000	0.687	J	10000	0.687

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.788	B	100	0.794	C	200	0.818	D	500	0.845	E	1000	0.881
	F	2000	0.928	G	3000	0.980	H	5000	1.02	I	7000	1.04	J	10000	1.07
Benzo(k)fluoranthene	A	50	1.44	B	100	1.51	C	200	1.52	D	500	1.34	E	1000	1.32
	F	2000	1.22	G	3000	1.27	H	5000	1.23	I	7000	1.20	J	10000	1.19
Benzo(a)pyrene	A	50	0.803	B	100	0.794	C	200	0.797	D	500	0.791	E	1000	0.931
	F	2000	0.926	G	3000	0.958	H	5000	0.977	I	7000	0.974	J	10000	0.991
Indeno(1,2,3-cd)pyrene				B	100	0.486	C	200	0.451	D	500	0.508	E	1000	0.528
	F	2000	0.609	G	3000	0.664	H	5000	0.769						
Dibenz(a,h)anthracene	A	50	0.815	B	100	0.973	C	200	0.903	D	500	0.889	E	1000	0.929
	F	2000	0.942	G	3000	0.987	H	5000	1.02	I	7000	1.02	J	10000	1.04
Benzo(g,h,i)perylene	A	50	1.21	B	100	1.27	C	200	1.23	D	500	1.13	E	1000	1.16
	F	2000	1.12	G	3000	1.16	H	5000	1.13	I	7000	1.11	J	10000	1.11
Nitrobenzene-d5				B	100	1.05	C	200	0.952	D	500	0.960	E	1000	0.973
	F	2000	1.01	G	3000	0.975	H	5000	0.978	I	7000	0.974	J	10000	0.983
2-Fluorobiphenyl				B	100	1.37	C	200	1.43	D	500	1.45	E	1000	1.62
	F	2000	1.52	G	3000	1.52	H	5000	1.52	I	7000	1.49	J	10000	1.47
2,4,6-Tribromophenol							C	200	0.149	D	500	0.174	E	1000	0.190
	F	2000	0.196	G	3000	0.204	H	5000	0.214	I	7000	0.214	J	10000	0.217
Terphenyl-d14				B	100	1.02	C	200	0.981	D	500	0.929	E	1000	0.912
	F	2000	0.878	G	3000	0.881	H	5000	0.861	I	7000	0.839	J	10000	0.832

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† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/25/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12868
Instrument ID: MS26

Column: MS

		Calibration Evaluation					RRF Evaluation	
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	6.6		≤ 20	1.02		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	7.8		≤ 20	0.530		0.300
Acenaphthylene	MS	AverageRF	% RSD	8.4		≤ 20	1.75		0.900
Acenaphthene	MS	AverageRF	% RSD	4.1		≤ 20	1.12		0.700
Fluorene	MS	AverageRF	% RSD	3.4		≤ 20	1.41		0.800
Hexachlorobenzene	MS	AverageRF	% RSD	6.6		≤ 20	0.359		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.157		0.050
Phenanthrene	MS	AverageRF	% RSD	5.3		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	4.1		≤ 20	1.07		0.600
Fluoranthene	MS	AverageRF	% RSD	4.5		≤ 20	1.19		0.600
Pyrene	MS	AverageRF	% RSD	5.4		≤ 20	1.16		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	2.5		≤ 20	0.952		0.600
Chrysene	MS	AverageRF	% RSD	6.3		≤ 20	1.09		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	1.7		≤ 20	0.690		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	11.7		≤ 20	0.917		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	9.5		≤ 20	1.32		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	9.7		≤ 20	0.894		0.600
Indeno(1,2,3-cd)pyrene	MS	Quadratic	COD	1.000		≥ 0.990	0.574		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	7.3		≤ 20	0.951		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	4.8		≤ 20	1.16		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	2.8		≤ 20	0.983		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	4.7		≤ 20	1.49		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	12.1		≤ 20	0.195		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	7.1		≤ 20	0.904		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 10/25/2013
Date Analyzed: 10/26/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12868
Units: ng/ml

File ID: J:\MS26\DATA\102513\1025F033.D
J:\MS26\DATA\102513\1025F034.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3200	1.02	1.09	8	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3600	0.530	0.638	20	NA	± 30 %	AverageRF
Acenaphthylene	3000	3400	1.75	1.98	13	NA	± 30 %	AverageRF
Acenaphthene	3000	3300	1.12	1.22	10	NA	± 30 %	AverageRF
Fluorene	3000	3200	1.41	1.53	8	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3200	0.359	0.380	6	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.157	0.180	NA	8	± 30 %	Quadratic
Phenanthrene	3000	3200	1.06	1.13	7	NA	± 30 %	AverageRF
Anthracene	3000	3300	1.07	1.16	8	NA	± 30 %	AverageRF
Fluoranthene	3000	3200	1.19	1.28	7	NA	± 30 %	AverageRF
Pyrene	3000	3300	1.16	1.27	10	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	3000	0.952	0.953	0	NA	± 30 %	AverageRF
Chrysene	3000	3100	1.09	1.11	2	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3300	0.690	0.748	8	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3600	0.917	1.10	20	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.32	1.27	-4	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3600	0.894	1.08	21	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3400	0.574	0.765	NA	12	± 30 %	Quadratic
Dibenz(a,h)anthracene	3000	3200	0.951	1.03	8	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	3100	1.16	1.20	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/04/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 10/25/2013
Calibration ID: CAL12868
Analysis Lot: KWG1313458
Units: ng/ml

File ID: J:\MS26\DATA\120413\1204F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
Naphthalene	3000	2900	0.700	1.02	0.971	-4	NA		± 20 %	AverageRF
2-Methylnaphthalene	3000	3300	0.300	0.530	0.585	10	NA		± 20 %	AverageRF
Acenaphthylene	3000	3200	0.900	1.75	1.86	6	NA		± 20 %	AverageRF
Acenaphthene	3000	2900	0.700	1.12	1.07	-4	NA		± 20 %	AverageRF
Fluorene	3000	2900	0.800	1.41	1.37	-3	NA		± 20 %	AverageRF
Hexachlorobenzene	3000	2900	0.100	0.359	0.346	-4	NA		± 20 %	AverageRF
Pentachlorophenol	3000	2500	0.050	0.157	0.133	NA	-17		± 20 %	Quadratic
Phenanthrene	3000	2800	0.600	1.06	1.00	-5	NA		± 20 %	AverageRF
Anthracene	3000	2900	0.600	1.07	1.02	-4	NA		± 20 %	AverageRF
Fluoranthene	3000	2900	0.600	1.19	1.14	-5	NA		± 20 %	AverageRF
Pyrene	3000	3200	0.600	1.16	1.22	5	NA		± 20 %	AverageRF
Benz(a)anthracene	3000	3100	0.600	0.952	0.978	3	NA		± 20 %	AverageRF
Chrysene	3000	2600	0.600	1.09	0.951	-13	NA		± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3100	0.010	0.690	0.713	3	NA		± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3300	0.600	0.917	1.02	12	NA		± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2500	0.600	1.32	1.08	-18	NA		± 20 %	AverageRF
Benzo(a)pyrene	3000	3200	0.600	0.894	0.953	7	NA		± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3900	0.500	0.574	0.928	NA	30	*	± 20 %	Quadratic
Dibenz(a,h)anthracene	3000	3100	0.400	0.951	0.982	3	NA		± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2600	0.500	1.16	1.00	-14	NA		± 20 %	AverageRF
Nitrobenzene-d5	3000	2800	0.01	0.983	0.914	-7	NA		± 20 %	AverageRF
2-Fluorobiphenyl	3000	2800	0.01	1.49	1.38	-7	NA		± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.195	0.179	-8	NA		± 20 %	AverageRF
Terphenyl-d14	3000	2900	0.01	0.904	0.864	-4	NA		± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/05/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313575
Units: ng/ml

File ID: J:\MS06\DATA\120513\1205F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2700	0.700	1.19	1.06	-11	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2800	0.300	0.667	0.627	-6	NA	± 20 %	AverageRF
Acenaphthylene	3000	2600	0.900	2.11	1.86	-12	NA	± 20 %	AverageRF
Acenaphthene	3000	2700	0.700	1.15	1.05	-9	NA	± 20 %	AverageRF
Fluorene	3000	2700	0.800	1.50	1.35	-10	NA	± 20 %	AverageRF
Phenanthrene	3000	2600	0.600	1.16	1.01	-13	NA	± 20 %	AverageRF
Anthracene	3000	2700	0.600	1.19	1.09	-9	NA	± 20 %	AverageRF
Fluoranthene	3000	2700	0.600	1.29	1.17	-10	NA	± 20 %	AverageRF
Pyrene	3000	2700	0.600	1.37	1.24	-10	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2800	0.600	1.20	1.10	-8	NA	± 20 %	AverageRF
Chrysene	3000	2600	0.600	1.13	0.997	-12	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2700	0.100	0.279	0.255	-9	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2600	0.050	0.187	0.165	-12	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2700	0.010	1.02	0.931	-9	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	2900	0.600	1.19	1.17	-2	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2800	0.600	1.23	1.14	-7	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	2900	0.600	1.09	1.07	-2	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3000	0.500	0.930	0.945	2	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2700	0.400	1.02	0.914	-11	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.500	1.05	0.963	-8	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3000	0.01	1.39	1.40	1	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2500	0.01	1.57	1.31	-17	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2700	0.01	0.159	0.144	-10	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2600	0.01	0.915	0.793	-13	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313648
Units: ng/ml

File ID: J:\MS06\DATA\121013\1210F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2800	0.700	1.19	1.11	-6	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2900	0.300	0.667	0.635	-5	NA	± 20 %	AverageRF
Acenaphthylene	3000	3000	0.900	2.11	2.11	0	NA	± 20 %	AverageRF
Acenaphthene	3000	3000	0.700	1.15	1.16	0	NA	± 20 %	AverageRF
Fluorene	3000	3000	0.800	1.50	1.52	2	NA	± 20 %	AverageRF
Phenanthrene	3000	2700	0.600	1.16	1.06	-9	NA	± 20 %	AverageRF
Anthracene	3000	2800	0.600	1.19	1.10	-8	NA	± 20 %	AverageRF
Fluoranthene	3000	2800	0.600	1.29	1.20	-7	NA	± 20 %	AverageRF
Pyrene	3000	2800	0.600	1.37	1.28	-7	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2900	0.600	1.20	1.15	-4	NA	± 20 %	AverageRF
Chrysene	3000	2900	0.600	1.13	1.08	-5	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2800	0.100	0.279	0.264	-5	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2600	0.050	0.187	0.161	-14	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	0.010	1.02	1.00	-2	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3000	0.600	1.19	1.19	0	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.23	1.27	3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3100	0.600	1.09	1.12	2	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2800	0.500	0.930	0.869	-7	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2600	0.400	1.02	0.870	-15	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.500	1.05	0.948	-9	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3000	0.01	1.39	1.40	1	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2900	0.01	1.57	1.53	-3	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.159	0.148	-7	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2800	0.01	0.915	0.843	-8	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313575
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1205F003.D	GC/MS Tuning - Generic	KWG1313575-1	12/5/2013	12:29		12/5/2013	12:58
1205F004.D	Continuing Calibration Verification	KWG1313575-2	12/5/2013	13:06		12/5/2013	13:34
1205F008.D	Method Blank	KWG1313114-5	12/5/2013	15:38		12/5/2013	16:07
1205F009.D	Lab Control Sample	KWG1313114-3	12/5/2013	16:15		12/5/2013	16:43
1205F010.D	Duplicate Lab Control Sample	KWG1313114-4	12/5/2013	16:55		12/5/2013	17:24
1205F011.D	RM11E-MWS004-24_29'MS	KWG1313114-1	12/5/2013	17:33		12/5/2013	18:01
1205F012.D	RM11E-MWS004-24_29'DMS	KWG1313114-2	12/5/2013	18:11		12/5/2013	18:40
1205F013.D	RM11E-MWS004-24_29'	K1312857-013	12/5/2013	18:49		12/5/2013	19:17
1205F014.D	RM11E-MWS001-24_29'	K1312857-006	12/5/2013	19:27		12/5/2013	19:55
1205F015.D	RM11E-MWS004-05_24'	K1312857-012	12/5/2013	20:05		12/5/2013	20:33
1205F016.D	RM11E-MWS504-24_29'	K1312857-016	12/5/2013	20:44		12/5/2013	21:12
1205F017.D	RM11E-MWS005-21_26'	K1312857-025	12/5/2013	21:22		12/5/2013	21:50
1205F018.D	RM11E-SL031	K1312857-026	12/5/2013	21:59		12/5/2013	22:27
1205F019.D	RM11E-SL030	K1312857-029	12/5/2013	22:37		12/5/2013	23:05
1205F020.D	RM11E-MWS001-5_24'	K1312857-005	12/5/2013	23:17		12/5/2013	23:46
1205F021.D	RM11E-MWS005-05_21'	K1312857-024	12/5/2013	23:55		12/6/2013	00:23
1205F022.D	ZZZZZZ	ZZZZZZ	12/6/2013	00:32		12/6/2013	01:01
1205F023.D	ZZZZZZ	ZZZZZZ	12/6/2013	01:09		12/6/2013	01:37

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313648
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F003.D	GC/MS Tuning - Generic	KWG1313648-1	12/10/2013	10:27		12/10/2013	10:55
1210F004.D	Continuing Calibration Verification	KWG1313648-2	12/10/2013	11:07		12/10/2013	11:35
1210F005.D	ZZZZZZ	ZZZZZZ	12/10/2013	11:50		12/10/2013	12:18
1210F006.D	ZZZZZZ	ZZZZZZ	12/10/2013	12:34		12/10/2013	13:02
1210F007.D	ZZZZZZ	ZZZZZZ	12/10/2013	13:12		12/10/2013	13:40
1210F008.D	ZZZZZZ	ZZZZZZ	12/10/2013	13:51		12/10/2013	14:19
1210F009.D	ZZZZZZ	ZZZZZZ	12/10/2013	14:28		12/10/2013	14:56
1210F010.D	ZZZZZZ	ZZZZZZ	12/10/2013	15:06		12/10/2013	15:34
1210F011.D	ZZZZZZ	ZZZZZZ	12/10/2013	15:44		12/10/2013	16:12
1210F012.D	ZZZZZZ	ZZZZZZ	12/10/2013	16:22		12/10/2013	16:50
1210F013.D	ZZZZZZ	ZZZZZZ	12/10/2013	16:59		12/10/2013	17:27
1210F014.D	RM11E-SL029	K1312857-028	12/10/2013	17:36		12/10/2013	18:04
1210F015.D	RM11E-SL028	K1312857-027	12/10/2013	18:14		12/10/2013	18:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313458
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1204F003.D	GC/MS Tuning - Generic	KWG1313458-1	12/4/2013	10:57		12/4/2013	11:21
1204F004.D	Continuing Calibration Verification	KWG1313458-2	12/4/2013	11:30		12/4/2013	11:54
1204F005.D	Method Blank	KWG1313137-3	12/4/2013	12:02		12/4/2013	12:26
1204F006.D	Lab Control Sample	KWG1313137-1	12/4/2013	12:34		12/4/2013	12:58
1204F007.D	Duplicate Lab Control Sample	KWG1313137-2	12/4/2013	13:06		12/4/2013	13:30
1204F008.D	ZZZZZZ	ZZZZZZ	12/4/2013	13:38		12/4/2013	14:02
1204F009.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:11		12/4/2013	14:35
1204F010.D	ZZZZZZ	ZZZZZZ	12/4/2013	14:43		12/4/2013	15:07
1204F011.D	ZZZZZZ	ZZZZZZ	12/4/2013	15:15		12/4/2013	15:39
1204F012.D	ZZZZZZ	ZZZZZZ	12/4/2013	15:47		12/4/2013	16:11
1204F013.D	ZZZZZZ	ZZZZZZ	12/4/2013	16:20		12/4/2013	16:44
1204F014.D	ZZZZZZ	ZZZZZZ	12/4/2013	16:52		12/4/2013	17:16
1204F015.D	ZZZZZZ	ZZZZZZ	12/4/2013	17:24		12/4/2013	17:48
1204F016.D	ZZZZZZ	ZZZZZZ	12/4/2013	17:56		12/4/2013	18:20
1204F017.D	ZZZZZZ	ZZZZZZ	12/4/2013	18:29		12/4/2013	18:53
1204F018.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:01		12/4/2013	19:25
1204F019.D	ZZZZZZ	ZZZZZZ	12/4/2013	19:33		12/4/2013	19:57
1204F020.D	ZZZZZZ	ZZZZZZ	12/4/2013	20:05		12/4/2013	20:29
1204F021.D	RM11E-MWS904-24_29'	K1312857-017	12/4/2013	20:37		12/4/2013	21:01
1204F022.D	ZZZZZZ	ZZZZZZ	12/4/2013	21:10		12/4/2013	21:34
1204F023.D	ZZZZZZ	ZZZZZZ	12/4/2013	21:42		12/4/2013	22:06
1204F024.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:14		12/4/2013	22:38
1204F025.D	ZZZZZZ	ZZZZZZ	12/4/2013	22:46		12/4/2013	23:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1312857
Date Extracted: 11/25/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Extraction Lot: KWG1313137
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS904-24_29'	K1312857-017	11/21/13	11/22/13	940ml	2ml	NA	
Method Blank	KWG1313137-3	NA	NA	1060ml	2ml	NA	
Lab Control Sample	KWG1313137-1	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1313137-2	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1312857
Date Extracted: 11/25/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1313114
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS001-5_24'	K1312857-005	11/21/13	11/22/13	40.079g	2ml	83.0	
RM11E-MWS001-24_29'	K1312857-006	11/21/13	11/22/13	40.343g	2ml	72.4	
RM11E-MWS004-05_24'	K1312857-012	11/21/13	11/22/13	40.287g	2ml	80.2	
RM11E-MWS004-24_29'	K1312857-013	11/21/13	11/22/13	40.137g	2ml	70.9	
RM11E-MWS504-24_29'	K1312857-016	11/21/13	11/22/13	40.382g	2ml	70.6	
RM11E-MWS005-05_21'	K1312857-024	11/22/13	11/22/13	40.190g	2ml	80.5	
RM11E-MWS005-21_26'	K1312857-025	11/22/13	11/22/13	40.323g	2ml	72.3	
RM11E-SL031	K1312857-026	11/22/13	11/22/13	40.143g	2ml	90.2	
RM11E-SL028	K1312857-027	11/22/13	11/22/13	40.422g	2ml	85.5	
RM11E-SL029	K1312857-028	11/22/13	11/22/13	40.098g	2ml	89.0	
RM11E-SL030	K1312857-029	11/22/13	11/22/13	40.443g	2ml	84.2	
Method Blank	KWG1313114-5	NA	NA	40.443g	2ml	NA	
RM11E-MWS004-24_29'MS	KWG1313114-1	11/21/13	11/22/13	40.203g	2ml	70.9	
RM11E-MWS004-24_29'DMS	KWG1313114-2	11/21/13	11/22/13	40.226g	2ml	70.9	
Lab Control Sample	KWG1313114-3	NA	NA	20.000g	2ml	NA	
Duplicate Lab Control Sample	KWG1313114-4	NA	NA	20.000g	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 4, 2014

Analytical Report for Service Request No: K1312857
Revised Service Request No: K1312857.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental R1/FS Investigation/487.002.004

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on November 01, 2013. For your reference, these analyses have been assigned our service request number K1312857.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
9:52 am, Mar 06, 2014

GS/lb

cc: James McAteer, QC/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1312857
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	11/21/13 to 11/22/13
Sample Matrix:	Water and Soil		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and twenty-nine soil samples were received for analysis at ALS Environmental between 11/21/13 and 11/22/13. Except as noted on the cooler receipt and preservation form included in this data package the samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C or frozen at –20°C as required upon receipt at the laboratory. Additional instructions were received from Erin Carroll Hughes via e-mail on November 27, December 2, and December 4, 2013.

Chlorinated Pesticides by GC/MS/MS

Calibration Verification Exceptions:
The upper control criterion was exceeded for Hexachlorobenzene-13C6 (surrogate) in Continuing Calibration Verification (CCV) MS21\1210F005.D. The analyte in question was not originally included in the list of analytes to be reported for pesticides on this project. The affected results were flagged to indicate the issue. No further corrective action was possible.

Method Blank Exceptions:
The Method Blank KWG1313368-5 contained low levels of Hexachlorobenzene above the Method Reporting Limit (MRL). In accordance with ALS QA/QC policy, all sample results less than twenty times the level found in the Method Blank were flagged as estimated. The affected samples were not re-extracted and re-analyzed because the analyte in question was not originally included in the list of analytes to be reported for pesticides on this project.

Surrogate Exceptions:
The control criteria for Hexachlorobenzene-13C6 in sample RM11E-MWS005-05_21' and the associated replicate Matrix Spike (MS/MSD) analyses were not applicable. The analysis of the samples required dilutions, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The recovery of Hexachlorobenzene in sample RM11E-MWS005-05_21'MS was outside the control limits listed in the results summary. The limits are default values in use until statistical control limits are generated for the analyte in question. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Elevated Detection Limits:
The detection limit was elevated for Hexachlorobenzene in sample RM11E-MWS005-05_21'. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MWS001-5_24'	K1312857-005	11/21/2013	11/22/2013
RM11E-MWS001-24_29'	K1312857-006	11/21/2013	11/22/2013
RM11E-MWS004-05_24'	K1312857-012	11/21/2013	11/22/2013
RM11E-MWS004-24_29'	K1312857-013	11/21/2013	11/22/2013
RM11E-MWS504-24_29'	K1312857-016	11/21/2013	11/22/2013
RM11E-MWS904-24_29'	K1312857-017	11/21/2013	11/22/2013
RM11E-MWS005-05_21'	K1312857-024	11/22/2013	11/22/2013
RM11E-MWS005-21_26'	K1312857-025	11/22/2013	11/22/2013
RM11E-SL031	K1312857-026	11/22/2013	11/22/2013
RM11E-SL028	K1312857-027	11/22/2013	11/22/2013
RM11E-SL029	K1312857-028	11/22/2013	11/22/2013
RM11E-SL030	K1312857-029	11/22/2013	11/22/2013
RM11E-G079	K1312857-030	10/31/2013	11/01/2013
RM11E-MWS005-05_21'MS	KWG1313175-1	11/22/2013	11/22/2013
RM11E-MWS005-05_21'DMS	KWG1313175-2	11/22/2013	11/22/2013
RM11E-G079MS	KWG1313368-1	10/31/2013	11/01/2013
RM11E-G079DMS	KWG1313368-2	10/31/2013	11/01/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Water	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS904-24_29'	**Units:**	ng/L
Lab Code:	K1312857-017	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.0	0.27	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	72	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313244-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.29**	J	1.0	0.27	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	61	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1313244-1	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**19.7**		1.0	0.27	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	71	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1313244-2	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**19.8**		1.0	0.27	1	11/27/13	12/03/13	KWG1313244	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	70	5-120	12/03/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS001-5_24'	**Units:**	ug/Kg
Lab Code:	K1312857-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.094**		0.092	0.092	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	90	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS001-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	70	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS004-05_24'	**Units:**	ug/Kg
Lab Code:	K1312857-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	68	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS004-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	59	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/21/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS504-24_29'	**Units:**	ug/Kg
Lab Code:	K1312857-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	54	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.62	0.43	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	86	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS005-21_26'	**Units:**	ug/Kg
Lab Code:	K1312857-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	93	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL031	**Units:**	ug/Kg
Lab Code:	K1312857-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	93	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL028	**Units:**	ug/Kg
Lab Code:	K1312857-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.095**		0.092	0.092	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	97	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL029	**Units:**	ug/Kg
Lab Code:	K1312857-028	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	42	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	11/22/2013
Sample Matrix:	Soil	**Date Received:**	11/22/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-SL030	**Units:**	ug/Kg
Lab Code:	K1312857-029	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/09/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	94	5-120	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	10/31/2013
Sample Matrix:	Sediment	**Date Received:**	11/01/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G079	**Units:**	ug/Kg
Lab Code:	K1312857-030	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.43**	B	0.092	0.092	1	12/03/13	12/10/13	KWG1313368	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	91	5-120	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313175-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.092	0.092	1	11/26/13	12/06/13	KWG1313175	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	62	5-120	12/06/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313368-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**1.1**		0.092	0.092	1	12/03/13	12/10/13	KWG1313368	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	78	5-120	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004		
Sample Matrix:	Water		

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	Percent
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Sur1
RM11E-MWS904-24_29'	K1312857-017	72
Method Blank	KWG1313244-3	61
Lab Control Sample	KWG1313244-1	71
Duplicate Lab Control Sample	KWG1313244-2	70

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004		
Sample Matrix:	Soil		

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	Percent
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Sur1	
RM11E-MWS001-5_24'	K1312857-005	90	
RM11E-MWS001-24_29'	K1312857-006	70	
RM11E-MWS004-05_24'	K1312857-012	68	
RM11E-MWS004-24_29'	K1312857-013	59	
RM11E-MWS504-24_29'	K1312857-016	54	
RM11E-MWS005-05_21'	K1312857-024	86	#
RM11E-MWS005-21_26'	K1312857-025	93	
RM11E-SL031	K1312857-026	93	
RM11E-SL028	K1312857-027	97	
RM11E-SL029	K1312857-028	42	
RM11E-SL030	K1312857-029	94	
RM11E-G079	K1312857-030	91	
Method Blank	KWG1313175-5	62	
Method Blank	KWG1313368-5	78	
RM11E-MWS005-05_21'MS	KWG1313175-1	75	#
RM11E-MWS005-05_21'DMS	KWG1313175-2	94	#
RM11E-G079MS	KWG1313368-1	86	
RM11E-G079DMS	KWG1313368-2	78	
Lab Control Sample	KWG1313175-3	72	
Duplicate Lab Control Sample	KWG1313175-4	44	
Lab Control Sample	KWG1313368-3	74	
Duplicate Lab Control Sample	KWG1313368-4	68	

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013
		Time Analyzed:	16:04

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120313\1203F019.D	**Lab Code:**	KWG1313406-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313406
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	RT	Area	RT
	Results ==>	62,259	15.30	9,119	11.03
	Upper Limit ==>	124,517	15.80	45,597	11.53
	Lower Limit ==>	31,129	14.80	456	10.53
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313244-3	74,423	15.30	6,775	11.02
Lab Control Sample	KWG1313244-1	68,296	15.30	7,189	11.02
Duplicate Lab Control Sample	KWG1313244-2	70,224	15.30	7,315	11.02
RM11E-MWS904-24_29'	K1312857-017	68,454	15.30	7,309	11.02

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/06/2013
		Time Analyzed:	10:10

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120613\1206F004.D	**Lab Code:**	KWG1313576-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313576
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	72,580	15.33	11,135	11.04
	Upper Limit ==>	145,160	15.83	55,676	11.54
	Lower Limit ==>	36,290	14.83	557	10.54
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313175-5	63,490	15.34	5,834	11.04
Lab Control Sample	KWG1313175-3	59,326	15.34	6,350	11.04
Duplicate Lab Control Sample	KWG1313175-4	65,286	15.34	4,278	11.04
RM11E-MWS004-05_24'	K1312857-012	55,146	15.39	5,572	11.07
RM11E-MWS004-24_29'	K1312857-013	51,022	15.38	4,480	11.07
RM11E-MWS504-24_29'	K1312857-016	53,866	15.37	4,293	11.06
RM11E-MWS005-21_26'	K1312857-025	59,161	15.39	8,152	11.06
RM11E-SL031	K1312857-026	60,167	15.38	8,265	11.06

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/09/2013
		Time Analyzed:	13:06

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\120913\1209F004.D	**Lab Code:**	KWG1313599-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313599
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	60,969	15.30	8,509	11.03
	Upper Limit ==>	121,938	15.80	42,544	11.53
	Lower Limit ==>	30,485	14.80	425	10.53
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
RM11E-SL028	K1312857-027	61,036	15.32	8,803	11.03
RM11E-SL029	K1312857-028	56,139	15.34	3,527	11.04
RM11E-SL030	K1312857-029	50,025	15.36	6,937	11.05
RM11E-MWS005-05_21'MS	KWG1313175-1	47,539	15.36	527	11.05
RM11E-MWS005-05_21'DMS	KWG1313175-2	48,493	15.35	677	11.05
RM11E-MWS005-05_21'	K1312857-024	48,730	15.35	618	11.04
RM11E-MWS001-5_24'	K1312857-005	43,994	15.38	5,843	11.05
RM11E-MWS001-24_29'	K1312857-006	42,954	15.34	4,466	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013
		Time Analyzed:	16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\121013\1210F005.D	**Lab Code:**	KWG1313638-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313638
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	54,042	15.32	11,562	11.04
	Upper Limit ==>	108,084	15.82	57,808	11.54
	Lower Limit ==>	27,021	14.82	578	10.54
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313368-5	58,140	15.32	6,718	11.04
Lab Control Sample	KWG1313368-3	57,091	15.32	6,234	11.04
Duplicate Lab Control Sample	KWG1313368-4	56,733	15.32	5,684	11.04
RM11E-G079	K1312857-030	56,148	15.33	7,528	11.04
RM11E-G079MS	KWG1313368-1	57,060	15.34	7,296	11.04
RM11E-G079DMS	KWG1313368-2	53,143	15.34	6,143	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/09/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MWS005-05_21'	**Units:**	ug/Kg
Lab Code:	K1312857-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

		RM11E-MWS005-05_21'MS KWG1313175-1 Matrix Spike			RM11E-MWS005-05_21'DMS KWG1313175-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	ND	1.59	1.23	130 *	1.34	1.23	110	50-120	17	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G079	**Units:**	ug/Kg
Lab Code:	K1312857-030	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

		RM11E-G079MS KWG1313368-1 Matrix Spike			RM11E-G079DMS KWG1313368-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	0.43	1.14	1.22	58	1.18	1.22	61	50-120	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water	**Date Analyzed:**	12/03/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313244

	Lab Control Sample KWG1313244-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313244-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	19.7	20.0	98	19.8	20.0	99	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313175

	Lab Control Sample KWG1313175-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313175-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	2.07	2.00	104	2.06	2.00	103	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1313368

	Lab Control Sample KWG1313368-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313368-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	1.84	2.00	92	1.87	2.00	94	50-120	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	19:13

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313244-3	**File ID:**	J:\MS21\DATA\120313\1203F026.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313244

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313244-1	J:\MS21\DATA\120313\1203F027.D	12/03/13	19:40
Duplicate Lab Control Sample	KWG1313244-2	J:\MS21\DATA\120313\1203F028.D	12/03/13	20:07
RM11E-MWS904-24_29'	K1312857-017	J:\MS21\DATA\120313\1203F029.D	12/03/13	20:34

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013
		Time Analyzed:	15:16

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313175-5	**File ID:**	J:\MS21\DATA\120613\1206F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313175-3	J:\MS21\DATA\120613\1206F007.D	12/06/13	15:55
Duplicate Lab Control Sample	KWG1313175-4	J:\MS21\DATA\120613\1206F008.D	12/06/13	16:20
RM11E-MWS004-05_24'	K1312857-012	J:\MS21\DATA\120613\1206F014.D	12/06/13	19:04
RM11E-MWS004-24_29'	K1312857-013	J:\MS21\DATA\120613\1206F015.D	12/06/13	19:32
RM11E-MWS504-24_29'	K1312857-016	J:\MS21\DATA\120613\1206F016.D	12/06/13	19:59
RM11E-MWS005-21_26'	K1312857-025	J:\MS21\DATA\120613\1206F017.D	12/06/13	20:26
RM11E-SL031	K1312857-026	J:\MS21\DATA\120613\1206F018.D	12/06/13	20:53
RM11E-SL028	K1312857-027	J:\MS21\DATA\120913\1209F006.D	12/09/13	14:00
RM11E-SL029	K1312857-028	J:\MS21\DATA\120913\1209F007.D	12/09/13	14:27
RM11E-SL030	K1312857-029	J:\MS21\DATA\120913\1209F008.D	12/09/13	14:54
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120913\1209F009.D	12/09/13	15:21
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120913\1209F010.D	12/09/13	15:48
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120913\1209F011.D	12/09/13	16:16
RM11E-MWS001-5_24'	K1312857-005	J:\MS21\DATA\120913\1209F012.D	12/09/13	16:43
RM11E-MWS001-24_29'	K1312857-006	J:\MS21\DATA\120913\1209F013.D	12/09/13	17:10

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013
		Time Analyzed:	18:43

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313368-5	**File ID:**	J:\MS21\DATA\121013\1210F009.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313368-3	J:\MS21\DATA\121013\1210F010.D	12/10/13	19:11
Duplicate Lab Control Sample	KWG1313368-4	J:\MS21\DATA\121013\1210F011.D	12/10/13	19:38
RM11E-G079	K1312857-030	J:\MS21\DATA\121013\1210F015.D	12/10/13	21:27
RM11E-G079MS	KWG1313368-1	J:\MS21\DATA\121013\1210F016.D	12/10/13	21:54
RM11E-G079DMS	KWG1313368-2	J:\MS21\DATA\121013\1210F017.D	12/10/13	22:21

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water	**Date Analyzed:**	12/03/2013
		Time Analyzed:	19:40

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313244-1	**File ID:**	J:\MS21\DATA\120313\1203F027.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313244

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313244-3	J:\MS21\DATA\120313\1203F026.D	12/03/13	19:13
RM11E-MWS904-24_29'	K1312857-017	J:\MS21\DATA\120313\1203F029.D	12/03/13	20:34

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/06/2013
		Time Analyzed:	15:55

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313175-3	**File ID:**	J:\MS21\DATA\120613\1206F007.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313175

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313175-5	J:\MS21\DATA\120613\1206F006.D	12/06/13	15:16
RM11E-MWS004-05_24'	K1312857-012	J:\MS21\DATA\120613\1206F014.D	12/06/13	19:04
RM11E-MWS004-24_29'	K1312857-013	J:\MS21\DATA\120613\1206F015.D	12/06/13	19:32
RM11E-MWS504-24_29'	K1312857-016	J:\MS21\DATA\120613\1206F016.D	12/06/13	19:59
RM11E-MWS005-21_26'	K1312857-025	J:\MS21\DATA\120613\1206F017.D	12/06/13	20:26
RM11E-SL031	K1312857-026	J:\MS21\DATA\120613\1206F018.D	12/06/13	20:53
RM11E-SL028	K1312857-027	J:\MS21\DATA\120913\1209F006.D	12/09/13	14:00
RM11E-SL029	K1312857-028	J:\MS21\DATA\120913\1209F007.D	12/09/13	14:27
RM11E-SL030	K1312857-029	J:\MS21\DATA\120913\1209F008.D	12/09/13	14:54
RM11E-MWS005-05_21'MS	KWG1313175-1	J:\MS21\DATA\120913\1209F009.D	12/09/13	15:21
RM11E-MWS005-05_21'DMS	KWG1313175-2	J:\MS21\DATA\120913\1209F010.D	12/09/13	15:48
RM11E-MWS005-05_21'	K1312857-024	J:\MS21\DATA\120913\1209F011.D	12/09/13	16:16
RM11E-MWS001-5_24'	K1312857-005	J:\MS21\DATA\120913\1209F012.D	12/09/13	16:43
RM11E-MWS001-24_29'	K1312857-006	J:\MS21\DATA\120913\1209F013.D	12/09/13	17:10

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment	**Date Analyzed:**	12/10/2013
		Time Analyzed:	19:11

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313368-3	**File ID:**	J:\MS21\DATA\121013\1210F010.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313368

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313368-5	J:\MS21\DATA\121013\1210F009.D	12/10/13	18:43
RM11E-G079	K1312857-030	J:\MS21\DATA\121013\1210F015.D	12/10/13	21:27
RM11E-G079MS	KWG1313368-1	J:\MS21\DATA\121013\1210F016.D	12/10/13	21:54
RM11E-G079DMS	KWG1313368-2	J:\MS21\DATA\121013\1210F017.D	12/10/13	22:21

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.04	C	2.0	0.998	D	5.0	0.991	E	10	0.942
	F	20	0.900	G	40	0.882	H	60	0.863	I	80	0.835	J	100	0.837
S_HXCBZ13C6	A	20	0.675	B	20	0.679	C	20	0.701	D	20	0.697	E	20	0.733
	F	20	0.735	G	20	0.758	H	20	0.775	I	20	0.839	J	20	0.814

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1312857
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.1		≤20	0.921		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	7.6		≤20	0.741		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Calibration Date:**	12/03/2013
		Date Analyzed:	12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL12946
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.921	0.880	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/03/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313406
		Units:	ng/ml
File ID:	J:\MS21\DATA\120313\1203F019.D		

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	.01	0.921	0.892	-3	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	20	.01	0.741	0.732	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/06/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313576
		Units:	ng/ml

File ID: J:\MS21\DATA\120613\1206F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.921	0.923	0	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	21	.01	0.741	0.767	4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/09/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313599
		Units:	ng/ml
File ID:	J:\MS21\DATA\120913\1209F004.D		

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	21	.01	0.921	0.955	4	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	19	.01	0.741	0.698	-6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313638
		Units:	ng/ml

File ID: J:\MS21\DATA\121013\1210F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.921	0.931	1		NA	± 25 %	AverageRF
S_HXCBZ13C6	20	29	.01	0.741	1.07	44	*	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313406
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1203F019.D	Continuing Calibration Verification	KWG1313406-1	12/3/2013	16:04		12/3/2013	16:04
1203F020.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:31		12/3/2013	16:31
1203F021.D	ZZZZZZ	ZZZZZZ	12/3/2013	16:58		12/3/2013	16:58
1203F022.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:25		12/3/2013	17:25
1203F023.D	ZZZZZZ	ZZZZZZ	12/3/2013	17:52		12/3/2013	17:52
1203F024.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:19		12/3/2013	18:19
1203F025.D	ZZZZZZ	ZZZZZZ	12/3/2013	18:46		12/3/2013	18:46
1203F026.D	Method Blank	KWG1313244-3	12/3/2013	19:13		12/3/2013	19:13
1203F027.D	Lab Control Sample	KWG1313244-1	12/3/2013	19:40		12/3/2013	19:40
1203F028.D	Duplicate Lab Control Sample	KWG1313244-2	12/3/2013	20:07		12/3/2013	20:07
1203F029.D	RM11E-MWS904-24_29'	K1312857-017	12/3/2013	20:34		12/3/2013	20:34
1203F030.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:01		12/3/2013	21:01
1203F031.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:28		12/3/2013	21:28
1203F032.D	ZZZZZZ	ZZZZZZ	12/3/2013	21:55		12/3/2013	21:55
1203F033.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:23		12/3/2013	22:23
1203F034.D	ZZZZZZ	ZZZZZZ	12/3/2013	22:50		12/3/2013	22:50
1203F035.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:17		12/3/2013	23:17
1203F036.D	ZZZZZZ	ZZZZZZ	12/3/2013	23:44		12/3/2013	23:44
1203F037.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:11		12/4/2013	00:11
1203F038.D	ZZZZZZ	ZZZZZZ	12/4/2013	00:38		12/4/2013	00:38
1203F039.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:05		12/4/2013	01:05
1203F040.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:32		12/4/2013	01:32
1203F041.D	ZZZZZZ	ZZZZZZ	12/4/2013	01:59		12/4/2013	01:59
1203F042.D	ZZZZZZ	ZZZZZZ	12/4/2013	02:26		12/4/2013	02:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313576
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F004.D	Continuing Calibration Verification	KWG1313576-1	12/6/2013	10:10		12/6/2013	10:10
1206F005.D	Instrument Blank	KWG1313576-2	12/6/2013	12:10		12/6/2013	12:10
1206F006.D	Method Blank	KWG1313175-5	12/6/2013	15:16		12/6/2013	15:16
1206F007.D	Lab Control Sample	KWG1313175-3	12/6/2013	15:55		12/6/2013	15:55
1206F008.D	Duplicate Lab Control Sample	KWG1313175-4	12/6/2013	16:20		12/6/2013	16:20
1206F009.D	ZZZZZZ	ZZZZZZ	12/6/2013	16:47		12/6/2013	16:47
1206F010.D	ZZZZZZ	ZZZZZZ	12/6/2013	17:15		12/6/2013	17:15
1206F011.D	ZZZZZZ	ZZZZZZ	12/6/2013	17:42		12/6/2013	17:42
1206F012.D	ZZZZZZ	ZZZZZZ	12/6/2013	18:10		12/6/2013	18:10
1206F013.D	ZZZZZZ	ZZZZZZ	12/6/2013	18:37		12/6/2013	18:37
1206F014.D	RM11E-MWS004-05_24'	K1312857-012	12/6/2013	19:04		12/6/2013	19:04
1206F015.D	RM11E-MWS004-24_29'	K1312857-013	12/6/2013	19:32		12/6/2013	19:32
1206F016.D	RM11E-MWS504-24_29'	K1312857-016	12/6/2013	19:59		12/6/2013	19:59
1206F017.D	RM11E-MWS005-21_26'	K1312857-025	12/6/2013	20:26		12/6/2013	20:26
1206F018.D	RM11E-SL031	K1312857-026	12/6/2013	20:53		12/6/2013	20:53

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313599
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1209F004.D	Continuing Calibration Verification	KWG1313599-1	12/9/2013	13:06		12/9/2013	13:06
1209F005.D	Instrument Blank	KWG1313599-2	12/9/2013	13:37		12/9/2013	13:37
1209F006.D	RM11E-SL028	K1312857-027	12/9/2013	14:00		12/9/2013	14:00
1209F007.D	RM11E-SL029	K1312857-028	12/9/2013	14:27		12/9/2013	14:27
1209F008.D	RM11E-SL030	K1312857-029	12/9/2013	14:54		12/9/2013	14:54
1209F009.D	RM11E-MWS005-05_21'MS	KWG1313175-1	12/9/2013	15:21		12/9/2013	15:21
1209F010.D	RM11E-MWS005-05_21'DMS	KWG1313175-2	12/9/2013	15:48		12/9/2013	15:48
1209F011.D	RM11E-MWS005-05_21'	K1312857-024	12/9/2013	16:16		12/9/2013	16:16
1209F012.D	RM11E-MWS001-5_24'	K1312857-005	12/9/2013	16:43		12/9/2013	16:43
1209F013.D	RM11E-MWS001-24_29'	K1312857-006	12/9/2013	17:10		12/9/2013	17:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1312857
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1313638
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F005.D	Continuing Calibration Verification	KWG1313638-1	12/10/2013	16:45		12/10/2013	16:45
1210F006.D	ZZZZZZ	ZZZZZZ	12/10/2013	17:25		12/10/2013	17:25
1210F007.D	ZZZZZZ	ZZZZZZ	12/10/2013	17:49		12/10/2013	17:49
1210F008.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:16		12/10/2013	18:16
1210F009.D	Method Blank	KWG1313368-5	12/10/2013	18:43		12/10/2013	18:43
1210F010.D	Lab Control Sample	KWG1313368-3	12/10/2013	19:11		12/10/2013	19:11
1210F011.D	Duplicate Lab Control Sample	KWG1313368-4	12/10/2013	19:38		12/10/2013	19:38
1210F012.D	ZZZZZZ	ZZZZZZ	12/10/2013	20:05		12/10/2013	20:05
1210F013.D	ZZZZZZ	ZZZZZZ	12/10/2013	20:32		12/10/2013	20:32
1210F014.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:00		12/10/2013	21:00
1210F015.D	RM11E-G079	K1312857-030	12/10/2013	21:27		12/10/2013	21:27
1210F016.D	RM11E-G079MS	KWG1313368-1	12/10/2013	21:54		12/10/2013	21:54
1210F017.D	RM11E-G079DMS	KWG1313368-2	12/10/2013	22:21		12/10/2013	22:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/27/2013
Sample Matrix:	Water		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1313244
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS904-24_29'	K1312857-017	11/21/13	11/22/13	1000ml	1.0ml	NA	
Method Blank	KWG1313244-3	NA	NA	1000ml	1.0ml	NA	
Lab Control Sample	KWG1313244-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313244-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/26/2013
Sample Matrix:	Soil		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1313175
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MWS001-5_24'	K1312857-005	11/21/13	11/22/13	20.330g	1.0ml	83	
RM11E-MWS001-24_29'	K1312857-006	11/21/13	11/22/13	20.220g	1.0ml	72.4	
RM11E-MWS004-05_24'	K1312857-012	11/21/13	11/22/13	20.356g	1.0ml	80.2	
RM11E-MWS004-24_29'	K1312857-013	11/21/13	11/22/13	20.040g	1.0ml	70.9	
RM11E-MWS504-24_29'	K1312857-016	11/21/13	11/22/13	20.038g	1.0ml	70.6	
RM11E-MWS005-05_21'	K1312857-024	11/22/13	11/22/13	20.177g	1.0ml	80.5	
RM11E-MWS005-21_26'	K1312857-025	11/22/13	11/22/13	20.168g	1.0ml	72.3	
RM11E-SL031	K1312857-026	11/22/13	11/22/13	20.142g	1.0ml	90.2	
RM11E-SL028	K1312857-027	11/22/13	11/22/13	20.117g	1.0ml	85.5	
RM11E-SL029	K1312857-028	11/22/13	11/22/13	20.022g	1.0ml	89	
RM11E-SL030	K1312857-029	11/22/13	11/22/13	20.303g	1.0ml	84.2	
Method Blank	KWG1313175-5	NA	NA	20.356g	1.0ml	NA	
RM11E-MWS005-05_21'MS	KWG1313175-1	11/22/13	11/22/13	20.231g	1.0ml	80.5	
RM11E-MWS005-05_21'DMS	KWG1313175-2	11/22/13	11/22/13	20.280g	1.0ml	80.5	
Lab Control Sample	KWG1313175-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313175-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1312857
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	12/03/2013
Sample Matrix:	Sediment		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1313368
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G079	K1312857-030	10/31/13	11/01/13	20.245g	1.0ml	80.5	*
Method Blank	KWG1313368-5	NA	NA	20.414g	1.0ml	NA	
RM11E-G079MS	KWG1313368-1	10/31/13	11/01/13	20.299g	1.0ml	80.5	
RM11E-G079DMS	KWG1313368-2	10/31/13	11/01/13	20.414g	1.0ml	80.5	
Lab Control Sample	KWG1313368-3	NA	NA	10.000g	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313368-4	NA	NA	10.000g	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

December 27, 2013 Analytical Report for Service Request No: K1313208

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplement RI/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on December 05, 2013. For your reference, these analyses have been assigned our service request number K1313208.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
10:13 am, Mar 06, 2014

GS/kd

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1313208
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	12/05/13-12/06/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 12/05/-12/06/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Sulfate by EPA Method 300.0:
The control criteria for matrix spike recovery for sample RM11E-MULT89881-12-2013 were not applicable. The added spike concentration was not significantly higher than the analyte concentration in the sample, preventing accurate evaluation of the spike recovery.

The upper control criterion was exceeded in Continuing Calibration Verification (CCV) 5. The field samples were not analyzed in this sequence. No further corrective action was required.

Dissolved and Total Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample RM11E-MULT89881-12-2013 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Total and Dissolved Metals

No anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

No anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by EPA Method 8015

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ 1/2/14

Gasoline Range Organics by EPA Method 8015

No anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1211F003. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Aroclor 1260 in Duplicate Laboratory Control Sample (DLCS) KWG1313603-2. Recovery in the associated Laboratory Control Sample (LCS) was within control criteria. No target Aroclors were detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1221, 1232, 1242, and 1248 in Method Blank KWG1313603-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the normal limit. Note the level of background was relatively low compared to the normal detection limit, so the effect on the results was minimal. The results were flagged to indicate the interference.

The detection limit was elevated for multiple target Aroclors in both field samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) J:\MS27\1216F006.D: Carbon Disulfide. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ 1/2/14

Chain of Custody

KI 313208

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

Analysis Requested

Sample I.D.	~~Date~~	Time	~~LAB I.D.~~	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen	VOCs	TRIP BLANK	TPH-GX	REMARKS/DATE
RM11E-~~89881~~-12-2013		1250	12/4/13	W	3													X		X	12-04-13
RM11E-~~SMULT89311~~-12-2013		1300	12/4/13	W	3													X		X	12-04-13
RM11E-MW005-12-2013		1040	12/5/13	W	3													X		X	
RM11E-MW02-5-12-2013		1400	12/5/13	W	5													X		X	
RM11E-MW03-12-2013		1450	12/5/13	W	5													X		X	
RM11E-MW04-12-2013		1700	12/5/13	W	5													X		X	
RM11E-~~MULT 007-12-2013~~			CH																		
RM11E-																					
RM11E-Trip Blank			12/6/13	W	1													X		X	
RM11E-MULT 007-12-2013		1130	12/6/13	W	5																
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					

Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [illegible]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: ALS
Firm: Groundwater Solutions Inc.	Firm: 12/6/13 1445
Date/Time: 12/6/13 1200	Date/Time:

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

Analysis Requested

Sample I.D.	~~Date~~	Time	LAB I.D.	Sample Matrix	Number of Containers [1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen				REMARKS
RM11E-89881	12-2013	1250		W	10	X			X	X	X	X	X	X	X	X					ALL SAMPLES COLLECTED 12-04-13.
RM11E-5MULT8781	12-2013	1300		W	10	X			X	X	X	X	X	X	X	X					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
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Relinquished By	Received By
	KSmith
Signature Peter Pellegrin Erin Carroll Hughes	Signature KSmith
Printed Name PETER PELLEGRIN GSI Water Solutions	Printed Name ALS
Firm Groundwater Solutions Inc	Firm 12/5/13 0930
Date/Time 12-05-13 0830	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____
Shipping #: _____
Condition: _____
Lab No: _____

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Note: ALL VOC's will be shipped in one separate cooler with trip blanks.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

PC Shey

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K13 13208

Received: 12/6/13 Opened: 12/6/13 By: [illegible] Unloaded: 12/6/13 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 FRONT

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
5.5	5.5	4.9	4.9	0.0	316			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: VOAS

Page ____ *of* ____

PC GREG

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request *K13* 13208

Received: 12/5/13 Opened: 12/5/13 By: KD Unloaded: 12/5/13 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1, Front 2, Back
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
3.1	3.2	6.2	6.3	+.1	304			

4. Packing material: (*Inserts*) *Baggies* *Bubble Wrap* (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) (N) *
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:
RMIIE MWOMULT 89881-12-2013	RMIIE-5MULT 89811-12-2013	time
MULT 89881-12-2013	RMIIE-89881-12-2013	time

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: * Client preserved all of the dissolved bottles before it was filtered and the client did not state all of the tests based on what the labels say on the bottles ~~are~~ in comparison to the COC. ~~Collect date not listed on COC, bttls have~~ 12/4/13

Page _____ *of* _____

General Chemistry Parameters

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**0.12 J**	0.20	0.04	1	12/05/13 13:00	
RM11E-5MULT89811-12-2013	K1313208-002	**0.13 J**	0.20	0.04	1	12/05/13 13:00	
Method Blank	K1313208-MB1	**0.05 J**	0.20	0.04	1	12/05/13 13:00	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	NTU
Lab Code:	K1313208-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-001DUP Result	Average	RPD	RPD Limit
Turbidity	180.1	0.20	0.04	0.12	0.12	0.117	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371524

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	5.42	5.80	93	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371524	KQ1314483-02	12/05/13 13:00	1.00	1.01	101	90-110
CCV2	371524	KQ1314483-03	12/05/13 13:00	1.00	1.02	102	90-110
CCV3	371524	KQ1314483-08	12/05/13 13:00	1.00	1.04	104	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371524	KQ1314483-04	12/05/13 13:00	0.20	0.04	0.04	J
CCB2	371524	KQ1314483-05	12/05/13 13:00	0.20	0.04	0.05	J
CCB3	371524	KQ1314483-09	12/05/13 13:00	0.20	0.04	0.05	J

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**6.5**	1.0	0.2	5	12/05/13 11:37	
RM11E-5MULT89811-12-2013	K1313208-002	**6.5**	1.0	0.2	5	12/05/13 11:57	
Method Blank	K1313208-MB1	ND U	0.20	0.03	1	12/05/13 07:32	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-001DUP Result	Average	RPD	RPD Limit
Chloride	300.0	1.0	0.2	6.5	6.5	6.46	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/5/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313208-001MS			Duplicate Matrix Spike K1313208-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	6.5	27.4	20.0	105	27.5	20.0	105	90-110	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371425

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	4.98	5.00	100	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Chloride

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371425	KQ1314530-09	12/05/13 07:02	5.00	5.02	100	90-110
CCV2	371425	KQ1314530-10	12/05/13 08:22	5.00	5.03	101	90-110
CCV3	371425	KQ1314530-11	12/05/13 12:07	5.00	5.04	101	90-110
CCV4	371425	KQ1314530-12	12/05/13 14:06	5.00	5.03	101	90-110
CCV5	371425	KQ1314530-13	12/05/13 18:27	5.00	5.03	101	90-110
CCV6	371425	KQ1314530-14	12/05/13 20:29	5.00	5.02	100	90-110
CCV7	371425	KQ1314530-15	12/05/13 21:00	5.00	5.00	100	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Chloride

Analysis Method: 300.0 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371425	KQ1314530-16	12/05/13 07:12	0.20	0.03	ND	U
CCB2	371425	KQ1314530-17	12/05/13 08:32	0.20	0.03	ND	U
CCB3	371425	KQ1314530-18	12/05/13 12:18	0.20	0.03	ND	U
CCB4	371425	KQ1314530-19	12/05/13 14:16	0.20	0.03	ND	U
CCB5	371425	KQ1314530-20	12/05/13 18:37	0.20	0.03	ND	U
CCB6	371425	KQ1314530-21	12/05/13 20:40	0.20	0.03	ND	U
CCB7	371425	KQ1314530-22	12/05/13 21:10	0.20	0.03	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**19.5**	0.50	0.05	5	12/05/13 11:37	
RM11E-5MULT89811-12-2013	K1313208-002	**19.6**	0.50	0.05	5	12/05/13 11:57	
Method Blank	K1313208-MB1	ND U	0.10	0.01	1	12/05/13 07:32	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-001DUP Result	Average	RPD	RPD Limit
Sulfate	300.0	0.50	0.05	19.5	19.4	19.4	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/5/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313208-001MS			Duplicate Matrix Spike K1313208-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	19.5	41.9	20.0	112 *	41.6	20.0	110	90-110	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371425

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	5.09	5.00	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371425	KQ1314530-09	12/05/13 07:02	5.00	5.06	101	90-110
CCV2	371425	KQ1314530-10	12/05/13 08:22	5.00	5.08	102	90-110
CCV3	371425	KQ1314530-11	12/05/13 12:07	5.00	5.06	101	90-110
CCV4	371425	KQ1314530-12	12/05/13 14:06	5.00	5.06	101	90-110
CCV5	371425	KQ1314530-13	12/05/13 18:27	5.00	5.59	112	90-110
CCV6	371425	KQ1314530-14	12/05/13 20:29	5.00	5.20	104	90-110
CCV7	371425	KQ1314530-15	12/05/13 21:00	5.00	5.08	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371425	KQ1314530-16	12/05/13 07:12	0.10	0.01	ND	U
CCB2	371425	KQ1314530-17	12/05/13 08:32	0.10	0.01	ND	U
CCB3	371425	KQ1314530-18	12/05/13 12:18	0.10	0.01	ND	U
CCB4	371425	KQ1314530-19	12/05/13 14:16	0.10	0.01	ND	U
CCB5	371425	KQ1314530-20	12/05/13 18:37	0.10	0.01	ND	U
CCB6	371425	KQ1314530-21	12/05/13 20:40	0.10	0.01	ND	U
CCB7	371425	KQ1314530-22	12/05/13 21:10	0.10	0.01	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**325**	2.0	0.4	1	12/11/13 16:30	
RM11E-5MULT89811-12-2013	K1313208-002	**325**	2.0	0.4	1	12/11/13 16:30	
Method Blank	K1313208-MB1	**1.1**	2.0	0.4	1	12/11/13 16:30	J

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	KQ1314706-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1314706-06DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	9050A	2.0	0.4	415	417	416	<1	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372454

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	337	330	102	86-113

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	ApplEnvMic7-87-1536-1540	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Iron, Divalent (Ferrous Iron)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	ND U	0.20	0.05	1	12/05/13 11:20	
RM11E-5MULT89811-12-2013	K1313208-002	ND U	0.20	0.05	1	12/05/13 11:20	
Method Blank	K1313208-MB1	ND U	0.20	0.05	1	12/05/13 11:20	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-001DUP Result	Average	RPD	RPD Limit
Iron, Divalent (Ferrous Iron)	ApplEnvMic7-87-1536-1540	0.20	0.05	ND	ND	NC	NC	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/5/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	ApplEnvMic7-87-1536-1540		
Prep Method:	None		

		Matrix Spike K1313208-001MS			Duplicate Matrix Spike K1313208-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Iron, Divalent (Ferrous Iron)	ND U	3.99	4.00	100	3.96	4.00	99	75-125	<1	20

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Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371465	KQ1314461-04	12/05/13 11:20	4.00	4.03	101	90-110
CCV2	371465	KQ1314461-06	12/05/13 11:20	4.00	3.94	99	90-110
CCV3	371465	KQ1314461-10	12/05/13 16:50	4.00	3.97	99	90-110
CCV4	371465	KQ1314461-12	12/05/13 16:50	4.00	3.95	99	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371465	KQ1314461-05	12/05/13 11:20	0.20	0.05	ND	U
CCB2	371465	KQ1314461-07	12/05/13 11:20	0.20	0.05	ND	U
CCB3	371465	KQ1314461-09	12/05/13 16:50	0.20	0.05	ND	U
CCB4	371465	KQ1314461-11	12/05/13 16:50	0.20	0.05	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Oxidation-Reduction Potential (ORP)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**277**	-	-	1	12/09/13 11:25	H
RM11E-5MULT89811-12-2013	K1313208-002	**284**	-	-	1	12/09/13 11:25	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/09/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mV
Lab Code:	K1313208-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-001DUP Result	Average	RPD	RPD Limit
Oxidation-Reduction Potential (ORP)	ASTM D1498-00	-	-	277	283	280	2	20

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/09/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371891

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	484	480	101	85-115
Lab Control Sample	K1313208-LCS2	476	480	99	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Bicarbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**119**	15	3	1	12/05/13 17:53	
RM11E-5MULT89811-12-2013	K1313208-002	**120**	15	3	1	12/05/13 17:53	
Method Blank	K1313208-MB1	**7 J**	15	3	1	12/05/13 17:53	
Method Blank	K1313208-MB2	**9 J**	15	3	1	12/05/13 17:53	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	mg/L
Lab Code:	K1313208-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-002DUP Result	Average	RPD	RPD Limit
Bicarbonate as CaCO3	SM 2320 B	15	3	120	120	120	<1	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	ND U	15	3	1	12/05/13 17:53	
RM11E-5MULT89811-12-2013	K1313208-002	ND U	15	3	1	12/05/13 17:53	
Method Blank	K1313208-MB1	ND U	15	3	1	12/05/13 17:53	
Method Blank	K1313208-MB2	ND U	15	3	1	12/05/13 17:53	
Method Blank	K1313208-MB3	ND U	15	3	1	12/12/13 19:00	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/05/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	mg/L
Lab Code:	K1313208-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313208-002DUP Result	Average	RPD	RPD Limit
Carbonate as CaCO3	SM 2320 B	15	3	ND	ND	NC	NC	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

pH

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**7.57**	-	-	1	12/05/13 16:12	H
RM11E-5MULT89811-12-2013	K1313208-002	**7.56**	-	-	1	12/05/13 16:13	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
pH

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1313206-001DUP	-		8.30	8.31	8.31	<1	20	12/05/13
Batch QC	K1313252-007DUP	-		6.63	6.64	6.64	<1	20	12/05/13

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371547

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	5.39	5.38	100	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**0.25 J**	0.50	0.07	1	12/17/13 21:11	
RM11E-5MULT89811-12-2013	K1313208-002	**0.35 J**	0.50	0.07	1	12/17/13 21:11	
Method Blank	K1313208-MB1	ND U	0.50	0.07	1	12/17/13 21:11	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MULT89881-12-2013	K1313208-001DUP	0.50	0.07	0.25 J	0.33 J	0.294	27 *	10	12/17/13
RM11E-5MULT89811-12-2013	K1313208-002DUP	0.50	0.07	0.35 J	0.32 J	0.337	10	10	12/17/13

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

		Matrix Spike K1313208-001MS			Duplicate Matrix Spike K1313208-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Dissolved Organic (DOC)	0.25 J	25.1	25.0	100	25.7	25.0	102	83-117	2	10

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/17/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373378

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	17.2	18.1	95	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	373378	KQ1314995-17	12/17/13 21:11	25.0	25.0	100	90-110
CCV2	373378	KQ1314995-18	12/17/13 21:11	25.0	25.0	100	90-110
CCV3	373378	KQ1314995-19	12/17/13 21:11	25.0	25.3	101	90-110
CCV4	373378	KQ1314995-20	12/17/13 21:11	25.0	24.9	100	90-110
CCV5	373378	KQ1314995-21	12/17/13 21:11	25.0	25.6	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	373378	KQ1314995-22	12/17/13 21:11	0.50	0.07	ND	U
CCB2	373378	KQ1314995-23	12/17/13 21:11	0.50	0.07	ND	U
CCB3	373378	KQ1314995-24	12/17/13 21:11	0.50	0.07	ND	U
CCB4	373378	KQ1314995-25	12/17/13 21:11	0.50	0.07	ND	U
CCB5	373378	KQ1314995-26	12/17/13 21:11	0.50	0.07	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/4/13
Sample Matrix:	Water	**Date Received:**	12/5/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MULT89881-12-2013	K1313208-001	**0.44** J	0.50	0.07	1	12/05/13 22:38	
RM11E-5MULT89811-12-2013	K1313208-002	**0.40** J	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313208-MB1	**0.32** J	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313208-MB2	ND U	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313208-MB3	ND U	0.50	0.07	1	12/05/13 22:38	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MULT89881-12-2013	K1313208-001DUP	0.50	0.07	0.44 J	0.36 J	0.403	19 *	10	12/05/13
RM11E-5MULT89811-12-2013	K1313208-002DUP	0.50	0.07	0.40 J	0.39 J	0.396	4	10	12/05/13

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/5/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1313208-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.44 J	25.4	25.0	100	83-117

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371554

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313208-LCS1	17.0	18.1	94	83-117
Lab Control Sample	K1313208-LCS2	17.0	18.1	94	83-117
Lab Control Sample	K1313208-LCS3	16.9	18.1	94	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371554	KQ1314583-54	12/05/13 22:38	25.0	25.0	100	90-110
CCV2	371554	KQ1314583-55	12/05/13 22:38	25.0	24.9	99	90-110
CCV3	371554	KQ1314583-56	12/05/13 22:38	25.0	24.7	99	90-110
CCV4	371554	KQ1314583-57	12/05/13 22:38	25.0	24.8	99	90-110
CCV5	371554	KQ1314583-58	12/05/13 22:38	25.0	25.0	100	90-110
CCV6	371554	KQ1314583-59	12/05/13 22:38	25.0	24.8	99	90-110
CCV7	371554	KQ1314583-60	12/05/13 22:38	25.0	24.5	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371554	KQ1314583-61	12/05/13 22:38	0.50	0.07	ND	U
CCB2	371554	KQ1314583-62	12/05/13 22:38	0.50	0.07	ND	U
CCB3	371554	KQ1314583-63	12/05/13 22:38	0.50	0.07	ND	U
CCB4	371554	KQ1314583-64	12/05/13 22:38	0.50	0.07	0.08	J
CCB5	371554	KQ1314583-65	12/05/13 22:38	0.50	0.07	ND	U
CCB6	371554	KQ1314583-66	12/05/13 22:38	0.50	0.07	ND	U
CCB7	371554	KQ1314583-67	12/05/13 22:38	0.50	0.07	ND	U

Metals

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	6010C/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
RM11E-MULT89881-12-2013	K1313208-001	0.07	0.004	1	12/11/13	12/13/13	143	
RM11E-5MULT89811-12-2013	K1313208-002	0.07	0.004	1	12/11/13	12/13/13	142	
Method Blank	K1313208-MB	0.07	0.004	1	12/11/13	12/13/13	ND	

ALS Group USA, Corp.
dba ALS Environmental
QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Extracted:	12/11/13
		Date Analyzed:	12/13/13

Duplicate Summary
Metals

Sample Name:	RM11E-MULT89881-12-2013	Units:	mg/L (ppm)
Lab Code:	K1313208-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	6010C/SM 2340B	0.07	143	142	142	<1	

ALS Group USA, Corp.
dba ALS Environmental

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E Supplement RI/FS Investigation
Project No.: 487.002.004

Service Request: K1313208

Sample Name:	Lab Code:
RM11E-89881-12-2013	K1313208-001
RM11E-89881-12-2013D	K1313208-001D
RM11E-89881-12-2013	K1313208-001DISS
RM11E-89881-12-2013S	K1313208-001DISSS
RM11E-89881-12-2013SD	K1313208-001DISSSD
RM11E-89881-12-2013S	K1313208-001S
RM11E-5MULT89811-12-2013	K1313208-002
RM11E-5MULT89811-12-2013D	K1313208-002D
RM11E-5MULT89811-12-2013	K1313208-002DISS
RM11E-5MULT89811-12-2013S	K1313208-002S
Method Blank	K1313208-MB
Method Blank	K1313208-MB2

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	12/04/13
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-89881-12-2013 **Lab Code:** K1313208-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.079		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.8		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	20.5		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.152		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	35600		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.39		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.103		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	2.42		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.007	J	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	13200		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	3.200		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.09		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3100		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8500		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	10.1		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	12.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	12/04/13
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-89881-12-2013 **Lab Code:** K1313208-001DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.050	J	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.6		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	20.4		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.124		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	35300		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.35		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.089		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	2.29		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	13100		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	3.110		
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.10		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3120		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8480		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	9.49		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	12.4		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	12/04/13
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-5MULT89811-12-2013 **Lab Code:** K1313208-002

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.069		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.6		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	20.0		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.154		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	35500		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.34		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.097		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	2.27		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	13100		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	3.180		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.07		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3100		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8390		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	9.54		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	12.3		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	12/04/13
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-5MULT89811-12-2013 **Lab Code:** K1313208-002DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.051		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.7		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	20.1		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.144		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	34800		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.33		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.088		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	2.25		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	13000		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	3.100		
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.09		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3110		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8330		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	9.41		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	12.3		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1313208-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	0.1	U	
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	0.02	U	
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	1.4	J	
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.02	U	
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	1.2	J	
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	0.006	U	
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.02	U	
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	26.5	J	
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	0.2	U	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project No.:	487.002.004	**Date Collected:**	
Project Name:	RM11E Supplement RI/FS Investiga	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1313208-MB2

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	

Comments:

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.6	106	25.0	24.4	98	24.9	100	6020A
Arsenic	25.0	26.0	104	25.0	24.4	98	25.3	101	6020A
Barium	100.0	103.1	103	25.0	24.3	97	24.8	99	6020A
Beryllium	2.5	2.7	108	25.0	24.9	100	25.1	100	6020A
Cadmium	12.5	13.1	105	25.0	24.4	98	25.0	100	6020A
Calcium	1000	921	92	250	252	101	252	101	6010C
Calcium	12500	12670	101	10000	10310	103	10320	103	6010C
Chromium	10.0	10.3	103	25.0	24.4	98	24.8	99	6020A
Cobalt	25.0	26.0	104	25.0	24.7	99	24.9	100	6020A
Copper	12.5	13.2	106	25.0	25.1	100	25.0	100	6020A
Iron	2500	2527	101	10000	10250	102	10170	102	6010C
Lead	25.0	25.7	103	25.0	24.6	98	24.9	100	6020A
Magnesium	5000	4938	99	250	252	101	252	101	6010C
Magnesium	12500	12660	101	10000	10310	103	10250	102	6010C
Manganese	25.0	25.5	102	25.0	25.0	100	25.1	100	6020A
Mercury	5.00	4.90	98	5.00	5.00	100	4.60	92	7470A
Nickel	25.0	25.8	103	25.0	24.6	98	24.9	100	6020A
Potassium	12500	12620	101	10000	10250	102	9976	100	6010C
Sodium	12500	12580	101	10000	10350	104	10360	104	6010C
Vanadium	25.0	26.0	104	25.0	24.3	97	24.5	98	6020A
Zinc	25.0	26.4	106	25.0	24.8	99	25.2	101	6020A

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	24.8	99	24.9	100	6020A
Arsenic				25.0	24.4	98	24.3	97	6020A
Barium				25.0	24.4	98	24.5	98	6020A
Beryllium				25.0	24.8	99	25.1	100	6020A
Cadmium				25.0	24.9	100	25.4	102	6020A
Calcium				10000	10440	104	10560	106	6010C
Calcium				250	262	105	258	103	6010C
Chromium				25.0	24.5	98	24.5	98	6020A
Cobalt				25.0	24.5	98	24.6	98	6020A
Copper				25.0	24.5	98	24.5	98	6020A
Iron				10000	10610	106	10650	106	6010C
Lead				25.0	24.8	99	24.7	99	6020A
Magnesium				10000	10010	100	10010	100	6010C
Magnesium				250	260	104	253	101	6010C
Manganese				25.0	25.5	102	25.1	100	6020A
Mercury				5.00	5.00	100	5.00	100	7470A
Nickel				25.0	24.5	98	24.2	97	6020A
Potassium				10000	10380	104	10240	102	6010C
Sodium				10000	9848	98	9884	99	6010C
Vanadium				25.0	24.6	98	24.6	98	6020A
Zinc				25.0	25.0	100	25.0	100	6020A

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	25.1	100			6020A
Arsenic				25.0	25.4	102			6020A
Barium				25.0	25.1	100			6020A
Beryllium				25.0	25.5	102			6020A
Cadmium				25.0	25.2	101			6020A
Calcium				10000	10380	104	10410	104	6010C
Calcium				250	261	104	260	104	6010C
Chromium				25.0	25.2	101			6020A
Cobalt				25.0	25.6	102			6020A
Copper				25.0	25.5	102			6020A
Iron				10000	10590	106	10580	106	6010C
Lead				25.0	25.2	101			6020A
Magnesium				10000	9845	98	9937	99	6010C
Magnesium				250	261	104	258	103	6010C
Nickel				25.0	25.1	100			6020A
Potassium				10000	10280	103	10270	103	6010C
Sodium				10000	9650	96	9763	98	6010C
Vanadium				25.0	25.1	100			6020A
Zinc				25.0	25.2	101			6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Calcium				10000	10500	105	10440	104	6010C
Calcium				250	259	104	260	104	6010C
Iron				10000	10700	107	10600	106	6010C
Magnesium				10000	9921	99	9868	99	6010C
Magnesium				250	259	104	258	103	6010C
Potassium				10000	10300	103	10230	102	6010C
Sodium				10000	9772	98	9701	97	6010C

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury	5.00	4.90	98	5.00	5.00	100	5.00	100	7470A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.10	102			7470A

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313208

Contract: 487.002.004 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS Mixed

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Calcium	18.9	20.0	94	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Iron	18.1	20.0	90	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Magnesium	5.2	5.0	104	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Potassium	168.4	200.0	84	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Sodium	219.7	200.0	110	70.0 - 130.0	P	12/13/13	08:52	121313AICP
LLCCV1									
	Calcium	22.2	20.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Iron	21.7	20.0	108	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Magnesium	5.8	5.0	116	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Potassium	221.6	200.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Sodium	221.4	200.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
LLCCV2									
	Calcium	20.6	20.0	103	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Iron	20.2	20.0	101	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Magnesium	5.8	5.0	116	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Potassium	219.4	200.0	110	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Sodium	206.3	200.0	103	70.0 - 130.0	P	12/13/13	11:40	121313AICP
LLCCV3									
	Calcium	20.2	20.0	101	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Iron	18.1	20.0	90	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Magnesium	5.6	5.0	112	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Potassium	227.7	200.0	114	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Sodium	201.0	200.0	100	70.0 - 130.0	P	12/13/13	12:55	121313AICP

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313208

Contract: 487.002.004 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Antimony	0.042	0.05	84	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Arsenic	0.49	0.5	98	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Beryllium	0.017	0.02	85	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Cadmium	0.014	0.02	70	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Chromium	0.20	0.20	100	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Cobalt	0.015	0.02	75	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Copper	0.08	0.10	80	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Lead	0.016	0.02	80	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Vanadium	0.20	0.20	100	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Zinc	0.47	0.50	94	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
LLICV1									
	Barium	0.041	0.05	82	70.0 - 130.0	MS	12/19/13	18:38	121913DMS
LLCCV1									
	Antimony	0.065	0.05	130	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Arsenic	0.57	0.5	114	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Barium	0.036	0.05	72	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Beryllium	0.025	0.02	125	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Cadmium	0.019	0.02	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Chromium	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Cobalt	0.018	0.02	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Copper	0.09	0.10	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Lead	0.016	0.02	80	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Nickel	0.18	0.20	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Vanadium	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Zinc	0.45	0.50	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313208

Contract: 487.002.004 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV2									
	Antimony	0.056	0.05	112	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Arsenic	0.62	0.5	124	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Barium	0.038	0.05	76	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Beryllium	0.024	0.02	120	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Cadmium	0.018	0.02	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Chromium	0.18	0.20	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Cobalt	0.019	0.02	95	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Copper	0.09	0.10	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Lead	0.014	0.02	70	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Vanadium	0.21	0.20	105	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Zinc	0.49	0.50	98	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
LLICV1									
	Manganese	0.058	0.05	116	70.0 - 130.0	MS	12/23/13	14:10	122313BMS
LLCCV1									
	Manganese	0.063	0.05	126	70.0 - 130.0	MS	12/23/13	15:21	122313BMS
LLCCV2									
	Manganese	0.063	0.05	126	70.0 - 130.0	MS	12/23/13	15:46	122313BMS

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.19	95		

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.20	100		

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony	0.020	J	0.008	J	0.024	J	0.020	J	6020A
Arsenic	0.10	U	0.10	U	0.10	U	0.10	U	6020A
Barium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Beryllium	0.009	J	0.006	U	0.008	J	0.007	J	6020A
Cadmium	0.005	U	0.005	U	0.005	U	0.005	U	6020A
Calcium	0.9	U	0.9	U	0.9	U	1.6	J	6010C
Chromium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Cobalt	0.007	J	0.006	U	0.006	U	0.006	U	6020A
Copper	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Iron	3.0	U	-3.8	J	3.0	U	3.0	U	6010C
Lead	0.005	J	0.005	U	0.005	U	0.005	U	6020A
Magnesium	0.3	J	0.3	U	0.3	U	0.4	J	6010C
Manganese	0.015	J	0.018	J	0.018	J	0.022	J	6020A
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A
Nickel	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Potassium	60.0	U	60.0	U	60.0	U	60.0	U	6010C
Sodium	20.0	U	20.0	U	20.0	U	20.0	U	6010C
Vanadium	0.03	U	0.03	U	0.03	U	0.03	U	6020A
Zinc	0.20	U	0.20	U	0.20	U	0.20	U	6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.025	J	0.024	J			6020A
Arsenic			0.10	U	0.10	U			6020A
Barium			0.02	U	0.02	U			6020A
Beryllium			0.006	U	0.006	U			6020A
Cadmium			0.006	J	0.005	U			6020A
Calcium			0.9	U	1.0	J	0.9	U	6010C
Chromium			0.02	U	0.02	U			6020A
Cobalt			0.006	U	0.006	U			6020A
Copper			0.02	U	0.02	U			6020A
Iron			3.0	U	3.0	U	3.0	U	6010C
Lead			0.005	U	0.005	U			6020A
Magnesium			0.3	U	0.7	J	0.3	J	6010C
Manganese			0.037	J					6020A
Mercury			0.02	U					7470A
Nickel			0.02	U	0.02	U			6020A
Potassium			60.0	U	60.0	U	60.0	U	6010C
Sodium			20.0	U	20.0	U	20.0	U	6010C
Vanadium			0.03	U	0.03	U			6020A
Zinc			0.20	U	0.20	U			6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Calcium			0.9	U	0.9	U			6010C
Iron			3.0	U	3.0	U			6010C
Magnesium			0.4	J	0.4	J			6010C
Potassium			60.0	U	60.0	U			6010C
Sodium			20.0	U	20.0	U			6010C

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICP ID Number: K-ICP-AES-03 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Calcium	500000.0	500000.0	462600.0	474600.0	95			
Iron	200000.0	200000.0	185300.0	187700.0	94			
Magnesium	500000.0	500000.0	415400.0	415500.0	83			
Potassium	0.0		-84.6	-113.7				
Sodium	0.0		10.7	11.2				

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

ICP ID Number: K-ICP-MS-03 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.0		0.23	0.24				
Arsenic	0.00	25.00	-0.06	24.98	100			
Barium	0.00		3.11	3.14				
Beryllium	0.00		0.016	0.013				
Cadmium	0.00	25.00	0.18	25.08	100			
Chromium	0.00	50.00	0.35	49.88	100			
Cobalt	0.0	50.0	0.98	49.53	99			
Copper	0.0	50.0	0.46	47.2	94			
Lead	0.0		0.05	0.05				
Manganese	0.0	50.0	1.41	50.86	102			
Nickel	0.0	50.0	1.19	48.0	96			
Vanadium	0.0	50.0	-0.04	50.29	101			
Zinc	0.0	25.0	1.14	24.7	99			

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013S **Lab Code:** K1313208-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	52.7		0.079		50.00	105.2		6020A
Arsenic	75 - 125	52.3		1.8		50.00	101.0		6020A
Barium	75 - 125	121		20.5		100.00	100.5		6020A
Beryllium	75 - 125	2.510		0.006	U	2.50	100.4		6020A
Cadmium	75 - 125	26.4		0.152		25.00	105.0		6020A
Calcium	75 - 125	45600		35600		10000.00	100.0		6010C
Chromium	75 - 125	11.0		1.39		10.00	96.1		6020A
Cobalt	75 - 125	24.8		0.103		25.00	98.8		6020A
Copper	75 - 125	14.6		2.42		12.50	97.4		6020A
Iron	75 - 125	1070		3.0	U	1000.00	107.0		6010C
Lead	75 - 125	50.6		0.007	J	50.00	101.2		6020A
Magnesium	75 - 125	23000		13200		10000.00	98.0		6010C
Mercury	76 - 126	0.99		0.02	U	1.00	99.0		7470A
Nickel	75 - 125	25.3		1.09		25.00	96.8		6020A
Potassium	75 - 125	13400		3100		10000.00	103.0		6010C
Sodium	75 - 125	18200		8500		10000.00	97.0		6010C
Vanadium	75 - 125	33.1		10.1		25.00	92.0		6020A
Zinc	75 - 125	39.3		12.8		25.00	106.0		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013S **Lab Code:** K1313208-001DISSS

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	0.96		0.02	U	1.00	96.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013SD **Lab Code:** K1313208-001DISSSD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	0.99		0.02	U	1.00	99.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-5MULT89811-12-2013S **Lab Code:** K1313208-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Manganese	75 - 125	27.8		3.180		25.00	98.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1313208
Project No.: 487.002.004
Units: UG/L
Project Name: RM11E Supplement RI/FS Investiga
Basis: NA
Matrix: WATER

Sample Name: RM11E-89881-12-2013A
Lab Code: K1313208-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	20.440		0.079		20.0	102		6020A
Arsenic	80 - 120	21.4		1.8		20.0	98		6020A
Barium	80 - 120	40.18		20.51		20.0	98		6020A
Beryllium	80 - 120	20.227		0.006		20.0	101		6020A
Cadmium	80 - 120	20.465		0.152		20.0	102		6020A
Calcium	80 - 120	47390.0		35580.0		12500	94		6010C
Chromium	80 - 120	20.47		1.39		20.0	95		6020A
Cobalt	80 - 120	19.358		0.103		20.0	96		6020A
Copper	80 - 120	22.00		2.42		20.0	98		6020A
Iron	80 - 120	2668.0		3.0		2500	107		6010C
Lead	80 - 120	20.097		0.007		20.0	100		6020A
Magnesium	80 - 120	25150.0		13160.0		12500	96		6010C
Mercury	80 - 120	0.98		0.02		1.0	98		7470A
Nickel	80 - 120	19.85		1.09		20.0	94		6020A
Potassium	80 - 120	15940.0		3098.0		12500	103		6010C
Sodium	80 - 120	20410.0		8495.0		12500	95		6010C
Vanadium	80 - 120	29.06		10.11		20.0	95		6020A
Zinc	80 - 120	32.23		12.81		20.0	97		6020A

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013A **Lab Code:** K1313208-001DISSA

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	1.00		0.02		1.0	100		7470A

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-5MULT89811-12-2013A **Lab Code:** K1313208-002A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Manganese	80 - 120	23.361		3.176		20.0	101		6020A

Metals

- 6 -
DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013D **Lab Code:** K1313208-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.079		0.054		37.6		6020A
Arsenic		1.8		1.9		5.4		6020A
Barium	20	20.5		20.5		0.0		6020A
Beryllium		0.006	U	0.006	U			6020A
Cadmium	20	0.152		0.147		3.3		6020A
Calcium	20	35600		35100		1.4		6010C
Chromium	20	1.39		1.37		1.4		6020A
Cobalt	20	0.103		0.103		0.0		6020A
Copper	20	2.42		2.38		1.7		6020A
Iron		3.0	U	3.0	U			6010C
Lead		0.007	J	0.005	U	200.0		6020A
Magnesium	20	13200		13100		0.8		6010C
Mercury		0.02	U	0.02	U			7470A
Nickel	20	1.09		1.06		2.8		6020A
Potassium	20	3100		3060		1.3		6010C
Sodium	20	8500		8410		1.1		6010C
Vanadium	20	10.1		9.75		3.5		6020A
Zinc	20	12.8		12.7		0.8		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-89881-12-2013SD **Lab Code:** K1313208-001DISSSD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.96		0.99		3.1		7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004 **Units:** UG/L

Project Name: RM11E Supplement RI/FS Investiga **Basis:** NA

Matrix: WATER

Sample Name: RM11E-5MULT89811-12-2013D **Lab Code:** K1313208-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Manganese	20	3.180		3.200		0.6		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

ALS Group USA, Corp.
dba ALS Environmental

Metals

LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Antimony	50	52.8	105.6					
Arsenic	50	51.9	103.8					
Barium	100	102	102.0					
Beryllium	2.5	2.570	102.8					
Cadmium	25	26.3	105.2					
Calcium	12500	12800	102.4					
Chromium	10	10.3	103.0					
Cobalt	25	25.7	102.8					
Copper	12.5	13.3	106.4					
Iron	2500	2580	103.2					
Lead	50	51.7	103.4					
Magnesium	12500	12300	98.4					
Manganese	25	25.4	101.6					
Mercury	5	4.87	97.4					
Nickel	25	25.6	102.4					
Potassium	12500	12700	101.6					
Sodium	12500	12100	96.8					
Vanadium	25	24.6	98.4					
Zinc	25	28.1	112.4					

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1313208

Project No.: 487.002.004

Project Name: RM11E Supplement RI/FS Investiga

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury	5	4.88	97.6					

Chlorinated Pesticides

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Jerome Peterson

Name: Jerome Peterson

Date: 12-16-13

Title: Scientist

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-89881-12-2013	**Units:**	ng/L
Lab Code:	K1313208-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDE	ND	U	0.50	0.11	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDT	ND	U	0.50	0.087	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDD	ND	U	0.50	0.10	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDE	ND	U	0.50	0.075	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDT	ND	U	0.50	0.088	1	12/05/13	12/10/13	KWG1313443	
alpha-Chlordane	ND	U	0.50	0.13	1	12/05/13	12/10/13	KWG1313443	
cis-Nonachlor	ND	U	0.50	0.17	1	12/05/13	12/10/13	KWG1313443	
gamma-Chlordane	ND	U	0.50	0.17	1	12/05/13	12/10/13	KWG1313443	
trans-Nonachlor	ND	U	0.50	0.12	1	12/05/13	12/10/13	KWG1313443	
Dieldrin	ND	U	5.0	0.74	1	12/05/13	12/10/13	KWG1313443	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/05/13	12/10/13	KWG1313443	
Heptachlor Epoxide	ND	U	1.0	0.16	1	12/05/13	12/10/13	KWG1313443	
Oxychlordane	ND	U	5.0	2.0	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	75	5-124	12/10/13	Acceptable
S_Oxychlordane-13C10	95	5-144	12/10/13	Acceptable
S_Heptachlrepox13C10	109	8-146	12/10/13	Acceptable
S_Endrin-13C12	105	20-157	12/10/13	Acceptable
S_4,4'DDD-d4	95	5-120	12/10/13	Acceptable
S_4,4'-DDT-d4	95	13-200	12/10/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	ng/L
Lab Code:	K1313208-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.52	0.12	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDE	ND	U	0.52	0.12	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDT	ND	U	0.52	0.089	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDD	ND	U	0.52	0.11	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDE	ND	U	0.52	0.077	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDT	ND	U	0.52	0.090	1	12/05/13	12/10/13	KWG1313443	
alpha-Chlordane	ND	U	0.52	0.14	1	12/05/13	12/10/13	KWG1313443	
cis-Nonachlor	ND	U	0.52	0.18	1	12/05/13	12/10/13	KWG1313443	
gamma-Chlordane	ND	U	0.52	0.18	1	12/05/13	12/10/13	KWG1313443	
trans-Nonachlor	ND	U	0.52	0.13	1	12/05/13	12/10/13	KWG1313443	
Dieldrin	ND	U	5.2	0.76	1	12/05/13	12/10/13	KWG1313443	
gamma-BHC (Lindane)	ND	U	0.52	0.31	1	12/05/13	12/10/13	KWG1313443	
Heptachlor Epoxide	ND	U	1.1	0.17	1	12/05/13	12/10/13	KWG1313443	
Oxychlordane	ND	U	5.2	2.1	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	79	5-124	12/10/13	Acceptable
S_Oxychlordane-13C10	102	5-144	12/10/13	Acceptable
S_Heptachlrepox13C10	106	8-146	12/10/13	Acceptable
S_Endrin-13C12	104	20-157	12/10/13	Acceptable
S_4,4'DDD-d4	92	5-120	12/10/13	Acceptable
S_4,4'-DDT-d4	93	13-200	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Storm water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313443-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDE	ND	U	0.50	0.11	1	12/05/13	12/10/13	KWG1313443	
2,4'-DDT	ND	U	0.50	0.087	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDD	ND	U	0.50	0.10	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDE	ND	U	0.50	0.075	1	12/05/13	12/10/13	KWG1313443	
4,4'-DDT	ND	U	0.50	0.088	1	12/05/13	12/10/13	KWG1313443	
alpha-Chlordane	ND	U	0.50	0.13	1	12/05/13	12/10/13	KWG1313443	
cis-Nonachlor	ND	U	0.50	0.17	1	12/05/13	12/10/13	KWG1313443	
gamma-Chlordane	ND	U	0.50	0.17	1	12/05/13	12/10/13	KWG1313443	
trans-Nonachlor	ND	U	0.50	0.12	1	12/05/13	12/10/13	KWG1313443	
Dieldrin	ND	U	5.0	0.74	1	12/05/13	12/10/13	KWG1313443	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/05/13	12/10/13	KWG1313443	
Heptachlor Epoxide	ND	U	1.0	0.16	1	12/05/13	12/10/13	KWG1313443	
Oxychlordane	ND	U	5.0	2.0	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	79	5-124	12/10/13	Acceptable
S_Oxychlordane-13C10	110	5-144	12/10/13	Acceptable
S_Heptachlrepox13C10	110	8-146	12/10/13	Acceptable
S_Endrin-13C12	109	20-157	12/10/13	Acceptable
S_4,4'DDD-d4	97	5-120	12/10/13	Acceptable
S_4,4'-DDT-d4	94	13-200	12/10/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-89881-12-2013	K1313208-001	75	95	109	105	95	95
RM11E-5MULT89811-12-2013	K1313208-002	79	102	106	104	92	93
Method Blank	KWG1313443-3	79	110	110	109	97	94
Lab Control Sample	KWG1313443-1	81	105	117	114	103	96
Duplicate Lab Control Sample	KWG1313443-2	80	104	110	109	91	85

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\121013\1210F005.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313638-1
Analysis Lot: KWG1313638

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	RT	Area	RT	Area	RT
	Results ==>	54,042	15.32	5,801	11.42	1,922	14.02
	Upper Limit ==>	108,084	15.82	11,602	11.92	3,843	14.52
	Lower Limit ==>	27,021	14.82	290	10.92	96	13.52
	ICAL Result ==>	62,196	15.30	5,933	11.42	1,627	14.02
Associated Analyses							
Method Blank	KWG1313443-3	52,652	15.32	3,891	11.43	1,653	14.02
Lab Control Sample	KWG1313443-1	58,233	15.32	4,425	11.42	1,741	14.02
Duplicate Lab Control Sample	KWG1313443-2	57,843	15.32	4,336	11.42	1,706	14.02
RM11E-89881-12-2013	K1313208-001	58,152	15.32	4,119	11.42	1,578	14.02
RM11E-5MULT89811-12-2013	K1313208-002	51,115	15.31	3,805	11.42	1,483	14.02

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\121013\1210F005.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313638-1
Analysis Lot: KWG1313638

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	2,866	14.12	1,360	16.46	7,614	17.01
	Upper Limit ==>	5,732	14.62	2,721	16.96	15,228	17.51
	Lower Limit ==>	143	13.62	68	15.96	381	16.51
	ICAL Result ==>	2,442	14.12	1,401	16.45	10,018	17.00
Associated Analyses							
Method Blank	KWG1313443-3	2,383	14.13	1,250	16.46	7,741	17.02
Lab Control Sample	KWG1313443-1	2,797	14.12	1,448	16.46	9,123	17.01
Duplicate Lab Control Sample	KWG1313443-2	2,598	14.12	1,367	16.46	8,033	17.01
RM11E-89881-12-2013	K1313208-001	2,597	14.12	1,334	16.46	8,437	17.01
RM11E-5MULT89811-12-2013	K1313208-002	2,216	14.12	1,152	16.46	7,172	17.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\121013\1210F005.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1313638-1
Analysis Lot: KWG1313638

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	4,311	18.03
	Upper Limit ==>	8,623	18.53
	Lower Limit ==>	216	17.53
	ICAL Result ==>	6,386	18.01
Associated Analyses			
Method Blank	KWG1313443-3	4,764	18.04
Lab Control Sample	KWG1313443-1	5,408	18.03
Duplicate Lab Control Sample	KWG1313443-2	4,752	18.03
RM11E-89881-12-2013	K1313208-001	5,305	18.03
RM11E-5MULT89811-12-2013	K1313208-002	4,567	18.03

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Storm water

Service Request: K1313208
Date Extracted: 12/05/2013
Date Analyzed: 12/10/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1313443

	Lab Control Sample KWG1313443-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313443-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	17.3	20.0	86	19.7	20.0	99	50-120	13	30
2,4'-DDE	17.0	20.0	85	19.6	20.0	98	24-123	14	30
2,4'-DDT	18.9	20.0	95	20.7	20.0	104	50-120	9	30
4,4'-DDD	18.1	20.0	90	20.0	20.0	100	42-120	10	30
4,4'-DDE	17.1	20.0	86	19.1	20.0	95	50-120	11	30
4,4'-DDT	19.0	20.0	95	20.0	20.0	100	50-120	5	30
alpha-Chlordane	19.4	20.0	97	19.4	20.0	97	50-120	0	30
cis-Nonachlor	19.8	20.0	99	19.5	20.0	97	50-120	2	30
gamma-Chlordane	18.7	20.0	94	19.3	20.0	97	50-120	3	30
trans-Nonachlor	19.0	20.0	95	19.4	20.0	97	50-120	2	30
Dieldrin	15.8	20.0	79	16.2	20.0	81	50-120	3	30
gamma-BHC (Lindane)	18.5	20.0	93	20.5	20.0	103	50-120	10	30
Heptachlor Epoxide	19.8	20.0	99	21.1	20.0	105	50-120	6	30
Oxychlordane	20.2	20.0	101	21.8	20.0	109	50-120	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	17:25

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313443-3	**File ID:**	J:\MS21\DATA\121013\1210F006.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313443

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313443-1	J:\MS21\DATA\121013\1210F007.D	12/10/13	17:49
Duplicate Lab Control Sample	KWG1313443-2	J:\MS21\DATA\121013\1210F008.D	12/10/13	18:16
RM11E-89881-12-2013	K1313208-001	J:\MS21\DATA\121013\1210F012.D	12/10/13	20:05
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS21\DATA\121013\1210F013.D	12/10/13	20:32

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	17:49

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313443-1	**File ID:**	J:\MS21\DATA\121013\1210F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313443

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313443-3	J:\MS21\DATA\121013\1210F006.D	12/10/13	17:25
RM11E-89881-12-2013	K1313208-001	J:\MS21\DATA\121013\1210F012.D	12/10/13	20:05
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS21\DATA\121013\1210F013.D	12/10/13	20:32

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.896	B	1.0	0.956	C	2.0	0.939	D	5.0	0.960	E	10	0.952
	F	20	0.901	G	40	0.936	H	60	0.977	I	80	0.998	J	100	1.03
2,4'-DDE	A	0.50	0.754	B	1.0	0.744	C	2.0	0.771	D	5.0	0.757	E	10	0.765
	F	20	0.695	G	40	0.734	H	60	0.757	I	80	0.776	J	100	0.785
2,4'-DDT	A	0.50	1.00	B	1.0	0.980	C	2.0	0.965	D	5.0	0.974	E	10	1.02
	F	20	0.945	G	40	0.987	H	60	1.01	I	80	1.01	J	100	1.01
4,4'-DDD	A	0.50	0.965	B	1.0	0.880	C	2.0	0.865	D	5.0	0.926	E	10	0.916
	F	20	0.850	G	40	0.876	H	60	0.906	I	80	0.918	J	100	0.949
4,4'-DDE	A	0.50	0.514	B	1.0	0.550	C	2.0	0.567	D	5.0	0.562	E	10	0.568
	F	20	0.524	G	40	0.541	H	60	0.559	I	80	0.567	J	100	0.574
4,4'-DDT	A	0.50	0.988	B	1.0	0.943	C	2.0	1.00	D	5.0	1.01	E	10	1.02
	F	20	0.985	G	40	1.04	H	60	1.07	I	80	1.09	J	100	1.11
alpha-Chlordane	A	0.50	4.25	B	1.0	4.59	C	2.0	4.19	D	5.0	4.22	E	10	4.25
	F	20	4.30	G	40	3.95	H	60	3.91	I	80	3.71	J	100	3.91
cis-Nonachlor	A	0.50	1.93	B	1.0	2.44	C	2.0	2.19	D	5.0	2.17	E	10	2.27
	F	20	2.28	G	40	2.00	H	60	1.98	I	80	1.83	J	100	1.97
gamma-Chlordane	A	0.50	4.50	B	1.0	4.99	C	2.0	4.24	D	5.0	4.52	E	10	4.56
	F	20	4.50	G	40	4.20	H	60	4.14	I	80	3.94	J	100	4.12
trans-Nonachlor	A	0.50	2.19	B	1.0	2.79	C	2.0	2.52	D	5.0	2.56	E	10	2.70
	F	20	2.72	G	40	2.49	H	60	2.43	I	80	2.32	J	100	2.44
Dieldrin				B	1.0	1.04	C	2.0	0.972	D	5.0	1.12	E	10	1.14
	F	20	1.02	G	40	1.01	H	60	1.06	I	80	1.10	J	100	1.07
gamma-BHC (Lindane)	A	0.50	0.635	B	1.0	0.586	C	2.0	0.598	D	5.0	0.546	E	10	0.564
	F	20	0.540	G	40	0.580	H	60	0.561	I	80	0.569	J	100	0.576
Heptachlor Epoxide				B	1.0	1.14	C	2.0	1.01	D	5.0	1.09	E	10	1.18
	F	20	1.12	G	40	1.10	H	60	1.11	I	80	1.08	J	100	1.07
Oxychlordane				B	1.0	1.00	C	2.0	0.948	D	5.0	1.03	E	10	0.982
	F	20	0.983	G	40	0.882	H	60	0.832	I	80	0.804	J	100	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.474	B	20	0.447	C	20	0.457	D	20	0.474	E	20	0.483
	F	20	0.477	G	20	0.454	H	20	0.471	I	20	0.484	J	20	0.472
S_Oxychlordane-13C10	A	20	0.144	B	20	0.126	C	20	0.141	D	20	0.136	E	20	0.136
	F	20	0.131	G	20	0.144	H	20	0.148	I	20	0.164	J	20	0.154
S_Heptachlrepox13C10	A	20	0.198	B	20	0.199	C	20	0.207	D	20	0.202	E	20	0.201
	F	20	0.196	G	20	0.204	H	20	0.203	I	20	0.224	J	20	0.215
S_Endrin-13C12	A	20	0.107	B	20	0.108	C	20	0.104	D	20	0.106	E	20	0.106
	F	20	0.113	G	20	0.115	H	20	0.107	I	20	0.109	J	20	0.113
S_4,4'DDD-d4	A	5.0	3.05	B	5.0	2.97	C	5.0	2.99	D	5.0	2.96	E	5.0	3.01
	F	5.0	3.22	G	5.0	3.03	H	5.0	3.02	I	5.0	3.09	J	5.0	3.08
S_4,4'-DDT-d4	A	5.0	1.78	B	5.0	1.83	C	5.0	1.79	D	5.0	1.88	E	5.0	1.87
	F	5.0	2.05	G	5.0	1.95	H	5.0	1.97	I	5.0	2.07	J	5.0	2.09

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.3		≤ 20	0.954		.01
2,4'-DDE	MS	AverageRF	% RSD	3.4		≤ 20	0.754		.01
2,4'-DDT	MS	AverageRF	% RSD	2.4		≤ 20	0.990		.01
4,4'-DDD	MS	AverageRF	% RSD	4.1		≤ 20	0.905		.01
4,4'-DDE	MS	AverageRF	% RSD	3.7		≤ 20	0.553		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.03		.01
alpha-Chlordane	MS	AverageRF	% RSD	6.2		≤ 20	4.13		.01
cis-Nonachlor	MS	AverageRF	% RSD	9.2		≤ 20	2.11		.01
gamma-Chlordane	MS	AverageRF	% RSD	6.9		≤ 20	4.37		.01
trans-Nonachlor	MS	AverageRF	% RSD	7.4		≤ 20	2.52		.01
Dieldrin	MS	AverageRF	% RSD	5.3		≤ 20	1.06		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	4.7		≤ 20	0.575		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.1		≤ 20	1.10		.01
Oxychlordane	MS	AverageRF	% RSD	9.1		≤ 20	0.923		.01
S_GBHCD6	SURR	AverageRF	% RSD	2.6		≤ 20	0.469		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	7.9		≤ 20	0.142		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	4.2		≤ 20	0.205		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	3.2		≤ 20	0.109		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.5		≤ 20	3.04		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	5.9		≤ 20	1.93		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL12946
Units: ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.954	0.940	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.754	0.745	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	19	0.990	0.936	-5	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.905	0.851	-6	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.553	0.544	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.03	0.970	-5	NA	± 25 %	AverageRF
alpha-Chlordane	20	20	4.13	4.13	0	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	2.11	2.16	3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	4.37	4.37	0	NA	± 25 %	AverageRF
trans-Nonachlor	20	20	2.52	2.50	-1	NA	± 25 %	AverageRF
Dieldrin	20	20	1.06	1.04	-2	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.575	0.565	-2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.10	1.11	1	NA	± 25 %	AverageRF
Oxychlordane	20	19	0.923	0.875	-5	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 12/03/2013
Calibration ID: CAL12946
Analysis Lot: KWG1313638
Units: ng/ml

File ID: J:\MS21\DATA\121013\1210F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	.01	0.954	0.938	-2	NA	± 25 %	AverageRF
2,4'-DDE	20	21	.01	0.754	0.785	4	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	0.990	1.05	6	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	0.905	0.894	-1	NA	± 25 %	AverageRF
4,4'-DDE	20	20	.01	0.553	0.540	-2	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.03	0.985	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	4.13	3.83	-7	NA	± 25 %	AverageRF
cis-Nonachlor	20	16	.01	2.11	1.72	-18	NA	± 25 %	AverageRF
gamma-Chlordane	20	19	.01	4.37	4.08	-7	NA	± 25 %	AverageRF
trans-Nonachlor	20	18	.01	2.52	2.22	-12	NA	± 25 %	AverageRF
Dieldrin	20	17	.01	1.06	0.903	-15	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	.01	0.575	0.585	2	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.10	1.13	2	NA	± 25 %	AverageRF
Oxychlordane	20	21	.01	0.923	0.958	4	NA	± 25 %	AverageRF
S_GBHCD6	20	23	.01	0.469	0.537	14	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	25	.01	0.142	0.178	25	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	26	.01	0.205	0.265	29	NA	± 30 %	AverageRF
S_Endrin-13C12	20	23	.01	0.109	0.126	16	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.6	.01	3.04	2.82	-7	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	4.1	.01	1.93	1.60	-17	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313638
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F005.D	Continuing Calibration Verification	KWG1313638-1	12/10/2013	16:45		12/10/2013	16:45
1210F006.D	Method Blank	KWG1313443-3	12/10/2013	17:25		12/10/2013	17:25
1210F007.D	Lab Control Sample	KWG1313443-1	12/10/2013	17:49		12/10/2013	17:49
1210F008.D	Duplicate Lab Control Sample	KWG1313443-2	12/10/2013	18:16		12/10/2013	18:16
1210F009.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:43		12/10/2013	18:43
1210F010.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:11		12/10/2013	19:11
1210F011.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:38		12/10/2013	19:38
1210F012.D	RM11E-89881-12-2013	K1313208-001	12/10/2013	20:05		12/10/2013	20:05
1210F013.D	RM11E-5MULT89811-12-2013	K1313208-002	12/10/2013	20:32		12/10/2013	20:32
1210F014.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:00		12/10/2013	21:00
1210F015.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:27		12/10/2013	21:27
1210F016.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:54		12/10/2013	21:54
1210F017.D	ZZZZZZ	ZZZZZZ	12/10/2013	22:21		12/10/2013	22:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/05/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313443
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-89881-12-2013	K1313208-001	12/04/13	12/05/13	1010ml	1.0ml	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	980ml	1.0ml	NA	
Method Blank	KWG1313443-3	NA	NA	1010ml	1.0ml	NA	
Lab Control Sample	KWG1313443-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313443-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Diesel and Residual Range Organics

Organic Analysis:
Diesel and Residual Range Organics - Silca Gel Treated
Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Service Request: K1313208

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MULT89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Lorem E Portwood
Name: Lorem Portwood
Date: 12/20/13
Title:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	ug/L
Lab Code:	K1313208-001	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	290	13	1	12/05/13	12/11/13	KWG1313579	
Residual Range Organics (RRO)	ND	U	290	22	1	12/05/13	12/11/13	KWG1313579	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	12/11/13	Acceptable
n-Triacontane	115	50-150	12/11/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	ug/L
Lab Code:	K1313208-002	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	12/05/13	12/11/13	KWG1313579	
Residual Range Organics (RRO)	ND	U	250	19	1	12/05/13	12/11/13	KWG1313579	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	50-150	12/11/13	Acceptable
n-Triacontane	107	50-150	12/11/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313579-3	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	12/05/13	12/11/13	KWG1313579	
Residual Range Organics (RRO)	ND	U	250	19	1	12/05/13	12/11/13	KWG1313579	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	12/11/13	Acceptable
n-Triacontane	112	50-150	12/11/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-MULT89881-12-2013	K1313208-001	100	115
RM11E-5MULT89811-12-2013	K1313208-002	93	107
Method Blank	KWG1313579-3	94	112
Lab Control Sample	KWG1313579-1	110	121
Duplicate Lab Control Sample	KWG1313579-2	90	102

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/05/2013
Date Analyzed: 12/11/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313579

	Lab Control Sample KWG1313579-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313579-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	1550	1600	97	1210	1600	76	46-140	25	30
Residual Range Organics (RRO)	975	800	122	777	800	97	45-159	23	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Water	**Date Analyzed:**	12/11/2013
		Time Analyzed:	17:07

Method Blank Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313579-3	**File ID:**	J:\GC21\DATA\121113B\1211F021.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313579

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313579-1	J:\GC21\DATA\121113B\1211F017.D	12/11/13	16:23
Duplicate Lab Control Sample	KWG1313579-2	J:\GC21\DATA\121113B\1211F019.D	12/11/13	16:45
RM11E-MULT89881-12-2013	K1313208-001	J:\GC21\DATA\121113B\1211F023.D	12/11/13	17:29
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC21\DATA\121113B\1211F025.D	12/11/13	17:51

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Water	**Date Analyzed:**	12/11/2013
		Time Analyzed:	16:23

Lab Control Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313579-1	**File ID:**	J:\GC21\DATA\121113B\1211F017.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313579

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313579-3	J:\GC21\DATA\121113B\1211F021.D	12/11/13	17:07
RM11E-MULT89881-12-2013	K1313208-001	J:\GC21\DATA\121113B\1211F023.D	12/11/13	17:29
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC21\DATA\121113B\1211F025.D	12/11/13	17:51

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\102113B-CAL\1021F103.D	I	J:\GC21\DATA\102113B-CAL\1023F019.D
B	J:\GC21\DATA\102113B-CAL\1021F105.D	J	J:\GC21\DATA\102113B-CAL\1023F021.D
C	J:\GC21\DATA\102113B-CAL\1021F107.D	K	J:\GC21\DATA\102113B-CAL\1023F041.D
D	J:\GC21\DATA\102113B-CAL\1021F109.D	L	J:\GC21\DATA\102113B-CAL\1023F043.D
E	J:\GC21\DATA\102113B-CAL\1021F111.D	M	J:\GC21\DATA\102113B-CAL\1023F045.D
F	J:\GC21\DATA\102113B-CAL\1021F113.D	N	J:\GC21\DATA\102113B-CAL\1023F047.D
G	J:\GC21\DATA\102113B-CAL\1023F033.D		
H	J:\GC21\DATA\102113B-CAL\1023F035.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)				G	20	976	H	50	1030				J	500	1030
	K	2000	1030	L	5000	911	M	20000	898	N	50000	856			
Residual Range Organics (RRO)	A	20	695	B	50	689	C	200	626	D	500	603	E	2000	520
	F	5000	598												
o-Terphenyl				G	1.0	1380	H	2.5	1430				J	25	1370
	K	100	1340	L	250	1170									
n-Triacontane				G	1.0	916	H	2.5	979				J	25	1180
	K	100	1130	L	250	1000									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	7.7		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.996		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	7.3		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	10.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/22/2013
Date Analyzed: 10/22/2013 - 10/23/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL12862
Units: ppm

File ID: J:\GC21\DATA\102113B-CAL\1021F119.D
J:\GC21\DATA\102113B-CAL\1023F049.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	962	943	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	622	626	NA	8	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313686
Units: ppm

File ID: J:\GC21\DATA\121113B\1211F011.D
J:\GC21\DATA\121113B\1211F013.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	880	962	852	-12	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	940	622	547	NA	-6	± 15 %	Linear
o-Terphenyl	50	44	1340	1170	-12	NA	± 15 %	AverageRF
n-Triacontane	50	52	1040	1070	3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313686
Units: ppm

File ID: J:\GC21\DATA\121113B\1211F035.D
J:\GC21\DATA\121113B\1211F037.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	960	962	920	-4	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	960	622	558	NA	-4	± 15 %	Linear
o-Terphenyl	50	47	1340	1260	-6	NA	± 15 %	AverageRF
n-Triacontane	50	52	1040	1090	4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313686
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1211F011.D	Continuing Calibration Verification	KWG1313686-1	12/11/2013	15:15		12/11/2013	15:31
1211F013.D	Continuing Calibration Verification	KWG1313686-1	12/11/2013	15:39		12/11/2013	15:55
1211F015.D	Instrument Blank	KWG1313686-3	12/11/2013	16:01		12/11/2013	16:17
1211F017.D	Lab Control Sample	KWG1313579-1	12/11/2013	16:23		12/11/2013	16:39
1211F019.D	Duplicate Lab Control Sample	KWG1313579-2	12/11/2013	16:45		12/11/2013	17:01
1211F021.D	Method Blank	KWG1313579-3	12/11/2013	17:07		12/11/2013	17:23
1211F023.D	RM11E-MULT89881-12-2013	K1313208-001	12/11/2013	17:29		12/11/2013	17:45
1211F025.D	RM11E-5MULT89811-12-2013	K1313208-002	12/11/2013	17:51		12/11/2013	18:07
1211F027.D	ZZZZZZ	ZZZZZZ	12/11/2013	18:13		12/11/2013	18:29
1211F029.D	ZZZZZZ	ZZZZZZ	12/11/2013	18:35		12/11/2013	18:51
1211F031.D	ZZZZZZ	ZZZZZZ	12/11/2013	18:57		12/11/2013	19:13
1211F033.D	ZZZZZZ	ZZZZZZ	12/11/2013	19:19		12/11/2013	19:35
1211F035.D	Continuing Calibration Verification	KWG1313686-2	12/11/2013	19:41		12/11/2013	19:57
1211F037.D	Continuing Calibration Verification	KWG1313686-2	12/11/2013	20:03		12/11/2013	20:19
1211F039.D	Instrument Blank	KWG1313686-4	12/11/2013	20:26		12/11/2013	20:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/05/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313579
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MULT89881-12-2013	K1313208-001	12/04/13	12/05/13	880mL	2mL	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	1000mL	2mL	NA	
Method Blank	KWG1313579-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313579-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313579-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Gasoline Range Organics

Organic Analysis:
Gasoline Range Organics

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MULT89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KReasoner

Name: KReasoner

Date: 12/17/13

Title: Scientist

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Gasoline Range Organics

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	ug/L
Lab Code:	K1313208-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/11/13	12/11/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	12/11/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Gasoline Range Organics

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	ug/L
Lab Code:	K1313208-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/11/13	12/11/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	93	50-150	12/11/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313807-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/12/13	12/12/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	91	50-150	12/12/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MULT89881-12-2013	K1313208-001	94
RM11E-5MULT89811-12-2013	K1313208-002	93
Batch QC	K1313248-002	91
Batch QCDUP	KWG1313807-1	96
Method Blank	KWG1313807-3	91
Lab Control Sample	KWG1313807-2	88

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/11/2013
Date Analyzed: 12/11/2013

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: Batch QC
Lab Code: K1313248-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Level: Low
Extraction Lot: KWG1313807

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313807-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	13	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/12/2013
Date Analyzed: 12/12/2013

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313807

	Lab Control Sample KWG1313807-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Gasoline Range Organics-NWTPH	455	500	91	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	01:46

Method Blank Summary
Gasoline Range Organics

Sample Name:	Method Blank	**Instrument ID:**	GC39
Lab Code:	KWG1313807-3	**File ID:**	J:\GC39\DATA\121113\1211F017.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1313807

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MULT89881-12-2013	K1313208-001	J:\GC39\DATA\121113\1211F008.D	12/11/13	22:11
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC39\DATA\121113\1211F009.D	12/11/13	22:35
Batch QC	K1313248-002	J:\GC39\DATA\121113\1211F011.D	12/11/13	23:23
Batch QCDUP	KWG1313807-1	J:\GC39\DATA\121113\1211F012.D	12/11/13	23:47
Lab Control Sample	KWG1313807-2	J:\GC39\DATA\121113\1211F016.D	12/12/13	01:23

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	01:23

Lab Control Sample Summary
Gasoline Range Organics

Sample Name:	Lab Control Sample	**Instrument ID:**	GC39
Lab Code:	KWG1313807-2	**File ID:**	J:\GC39\DATA\121113\1211F016.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1313807

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MULT89881-12-2013	K1313208-001	J:\GC39\DATA\121113\1211F008.D	12/11/13	22:11
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC39\DATA\121113\1211F009.D	12/11/13	22:35
Batch QC	K1313248-002	J:\GC39\DATA\121113\1211F011.D	12/11/13	23:23
Batch QCDUP	KWG1313807-1	J:\GC39\DATA\121113\1211F012.D	12/11/13	23:47
Method Blank	KWG1313807-3	J:\GC39\DATA\121113\1211F017.D	12/12/13	01:46

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Level ID	File ID	Level ID	File ID
A	J:\GC39\Data\101113\1011F009.D	E	J:\GC39\Data\101113\1011F013.D
B	J:\GC39\Data\101113\1011F010.D	F	J:\GC39\Data\101113\1011F014.D
C	J:\GC39\Data\101113\1011F011.D	G	J:\GC39\Data\101113\1011F015.D
D	J:\GC39\Data\101113\1011F012.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Gasoline Range Organics-NWTPH	A	50	85600	B	100	86100	C	200	83700	D	500	77200	E	1000	79400
	F	5000	78900												
1,4-Difluorobenzene	A	100	1.18E+5	B	100	1.19E+5	C	100	1.19E+5	D	100	1.19E+5	E	100	1.20E+5

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Gasoline Range Organics-NWTPH	MS	AverageRF	% RSD	4.6		≤ 20
1,4-Difluorobenzene	SURR	AverageRF	% RSD	0.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/11/2013
Date Analyzed: 10/11/2013

Second Source Calibration Verification
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration ID: CAL12840
Units: ug/L

File ID: J:\GC39\Data\101113\1011F019.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	480	81800	76900	-6	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313806
Units: ug/L

File ID: J:\GC39\DATA\121113\1211F006.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	430	81800	69800	-15	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	99	119000	118000	-1	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313806
Units: ug/L

File ID: J:\GC39\DATA\121113\1211F018.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	420	81800	68500	-16	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	95	119000	113000	-5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Gasoline Range Organics

Analysis Method: NWTPH-Gx

Analysis Lot: KWG1313806
Instrument ID: GC39
Column: DB-624

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1211F006.D	Continuing Calibration Verification	KWG1313806-1	12/11/2013	21:04		12/11/2013	21:19
1211F007.D	Instrument Blank	KWG1313806-3	12/11/2013	21:28		12/11/2013	21:43
1211F008.D	RM11E-MULT89881-12-2013	K1313208-001	12/11/2013	22:11		12/11/2013	22:26
1211F009.D	RM11E-5MULT89811-12-2013	K1313208-002	12/11/2013	22:35		12/11/2013	22:50
1211F010.D	ZZZZZZ	ZZZZZZ	12/11/2013	22:59		12/11/2013	23:14
1211F011.D	Batch QC	K1313248-002	12/11/2013	23:23		12/11/2013	23:38
1211F012.D	Batch QCDUP	KWG1313807-1	12/11/2013	23:47		12/12/2013	00:02
1211F013.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:11		12/12/2013	00:26
1211F014.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:35		12/12/2013	00:50
1211F015.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:59		12/12/2013	01:14
1211F016.D	Lab Control Sample	KWG1313807-2	12/12/2013	01:23		12/12/2013	01:38
1211F017.D	Method Blank	KWG1313807-3	12/12/2013	01:46		12/12/2013	02:01
1211F018.D	Continuing Calibration Verification	KWG1313806-2	12/12/2013	02:10		12/12/2013	02:25
1211F019.D	Instrument Blank	KWG1313806-4	12/12/2013	02:34		12/12/2013	02:49

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/11/2013

Extraction Prep Log
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Extraction Lot: KWG1313807
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MULT89881-12-2013	K1313208-001	12/04/13	12/05/13	10ml	10ml	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	10ml	10ml	NA	
Batch QCDUP	KWG1313807-1	NA	NA	10ml	10ml	NA	
Method Blank	KWG1313807-3	NA	NA	10ml	10ml	NA	
Batch QC	K1313248-002	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1313807-2	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MULT89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: 12/27/13 Title: _____

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	ug/L
Lab Code:	K1313208-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0054	0.0016	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	Ui	0.011	0.0035	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0054	0.0039	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0054	0.0028	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	U	0.0054	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	Ui	0.0054	0.0013	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0054	0.0011	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0054	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0054	0.0011	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	ug/L
Lab Code:	K1313208-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0053	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	Ui	0.011	0.0024	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0053	0.0031	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	U	0.0053	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	Ui	0.0053	0.0013	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	Ui	0.0053	0.0012	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0053	0.0011	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0053	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0053	0.0011	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	87	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313603-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	Ui	0.010	0.0034	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0050	0.0040	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0050	0.0018	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	Ui	0.0050	0.0032	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	97	39-140	12/12/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MULT89881-12-2013	K1313208-001	84
RM11E-5MULT89811-12-2013	K1313208-002	87
Method Blank	KWG1313603-3	97
Lab Control Sample	KWG1313603-1	89
Duplicate Lab Control Sample	KWG1313603-2	109

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/09/2013
Date Analyzed: 12/12/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313603

	Lab Control Sample KWG1313603-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313603-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	0.178	0.200	89	0.186	0.200	93	60-103	4	30
Aroclor 1260	0.173	0.200	87	0.213	0.200	106 *	60-103	20	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	01:39

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1313603-3	**File ID:**	J:\GC22\DATA\121113UL.B\1211F012.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313603

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313603-1	J:\GC22\DATA\121113UL.B\1211F010.D	12/12/13	00:54
Duplicate Lab Control Sample	KWG1313603-2	J:\GC22\DATA\121113UL.B\1211F011.D	12/12/13	01:16
RM11E-MULT89881-12-2013	K1313208-001	J:\GC22\DATA\121113UL.B\1211F013.D	12/12/13	02:02
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC22\DATA\121113UL.B\1211F014.D	12/12/13	02:24

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	00:54

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC22.i
Lab Code:	KWG1313603-1	**File ID:**	J:\GC22\DATA\121113UL.B\1211F010.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313603

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313603-3	J:\GC22\DATA\121113UL.B\1211F012.D	12/12/13	01:39
RM11E-MULT89881-12-2013	K1313208-001	J:\GC22\DATA\121113UL.B\1211F013.D	12/12/13	02:02
RM11E-5MULT89811-12-2013	K1313208-002	J:\GC22\DATA\121113UL.B\1211F014.D	12/12/13	02:24

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	7.97E+6	B	0.50	8.27E+6	C	5.0	8.08E+6	D	10	7.92E+6	E	20	7.42E+6
	F	50	7.26E+6												
Aroclor 1016 {1}	A	2.5	1.11E+5	B	5.0	1.12E+5	C	50	1.05E+5	D	100	1.04E+5	E	200	93000
	F	500	87600												
Aroclor 1016 {2}	A	2.5	3.79E+5	B	5.0	3.97E+5	C	50	3.68E+5	D	100	3.87E+5	E	200	3.42E+5
	F	500	3.67E+5												
Aroclor 1016 {3}	A	2.5	1.72E+5	B	5.0	1.93E+5	C	50	2.02E+5	D	100	1.93E+5	E	200	1.75E+5
	F	500	1.62E+5												
Aroclor 1016 {4}	A	2.5	2.08E+5	B	5.0	2.10E+5	C	50	2.15E+5	D	100	2.07E+5	E	200	1.90E+5
	F	500	1.78E+5												
Aroclor 1016 {5}	A	2.5	1.50E+5	B	5.0	1.54E+5	C	50	1.64E+5	D	100	1.59E+5	E	200	1.46E+5
	F	500	1.38E+5												
Aroclor 1260 {1}	A	2.5	2.52E+5	B	5.0	2.45E+5	C	50	2.56E+5	D	100	2.47E+5	E	200	2.39E+5
	F	500	2.33E+5												
Aroclor 1260 {2}	A	2.5	3.73E+5	B	5.0	3.70E+5	C	50	3.67E+5	D	100	3.58E+5	E	200	3.30E+5
	F	500	3.15E+5												
Aroclor 1260 {3}	A	2.5	3.82E+5	B	5.0	4.02E+5	C	50	4.07E+5	D	100	3.98E+5	E	200	3.71E+5
	F	500	3.58E+5												
Aroclor 1260 {4}	A	2.5	8.63E+5	B	5.0	8.81E+5	C	50	9.13E+5	D	100	9.25E+5	E	200	8.76E+5
	F	500	8.58E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.24E+5	B	5.0	6.87E+5	C	50	7.11E+5	D	100	7.04E+5	E	200	6.44E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	7.1		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	3.5		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	5.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	3.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	5.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	100	102000	103000	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	373000	382000	2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	183000	186000	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	201000	212000	5	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	120	152000	179000	18	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	90	245000	221000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	352000	390000	11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	386000	426000	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	886000	965000	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	669000	711000	6	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	8.26E+6	B	0.50	8.50E+6	C	5.0	8.66E+6	D	10	8.79E+6	E	20	8.42E+6
	F	50	8.58E+6												
Aroclor 1016 {1}	A	2.5	1.60E+5	B	5.0	1.74E+5	C	50	1.85E+5	D	100	1.83E+5	E	200	1.72E+5
	F	500	1.68E+5												
Aroclor 1016 {2}	A	2.5	2.67E+5	B	5.0	2.62E+5	C	50	2.60E+5	D	100	2.64E+5	E	200	2.51E+5
	F	500	2.52E+5												
Aroclor 1016 {3}	A	2.5	3.64E+5	B	5.0	3.71E+5	C	50	3.80E+5	D	100	3.85E+5	E	200	3.77E+5
	F	500	4.04E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	3.16E+5	C	50	3.10E+5	D	100	3.19E+5	E	200	3.07E+5
	F	500	3.08E+5												
Aroclor 1016 {5}	A	2.5	2.29E+5	B	5.0	2.29E+5	C	50	2.29E+5	D	100	2.29E+5	E	200	2.19E+5
	F	500	2.22E+5												
Aroclor 1260 {1}	A	2.5	2.28E+5	B	5.0	2.37E+5	C	50	2.46E+5	D	100	2.40E+5	E	200	2.34E+5
	F	500	2.35E+5												
Aroclor 1260 {2}	A	2.5	4.95E+5	B	5.0	4.45E+5	C	50	4.27E+5	D	100	4.13E+5	E	200	4.13E+5
	F	500	4.01E+5												
Aroclor 1260 {3}	A	2.5	4.09E+5	B	5.0	4.22E+5	C	50	4.28E+5	D	100	4.32E+5	E	200	4.17E+5
	F	500	4.19E+5												
Aroclor 1260 {4}	A	2.5	9.51E+5	B	5.0	9.41E+5	C	50	1.02E+6	D	100	1.06E+6	E	200	1.03E+6
	F	500	1.07E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.15E+5	B	5.0	6.26E+5	C	50	6.44E+5	D	100	6.58E+5	E	200	6.36E+5
	F	500	6.46E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	2.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	2.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	3.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	1.6		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	2.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	7.9		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	120	174000	200000	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	259000	269000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	380000	395000	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	313000	331000	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	100	226000	233000	3	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	110	237000	266000	12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	120	432000	517000	20	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	120	421000	490000	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	120	1010000	1180000	17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	638000	696000	9	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL.B\1211F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	3.6	7820000	5700000	-27 *	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	55	102000	113000	11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	52	373000	387000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	53	183000	195000	7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	49	201000	199000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	49	152000	149000	-2	NA	± 100 %	AverageRF
Aroclor 1016	50	52	NA	NA	NA	4	± 20 %	NA
Aroclor 1260 {1}	50	42	245000	204000	-17	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	41	352000	289000	-18	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	40	386000	312000	-19	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	39	886000	690000	-22	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	39	669000	519000	-22	NA	± 100 %	AverageRF
Aroclor 1260	50	40	NA	NA	NA	-20	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL_R.B\1211F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.9	8530000	8350000	-2	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	51	174000	177000	2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	46	259000	237000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	49	380000	374000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	313000	311000	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	50	226000	226000	0	NA	± 100 %	AverageRF
Aroclor 1016	50	49	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	50	51	237000	241000	2	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	50	432000	431000	0	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	50	421000	425000	1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	50	1010000	1000000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	50	638000	637000	0	NA	± 100 %	AverageRF
Aroclor 1260	50	50	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL.B\1211F020.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.5	7820000	7000000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	61	102000	125000	22	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	54	373000	403000	8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	58	183000	211000	16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	54	201000	217000	8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	54	152000	163000	7	NA	± 100 %	AverageRF
Aroclor 1016	50	56	NA	NA	NA	12	± 20 %	NA
Aroclor 1260 {1}	50	46	245000	227000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	46	352000	326000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	46	386000	356000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	45	886000	801000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	46	669000	610000	-9	NA	± 100 %	AverageRF
Aroclor 1260	50	46	NA	NA	NA	-8	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL_R.B\1211F020.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.2	8530000	8790000	3	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	50	174000	173000	0	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	47	259000	245000	-5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	50	380000	380000	0	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	313000	314000	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	51	226000	232000	2	NA	± 100 %	AverageRF
Aroclor 1016	50	50	NA	NA	NA	-1	± 20 %	NA
Aroclor 1260 {1}	50	54	237000	257000	8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	52	432000	451000	4	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	53	421000	445000	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	52	1010000	1060000	5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	54	638000	684000	7	NA	± 100 %	AverageRF
Aroclor 1260	50	53	NA	NA	NA	6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313898
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1211F003.D	Continuing Calibration Verification	KWG1313898-1	12/11/2013	22:15		12/11/2013	22:15
1211F004.D	Instrument Blank	KWG1313898-2	12/11/2013	22:37		12/11/2013	22:37
1211F005.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:00		12/11/2013	23:00
1211F006.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:23		12/11/2013	23:23
1211F007.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:45		12/11/2013	23:45
1211F008.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:08		12/12/2013	00:08
1211F009.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:31		12/12/2013	00:31
1211F010.D	Lab Control Sample	KWG1313603-1	12/12/2013	00:54		12/12/2013	00:54
1211F011.D	Duplicate Lab Control Sample	KWG1313603-2	12/12/2013	01:16		12/12/2013	01:16
1211F012.D	Method Blank	KWG1313603-3	12/12/2013	01:39		12/12/2013	01:39
1211F013.D	RM11E-MULT89881-12-2013	K1313208-001	12/12/2013	02:02		12/12/2013	02:02
1211F014.D	RM11E-5MULT89811-12-2013	K1313208-002	12/12/2013	02:24		12/12/2013	02:24
1211F015.D	ZZZZZZ	ZZZZZZ	12/12/2013	02:47		12/12/2013	02:47
1211F016.D	ZZZZZZ	ZZZZZZ	12/12/2013	03:10		12/12/2013	03:10
1211F017.D	ZZZZZZ	ZZZZZZ	12/12/2013	03:32		12/12/2013	03:32
1211F018.D	ZZZZZZ	ZZZZZZ	12/12/2013	03:55		12/12/2013	03:55
1211F019.D	ZZZZZZ	ZZZZZZ	12/12/2013	04:18		12/12/2013	04:18
1211F020.D	Continuing Calibration Verification	KWG1313898-3	12/12/2013	04:41		12/12/2013	04:41
1211F021.D	Instrument Blank	KWG1313898-4	12/12/2013	05:03		12/12/2013	05:03

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/09/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1313603
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MULT89881-12-2013	K1313208-001	12/04/13	12/05/13	930mL	2mL	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	950mL	2mL	NA	
Method Blank	KWG1313603-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313603-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313603-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Service Request: K1313208

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MULT89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013
Trip Blank	K1313208-003	12/04/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Reasoner
Name: K Reasoner
Date: 12/20/13
Title: Supervisor

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: 12/04/2013
Date Received: 12/05/2013

Volatile Organic Compounds

Sample Name: RM11E-MULT89881-12-2013
Lab Code: K1313208-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	**0.12**	J	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	**0.88**		0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.36**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	**3.8**		0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	**15**		0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	12/16/13	Acceptable
Toluene-d8	99	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	92	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: 12/04/2013
Date Received: 12/05/2013

Volatile Organic Compounds

Sample Name: RM11E-5MULT89811-12-2013
Lab Code: K1313208-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	**0.11**	J	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	**0.88**		0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.33**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	**3.8**		0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	**15**		0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	12/16/13	Acceptable
Toluene-d8	96	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	90	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: 12/04/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: Trip Blank
Lab Code: K1313208-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	ND	U	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	12/16/13	Acceptable
Toluene-d8	96	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	89	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1313789-5

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.21**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	90	68-117	12/16/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RM11E-MULT89881-12-2013	K1313208-001	99	99	92
RM11E-5MULT89811-12-2013	K1313208-002	97	96	90
Trip Blank	K1313208-003	98	96	89
Batch QC	K1313248-005	99	98	92
Method Blank	KWG1313789-5	98	97	90
Batch QCMS	KWG1313789-1	101	101	98
Batch QCDMS	KWG1313789-2	99	99	96
Lab Control Sample	KWG1313789-3	97	99	96
Duplicate Lab Control Sample	KWG1313789-4	99	101	95

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/16/2013
Time Analyzed: 11:39

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121613\1216F006.D
Instrument ID: MS27
Analysis Method: 8260C

Lab Code: KWG1313788-2
Analysis Lot: KWG1313788

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	722,266	6.42	290,382	9.60	239,941	11.94
	Upper Limit ==>	1,444,532	6.92	580,764	10.10	479,882	12.44
	Lower Limit ==>	361,133	5.92	145,191	9.10	119,971	11.44
	ICAL Result ==>	1,079,071	6.43	433,052	9.60	399,133	11.94
Associated Analyses							
Lab Control Sample	KWG1313789-3	766,494	6.43	304,347	9.60	257,441	11.93
Duplicate Lab Control Sample	KWG1313789-4	765,387	6.43	308,944	9.60	258,542	11.94
Method Blank	KWG1313789-5	718,458	6.43	287,095	9.60	204,628	11.93
Trip Blank	K1313208-003	693,672	6.43	274,914	9.60	191,421	11.94
RM11E-MULT89881-12-2013	K1313208-001	706,675	6.43	283,004	9.60	206,105	11.94
RM11E-5MULT89811-12-2013	K1313208-002	714,935	6.43	279,365	9.60	200,330	11.94
Batch QC	K1313248-005	687,280	6.43	274,607	9.60	199,146	11.93
Batch QCMS	KWG1313789-1	738,607	6.43	297,939	9.60	253,919	11.94
Batch QCDMS	KWG1313789-2	774,211	6.43	315,758	9.60	261,899	11.93

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Batch QC
Lab Code: K1313248-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313789

		Batch QCMS KWG1313789-1 Matrix Spike			Batch QCDMS KWG1313789-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	ND	12.3	10.0	123	11.3	10.0	113	56-147	8	30
1,1-Dichloroethene	0.10	13.6	10.0	135	12.4	10.0	123	59-171	9	30
Carbon Disulfide	ND	24.8	20.0	124	22.3	20.0	111	52-156	11	30
cis-1,2-Dichloroethene	2.9	13.3	10.0	104	12.1	10.0	92	61-139	9	30
Chloroform	ND	11.0	10.0	110	10.2	10.0	102	64-133	8	30
Benzene	ND	11.1	10.0	111	10.1	10.0	101	63-144	9	30
Trichloroethene (TCE)	5.7	16.9	10.0	112	15.2	10.0	95	53-139	11	30
Toluene	ND	10.5	10.0	105	9.59	10.0	96	71-136	9	30
Tetrachloroethene (PCE)	ND	10.3	10.0	103	9.44	10.0	94	61-131	9	30
Chlorobenzene	ND	9.95	10.0	100	9.07	10.0	91	69-126	9	30
Ethylbenzene	ND	10.4	10.0	104	9.45	10.0	95	66-136	10	30
m,p-Xylenes	ND	20.8	20.0	104	18.7	20.0	93	67-135	11	30
o-Xylene	ND	9.90	10.0	99	8.83	10.0	88	67-127	11	30
Isopropylbenzene	ND	9.90	10.0	99	8.78	10.0	88	58-144	12	30
1,3,5-Trimethylbenzene	ND	10.9	10.0	109	10.2	10.0	102	60-136	7	30
1,2,4-Trimethylbenzene	ND	11.0	10.0	110	10.2	10.0	102	61-132	7	30
1,4-Dichlorobenzene	ND	9.69	10.0	97	9.05	10.0	91	72-121	7	30
1,2-Dichlorobenzene	ND	9.73	10.0	97	8.93	10.0	89	72-119	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313789

	Lab Control Sample KWG1313789-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313789-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	11.4	10.0	114	10.6	10.0	106	58-134	8	30
1,1-Dichloroethene	12.2	10.0	122	11.2	10.0	112	66-129	8	30
Carbon Disulfide	22.3	20.0	112	21.1	20.0	106	46-144	5	30
cis-1,2-Dichloroethene	9.68	10.0	97	9.13	10.0	91	71-118	6	30
Chloroform	10.2	10.0	102	10.1	10.0	101	70-129	1	30
Benzene	10.2	10.0	102	9.77	10.0	98	69-124	5	30
Trichloroethene (TCE)	10.8	10.0	108	10.7	10.0	107	67-128	1	30
Toluene	9.80	10.0	98	9.35	10.0	94	69-124	5	30
Tetrachloroethene (PCE)	9.95	10.0	100	9.08	10.0	91	62-126	9	30
Chlorobenzene	9.37	10.0	94	8.90	10.0	89	72-116	5	30
Ethylbenzene	9.78	10.0	98	9.17	10.0	92	67-121	6	30
m,p-Xylenes	19.4	20.0	97	18.3	20.0	91	69-121	6	30
o-Xylene	9.12	10.0	91	8.63	10.0	86	71-119	6	30
Isopropylbenzene	9.28	10.0	93	8.58	10.0	86	67-129	8	30
1,3,5-Trimethylbenzene	10.4	10.0	104	9.89	10.0	99	62-126	5	30
1,2,4-Trimethylbenzene	10.4	10.0	104	9.87	10.0	99	63-122	6	30
1,4-Dichlorobenzene	9.38	10.0	94	8.83	10.0	88	73-115	6	30
1,2-Dichlorobenzene	9.08	10.0	91	8.88	10.0	89	72-115	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/16/2013
Sample Matrix:	Water	**Date Analyzed:**	12/16/2013
		Time Analyzed:	13:32

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS27
Lab Code:	KWG1313789-5	**File ID:**	J:\MS27\DATA\121613\1216F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1313789

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313789-3	J:\MS27\DATA\121613\1216F007.D	12/16/13	12:09
Duplicate Lab Control Sample	KWG1313789-4	J:\MS27\DATA\121613\1216F008.D	12/16/13	12:37
Trip Blank	K1313208-003	J:\MS27\DATA\121613\1216F014.D	12/16/13	15:50
RM11E-MULT89881-12-2013	K1313208-001	J:\MS27\DATA\121613\1216F020.D	12/16/13	18:36
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS27\DATA\121613\1216F021.D	12/16/13	19:03
Batch QC	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/13	21:22
Batch QCMS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/13	22:17
Batch QCDMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/13	22:44

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013
Time Analyzed: 12:09

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name: Lab Control Sample
Lab Code: KWG1313789-3

Instrument ID: MS27
File ID: J:\MS27\DATA\121613\1216F007.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313789

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313789-5	J:\MS27\DATA\121613\1216F010.D	12/16/13	13:32
Trip Blank	K1313208-003	J:\MS27\DATA\121613\1216F014.D	12/16/13	15:50
RM11E-MULT89881-12-2013	K1313208-001	J:\MS27\DATA\121613\1216F020.D	12/16/13	18:36
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS27\DATA\121613\1216F021.D	12/16/13	19:03
Batch QC	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/13	21:22
Batch QCMS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/13	22:17
Batch QCDMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/13	22:44

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/16/2013
Time Analyzed: 11:10

Tune Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121613\1216F005.D
Instrument ID: MS27
Column:

Analysis Method: 8260C
Analysis Lot: KWG1313788

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.0	12136	PASS
75	95	30	60	48.1	30659	PASS
95	95	100	100	100.0	63770	PASS
96	95	5	9	6.5	4137	PASS
173	174	0	2	1.0	518	PASS
174	95	50	120	80.6	51424	PASS
175	174	5	9	7.6	3926	PASS
176	174	95	101	96.1	49437	PASS
177	176	5	9	6.1	2993	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313788-2	J:\MS27\DATA\121613\1216F006.D	12/16/2013	11:39	
Lab Control Sample	KWG1313789-3	J:\MS27\DATA\121613\1216F007.D	12/16/2013	12:09	
Duplicate Lab Control Sample	KWG1313789-4	J:\MS27\DATA\121613\1216F008.D	12/16/2013	12:37	
Method Blank	KWG1313789-5	J:\MS27\DATA\121613\1216F010.D	12/16/2013	13:32	
Trip Blank	K1313208-003	J:\MS27\DATA\121613\1216F014.D	12/16/2013	15:50	
RM11E-MULT89881-12-2013	K1313208-001	J:\MS27\DATA\121613\1216F020.D	12/16/2013	18:36	
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS27\DATA\121613\1216F021.D	12/16/2013	19:03	
Batch QC	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/2013	21:22	
Batch QCMS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/2013	22:17	
Batch QCDMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/2013	22:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS27\DATA\100713\1007F018.D	G	J:\MS27\DATA\100713\1007F024.D
B	J:\MS27\DATA\100713\1007F019.D	H	J:\MS27\DATA\100713\1007F025.D
C	J:\MS27\DATA\100713\1007F020.D	I	J:\MS27\DATA\100713\1007F026.D
D	J:\MS27\DATA\100713\1007F021.D	J	J:\MS27\DATA\100713\1007F027.D
E	J:\MS27\DATA\100713\1007F022.D	K	J:\MS27\DATA\100713\1007F028.D
F	J:\MS27\DATA\100713\1007F023.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroethane	A	0.10	0.199	B	0.20	0.159	C	0.50	0.180	D	1.0	0.169	E	2.0	0.167
	F	5.0	0.167	G	10	0.155	H	20	0.165	I	40	0.172	J	60	0.175
	K	80	0.168												
1,1-Dichloroethene	A	0.10	0.206	B	0.20	0.158	C	0.50	0.186	D	1.0	0.163	E	2.0	0.186
	F	5.0	0.176	G	10	0.168	H	20	0.185	I	40	0.197	J	60	0.203
	K	80	0.197												
Carbon Disulfide	A	0.10	0.857	B	0.20	0.692	C	0.50	0.686	D	1.0	0.653	E	2.0	0.680
	F	5.0	0.678	G	10	0.641	H	20	0.717	I	40	0.758	J	60	0.791
	K	80	0.773												
cis-1,2-Dichloroethene	A	0.10	0.320	B	0.20	0.286	C	0.50	0.290	D	1.0	0.287	E	2.0	0.276
	F	5.0	0.302	G	10	0.278	H	20	0.291	I	40	0.296	J	60	0.303
	K	80	0.289												
Chloroform	A	0.10	0.497	B	0.20	0.452	C	0.50	0.460	D	1.0	0.461	E	2.0	0.455
	F	5.0	0.480	G	10	0.440	H	20	0.471	I	40	0.478	J	60	0.484
	K	80	0.466												
Benzene	A	0.10	1.14	B	0.20	0.968	C	0.50	1.03	D	1.0	0.993	E	2.0	0.993
	F	5.0	1.05	G	10	0.968	H	20	1.03	I	40	1.06	J	60	1.08
	K	80	1.05												
Trichloroethene (TCE)	A	0.10	0.295	B	0.20	0.225	C	0.50	0.250	D	1.0	0.253	E	2.0	0.255
	F	5.0	0.263	G	10	0.245	H	20	0.268	I	40	0.278	J	60	0.287
	K	80	0.277												
Toluene	A	0.10	0.773	B	0.20	0.584	C	0.50	0.643	D	1.0	0.632	E	2.0	0.604
	F	5.0	0.652	G	10	0.599	H	20	0.646	I	40	0.667	J	60	0.682
	K	80	0.662												
Tetrachloroethene (PCE)	A	0.10	0.552	B	0.20	0.568	C	0.50	0.529	D	1.0	0.498	E	2.0	0.539
	F	5.0	0.534	G	10	0.499	H	20	0.551	I	40	0.579	J	60	0.595
	K	80	0.574												
Chlorobenzene				B	0.20	2.02	C	0.50	1.87	D	1.0	1.77	E	2.0	1.83
	F	5.0	1.99	G	10	1.78	H	20	1.89	I	40	1.91	J	60	1.93
	K	80	1.86												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Ethylbenzene	A	0.10	1.12	B	0.20	0.988	C	0.50	0.860	D	1.0	0.871	E	2.0	0.852
	F	5.0	0.933	G	10	0.883	H	20	0.945	I	40	0.987	J	60	0.998
	K	80	0.967												
m,p-Xylenes	A	0.20	1.39	B	0.40	1.10	C	1.0	1.05	D	2.0	1.08	E	4.0	1.09
	F	10	1.16	G	20	1.08	H	40	1.17	I	80	1.22	J	120	1.23
o-Xylene	A	0.10	1.56	B	0.20	1.11	C	0.50	1.14	D	1.0	1.04	E	2.0	1.07
	F	5.0	1.18	G	10	1.09	H	20	1.18	I	40	1.20	J	60	1.20
	K	80	1.16												
Isopropylbenzene	A	0.10	3.59	B	0.20	2.82	C	0.50	2.55	D	1.0	2.59	E	2.0	2.64
	F	5.0	2.80	G	10	2.64	H	20	2.90	I	40	3.02	J	60	3.06
	K	80	2.94												
1,3,5-Trimethylbenzene	A	0.10	3.68	B	0.20	2.57	C	0.50	2.32	D	1.0	2.40	E	2.0	2.43
	F	5.0	2.67	G	10	2.44	H	20	2.58	I	40	2.71	J	60	2.73
	K	80	2.66												
1,2,4-Trimethylbenzene				B	0.20	2.76	C	0.50	2.44	D	1.0	2.42	E	2.0	2.51
	F	5.0	2.74	G	10	2.55	H	20	2.66	I	40	2.77	J	60	2.79
	K	80	2.71												
1,4-Dichlorobenzene				B	0.20	2.16	C	0.50	1.66	D	1.0	1.55	E	2.0	1.57
	F	5.0	1.75	G	10	1.56	H	20	1.61	I	40	1.63	J	60	1.63
	K	80	1.57												
1,2-Dichlorobenzene				B	0.20	2.04	C	0.50	1.52	D	1.0	1.51	E	2.0	1.51
	F	5.0	1.69	G	10	1.50	H	20	1.52	I	40	1.54	J	60	1.52
	K	80	1.46												
Dibromofluoromethane	A	10	0.261	B	10	0.261	C	10	0.263	D	10	0.264	E	10	0.267
	F	10	0.270	G	10	0.269	H	10	0.271	I	10	0.274	J	10	0.270
	K	10	0.266												
Toluene-d8	A	10	0.956	B	10	0.956	C	10	0.959	D	10	0.983	E	10	0.988
	F	10	0.977	G	10	0.972	H	10	0.977	I	10	0.982	J	10	1.01
	K	10	0.990												
4-Bromofluorobenzene	A	10	0.868	B	10	0.882	C	10	0.875	D	10	0.876	E	10	0.891
	F	10	0.882	G	10	0.896	H	10	0.924	I	10	0.907	J	10	0.905
	K	10	0.882												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Chloroethane	MS	AverageRF	% RSD	6.9		≤ 20	0.171		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.8		≤ 20	0.184		0.100
Carbon Disulfide	MS	AverageRF	% RSD	9.2		≤ 20	0.720		0.100
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.3		≤ 20	0.292		0.100
Chloroform	MS	AverageRF	% RSD	3.5		≤ 20	0.467		0.200
Benzene	MS	AverageRF	% RSD	5.0		≤ 20	1.03		0.500
Trichloroethene (TCE)	MS	AverageRF	% RSD	7.8		≤ 20	0.263		0.200
Toluene	MS	AverageRF	% RSD	7.8		≤ 20	0.649		0.400
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.547		0.200
Chlorobenzene	MS	AverageRF	% RSD	4.3		≤ 20	1.88		0.500
Ethylbenzene	MS	AverageRF	% RSD	8.4		≤ 20	0.946		0.100
m,p-Xylenes	MS	AverageRF	% RSD	8.9		≤ 20	1.16		0.100
o-Xylene	MS	AverageRF	% RSD	11.8		≤ 20	1.18		0.300
Isopropylbenzene	MS	AverageRF	% RSD	10.4		≤ 20	2.87		0.100
1,3,5-Trimethylbenzene	MS	AverageRF	% RSD	13.9		≤ 20	2.65		0.01
1,2,4-Trimethylbenzene	MS	AverageRF	% RSD	5.4		≤ 20	2.63		0.01
1,4-Dichlorobenzene	MS	AverageRF	% RSD	10.9		≤ 20	1.67		0.500
1,2-Dichlorobenzene	MS	AverageRF	% RSD	10.8		≤ 20	1.58		0.400
Dibromofluoromethane	SURR	AverageRF	% RSD	1.6		≤ 20	0.267		0.01
Toluene-d8	SURR	AverageRF	% RSD	1.6		≤ 20	0.977		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	1.9		≤ 20	0.890		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 10/07/2013
Date Analyzed: 10/07/2013

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL12827
Units: PPB

File ID: J:\MS27\DATA\100713\1007F032.D
J:\MS27\DATA\100713\1007F035.D
J:\MS27\DATA\100813\1008F003.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	8.5	0.171	0.145	-15	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.184	0.186	1	NA	± 30 %	AverageRF
Carbon Disulfide	20	17	0.720	0.618	-14	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.3	0.292	0.272	-7	NA	± 30 %	AverageRF
Chloroform	10	9.4	0.467	0.441	-6	NA	± 30 %	AverageRF
Benzene	10	9.3	1.03	0.964	-7	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	9.5	0.263	0.250	-5	NA	± 30 %	AverageRF
Toluene	10	9.3	0.649	0.604	-7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.0	0.547	0.495	-10	NA	± 30 %	AverageRF
Chlorobenzene	10	9.6	1.88	1.80	-4	NA	± 30 %	AverageRF
Ethylbenzene	10	9.1	0.946	0.864	-9	NA	± 30 %	AverageRF
m,p-Xylenes	20	19	1.16	1.08	-7	NA	± 30 %	AverageRF
o-Xylene	10	9.2	1.18	1.08	-8	NA	± 30 %	AverageRF
Isopropylbenzene	10	9.2	2.87	2.63	-8	NA	± 30 %	AverageRF
1,3,5-Trimethylbenzene	10	9.1	2.65	2.40	-9	NA	± 30 %	AverageRF
1,2,4-Trimethylbenzene	10	9.3	2.63	2.44	-7	NA	± 30 %	AverageRF
1,4-Dichlorobenzene	10	9.2	1.67	1.54	-8	NA	± 30 %	AverageRF
1,2-Dichlorobenzene	10	9.1	1.58	1.44	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/16/2013

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/07/2013
Calibration ID: CAL12827
Analysis Lot: KWG1313788
Units: PPB

File ID: J:\MS27\DATA\121613\1216F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	10	0.100	0.171	0.177	4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.5	0.100	0.184	0.156	-15	NA	± 20 %	AverageRF
Carbon Disulfide	10	7.6	0.100	0.720	0.545	-24 *	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	8.9	0.100	0.292	0.261	-11	NA	± 20 %	AverageRF
Chloroform	10	9.8	0.200	0.467	0.460	-2	NA	± 20 %	AverageRF
Benzene	10	9.2	0.500	1.03	0.953	-8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.7	0.200	0.263	0.254	-3	NA	± 20 %	AverageRF
Toluene	10	9.7	0.400	0.649	0.630	-3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.547	0.510	-7	NA	± 20 %	AverageRF
Chlorobenzene	10	9.7	0.500	1.88	1.83	-3	NA	± 20 %	AverageRF
Ethylbenzene	10	9.7	0.100	0.946	0.919	-3	NA	± 20 %	AverageRF
m,p-Xylenes	20	20	0.100	1.16	1.14	-2	NA	± 20 %	AverageRF
o-Xylene	10	9.5	0.300	1.18	1.12	-5	NA	± 20 %	AverageRF
Isopropylbenzene	10	10	0.100	2.87	2.87	0	NA	± 20 %	AverageRF
1,3,5-Trimethylbenzene	10	11	0.01	2.65	2.96	12	NA	± 20 %	AverageRF
1,2,4-Trimethylbenzene	10	11	0.01	2.63	3.00	14	NA	± 20 %	AverageRF
1,4-Dichlorobenzene	10	10	0.500	1.67	1.73	4	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	10	10	0.400	1.58	1.61	2	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.8	0.01	0.267	0.263	-2	NA	± 20 %	AverageRF
Toluene-d8	10	9.9	0.01	0.977	0.966	-1	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.7	0.01	0.890	0.860	-3	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1313788
Instrument ID: MS27

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1216F005.D	GC/MS Tuning - Generic	KWG1313788-1	12/16/2013	11:10		12/16/2013	11:27
1216F006.D	Continuing Calibration Verification	KWG1313788-2	12/16/2013	11:39		12/16/2013	11:56
1216F007.D	Lab Control Sample	KWG1313789-3	12/16/2013	12:09		12/16/2013	12:26
1216F008.D	Duplicate Lab Control Sample	KWG1313789-4	12/16/2013	12:37		12/16/2013	12:54
1216F010.D	Method Blank	KWG1313789-5	12/16/2013	13:32		12/16/2013	13:49
1216F011.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:00		12/16/2013	14:17
1216F012.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:27		12/16/2013	14:44
1216F100.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:55		12/16/2013	15:12
1216F013.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:22		12/16/2013	15:39
1216F014.D	Trip Blank	K1313208-003	12/16/2013	15:50		12/16/2013	16:07
1216F015.D	ZZZZZZ	ZZZZZZ	12/16/2013	16:18		12/16/2013	16:35
1216F016.D	ZZZZZZ	ZZZZZZ	12/16/2013	16:45		12/16/2013	17:02
1216F017.D	ZZZZZZ	ZZZZZZ	12/16/2013	17:13		12/16/2013	17:30
1216F018.D	ZZZZZZ	ZZZZZZ	12/16/2013	17:40		12/16/2013	17:57
1216F019.D	ZZZZZZ	ZZZZZZ	12/16/2013	18:08		12/16/2013	18:25
1216F020.D	RM11E-MULT89881-12-2013	K1313208-001	12/16/2013	18:36		12/16/2013	18:53
1216F021.D	RM11E-5MULT89811-12-2013	K1313208-002	12/16/2013	19:03		12/16/2013	19:20
1216F022.D	ZZZZZZ	ZZZZZZ	12/16/2013	19:31		12/16/2013	19:48
1216F023.D	ZZZZZZ	ZZZZZZ	12/16/2013	19:59		12/16/2013	20:16
1216F024.D	ZZZZZZ	ZZZZZZ	12/16/2013	20:26		12/16/2013	20:43
1216F025.D	ZZZZZZ	ZZZZZZ	12/16/2013	20:54		12/16/2013	21:11
1216F026.D	Batch QC	K1313248-005	12/16/2013	21:22		12/16/2013	21:39
1216F028.D	Batch QCMS	KWG1313789-1	12/16/2013	22:17		12/16/2013	22:34
1216F029.D	Batch QCDMS	KWG1313789-2	12/16/2013	22:44		12/16/2013	23:01

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/16/2013

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1313789
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MULT89881-12-2013	K1313208-001	12/04/13	12/05/13	10ml	10ml	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	10ml	10ml	NA	
Trip Blank	K1313208-003	12/04/13	12/06/13	10ml	10ml	NA	
Method Blank	KWG1313789-5	NA	NA	10ml	10ml	NA	
Batch QC	K1313248-005	NA	NA	10ml	10ml	NA	
Batch QCMS	KWG1313789-1	NA	NA	10ml	10ml	NA	
Batch QCDMS	KWG1313789-2	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1313789-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1313789-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dagner

Date: 12/16/13 Title: Sem Supervisor

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: 12/04/2013
Date Received: 12/05/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-89881-12-2013
Lab Code: K1313208-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.071**	J	0.22	0.025	1	12/05/13	12/10/13	KWG1313447	
2-Methylnaphthalene	ND	U	0.22	0.030	1	12/05/13	12/10/13	KWG1313447	
Acenaphthylene	ND	U	0.22	0.017	1	12/05/13	12/10/13	KWG1313447	
Acenaphthene	ND	U	0.22	0.029	1	12/05/13	12/10/13	KWG1313447	
Fluorene	ND	U	0.22	0.030	1	12/05/13	12/10/13	KWG1313447	
Hexachlorobenzene	ND	U	0.22	0.025	1	12/05/13	12/10/13	KWG1313447	
Pentachlorophenol	ND	U	1.1	0.38	1	12/05/13	12/10/13	KWG1313447	
Phenanthrene	ND	U	0.22	0.025	1	12/05/13	12/10/13	KWG1313447	
Anthracene	ND	U	0.22	0.027	1	12/05/13	12/10/13	KWG1313447	
Fluoranthene	ND	U	0.22	0.022	1	12/05/13	12/10/13	KWG1313447	
Pyrene	ND	U	0.22	0.021	1	12/05/13	12/10/13	KWG1313447	
Benz(a)anthracene	ND	U	0.22	0.020	1	12/05/13	12/10/13	KWG1313447	
Chrysene	ND	U	0.22	0.031	1	12/05/13	12/10/13	KWG1313447	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.15	1	12/05/13	12/10/13	KWG1313447	
Benzo(b)fluoranthene	ND	U	0.22	0.019	1	12/05/13	12/10/13	KWG1313447	
Benzo(k)fluoranthene	ND	U	0.22	0.027	1	12/05/13	12/10/13	KWG1313447	
Benzo(a)pyrene	ND	U	0.22	0.035	1	12/05/13	12/10/13	KWG1313447	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.024	1	12/05/13	12/10/13	KWG1313447	
Dibenz(a,h)anthracene	ND	U	0.22	0.019	1	12/05/13	12/10/13	KWG1313447	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	12/05/13	12/10/13	KWG1313447	
Perylene	ND	U	0.22	0.22	1	12/05/13	12/10/13	KWG1313447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	85	26-110	12/10/13	Acceptable
2-Fluorobiphenyl	72	31-94	12/10/13	Acceptable
2,4,6-Tribromophenol	76	23-127	12/10/13	Acceptable
Terphenyl-d14	83	40-127	12/10/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Collected: 12/04/2013
Date Received: 12/05/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-5MULT89811-12-2013
Lab Code: K1313208-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.068**	J	0.21	0.023	1	12/05/13	12/10/13	KWG1313447	
2-Methylnaphthalene	ND	U	0.21	0.028	1	12/05/13	12/10/13	KWG1313447	
Acenaphthylene	ND	U	0.21	0.016	1	12/05/13	12/10/13	KWG1313447	
Acenaphthene	ND	U	0.21	0.027	1	12/05/13	12/10/13	KWG1313447	
Fluorene	ND	U	0.21	0.028	1	12/05/13	12/10/13	KWG1313447	
Hexachlorobenzene	ND	U	0.21	0.023	1	12/05/13	12/10/13	KWG1313447	
Pentachlorophenol	ND	U	1.1	0.35	1	12/05/13	12/10/13	KWG1313447	
Phenanthrene	ND	U	0.21	0.023	1	12/05/13	12/10/13	KWG1313447	
Anthracene	ND	U	0.21	0.025	1	12/05/13	12/10/13	KWG1313447	
Fluoranthene	ND	U	0.21	0.021	1	12/05/13	12/10/13	KWG1313447	
Pyrene	ND	U	0.21	0.020	1	12/05/13	12/10/13	KWG1313447	
Benz(a)anthracene	ND	U	0.21	0.019	1	12/05/13	12/10/13	KWG1313447	
Chrysene	ND	U	0.21	0.029	1	12/05/13	12/10/13	KWG1313447	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	12/05/13	12/10/13	KWG1313447	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	12/05/13	12/10/13	KWG1313447	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	12/05/13	12/10/13	KWG1313447	
Benzo(a)pyrene	ND	U	0.21	0.032	1	12/05/13	12/10/13	KWG1313447	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	12/05/13	12/10/13	KWG1313447	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	12/05/13	12/10/13	KWG1313447	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	12/05/13	12/10/13	KWG1313447	
Perylene	ND	U	0.21	0.21	1	12/05/13	12/10/13	KWG1313447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	84	26-110	12/10/13	Acceptable
2-Fluorobiphenyl	70	31-94	12/10/13	Acceptable
2,4,6-Tribromophenol	71	23-127	12/10/13	Acceptable
Terphenyl-d14	82	40-127	12/10/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313447-3	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	12/05/13	12/10/13	KWG1313447	
2-Methylnaphthalene	ND	U	0.20	0.027	1	12/05/13	12/10/13	KWG1313447	
Acenaphthylene	ND	U	0.20	0.015	1	12/05/13	12/10/13	KWG1313447	
Acenaphthene	ND	U	0.20	0.026	1	12/05/13	12/10/13	KWG1313447	
Fluorene	ND	U	0.20	0.027	1	12/05/13	12/10/13	KWG1313447	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/05/13	12/10/13	KWG1313447	
Pentachlorophenol	ND	U	1.0	0.34	1	12/05/13	12/10/13	KWG1313447	
Phenanthrene	ND	U	0.20	0.022	1	12/05/13	12/10/13	KWG1313447	
Anthracene	ND	U	0.20	0.024	1	12/05/13	12/10/13	KWG1313447	
Fluoranthene	ND	U	0.20	0.020	1	12/05/13	12/10/13	KWG1313447	
Pyrene	ND	U	0.20	0.019	1	12/05/13	12/10/13	KWG1313447	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/05/13	12/10/13	KWG1313447	
Chrysene	ND	U	0.20	0.028	1	12/05/13	12/10/13	KWG1313447	
Bis(2-ethylhexyl) Phthalate	ND	U	1.0	0.13	1	12/05/13	12/10/13	KWG1313447	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	12/05/13	12/10/13	KWG1313447	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	12/05/13	12/10/13	KWG1313447	
Benzo(a)pyrene	ND	U	0.20	0.031	1	12/05/13	12/10/13	KWG1313447	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	12/05/13	12/10/13	KWG1313447	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	12/05/13	12/10/13	KWG1313447	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	12/05/13	12/10/13	KWG1313447	
Perylene	ND	U	0.20	0.20	1	12/05/13	12/10/13	KWG1313447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	88	26-110	12/10/13	Acceptable
2-Fluorobiphenyl	80	31-94	12/10/13	Acceptable
2,4,6-Tribromophenol	69	23-127	12/10/13	Acceptable
Terphenyl-d14	80	40-127	12/10/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-89881-12-2013	K1313208-001	85	72	76	83
RM11E-5MULT89811-12-2013	K1313208-002	84	70	71	82
Method Blank	KWG1313447-3	88	80	69	80
Lab Control Sample	KWG1313447-1	86	81	79	76
Duplicate Lab Control Sample	KWG1313447-2	93	72	76	72

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	26-110
Sur2 =	2-Fluorobiphenyl	31-94
Sur3 =	2,4,6-Tribromophenol	23-127
Sur4 =	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 11:07

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121013\1210F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313648-2
Analysis Lot: KWG1313648

		1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	148,457	8.71	491,145	10.62	258,544	13.47
	Upper Limit ==>	296,914	9.21	982,290	11.12	517,088	13.97
	Lower Limit ==>	74,229	8.21	245,573	10.12	129,272	12.97
	ICAL Result ==>	122,081	8.73	411,958	10.64	230,718	13.49
Associated Analyses							
Method Blank	KWG1313447-3	127,709	8.71	426,644	10.62	224,234	13.46
Lab Control Sample	KWG1313447-1	122,766	8.71	424,058	10.62	235,604	13.47
Duplicate Lab Control Sample	KWG1313447-2	120,058	8.70	420,868	10.63	239,504	13.46
RM11E-89881-12-2013	K1313208-001	121,389	8.70	398,167	10.62	233,991	13.46
RM11E-5MULT89811-12-2013	K1313208-002	110,136	8.70	406,547	10.62	218,657	13.46

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 11:07

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121013\1210F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313648-2
Analysis Lot: KWG1313648

		Phenanthrene-d10		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT	Area	RT
	Results ==>	511,670	15.90	537,877	20.45	384,015	24.13
	Upper Limit ==>	1,023,340	16.40	1,075,754	20.95	768,030	24.63
	Lower Limit ==>	255,835	15.40	268,939	19.95	192,008	23.63
	ICAL Result ==>	428,281	15.92	442,598	20.46	342,958	24.13
Associated Analyses							
Method Blank	KWG1313447-3	444,483	15.89	432,086	20.43	349,739	24.12
Lab Control Sample	KWG1313447-1	441,435	15.90	458,337	20.44	342,742	24.13
Duplicate Lab Control Sample	KWG1313447-2	441,445	15.89	450,695	20.44	333,591	24.11
RM11E-89881-12-2013	K1313208-001	425,248	15.90	374,727	20.43	296,822	24.11
RM11E-5MULT89811-12-2013	K1313208-002	405,458	15.89	389,906	20.43	294,885	24.11

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/05/2013
Date Analyzed: 12/10/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313447

	Lab Control Sample KWG1313447-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313447-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.99	5.00	80	3.92	5.00	78	43-98	2	30
2-Methylnaphthalene	4.04	5.00	81	4.01	5.00	80	38-102	1	30
Acenaphthylene	4.48	5.00	90	4.07	5.00	81	52-108	10	30
Acenaphthene	4.33	5.00	87	4.12	5.00	82	48-102	5	30
Fluorene	4.53	5.00	91	4.19	5.00	84	51-106	8	30
Hexachlorobenzene	4.14	5.00	83	4.02	5.00	80	55-105	3	30
Pentachlorophenol	4.09	5.00	82	3.74	5.00	75	33-106	9	30
Phenanthrene	4.19	5.00	84	3.97	5.00	79	56-103	5	30
Anthracene	4.16	5.00	83	3.91	5.00	78	55-103	6	30
Fluoranthene	4.36	5.00	87	4.17	5.00	83	56-110	4	30
Pyrene	4.43	5.00	89	4.21	5.00	84	59-109	5	30
Benz(a)anthracene	4.36	5.00	87	4.27	5.00	85	61-104	2	30
Chrysene	4.31	5.00	86	4.12	5.00	82	61-107	4	30
Bis(2-ethylhexyl) Phthalate	4.61	5.00	92	4.46	5.00	89	61-118	3	30
Benzo(b)fluoranthene	4.18	5.00	84	4.32	5.00	86	62-107	3	30
Benzo(k)fluoranthene	4.38	5.00	88	4.32	5.00	86	63-108	1	30
Benzo(a)pyrene	4.48	5.00	90	4.46	5.00	89	56-105	1	30
Indeno(1,2,3-cd)pyrene	4.30	5.00	86	4.28	5.00	86	63-108	0	30
Dibenz(a,h)anthracene	3.92	5.00	78	3.97	5.00	79	62-108	1	30
Benzo(g,h,i)perylene	4.00	5.00	80	4.03	5.00	81	62-108	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	11:50

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313447-3	**File ID:**	J:\MS06\DATA\121013\1210F005.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313447

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313447-1	J:\MS06\DATA\121013\1210F006.D	12/10/13	12:34
Duplicate Lab Control Sample	KWG1313447-2	J:\MS06\DATA\121013\1210F007.D	12/10/13	13:12
RM11E-89881-12-2013	K1313208-001	J:\MS06\DATA\121013\1210F009.D	12/10/13	14:28
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS06\DATA\121013\1210F010.D	12/10/13	15:06

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	12:34

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313447-1	**File ID:**	J:\MS06\DATA\121013\1210F006.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313447

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313447-3	J:\MS06\DATA\121013\1210F005.D	12/10/13	11:50
RM11E-89881-12-2013	K1313208-001	J:\MS06\DATA\121013\1210F009.D	12/10/13	14:28
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS06\DATA\121013\1210F010.D	12/10/13	15:06

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013
Time Analyzed: 10:27

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121013\1210F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313648

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	53.8	114002	PASS
68	69	0	2	0.5	461	PASS
69	198	0	100	47.8	101341	PASS
70	69	0	2	0.0	44	PASS
127	198	25	75	55.9	118424	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	211925	PASS
199	198	5	9	7.4	15717	PASS
275	198	10	30	23.5	49863	PASS
365	198	1	100	6.3	13246	PASS
441	443	0	100	81.8	14712	PASS
442	198	40	110	45.0	95391	PASS
443	442	15	24	18.8	17981	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313648-2	J:\MS06\DATA\121013\1210F004.D	12/10/2013	11:07	
Method Blank	KWG1313447-3	J:\MS06\DATA\121013\1210F005.D	12/10/2013	11:50	
Lab Control Sample	KWG1313447-1	J:\MS06\DATA\121013\1210F006.D	12/10/2013	12:34	
Duplicate Lab Control Sample	KWG1313447-2	J:\MS06\DATA\121013\1210F007.D	12/10/2013	13:12	
RM11E-89881-12-2013	K1313208-001	J:\MS06\DATA\121013\1210F009.D	12/10/2013	14:28	
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS06\DATA\121013\1210F010.D	12/10/2013	15:06	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\120313\1203F005.D	G	J:\MS06\DATA\120313\1203F011.D
B	J:\MS06\DATA\120313\1203F006.D	H	J:\MS06\DATA\120313\1203F012.D
C	J:\MS06\DATA\120313\1203F007.D	I	J:\MS06\DATA\120313\1203F013.D
D	J:\MS06\DATA\120313\1203F008.D	J	J:\MS06\DATA\120313\1203F014.D
E	J:\MS06\DATA\120313\1203F009.D		
F	J:\MS06\DATA\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	0.991	B	100	1.06	C	200	1.09	D	500	1.18	E	1000	1.20
	F	2000	1.23	G	3000	1.23	H	5000	1.26	I	7000	1.30	J	10000	1.30
2-Methylnaphthalene	A	50	0.555	B	100	0.614	C	200	0.585	D	500	0.649	E	1000	0.690
	F	2000	0.707	G	3000	0.685	H	5000	0.709	I	7000	0.737	J	10000	0.742
Acenaphthylene	A	50	1.63	B	100	2.02	C	200	1.89	D	500	2.02	E	1000	2.22
	F	2000	2.07	G	3000	2.16	H	5000	2.38	I	7000	2.42	J	10000	2.27
Acenaphthene	A	50	0.906	B	100	1.01	C	200	1.04	D	500	1.10	E	1000	1.18
	F	2000	1.10	G	3000	1.20	H	5000	1.30	I	7000	1.38	J	10000	1.31
Fluorene	A	50	1.17	B	100	1.42	C	200	1.40	D	500	1.44	E	1000	1.47
	F	2000	1.48	G	3000	1.51	H	5000	1.69	I	7000	1.76	J	10000	1.65
Hexachlorobenzene				B	100	0.240	C	200	0.271	D	500	0.244	E	1000	0.284
	F	2000	0.280	G	3000	0.274	H	5000	0.297	I	7000	0.299	J	10000	0.317
Pentachlorophenol										D	500	0.133	E	1000	0.175
	F	2000	0.179	G	3000	0.181	H	5000	0.213	I	7000	0.205	J	10000	0.222
Phenanthrene	A	50	1.11	B	100	1.15	C	200	1.03	D	500	1.06	E	1000	1.14
	F	2000	1.11	G	3000	1.16	H	5000	1.27	I	7000	1.23	J	10000	1.34
Anthracene	A	50	1.13	B	100	1.03	C	200	1.07	D	500	1.11	E	1000	1.18
	F	2000	1.19	G	3000	1.21	H	5000	1.34	I	7000	1.32	J	10000	1.38
Fluoranthene	A	50	0.951	B	100	1.29	C	200	1.25	D	500	1.13	E	1000	1.30
	F	2000	1.30	G	3000	1.34	H	5000	1.44	1	7000	1.41	J	10000	1.52
Pyrene	A	50	1.11	B	100	1.46	C	200	1.32	D	500	1.36	E	1000	1.38
	F	2000	1.41	G	3000	1.42	H	5000	1.51	I	7000	1.40	J	10000	1.35
Benz(a)anthracene	A	50	1.11	B	100	1.17	C	200	1.10	D	500	1.16	E	1000	1.18
	F	2000	1.21	G	3000	1.24	H	5000	1.36	I	7000	1.26	J	10000	1.19
Chrysene	A	50	1.07	B	100	1.09	C	200	1.12	D	500	1.12	E	1000	1.18
	F	2000	1.17	G	3000	1.15	H	5000	1.24	I	7000	1.15	J	10000	1.05
Bis(2-ethylhexyl) Phthalate							C	200	1.04	D	500	0.950	E	1000	1.01
	F	2000	1.05	G	3000	1.04	H	5000	1.13	I	7000	1.04	J	10000	0.945

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.979	B	100	1.01	C	200	0.977	D	500	1.11	E	1000	1.12
	F	2000	1.19	G	3000	1.22	H	5000	1.41	I	7000	1.41	J	10000	1.49
Benzo(k)fluoranthene	A	50	0.916	B	100	1.28	C	200	1.09	D	500	1.25	E	1000	1.20
	F	2000	1.23	G	3000	1.30	H	5000	1.42	I	7000	1.32	J	10000	1.30
Benzo(a)pyrene	A	50	0.879	B	100	1.04	C	200	0.897	D	500	1.01	E	1000	1.04
	F	2000	1.09	G	3000	1.16	H	5000	1.26	I	7000	1.24	J	10000	1.28
Indeno(1,2,3-cd)pyrene	A	50	0.710	B	100	0.822	C	200	0.729	D	500	0.865	E	1000	0.890
	F	2000	0.943	G	3000	0.964	H	5000	1.09	I	7000	1.09	J	10000	1.20
Dibenz(a,h)anthracene				B	100	0.873	C	200	0.866	D	500	0.931	E	1000	0.980
	F	2000	1.04	G	3000	1.05	H	5000	1.14	I	7000	1.13	J	10000	1.18
Benzo(g,h,i)perylene	A	50	0.875	B	100	0.937	C	200	0.956	D	500	1.03	E	1000	1.02
	F	2000	1.09	G	3000	1.07	H	5000	1.17	I	7000	1.14	J	10000	1.17
Nitrobenzene-d5				B	100	1.37	C	200	1.08	D	500	1.36	E	1000	1.28
	F	2000	1.39	G	3000	1.49	H	5000	1.53	I	7000	1.50	J	10000	1.49
2-Fluorobiphenyl				B	100	1.33	C	200	1.67	D	500	1.49	E	1000	1.58
	F	2000	1.46	G	3000	1.55	H	5000	1.72	I	7000	1.74	J	10000	1.63
2,4,6-Tribromophenol							C	200	0.142	D	500	0.143	E	1000	0.145
	F	2000	0.149	G	3000	0.158	H	5000	0.173	I	7000	0.173	J	10000	0.189
Terphenyl-d14				B	100	0.942	C	200	0.846	D	500	0.902	E	1000	0.893
	F	2000	0.925	G	3000	0.921	H	5000	1.02	I	7000	0.934	J	10000	0.857

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	8.8		≤ 20	1.19		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.6		≤ 20	0.667		0.300
Acenaphthylene	MS	AverageRF	% RSD	11.2		≤ 20	2.11		0.900
Acenaphthene	MS	AverageRF	% RSD	12.8		≤ 20	1.15		0.700
Fluorene	MS	AverageRF	% RSD	11.3		≤ 20	1.50		0.800
Hexachlorobenzene	MS	AverageRF	% RSD	8.9		≤ 20	0.279		0.100
Pentachlorophenol	MS	AverageRF	% RSD	16.0		≤ 20	0.187		0.050
Phenanthrene	MS	AverageRF	% RSD	8.1		≤ 20	1.16		0.600
Anthracene	MS	AverageRF	% RSD	9.9		≤ 20	1.19		0.600
Fluoranthene	MS	AverageRF	% RSD	12.5		≤ 20	1.29		0.600
Pyrene	MS	AverageRF	% RSD	7.8		≤ 20	1.37		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	6.4		≤ 20	1.20		0.600
Chrysene	MS	AverageRF	% RSD	5.0		≤ 20	1.13		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	5.8		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	15.9		≤ 20	1.19		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	11.4		≤ 20	1.23		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.2		≤ 20	1.09		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	17.2		≤ 20	0.930		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	11.5		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.6		≤ 20	1.05		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	10.3		≤ 20	1.39		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	8.4		≤ 20	1.57		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	10.9		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	5.5		≤ 20	0.915		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12950
Units: ng/ml

File ID: J:\MS06\DATA\120313\1203F015.D
J:\MS06\DATA\120313\1203F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	1.19	1.22	3	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3100	0.667	0.689	3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.11	1.91	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	3000	1.15	1.15	0	NA	± 30 %	AverageRF
Fluorene	3000	3000	1.50	1.52	1	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2900	0.279	0.269	-4	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.187	0.198	6	NA	± 30 %	AverageRF
Phenanthrene	3000	3000	1.16	1.15	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	1.19	1.21	1	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.29	1.29	0	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.36	-1	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.20	1.13	-6	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.13	1.08	-5	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	1.02	0.991	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.19	1.32	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.23	1.17	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3200	1.09	1.14	5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.930	0.888	-4	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	1.02	1.00	-2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2900	1.05	1.00	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313648
Units: ng/ml

File ID: J:\MS06\DATA\121013\1210F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2800	0.700	1.19	1.11	-6	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2900	0.300	0.667	0.635	-5	NA	± 20 %	AverageRF
Acenaphthylene	3000	3000	0.900	2.11	2.11	0	NA	± 20 %	AverageRF
Acenaphthene	3000	3000	0.700	1.15	1.16	0	NA	± 20 %	AverageRF
Fluorene	3000	3000	0.800	1.50	1.52	2	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2800	0.100	0.279	0.264	-5	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2600	0.050	0.187	0.161	-14	NA	± 20 %	AverageRF
Phenanthrene	3000	2700	0.600	1.16	1.06	-9	NA	± 20 %	AverageRF
Anthracene	3000	2800	0.600	1.19	1.10	-8	NA	± 20 %	AverageRF
Fluoranthene	3000	2800	0.600	1.29	1.20	-7	NA	± 20 %	AverageRF
Pyrene	3000	2800	0.600	1.37	1.28	-7	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2900	0.600	1.20	1.15	-4	NA	± 20 %	AverageRF
Chrysene	3000	2900	0.600	1.13	1.08	-5	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	0.010	1.02	1.00	-2	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3000	0.600	1.19	1.19	0	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.23	1.27	3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3100	0.600	1.09	1.12	2	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2800	0.500	0.930	0.869	-7	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2600	0.400	1.02	0.870	-15	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.500	1.05	0.948	-9	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3000	0.01	1.39	1.40	1	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2900	0.01	1.57	1.53	-3	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.159	0.148	-7	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2800	0.01	0.915	0.843	-8	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1313208
Project: RM11E Supplement RI/FS Investigation/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1313648
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F003.D	GC/MS Tuning - Generic	KWG1313648-1	12/10/2013	10:27		12/10/2013	10:55
1210F004.D	Continuing Calibration Verification	KWG1313648-2	12/10/2013	11:07		12/10/2013	11:35
1210F005.D	Method Blank	KWG1313447-3	12/10/2013	11:50		12/10/2013	12:18
1210F006.D	Lab Control Sample	KWG1313447-1	12/10/2013	12:34		12/10/2013	13:02
1210F007.D	Duplicate Lab Control Sample	KWG1313447-2	12/10/2013	13:12		12/10/2013	13:40
1210F008.D	ZZZZZZ	ZZZZZZ	12/10/2013	13:51		12/10/2013	14:19
1210F009.D	RM11E-89881-12-2013	K1313208-001	12/10/2013	14:28		12/10/2013	14:56
1210F010.D	RM11E-5MULT89811-12-2013	K1313208-002	12/10/2013	15:06		12/10/2013	15:34
1210F011.D	ZZZZZZ	ZZZZZZ	12/10/2013	15:44		12/10/2013	16:12
1210F012.D	ZZZZZZ	ZZZZZZ	12/10/2013	16:22		12/10/2013	16:50
1210F013.D	ZZZZZZ	ZZZZZZ	12/10/2013	16:59		12/10/2013	17:27
1210F014.D	ZZZZZZ	ZZZZZZ	12/10/2013	17:36		12/10/2013	18:04
1210F015.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:14		12/10/2013	18:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004
Sample Matrix: Water

Service Request: K1313208
Date Extracted: 12/05/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Extraction Lot: KWG1313447
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-89881-12-2013	K1313208-001	12/04/13	12/05/13	910ml	2ml	NA	
RM11E-5MULT89811-12-201	K1313208-002	12/04/13	12/05/13	980ml	2ml	NA	
Method Blank	KWG1313447-3	NA	NA	1000ml	2ml	NA	
Lab Control Sample	KWG1313447-1	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1313447-2	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 4, 2014

Analytical Report for Service Request No: K1313208
Revised Service Request No: K1313208.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplement RI/FS Investigation/487.002.004

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on December 05, 2013. For your reference, these analyses have been assigned our service request number K1313208.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata

REVISED
10:13 am, Mar 06, 2014

Gregory Salata, Ph.D.
Client Services Manager

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1313208
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	12/05/13-12/06/13
Sample Matrix:	Water		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 12/05/-12/06/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Chlorinated Pesticides by GC/MS/MS

Calibration Verification Exceptions:
The upper control criterion was exceeded for Hexachlorobenzene-13C6 (surrogate) in Continuing Calibration Verification (CCV) MS21\1210F005.D. The analyte in question was not originally included in the list of analytes to be reported for pesticides on this project. The affected results were flagged to indicate the issue. No further corrective action was possible.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No anomalies associated with the analysis of these samples were observed.

Approved by _____

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MULT89881-12-2013	K1313208-001	12/04/2013	12/05/2013
RM11E-5MULT89811-12-2013	K1313208-002	12/04/2013	12/05/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MULT89881-12-2013	**Units:**	ng/L
Lab Code:	K1313208-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.0	0.27	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	87	5-120	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	12/04/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-5MULT89811-12-2013	**Units:**	ng/L
Lab Code:	K1313208-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.31**	J	1.1	0.28	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	90	5-120	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Storm water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313443-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	**0.31**	J	1.0	0.27	1	12/05/13	12/10/13	KWG1313443	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	69	5-120	12/10/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004		
Sample Matrix:	Water		

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	Percent
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Sur1
RM11E-MULT89881-12-2013	K1313208-001	87
RM11E-5MULT89811-12-2013	K1313208-002	90
Method Blank	KWG1313443-3	69
Lab Control Sample	KWG1313443-1	73
Duplicate Lab Control Sample	KWG1313443-2	74

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013
		Time Analyzed:	16:45

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\121013\1210F005.D	**Lab Code:**	KWG1313638-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1313638
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	RT	Area	RT
	Results ==>	54,042	15.32	11,562	11.04
	Upper Limit ==>	108,084	15.82	57,808	11.54
	Lower Limit ==>	27,021	14.82	578	10.54
	ICAL Result ==>	62,196	15.30	9,144	11.03
Associated Analyses					
Method Blank	KWG1313443-3	52,652	15.32	5,373	11.04
Lab Control Sample	KWG1313443-1	58,233	15.32	6,255	11.04
Duplicate Lab Control Sample	KWG1313443-2	57,843	15.32	6,383	11.04
RM11E-MULT89881-12-2013	K1313208-001	58,152	15.32	7,504	11.04
RM11E-5MULT89811-12-2013	K1313208-002	51,115	15.31	6,784	11.04

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/10/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313443

	Lab Control Sample KWG1313443-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313443-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	19.7	20.0	99	20.0	20.0	100	50-120	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	17:25

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313443-3	**File ID:**	J:\MS21\DATA\121013\1210F006.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313443

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313443-1	J:\MS21\DATA\121013\1210F007.D	12/10/13	17:49
Duplicate Lab Control Sample	KWG1313443-2	J:\MS21\DATA\121013\1210F008.D	12/10/13	18:16
RM11E-MULT89881-12-2013	K1313208-001	J:\MS21\DATA\121013\1210F012.D	12/10/13	20:05
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS21\DATA\121013\1210F013.D	12/10/13	20:32

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Storm water	**Date Analyzed:**	12/10/2013
		Time Analyzed:	17:49

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313443-1	**File ID:**	J:\MS21\DATA\121013\1210F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313443

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313443-3	J:\MS21\DATA\121013\1210F006.D	12/10/13	17:25
RM11E-MULT89881-12-2013	K1313208-001	J:\MS21\DATA\121013\1210F012.D	12/10/13	20:05
RM11E-5MULT89811-12-2013	K1313208-002	J:\MS21\DATA\121013\1210F013.D	12/10/13	20:32

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\120313\1203F005.D	G	J:\MS21\Data\120313\1203F011.D
B	J:\MS21\Data\120313\1203F006.D	H	J:\MS21\Data\120313\1203F012.D
C	J:\MS21\Data\120313\1203F007.D	I	J:\MS21\Data\120313\1203F013.D
D	J:\MS21\Data\120313\1203F008.D	J	J:\MS21\Data\120313\1203F014.D
E	J:\MS21\Data\120313\1203F009.D		
F	J:\MS21\Data\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.04	C	2.0	0.998	D	5.0	0.991	E	10	0.942
	F	20	0.900	G	40	0.882	H	60	0.863	I	80	0.835	J	100	0.837
S_HXCBZ13C6	A	20	0.675	B	20	0.679	C	20	0.701	D	20	0.697	E	20	0.733
	F	20	0.735	G	20	0.758	H	20	0.775	I	20	0.839	J	20	0.814

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208
Calibration Date: 12/03/2013

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL12946
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.1		≤20	0.921		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	7.6		≤20	0.741		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Calibration Date:**	12/03/2013
		Date Analyzed:	12/03/2013

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL12946
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\120313\1203F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.921	0.880	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Analyzed:**	12/10/2013

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	12/03/2013
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL12946
		Analysis Lot:	KWG1313638
		Units:	ng/ml

File ID: J:\MS21\DATA\121013\1210F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.921	0.931	1		NA	± 25 %	AverageRF
S_HXCBZ13C6	20	29	.01	0.741	1.07	44	*	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplement RI/FS Investigation/487.002.004

Service Request: K1313208

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1313638
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F005.D	Continuing Calibration Verification	KWG1313638-1	12/10/2013	16:45		12/10/2013	16:45
1210F006.D	Method Blank	KWG1313443-3	12/10/2013	17:25		12/10/2013	17:25
1210F007.D	Lab Control Sample	KWG1313443-1	12/10/2013	17:49		12/10/2013	17:49
1210F008.D	Duplicate Lab Control Sample	KWG1313443-2	12/10/2013	18:16		12/10/2013	18:16
1210F009.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:43		12/10/2013	18:43
1210F010.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:11		12/10/2013	19:11
1210F011.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:38		12/10/2013	19:38
1210F012.D	RM11E-MULT89881-12-2013	K1313208-001	12/10/2013	20:05		12/10/2013	20:05
1210F013.D	RM11E-5MULT89811-12-2013	K1313208-002	12/10/2013	20:32		12/10/2013	20:32
1210F014.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:00		12/10/2013	21:00
1210F015.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:27		12/10/2013	21:27
1210F016.D	ZZZZZZ	ZZZZZZ	12/10/2013	21:54		12/10/2013	21:54
1210F017.D	ZZZZZZ	ZZZZZZ	12/10/2013	22:21		12/10/2013	22:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313208
Project:	RM11E Supplement RI/FS Investigation/487.002.004	**Date Extracted:**	12/05/2013
Sample Matrix:	Water		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1313443
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MULT89881-12-2013	K1313208-001	12/04/13	12/05/13	1010ml	1.0ml	NA	
RM11E-5MULT89811-12-2013	K1313208-002	12/04/13	12/05/13	980ml	1.0ml	NA	
Method Blank	KWG1313443-3	NA	NA	1010ml	1.0ml	NA	
Lab Control Sample	KWG1313443-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313443-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

January 3, 2014

Analytical Report for Service Request No: K1313248

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on December 05, 2013. For your reference, these analyses have been assigned our service request number K1313248.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
10:51 am, Jan 20, 2014

REVISED
9:32 am, Mar 06, 2014

GS/aj

RIGHT SOLUTIONS RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The eontrol limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1313248
Project:	RM11E/ 487.002.006	**Date Received:**	12/05/13-12/06/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six water samples were received for analysis at ALS Environmental between 12/05/13 and 12/06/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Sulfate by EPA Method 300.0:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Divalent Iron (Ferrous Iron) by ApplEnvMic7-87-1536-1540:
Samples RM11E-MW002s-12-2013 and RM11E-MW003d-12-2013 were received past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

Dissolved Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample RM11E-MULT1007-12-2013 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Total Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in samples RM11E-MULT1007-12-2013 and RM11E-MW003d-12-2013 were not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by 1/6/13

Total and Dissolved Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Calcium, Iron, Magnesium, Manganese and Sodium for sample RM11E-MW002s-12-2013 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1211F003. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Aroclor 1260 in Duplicate Laboratory Control Sample (DLCS) KWG1313603-2. Recovery in the associated Laboratory Control Sample (LCS) was within control criteria. No target Aroclors were detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1221, 1232, 1242, and 1248 in Method Blank KWG1313603-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the normal limit. Note the level of background was relatively low compared to the normal detection limit, so the effect on the results was minimal. The results were flagged to indicate the interference.

The detection limit was elevated for multiple target Aroclors in all field samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ 1/6/13

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) J:\MS27\1216F006.D: Carbon Disulfide. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Elevated Detection Limits:
The detection limit for all analytes for samples RM11E-MW004-12-2013, RM11E-MW002s-12-2013, and RM11E-MW003d-12-2013 was elevated due to less than optimal sample volume available for analysis.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Perylene was searched for as a tentatively identified compound. No quantitative analysis was performed for this analyte.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

Pesticides data will be provided when available.

Approved by _____ 1/6/13

Chain of Custody

ALS Environmental

45130

CHAIN OF CUSTODY

45130

002

K1313248

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: RMIIE	Project Number: 467.002.006
Project Manager: Erin Carroll Hughes	
Company: GSI	
Address: 55 SW Yamhill St. PDX	
Phone #: 503 927-4553	email: echughes@gsiws.com
Sampler Signature: Erin Hughes	Sampler Printed Name: Erin Hughes

CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix	NUMBER OF CONTAINERS	0H: ASTM D1498-00 / Redox Pot	0H: SM 4500-H+ B / pH	24H: ApplEnvMic7-87-1536-1540 /	48H: 180.1 / Turbidity	7D: 8082A / PCB	7D: 8270D / SVO LL	7D: Pesticides / Pesticides	14D: 8260C / VOC FP	14D: NWTPH-Dx / NWTPH SGT	14D: SM 2320 B / Bicarb Alk	14D: SM 2320 B / Carbonate Alk	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 7470A / Hg D	28D: 7470A / Hg T	28D: SM 2510 B / Conductivity	28D: SM 5310 C / TOC D	28D: SM 5310 C / TOC T	28D: 6010C / Metals D
1. RMIIE-MW005-12.2013		12/5/13 10:40	W	13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.																							
3.																							
4.																							
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# 467.002.006

Bill To: GSI

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard 21day

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo

Special Instructions/Comments:

Need TPH-Gx on groundwater too as per SAP.

*Indicate State Hydrocarbon Procedure:

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquishe
Signature: Erin Carroll Hughes	Signature: SWOLF	Signature	Signature	Signature
Printed Name: Erin Carrol Hughes	Printed Name: AJP	Printed Name	Printed Name	Printed Name
Firm: GSI 12/5/13 13:10	Firm: 12/5/13 1500	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

PC

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K13 13248

Received: 12/5/13 Opened: 12/5/13 By: Unloaded: 12/5/13 By:

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front, 1 back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
7.0	6.9	3.8	3.7	-0.1	345			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: VOAs running in separate cooler as per client

Page _____ *of* _____

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1313248

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Peter Pellegrin

Date

Analysis Requested

Sample I.D.	~~Date~~	Time	~~LAB I.D.~~	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	Metals (EPA 6020 & 7471A)	SVOCs (8270D LL)	PAHs (8270D LL)	Phthalates (8270D LL)	Phenols (8270D LL)	High-Resolution Pesticides (EPA 1699M)	Hydrocarbons (NWTPH-Dx)	Archive Frozen	VOCs	TRIP BLANK	TPH-GX	REMARKS/DATE
RM11E-89881-12-2013		1250	12/4/13	W	3													X		X	12-04-13
RM11E-5MULT87311-12-2013		1300	12/4/13	W	3													X		X	12-04-13
RM11E-MW005-12-2013		1040	12/5/13	W	3													X		X	
RM11E-MW002-12-2013		1400	12/5/13	W	5													X		X	
RM11E-MW031-12-2013		1450	12/5/13	W	5													X		X	
RM11E-MW24-12-2013		1700	12/5/13	W	5													X		X	
~~RM11E-MULT1007-12-2013~~			~~12/6/13~~																		
RM11E-																					
RM11E-Trip Blank			12/6/13	W	1													X		X	
~~RM11E-~~ MULT1007-12-2013		1130	12/6/13	W	5																
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					
RM11E-																					

Relinquished By	Received By
Signature: Peter Pellegrin / Erin Carroll Hughes	Signature: [illegible]
Printed Name: PETER PELLEGRIN / GSI Water Solutions	Printed Name: ALS
Firm: Groundwater Solutions Inc.	Firm: 12/6/13 1445
Date/Time: 12/6/13 1200	Date/Time:

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day
X Standard (21 days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results

Requested Report Date ___

REPORT REQUIREMENTS

___ I. Routine Report
X II. Report (includes DUP, MS MSD, as required, may be charged as samples)
X III. Data Validation Report (includes All Raw Data)
___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # ___
Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___
Shipping #: ___
Condition: ___
Lab No: ___

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553)

ALS

PC Gley

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K1312248

Received: 12/6/13 Opened: 12/6/13 By: [illegible] Unloaded: 12/6/13 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 4 Front 2 Back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
7.9	8.0	3.7	3.8	0.1	307	45361		
6.2		4.2		0.0	333	45361		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
MULT 1007-12-2013	1-250mL				✓	H_2SO_4	.5mL	Gen P11-65B	[illegible]	1515

Notes, Discrepancies, & Resolutions: Did not rec btls marked for DOC, TOC for Mult 1007-12-2013 AS on COC - will aliquot @ lab -

Page _____ *of* _____

ALS

PC Greg

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request K13 13248

Received: 12/6/13 Opened: 12/6/13 By: [illegible] Unloaded: 12/6/13 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
5.5	5.5	4.9	4.9	0.0	316			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: (VOAS)

Page ____ *of* ____

General Chemistry Parameters

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**10.4**	0.20	0.04	1	12/05/13 13:00	
RM11E-MW004-12-2013	K1313248-002	**0.26**	0.20	0.04	1	12/06/13 16:01	
RM11E-MULT1007-12-2013	K1313248-003	**2.38**	0.20	0.04	1	12/06/13 16:05	
RM11E-MW002s-12-2013	K1313248-004	**23.2**	0.20	0.04	1	12/06/13 16:07	
RM11E-MW003d-12-2013	K1313248-005	**18.8**	0.20	0.04	1	12/06/13 16:10	
Method Blank	K1313248-MB1	**0.05**	0.20	0.04	1	12/05/13 13:00	J
Method Blank	K1313248-MB2	**0.05**	0.20	0.04	1	12/06/13 11:12	J

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/06/13
		Date Analyzed:	12/06/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW004-12-2013	**Units:**	NTU
Lab Code:	K1313248-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313248-002DUP Result	Average	RPD	RPD Limit
Turbidity	180.1	0.20	0.04	0.26	0.28	0.268	6	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371524

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	5.42	5.80	93	90-110

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/06/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371833

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS2	5.38	5.80	93	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371524	KQ1314483-02	12/05/13 13:00	1.00	1.01	101	90-110
CCV2	371524	KQ1314483-03	12/05/13 13:00	1.00	1.02	102	90-110
CCV3	371524	KQ1314483-08	12/05/13 13:00	1.00	1.04	104	90-110
CCV4	371833	KQ1314540-01	12/06/13 11:00	1.00	1.02	102	90-110
CCV5	371833	KQ1314540-06	12/06/13 16:14	20.0	20.1	101	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371524	KQ1314483-04	12/05/13 13:00	0.20	0.04	0.04	J
CCB2	371524	KQ1314483-05	12/05/13 13:00	0.20	0.04	0.05	J
CCB3	371524	KQ1314483-09	12/05/13 13:00	0.20	0.04	0.05	J
CCB4	371833	KQ1314540-02	12/06/13 11:10	0.20	0.04	0.05	J
CCB5	371833	KQ1314540-05	12/06/13 16:16	0.20	0.04	0.07	J

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**7.0**	1.0	0.2	5	12/09/13 13:13	
RM11E-MW004-12-2013	K1313248-002	**4.0**	2.0	0.3	10	12/09/13 13:23	
RM11E-MULT1007-12-2013	K1313248-003	**6.5**	1.0	0.2	5	12/09/13 13:33	
RM11E-MW002s-12-2013	K1313248-004	**48.0**	2.0	0.3	10	12/09/13 13:43	
RM11E-MW003d-12-2013	K1313248-005	**14.8**	1.0	0.2	5	12/09/13 13:52	
Method Blank	K1313248-MB1	ND	0.20	0.03	1	12/09/13 09:08	U

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/09/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1314596-19	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1314596-19DUP Result	Average	RPD	RPD Limit
Chloride	300.0	0.40	0.06	0.55	0.52	0.534	6	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/9/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1314596-19	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike KQ1314596-19MS				Duplicate Matrix Spike KQ1314596-19DMS				
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	0.55	10.8	10.0	102	11.0	10.0	105	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/09/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371884

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	4.92	5.00	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Chloride

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371884	KQ1314596-09	12/09/13 08:37	5.00	5.22	104	90-110
CCV2	371884	KQ1314596-10	12/09/13 10:07	5.00	5.12	102	90-110
CCV3	371884	KQ1314596-11	12/09/13 12:05	5.00	5.05	101	90-110
CCV4	371884	KQ1314596-12	12/09/13 14:02	5.00	5.12	102	90-110
CCV5	371884	KQ1314596-13	12/09/13 15:02	5.00	5.12	102	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Chloride

Analysis Method: 300.0 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371884	KQ1314596-14	12/09/13 08:48	0.20	0.03	ND	U
CCB2	371884	KQ1314596-15	12/09/13 10:17	0.20	0.03	ND	U
CCB3	371884	KQ1314596-16	12/09/13 12:14	0.20	0.03	ND	U
CCB4	371884	KQ1314596-17	12/09/13 14:12	0.20	0.03	ND	U
CCB5	371884	KQ1314596-18	12/09/13 15:12	0.20	0.03	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**19.4**	0.50	0.05	5	12/09/13 13:13	
RM11E-MW004-12-2013	K1313248-002	**20.9**	1.0	0.1	10	12/09/13 13:23	
RM11E-MULT1007-12-2013	K1313248-003	**19.7**	0.50	0.05	5	12/09/13 13:33	
RM11E-MW002s-12-2013	K1313248-004	**76.8**	1.0	0.1	10	12/09/13 13:43	
RM11E-MW003d-12-2013	K1313248-005	**25.4**	0.50	0.05	5	12/09/13 13:52	
Method Blank	K1313248-MB1	ND	0.10	0.01	1	12/09/13 09:08	U

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/09/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1314596-19	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1314596-19DUP Result	Average	RPD	RPD Limit
Sulfate	300.0	0.20	0.02	0.84	0.79	0.817	6	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/9/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1314596-19	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike KQ1314596-19MS			Duplicate Matrix Spike KQ1314596-19DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	0.84	12.7	10.0	119 *	12.0	10.0	111 *	90-110	6	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/09/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371884

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	5.21	5.00	104	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371884	KQ1314596-09	12/09/13 08:37	5.00	5.35	107	90-110
CCV2	371884	KQ1314596-10	12/09/13 10:07	5.00	5.19	104	90-110
CCV3	371884	KQ1314596-11	12/09/13 12:05	5.00	5.11	102	90-110
CCV4	371884	KQ1314596-12	12/09/13 14:02	5.00	5.20	104	90-110
CCV5	371884	KQ1314596-13	12/09/13 15:02	5.00	5.18	104	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371884	KQ1314596-14	12/09/13 08:48	0.10	0.01	ND	U
CCB2	371884	KQ1314596-15	12/09/13 10:17	0.10	0.01	ND	U
CCB3	371884	KQ1314596-16	12/09/13 12:14	0.10	0.01	ND	U
CCB4	371884	KQ1314596-17	12/09/13 14:12	0.10	0.01	ND	U
CCB5	371884	KQ1314596-18	12/09/13 15:12	0.10	0.01	ND	U

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**352**	2.0	0.4	1	12/11/13 16:30	
RM11E-MW004-12-2013	K1313248-002	**505**	2.0	0.4	1	12/11/13 16:30	
RM11E-MULT1007-12-2013	K1313248-003	**343**	2.0	0.4	1	12/11/13 16:30	
RM11E-MW002s-12-2013	K1313248-004	**1210**	2.0	0.4	1	12/18/13 15:00	
RM11E-MW003d-12-2013	K1313248-005	**312**	2.0	0.4	1	12/11/13 16:30	
Method Blank	K1313248-MB1	**1.1**	2.0	0.4	1	12/11/13 16:30	J
Method Blank	K1313248-MB2	**1.1**	2.0	0.4	1	12/18/13 15:00	J

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	KQ1314706-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1314706-06DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	9050A	2.0	0.4	415	417	416	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372454

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	337	330	102	86-113

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/18/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373593

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS2	333	330	101	86-113

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	ApplEnvMic7-87-1536-1540	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Iron, Divalent (Ferrous Iron)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**25.4**	2.0	0.5	10	12/05/13 16:50	
RM11E-MW004-12-2013	K1313248-002	ND U	0.20	0.05	1	12/06/13 16:20	
RM11E-MULT1007-12-2013	K1313248-003	ND U	0.20	0.05	1	12/06/13 16:20	
RM11E-MW002s-12-2013	K1313248-004	**4.1**	2.0	0.5	10	12/06/13 16:20	*
RM11E-MW003d-12-2013	K1313248-005	**13.8**	2.0	0.5	10	12/06/13 16:20	*
Method Blank	K1313248-MB1	ND U	0.20	0.05	1	12/05/13 11:20	
Method Blank	K1313248-MB2	ND U	0.20	0.05	1	12/06/13 16:20	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/06/13
		Date Analyzed:	12/06/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW004-12-2013	**Units:**	mg/L
Lab Code:	K1313248-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313248-002DUP Result	Average	RPD	RPD Limit
Iron, Divalent (Ferrous Iron)	ApplEnvMic7-87-1536-1540	0.20	0.05	ND	ND	NC	NC	20

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/06/13
		Date Analyzed:	12/6/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	RM11E-MW004-12-2013	**Units:**	mg/L
Lab Code:	K1313248-002	**Basis:**	NA
Analysis Method:	ApplEnvMic7-87-1536-1540		
Prep Method:	None		

		Matrix Spike K1313248-002MS			Duplicate Matrix Spike K1313248-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Iron, Divalent (Ferrous Iron)	ND U	4.17	4.00	104	4.23	4.00	106	75-125	1	20

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Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371465	KQ1314461-04	12/05/13 11:20	4.00	4.03	101	90-110
CCV2	371465	KQ1314461-06	12/05/13 11:20	4.00	3.94	99	90-110
CCV3	371465	KQ1314461-10	12/05/13 16:50	4.00	3.97	99	90-110
CCV4	371465	KQ1314461-12	12/05/13 16:50	4.00	3.95	99	90-110
CCV5	371742	KQ1314523-05	12/06/13 16:20	4.00	4.08	102	90-110
CCV6	371742	KQ1314523-07	12/06/13 16:20	4.00	4.11	103	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371465	KQ1314461-05	12/05/13 11:20	0.20	0.05	ND	U
CCB2	371465	KQ1314461-07	12/05/13 11:20	0.20	0.05	ND	U
CCB3	371465	KQ1314461-09	12/05/13 16:50	0.20	0.05	ND	U
CCB4	371465	KQ1314461-11	12/05/13 16:50	0.20	0.05	ND	U
CCB5	371742	KQ1314523-06	12/06/13 16:20	0.20	0.05	ND	U
CCB6	371742	KQ1314523-08	12/06/13 16:20	0.20	0.05	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Oxidation-Reduction Potential (ORP)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**17**	-	-	1	12/05/13 16:50	H
RM11E-MW004-12-2013	K1313248-002	**246**	-	-	1	12/06/13 16:00	H
RM11E-MULT1007-12-2013	K1313248-003	**263**	-	-	1	12/06/13 16:00	H
RM11E-MW002s-12-2013	K1313248-004	**78.8**	-	-	1	12/06/13 16:00	H
RM11E-MW003d-12-2013	K1313248-005	**71.4**	-	-	1	12/06/13 16:00	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Oxidation-Reduction Potential (ORP)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW005-12-2013	K1313248-001DUP	-		17	16	16.5	6	20	12/05/13
RM11E-MW004-12-2013	K1313248-002DUP	-		246	263	255	7	20	12/06/13

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371892

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	478	480	100	85-115
Lab Control Sample	K1313248-LCS2	478	480	100	85-115

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/06/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371841

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS3	477	480	99	85-115
Lab Control Sample	K1313248-LCS4	470	480	98	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Bicarbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**151**	15	3	1	12/11/13 17:43	
RM11E-MW004-12-2013	K1313248-002	**234**	15	3	1	12/11/13 17:43	
RM11E-MULT1007-12-2013	K1313248-003	**132**	15	3	1	12/11/13 17:43	
RM11E-MW002s-12-2013	K1313248-004	**558**	15	3	1	12/16/13 16:47	
RM11E-MW003d-12-2013	K1313248-005	**108**	15	3	1	12/11/13 17:43	
Method Blank	K1313248-MB1	**8**	15	3	1	12/11/13 17:43	J
Method Blank	K1313248-MB2	**9**	15	3	1	12/11/13 17:43	J
Method Blank	K1313248-MB3	**8**	15	3	1	12/16/13 16:47	J
Method Blank	K1313248-MB4	**8**	15	3	1	12/16/13 16:47	J

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/06/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Bicarbonate as CaCO3

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MULT1007-12-2013	K1313248-003DUP	15	3	132	132	132	<1	20	12/11/13
RM11E-MW002s-12-2013	K1313248-004DUP	15	3	558	554	556	<1	20	12/16/13

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	ND U	15	3	1	12/11/13 17:43	
RM11E-MW004-12-2013	K1313248-002	ND U	15	3	1	12/11/13 17:43	
RM11E-MULT1007-12-2013	K1313248-003	ND U	15	3	1	12/11/13 17:43	
RM11E-MW002s-12-2013	K1313248-004	ND U	15	3	1	12/16/13 16:47	
RM11E-MW003d-12-2013	K1313248-005	ND U	15	3	1	12/11/13 17:43	
Method Blank	K1313248-MB1	ND U	15	3	1	12/11/13 17:43	
Method Blank	K1313248-MB2	ND U	15	3	1	12/11/13 17:43	
Method Blank	K1313248-MB3	ND U	15	3	1	12/16/13 16:47	
Method Blank	K1313248-MB4	ND U	15	3	1	12/16/13 16:47	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/06/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Carbonate as CaCO3

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MULT1007-12-2013	K1313248-003DUP	15	3	ND U	ND U	NC	NC	20	12/11/13
RM11E-MW002s-12-2013	K1313248-004DUP	15	3	ND U	ND U	NC	NC	20	12/16/13

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

pH

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**6.84**	-	-	1	12/05/13 18:09	H
RM11E-MW004-12-2013	K1313248-002	**6.95**	-	-	1	12/06/13 17:18	H
RM11E-MULT1007-12-2013	K1313248-003	**7.11**	-	-	1	12/06/13 17:22	H
RM11E-MW002s-12-2013	K1313248-004	**6.91**	-	-	1	12/06/13 17:24	H
RM11E-MW003d-12-2013	K1313248-005	**6.95**	-	-	1	12/06/13 17:25	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/06/13
		Date Analyzed:	12/06/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW004-12-2013	**Units:**	pH Units
Lab Code:	K1313248-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313248-002DUP Result	Average	RPD	RPD Limit
pH	SM 4500-H+ B	-	-	6.95	7.01	6.98	<1	20

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Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371547

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	5.39	5.38	100	85-115

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/06/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371752

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS2	5.40	5.38	100	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**0.98**	0.50	0.07	1	12/05/13 22:38	
RM11E-MW004-12-2013	K1313248-002	**0.86**	0.50	0.07	1	12/17/13 21:11	
RM11E-MULT1007-12-2013	K1313248-003	**0.36 J**	0.50	0.07	1	12/17/13 21:11	
RM11E-MW002s-12-2013	K1313248-004	**12.4**	0.50	0.07	1	12/17/13 21:11	
RM11E-MW003d-12-2013	K1313248-005	**0.38 J**	0.50	0.07	1	12/17/13 21:11	
Method Blank	K1313248-MB1	**0.32 J**	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313248-MB2	ND U	0.50	0.07	1	12/17/13 21:11	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW005-12-2013	K1313248-001DUP	0.50	0.07	0.98	0.93	0.953	5	10	12/05/13
RM11E-MW004-12-2013	K1313248-002DUP	0.50	0.07	0.86	0.89	0.875	3	10	12/17/13
RM11E-MULT1007-12-2013	K1313248-003DUP	0.50	0.07	0.36 J	0.23 J	0.298	45 *	10	12/17/13
RM11E-MW002s-12-2013	K1313248-004DUP	0.50	0.07	12.4	12.5	12.5	<1	10	12/17/13
RM11E-MW003d-12-2013	K1313248-005DUP	0.50	0.07	0.38 J	0.36 J	0.368	7	10	12/17/13

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/05/13
		Date Analyzed:	12/5/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	RM11E-MW005-12-2013	**Units:**	mg/L
Lab Code:	K1313248-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1313248-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	0.98	26.0	25.0	100	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313208-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

		Matrix Spike K1313208-001MS			Duplicate Matrix Spike K1313208-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Dissolved Organic (DOC)	0.25 J	25.1	25.0	100	25.7	25.0	102	83-117	2	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

		Matrix Spike K1313401-001MS			Duplicate Matrix Spike K1313401-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Dissolved Organic (DOC)	2.90	28.2	25.0	101	28.1	25.0	101	83-117	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371553

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	17.0	18.1	94	83-117

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/17/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373378

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS2	17.2	18.1	95	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371553	KQ1314528-05	12/05/13 22:38	25.0	25.0	100	90-110
CCV2	371553	KQ1314528-06	12/05/13 22:38	25.0	24.9	99	90-110
CCV3	373378	KQ1314995-17	12/17/13 21:11	25.0	25.0	100	90-110
CCV4	373378	KQ1314995-18	12/17/13 21:11	25.0	25.0	100	90-110
CCV5	373378	KQ1314995-19	12/17/13 21:11	25.0	25.3	101	90-110
CCV6	373378	KQ1314995-20	12/17/13 21:11	25.0	24.9	100	90-110
CCV7	373378	KQ1314995-21	12/17/13 21:11	25.0	25.6	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371553	KQ1314528-07	12/05/13 22:38	0.50	0.07	ND	U
CCB2	371553	KQ1314528-08	12/05/13 22:38	0.50	0.07	ND	U
CCB3	373378	KQ1314995-22	12/17/13 21:11	0.50	0.07	ND	U
CCB4	373378	KQ1314995-23	12/17/13 21:11	0.50	0.07	ND	U
CCB5	373378	KQ1314995-24	12/17/13 21:11	0.50	0.07	ND	U
CCB6	373378	KQ1314995-25	12/17/13 21:11	0.50	0.07	ND	U
CCB7	373378	KQ1314995-26	12/17/13 21:11	0.50	0.07	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW005-12-2013	K1313248-001	**0.97**	0.50	0.07	1	12/05/13 22:38	
RM11E-MW004-12-2013	K1313248-002	**1.21**	0.50	0.07	1	12/17/13 00:11	
RM11E-MULT1007-12-2013	K1313248-003	**0.56**	0.50	0.07	1	12/17/13 00:11	
RM11E-MW002s-12-2013	K1313248-004	**12.6**	0.50	0.07	1	12/17/13 00:11	
RM11E-MW003d-12-2013	K1313248-005	**0.60**	0.50	0.07	1	12/17/13 00:11	
Method Blank	K1313248-MB1	**0.32 J**	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313248-MB2	ND U	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313248-MB3	ND U	0.50	0.07	1	12/05/13 22:38	
Method Blank	K1313248-MB4	**0.11 J**	0.50	0.07	1	12/17/13 00:11	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project	RM11E/487.002.006	**Date Collected:**	12/05/13 - 12/06/13
Sample Matrix:	Water	**Date Received:**	12/05/13 - 12/06/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW005-12-2013	K1313248-001DUP	0.50	0.07	0.97	1.00	0.982	3	10	12/05/13
RM11E-MW004-12-2013	K1313248-002DUP	0.50	0.07	1.21	1.16	1.18	4	10	12/17/13
RM11E-MULT1007-12-2013	K1313248-003DUP	0.50	0.07	0.56	0.42 J	0.489	28 *	10	12/17/13
RM11E-MW002s-12-2013	K1313248-004DUP	0.50	0.07	12.6	12.7	12.7	<1	10	12/17/13
RM11E-MW003d-12-2013	K1313248-005DUP	0.50	0.07	0.60	0.53	0.567	12 *	10	12/17/13

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/06/13
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-MW004-12-2013	**Units:**	mg/L
Lab Code:	K1313248-002	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

		Matrix Spike K1313248-002MS			Duplicate Matrix Spike K1313248-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic	1.21	26.5	25.0	101	26.2	25.0	100	83-117	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	12/05/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	371554

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313248-LCS1	17.0	18.1	94	83-117
Lab Control Sample	K1313248-LCS2	17.0	18.1	94	83-117
Lab Control Sample	K1313248-LCS3	16.9	18.1	94	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	371554	KQ1314583-54	12/05/13 22:38	25.0	25.0	100	90-110
CCV2	371554	KQ1314583-55	12/05/13 22:38	25.0	24.9	99	90-110
CCV3	371554	KQ1314583-56	12/05/13 22:38	25.0	24.7	99	90-110
CCV4	371554	KQ1314583-57	12/05/13 22:38	25.0	24.8	99	90-110
CCV5	371554	KQ1314583-58	12/05/13 22:38	25.0	25.0	100	90-110
CCV6	371554	KQ1314583-59	12/05/13 22:38	25.0	24.8	99	90-110
CCV7	371554	KQ1314583-60	12/05/13 22:38	25.0	24.5	98	90-110
CCV8	373175	KQ1314986-30	12/17/13 00:11	25.0	24.6	98	90-110
CCV9	373175	KQ1314986-31	12/17/13 00:11	25.0	25.0	100	90-110
CCV10	373175	KQ1314986-32	12/17/13 00:11	25.0	24.9	99	90-110
CCV11	373175	KQ1314986-33	12/17/13 00:11	25.0	24.3	97	90-110
CCV12	373175	KQ1314986-34	12/17/13 00:11	25.0	24.3	97	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313248
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	371554	KQ1314583-61	12/05/13 22:38	0.50	0.07	ND	U
CCB2	371554	KQ1314583-62	12/05/13 22:38	0.50	0.07	ND	U
CCB3	371554	KQ1314583-63	12/05/13 22:38	0.50	0.07	ND	U
CCB4	371554	KQ1314583-64	12/05/13 22:38	0.50	0.07	0.08	J
CCB5	371554	KQ1314583-65	12/05/13 22:38	0.50	0.07	ND	U
CCB6	371554	KQ1314583-66	12/05/13 22:38	0.50	0.07	ND	U
CCB7	371554	KQ1314583-67	12/05/13 22:38	0.50	0.07	ND	U
CCB8	373175	KQ1314986-35	12/17/13 00:11	0.50	0.07	0.09	J
CCB9	373175	KQ1314986-36	12/17/13 00:11	0.50	0.07	0.10	J
CCB10	373175	KQ1314986-37	12/17/13 00:11	0.50	0.07	ND	U
CCB11	373175	KQ1314986-38	12/17/13 00:11	0.50	0.07	ND	U
CCB12	373175	KQ1314986-39	12/17/13 00:11	0.50	0.07	ND	U

Metals

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/13
Sample Matrix:	Water	**Date Received:**	12/05/13

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	6010C/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
RM11E-MW005-12-2013	K1313248-001	0.07	0.004	1	12/11/13	12/13/13	144	
RM11E-MW004-12-2013	K1313248-002	0.07	0.004	1	12/11/13	12/13/13	238	
RM11E-MULT1007-12-2013	K1313248-003	0.07	0.004	1	12/11/13	12/13/13	149	
RM11E-MW002s-12-2013	K1313248-004	0.07	0.004	1	12/12/13	12/13/13	550	
RM11E-MW003d-12-2013	K1313248-005	0.07	0.004	1	12/11/13	12/13/13	118	
Method Blank	K1313248-MB1	0.07	0.004	1	12/11/13	12/13/13	0.008 J	
Method Blank	K1313248-MB2	0.07	0.004	1	12/12/13	12/13/13	ND	

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QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: NA
Date Received: NA
Date Extracted: 12/12/13
Date Analyzed: 12/13/13

Duplicate Summary
Metals

Sample Name: Batch QC
Lab Code: K1313208-001D
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	6010C/SM 2340B	0.07	143	142	142	<1	

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QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/13
Date Received: 12/06/13
Date Extracted: 12/12/13
Date Analyzed: 12/13/13

Duplicate Summary
Metals

Sample Name: RM11E-MW002s-12-2013
Lab Code: K1313248-004D
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	6010C/SM 2340B	0.07	550	554	552	<1	

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E
Project No.: 487.002.006

Service Request: K1313248

Sample Name:	Lab Code:
Batch QC1D	K1313208-001D
Batch QC1S	K1313208-001S
Batch QC2D	K1313208-002D
Batch QC2S	K1313208-002S
RM11E-MW005-12-2013	K1313248-001
RM11E-MW005-12-2013	K1313248-001DISS
RM11E-MW005-12-2013S	K1313248-001DISSS
RM11E-MW005-12-2013SD	K1313248-001DISSSD
RM11E-MW004-12-2013	K1313248-002
RM11E-MW004-12-2013	K1313248-002DISS
RM11E-MULT1007-12-2013	K1313248-003
RM11E-MULT1007-12-2013	K1313248-003DISS
RM11E-MW002s-12-2013	K1313248-004
RM11E-MW002s-12-2013D	K1313248-004D
RM11E-MW002s-12-2013	K1313248-004DISS
RM11E-MW002s-12-2013S	K1313248-004S
RM11E-MW003d-12-2013	K1313248-005
RM11E-MW003d-12-2013	K1313248-005DISS
Method Blank	K1313248-MB
Method Blank	K1313248-MB2

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	12/05/13
Project Name:	RM11E	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MW005-12-2013 **Lab Code:** K1313248-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	5.4		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	49.0		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	33600		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.06	J	
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	1.130		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.08	J	
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	27200		
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	14700		
Manganese	6020A	5.000	0.600	100.0	12/23/13	12/23/13	3720		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.65		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3000		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	9940		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.21		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	0.4	J	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	12/05/13
Project Name:	RM11E	**Date Received:**	12/05/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MW005-12-2013 **Lab Code:** K1313248-001DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.4		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	28.5		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	33000		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.26		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	1.100		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.17		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	12300		
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	14500		
Manganese	6020A	5.000	0.600	100.0	12/23/13	12/23/13	3760		
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.78		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	2930		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	9830		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	0.4	J	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1313248
Project No.:	487.002.006	Date Collected:	12/05/13
Project Name:	RM11E	Date Received:	12/06/13
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: RM11E-MW004-12-2013 Lab Code: K1313248-002

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.106		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.8		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	67.2		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.013	J	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.028		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	51800		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.62		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	1.290		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.47		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	9.2	J	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.014	J	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	26300		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	328		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	3.20		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3690		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	16500		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	15.6		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	1.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1313248
Project No.:	487.002.006	Date Collected:	12/05/13
Project Name:	RM11E	Date Received:	12/06/13
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: RM11E-MW004-12-2013 Lab Code: K1313248-002DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.106		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.9		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	66.1		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.036		
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	50200		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.61		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	1.290		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.51		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	25400		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	319		
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	3.06		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3590		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	16000		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	15.4		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	1.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1313248
Project No.:	487.002.006	Date Collected:	12/06/13
Project Name:	RM11E	Date Received:	12/06/13
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: RM11E-MULT1007-12-2013 Lab Code: K1313248-003

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.054		
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.2		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	17.1		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	36200		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	2.87		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	2.820		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.55		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	476		
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.068		
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	14300		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	25.7		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	2.47		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3130		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8710		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	8.70		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	15.7		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	12/06/13
Project Name:	RM11E	**Date Received:**	12/06/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MULT1007-12-2013 **Lab Code:** K1313248-003DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.044	J	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	0.8		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	15.9		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	36400		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.15		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	2.400		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.50		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.007	J	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	14300		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	5.220		
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	2.51		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3080		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	8730		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	7.24		
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	10.7		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	12/05/13
Project Name:	RM11E	**Date Received:**	12/06/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MW002s-12-2013 **Lab Code:** K1313248-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/12/13	12/19/13	0.123		
Arsenic	6020A	0.5	0.1	1.0	12/12/13	12/19/13	1.1		
Barium	6020A	0.05	0.02	1.0	12/12/13	12/19/13	174		
Beryllium	6020A	0.020	0.006	1.0	12/12/13	12/19/13	0.019	J	
Cadmium	6020A	0.020	0.005	1.0	12/12/13	12/19/13	0.012	J	
Calcium	6010C	20.0	0.9	1.0	12/12/13	12/13/13	136000		
Chromium	6020A	0.20	0.02	1.0	12/12/13	12/19/13	0.94		
Cobalt	6020A	0.020	0.006	1.0	12/12/13	12/19/13	15.8		
Copper	6020A	0.10	0.02	1.0	12/12/13	12/19/13	1.29		
Iron	6010C	20.0	3.0	1.0	12/12/13	12/13/13	11000		
Lead	6020A	0.020	0.005	1.0	12/12/13	12/19/13	0.156		
Magnesium	6010C	5.0	0.3	1.0	12/12/13	12/13/13	50800		
Manganese	6020A	5.000	0.600	100.0	12/12/13	12/23/13	6940		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/12/13	12/19/13	11.1		
Potassium	6010C	200	60.0	1.0	12/12/13	12/13/13	4180		
Sodium	6010C	200	20.0	1.0	12/12/13	12/13/13	46300		
Vanadium	6020A	0.20	0.03	1.0	12/12/13	12/19/13	1.34		
Zinc	6020A	0.5	0.2	1.0	12/12/13	12/19/13	5.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1313248
Project No.:	487.002.006	Date Collected:	12/05/13
Project Name:	RM11E	Date Received:	12/06/13
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: RM11E-MW002s-12-2013 Lab Code: K1313248-004DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/12/13	12/20/13	0.099		
Arsenic	6020A	0.5	0.1	1.0	12/12/13	12/20/13	0.8		
Barium	6020A	0.05	0.02	1.0	12/12/13	12/20/13	130		
Beryllium	6020A	0.020	0.006	1.0	12/12/13	12/20/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/12/13	12/20/13	0.008	J	
Calcium	6010C	20.0	0.9	1.0	12/12/13	12/13/13	139000		
Chromium	6020A	0.20	0.02	1.0	12/12/13	12/20/13	0.13	J	
Cobalt	6020A	0.020	0.006	1.0	12/12/13	12/20/13	18.0		
Copper	6020A	0.10	0.02	1.0	12/12/13	12/20/13	0.64		
Iron	6010C	20.0	3.0	1.0	12/12/13	12/13/13	92.7		
Lead	6020A	0.020	0.005	1.0	12/12/13	12/20/13	0.007	J	
Magnesium	6010C	5.0	0.3	1.0	12/12/13	12/13/13	51100		
Manganese	6020A	5.000	0.600	100.0	12/12/13	12/23/13	7720		
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/12/13	12/20/13	10.0		
Potassium	6010C	200	60.0	1.0	12/12/13	12/13/13	4060		
Sodium	6010C	200	20.0	1.0	12/12/13	12/13/13	47700		
Vanadium	6020A	0.20	0.03	1.0	12/12/13	12/20/13	0.15	J	
Zinc	6020A	0.5	0.2	1.0	12/12/13	12/20/13	4.4		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	12/05/13
Project Name:	RM11E	**Date Received:**	12/06/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RM11E-MW003d-12-2013 **Lab Code:** K1313248-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	2.7		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	38.9		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.008	J	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	27600		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	2.07		
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	2.330		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.47		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	19900		
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.111		
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	11800		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	1160		
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.28		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3300		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	10800		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.19	J	
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	3.6		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	Service Request:	K1313248
Project No.:	487.002.006	Date Collected:	12/05/13
Project Name:	RM11E	Date Received:	12/06/13
Matrix:	WATER	Units:	ug/L
		Basis:	NA

Sample Name: RM11E-MW003d-12-2013 Lab Code: K1313248-005DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	1.1		
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	21.4		
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	26800		
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.02	U	
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	1.410		
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.15		
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	7510		
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	11300		
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	1140		
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	1.09		
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	3170		
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	10400		
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	2.1		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	
Project Name:	RM11E	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1313248-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/11/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/11/13	12/19/13	0.1	U	
Barium	6020A	0.05	0.02	1.0	12/11/13	12/19/13	0.02	U	
Beryllium	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/11/13	12/13/13	1.4	J	
Chromium	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.02	U	
Cobalt	6020A	0.020	0.006	1.0	12/11/13	12/19/13	0.006	U	
Copper	6020A	0.10	0.02	1.0	12/11/13	12/19/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/11/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/11/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/11/13	12/13/13	1.2	J	
Manganese	6020A	0.050	0.006	1.0	12/23/13	12/23/13	0.006	U	
Mercury	7470A	0.20	0.02	1.0	12/09/13	12/09/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/11/13	12/19/13	0.02	U	
Potassium	6010C	200	60.0	1.0	12/11/13	12/13/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/11/13	12/13/13	26.5	J	
Vanadium	6020A	0.20	0.03	1.0	12/11/13	12/19/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/11/13	12/19/13	0.2	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project No.:	487.002.006	**Date Collected:**	
Project Name:	RM11E	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1313248-MB2

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/12/13	12/19/13	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	12/12/13	12/19/13	0.1	U	
Barium	6020A	0.05	0.02	1.0	12/12/13	12/19/13	0.02	U	
Beryllium	6020A	0.020	0.006	1.0	12/12/13	12/19/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/12/13	12/19/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/12/13	12/13/13	0.9	U	
Chromium	6020A	0.20	0.02	1.0	12/12/13	12/19/13	0.02	U	
Cobalt	6020A	0.020	0.006	1.0	12/12/13	12/19/13	0.006	U	
Copper	6020A	0.10	0.02	1.0	12/12/13	12/19/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/12/13	12/13/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/12/13	12/19/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/12/13	12/13/13	0.3	U	
Manganese	6020A	0.050	0.006	1.0	12/12/13	12/23/13	0.006	U	
Mercury	7470A	0.20	0.02	1.0	12/16/13	12/17/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/12/13	12/19/13	0.02	U	
Potassium	6010C	200	60.0	1.0	12/12/13	12/13/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/12/13	12/13/13	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	12/12/13	12/19/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/12/13	12/19/13	0.2	U	

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.6	106	25.0	24.4	98	24.9	100	6020A
Arsenic	25.0	26.0	104	25.0	24.4	98	25.3	101	6020A
Barium	100.0	103.1	103	25.0	24.3	97	24.8	99	6020A
Beryllium	2.5	2.7	108	25.0	24.9	100	25.1	100	6020A
Cadmium	12.5	13.1	105	25.0	24.4	98	25.0	100	6020A
Calcium	1000	921	92	250	252	101	252	101	6010C
Calcium	12500	12670	101	10000	10310	103	10320	103	6010C
Chromium	10.0	10.3	103	25.0	24.4	98	24.8	99	6020A
Cobalt	25.0	26.0	104	25.0	24.7	99	24.9	100	6020A
Copper	12.5	13.2	106	25.0	25.1	100	25.0	100	6020A
Iron	2500	2527	101	10000	10250	102	10170	102	6010C
Lead	25.0	25.7	103	25.0	24.6	98	24.9	100	6020A
Magnesium	5000	4938	99	250	252	101	252	101	6010C
Magnesium	12500	12660	101	10000	10310	103	10250	102	6010C
Manganese	25.0	25.5	102	25.0	25.0	100	25.1	100	6020A
Mercury	5.00	4.90	98	5.00	5.00	100	4.60	92	7470A
Nickel	25.0	25.8	103	25.0	24.6	98	24.9	100	6020A
Potassium	12500	12620	101	10000	10250	102	9976	100	6010C
Sodium	12500	12580	101	10000	10350	104	10360	104	6010C
Vanadium	25.0	26.0	104	25.0	24.3	97	24.5	98	6020A
Zinc	25.0	26.4	106	25.0	24.8	99	25.2	101	6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Antimony				25.0	24.8	99	24.9	100	6020A
Arsenic				25.0	24.4	98	24.3	97	6020A
Barium				25.0	24.4	98	24.5	98	6020A
Beryllium				25.0	24.8	99	25.1	100	6020A
Cadmium				25.0	24.9	100	25.4	102	6020A
Calcium				10000	10440	104	10560	106	6010C
Calcium				250	262	105	258	103	6010C
Chromium				25.0	24.5	98	24.5	98	6020A
Cobalt				25.0	24.5	98	24.6	98	6020A
Copper				25.0	24.5	98	24.5	98	6020A
Iron				10000	10610	106	10650	106	6010C
Lead				25.0	24.8	99	24.7	99	6020A
Magnesium				10000	10010	100	10010	100	6010C
Magnesium				250	260	104	253	101	6010C
Manganese				25.0	25.5	102	25.1	100	6020A
Mercury				5.00	5.00	100	5.00	100	7470A
Nickel				25.0	24.5	98	24.2	97	6020A
Potassium				10000	10380	104	10240	102	6010C
Sodium				10000	9848	98	9884	99	6010C
Vanadium				25.0	24.6	98	24.6	98	6020A
Zinc				25.0	25.0	100	25.0	100	6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Antimony				25.0	25.1	100			6020A
Arsenic				25.0	25.4	102			6020A
Barium				25.0	25.1	100			6020A
Beryllium				25.0	25.5	102			6020A
Cadmium				25.0	25.2	101			6020A
Calcium				10000	10380	104	10410	104	6010C
Calcium				250	261	104	260	104	6010C
Chromium				25.0	25.2	101			6020A
Cobalt				25.0	25.6	102			6020A
Copper				25.0	25.5	102			6020A
Iron				10000	10590	106	10580	106	6010C
Lead				25.0	25.2	101			6020A
Magnesium				10000	9845	98	9937	99	6010C
Magnesium				250	261	104	258	103	6010C
Nickel				25.0	25.1	100			6020A
Potassium				10000	10280	103	10270	103	6010C
Sodium				10000	9650	96	9763	98	6010C
Vanadium				25.0	25.1	100			6020A
Zinc				25.0	25.2	101			6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Calcium				10000	10500	105	10440	104	6010C
Calcium				250	259	104	260	104	6010C
Iron				10000	10700	107	10600	106	6010C
Magnesium				10000	9921	99	9868	99	6010C
Magnesium				250	259	104	258	103	6010C
Potassium				10000	10300	103	10230	102	6010C
Sodium				10000	9772	98	9701	97	6010C

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	5.00	5.00	100	5.00	5.00	100	5.20	104	7470A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.20	104			7470A

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313248

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS Mixed

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Calcium	18.9	20.0	94	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Iron	18.1	20.0	90	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Magnesium	5.2	5.0	104	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Potassium	168.4	200.0	84	70.0 - 130.0	P	12/13/13	08:52	121313AICP
	Sodium	219.7	200.0	110	70.0 - 130.0	P	12/13/13	08:52	121313AICP
LLCCV1									
	Calcium	22.2	20.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Iron	21.7	20.0	108	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Magnesium	5.8	5.0	116	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Potassium	221.6	200.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
	Sodium	221.4	200.0	111	70.0 - 130.0	P	12/13/13	10:31	121313AICP
LLCCV2									
	Calcium	20.6	20.0	103	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Iron	20.2	20.0	101	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Magnesium	5.8	5.0	116	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Potassium	219.4	200.0	110	70.0 - 130.0	P	12/13/13	11:40	121313AICP
	Sodium	206.3	200.0	103	70.0 - 130.0	P	12/13/13	11:40	121313AICP
LLCCV3									
	Calcium	20.2	20.0	101	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Iron	18.1	20.0	90	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Magnesium	5.6	5.0	112	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Potassium	227.7	200.0	114	70.0 - 130.0	P	12/13/13	12:55	121313AICP
	Sodium	201.0	200.0	100	70.0 - 130.0	P	12/13/13	12:55	121313AICP

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313248

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Antimony	0.042	0.05	84	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Arsenic	0.49	0.5	98	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Beryllium	0.017	0.02	85	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Cadmium	0.014	0.02	70	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Chromium	0.20	0.20	100	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Cobalt	0.015	0.02	75	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Copper	0.08	0.10	80	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Lead	0.016	0.02	80	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Vanadium	0.20	0.20	100	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
	Zinc	0.47	0.50	94	70.0 - 130.0	MS	12/19/13	18:33	121913DMS
LLICV1									
	Barium	0.041	0.05	82	70.0 - 130.0	MS	12/19/13	18:38	121913DMS
LLCCV1									
	Antimony	0.065	0.05	130	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Arsenic	0.57	0.5	114	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Barium	0.036	0.05	72	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Beryllium	0.025	0.02	125	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Cadmium	0.019	0.02	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Chromium	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Cobalt	0.018	0.02	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Copper	0.09	0.10	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Lead	0.016	0.02	80	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Nickel	0.18	0.20	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Vanadium	0.19	0.20	95	70.0 - 130.0	MS	12/19/13	21:43	121913DMS
	Zinc	0.45	0.50	90	70.0 - 130.0	MS	12/19/13	21:43	121913DMS

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313248

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV2									
	Antimony	0.056	0.05	112	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Arsenic	0.62	0.5	124	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Barium	0.038	0.05	76	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Beryllium	0.024	0.02	120	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Cadmium	0.018	0.02	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Chromium	0.18	0.20	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Cobalt	0.019	0.02	95	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Copper	0.09	0.10	90	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Lead	0.014	0.02	70	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Vanadium	0.21	0.20	105	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
	Zinc	0.49	0.50	98	70.0 - 130.0	MS	12/20/13	01:18	121913DMS
LLICV1									
	Manganese	0.058	0.05	116	70.0 - 130.0	MS	12/23/13	14:10	122313BMS
LLCCV1									
	Manganese	0.063	0.05	126	70.0 - 130.0	MS	12/23/13	15:21	122313BMS
LLCCV2									
	Manganese	0.063	0.05	126	70.0 - 130.0	MS	12/23/13	15:46	122313BMS

Metals

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.19	95		

Metals

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.20	100		

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony	0.020	J	0.008	J	0.024	J	0.020	J	6020A
Arsenic	0.10	U	0.10	U	0.10	U	0.10	U	6020A
Barium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Beryllium	0.009	J	0.006	U	0.008	J	0.007	J	6020A
Cadmium	0.005	U	0.005	U	0.005	U	0.005	U	6020A
Calcium	0.9	U	0.9	U	0.9	U	1.6	J	6010C
Chromium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Cobalt	0.007	J	0.006	U	0.006	U	0.006	U	6020A
Copper	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Iron	3.0	U	-3.8	J	3.0	U	3.0	U	6010C
Lead	0.005	J	0.005	U	0.005	U	0.005	U	6020A
Magnesium	0.3	J	0.3	U	0.3	U	0.4	J	6010C
Manganese	0.015	J	0.018	J	0.018	J	0.022	J	6020A
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A
Nickel	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Potassium	60.0	U	60.0	U	60.0	U	60.0	U	6010C
Sodium	20.0	U	20.0	U	20.0	U	20.0	U	6010C
Vanadium	0.03	U	0.03	U	0.03	U	0.03	U	6020A
Zinc	0.20	U	0.20	U	0.20	U	0.20	U	6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.025	J	0.024	J			6020A
Arsenic			0.10	U	0.10	U			6020A
Barium			0.02	U	0.02	U			6020A
Beryllium			0.006	U	0.006	U			6020A
Cadmium			0.006	J	0.005	U			6020A
Calcium			0.9	U	1.0	J	0.9	U	6010C
Chromium			0.02	U	0.02	U			6020A
Cobalt			0.006	U	0.006	U			6020A
Copper			0.02	U	0.02	U			6020A
Iron			3.0	U	3.0	U	3.0	U	6010C
Lead			0.005	U	0.005	U			6020A
Magnesium			0.3	U	0.7	J	0.3	J	6010C
Manganese			0.037	J					6020A
Mercury			0.02	U					7470A
Nickel			0.02	U	0.02	U			6020A
Potassium			60.0	U	60.0	U	60.0	U	6010C
Sodium			20.0	U	20.0	U	20.0	U	6010C
Vanadium			0.03	U	0.03	U			6020A
Zinc			0.20	U	0.20	U			6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Calcium			0.9	U	0.9	U			6010C
Iron			3.0	U	3.0	U			6010C
Magnesium			0.4	J	0.4	J			6010C
Potassium			60.0	U	60.0	U			6010C
Sodium			20.0	U	20.0	U			6010C

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICP ID Number: K-ICP-AES-03 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Calcium	500000.0	500000.0	462600.0	474600.0	95			
Iron	200000.0	200000.0	185300.0	187700.0	94			
Magnesium	500000.0	500000.0	415400.0	415500.0	83			
Potassium	0.0		-84.6	-113.7				
Sodium	0.0		10.7	11.2				

Metals

- 4 -

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

ICP ID Number: K-ICP-MS-03 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.0		0.23	0.24				
Arsenic	0.00	25.00	-0.06	24.98	100			
Barium	0.00		3.11	3.14				
Beryllium	0.00		0.016	0.013				
Cadmium	0.00	25.00	0.18	25.08	100			
Chromium	0.00	50.00	0.35	49.88	100			
Cobalt	0.0	50.0	0.98	49.53	99			
Copper	0.0	50.0	0.46	47.2	94			
Lead	0.0		0.05	0.05				
Manganese	0.0	50.0	1.41	50.86	102			
Nickel	0.0	50.0	1.19	48.0	96			
Vanadium	0.0	50.0	-0.04	50.29	101			
Zinc	0.0	25.0	1.14	24.7	99			

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW005-12-2013S **Lab Code:** K1313248-001DISSS

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	1.03		0.02	U	1.00	103.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW005-12-2013SD **Lab Code:** K1313248-001DISSSD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	1.02		0.02	U	1.00	102.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1313248
Project No.: 487.002.006
Units: UG/L
Project Name: RM11E
Basis: NA
Matrix: WATER

Sample Name: RM11E-MW002s-12-2013S
Lab Code: K1313248-004S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	50.8		0.123		50.00	101.4		6020A
Arsenic	75 - 125	52.9		1.1		50.00	103.6		6020A
Barium	75 - 125	279		174		100.00	105.0		6020A
Beryllium	75 - 125	2.550		0.019	J	2.50	101.2		6020A
Cadmium	75 - 125	25.5		0.012	J	25.00	102.0		6020A
Calcium		149000		136000		10000.00	130.0		6010C
Chromium	75 - 125	10.7		0.94		10.00	97.6		6020A
Cobalt	75 - 125	40.9		15.8		25.00	100.4		6020A
Copper	75 - 125	13.6		1.29		12.50	98.5		6020A
Iron		12200		11000		1000.00	120.0		6010C
Lead	75 - 125	49.6		0.156		50.00	98.9		6020A
Magnesium		61500		50800		10000.00	107.0		6010C
Manganese		6980		6940		25.00	160.0		6020A
Nickel	75 - 125	35.8		11.1		25.00	98.8		6020A
Potassium	75 - 125	14700		4180		10000.00	105.2		6010C
Sodium		57400		46300		10000.00	111.0		6010C
Vanadium	75 - 125	26.5		1.34		25.00	100.6		6020A
Zinc	75 - 125	31.8		5.8		25.00	104.0		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1S **Lab Code:** K1313208-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	52.7		0.079		50.00	105.2		6020A
Arsenic	75 - 125	52.3		1.8		50.00	101.0		6020A
Barium	75 - 125	121		20.5		100.00	100.5		6020A
Beryllium	75 - 125	2.510		0.006	U	2.50	100.4		6020A
Cadmium	75 - 125	26.4		0.152		25.00	105.0		6020A
Calcium	75 - 125	45600		35600		10000.00	100.0		6010C
Chromium	75 - 125	11.0		1.39		10.00	96.1		6020A
Cobalt	75 - 125	24.8		0.103		25.00	98.8		6020A
Copper	75 - 125	14.6		2.42		12.50	97.4		6020A
Iron	75 - 125	1070		3.0	U	1000.00	107.0		6010C
Lead	75 - 125	50.6		0.007	J	50.00	101.2		6020A
Magnesium	75 - 125	23000		13200		10000.00	98.0		6010C
Mercury	76 - 126	0.99		0.02	U	1.00	99.0		7470A
Nickel	75 - 125	25.3		1.09		25.00	96.8		6020A
Potassium	75 - 125	13400		3100		10000.00	103.0		6010C
Sodium	75 - 125	18200		8500		10000.00	97.0		6010C
Vanadium	75 - 125	33.1		10.1		25.00	92.0		6020A
Zinc	75 - 125	39.3		12.8		25.00	106.0		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

ALS Group USA, Corp.
dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC2S **Lab Code:** K1313208-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Manganese	75 - 125	27.8		3.180		25.00	98.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW005-12-2013A **Lab Code:** K1313248-001DISSA

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	1.02		0.02		1.0	102		7470A

ALS Group USA, Corp.
dba ALS Environmental

Metals

- 5B -

POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1313248

Project No.: 487.002.006
Units: UG/L

Project Name: RM11E
Basis: NA

Matrix: WATER

Sample Name: RM11E-MW002s-12-2013A
Lab Code: K1313248-004A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	20.246		0.123		20.0	101		6020A
Arsenic	80 - 120	21.7		1.1		20.0	103		6020A
Barium	80 - 120	193.19		173.88		20.0	97		6020A
Beryllium	80 - 120	19.895		0.019		20.0	99		6020A
Cadmium	80 - 120	20.020		0.012		20.0	100		6020A
Calcium	80 - 120	146400.0		136400.0		12500	80		6010C
Chromium	80 - 120	20.38		0.94		20.0	97		6020A
Cobalt	80 - 120	35.343		15.832		20.0	98		6020A
Copper	80 - 120	20.52		1.29		20.0	96		6020A
Iron	80 - 120	13390.0		11030.0		2500	94		6010C
Lead	80 - 120	19.508		0.156		20.0	97		6020A
Magnesium	80 - 120	62020.0		50770.0		12500	90		6010C
Nickel	80 - 120	29.85		11.06		20.0	94		6020A
Potassium	80 - 120	16520.0		4175.0		12500	99		6010C
Sodium	80 - 120	58080.0		46320.0		12500	94		6010C
Vanadium	80 - 120	21.00		1.34		20.0	98		6020A
Zinc	80 - 120	24.58		5.79		20.0	94		6020A

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1A **Lab Code:** K1313208-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	20.440		0.079		20.0	102		6020A
Arsenic	80 - 120	21.4		1.8		20.0	98		6020A
Barium	80 - 120	40.18		20.51		20.0	98		6020A
Beryllium	80 - 120	20.227		0.006		20.0	101		6020A
Cadmium	80 - 120	20.465		0.152		20.0	102		6020A
Calcium	80 - 120	47390.0		35580.0		12500	94		6010C
Chromium	80 - 120	20.47		1.39		20.0	95		6020A
Cobalt	80 - 120	19.358		0.103		20.0	96		6020A
Copper	80 - 120	22.00		2.42		20.0	98		6020A
Iron	80 - 120	2668.0		3.0		2500	107		6010C
Lead	80 - 120	20.097		0.007		20.0	100		6020A
Magnesium	80 - 120	25150.0		13160.0		12500	96		6010C
Mercury	80 - 120	0.98		0.02		1.0	98		7470A
Nickel	80 - 120	19.85		1.09		20.0	94		6020A
Potassium	80 - 120	15940.0		3098.0		12500	103		6010C
Sodium	80 - 120	20410.0		8495.0		12500	95		6010C
Vanadium	80 - 120	29.06		10.11		20.0	95		6020A
Zinc	80 - 120	32.23		12.81		20.0	97		6020A

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC2A **Lab Code:** K1313208-002A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Manganese	80 - 120	23.361		3.176		20.0	101		6020A

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1D **Lab Code:** K1313208-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.079		0.054		37.6		6020A
Arsenic		1.8		1.9		5.4		6020A
Barium	20	20.5		20.5		0.0		6020A
Beryllium		0.006	U	0.006	U			6020A
Cadmium	20	0.152		0.147		3.3		6020A
Calcium	20	35600		35100		1.4		6010C
Chromium	20	1.39		1.37		1.4		6020A
Cobalt	20	0.103		0.103		0.0		6020A
Copper	20	2.42		2.38		1.7		6020A
Iron		3.0	U	3.0	U			6010C
Lead		0.007	J	0.005	U	200.0		6020A
Magnesium	20	13200		13100		0.8		6010C
Mercury		0.02	U	0.02	U			7470A
Nickel	20	1.09		1.06		2.8		6020A
Potassium	20	3100		3060		1.3		6010C
Sodium	20	8500		8410		1.1		6010C
Vanadium	20	10.1		9.75		3.5		6020A
Zinc	20	12.8		12.7		0.8		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC2D **Lab Code:** K1313208-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Manganese	20	3.180		3.200		0.6		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW005-12-2013SD **Lab Code:** K1313248-001DISSSD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	1.03		1.02		1.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW002s-12-2013D **Lab Code:** K1313248-004D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.123		0.112		9.4		6020A
Arsenic		1.1		1.2		8.7		6020A
Barium	20	174		172		1.2		6020A
Beryllium		0.019	J	0.019	J	0.0		6020A
Cadmium		0.012	J	0.010	J	18.2		6020A
Calcium	20	136000		137000		0.7		6010C
Chromium		0.94		0.83		12.4		6020A
Cobalt	20	15.8		15.8		0.0		6020A
Copper	20	1.29		1.45		11.7		6020A
Iron	20	11000		11100		0.9		6010C
Lead	20	0.156		0.154		1.3		6020A
Magnesium	20	50800		51300		1.0		6010C
Manganese	20	6940		6960		0.3		6020A
Nickel	20	11.1		11.0		0.9		6020A
Potassium	20	4180		4250		1.7		6010C
Sodium	20	46300		46900		1.3		6010C
Vanadium	20	1.34		1.26		6.2		6020A
Zinc	20	5.8		5.9		1.7		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1313248

Project No.: 487.002.006

Project Name: RM11E

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	50	52.8	105.6					
Arsenic	50	51.9	103.8					
Barium	100	102	102.0					
Beryllium	2.5	2.570	102.8					
Cadmium	25	26.3	105.2					
Calcium	12500	12800	102.4					
Chromium	10	10.3	103.0					
Cobalt	25	25.7	102.8					
Copper	12.5	13.3	106.4					
Iron	2500	2580	103.2					
Lead	50	51.7	103.4					
Magnesium	12500	12300	98.4					
Manganese	25	25.4	101.6					
Mercury	5	4.87	97.4					
Nickel	25	25.6	102.4					
Potassium	12500	12700	101.6					
Sodium	12500	12100	96.8					
Vanadium	25	24.6	98.4					
Zinc	25	28.1	112.4					

Metals

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LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313248

Project No.: 487.002.006

Project Name: RM11E

Aqueous LCS Source: CAS MIXED Solid LCS Source:

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	50	52.0	104.0					
Arsenic	50	50.6	101.2					
Barium	100	99.3	99.3					
Beryllium	2.5	2.460	98.4					
Cadmium	25	25.9	103.6					
Calcium	12500	12800	102.4					
Chromium	10	9.98	99.8					
Cobalt	25	24.9	99.6					
Copper	12.5	12.6	100.8					
Iron	2500	2590	103.6					
Lead	50	50.9	101.8					
Magnesium	12500	12100	96.8					
Manganese	25	25.2	100.8					
Mercury	5	4.91	98.2					
Nickel	25	24.6	98.4					
Potassium	12500	12600	100.8					
Sodium	12500	12000	96.0					
Vanadium	25	23.7	94.8					
Zinc	25	27.5	110.0					

Diesel and Residual Range Organics
Silica Gel Treated

Organic Analysis:
Diesel and Residual Range Organics - Silca Gel Treated
Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
MULT1007-12-2013	K1313248-003	12/05/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Loren E Portwood

Name: Loren Portwood

Date: 12/11/13

Title:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MW005-12-2013	**Units:**	ug/L
Lab Code:	K1313248-001	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	260	12	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**25**	J	260	20	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/09/13	Acceptable
n-Triacontane	109	50-150	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MW004-12-2013	**Units:**	ug/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	280	12	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**26**	J	280	21	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	12/09/13	Acceptable
n-Triacontane	119	50-150	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	MULT1007-12-2013	**Units:**	ug/L
Lab Code:	K1313248-003	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	240	11	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**24**	J	240	19	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	96	50-150	12/09/13	Acceptable
n-Triacontane	114	50-150	12/09/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MW002s-12-2013	**Units:**	ug/L
Lab Code:	K1313248-004	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**11**	J	240	11	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**27**	J	240	19	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	98	50-150	12/09/13	Acceptable
n-Triacontane	113	50-150	12/09/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	RM11E-MW003d-12-2013	**Units:**	ug/L
Lab Code:	K1313248-005	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	260	12	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**31**	J	260	20	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	12/09/13	Acceptable
n-Triacontane	113	50-150	12/09/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313573-3	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	240	11	1	12/09/13	12/09/13	KWG1313573	
Residual Range Organics (RRO)	**23**	J	240	19	1	12/09/13	12/09/13	KWG1313573	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	50-150	12/09/13	Acceptable
n-Triacontane	111	50-150	12/09/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-MW005-12-2013	K1313248-001	87	109
RM11E-MW004-12-2013	K1313248-002	100	119
MULT1007-12-2013	K1313248-003	96	114
RM11E-MW002s-12-2013	K1313248-004	98	113
RM11E-MW003d-12-2013	K1313248-005	95	113
Method Blank	KWG1313573-3	91	111
Lab Control Sample	KWG1313573-1	104	114
Duplicate Lab Control Sample	KWG1313573-2	92	109

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013
Date Analyzed: 12/09/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313573

	Lab Control Sample KWG1313573-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313573-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	1420	1600	88	1230	1600	77	46-140	14	30
Residual Range Organics (RRO)	924	800	116	840	800	105	45-159	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/09/2013
		Time Analyzed:	21:16

Method Blank Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313573-3	**File ID:**	J:\GC21\DATA\120913B\1209F057.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313573

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313573-1	J:\GC21\DATA\120913B\1209F053.D	12/09/13	20:31
Duplicate Lab Control Sample	KWG1313573-2	J:\GC21\DATA\120913B\1209F055.D	12/09/13	20:54
RM11E-MW005-12-2013	K1313248-001	J:\GC21\DATA\120913B\1209F059.D	12/09/13	21:38
RM11E-MW004-12-2013	K1313248-002	J:\GC21\DATA\120913B\1209F061.D	12/09/13	22:01
RM11E-MW003d-12-2013	K1313248-005	J:\GC21\DATA\120913B\1209F063.D	12/09/13	22:23
MULT1007-12-2013	K1313248-003	J:\GC21\DATA\120913B\1209F065.D	12/09/13	22:45
RM11E-MW002s-12-2013	K1313248-004	J:\GC21\DATA\120913B\1209F067.D	12/09/13	23:07

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/09/2013
		Time Analyzed:	20:31

Lab Control Sample Summary
Diesel and Residual Range Organics - Silca Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313573-1	**File ID:**	J:\GC21\DATA\120913B\1209F053.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313573

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313573-3	J:\GC21\DATA\120913B\1209F057.D	12/09/13	21:16
RM11E-MW005-12-2013	K1313248-001	J:\GC21\DATA\120913B\1209F059.D	12/09/13	21:38
RM11E-MW004-12-2013	K1313248-002	J:\GC21\DATA\120913B\1209F061.D	12/09/13	22:01
RM11E-MW003d-12-2013	K1313248-005	J:\GC21\DATA\120913B\1209F063.D	12/09/13	22:23
MULT1007-12-2013	K1313248-003	J:\GC21\DATA\120913B\1209F065.D	12/09/13	22:45
RM11E-MW002s-12-2013	K1313248-004	J:\GC21\DATA\120913B\1209F067.D	12/09/13	23:07

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\102113B-CAL\1021F103.D	I	J:\GC21\DATA\102113B-CAL\1023F019.D
B	J:\GC21\DATA\102113B-CAL\1021F105.D	J	J:\GC21\DATA\102113B-CAL\1023F021.D
C	J:\GC21\DATA\102113B-CAL\1021F107.D	K	J:\GC21\DATA\102113B-CAL\1023F041.D
D	J:\GC21\DATA\102113B-CAL\1021F109.D	L	J:\GC21\DATA\102113B-CAL\1023F043.D
E	J:\GC21\DATA\102113B-CAL\1021F111.D	M	J:\GC21\DATA\102113B-CAL\1023F045.D
F	J:\GC21\DATA\102113B-CAL\1021F113.D	N	J:\GC21\DATA\102113B-CAL\1023F047.D
G	J:\GC21\DATA\102113B-CAL\1023F033.D		
H	J:\GC21\DATA\102113B-CAL\1023F035.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
				G	20	976	H	50	1030				J	500	1030
	K	2000	1030	L	5000	911	M	20000	898	N	50000	856			
Residual Range Organics (RRO)	A	20	695	B	50	689	C	200	626	D	500	603	E	2000	520
	F	5000	598												
o-Terphenyl															
				G	1.0	1380	H	2.5	1430				J	25	1370
	K	100	1340	L	250	1170									
n-Triacontane															
				G	1.0	916	H	2.5	979				J	25	1180
	K	100	1130	L	250	1000									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	7.7		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.996		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	7.3		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	10.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/22/2013
Date Analyzed: 10/22/2013 - 10/23/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL12862
Units: ppm

File ID: J:\GC21\DATA\102113B-CAL\1021F119.D
J:\GC21\DATA\102113B-CAL\1023F049.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	962	943	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	622	626	NA	8	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/09/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313616
Units: ppm

File ID: J:\GC21\DATA\120913B\1209F047.D
J:\GC21\DATA\120913B\1209F049.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	962	930	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	622	626	NA	8	± 15 %	Linear
o-Terphenyl	50	47	1340	1270	-5	NA	± 15 %	AverageRF
n-Triacontane	50	53	1040	1100	5	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/09/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silca Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313616
Units: ppm

File ID: J:\GC21\DATA\120913B\1209F069.D
J:\GC21\DATA\120913B\1209F071.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	962	895	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	940	622	548	NA	-6	± 15 %	Linear
o-Terphenyl	50	47	1340	1260	-6	NA	± 15 %	AverageRF
n-Triacontane	50	52	1040	1090	4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Diesel and Residual Range Organics - Silca Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313616
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1209F023.D	Continuing Calibration Verification	KWG1313616-1	12/9/2013	14:59		12/9/2013	15:15
1209F025.D	Continuing Calibration Verification	KWG1313616-1	12/9/2013	15:21		12/9/2013	15:37
1209F027.D	Instrument Blank	KWG1313616-4	12/9/2013	15:43		12/9/2013	15:59
1209F029.D	ZZZZZZ	ZZZZZZ	12/9/2013	16:05		12/9/2013	16:21
1209F031.D	ZZZZZZ	ZZZZZZ	12/9/2013	16:27		12/9/2013	16:43
1209F033.D	ZZZZZZ	ZZZZZZ	12/9/2013	16:49		12/9/2013	17:05
1209F035.D	ZZZZZZ	ZZZZZZ	12/9/2013	17:11		12/9/2013	17:27
1209F037.D	ZZZZZZ	ZZZZZZ	12/9/2013	17:34		12/9/2013	17:50
1209F039.D	ZZZZZZ	ZZZZZZ	12/9/2013	17:56		12/9/2013	18:12
1209F041.D	ZZZZZZ	ZZZZZZ	12/9/2013	18:18		12/9/2013	18:34
1209F043.D	ZZZZZZ	ZZZZZZ	12/9/2013	18:41		12/9/2013	18:57
1209F045.D	ZZZZZZ	ZZZZZZ	12/9/2013	19:03		12/9/2013	19:19
1209F047.D	Continuing Calibration Verification	KWG1313616-2	12/9/2013	19:25		12/9/2013	19:41
1209F049.D	Continuing Calibration Verification	KWG1313616-2	12/9/2013	19:48		12/9/2013	20:04
1209F051.D	Instrument Blank	KWG1313616-5	12/9/2013	20:10		12/9/2013	20:26
1209F053.D	Lab Control Sample	KWG1313573-1	12/9/2013	20:31		12/9/2013	20:47
1209F055.D	Duplicate Lab Control Sample	KWG1313573-2	12/9/2013	20:54		12/9/2013	21:10
1209F057.D	Method Blank	KWG1313573-3	12/9/2013	21:16		12/9/2013	21:32
1209F059.D	RM11E-MW005-12-2013	K1313248-001	12/9/2013	21:38		12/9/2013	21:54
1209F061.D	RM11E-MW004-12-2013	K1313248-002	12/9/2013	22:01		12/9/2013	22:17
1209F063.D	RM11E-MW003d-12-2013	K1313248-005	12/9/2013	22:23		12/9/2013	22:39
1209F065.D	MULT1007-12-2013	K1313248-003	12/9/2013	22:45		12/9/2013	23:01
1209F067.D	RM11E-MW002s-12-2013	K1313248-004	12/9/2013	23:07		12/9/2013	23:23
1209F069.D	Continuing Calibration Verification	KWG1313616-3	12/9/2013	23:29		12/9/2013	23:45
1209F071.D	Continuing Calibration Verification	KWG1313616-3	12/9/2013	23:51		12/10/2013	00:07
1209F073.D	Instrument Blank	KWG1313616-6	12/10/2013	00:14		12/10/2013	00:30

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silca Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313573
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	990mL	2mL	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	920mL	2mL	NA	
MULT1007-12-2013	K1313248-003	12/05/13	12/06/13	1060mL	2mL	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	1060mL	2mL	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	990mL	2mL	NA	
Method Blank	KWG1313573-3	NA	NA	1060mL	2mL	NA	
Lab Control Sample	KWG1313573-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313573-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Gasoline Range Organics

Organic Analysis:
Gasoline Range Organics

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013
RM11E-MW004-12-2013	KWG1313807-1	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Hassover

Name: K Hassover

Date: 12/20/13

Title: Scientist

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Gasoline Range Organics

Sample Name:	RM11E-MW005-12-2013	**Units:**	ug/L
Lab Code:	K1313248-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/11/13	12/11/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	92	50-150	12/11/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Gasoline Range Organics

Sample Name:	RM11E-MW004-12-2013	**Units:**	ug/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/11/13	12/11/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	91	50-150	12/11/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/06/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Gasoline Range Organics

Sample Name:	RM11E-MULT1007-12-2013	**Units:**	ug/L
Lab Code:	K1313248-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/12/13	12/12/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	92	50-150	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Gasoline Range Organics

Sample Name:	RM11E-MW002s-12-2013	**Units:**	ug/L
Lab Code:	K1313248-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**56**	J	250	13	1	12/12/13	12/12/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	90	50-150	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Gasoline Range Organics

Sample Name:	RM11E-MW003d-12-2013	**Units:**	ug/L
Lab Code:	K1313248-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/12/13	12/12/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	95	50-150	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313807-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/12/13	12/12/13	KWG1313807	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	91	50-150	12/12/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MW005-12-2013	K1313248-001	92
RM11E-MW004-12-2013	K1313248-002	91
RM11E-MULT1007-12-2013	K1313248-003	92
RM11E-MW002s-12-2013	K1313248-004	90
RM11E-MW003d-12-2013	K1313248-005	95
RM11E-MW004-12-2013DUP	KWG1313807-1	96
Method Blank	KWG1313807-3	91
Lab Control Sample	KWG1313807-2	88

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/11/2013
Date Analyzed: 12/11/2013

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: RM11E-MW004-12-2013
Lab Code: K1313248-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Level: Low
Extraction Lot: KWG1313807

Analyte Name	MRL	MDL	Sample Result	RM11E-MW004-12-2013DUP KWG1313807-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	13	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/12/2013
Date Analyzed: 12/12/2013

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313807

	Lab Control Sample KWG1313807-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Gasoline Range Organics-NWTPH	455	500	91	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/12/2013
Date Analyzed: 12/12/2013
Time Analyzed: 01:46

Method Blank Summary
Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1313807-3

Instrument ID: GC39
File ID: J:\GC39\DATA\121113\1211F017.D

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Level: Low
Extraction Lot: KWG1313807

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MW005-12-2013	K1313248-001	J:\GC39\DATA\121113\1211F010.D	12/11/13	22:59
RM11E-MW004-12-2013	K1313248-002	J:\GC39\DATA\121113\1211F011.D	12/11/13	23:23
RM11E-MW004-12-2013DUP	KWG1313807-1	J:\GC39\DATA\121113\1211F012.D	12/11/13	23:47
RM11E-MULT1007-12-2013	K1313248-003	J:\GC39\DATA\121113\1211F013.D	12/12/13	00:11
RM11E-MW002s-12-2013	K1313248-004	J:\GC39\DATA\121113\1211F014.D	12/12/13	00:35
RM11E-MW003d-12-2013	K1313248-005	J:\GC39\DATA\121113\1211F015.D	12/12/13	00:59
Lab Control Sample	KWG1313807-2	J:\GC39\DATA\121113\1211F016.D	12/12/13	01:23

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/12/2013
Date Analyzed: 12/12/2013
Time Analyzed: 01:23

Lab Control Sample Summary
Gasoline Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1313807-2

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Instrument ID: GC39
File ID: J:\GC39\DATA\121113\1211F016.D

Level: Low
Extraction Lot: KWG1313807

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MW005-12-2013	K1313248-001	J:\GC39\DATA\121113\1211F010.D	12/11/13	22:59
RM11E-MW004-12-2013	K1313248-002	J:\GC39\DATA\121113\1211F011.D	12/11/13	23:23
RM11E-MW004-12-2013DUP	KWG1313807-1	J:\GC39\DATA\121113\1211F012.D	12/11/13	23:47
RM11E-MULT1007-12-2013	K1313248-003	J:\GC39\DATA\121113\1211F013.D	12/12/13	00:11
RM11E-MW002s-12-2013	K1313248-004	J:\GC39\DATA\121113\1211F014.D	12/12/13	00:35
RM11E-MW003d-12-2013	K1313248-005	J:\GC39\DATA\121113\1211F015.D	12/12/13	00:59
Method Blank	KWG1313807-3	J:\GC39\DATA\121113\1211F017.D	12/12/13	01:46

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Level ID	File ID	Level ID	File ID
A	J:\GC39\Data\101113\1011F009.D	E	J:\GC39\Data\101113\1011F013.D
B	J:\GC39\Data\101113\1011F010.D	F	J:\GC39\Data\101113\1011F014.D
C	J:\GC39\Data\101113\1011F011.D	G	J:\GC39\Data\101113\1011F015.D
D	J:\GC39\Data\101113\1011F012.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Gasoline Range Organics-NWTPH	A	50	85600	B	100	86100	C	200	83700	D	500	77200	E	1000	79400
	F	5000	78900												
1,4-Difluorobenzene	A	100	1.18E+5	B	100	1.19E+5	C	100	1.19E+5	D	100	1.19E+5	E	100	1.20E+5

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Gasoline Range Organics-NWTPH	MS	AverageRF	% RSD	4.6		≤ 20
1,4-Difluorobenzene	SURR	AverageRF	% RSD	0.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/11/2013
Date Analyzed: 10/11/2013

Second Source Calibration Verification
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration ID: CAL12840
Units: ug/L

File ID: J:\GC39\Data\101113\1011F019.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	480	81800	76900	-6	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313806
Units: ug/L

File ID: J:\GC39\DATA\121113\1211F006.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	430	81800	69800	-15	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	99	119000	118000	-1	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313806
Units: ug/L

File ID: J:\GC39\DATA\121113\1211F018.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	420	81800	68500	-16	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	95	119000	113000	-5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Gasoline Range Organics

Analysis Method: NWTPH-Gx

Analysis Lot: KWG1313806
Instrument ID: GC39
Column: DB-624

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1211F006.D	Continuing Calibration Verification	KWG1313806-1	12/11/2013	21:04		12/11/2013	21:19
1211F007.D	Instrument Blank	KWG1313806-3	12/11/2013	21:28		12/11/2013	21:43
1211F008.D	ZZZZZZ	ZZZZZZ	12/11/2013	22:11		12/11/2013	22:26
1211F009.D	ZZZZZZ	ZZZZZZ	12/11/2013	22:35		12/11/2013	22:50
1211F010.D	RM11E-MW005-12-2013	K1313248-001	12/11/2013	22:59		12/11/2013	23:14
1211F011.D	RM11E-MW004-12-2013	K1313248-002	12/11/2013	23:23		12/11/2013	23:38
1211F012.D	RM11E-MW004-12-2013DUP	KWG1313807-1	12/11/2013	23:47		12/12/2013	00:02
1211F013.D	RM11E-MULT1007-12-2013	K1313248-003	12/12/2013	00:11		12/12/2013	00:26
1211F014.D	RM11E-MW002s-12-2013	K1313248-004	12/12/2013	00:35		12/12/2013	00:50
1211F015.D	RM11E-MW003d-12-2013	K1313248-005	12/12/2013	00:59		12/12/2013	01:14
1211F016.D	Lab Control Sample	KWG1313807-2	12/12/2013	01:23		12/12/2013	01:38
1211F017.D	Method Blank	KWG1313807-3	12/12/2013	01:46		12/12/2013	02:01
1211F018.D	Continuing Calibration Verification	KWG1313806-2	12/12/2013	02:10		12/12/2013	02:25
1211F019.D	Instrument Blank	KWG1313806-4	12/12/2013	02:34		12/12/2013	02:49

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/11/2013

Extraction Prep Log
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Extraction Lot: KWG1313807
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	10ml	10ml	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	10ml	10ml	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MW004-12-2013DUP	KWG1313807-1	12/05/13	12/06/13	10ml	10ml	NA	
Method Blank	KWG1313807-3	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1313807-2	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: 12/20/13 Title: _____

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/05/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-MW005-12-2013
Lab Code: K1313248-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3535A
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0052	0.0014	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	Ui	0.011	0.0019	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0052	0.0029	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0052	0.0015	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW004-12-2013	**Units:**	ug/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	U	0.011	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0055	0.0039	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	Ui	0.0055	0.0023	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0055	0.0011	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/06/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MULT1007-12-2013	**Units:**	ug/L
Lab Code:	K1313248-003	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	U	0.011	0.00097	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0051	0.0026	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	Ui	0.0051	0.0019	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0051	0.00097	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	91	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-MW002s-12-2013
Lab Code: K1313248-004

Units: ug/L
Basis: NA

Extraction Method: EPA 3535A
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0052	0.0013	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	U	0.011	0.00098	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0052	0.0032	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0052	0.0017	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	Ui	0.0052	0.0011	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	Ui	0.0052	0.0016	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0052	0.00098	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW003d-12-2013	**Units:**	ug/L
Lab Code:	K1313248-005	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	U	0.011	0.00099	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0052	0.0028	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0052	0.0013	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0052	0.00099	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	98	39-140	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313603-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1221	ND	Ui	0.010	0.0034	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1232	ND	Ui	0.0050	0.0040	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1242	ND	Ui	0.0050	0.0018	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1248	ND	Ui	0.0050	0.0032	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1254	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1260	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	*
Aroclor 1262	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	
Aroclor 1268	ND	U	0.0050	0.00096	1	12/09/13	12/12/13	KWG1313603	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	97	39-140	12/12/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MW005-12-2013	K1313248-001	83
RM11E-MW004-12-2013	K1313248-002	79
RM11E-MULT1007-12-2013	K1313248-003	91
RM11E-MW002s-12-2013	K1313248-004	88
RM11E-MW003d-12-2013	K1313248-005	98
Method Blank	KWG1313603-3	97
Lab Control Sample	KWG1313603-1	89
Duplicate Lab Control Sample	KWG1313603-2	109

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013
Date Analyzed: 12/12/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313603

	Lab Control Sample KWG1313603-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313603-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	0.178	0.200	89	0.186	0.200	93	60-103	4	30
Aroclor 1260	0.173	0.200	87	0.213	0.200	106 *	60-103	20	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	01:39

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1313603-3	**File ID:**	J:\GC22\DATA\121113UL.B\1211F012.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313603

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313603-1	J:\GC22\DATA\121113UL.B\1211F010.D	12/12/13	00:54
Duplicate Lab Control Sample	KWG1313603-2	J:\GC22\DATA\121113UL.B\1211F011.D	12/12/13	01:16
RM11E-MW005-12-2013	K1313248-001	J:\GC22\DATA\121113UL.B\1211F015.D	12/12/13	02:47
RM11E-MW004-12-2013	K1313248-002	J:\GC22\DATA\121113UL.B\1211F016.D	12/12/13	03:10
RM11E-MULT1007-12-2013	K1313248-003	J:\GC22\DATA\121113UL.B\1211F017.D	12/12/13	03:32
RM11E-MW002s-12-2013	K1313248-004	J:\GC22\DATA\121113UL.B\1211F018.D	12/12/13	03:55
RM11E-MW003d-12-2013	K1313248-005	J:\GC22\DATA\121113UL.B\1211F019.D	12/12/13	04:18

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013
Date Analyzed: 12/12/2013
Time Analyzed: 00:54

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Lab Control Sample
Lab Code: KWG1313603-1

Instrument ID: GC22.i
File ID: J:\GC22\DATA\121113UL.B\1211F010.D

Extraction Method: EPA 3535A
Analysis Method: 8082A

Level: Low
Extraction Lot: KWG1313603

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313603-3	J:\GC22\DATA\121113UL.B\1211F012.D	12/12/13	01:39
RM11E-MW005-12-2013	K1313248-001	J:\GC22\DATA\121113UL.B\1211F015.D	12/12/13	02:47
RM11E-MW004-12-2013	K1313248-002	J:\GC22\DATA\121113UL.B\1211F016.D	12/12/13	03:10
RM11E-MULT1007-12-2013	K1313248-003	J:\GC22\DATA\121113UL.B\1211F017.D	12/12/13	03:32
RM11E-MW002s-12-2013	K1313248-004	J:\GC22\DATA\121113UL.B\1211F018.D	12/12/13	03:55
RM11E-MW003d-12-2013	K1313248-005	J:\GC22\DATA\121113UL.B\1211F019.D	12/12/13	04:18

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	7.97E+6	B	0.50	8.27E+6	C	5.0	8.08E+6	D	10	7.92E+6	E	20	7.42E+6
	F	50	7.26E+6												
Aroclor 1016 {1}	A	2.5	1.11E+5	B	5.0	1.12E+5	C	50	1.05E+5	D	100	1.04E+5	E	200	93000
	F	500	87600												
Aroclor 1016 {2}	A	2.5	3.79E+5	B	5.0	3.97E+5	C	50	3.68E+5	D	100	3.87E+5	E	200	3.42E+5
	F	500	3.67E+5												
Aroclor 1016 {3}	A	2.5	1.72E+5	B	5.0	1.93E+5	C	50	2.02E+5	D	100	1.93E+5	E	200	1.75E+5
	F	500	1.62E+5												
Aroclor 1016 {4}	A	2.5	2.08E+5	B	5.0	2.10E+5	C	50	2.15E+5	D	100	2.07E+5	E	200	1.90E+5
	F	500	1.78E+5												
Aroclor 1016 {5}	A	2.5	1.50E+5	B	5.0	1.54E+5	C	50	1.64E+5	D	100	1.59E+5	E	200	1.46E+5
	F	500	1.38E+5												
Aroclor 1260 {1}	A	2.5	2.52E+5	B	5.0	2.45E+5	C	50	2.56E+5	D	100	2.47E+5	E	200	2.39E+5
	F	500	2.33E+5												
Aroclor 1260 {2}	A	2.5	3.73E+5	B	5.0	3.70E+5	C	50	3.67E+5	D	100	3.58E+5	E	200	3.30E+5
	F	500	3.15E+5												
Aroclor 1260 {3}	A	2.5	3.82E+5	B	5.0	4.02E+5	C	50	4.07E+5	D	100	3.98E+5	E	200	3.71E+5
	F	500	3.58E+5												
Aroclor 1260 {4}	A	2.5	8.63E+5	B	5.0	8.81E+5	C	50	9.13E+5	D	100	9.25E+5	E	200	8.76E+5
	F	500	8.58E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.24E+5	B	5.0	6.87E+5	C	50	7.11E+5	D	100	7.04E+5	E	200	6.44E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	7.1		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	3.5		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	5.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	3.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	5.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	100	102000	103000	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	373000	382000	2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	183000	186000	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	201000	212000	5	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	120	152000	179000	18	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	90	245000	221000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	352000	390000	11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	386000	426000	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	886000	965000	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	669000	711000	6	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	8.26E+6	B	0.50	8.50E+6	C	5.0	8.66E+6	D	10	8.79E+6	E	20	8.42E+6
	F	50	8.58E+6												
Aroclor 1016 {1}	A	2.5	1.60E+5	B	5.0	1.74E+5	C	50	1.85E+5	D	100	1.83E+5	E	200	1.72E+5
	F	500	1.68E+5												
Aroclor 1016 {2}	A	2.5	2.67E+5	B	5.0	2.62E+5	C	50	2.60E+5	D	100	2.64E+5	E	200	2.51E+5
	F	500	2.52E+5												
Aroclor 1016 {3}	A	2.5	3.64E+5	B	5.0	3.71E+5	C	50	3.80E+5	D	100	3.85E+5	E	200	3.77E+5
	F	500	4.04E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	3.16E+5	C	50	3.10E+5	D	100	3.19E+5	E	200	3.07E+5
	F	500	3.08E+5												
Aroclor 1016 {5}	A	2.5	2.29E+5	B	5.0	2.29E+5	C	50	2.29E+5	D	100	2.29E+5	E	200	2.19E+5
	F	500	2.22E+5												
Aroclor 1260 {1}	A	2.5	2.28E+5	B	5.0	2.37E+5	C	50	2.46E+5	D	100	2.40E+5	E	200	2.34E+5
	F	500	2.35E+5												
Aroclor 1260 {2}	A	2.5	4.95E+5	B	5.0	4.45E+5	C	50	4.27E+5	D	100	4.13E+5	E	200	4.13E+5
	F	500	4.01E+5												
Aroclor 1260 {3}	A	2.5	4.09E+5	B	5.0	4.22E+5	C	50	4.28E+5	D	100	4.32E+5	E	200	4.17E+5
	F	500	4.19E+5												
Aroclor 1260 {4}	A	2.5	9.51E+5	B	5.0	9.41E+5	C	50	1.02E+6	D	100	1.06E+6	E	200	1.03E+6
	F	500	1.07E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.15E+5	B	5.0	6.26E+5	C	50	6.44E+5	D	100	6.58E+5	E	200	6.36E+5
	F	500	6.46E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	2.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	2.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	3.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	1.6		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	2.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	7.9		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	120	174000	200000	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	259000	269000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	380000	395000	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	313000	331000	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	100	226000	233000	3	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	110	237000	266000	12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	120	432000	517000	20	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	120	421000	490000	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	120	1010000	1180000	17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	638000	696000	9	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL.B\1211F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	3.6	7820000	5700000	-27	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	55	102000	113000	11		NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	52	373000	387000	4		NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	53	183000	195000	7		NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	49	201000	199000	-1		NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	49	152000	149000	-2		NA	± 100 %	AverageRF
Aroclor 1016	50	52	NA	NA	NA		4	± 20 %	NA
Aroclor 1260 {1}	50	42	245000	204000	-17		NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	41	352000	289000	-18		NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	40	386000	312000	-19		NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	39	886000	690000	-22		NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	39	669000	519000	-22		NA	± 100 %	AverageRF
Aroclor 1260	50	40	NA	NA	NA		-20	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL_R.B\1211F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.9	8530000	8350000	-2	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	51	174000	177000	2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	46	259000	237000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	49	380000	374000	-1	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	313000	311000	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	50	226000	226000	0	NA	± 100 %	AverageRF
Aroclor 1016	50	49	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	50	51	237000	241000	2	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	50	432000	431000	0	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	50	421000	425000	1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	50	1010000	1000000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	50	638000	637000	0	NA	± 100 %	AverageRF
Aroclor 1260	50	50	NA	NA	NA	0	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL.B\1211F020.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.5	7820000	7000000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	61	102000	125000	22	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	54	373000	403000	8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	58	183000	211000	16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	54	201000	217000	8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	54	152000	163000	7	NA	± 100 %	AverageRF
Aroclor 1016	50	56	NA	NA	NA	12	± 20 %	NA
Aroclor 1260 {1}	50	46	245000	227000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	46	352000	326000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	46	386000	356000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	45	886000	801000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	46	669000	610000	-9	NA	± 100 %	AverageRF
Aroclor 1260	50	46	NA	NA	NA	-8	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1313898
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121113UL_R.B\1211F020.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.2	8530000	8790000	3	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	50	174000	173000	0	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	47	259000	245000	-5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	50	380000	380000	0	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	313000	314000	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	51	226000	232000	2	NA	± 100 %	AverageRF
Aroclor 1016	50	50	NA	NA	NA	-1	± 20 %	NA
Aroclor 1260 {1}	50	54	237000	257000	8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	52	432000	451000	4	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	53	421000	445000	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	52	1010000	1060000	5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	54	638000	684000	7	NA	± 100 %	AverageRF
Aroclor 1260	50	53	NA	NA	NA	6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313898
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1211F003.D	Continuing Calibration Verification	KWG1313898-1	12/11/2013	22:15		12/11/2013	22:15
1211F004.D	Instrument Blank	KWG1313898-2	12/11/2013	22:37		12/11/2013	22:37
1211F005.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:00		12/11/2013	23:00
1211F006.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:23		12/11/2013	23:23
1211F007.D	ZZZZZZ	ZZZZZZ	12/11/2013	23:45		12/11/2013	23:45
1211F008.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:08		12/12/2013	00:08
1211F009.D	ZZZZZZ	ZZZZZZ	12/12/2013	00:31		12/12/2013	00:31
1211F010.D	Lab Control Sample	KWG1313603-1	12/12/2013	00:54		12/12/2013	00:54
1211F011.D	Duplicate Lab Control Sample	KWG1313603-2	12/12/2013	01:16		12/12/2013	01:16
1211F012.D	Method Blank	KWG1313603-3	12/12/2013	01:39		12/12/2013	01:39
1211F013.D	ZZZZZZ	ZZZZZZ	12/12/2013	02:02		12/12/2013	02:02
1211F014.D	ZZZZZZ	ZZZZZZ	12/12/2013	02:24		12/12/2013	02:24
1211F015.D	RM11E-MW005-12-2013	K1313248-001	12/12/2013	02:47		12/12/2013	02:47
1211F016.D	RM11E-MW004-12-2013	K1313248-002	12/12/2013	03:10		12/12/2013	03:10
1211F017.D	RM11E-MULT1007-12-2013	K1313248-003	12/12/2013	03:32		12/12/2013	03:32
1211F018.D	RM11E-MW002s-12-2013	K1313248-004	12/12/2013	03:55		12/12/2013	03:55
1211F019.D	RM11E-MW003d-12-2013	K1313248-005	12/12/2013	04:18		12/12/2013	04:18
1211F020.D	Continuing Calibration Verification	KWG1313898-3	12/12/2013	04:41		12/12/2013	04:41
1211F021.D	Instrument Blank	KWG1313898-4	12/12/2013	05:03		12/12/2013	05:03

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1313603
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	980mL	2mL	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	920mL	2mL	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	990mL	2mL	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	980mL	2mL	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	970mL	2mL	NA	
Method Blank	KWG1313603-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313603-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313603-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013
Trip Blank	K1313248-006	12/05/2013	12/06/2013
RM11E-MW003d-12-2013MS	KWG1313789-1	12/05/2013	12/06/2013
RM11E-MW003d-12-2013DMS	KWG1313789-2	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KReasoner

Name: KReasoner

Date: 12/20/13

Title: Scientist

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/05/2013

Volatile Organic Compounds

Sample Name: RM11E-MW005-12-2013
Lab Code: K1313248-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	**0.32**	J	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	**37**		0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	ND	U	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	**4.1**		0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	**10**		0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	94	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: RM11E-MW004-12-2013
Lab Code: K1313248-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.23**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	**0.060**	J	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	12/16/13	Acceptable
Toluene-d8	98	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	90	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/06/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: RM11E-MULT1007-12-2013
Lab Code: K1313248-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	**0.070**	J	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.30**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	**1.4**		0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	**2.3**		0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	92	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: RM11E-MW002s-12-2013
Lab Code: K1313248-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	**0.080**	J	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**1.3**		0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	93	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: RM11E-MW003d-12-2013
Lab Code: K1313248-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	**0.10**	J	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	**2.9**		0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	ND	U	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	**5.7**		0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	12/16/13	Acceptable
Toluene-d8	98	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	92	68-117	12/16/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Volatile Organic Compounds

Sample Name: Trip Blank
Lab Code: K1313248-006

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	ND	U	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	92	68-117	12/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1313789-5

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/16/13	12/16/13	KWG1313789	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/16/13	12/16/13	KWG1313789	
Carbon Disulfide	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/16/13	12/16/13	KWG1313789	
Chloroform	**0.21**	J	0.50	0.072	1	12/16/13	12/16/13	KWG1313789	
Benzene	ND	U	0.50	0.062	1	12/16/13	12/16/13	KWG1313789	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/16/13	12/16/13	KWG1313789	
Toluene	ND	U	0.50	0.054	1	12/16/13	12/16/13	KWG1313789	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/16/13	12/16/13	KWG1313789	
Chlorobenzene	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
Ethylbenzene	ND	U	0.50	0.050	1	12/16/13	12/16/13	KWG1313789	
m,p-Xylenes	ND	U	0.50	0.11	1	12/16/13	12/16/13	KWG1313789	
o-Xylene	ND	U	0.50	0.074	1	12/16/13	12/16/13	KWG1313789	
Isopropylbenzene	ND	U	0.50	0.051	1	12/16/13	12/16/13	KWG1313789	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/16/13	12/16/13	KWG1313789	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/16/13	12/16/13	KWG1313789	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/16/13	12/16/13	KWG1313789	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	12/16/13	Acceptable
Toluene-d8	97	65-144	12/16/13	Acceptable
4-Bromofluorobenzene	90	68-117	12/16/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RM11E-MW005-12-2013	K1313248-001	101	97	94
RM11E-MW004-12-2013	K1313248-002	100	98	90
RM11E-MULT1007-12-2013	K1313248-003	101	97	92
RM11E-MW002s-12-2013	K1313248-004	100	97	93
RM11E-MW003d-12-2013	K1313248-005	99	98	92
Trip Blank	K1313248-006	98	97	92
Method Blank	KWG1313789-5	98	97	90
RM11E-MW003d-12-2013MS	KWG1313789-1	101	101	98
RM11E-MW003d-12-2013DMS	KWG1313789-2	99	99	96
Lab Control Sample	KWG1313789-3	97	99	96
Duplicate Lab Control Sample	KWG1313789-4	99	101	95

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/16/2013
Time Analyzed: 11:39

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121613\1216F006.D
Instrument ID: MS27
Analysis Method: 8260C

Lab Code: KWG1313788-2
Analysis Lot: KWG1313788

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	722,266	6.42	290,382	9.60	239,941	11.94
	Upper Limit ==>	1,444,532	6.92	580,764	10.10	479,882	12.44
	Lower Limit ==>	361,133	5.92	145,191	9.10	119,971	11.44
	ICAL Result ==>	1,079,071	6.43	433,052	9.60	399,133	11.94
Associated Analyses							
Lab Control Sample	KWG1313789-3	766,494	6.43	304,347	9.60	257,441	11.93
Duplicate Lab Control Sample	KWG1313789-4	765,387	6.43	308,944	9.60	258,542	11.94
Method Blank	KWG1313789-5	718,458	6.43	287,095	9.60	204,628	11.93
Trip Blank	K1313248-006	708,305	6.43	283,648	9.60	198,956	11.93
RM11E-MW005-12-2013	K1313248-001	716,272	6.43	283,283	9.60	207,491	11.93
RM11E-MW004-12-2013	K1313248-002	699,723	6.43	277,604	9.60	199,290	11.93
RM11E-MULT1007-12-2013	K1313248-003	718,123	6.43	283,093	9.60	206,693	11.93
RM11E-MW002s-12-2013	K1313248-004	686,762	6.43	267,399	9.60	207,466	11.93
RM11E-MW003d-12-2013	K1313248-005	687,280	6.43	274,607	9.60	199,146	11.93
RM11E-MW003d-12-2013MS	KWG1313789-1	738,607	6.43	297,939	9.60	253,919	11.94
RM11E-MW003d-12-2013DMS	KWG1313789-2	774,211	6.43	315,758	9.60	261,899	11.93

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: RM11E-MW003d-12-2013
Lab Code: K1313248-005

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313789

		RM11E-MW003d-12-2013MS KWG1313789-1 Matrix Spike			RM11E-MW003d-12-2013DMS KWG1313789-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	ND	12.3	10.0	123	11.3	10.0	113	56-147	8	30
1,1-Dichloroethene	0.10	13.6	10.0	135	12.4	10.0	123	59-171	9	30
Carbon Disulfide	ND	24.8	20.0	124	22.3	20.0	111	52-156	11	30
cis-1,2-Dichloroethene	2.9	13.3	10.0	104	12.1	10.0	92	61-139	9	30
Chloroform	ND	11.0	10.0	110	10.2	10.0	102	64-133	8	30
Benzene	ND	11.1	10.0	111	10.1	10.0	101	63-144	9	30
Trichloroethene (TCE)	5.7	16.9	10.0	112	15.2	10.0	95	53-139	11	30
Toluene	ND	10.5	10.0	105	9.59	10.0	96	71-136	9	30
Tetrachloroethene (PCE)	ND	10.3	10.0	103	9.44	10.0	94	61-131	9	30
Chlorobenzene	ND	9.95	10.0	100	9.07	10.0	91	69-126	9	30
Ethylbenzene	ND	10.4	10.0	104	9.45	10.0	95	66-136	10	30
m,p-Xylenes	ND	20.8	20.0	104	18.7	20.0	93	67-135	11	30
o-Xylene	ND	9.90	10.0	99	8.83	10.0	88	67-127	11	30
Isopropylbenzene	ND	9.90	10.0	99	8.78	10.0	88	58-144	12	30
1,3,5-Trimethylbenzene	ND	10.9	10.0	109	10.2	10.0	102	60-136	7	30
1,2,4-Trimethylbenzene	ND	11.0	10.0	110	10.2	10.0	102	61-132	7	30
1,4-Dichlorobenzene	ND	9.69	10.0	97	9.05	10.0	91	72-121	7	30
1,2-Dichlorobenzene	ND	9.73	10.0	97	8.93	10.0	89	72-119	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313789

	Lab Control Sample KWG1313789-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313789-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	11.4	10.0	114	10.6	10.0	106	58-134	8	30
1,1-Dichloroethene	12.2	10.0	122	11.2	10.0	112	66-129	8	30
Carbon Disulfide	22.3	20.0	112	21.1	20.0	106	46-144	5	30
cis-1,2-Dichloroethene	9.68	10.0	97	9.13	10.0	91	71-118	6	30
Chloroform	10.2	10.0	102	10.1	10.0	101	70-129	1	30
Benzene	10.2	10.0	102	9.77	10.0	98	69-124	5	30
Trichloroethene (TCE)	10.8	10.0	108	10.7	10.0	107	67-128	1	30
Toluene	9.80	10.0	98	9.35	10.0	94	69-124	5	30
Tetrachloroethene (PCE)	9.95	10.0	100	9.08	10.0	91	62-126	9	30
Chlorobenzene	9.37	10.0	94	8.90	10.0	89	72-116	5	30
Ethylbenzene	9.78	10.0	98	9.17	10.0	92	67-121	6	30
m,p-Xylenes	19.4	20.0	97	18.3	20.0	91	69-121	6	30
o-Xylene	9.12	10.0	91	8.63	10.0	86	71-119	6	30
Isopropylbenzene	9.28	10.0	93	8.58	10.0	86	67-129	8	30
1,3,5-Trimethylbenzene	10.4	10.0	104	9.89	10.0	99	62-126	5	30
1,2,4-Trimethylbenzene	10.4	10.0	104	9.87	10.0	99	63-122	6	30
1,4-Dichlorobenzene	9.38	10.0	94	8.83	10.0	88	73-115	6	30
1,2-Dichlorobenzene	9.08	10.0	91	8.88	10.0	89	72-115	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013
Time Analyzed: 13:32

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1313789-5

Instrument ID: MS27
File ID: J:\MS27\DATA\121613\1216F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313789

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313789-3	J:\MS27\DATA\121613\1216F007.D	12/16/13	12:09
Duplicate Lab Control Sample	KWG1313789-4	J:\MS27\DATA\121613\1216F008.D	12/16/13	12:37
Trip Blank	K1313248-006	J:\MS27\DATA\121613\1216F015.D	12/16/13	16:18
RM11E-MW005-12-2013	K1313248-001	J:\MS27\DATA\121613\1216F022.D	12/16/13	19:31
RM11E-MW004-12-2013	K1313248-002	J:\MS27\DATA\121613\1216F023.D	12/16/13	19:59
RM11E-MULT1007-12-2013	K1313248-003	J:\MS27\DATA\121613\1216F024.D	12/16/13	20:26
RM11E-MW002s-12-2013	K1313248-004	J:\MS27\DATA\121613\1216F025.D	12/16/13	20:54
RM11E-MW003d-12-2013	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/13	21:22
RM11E-MW003d-12-2013MS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/13	22:17
RM11E-MW003d-12-2013DMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/13	22:44

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/16/2013
Date Analyzed: 12/16/2013
Time Analyzed: 12:09

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name: Lab Control Sample
Lab Code: KWG1313789-3

Instrument ID: MS27
File ID: J:\MS27\DATA\121613\1216F007.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313789

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313789-5	J:\MS27\DATA\121613\1216F010.D	12/16/13	13:32
Trip Blank	K1313248-006	J:\MS27\DATA\121613\1216F015.D	12/16/13	16:18
RM11E-MW005-12-2013	K1313248-001	J:\MS27\DATA\121613\1216F022.D	12/16/13	19:31
RM11E-MW004-12-2013	K1313248-002	J:\MS27\DATA\121613\1216F023.D	12/16/13	19:59
RM11E-MULT1007-12-2013	K1313248-003	J:\MS27\DATA\121613\1216F024.D	12/16/13	20:26
RM11E-MW002s-12-2013	K1313248-004	J:\MS27\DATA\121613\1216F025.D	12/16/13	20:54
RM11E-MW003d-12-2013	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/13	21:22
RM11E-MW003d-12-2013MS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/13	22:17
RM11E-MW003d-12-2013DMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/13	22:44

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/16/2013
Time Analyzed: 11:10

Tune Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121613\1216F005.D
Instrument ID: MS27
Column:

Analysis Method: 8260C
Analysis Lot: KWG1313788

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.0	12136	PASS
75	95	30	60	48.1	30659	PASS
95	95	100	100	100.0	63770	PASS
96	95	5	9	6.5	4137	PASS
173	174	0	2	1.0	518	PASS
174	95	50	120	80.6	51424	PASS
175	174	5	9	7.6	3926	PASS
176	174	95	101	96.1	49437	PASS
177	176	5	9	6.1	2993	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313788-2	J:\MS27\DATA\121613\1216F006.D	12/16/2013	11:39	
Lab Control Sample	KWG1313789-3	J:\MS27\DATA\121613\1216F007.D	12/16/2013	12:09	
Duplicate Lab Control Sample	KWG1313789-4	J:\MS27\DATA\121613\1216F008.D	12/16/2013	12:37	
Method Blank	KWG1313789-5	J:\MS27\DATA\121613\1216F010.D	12/16/2013	13:32	
Trip Blank	K1313248-006	J:\MS27\DATA\121613\1216F015.D	12/16/2013	16:18	
RM11E-MW005-12-2013	K1313248-001	J:\MS27\DATA\121613\1216F022.D	12/16/2013	19:31	
RM11E-MW004-12-2013	K1313248-002	J:\MS27\DATA\121613\1216F023.D	12/16/2013	19:59	
RM11E-MULT1007-12-2013	K1313248-003	J:\MS27\DATA\121613\1216F024.D	12/16/2013	20:26	
RM11E-MW002s-12-2013	K1313248-004	J:\MS27\DATA\121613\1216F025.D	12/16/2013	20:54	
RM11E-MW003d-12-2013	K1313248-005	J:\MS27\DATA\121613\1216F026.D	12/16/2013	21:22	
RM11E-MW003d-12-2013MS	KWG1313789-1	J:\MS27\DATA\121613\1216F028.D	12/16/2013	22:17	
RM11E-MW003d-12-2013DMS	KWG1313789-2	J:\MS27\DATA\121613\1216F029.D	12/16/2013	22:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS27\DATA\100713\1007F018.D	G	J:\MS27\DATA\100713\1007F024.D
B	J:\MS27\DATA\100713\1007F019.D	H	J:\MS27\DATA\100713\1007F025.D
C	J:\MS27\DATA\100713\1007F020.D	I	J:\MS27\DATA\100713\1007F026.D
D	J:\MS27\DATA\100713\1007F021.D	J	J:\MS27\DATA\100713\1007F027.D
E	J:\MS27\DATA\100713\1007F022.D	K	J:\MS27\DATA\100713\1007F028.D
F	J:\MS27\DATA\100713\1007F023.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroethane	A	0.10	0.199	B	0.20	0.159	C	0.50	0.180	D	1.0	0.169	E	2.0	0.167
	F	5.0	0.167	G	10	0.155	H	20	0.165	I	40	0.172	J	60	0.175
	K	80	0.168												
1,1-Dichloroethene	A	0.10	0.206	B	0.20	0.158	C	0.50	0.186	D	1.0	0.163	E	2.0	0.186
	F	5.0	0.176	G	10	0.168	H	20	0.185	I	40	0.197	J	60	0.203
	K	80	0.197												
Carbon Disulfide	A	0.10	0.857	B	0.20	0.692	C	0.50	0.686	D	1.0	0.653	E	2.0	0.680
	F	5.0	0.678	G	10	0.641	H	20	0.717	I	40	0.758	J	60	0.791
	K	80	0.773												
cis-1,2-Dichloroethene	A	0.10	0.320	B	0.20	0.286	C	0.50	0.290	D	1.0	0.287	E	2.0	0.276
	F	5.0	0.302	G	10	0.278	H	20	0.291	I	40	0.296	J	60	0.303
	K	80	0.289												
Chloroform	A	0.10	0.497	B	0.20	0.452	C	0.50	0.460	D	1.0	0.461	E	2.0	0.455
	F	5.0	0.480	G	10	0.440	H	20	0.471	I	40	0.478	J	60	0.484
	K	80	0.466												
Benzene	A	0.10	1.14	B	0.20	0.968	C	0.50	1.03	D	1.0	0.993	E	2.0	0.993
	F	5.0	1.05	G	10	0.968	H	20	1.03	I	40	1.06	J	60	1.08
	K	80	1.05												
Trichloroethene (TCE)	A	0.10	0.295	B	0.20	0.225	C	0.50	0.250	D	1.0	0.253	E	2.0	0.255
	F	5.0	0.263	G	10	0.245	H	20	0.268	I	40	0.278	J	60	0.287
	K	80	0.277												
Toluene	A	0.10	0.773	B	0.20	0.584	C	0.50	0.643	D	1.0	0.632	E	2.0	0.604
	F	5.0	0.652	G	10	0.599	H	20	0.646	I	40	0.667	J	60	0.682
	K	80	0.662												
Tetrachloroethene (PCE)	A	0.10	0.552	B	0.20	0.568	C	0.50	0.529	D	1.0	0.498	E	2.0	0.539
	F	5.0	0.534	G	10	0.499	H	20	0.551	I	40	0.579	J	60	0.595
	K	80	0.574												
Chlorobenzene				B	0.20	2.02	C	0.50	1.87	D	1.0	1.77	E	2.0	1.83
	F	5.0	1.99	G	10	1.78	H	20	1.89	I	40	1.91	J	60	1.93
	K	80	1.86												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Ethylbenzene	A	0.10	1.12	B	0.20	0.988	C	0.50	0.860	D	1.0	0.871	E	2.0	0.852
	F	5.0	0.933	G	10	0.883	H	20	0.945	I	40	0.987	J	60	0.998
	K	80	0.967												
m,p-Xylenes	A	0.20	1.39	B	0.40	1.10	C	1.0	1.05	D	2.0	1.08	E	4.0	1.09
	F	10	1.16	G	20	1.08	H	40	1.17	I	80	1.22	J	120	1.23
o-Xylene	A	0.10	1.56	B	0.20	1.11	C	0.50	1.14	D	1.0	1.04	E	2.0	1.07
	F	5.0	1.18	G	10	1.09	H	20	1.18	I	40	1.20	J	60	1.20
	K	80	1.16												
Isopropylbenzene	A	0.10	3.59	B	0.20	2.82	C	0.50	2.55	D	1.0	2.59	E	2.0	2.64
	F	5.0	2.80	G	10	2.64	H	20	2.90	I	40	3.02	J	60	3.06
	K	80	2.94												
1,3,5-Trimethylbenzene	A	0.10	3.68	B	0.20	2.57	C	0.50	2.32	D	1.0	2.40	E	2.0	2.43
	F	5.0	2.67	G	10	2.44	H	20	2.58	I	40	2.71	J	60	2.73
	K	80	2.66												
1,2,4-Trimethylbenzene				B	0.20	2.76	C	0.50	2.44	D	1.0	2.42	E	2.0	2.51
	F	5.0	2.74	G	10	2.55	H	20	2.66	I	40	2.77	J	60	2.79
	K	80	2.71												
1,4-Dichlorobenzene				B	0.20	2.16	C	0.50	1.66	D	1.0	1.55	E	2.0	1.57
	F	5.0	1.75	G	10	1.56	H	20	1.61	I	40	1.63	J	60	1.63
	K	80	1.57												
1,2-Dichlorobenzene				B	0.20	2.04	C	0.50	1.52	D	1.0	1.51	E	2.0	1.51
	F	5.0	1.69	G	10	1.50	H	20	1.52	I	40	1.54	J	60	1.52
	K	80	1.46												
Dibromofluoromethane	A	10	0.261	B	10	0.261	C	10	0.263	D	10	0.264	E	10	0.267
	F	10	0.270	G	10	0.269	H	10	0.271	I	10	0.274	J	10	0.270
	K	10	0.266												
Toluene-d8	A	10	0.956	B	10	0.956	C	10	0.959	D	10	0.983	E	10	0.988
	F	10	0.977	G	10	0.972	H	10	0.977	I	10	0.982	J	10	1.01
	K	10	0.990												
4-Bromofluorobenzene	A	10	0.868	B	10	0.882	C	10	0.875	D	10	0.876	E	10	0.891
	F	10	0.882	G	10	0.896	H	10	0.924	I	10	0.907	J	10	0.905
	K	10	0.882												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Chloroethane	MS	AverageRF	% RSD	6.9		≤ 20	0.171		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.8		≤ 20	0.184		0.100
Carbon Disulfide	MS	AverageRF	% RSD	9.2		≤ 20	0.720		0.100
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.3		≤ 20	0.292		0.100
Chloroform	MS	AverageRF	% RSD	3.5		≤ 20	0.467		0.200
Benzene	MS	AverageRF	% RSD	5.0		≤ 20	1.03		0.500
Trichloroethene (TCE)	MS	AverageRF	% RSD	7.8		≤ 20	0.263		0.200
Toluene	MS	AverageRF	% RSD	7.8		≤ 20	0.649		0.400
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.547		0.200
Chlorobenzene	MS	AverageRF	% RSD	4.3		≤ 20	1.88		0.500
Ethylbenzene	MS	AverageRF	% RSD	8.4		≤ 20	0.946		0.100
m,p-Xylenes	MS	AverageRF	% RSD	8.9		≤ 20	1.16		0.100
o-Xylene	MS	AverageRF	% RSD	11.8		≤ 20	1.18		0.300
Isopropylbenzene	MS	AverageRF	% RSD	10.4		≤ 20	2.87		0.100
1,3,5-Trimethylbenzene	MS	AverageRF	% RSD	13.9		≤ 20	2.65		0.01
1,2,4-Trimethylbenzene	MS	AverageRF	% RSD	5.4		≤ 20	2.63		0.01
1,4-Dichlorobenzene	MS	AverageRF	% RSD	10.9		≤ 20	1.67		0.500
1,2-Dichlorobenzene	MS	AverageRF	% RSD	10.8		≤ 20	1.58		0.400
Dibromofluoromethane	SURR	AverageRF	% RSD	1.6		≤ 20	0.267		0.01
Toluene-d8	SURR	AverageRF	% RSD	1.6		≤ 20	0.977		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	1.9		≤ 20	0.890		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 10/07/2013
Date Analyzed: 10/07/2013

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL12827
Units: PPB

File ID: J:\MS27\DATA\100713\1007F032.D
J:\MS27\DATA\100713\1007F035.D
J:\MS27\DATA\100813\1008F003.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	8.5	0.171	0.145	-15	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.184	0.186	1	NA	± 30 %	AverageRF
Carbon Disulfide	20	17	0.720	0.618	-14	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.3	0.292	0.272	-7	NA	± 30 %	AverageRF
Chloroform	10	9.4	0.467	0.441	-6	NA	± 30 %	AverageRF
Benzene	10	9.3	1.03	0.964	-7	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	9.5	0.263	0.250	-5	NA	± 30 %	AverageRF
Toluene	10	9.3	0.649	0.604	-7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.0	0.547	0.495	-10	NA	± 30 %	AverageRF
Chlorobenzene	10	9.6	1.88	1.80	-4	NA	± 30 %	AverageRF
Ethylbenzene	10	9.1	0.946	0.864	-9	NA	± 30 %	AverageRF
m,p-Xylenes	20	19	1.16	1.08	-7	NA	± 30 %	AverageRF
o-Xylene	10	9.2	1.18	1.08	-8	NA	± 30 %	AverageRF
Isopropylbenzene	10	9.2	2.87	2.63	-8	NA	± 30 %	AverageRF
1,3,5-Trimethylbenzene	10	9.1	2.65	2.40	-9	NA	± 30 %	AverageRF
1,2,4-Trimethylbenzene	10	9.3	2.63	2.44	-7	NA	± 30 %	AverageRF
1,4-Dichlorobenzene	10	9.2	1.67	1.54	-8	NA	± 30 %	AverageRF
1,2-Dichlorobenzene	10	9.1	1.58	1.44	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/16/2013

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/07/2013
Calibration ID: CAL12827
Analysis Lot: KWG1313788
Units: PPB

File ID: J:\MS27\DATA\121613\1216F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	10	0.100	0.171	0.177	4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.5	0.100	0.184	0.156	-15	NA	± 20 %	AverageRF
Carbon Disulfide	10	7.6	0.100	0.720	0.545	-24 *	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	8.9	0.100	0.292	0.261	-11	NA	± 20 %	AverageRF
Chloroform	10	9.8	0.200	0.467	0.460	-2	NA	± 20 %	AverageRF
Benzene	10	9.2	0.500	1.03	0.953	-8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.7	0.200	0.263	0.254	-3	NA	± 20 %	AverageRF
Toluene	10	9.7	0.400	0.649	0.630	-3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.547	0.510	-7	NA	± 20 %	AverageRF
Chlorobenzene	10	9.7	0.500	1.88	1.83	-3	NA	± 20 %	AverageRF
Ethylbenzene	10	9.7	0.100	0.946	0.919	-3	NA	± 20 %	AverageRF
m,p-Xylenes	20	20	0.100	1.16	1.14	-2	NA	± 20 %	AverageRF
o-Xylene	10	9.5	0.300	1.18	1.12	-5	NA	± 20 %	AverageRF
Isopropylbenzene	10	10	0.100	2.87	2.87	0	NA	± 20 %	AverageRF
1,3,5-Trimethylbenzene	10	11	0.01	2.65	2.96	12	NA	± 20 %	AverageRF
1,2,4-Trimethylbenzene	10	11	0.01	2.63	3.00	14	NA	± 20 %	AverageRF
1,4-Dichlorobenzene	10	10	0.500	1.67	1.73	4	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	10	10	0.400	1.58	1.61	2	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.8	0.01	0.267	0.263	-2	NA	± 20 %	AverageRF
Toluene-d8	10	9.9	0.01	0.977	0.966	-1	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.7	0.01	0.890	0.860	-3	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1313788
Instrument ID: MS27

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1216F005.D	GC/MS Tuning - Generic	KWG1313788-1	12/16/2013	11:10		12/16/2013	11:27
1216F006.D	Continuing Calibration Verification	KWG1313788-2	12/16/2013	11:39		12/16/2013	11:56
1216F007.D	Lab Control Sample	KWG1313789-3	12/16/2013	12:09		12/16/2013	12:26
1216F008.D	Duplicate Lab Control Sample	KWG1313789-4	12/16/2013	12:37		12/16/2013	12:54
1216F010.D	Method Blank	KWG1313789-5	12/16/2013	13:32		12/16/2013	13:49
1216F011.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:00		12/16/2013	14:17
1216F012.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:27		12/16/2013	14:44
1216F100.D	ZZZZZZ	ZZZZZZ	12/16/2013	14:55		12/16/2013	15:12
1216F013.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:22		12/16/2013	15:39
1216F014.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:50		12/16/2013	16:07
1216F015.D	Trip Blank	K1313248-006	12/16/2013	16:18		12/16/2013	16:35
1216F016.D	ZZZZZZ	ZZZZZZ	12/16/2013	16:45		12/16/2013	17:02
1216F017.D	ZZZZZZ	ZZZZZZ	12/16/2013	17:13		12/16/2013	17:30
1216F018.D	ZZZZZZ	ZZZZZZ	12/16/2013	17:40		12/16/2013	17:57
1216F019.D	ZZZZZZ	ZZZZZZ	12/16/2013	18:08		12/16/2013	18:25
1216F020.D	ZZZZZZ	ZZZZZZ	12/16/2013	18:36		12/16/2013	18:53
1216F021.D	ZZZZZZ	ZZZZZZ	12/16/2013	19:03		12/16/2013	19:20
1216F022.D	RM11E-MW005-12-2013	K1313248-001	12/16/2013	19:31		12/16/2013	19:48
1216F023.D	RM11E-MW004-12-2013	K1313248-002	12/16/2013	19:59		12/16/2013	20:16
1216F024.D	RM11E-MULT1007-12-2013	K1313248-003	12/16/2013	20:26		12/16/2013	20:43
1216F025.D	RM11E-MW002s-12-2013	K1313248-004	12/16/2013	20:54		12/16/2013	21:11
1216F026.D	RM11E-MW003d-12-2013	K1313248-005	12/16/2013	21:22		12/16/2013	21:39
1216F028.D	RM11E-MW003d-12-2013MS	KWG1313789-1	12/16/2013	22:17		12/16/2013	22:34
1216F029.D	RM11E-MW003d-12-2013DMS	KWG1313789-2	12/16/2013	22:44		12/16/2013	23:01

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/16/2013

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1313789
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	10ml	10ml	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	10ml	10ml	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	10ml	10ml	NA	
Trip Blank	K1313248-006	12/05/13	12/06/13	10ml	10ml	NA	
Method Blank	KWG1313789-5	NA	NA	10ml	10ml	NA	
RM11E-MW003d-12-2013MS	KWG1313789-1	12/05/13	12/06/13	10ml	10ml	NA	
RM11E-MW003d-12-2013DM	KWG1313789-2	12/05/13	12/06/13	10ml	10ml	NA	
Lab Control Sample	KWG1313789-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1313789-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Karin Bailey
Name: Karin Bailey
Date: 12/17/13
Title: Scientist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW005-12-2013	**Units:**	ug/L
Lab Code:	K1313248-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.048**	J	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.20	0.015	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.20	0.026	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	1.0	0.34	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.20	0.020	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.20	0.028	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	ND	U	1.0	0.13	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.20	0.031	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.20	0.20	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	78	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	70	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	79	23-127	12/12/13	Acceptable
Terphenyl-d14	83	40-127	12/12/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW004-12-2013	**Units:**	ug/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.071**	J	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.22	0.030	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.22	0.017	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.22	0.029	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.22	0.030	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	1.1	0.37	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	**0.024**	J	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.22	0.027	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.22	0.022	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.22	0.020	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.22	0.031	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.15	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.22	0.019	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.22	0.027	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.22	0.034	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.22	0.019	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.22	0.22	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	88	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	70	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	77	23-127	12/12/13	Acceptable
Terphenyl-d14	84	40-127	12/12/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/06/2013
Date Received: 12/06/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-MULT1007-12-2013
Lab Code: K1313248-003

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.048**	J	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.20	0.015	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.20	0.026	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	0.98	0.34	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.20	0.020	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.20	0.028	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	**0.13**	J	0.98	0.13	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.20	0.031	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.20	0.20	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	93	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	76	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	70	23-127	12/12/13	Acceptable
Terphenyl-d14	81	40-127	12/12/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW002s-12-2013	**Units:**	ug/L
Lab Code:	K1313248-004	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.071**	J	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.22	0.029	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.22	0.016	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.22	0.028	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.22	0.029	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	1.1	0.36	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	ND	U	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.22	0.026	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.22	0.022	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.22	0.019	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.22	0.030	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.22	0.018	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.22	0.033	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.22	0.018	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.22	0.22	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	78	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	68	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	86	23-127	12/12/13	Acceptable
Terphenyl-d14	71	40-127	12/12/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Collected: 12/05/2013
Date Received: 12/06/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RM11E-MW003d-12-2013
Lab Code: K1313248-005

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.049**	J	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.22	0.029	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.22	0.016	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.22	0.028	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.22	0.029	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	1.1	0.36	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	ND	U	0.22	0.024	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.22	0.026	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.22	0.022	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.22	0.019	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.22	0.030	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.22	0.018	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.22	0.033	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.22	0.018	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.22	0.22	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	92	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	77	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	78	23-127	12/12/13	Acceptable
Terphenyl-d14	81	40-127	12/12/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313542-3	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
2-Methylnaphthalene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Acenaphthylene	ND	U	0.20	0.015	1	12/09/13	12/12/13	KWG1313542	
Acenaphthene	ND	U	0.20	0.026	1	12/09/13	12/12/13	KWG1313542	
Fluorene	ND	U	0.20	0.027	1	12/09/13	12/12/13	KWG1313542	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Pentachlorophenol	ND	U	0.98	0.34	1	12/09/13	12/12/13	KWG1313542	
Phenanthrene	ND	U	0.20	0.022	1	12/09/13	12/12/13	KWG1313542	
Anthracene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Fluoranthene	ND	U	0.20	0.020	1	12/09/13	12/12/13	KWG1313542	
Pyrene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/09/13	12/12/13	KWG1313542	
Chrysene	ND	U	0.20	0.028	1	12/09/13	12/12/13	KWG1313542	
Bis(2-ethylhexyl) Phthalate	ND	U	0.98	0.13	1	12/09/13	12/12/13	KWG1313542	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	12/09/13	12/12/13	KWG1313542	
Benzo(a)pyrene	ND	U	0.20	0.031	1	12/09/13	12/12/13	KWG1313542	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	12/09/13	12/12/13	KWG1313542	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	12/09/13	12/12/13	KWG1313542	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	12/09/13	12/12/13	KWG1313542	
Perylene	ND	U	0.20	0.20	1	12/09/13	12/12/13	KWG1313542	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	97	26-110	12/12/13	Acceptable
2-Fluorobiphenyl	79	31-94	12/12/13	Acceptable
2,4,6-Tribromophenol	79	23-127	12/12/13	Acceptable
Terphenyl-d14	90	40-127	12/12/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-MW005-12-2013	K1313248-001	78	70	79	83
RM11E-MW004-12-2013	K1313248-002	88	70	77	84
RM11E-MULT1007-12-2013	K1313248-003	93	76	70	81
RM11E-MW002s-12-2013	K1313248-004	78	68	86	71
RM11E-MW003d-12-2013	K1313248-005	92	77	78	81
Method Blank	KWG1313542-3	97	79	79	90
Lab Control Sample	KWG1313542-1	94	81	88	86
Duplicate Lab Control Sample	KWG1313542-2	98	71	78	79

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	26-110
Sur2 =	2-Fluorobiphenyl	31-94
Sur3 =	2,4,6-Tribromophenol	23-127
Sur4 =	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013
Time Analyzed: 10:12

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121213\1212F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313713-2
Analysis Lot: KWG1313713

		1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	131,510	8.70	447,669	10.63	254,239	13.47
	Upper Limit ==>	263,020	9.20	895,338	11.13	508,478	13.97
	Lower Limit ==>	65,755	8.20	223,835	10.13	127,120	12.97
	ICAL Result ==>	122,081	8.73	411,958	10.64	230,718	13.49
Associated Analyses							
Method Blank	KWG1313542-3	117,943	8.70	389,813	10.63	211,060	13.46
Lab Control Sample	KWG1313542-1	109,507	8.70	370,839	10.63	210,790	13.47
Duplicate Lab Control Sample	KWG1313542-2	106,137	8.70	391,503	10.63	230,430	13.47
RM11E-MW005-12-2013	K1313248-001	109,915	8.71	373,906	10.62	206,213	13.47
RM11E-MW004-12-2013	K1313248-002	103,299	8.70	383,696	10.63	214,357	13.46
RM11E-MULT1007-12-2013	K1313248-003	106,059	8.70	376,827	10.63	210,492	13.46
RM11E-MW002s-12-2013	K1313248-004	114,157	8.70	375,280	10.63	219,987	13.46
RM11E-MW003d-12-2013	K1313248-005	110,387	8.70	364,278	10.63	202,187	13.46

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013
Time Analyzed: 10:12

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121213\1212F004.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1313713-2
Analysis Lot: KWG1313713

		Phenanthrene-d10		Chrysene-d12		Perylene-d12	
		Area	RT	Area	RT	Area	RT
	Results ==>	486,115	15.91	478,500	20.46	343,267	24.13
	Upper Limit ==>	972,230	16.41	957,000	20.96	686,534	24.63
	Lower Limit ==>	243,058	15.41	239,250	19.96	171,634	23.63
	ICAL Result ==>	428,281	15.92	442,598	20.46	342,958	24.13
Associated Analyses							
Method Blank	KWG1313542-3	382,373	15.90	351,880	20.44	333,355	24.11
Lab Control Sample	KWG1313542-1	394,898	15.91	394,567	20.45	290,809	24.12
Duplicate Lab Control Sample	KWG1313542-2	410,486	15.90	404,593	20.45	299,730	24.12
RM11E-MW005-12-2013	K1313248-001	385,045	15.90	378,516	20.43	313,927	24.12
RM11E-MW004-12-2013	K1313248-002	403,713	15.90	368,200	20.44	273,063	24.12
RM11E-MULT1007-12-2013	K1313248-003	385,368	15.89	377,582	20.44	305,480	24.11
RM11E-MW002s-12-2013	K1313248-004	395,960	15.91	331,516	20.45	240,166	24.14
RM11E-MW003d-12-2013	K1313248-005	393,032	15.90	368,014	20.44	280,530	24.11

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013
Date Analyzed: 12/12/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313542

	Lab Control Sample KWG1313542-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313542-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.70	5.00	74	3.41	5.00	68	43-98	8	30
2-Methylnaphthalene	3.78	5.00	76	3.56	5.00	71	38-102	6	30
Acenaphthylene	4.20	5.00	84	3.64	5.00	73	52-108	14	30
Acenaphthene	4.23	5.00	85	3.40	5.00	68	48-102	22	30
Fluorene	4.20	5.00	84	3.70	5.00	74	51-106	13	30
Hexachlorobenzene	4.19	5.00	84	3.83	5.00	77	55-105	9	30
Pentachlorophenol	3.89	5.00	78	3.55	5.00	71	33-106	9	30
Phenanthrene	4.07	5.00	81	3.76	5.00	75	56-103	8	30
Anthracene	4.19	5.00	84	3.96	5.00	79	55-103	6	30
Fluoranthene	4.40	5.00	88	4.06	5.00	81	56-110	8	30
Pyrene	4.41	5.00	88	4.16	5.00	83	59-109	6	30
Benz(a)anthracene	4.33	5.00	87	4.09	5.00	82	61-104	6	30
Chrysene	4.39	5.00	88	4.06	5.00	81	61-107	8	30
Bis(2-ethylhexyl) Phthalate	4.61	5.00	92	4.52	5.00	90	61-118	2	30
Benzo(b)fluoranthene	4.28	5.00	86	4.35	5.00	87	62-107	2	30
Benzo(k)fluoranthene	4.49	5.00	90	4.42	5.00	88	63-108	2	30
Benzo(a)pyrene	4.71	5.00	94	4.39	5.00	88	56-105	7	30
Indeno(1,2,3-cd)pyrene	4.69	5.00	94	4.47	5.00	89	63-108	5	30
Dibenz(a,h)anthracene	4.39	5.00	88	4.18	5.00	84	62-108	5	30
Benzo(g,h,i)perylene	4.28	5.00	86	4.22	5.00	84	62-108	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	13:24

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313542-3	**File ID:**	J:\MS06\DATA\121213\1212F009.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313542

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313542-1	J:\MS06\DATA\121213\1212F010.D	12/12/13	14:02
Duplicate Lab Control Sample	KWG1313542-2	J:\MS06\DATA\121213\1212F011.D	12/12/13	14:40
RM11E-MW005-12-2013	K1313248-001	J:\MS06\DATA\121213\1212F012.D	12/12/13	15:17
RM11E-MW004-12-2013	K1313248-002	J:\MS06\DATA\121213\1212F013.D	12/12/13	15:55
RM11E-MULT1007-12-2013	K1313248-003	J:\MS06\DATA\121213\1212F014.D	12/12/13	16:32
RM11E-MW002s-12-2013	K1313248-004	J:\MS06\DATA\121213\1212F015.D	12/12/13	17:10
RM11E-MW003d-12-2013	K1313248-005	J:\MS06\DATA\121213\1212F016.D	12/12/13	17:47

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/09/2013
Sample Matrix:	Water	**Date Analyzed:**	12/12/2013
		Time Analyzed:	14:02

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313542-1	**File ID:**	J:\MS06\DATA\121213\1212F010.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313542

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313542-3	J:\MS06\DATA\121213\1212F009.D	12/12/13	13:24
RM11E-MW005-12-2013	K1313248-001	J:\MS06\DATA\121213\1212F012.D	12/12/13	15:17
RM11E-MW004-12-2013	K1313248-002	J:\MS06\DATA\121213\1212F013.D	12/12/13	15:55
RM11E-MULT1007-12-2013	K1313248-003	J:\MS06\DATA\121213\1212F014.D	12/12/13	16:32
RM11E-MW002s-12-2013	K1313248-004	J:\MS06\DATA\121213\1212F015.D	12/12/13	17:10
RM11E-MW003d-12-2013	K1313248-005	J:\MS06\DATA\121213\1212F016.D	12/12/13	17:47

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013
Time Analyzed: 09:34

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\121213\1212F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1313713

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	47.7	98392	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	46.3	95579	PASS
70	69	0	2	0.4	362	PASS
127	198	25	75	54.2	111919	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	206338	PASS
199	198	5	9	7.1	14721	PASS
275	198	10	30	26.6	54829	PASS
365	198	1	100	6.5	13446	PASS
441	443	0	100	96.2	19212	PASS
442	198	40	110	52.9	109081	PASS
443	442	15	24	18.3	19978	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313713-2	J:\MS06\DATA\121213\1212F004.D	12/12/2013	10:12	
Method Blank	KWG1313542-3	J:\MS06\DATA\121213\1212F009.D	12/12/2013	13:24	
Lab Control Sample	KWG1313542-1	J:\MS06\DATA\121213\1212F010.D	12/12/2013	14:02	
Duplicate Lab Control Sample	KWG1313542-2	J:\MS06\DATA\121213\1212F011.D	12/12/2013	14:40	
RM11E-MW005-12-2013	K1313248-001	J:\MS06\DATA\121213\1212F012.D	12/12/2013	15:17	
RM11E-MW004-12-2013	K1313248-002	J:\MS06\DATA\121213\1212F013.D	12/12/2013	15:55	
RM11E-MULT1007-12-2013	K1313248-003	J:\MS06\DATA\121213\1212F014.D	12/12/2013	16:32	
RM11E-MW002s-12-2013	K1313248-004	J:\MS06\DATA\121213\1212F015.D	12/12/2013	17:10	
RM11E-MW003d-12-2013	K1313248-005	J:\MS06\DATA\121213\1212F016.D	12/12/2013	17:47	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\120313\1203F005.D	G	J:\MS06\DATA\120313\1203F011.D
B	J:\MS06\DATA\120313\1203F006.D	H	J:\MS06\DATA\120313\1203F012.D
C	J:\MS06\DATA\120313\1203F007.D	I	J:\MS06\DATA\120313\1203F013.D
D	J:\MS06\DATA\120313\1203F008.D	J	J:\MS06\DATA\120313\1203F014.D
E	J:\MS06\DATA\120313\1203F009.D		
F	J:\MS06\DATA\120313\1203F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	0.991	B	100	1.06	C	200	1.09	D	500	1.18	E	1000	1.20
	F	2000	1.23	G	3000	1.23	H	5000	1.26	I	7000	1.30	J	10000	1.30
2-Methylnaphthalene	A	50	0.555	B	100	0.614	C	200	0.585	D	500	0.649	E	1000	0.690
	F	2000	0.707	G	3000	0.685	H	5000	0.709	I	7000	0.737	J	10000	0.742
Acenaphthylene	A	50	1.63	B	100	2.02	C	200	1.89	D	500	2.02	E	1000	2.22
	F	2000	2.07	G	3000	2.16	H	5000	2.38	I	7000	2.42	J	10000	2.27
Acenaphthene	A	50	0.906	B	100	1.01	C	200	1.04	D	500	1.10	E	1000	1.18
	F	2000	1.10	G	3000	1.20	H	5000	1.30	I	7000	1.38	J	10000	1.31
Fluorene	A	50	1.17	B	100	1.42	C	200	1.40	D	500	1.44	E	1000	1.47
	F	2000	1.48	G	3000	1.51	H	5000	1.69	I	7000	1.76	J	10000	1.65
Hexachlorobenzene				B	100	0.240	C	200	0.271	D	500	0.244	E	1000	0.284
	F	2000	0.280	G	3000	0.274	H	5000	0.297	I	7000	0.299	J	10000	0.317
Pentachlorophenol										D	500	0.133	E	1000	0.175
	F	2000	0.179	G	3000	0.181	H	5000	0.213	I	7000	0.205	J	10000	0.222
Phenanthrene	A	50	1.11	B	100	1.15	C	200	1.03	D	500	1.06	E	1000	1.14
	F	2000	1.11	G	3000	1.16	H	5000	1.27	I	7000	1.23	J	10000	1.34
Anthracene	A	50	1.13	B	100	1.03	C	200	1.07	D	500	1.11	E	1000	1.18
	F	2000	1.19	G	3000	1.21	H	5000	1.34	I	7000	1.32	J	10000	1.38
Fluoranthene	A	50	0.951	B	100	1.29	C	200	1.25	D	500	1.13	E	1000	1.30
	F	2000	1.30	G	3000	1.34	H	5000	1.44	I	7000	1.41	J	10000	1.52
Pyrene	A	50	1.11	B	100	1.46	C	200	1.32	D	500	1.36	E	1000	1.38
	F	2000	1.41	G	3000	1.42	H	5000	1.51	I	7000	1.40	J	10000	1.35
Benz(a)anthracene	A	50	1.11	B	100	1.17	C	200	1.10	D	500	1.16	E	1000	1.18
	F	2000	1.21	G	3000	1.24	H	5000	1.36	I	7000	1.26	J	10000	1.19
Chrysene	A	50	1.07	B	100	1.09	C	200	1.12	D	500	1.12	E	1000	1.18
	F	2000	1.17	G	3000	1.15	H	5000	1.24	I	7000	1.15	J	10000	1.05
Bis(2-ethylhexyl) Phthalate							C	200	1.04	D	500	0.950	E	1000	1.01
	F	2000	1.05	G	3000	1.04	H	5000	1.13	I	7000	1.04	J	10000	0.945

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.979	B	100	1.01	C	200	0.977	D	500	1.11	E	1000	1.12
	F	2000	1.19	G	3000	1.22	H	5000	1.41	I	7000	1.41	J	10000	1.49
Benzo(k)fluoranthene	A	50	0.916	B	100	1.28	C	200	1.09	D	500	1.25	E	1000	1.20
	F	2000	1.23	G	3000	1.30	H	5000	1.42	I	7000	1.32	J	10000	1.30
Benzo(a)pyrene	A	50	0.879	B	100	1.04	C	200	0.897	D	500	1.01	E	1000	1.04
	F	2000	1.09	G	3000	1.16	H	5000	1.26	I	7000	1.24	J	10000	1.28
Indeno(1,2,3-cd)pyrene	A	50	0.710	B	100	0.822	C	200	0.729	D	500	0.865	E	1000	0.890
	F	2000	0.943	G	3000	0.964	H	5000	1.09	I	7000	1.09	J	10000	1.20
Dibenz(a,h)anthracene				B	100	0.873	C	200	0.866	D	500	0.931	E	1000	0.980
	F	2000	1.04	G	3000	1.05	H	5000	1.14	I	7000	1.13	J	10000	1.18
Benzo(g,h,i)perylene	A	50	0.875	B	100	0.937	C	200	0.956	D	500	1.03	E	1000	1.02
	F	2000	1.09	G	3000	1.07	H	5000	1.17	I	7000	1.14	J	10000	1.17
Nitrobenzene-d5				B	100	1.37	C	200	1.08	D	500	1.36	E	1000	1.28
	F	2000	1.39	G	3000	1.49	H	5000	1.53	I	7000	1.50	J	10000	1.49
2-Fluorobiphenyl				B	100	1.33	C	200	1.67	D	500	1.49	E	1000	1.58
	F	2000	1.46	G	3000	1.55	H	5000	1.72	I	7000	1.74	J	10000	1.63
2,4,6-Tribromophenol							C	200	0.142	D	500	0.143	E	1000	0.145
	F	2000	0.149	G	3000	0.158	H	5000	0.173	I	7000	0.173	J	10000	0.189
Terphenyl-d14				B	100	0.942	C	200	0.846	D	500	0.902	E	1000	0.893
	F	2000	0.925	G	3000	0.921	H	5000	1.02	I	7000	0.934	J	10000	0.857

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 12/03/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12950
Instrument ID: MS06

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	8.8		≤ 20	1.19		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.6		≤ 20	0.667		0.300
Acenaphthylene	MS	AverageRF	% RSD	11.2		≤ 20	2.11		0.900
Acenaphthene	MS	AverageRF	% RSD	12.8		≤ 20	1.15		0.700
Fluorene	MS	AverageRF	% RSD	11.3		≤ 20	1.50		0.800
Hexachlorobenzene	MS	AverageRF	% RSD	8.9		≤ 20	0.279		0.100
Pentachlorophenol	MS	AverageRF	% RSD	16.0		≤ 20	0.187		0.050
Phenanthrene	MS	AverageRF	% RSD	8.1		≤ 20	1.16		0.600
Anthracene	MS	AverageRF	% RSD	9.9		≤ 20	1.19		0.600
Fluoranthene	MS	AverageRF	% RSD	12.5		≤ 20	1.29		0.600
Pyrene	MS	AverageRF	% RSD	7.8		≤ 20	1.37		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	6.4		≤ 20	1.20		0.600
Chrysene	MS	AverageRF	% RSD	5.0		≤ 20	1.13		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	5.8		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	15.9		≤ 20	1.19		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	11.4		≤ 20	1.23		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.2		≤ 20	1.09		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	17.2		≤ 20	0.930		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	11.5		≤ 20	1.02		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.6		≤ 20	1.05		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	10.3		≤ 20	1.39		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	8.4		≤ 20	1.57		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	10.9		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	5.5		≤ 20	0.915		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 12/03/2013
Date Analyzed: 12/03/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12950
Units: ng/ml

File ID: J:\MS06\DATA\120313\1203F015.D
J:\MS06\DATA\120313\1203F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3100	1.19	1.22	3	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3100	0.667	0.689	3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.11	1.91	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	3000	1.15	1.15	0	NA	± 30 %	AverageRF
Fluorene	3000	3000	1.50	1.52	1	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2900	0.279	0.269	-4	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3200	0.187	0.198	6	NA	± 30 %	AverageRF
Phenanthrene	3000	3000	1.16	1.15	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	1.19	1.21	1	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.29	1.29	0	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.36	-1	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2800	1.20	1.13	-6	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.13	1.08	-5	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	1.02	0.991	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.19	1.32	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.23	1.17	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3200	1.09	1.14	5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.930	0.888	-4	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	1.02	1.00	-2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2900	1.05	1.00	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/03/2013
Calibration ID: CAL12950
Analysis Lot: KWG1313713
Units: ng/ml

File ID: J:\MS06\DATA\121213\1212F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	0.700	1.19	1.14	-3	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3000	0.300	0.667	0.672	1	NA	± 20 %	AverageRF
Acenaphthylene	3000	2900	0.900	2.11	2.06	-2	NA	± 20 %	AverageRF
Acenaphthene	3000	3100	0.700	1.15	1.21	5	NA	± 20 %	AverageRF
Fluorene	3000	3000	0.800	1.50	1.51	1	NA	± 20 %	AverageRF
Hexachlorobenzene	3000	2800	0.100	0.279	0.264	-5	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2500	0.050	0.187	0.157	-16	NA	± 20 %	AverageRF
Phenanthrene	3000	2800	0.600	1.16	1.08	-7	NA	± 20 %	AverageRF
Anthracene	3000	2900	0.600	1.19	1.14	-5	NA	± 20 %	AverageRF
Fluoranthene	3000	2800	0.600	1.29	1.21	-6	NA	± 20 %	AverageRF
Pyrene	3000	3000	0.600	1.37	1.35	-2	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	3100	0.600	1.20	1.23	2	NA	± 20 %	AverageRF
Chrysene	3000	2900	0.600	1.13	1.10	-3	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3100	0.010	1.02	1.05	3	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3000	0.600	1.19	1.20	1	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.23	1.27	3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3100	0.600	1.09	1.13	4	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2900	0.500	0.930	0.902	-3	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2500	0.400	1.02	0.867	-15	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.500	1.05	0.937	-10	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3100	0.01	1.39	1.43	3	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2900	0.01	1.57	1.51	-4	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2900	0.01	0.159	0.155	-3	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2900	0.01	0.915	0.885	-3	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D

Analysis Lot: KWG1313713
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1212F003.D	GC/MS Tuning - Generic	KWG1313713-1	12/12/2013	09:34		12/12/2013	10:02
1212F004.D	Continuing Calibration Verification	KWG1313713-2	12/12/2013	10:12		12/12/2013	10:40
1212F006.D	ZZZZZZ	ZZZZZZ	12/12/2013	11:31		12/12/2013	11:59
1212F007.D	ZZZZZZ	ZZZZZZ	12/12/2013	12:09		12/12/2013	12:37
1212F008.D	ZZZZZZ	ZZZZZZ	12/12/2013	12:46		12/12/2013	13:14
1212F009.D	Method Blank	KWG1313542-3	12/12/2013	13:24		12/12/2013	13:52
1212F010.D	Lab Control Sample	KWG1313542-1	12/12/2013	14:02		12/12/2013	14:30
1212F011.D	Duplicate Lab Control Sample	KWG1313542-2	12/12/2013	14:40		12/12/2013	15:08
1212F012.D	RM11E-MW005-12-2013	K1313248-001	12/12/2013	15:17		12/12/2013	15:45
1212F013.D	RM11E-MW004-12-2013	K1313248-002	12/12/2013	15:55		12/12/2013	16:23
1212F014.D	RM11E-MULT1007-12-2013	K1313248-003	12/12/2013	16:32		12/12/2013	17:00
1212F015.D	RM11E-MW002s-12-2013	K1313248-004	12/12/2013	17:10		12/12/2013	17:38
1212F016.D	RM11E-MW003d-12-2013	K1313248-005	12/12/2013	17:47		12/12/2013	18:15
1212F017.D	ZZZZZZ	ZZZZZZ	12/12/2013	18:25		12/12/2013	18:53
1212F018.D	ZZZZZZ	ZZZZZZ	12/12/2013	19:02		12/12/2013	19:30
1212F019.D	ZZZZZZ	ZZZZZZ	12/12/2013	19:40		12/12/2013	20:08
1212F020.D	ZZZZZZ	ZZZZZZ	12/12/2013	20:17		12/12/2013	20:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/09/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Extraction Lot: KWG1313542
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	1000ml	2ml	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	920ml	2ml	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	1030ml	2ml	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	950ml	2ml	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	950ml	2ml	NA	
Method Blank	KWG1313542-3	NA	NA	1030ml	2ml	NA	
Lab Control Sample	KWG1313542-1	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1313542-2	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

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January 17, 2014

Analytical Report for Service Request No: K1313248
Revised Service Request No: K1313248.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed are the additional pages for the samples submitted to our laboratory on December 05, 2013. For your reference, these analyses have been assigned our service request number K1313248.

Data for the Pesticide analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
10:50 am, Jan 20, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 USA | PHONE +1 360 577 7222 | FAX +1 360 636 1068
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Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1313248
Project:	RM11E/ 487.002.006	**Date Received:**	12/05/13-12/06/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six water samples were received for analysis at ALS Environmental between 12/05/13 and 12/06/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Sulfate by EPA Method 300.0:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Divalent Iron (Ferrous Iron) by ApplEnvMic7-87-1536-1540:
Samples RM11E-MW002s-12-2013 and RM11E-MW003d-12-2013 were received past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

Dissolved Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample RM11E-MULT1007-12-2013 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Total Organic Carbon by Standard Method 5310 C:
The Relative Percent Difference (RPD) criterion for the replicate analysis in samples RM11E-MULT1007-12-2013 and RM11E-MW003d-12-2013 were not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by Regina LaCotta 1/17/14

Total and Dissolved Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Calcium, Iron, Magnesium, Manganese and Sodium for sample RM11E-MW002s-12-2013 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1211F003. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Aroclor 1260 in Duplicate Laboratory Control Sample (DLCS) KWG1313603-2. Recovery in the associated Laboratory Control Sample (LCS) was within control criteria. No target Aroclors were detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1221, 1232, 1242, and 1248 in Method Blank KWG1313603-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the normal limit. Note the level of background was relatively low compared to the normal detection limit, so the effect on the results was minimal. The results were flagged to indicate the interference.

The detection limit was elevated for multiple target Aroclors in all field samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Regina Dalata 1/17/14

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) J:\MS27\1216F006.D: Carbon Disulfide. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Elevated Detection Limits:
The detection limit for all analytes for samples RM11E-MW004-12-2013, RM11E-MW002s-12-2013, and RM11E-MW003d-12-2013 was elevated due to less than optimal sample volume available for analysis.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Perylene was searched for as a tentatively identified compound. No quantitative analysis was performed for this analyte.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Kenny DeLatt 1/17/14

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Degen

Date: 1/16/14 Title: SVOC Supervisor

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW005-12-2013	**Units:**	ng/L
Lab Code:	K1313248-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.51	0.12	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.51	0.12	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.51	0.088	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.51	0.11	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.51	0.076	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.51	0.089	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.51	0.14	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.51	0.18	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.51	0.18	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.51	0.13	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.1	0.75	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.51	0.31	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	1.1	0.17	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.1	2.1	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	81	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	93	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	97	8-146	01/14/14	Acceptable
S_Endrin-13C12	118	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	101	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	115	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW004-12-2013	**Units:**	ng/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.54	0.12	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.54	0.12	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.54	0.093	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.54	0.11	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.54	0.080	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.54	0.094	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.54	0.14	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.54	0.19	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.54	0.19	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.54	0.13	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.4	0.79	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.54	0.32	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	1.1	0.18	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.4	2.2	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	83	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	86	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	98	8-146	01/14/14	Acceptable
S_Endrin-13C12	117	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	99	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	123	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/06/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MULT1007-12-2013	**Units:**	ng/L
Lab Code:	K1313248-003	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.49	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.49	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.49	0.087	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.49	0.10	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.49	0.075	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.49	0.088	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.49	0.13	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.49	0.17	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.49	0.17	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.49	0.12	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	4.9	0.74	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.49	0.30	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	0.98	0.16	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	4.9	2.0	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	79	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	88	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	90	8-146	01/14/14	Acceptable
S_Endrin-13C12	118	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	97	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	115	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW002s-12-2013	**Units:**	ng/L
Lab Code:	K1313248-004	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.50	0.087	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.50	0.10	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.50	0.075	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.50	0.088	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.50	0.13	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.50	0.12	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.0	0.74	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	1.0	0.16	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.0	2.0	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	71	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	56	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	63	8-146	01/14/14	Acceptable
S_Endrin-13C12	77	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	57	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	69	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW003d-12-2013	**Units:**	ng/L
Lab Code:	K1313248-005	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.57	0.13	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.57	0.13	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.57	0.099	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.57	0.12	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.57	0.086	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.57	0.11	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.57	0.15	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.57	0.20	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.57	0.20	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.57	0.14	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.7	0.85	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.57	0.35	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	1.2	0.19	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.7	2.3	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	82	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	93	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	97	8-146	01/14/14	Acceptable
S_Endrin-13C12	109	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	104	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	127	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313628-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.50	0.087	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.50	0.10	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.50	0.075	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.50	0.088	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.50	0.13	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.50	0.12	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.0	0.74	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	0.99	0.16	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.0	2.0	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	90	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	101	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	100	8-146	01/14/14	Acceptable
S_Endrin-13C12	114	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	110	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	124	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RM11E-MW005-12-2013	K1313248-001	81	93	97	118	101	115
RM11E-MW004-12-2013	K1313248-002	83	86	98	117	99	123
RM11E-MULT1007-12-2013	K1313248-003	79	88	90	118	97	115
RM11E-MW002s-12-2013	K1313248-004	71	56	63	77	57	69
RM11E-MW003d-12-2013	K1313248-005	82	93	97	109	104	127
Method Blank	KWG1313628-3	90	101	100	114	110	124
Lab Control Sample	KWG1313628-1	85	99	101	124	104	117
Duplicate Lab Control Sample	KWG1313628-2	85	93	98	114	108	123

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	RT	Area	RT	Area	RT
	Results ==>	32,442	15.26	5,383	11.39	1,650	13.97
	Upper Limit ==>	64,885	15.76	10,767	11.89	3,300	14.47
	Lower Limit ==>	16,221	14.76	269	10.89	83	13.47
	ICAL Result ==>	39,971	15.27	5,220	11.39	1,746	13.97
Associated Analyses							
Method Blank	KWG1313628-3	34,232	15.26	4,761	11.39	1,678	13.97
Lab Control Sample	KWG1313628-1	33,350	15.26	4,350	11.39	1,599	13.97
Duplicate Lab Control Sample	KWG1313628-2	33,745	15.26	4,428	11.39	1,527	13.97
RM11E-MW005-12-2013	K1313248-001	35,217	15.26	4,389	11.39	1,598	13.97
RM11E-MW004-12-2013	K1313248-002	34,945	15.26	4,466	11.39	1,460	13.97
RM11E-MULT1007-12-2013	K1313248-003	35,881	15.26	4,343	11.39	1,536	13.97
RM11E-MW002s-12-2013	K1313248-004	41,948	15.26	4,599	11.39	1,149	13.97
RM11E-MW003d-12-2013	K1313248-005	35,183	15.26	4,444	11.39	1,597	13.97

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS:

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,775	14.07	929	16.40	6,535	16.95
	Upper Limit ==>	3,549	14.57	1,859	16.90	13,071	17.45
	Lower Limit ==>	89	13.57	46	15.90	327	16.45
	ICAL Result ==>	1,714	14.08	1,072	16.40	7,108	16.96
Associated Analyses							
Method Blank	KWG1313628-3	1,713	14.08	1,117	16.40	7,363	16.96
Lab Control Sample	KWG1313628-1	1,672	14.07	1,183	16.40	6,797	16.96
Duplicate Lab Control Sample	KWG1313628-2	1,658	14.07	1,104	16.40	7,149	16.95
RM11E-MW005-12-2013	K1313248-001	1,703	14.08	1,191	16.40	6,990	16.96
RM11E-MW004-12-2013	K1313248-002	1,704	14.08	1,172	16.40	6,818	16.96
RM11E-MULT1007-12-2013	K1313248-003	1,608	14.07	1,208	16.40	6,830	16.95
RM11E-MW002s-12-2013	K1313248-004	1,328	14.07	923	16.40	4,703	16.96
RM11E-MW003d-12-2013	K1313248-005	1,704	14.07	1,102	16.40	7,161	16.96

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

	4,4'-DDT-d4	
	Area	**RT**
Results ==>	3,506	17.96
Upper Limit ==>	7,012	18.46
Lower Limit ==>	175	17.46
ICAL Result ==>	4,046	17.97

Associated Analyses

Method Blank	KWG1313628-3	4,592	17.96
Lab Control Sample	KWG1313628-1	4,219	17.96
Duplicate Lab Control Sample	KWG1313628-2	4,482	17.96
RM11E-MW005-12-2013	K1313248-001	4,402	17.97
RM11E-MW004-12-2013	K1313248-002	4,654	17.96
RM11E-MULT1007-12-2013	K1313248-003	4,468	17.96
RM11E-MW002s-12-2013	K1313248-004	3,133	17.97
RM11E-MW003d-12-2013	K1313248-005	4,847	17.96

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313628

	Lab Control Sample KWG1313628-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313628-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	19.9	20.0	100	19.2	20.0	96	50-120	4	30
2,4'-DDE	20.3	20.0	101	18.9	20.0	94	24-123	7	30
2,4'-DDT	20.2	20.0	101	18.8	20.0	94	50-120	7	30
4,4'-DDD	19.9	20.0	100	19.3	20.0	96	42-120	3	30
4,4'-DDE	20.1	20.0	100	18.9	20.0	95	50-120	6	30
4,4'-DDT	20.6	20.0	103	20.2	20.0	101	50-120	2	30
alpha-Chlordane	22.4	20.0	112	22.9	20.0	115	50-120	2	30
cis-Nonachlor	22.6	20.0	113	22.9	20.0	115	50-120	1	30
gamma-Chlordane	21.6	20.0	108	22.5	20.0	113	50-120	4	30
trans-Nonachlor	22.0	20.0	110	22.9	20.0	114	50-120	4	30
Dieldrin	17.7	20.0	88	19.8	20.0	99	50-120	11	30
gamma-BHC (Lindane)	20.7	20.0	103	19.8	20.0	99	50-120	4	30
Heptachlor Epoxide	19.4	20.0	97	19.8	20.0	99	50-120	2	30
Oxychlordane	20.4	20.0	102	22.0	20.0	110	50-120	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	11:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313628-3	**File ID:**	J:\MS21\DATA\011414\0114F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313628-1	J:\MS21\DATA\011414\0114F007.D	01/14/14	12:13
Duplicate Lab Control Sample	KWG1313628-2	J:\MS21\DATA\011414\0114F008.D	01/14/14	12:40
RM11E-MW005-12-2013	K1313248-001	J:\MS21\DATA\011414\0114F010.D	01/14/14	13:35
RM11E-MW004-12-2013	K1313248-002	J:\MS21\DATA\011414\0114F011.D	01/14/14	14:02
RM11E-MULT1007-12-2013	K1313248-003	J:\MS21\DATA\011414\0114F012.D	01/14/14	14:29
RM11E-MW002s-12-2013	K1313248-004	J:\MS21\DATA\011414\0114F013.D	01/14/14	14:56
RM11E-MW003d-12-2013	K1313248-005	J:\MS21\DATA\011414\0114F014.D	01/14/14	15:23

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	12:13

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313628-1	**File ID:**	J:\MS21\DATA\011414\0114F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313628-3	J:\MS21\DATA\011414\0114F005.D	01/14/14	11:23
RM11E-MW005-12-2013	K1313248-001	J:\MS21\DATA\011414\0114F010.D	01/14/14	13:35
RM11E-MW004-12-2013	K1313248-002	J:\MS21\DATA\011414\0114F011.D	01/14/14	14:02
RM11E-MULT1007-12-2013	K1313248-003	J:\MS21\DATA\011414\0114F012.D	01/14/14	14:29
RM11E-MW002s-12-2013	K1313248-004	J:\MS21\DATA\011414\0114F013.D	01/14/14	14:56
RM11E-MW003d-12-2013	K1313248-005	J:\MS21\DATA\011414\0114F014.D	01/14/14	15:23

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\011314\0113F005.D	G	J:\MS21\Data\011314\0113F011.D
B	J:\MS21\Data\011314\0113F006.D	H	J:\MS21\Data\011314\0113F012.D
C	J:\MS21\Data\011314\0113F007.D	I	J:\MS21\Data\011314\0113F013.D
D	J:\MS21\Data\011314\0113F008.D	J	J:\MS21\Data\011314\0113F014.D
E	J:\MS21\Data\011314\0113F009.D		
F	J:\MS21\Data\011314\0113F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.967	B	1.0	0.944	C	2.0	0.956	D	5.0	0.944	E	10	0.924
	F	20	0.913	G	40	0.934	H	60	0.992	I	80	0.997	J	100	0.999
2,4'-DDE	A	0.50	0.734	B	1.0	0.729	C	2.0	0.755	D	5.0	0.685	E	10	0.673
	F	20	0.745	G	40	0.675	H	60	0.707	I	80	0.722	J	100	0.713
2,4'-DDT	A	0.50	1.01	B	1.0	1.10	C	2.0	1.04	D	5.0	1.00	E	10	0.993
	F	20	0.979	G	40	0.956	H	60	1.00	I	80	1.01	J	100	0.996
4,4'-DDD	A	0.50	0.904	B	1.0	0.907	C	2.0	0.877	D	5.0	0.920	E	10	0.911
	F	20	0.874	G	40	0.898	H	60	0.929	I	80	0.929	J	100	0.933
4,4'-DDE	A	0.50	0.471	B	1.0	0.507	C	2.0	0.548	D	5.0	0.505	E	10	0.505
	F	20	0.517	G	40	0.503	H	60	0.540	I	80	0.534	J	100	0.528
4,4'-DDT	A	0.50	0.942	B	1.0	0.982	C	2.0	0.960	D	5.0	0.963	E	10	1.00
	F	20	0.963	G	40	1.01	H	60	1.04	I	80	1.07	J	100	1.10
alpha-Chlordane	A	0.50	2.47	B	1.0	2.91	C	2.0	2.59	D	5.0	2.65	E	10	2.82
	F	20	2.53	G	40	2.44	H	60	2.71	I	80	2.42	J	100	2.35
cis-Nonachlor	A	0.50	1.71	B	1.0	1.48	C	2.0	1.46	D	5.0	1.43	E	10	1.49
	F	20	1.42	G	40	1.40	H	60	1.50	I	80	1.36	J	100	1.33
gamma-Chlordane	A	0.50	2.56	B	1.0	2.92	C	2.0	3.15	D	5.0	2.89	E	10	2.93
	F	20	2.78	G	40	2.62	H	60	2.81	I	80	2.58	J	100	2.50
trans-Nonachlor	A	0.50	1.86	B	1.0	1.77	C	2.0	1.82	D	5.0	1.78	E	10	1.83
	F	20	1.73	G	40	1.65	H	60	1.79	I	80	1.63	J	100	1.58
Dieldrin	A	0.50	0.894	B	1.0	1.20	C	2.0	1.09	D	5.0	1.07	E	10	1.03
	F	20	0.946	G	40	0.933	H	60	0.938	I	80	0.944	J	100	0.913
gamma-BHC (Lindane)	A	0.50	0.714	B	1.0	0.543	C	2.0	0.646	D	5.0	0.627	E	10	0.639
	F	20	0.603	G	40	0.628	H	60	0.632	I	80	0.642	J	100	0.660
Heptachlor Epoxide				B	1.0	1.14	C	2.0	0.992	D	5.0	1.09	E	10	1.05
	F	20	1.00	G	40	1.01	H	60	1.08	I	80	1.03	J	100	1.05
Oxychlordane	A	0.50	1.19	B	1.0	1.02	C	2.0	1.35	D	5.0	1.23	E	10	1.25
	F	20	1.07	G	40	1.06	H	60	1.08	I	80	1.03	J	100	0.972

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.811	B	20	0.826	C	20	0.760	D	20	0.814	E	20	0.803
	F	20	0.653	G	20	0.729	H	20	0.755	I	20	0.775	J	20	0.769
S_Oxychlordane-13C10	A	20	0.258	B	20	0.244	C	20	0.239	D	20	0.247	E	20	0.239
	F	20	0.218	G	20	0.233	H	20	0.231	I	20	0.257	J	20	0.267
S_Heptachlrepox13C10	A	20	0.274	B	20	0.263	C	20	0.255	D	20	0.271	E	20	0.271
	F	20	0.214	G	20	0.231	H	20	0.238	I	20	0.244	J	20	0.233
S_Endrin-13C12	A	20	0.135	B	20	0.142	C	20	0.139	D	20	0.144	E	20	0.142
	F	20	0.134	G	20	0.139	H	20	0.152	I	20	0.150	J	20	0.155
S_4,4'DDD-d4	A	5.0	4.08	B	5.0	3.90	C	5.0	3.72	D	5.0	4.18	E	5.0	4.23
	F	5.0	3.56	G	5.0	3.86	H	5.0	3.85	I	5.0	3.90	J	5.0	4.00
S_4,4'-DDT-d4	A	5.0	1.91	B	5.0	1.82	C	5.0	1.82	D	5.0	2.26	E	5.0	2.34
	F	5.0	2.02	G	5.0	2.30	H	5.0	2.31	I	5.0	2.40	J	5.0	2.49

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	3.2		≤ 20	0.957		.01
2,4'-DDE	MS	AverageRF	% RSD	4.0		≤ 20	0.714		.01
2,4'-DDT	MS	AverageRF	% RSD	3.8		≤ 20	1.01		.01
4,4'-DDD	MS	AverageRF	% RSD	2.3		≤ 20	0.908		.01
4,4'-DDE	MS	AverageRF	% RSD	4.4		≤ 20	0.516		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.00		.01
alpha-Chlordane	MS	AverageRF	% RSD	7.0		≤ 20	2.59		.01
cis-Nonachlor	MS	AverageRF	% RSD	7.1		≤ 20	1.46		.01
gamma-Chlordane	MS	AverageRF	% RSD	7.5		≤ 20	2.77		.01
trans-Nonachlor	MS	AverageRF	% RSD	5.4		≤ 20	1.75		.01
Dieldrin	MS	AverageRF	% RSD	9.9		≤ 20	0.997		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	6.8		≤ 20	0.633		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.6		≤ 20	1.05		.01
Oxychlordane	MS	AverageRF	% RSD	10.8		≤ 20	1.12		.01
S_GBHCD6	SURR	AverageRF	% RSD	6.6		≤ 20	0.770		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	6.0		≤ 20	0.243		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	8.2		≤ 20	0.249		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	5.0		≤ 20	0.143		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	5.2		≤ 20	3.93		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	11.5		≤ 20	2.17		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014
Date Analyzed: 01/13/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL13037
Units: ng/ml

File ID: J:\MS21\Data\011314\0113F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.957	0.943	-1	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.714	0.707	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	18	1.01	0.908	-10	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.908	0.877	-3	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.516	0.509	-1	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.00	0.932	-7	NA	± 25 %	AverageRF
alpha-Chlordane	20	23	2.59	2.92	13	NA	± 25 %	AverageRF
cis-Nonachlor	20	24	1.46	1.73	19	NA	± 25 %	AverageRF
gamma-Chlordane	20	22	2.77	3.11	12	NA	± 25 %	AverageRF
trans-Nonachlor	20	22	1.75	1.93	10	NA	± 25 %	AverageRF
Dieldrin	20	19	0.997	0.956	-4	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.633	0.630	-1	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.05	1.07	2	NA	± 25 %	AverageRF
Oxychlordane	20	20	1.12	1.12	0	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Date Analyzed: 01/14/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 01/13/2014
Calibration ID: CAL13037
Analysis Lot: KWG1400389
Units: ng/ml

File ID: J:\MS21\DATA\011414\0114F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.957	0.915	-4	NA	± 25 %	AverageRF
2,4'-DDE	20	20	.01	0.714	0.702	-2	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	1.01	1.04	3	NA	± 25 %	AverageRF
4,4'-DDD	20	19	.01	0.908	0.862	-5	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.516	0.501	-3	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.00	0.972	-3	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	2.59	2.46	-5	NA	± 25 %	AverageRF
cis-Nonachlor	20	19	.01	1.46	1.41	-3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	.01	2.77	2.79	1	NA	± 25 %	AverageRF
trans-Nonachlor	20	19	.01	1.75	1.65	-6	NA	± 25 %	AverageRF
Dieldrin	20	20	.01	0.997	0.990	-1	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.633	0.615	-3	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.05	1.05	0	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	1.12	1.13	1	NA	± 25 %	AverageRF
S_GBHCD6	20	22	.01	0.770	0.830	8	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	21	.01	0.243	0.254	5	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	22	.01	0.249	0.274	10	NA	± 30 %	AverageRF
S_Endrin-13C12	20	20	.01	0.143	0.143	0	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.1	.01	3.93	4.03	3	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.0	.01	2.17	2.16	0	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1400389
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F004.D	Continuing Calibration Verification	KWG1400389-1	1/14/2014	10:51		1/14/2014	10:51
0114F005.D	Method Blank	KWG1313628-3	1/14/2014	11:23		1/14/2014	11:23
0114F006.D	ZZZZZZ	ZZZZZZ	1/14/2014	11:46		1/14/2014	11:46
0114F007.D	Lab Control Sample	KWG1313628-1	1/14/2014	12:13		1/14/2014	12:13
0114F008.D	Duplicate Lab Control Sample	KWG1313628-2	1/14/2014	12:40		1/14/2014	12:40
0114F009.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:07		1/14/2014	13:07
0114F010.D	RM11E-MW005-12-2013	K1313248-001	1/14/2014	13:35		1/14/2014	13:35
0114F011.D	RM11E-MW004-12-2013	K1313248-002	1/14/2014	14:02		1/14/2014	14:02
0114F012.D	RM11E-MULT1007-12-2013	K1313248-003	1/14/2014	14:29		1/14/2014	14:29
0114F013.D	RM11E-MW002s-12-2013	K1313248-004	1/14/2014	14:56		1/14/2014	14:56
0114F014.D	RM11E-MW003d-12-2013	K1313248-005	1/14/2014	15:23		1/14/2014	15:23
0114F015.D	ZZZZZZ	ZZZZZZ	1/14/2014	15:50		1/14/2014	15:50
0114F016.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:17		1/14/2014	16:17
0114F017.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:44		1/14/2014	16:44
0114F018.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:11		1/14/2014	17:11
0114F019.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:38		1/14/2014	17:38
0114F020.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:05		1/14/2014	18:05
0114F021.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:32		1/14/2014	18:32
0114F022.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:59		1/14/2014	18:59
0114F023.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:27		1/14/2014	19:27
0114F024.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:54		1/14/2014	19:54
0114F026.D	ZZZZZZ	ZZZZZZ	1/14/2014	20:48		1/14/2014	20:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248
Date Extracted: 12/12/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313628
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	990ml	1.0ml	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	940ml	1.0ml	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	1030ml	1.0ml	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	1000ml	1.0ml	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	880ml	1.0ml	NA	
Method Blank	KWG1313628-3	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313628-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313628-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 5, 2014

Analytical Report for Service Request No: K1313248
Revised Service Request No: K1313248.02

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on December 05, 2013. For your reference, these analyses have been assigned our service request number K1313248.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
9:32 am, Mar 06, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1313248
Project:	RM11E/ 487.002.006	**Date Received:**	12/05/13-12/06/13
Sample Matrix:	Water		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six water samples were received for analysis at ALS Environmental between 12/05/13 and 12/06/13. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Chlorinated Pesticides by GC/MS/MS

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW005-12-2013	K1313248-001	12/05/2013	12/05/2013
RM11E-MW004-12-2013	K1313248-002	12/05/2013	12/06/2013
RM11E-MULT1007-12-2013	K1313248-003	12/06/2013	12/06/2013
RM11E-MW002s-12-2013	K1313248-004	12/05/2013	12/06/2013
RM11E-MW003d-12-2013	K1313248-005	12/05/2013	12/06/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/05/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW005-12-2013	**Units:**	ng/L
Lab Code:	K1313248-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.1	0.28	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	72	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW004-12-2013	**Units:**	ng/L
Lab Code:	K1313248-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.1	0.29	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	72	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/06/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MULT1007-12-2013	**Units:**	ng/L
Lab Code:	K1313248-003	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.98	0.27	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	66	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW002s-12-2013	**Units:**	ng/L
Lab Code:	K1313248-004	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.0	0.27	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	38	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	12/05/2013
Sample Matrix:	Water	**Date Received:**	12/06/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW003d-12-2013	**Units:**	ng/L
Lab Code:	K1313248-005	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	1.2	0.31	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	70	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313628-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.99	0.27	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	73	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313248

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MW005-12-2013	K1313248-001	72
RM11E-MW004-12-2013	K1313248-002	72
RM11E-MULT1007-12-2013	K1313248-003	66
RM11E-MW002s-12-2013	K1313248-004	38
RM11E-MW003d-12-2013	K1313248-005	70
Method Blank	KWG1313628-3	73
Lab Control Sample	KWG1313628-1	75
Duplicate Lab Control Sample	KWG1313628-2	76

Surrogate Recovery Control Limits (%)

Sur1 = S_HXCBZ13C6 5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	01/14/2014
		Time Analyzed:	10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\011414\0114F004.D	**Lab Code:**	KWG1400389-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1400389
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	RT	Area	RT
	Results ==>	32,442	15.26	7,985	11.00
	Upper Limit ==>	64,885	15.76	39,926	11.50
	Lower Limit ==>	16,221	14.76	399	10.50
	ICAL Result ==>	39,971	15.27	8,062	11.00
Associated Analyses					
Method Blank	KWG1313628-3	34,232	15.26	5,956	11.00
Lab Control Sample	KWG1313628-1	33,350	15.26	5,951	11.00
Duplicate Lab Control Sample	KWG1313628-2	33,745	15.26	6,085	11.00
RM11E-MW005-12-2013	K1313248-001	35,217	15.26	6,034	11.00
RM11E-MW004-12-2013	K1313248-002	34,945	15.26	5,961	11.00
RM11E-MULT1007-12-2013	K1313248-003	35,881	15.26	5,641	11.00
RM11E-MW002s-12-2013	K1313248-004	41,948	15.26	3,842	11.00
RM11E-MW003d-12-2013	K1313248-005	35,183	15.26	5,834	11.00

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313628

	Lab Control Sample KWG1313628-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313628-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	20.7	20.0	104	19.6	20.0	98	50-120	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	11:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313628-3	**File ID:**	J:\MS21\DATA\011414\0114F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313628-1	J:\MS21\DATA\011414\0114F007.D	01/14/14	12:13
Duplicate Lab Control Sample	KWG1313628-2	J:\MS21\DATA\011414\0114F008.D	01/14/14	12:40
RM11E-MW005-12-2013	K1313248-001	J:\MS21\DATA\011414\0114F010.D	01/14/14	13:35
RM11E-MW004-12-2013	K1313248-002	J:\MS21\DATA\011414\0114F011.D	01/14/14	14:02
RM11E-MULT1007-12-2013	K1313248-003	J:\MS21\DATA\011414\0114F012.D	01/14/14	14:29
RM11E-MW002s-12-2013	K1313248-004	J:\MS21\DATA\011414\0114F013.D	01/14/14	14:56
RM11E-MW003d-12-2013	K1313248-005	J:\MS21\DATA\011414\0114F014.D	01/14/14	15:23

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	12:13

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313628-1	**File ID:**	J:\MS21\DATA\011414\0114F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313628-3	J:\MS21\DATA\011414\0114F005.D	01/14/14	11:23
RM11E-MW005-12-2013	K1313248-001	J:\MS21\DATA\011414\0114F010.D	01/14/14	13:35
RM11E-MW004-12-2013	K1313248-002	J:\MS21\DATA\011414\0114F011.D	01/14/14	14:02
RM11E-MULT1007-12-2013	K1313248-003	J:\MS21\DATA\011414\0114F012.D	01/14/14	14:29
RM11E-MW002s-12-2013	K1313248-004	J:\MS21\DATA\011414\0114F013.D	01/14/14	14:56
RM11E-MW003d-12-2013	K1313248-005	J:\MS21\DATA\011414\0114F014.D	01/14/14	15:23

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\011314\0113F005.D	G	J:\MS21\Data\011314\0113F011.D
B	J:\MS21\Data\011314\0113F006.D	H	J:\MS21\Data\011314\0113F012.D
C	J:\MS21\Data\011314\0113F007.D	I	J:\MS21\Data\011314\0113F013.D
D	J:\MS21\Data\011314\0113F008.D	J	J:\MS21\Data\011314\0113F014.D
E	J:\MS21\Data\011314\0113F009.D		
F	J:\MS21\Data\011314\0113F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.11	C	2.0	1.05	D	5.0	1.00	E	10	1.02
	F	20	0.941	G	40	0.959	H	60	0.930	I	80	0.878	J	100	0.867
S_HXCBZ13C6	A	20	1.17	B	20	1.17	C	20	1.13	D	20	1.16	E	20	1.18
	F	20	1.01	G	20	1.15	H	20	1.25	I	20	1.35	J	20	1.35

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.2		≤20	0.973		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	8.7		≤20	1.19		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248
Calibration Date: 01/13/2014
Date Analyzed: 01/13/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL13037
Units: ng/ml

File ID: J:\MS21\Data\011314\0113F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.973	0.930	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Analyzed:**	01/14/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	01/13/2014
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL13037
		Analysis Lot:	KWG1400389
		Units:	ng/ml

File ID: J:\MS21\DATA\011414\0114F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.973	0.961	-1	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	21	.01	1.19	1.23	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313248

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1400389
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F004.D	Continuing Calibration Verification	KWG1400389-1	1/14/2014	10:51		1/14/2014	10:51
0114F005.D	Method Blank	KWG1313628-3	1/14/2014	11:23		1/14/2014	11:23
0114F006.D	ZZZZZZ	ZZZZZZ	1/14/2014	11:46		1/14/2014	11:46
0114F007.D	Lab Control Sample	KWG1313628-1	1/14/2014	12:13		1/14/2014	12:13
0114F008.D	Duplicate Lab Control Sample	KWG1313628-2	1/14/2014	12:40		1/14/2014	12:40
0114F009.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:07		1/14/2014	13:07
0114F010.D	RM11E-MW005-12-2013	K1313248-001	1/14/2014	13:35		1/14/2014	13:35
0114F011.D	RM11E-MW004-12-2013	K1313248-002	1/14/2014	14:02		1/14/2014	14:02
0114F012.D	RM11E-MULT1007-12-2013	K1313248-003	1/14/2014	14:29		1/14/2014	14:29
0114F013.D	RM11E-MW002s-12-2013	K1313248-004	1/14/2014	14:56		1/14/2014	14:56
0114F014.D	RM11E-MW003d-12-2013	K1313248-005	1/14/2014	15:23		1/14/2014	15:23
0114F015.D	ZZZZZZ	ZZZZZZ	1/14/2014	15:50		1/14/2014	15:50
0114F016.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:17		1/14/2014	16:17
0114F017.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:44		1/14/2014	16:44
0114F018.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:11		1/14/2014	17:11
0114F019.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:38		1/14/2014	17:38
0114F020.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:05		1/14/2014	18:05
0114F021.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:32		1/14/2014	18:32
0114F022.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:59		1/14/2014	18:59
0114F023.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:27		1/14/2014	19:27
0114F024.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:54		1/14/2014	19:54
0114F026.D	ZZZZZZ	ZZZZZZ	1/14/2014	20:48		1/14/2014	20:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313248
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1313628
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW005-12-2013	K1313248-001	12/05/13	12/05/13	990ml	1.0ml	NA	
RM11E-MW004-12-2013	K1313248-002	12/05/13	12/06/13	940ml	1.0ml	NA	
RM11E-MULT1007-12-2013	K1313248-003	12/06/13	12/06/13	1030ml	1.0ml	NA	
RM11E-MW002s-12-2013	K1313248-004	12/05/13	12/06/13	1000ml	1.0ml	NA	
RM11E-MW003d-12-2013	K1313248-005	12/05/13	12/06/13	880ml	1.0ml	NA	
Method Blank	KWG1313628-3	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313628-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313628-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

January 3, 2014

Analytical Report for Service Request No: K1313401

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on December 11, 2013. For your reference, these analyses have been assigned our service request number K1313401.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Project Manager

REVISED
10:10 am, Jan 20, 2014

GS/ln

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Summary Package

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1313401
Project:	RM11E/ 487.002.006	**Date Received:**	12/11/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at ALS Environmental on 12/11/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Chloride by EPA Method 300.0:
The matrix spike recovery for sample Batch QC was outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Sulfate by EPA Method 300.0:
The control criteria for matrix spike recoveries for sample Batch QC were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Total and Dissolved Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Calcium, Iron and Manganese for sample RMIIE-MW001-12-2013 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

The matrix spike recovery of Antimony for sample RMIIE-MW001-12-2013 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by Kiesgrey Sotelo 1/6/13

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Insufficient sample volume was received to perform a duplicate client sample analysis. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the duplicate analysis for these samples.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

Sample Notes and Discussion:
Only two vials received for NWTPH-Gx.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCVs 1218F003 and 1218F012. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Method Blank Exceptions:
The Method Blank KWG1313837-3 contained low levels of Aroclor 1260 above the Method Reporting Limit (MRL). In accordance with ALS QA/QC policy, all sample results less than twenty times the level found in the Method Blank were flagged as estimated. The associated field sample was not re-extracted and re-analyzed because insufficient sample volume remained for additional testing. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for this sample.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1016, 1232, 1242, and 1248 in sample RM11E-MW001-12-2013. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Notes and Discussion:
Two Aroclors were identified in sample RM11E-MW001-12-2013: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1254 and 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Approved by Gregory [illegible] 1/6/13

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS27\1218F003.D: 1,1-Dichloroethene and Carbon Disulfide. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\1227F006.D: 2-Methylnaphthalene, 2,4,6-Tribromophenol. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Sample Notes and Discussion:
A Matrix Spike/Matrix Spike Duplicate (MS/MSD) was not reported with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

The Pesticide data will be provided when available.

Approved by _____ 1/6/13

Chain of Custody

ALS Environmental

45361

CHAIN OF CUSTODY

45361

002

SR# K131340 1

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: RMIIE
Project Number: 487.002.006
Project Manager: Erin Carroll Hughes
Company: GSI Water Solutions
Address: 55 SW Yamhill #300 PDX
Phone #: 503 927 4553
email: echughes@gsiwes.com
Sampler Signature: Erin Carroll Hughes
Sampler Printed Name: Erin Carroll Hughes

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	0H: ASTM D1498-00 / Redox Pot	0H: SM 4500-H+ B / pH	24H: ApplEnvMic7-87-1540 /	48H: 180.1 / Turbidity	7D: 8082A / PCB	7D: 8270D / SVO LL	7D: Pesticides / Pesticides	14D: 8260C / VOC FP	14D: NWTPH-Dx / NW TPH SGT	14D: NWTPH-Gx / NW_GAS	14D: SM 2320 B / Bicarb Alk	14D: SM 2320 B / Carbonate Alk	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 7470A / Hg D	28D: 7470A / Hg T	28D: 9050A / Cond Spec	28D: SM 5310 C / TOC D	28D: SM 5310 C / TOC T	180D: 6010C / Metals D	180D: 6010C / Metals T	180D: 6020A / Metals D	180D: 6020A / Metals T	999D: SM 2340 B / Hardness Calc	1	2	3	4	5
1. RMIIE-MW001-12-2013		12/10/13	1600	W	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
2. Trip Blank		N/A		W	2								X																					
3.																																		
4.																																		
5.																																		
6.																																		
7.																																		
8.																																		
9.																																		
10.																																		

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 487.002.006
Bill To: GSI

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: contact Greg Salata w/ questions

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Erin Carroll Hughes	[illegible]				
Signature: Erin Carroll Hughes	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: GSI	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: 12/11/13 8:30	Firm: 12/11/13 1230	Firm	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

11

PC Greg

Cooler Receipt and Preservation Form

Client / Project: GSI Service Request *K13* 13401

Received: 12/11/13 Opened: 12/11/13 By: [illegible] Unloaded: 12/11/13 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 3 front, back, + side

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
4.5	4.6	2.0	2.1	+0.1	325			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

SHORT HOLD TIME

Notes, Discrepancies, & Resolutions: For TOC/DOC - labels are switched on bottles (pres. vs. unpres.)

Page _____ ***of*** _____

General Chemistry Parameters

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**82.5**	1.0	0.2	5	12/11/13 14:40	
Method Blank	K1313401-MB1	**0.05 J**	0.20	0.04	1	12/11/13 14:40	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	NTU
Lab Code:	K1313409-002	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313409-002DUP Result	Average	RPD	RPD Limit
Turbidity	180.1	0.20	0.04	1.42	1.48	1.45	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372456

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	5.49	5.80	95	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	372456	KQ1314714-02	12/11/13 14:40	1.00	1.05	105	90-110
CCV2	372456	KQ1314714-03	12/11/13 14:40	1.00	1.03	103	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	372456	KQ1314714-04	12/11/13 14:40	0.20	0.04	0.06	J
CCB2	372456	KQ1314714-05	12/11/13 14:40	0.20	0.04	0.05	J

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**5.3**	1.0	0.2	5	12/12/13 01:54	
Method Blank	K1313401-MB1	ND U	0.20	0.03	1	12/11/13 09:50	
Method Blank	K1313401-MB2	ND U	0.20	0.03	1	12/11/13 16:56	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1313065-001DUP	0.40	0.06	0.28 J	0.28 J	0.278	<1	20	12/11/13
Batch QC	K1313379-001DUP	0.40	0.06	0.62	0.63	0.626	<1	20	12/11/13
Batch QC	K1313402-008DUP	0.40	0.06	0.56	0.57	0.564	1	20	12/11/13

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313065-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313065-001MS			Duplicate Matrix Spike K1313065-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	0.28 J	9.0	10.0	87 *	9.3	10.0	90	90-110	3	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313379-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313379-001MS			Duplicate Matrix Spike K1313379-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	0.62	4.43	4.00	95	4.39	4.00	94	90-110	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313402-008	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313402-008MS			Duplicate Matrix Spike K1313402-008DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	0.56	4.27	4.00	93	4.30	4.00	94	90-110	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372313

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	4.60	5.00	92	90-110
Lab Control Sample	K1313401-LCS2	4.62	5.00	92	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Chloride

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	372313	KQ1314726-14	12/11/13 09:04	5.00	4.79	96	90-110
CCV2	372313	KQ1314726-15	12/11/13 11:06	5.00	4.77	95	90-110
CCV3	372313	KQ1314726-16	12/11/13 14:09	5.00	4.70	94	90-110
CCV4	372313	KQ1314726-17	12/11/13 17:11	5.00	4.77	95	90-110
CCV5	372313	KQ1314726-18	12/11/13 20:13	5.00	4.80	96	90-110
CCV6	372313	KQ1314726-19	12/11/13 23:18	5.00	4.68	94	90-110
CCV7	372313	KQ1314726-20	12/12/13 02:26	5.00	4.70	94	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Chloride

Analysis Method: 300.0 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	372313	KQ1314726-21	12/11/13 09:19	0.20	0.03	ND	U
CCB2	372313	KQ1314726-22	12/11/13 11:21	0.20	0.03	ND	U
CCB3	372313	KQ1314726-23	12/11/13 14:24	0.20	0.03	ND	U
CCB4	372313	KQ1314726-24	12/11/13 17:26	0.20	0.03	ND	U
CCB5	372313	KQ1314726-25	12/11/13 20:29	0.20	0.03	ND	U
CCB6	372313	KQ1314726-26	12/11/13 23:34	0.20	0.03	ND	U
CCB7	372313	KQ1314726-27	12/12/13 02:42	0.20	0.03	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**5.33**	0.50	0.05	5	12/12/13 01:54	
Method Blank	K1313401-MB1	ND U	0.10	0.01	1	12/11/13 09:50	
Method Blank	K1313401-MB2	ND U	0.10	0.01	1	12/11/13 16:56	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Duplicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1313379-001DUP	0.20	0.02	2.15	2.17	2.16	<1	20	12/11/13
Batch QC	K1313402-008DUP	0.20	0.02	12.3	12.3	12.3	<1	20	12/11/13

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313379-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313379-001MS				Duplicate Matrix Spike K1313379-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.15	6.51	4.00	109	6.48	4.00	108	90-110	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1313402-008	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1313402-008MS				Duplicate Matrix Spike K1313402-008DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	12.3	17.3	4.00	125 *		17.2	4.00	123 *	90-110	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372313

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	4.80	5.00	96	90-110
Lab Control Sample	K1313401-LCS2	4.79	5.00	96	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	372313	KQ1314726-14	12/11/13 09:04	5.00	4.91	98	90-110
CCV2	372313	KQ1314726-15	12/11/13 11:06	5.00	4.92	98	90-110
CCV3	372313	KQ1314726-16	12/11/13 14:09	5.00	4.84	97	90-110
CCV4	372313	KQ1314726-17	12/11/13 17:11	5.00	4.91	98	90-110
CCV5	372313	KQ1314726-18	12/11/13 20:13	5.00	4.94	99	90-110
CCV6	372313	KQ1314726-19	12/11/13 23:18	5.00	4.84	97	90-110
CCV7	372313	KQ1314726-20	12/12/13 02:26	5.00	4.86	97	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	372313	KQ1314726-21	12/11/13 09:19	0.10	0.01	ND	U
CCB2	372313	KQ1314726-22	12/11/13 11:21	0.10	0.01	ND	U
CCB3	372313	KQ1314726-23	12/11/13 14:24	0.10	0.01	ND	U
CCB4	372313	KQ1314726-24	12/11/13 17:26	0.10	0.01	ND	U
CCB5	372313	KQ1314726-25	12/11/13 20:29	0.10	0.01	ND	U
CCB6	372313	KQ1314726-26	12/11/13 23:34	0.10	0.01	ND	U
CCB7	372313	KQ1314726-27	12/12/13 02:42	0.10	0.01	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**515**	2.0	0.4	1	12/19/13 10:40	
Method Blank	K1313401-MB1	**1.0 J**	2.0	0.4	1	12/19/13 10:40	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/19/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	KQ1315030-04	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1315030-04DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	9050A	2.0	0.4	770	772	771	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/19/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373717

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	332	330	101	86-113

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	ApplEnvMic7-87-1536-1540	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Iron, Divalent (Ferrous Iron)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	ND U	0.20	0.05	1	12/11/13 15:10	
Method Blank	K1313401-MB1	ND U	0.20	0.05	1	12/11/13 15:10	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313401-001DUP Result	Average	RPD	RPD Limit
Iron, Divalent (Ferrous Iron)	ApplEnvMic7-87-1536-1540	0.20	0.05	ND	ND	NC	NC	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/11/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA
Analysis Method:	ApplEnvMic7-87-1536-1540		
Prep Method:	None		

		Matrix Spike K1313401-001MS			Duplicate Matrix Spike K1313401-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Iron, Divalent (Ferrous Iron)	ND U	3.91	4.00	98	3.81	4.00	95	75-125	3	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	372460	KQ1314707-05	12/11/13 15:10	4.00	4.02	101	90-110
CCV2	372460	KQ1314707-07	12/11/13 15:10	4.00	4.05	101	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	372460	KQ1314707-06	12/11/13 15:10	0.20	0.05	ND	U
CCB2	372460	KQ1314707-08	12/11/13 15:10	0.20	0.05	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Oxidation-Reduction Potential (ORP)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**246**	-	-	1	12/11/13 14:20	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mV
Lab Code:	K1313401-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313401-001DUP Result	Average	RPD	RPD Limit
Oxidation-Reduction Potential (ORP)	ASTM D1498-00	-	-	246	229	238	7	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372473

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	468	480	98	85-115
Lab Control Sample	K1313401-LCS2	473	480	99	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Bicarbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**264**	15	3	1	12/19/13 11:50	
Method Blank	K1313401-MB1	**8 J**	15	3	1	12/19/13 11:50	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/19/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1315031-05	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1315031-05DUP Result	Average	RPD	RPD Limit
Bicarbonate as CaCO3	SM 2320 B	15	3	74	75	74.9	1	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	ND U	15	3	1	12/19/13 11:50	
Method Blank	K1313401-MB1	ND U	15	3	1	12/19/13 11:50	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/19/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1315031-05	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1315031-05DUP Result	Average	RPD	RPD Limit
Carbonate as CaCO3	SM 2320 B	15	3	74	75	74.9	1	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

pH

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**7.05**	-	-	1	12/11/13 15:05	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	12/11/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	pH Units
Lab Code:	K1313389-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313389-001DUP Result	Average	RPD	RPD Limit
pH	SM 4500-H+ B	-	-	7.64	7.61	7.63	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/11/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	372431

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	5.43	5.38	101	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**2.90**	0.50	0.07	1	12/17/13 21:11	
Method Blank	K1313401-MB1	ND U	0.50	0.07	1	12/17/13 21:11	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/17/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313401-001DUP Result	Average	RPD	RPD Limit
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	2.90	2.88	2.89	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

		Matrix Spike K1313401-001MS			Duplicate Matrix Spike K1313401-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Dissolved Organic (DOC)	2.90	28.2	25.0	101	28.1	25.0	101	83-117	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/17/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373378

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	17.2	18.1	95	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	373378	KQ1314995-17	12/17/13 21:11	25.0	25.0	100	90-110
CCV2	373378	KQ1314995-18	12/17/13 21:11	25.0	25.0	100	90-110
CCV3	373378	KQ1314995-19	12/17/13 21:11	25.0	25.3	101	90-110
CCV4	373378	KQ1314995-20	12/17/13 21:11	25.0	24.9	100	90-110
CCV5	373378	KQ1314995-21	12/17/13 21:11	25.0	25.6	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	373378	KQ1314995-22	12/17/13 21:11	0.50	0.07	ND	U
CCB2	373378	KQ1314995-23	12/17/13 21:11	0.50	0.07	ND	U
CCB3	373378	KQ1314995-24	12/17/13 21:11	0.50	0.07	ND	U
CCB4	373378	KQ1314995-25	12/17/13 21:11	0.50	0.07	ND	U
CCB5	373378	KQ1314995-26	12/17/13 21:11	0.50	0.07	ND	U

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RMIIE-MW001-12-2013	K1313401-001	**2.8**	1.0	0.2	2	12/17/13 00:11	
Method Blank	K1313401-MB1	ND U	0.50	0.07	1	12/17/13 00:11	

ALS Group USA, Corp.
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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/17/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1313401-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	1.0	0.2	2.8	2.8	2.82	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Analyzed:	12/17/13
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RMIIE-MW001-12-2013	**Units:**	mg/L
Lab Code:	K1313401-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1313401-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	2.8	53.2	50.0	101	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/17/13
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	373595

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1313401-LCS1	16.7	18.1	92	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1313401
Project: RM11E/487.002.006

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	373595	KQ1314987-08	12/17/13 00:11	25.0	24.9	99	90-110
CCV2	373595	KQ1314987-09	12/17/13 00:11	25.0	24.3	97	90-110
CCV3	373595	KQ1314987-10	12/17/13 00:11	25.0	24.3	97	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1313401
Project: RM11E/487.002.006

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	373595	KQ1314987-11	12/17/13 00:11	0.50	0.07	ND	U
CCB2	373595	KQ1314987-12	12/17/13 00:11	0.50	0.07	ND	U
CCB3	373595	KQ1314987-13	12/17/13 00:11	0.50	0.07	ND	U

Metals

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	6010C/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
RMIIE-MW001-12-2013	K1313401-001	0.07	0.004	1	12/17/13	12/19/13	220	
Method Blank	K1313401-MB	0.07	0.004	1	12/17/13	12/19/13	0.013 J	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/13
Sample Matrix:	Water	**Date Received:**	12/11/13
		Date Extracted:	12/17/13
		Date Analyzed:	12/19/13

Duplicate Summary
Metals

Sample Name:	RMIIE-MW001-12-2013	Units:	mg/L (ppm)
Lab Code:	K1313401-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	6010C/SM 2340B	0.07	220	222	221	<1	

Metals

ALS Group USA, Corp.
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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: RM11E
Project No.: 487.002.006

Service Request: K1313401

Sample Name:	Lab Code:
Batch QC1S	K1313208-001S
Batch QC1SD	K1313208-001SD
RMIIE-MW001-12-2013	K1313401-001
RMIIE-MW001-12-2013D	K1313401-001D
RMIIE-MW001-12-2013	K1313401-001DISS
RMIIE-MW001-12-2013S	K1313401-001S
Method Blank	K1313401-MB

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project No.:	487.002.006	**Date Collected:**	12/10/13
Project Name:	RM11E	**Date Received:**	12/11/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RMIIE-MW001-12-2013 **Lab Code:** K1313401-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/17/13	12/23/13	0.147		N
Arsenic	6020A	0.5	0.1	1.0	12/17/13	12/23/13	7.6		
Barium	6020A	0.05	0.02	1.0	12/17/13	12/23/13	170		
Beryllium	6020A	0.020	0.006	1.0	12/17/13	12/23/13	0.283		
Cadmium	6020A	0.020	0.005	1.0	12/17/13	12/23/13	0.114		
Calcium	6010C	20.0	0.9	1.0	12/17/13	12/19/13	55600		
Chromium	6020A	0.20	0.02	1.0	12/17/13	12/23/13	19.3		
Cobalt	6020A	0.020	0.006	1.0	12/17/13	12/23/13	12.6		
Copper	6020A	0.10	0.02	1.0	12/17/13	12/23/13	13.4		
Iron	6010C	20.0	3.0	1.0	12/17/13	12/19/13	17000		
Lead	6020A	0.020	0.005	1.0	12/17/13	12/23/13	6.860		
Magnesium	6010C	5.0	0.3	1.0	12/17/13	12/19/13	19700		
Manganese	6020A	5.000	0.600	100.0	12/17/13	12/23/13	13600		
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/17/13	12/23/13	13.7		
Potassium	6010C	200	60.0	1.0	12/17/13	12/19/13	5580		
Sodium	6010C	200	20.0	1.0	12/17/13	12/19/13	20000		
Vanadium	6020A	0.20	0.03	1.0	12/17/13	12/23/13	39.2		
Zinc	6020A	0.5	0.2	1.0	12/17/13	12/23/13	20.7		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project No.:	487.002.006	**Date Collected:**	12/10/13
Project Name:	RM11E	**Date Received:**	12/11/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: RMIIE-MW001-12-2013 **Lab Code:** K1313401-001DISS

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/17/13	12/23/13	0.125		N
Arsenic	6020A	0.5	0.1	1.0	12/17/13	12/23/13	1.5		
Barium	6020A	0.05	0.02	1.0	12/17/13	12/23/13	97.9		
Beryllium	6020A	0.020	0.006	1.0	12/17/13	12/23/13	0.006	J	
Cadmium	6020A	0.020	0.005	1.0	12/17/13	12/23/13	0.054		
Calcium	6010C	20.0	0.9	1.0	12/17/13	12/19/13	54200		
Chromium	6020A	0.20	0.02	1.0	12/17/13	12/23/13	0.09	J	
Cobalt	6020A	0.020	0.006	1.0	12/17/13	12/23/13	8.310		
Copper	6020A	0.10	0.02	1.0	12/17/13	12/23/13	1.72		
Iron	6010C	20.0	3.0	1.0	12/17/13	12/19/13	10.8	J	
Lead	6020A	0.020	0.005	1.0	12/17/13	12/23/13	0.013	J	
Magnesium	6010C	5.0	0.3	1.0	12/17/13	12/19/13	18300		
Manganese	6020A	5.000	0.600	100.0	12/17/13	12/23/13	13100		
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/17/13	12/23/13	8.84		
Potassium	6010C	200	60.0	1.0	12/17/13	12/19/13	5120		
Sodium	6010C	200	20.0	1.0	12/17/13	12/19/13	20000		
Vanadium	6020A	0.20	0.03	1.0	12/17/13	12/23/13	1.82		
Zinc	6020A	0.5	0.2	1.0	12/17/13	12/23/13	4.0		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Service Request: K1313401
Project No.: 487.002.006
Date Collected:
Project Name: RM11E
Date Received:
Matrix: WATER
Units: ug/L
Basis: NA

Sample Name: Method Blank
Lab Code: K1313401-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	12/17/13	12/23/13	0.005	U	N
Arsenic	6020A	0.5	0.1	1.0	12/17/13	12/23/13	0.1	U	
Barium	6020A	0.05	0.02	1.0	12/17/13	12/23/13	0.02	U	
Beryllium	6020A	0.020	0.006	1.0	12/17/13	12/23/13	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	12/17/13	12/23/13	0.005	U	
Calcium	6010C	20.0	0.9	1.0	12/17/13	12/19/13	2.2	J	
Chromium	6020A	0.20	0.02	1.0	12/17/13	12/23/13	0.02	J	
Cobalt	6020A	0.020	0.006	1.0	12/17/13	12/23/13	0.006	U	
Copper	6020A	0.10	0.02	1.0	12/17/13	12/23/13	0.02	U	
Iron	6010C	20.0	3.0	1.0	12/17/13	12/19/13	3.0	U	
Lead	6020A	0.020	0.005	1.0	12/17/13	12/23/13	0.005	U	
Magnesium	6010C	5.0	0.3	1.0	12/17/13	12/19/13	1.9	J	
Manganese	6020A	0.050	0.006	1.0	12/17/13	12/23/13	0.006	U	
Mercury	7470A	0.20	0.02	1.0	12/12/13	12/13/13	0.02	U	
Nickel	6020A	0.20	0.02	1.0	12/17/13	12/23/13	0.02	U	
Potassium	6010C	200	60.0	1.0	12/17/13	12/19/13	60.0	U	
Sodium	6010C	200	20.0	1.0	12/17/13	12/19/13	77.6	J	
Vanadium	6020A	0.20	0.03	1.0	12/17/13	12/23/13	0.03	U	
Zinc	6020A	0.5	0.2	1.0	12/17/13	12/23/13	0.4	J	

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.0	104	25.0	25.1	100	25.8	103	6020A
Arsenic	25.0	26.0	104	25.0	25.2	101	25.0	100	6020A
Barium	100.0	102.8	103	25.0	25.3	101	25.8	103	6020A
Beryllium	2.5	2.6	104	25.0	24.8	99	24.9	100	6020A
Cadmium	12.5	13.1	105	25.0	25.2	101	25.2	101	6020A
Calcium	5000	4782	96	500	484	97	485	97	6010C
Calcium	12500	12490	100	10000	9998	100	10040	100	6010C
Chromium	10.0	10.2	102	25.0	25.2	101	25.5	102	6020A
Cobalt	25.0	25.7	103	25.0	25.3	101	25.1	100	6020A
Copper	12.5	12.9	103	25.0	25.2	101	24.9	100	6020A
Iron	2500	2453	98	10000	9965	100	10000	100	6010C
Lead	25.0	25.6	102	25.0	25.1	100	25.3	101	6020A
Magnesium	5000	5013	100	250	251	100	250	100	6010C
Magnesium	12500	12330	99	10000	9852	99	9885	99	6010C
Manganese	25.0	25.7	103	25.0	25.1	100	26.0	104	6020A
Mercury	5.00	4.90	98	5.00	5.00	100	5.00	100	7470A
Nickel	25.0	25.6	102	25.0	25.2	101	25.0	100	6020A
Potassium	12500	12070	97	10000	9810	98	9893	99	6010C
Sodium	12500	12420	99	10000	9912	99	9919	99	6010C
Vanadium	25.0	25.8	103	25.0	25.3	101	25.6	102	6020A
Zinc	25.0	26.0	104	25.0	25.1	100	25.3	101	6020A

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	Method
Antimony				25.0	25.8	103	25.8	103	6020A
Arsenic				25.0	25.0	100	25.9	104	6020A
Barium				25.0	26.0	104	26.0	104	6020A
Beryllium				25.0	24.9	100	26.0	104	6020A
Cadmium				25.0	25.5	102	25.2	101	6020A
Calcium				10000	10060	101	10030	100	6010C
Calcium				500	488	98	488	98	6010C
Chromium				25.0	25.2	101	25.2	101	6020A
Cobalt				25.0	24.5	98	24.6	98	6020A
Copper				25.0	24.5	98	24.8	99	6020A
Iron				10000	9978	100	10130	101	6010C
Lead				25.0	25.4	102	25.4	102	6020A
Magnesium				10000	9909	99	9889	99	6010C
Magnesium				250	252	101	251	100	6010C
Mercury				5.00	5.10	102			7470A
Nickel				25.0	24.7	99	24.7	99	6020A
Potassium				10000	9878	99	10040	100	6010C
Sodium				10000	9978	100	9821	98	6010C
Vanadium				25.0	25.2	101	25.2	101	6020A
Zinc				25.0	25.4	102	25.3	101	6020A

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Calcium				10000	10150	102	10240	102	6010C
Calcium				500	491	98	496	99	6010C
Iron				10000	10170	102	10120	101	6010C
Magnesium				10000	9781	98	9976	100	6010C
Magnesium				250	251	100	253	101	6010C
Potassium				10000	10160	102	10050	100	6010C
Sodium				10000	10360	104	10230	102	6010C

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Calcium				10000	10150	102	10230	102	6010C
Calcium				500	495	99	503	101	6010C
Iron				10000	10090	101	10200	102	6010C
Magnesium				10000	9910	99	9867	99	6010C
Magnesium				250	252	101	252	101	6010C
Potassium				10000	9967	100	10060	101	6010C
Sodium				10000	10050	100	9949	99	6010C

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313401

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS Mixed

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Calcium	18.7	20.0	94	70.0 - 130.0	P	12/19/13	10:08	121913AICP
	Iron	20.0	20.0	100	70.0 - 130.0	P	12/19/13	10:08	121913AICP
	Magnesium	4.2	5.0	84	70.0 - 130.0	P	12/19/13	10:08	121913AICP
	Sodium	207.8	200.0	104	70.0 - 130.0	P	12/19/13	10:08	121913AICP
LLICV1									
	Potassium	167.5	200.0	84	70.0 - 130.0	P	12/19/13	10:11	121913AICP
LLCCV1									
	Calcium	18.2	20.0	91	70.0 - 130.0	P	12/19/13	14:44	121913AICP
	Iron	20.0	20.0	100	70.0 - 130.0	P	12/19/13	14:44	121913AICP
	Magnesium	4.0	5.0	80	70.0 - 130.0	P	12/19/13	14:44	121913AICP
	Potassium	221.1	200.0	111	70.0 - 130.0	P	12/19/13	14:44	121913AICP
	Sodium	247.0	200.0	124	70.0 - 130.0	P	12/19/13	14:44	121913AICP
LLCCV2									
	Calcium	18.6	20.0	93	70.0 - 130.0	P	12/19/13	15:24	121913AICP
	Iron	21.3	20.0	106	70.0 - 130.0	P	12/19/13	15:24	121913AICP
	Magnesium	4.1	5.0	82	70.0 - 130.0	P	12/19/13	15:24	121913AICP
	Potassium	222.1	200.0	111	70.0 - 130.0	P	12/19/13	15:24	121913AICP
	Sodium	234.5	200.0	117	70.0 - 130.0	P	12/19/13	15:24	121913AICP

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313401

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV1									
	Antimony	0.056	0.05	112	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Arsenic	0.57	0.5	114	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Barium	0.055	0.05	110	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Beryllium	0.024	0.02	120	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Cadmium	0.018	0.02	90	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Chromium	0.20	0.20	100	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Cobalt	0.022	0.02	110	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Copper	0.10	0.10	100	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Lead	0.023	0.02	115	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Manganese	0.049	0.05	98	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Nickel	0.21	0.20	105	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Vanadium	0.21	0.20	105	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
	Zinc	0.48	0.50	96	70.0 - 130.0	MS	12/23/13	09:59	122313AMS
LLCCV1									
	Antimony	0.059	0.05	118	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Arsenic	0.59	0.5	118	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Barium	0.050	0.05	100	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Beryllium	0.018	0.02	90	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Cadmium	0.022	0.02	110	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Chromium	0.23	0.20	115	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Cobalt	0.022	0.02	110	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Copper	0.11	0.10	110	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Lead	0.023	0.02	115	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Manganese	0.050	0.05	100	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Nickel	0.21	0.20	105	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Vanadium	0.21	0.20	105	70.0 - 130.0	MS	12/23/13	11:14	122313AMS
	Zinc	0.51	0.50	102	70.0 - 130.0	MS	12/23/13	11:14	122313AMS

Metals

- 2a -

LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1313401

Contract: 487.002.006 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV2									
	Antimony	0.064	0.05	128	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Arsenic	0.55	0.5	110	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Barium	0.058	0.05	116	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Beryllium	0.021	0.02	105	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Cadmium	0.023	0.02	115	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Chromium	0.22	0.20	110	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Cobalt	0.022	0.02	110	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Copper	0.10	0.10	100	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Lead	0.023	0.02	115	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Vanadium	0.20	0.20	100	70.0 - 130.0	MS	12/23/13	13:13	122313AMS
	Zinc	0.47	0.50	94	70.0 - 130.0	MS	12/23/13	13:13	122313AMS

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury				0.20	0.20	100		

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc Service Request: K1313401

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony	0.020	J	0.012	J	0.018	J	0.020	J	6020A
Arsenic	0.10	U	0.10	U	0.10	U	0.10	U	6020A
Barium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Beryllium	0.011	J	0.006	U	0.015	J	0.009	J	6020A
Cadmium	0.009	J	0.005	U	0.014	J	0.008	J	6020A
Calcium	0.9	U	-1.2	J	-1.2	J	-1.3	J	6010C
Chromium	0.02	U	0.02	U	0.02	J	0.02	J	6020A
Cobalt	0.012	J	0.006	U	0.012	J	0.007	J	6020A
Copper	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Iron	3.0	U	3.0	U	3.0	U	3.0	U	6010C
Lead	0.012	J	0.005	U	0.014	J	0.010	J	6020A
Magnesium	-0.6	J	-1.1	J	-1.3	J	-1.3	J	6010C
Manganese	0.012	J	0.006	U	0.016	J			6020A
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A
Nickel	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Potassium	60.0	U	60.0	U	60.0	U	60.0	U	6010C
Sodium	20.0	U	20.0	U	20.0	U	20.0	U	6010C
Vanadium	0.03	U	0.03	U	0.03	U	0.03	U	6020A
Zinc	0.20	U	0.20	U	0.20	U	0.20	U	6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.021	J					6020A
Arsenic			0.10	U					6020A
Barium			0.02	U					6020A
Beryllium			0.007	J					6020A
Cadmium			0.011	J					6020A
Calcium			0.9	U	-1.1	J	0.9	U	6010C
Chromium			0.02	U					6020A
Cobalt			0.010	J					6020A
Copper			0.02	U					6020A
Iron			3.0	U	3.0	U	3.0	U	6010C
Lead			0.010	J					6020A
Magnesium			-0.8	J	-0.7	J	-0.4	J	6010C
Nickel			0.02	U					6020A
Potassium			60.0	U	60.0	U	60.0	U	6010C
Sodium			20.0	U	66.4	J	101.0	J	6010C
Vanadium			0.03	U					6020A
Zinc			0.20	U					6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Calcium			0.9	U	-1.2	J			6010C
Iron			3.0	U	3.0	U			6010C
Magnesium			-0.4	J	-1.2	J			6010C
Potassium			60.0	U	60.0	U			6010C
Sodium			37.6	J	32.8	J			6010C

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

ICP ID Number: K-ICP-AES-03 **ICS Source:** Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Calcium	500000.0	500000.0	462500.0	465200.0	93			
Iron	200000.0	200000.0	182900.0	183100.0	92			
Magnesium	500000.0	500000.0	385300.0	389500.0	78			
Potassium	0.0		-128.0	-112.6				
Sodium	0.0		-3.9	3.0				

Metals

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc Service Request: K1313401

Project No.: 487.002.006

Project Name: RM11E

ICP ID Number: K-ICP-MS-03 ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.0		0.25	0.25				
Arsenic	0.00	25.00	0.03	25.06	100			
Barium	0.00		3.23	3.32				
Beryllium	0.00		0.021	0.024				
Cadmium	0.00	25.00	0.21	24.37	97			
Chromium	0.00	50.00	0.40	51.64	103			
Cobalt	0.0	50.0	1.00	50.23	100			
Copper	0.0	50.0	0.49	47.4	95			
Lead	0.0		0.06	0.06				
Manganese	0.0	50.0	1.44	52.73	105			
Nickel	0.0	50.0	1.39	49.4	99			
Vanadium	0.0	50.0	-0.02	52.13	104			
Zinc	0.0	25.0	1.17	24.6	98			

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RMIIE-MW001-12-2013S **Lab Code:** K1313401-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	34.3		0.147		50.00	68.3	N	6020A
Arsenic	75 - 125	55.0		7.6		50.00	94.8		6020A
Barium	75 - 125	278		170		100.00	108.0		6020A
Beryllium	75 - 125	2.770		0.283		2.50	99.5		6020A
Cadmium	75 - 125	25.9		0.114		25.00	103.1		6020A
Calcium		65700		55600		10000.00	101.0		6010C
Chromium	75 - 125	29.1		19.3		10.00	98.0		6020A
Cobalt	75 - 125	37.1		12.6		25.00	98.0		6020A
Copper	75 - 125	24.8		13.4		12.50	91.2		6020A
Iron		18000		17000		1000.00	100.0		6010C
Lead	75 - 125	53.5		6.860		50.00	93.3		6020A
Magnesium	75 - 125	29600		19700		10000.00	99.0		6010C
Manganese		13800		13600		25.00	800.0		6020A
Nickel	75 - 125	37.5		13.7		25.00	95.2		6020A
Potassium	75 - 125	15700		5580		10000.00	101.2		6010C
Sodium	75 - 125	30000		20000		10000.00	100.0		6010C
Vanadium	75 - 125	65.1		39.2		25.00	103.6		6020A
Zinc	75 - 125	45.5		20.7		25.00	99.2		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1313401
Project No.: 487.002.006
Units: UG/L
Project Name: RM11E
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1313208-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	0.96		0.02	U	1.00	96.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc
Service Request: K1313401
Project No.: 487.002.006
Units: UG/L
Project Name: RM11E
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1313208-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	76 - 126	0.99		0.02	U	1.00	99.0		7470A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RMIIE-MW001-12-2013A **Lab Code:** K1313401-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	19.404		0.147		20.0	96		6020A
Arsenic	80 - 120	27.9		7.6		20.0	102		6020A
Barium	80 - 120	190.31		169.76		20.0	103		6020A
Beryllium	80 - 120	20.785		0.283		20.0	103		6020A
Cadmium	80 - 120	21.084		0.114		20.0	105		6020A
Calcium	80 - 120	67860.0		55630.0		12500	98		6010C
Chromium	80 - 120	40.20		19.28		20.0	105		6020A
Cobalt	80 - 120	32.549		12.594		20.0	100		6020A
Copper	80 - 120	32.63		13.39		20.0	96		6020A
Iron	80 - 120	19370.0		16980.0		2500	96		6010C
Lead	80 - 120	27.317		6.857		20.0	102		6020A
Magnesium	80 - 120	31470.0		19730.0		12500	94		6010C
Nickel	80 - 120	33.03		13.73		20.0	96		6020A
Potassium	80 - 120	17770.0		5579.0		12500	98		6010C
Sodium	80 - 120	32060.0		20020.0		12500	96		6010C
Vanadium	80 - 120	60.45		39.21		20.0	106		6020A
Zinc	80 - 120	41.12		20.74		20.0	102		6020A

Metals

- 5B -

POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: Batch QC1A **Lab Code:** K1313208-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	1.00		0.02		1.0	100		7470A

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006 **Units:** UG/L

Project Name: RM11E **Basis:** NA

Matrix: WATER

Sample Name: RMIIE-MW001-12-2013D **Lab Code:** K1313401-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.147		0.140		4.9		6020A
Arsenic	20	7.6		7.3		4.0		6020A
Barium	20	170		169		0.6		6020A
Beryllium	20	0.283		0.273		3.6		6020A
Cadmium		0.114		0.093		20.3		6020A
Calcium	20	55600		55900		0.5		6010C
Chromium	20	19.3		19.2		0.5		6020A
Cobalt	20	12.6		12.5		0.8		6020A
Copper	20	13.4		13.3		0.7		6020A
Iron	20	17000		16800		1.2		6010C
Lead	20	6.860		6.850		0.1		6020A
Magnesium	20	19700		20100		2.0		6010C
Manganese	20	13600		13600		0.0		6020A
Nickel	20	13.7		13.6		0.7		6020A
Potassium	20	5580		5620		0.7		6010C
Sodium	20	20000		20500		2.5		6010C
Vanadium	20	39.2		38.9		0.8		6020A
Zinc	20	20.7		20.6		0.5		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: GSI Water Solutions, Inc

Service Request: K1313401

Project No.: 487.002.006

Units: UG/L

Project Name: RM11E

Basis: NA

Matrix: WATER

Sample Name: Batch QC1SD

Lab Code: K1313208-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.96		0.99		3.1		7470A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1313401

Project No.: 487.002.006

Project Name: RM11E

Aqueous LCS Source: Inorganic Ventures **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	50	52.8	105.6					
Arsenic	50	51.0	102.0					
Barium	100	103	103.0					
Beryllium	2.5	2.530	101.2					
Cadmium	25	25.8	103.2					
Calcium	12500	12700	101.6					
Chromium	10	10.1	101.0					
Cobalt	25	25.4	101.6					
Copper	12.5	12.7	101.6					
Iron	2500	2550	102.0					
Lead	50	51.4	102.8					
Magnesium	12500	12100	96.8					
Manganese	25	25.9	103.6					
Mercury	5.0	4.88	97.6					
Nickel	25	25.3	101.2					
Potassium	12500	12400	99.2					
Sodium	12500	12200	97.6					
Vanadium	25	24.6	98.4					
Zinc	25	26.5	106.0					

Diesel and Residual Range Organics

Organic Analysis:
Diesel and Residual Range Organics - Silica Gel Treated

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Jeffrey M. Smith

Date: 12/30/13 Title: GC Analyst

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/2013
Sample Matrix:	Water	**Date Received:**	12/11/2013

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW001-12-2013	**Units:**	ug/L
Lab Code:	K1313401-001	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**49**	J	240	11	1	12/12/13	12/16/13	KWG1313712	
Residual Range Organics (RRO)	**130**	J	480	19	1	12/12/13	12/16/13	KWG1313712	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	12/16/13	Acceptable
n-Triacontane	116	50-150	12/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313712-3	**Basis:**	NA
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**22**	J	240	11	1	12/12/13	12/16/13	KWG1313712	
Residual Range Organics (RRO)	**37**	J	480	19	1	12/12/13	12/16/13	KWG1313712	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	12/16/13	Acceptable
n-Triacontane	109	50-150	12/16/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-MW001-12-2013	K1313401-001	99	116
Method Blank	KWG1313712-3	95	109
Lab Control Sample	KWG1313712-1	97	108
Duplicate Lab Control Sample	KWG1313712-2	105	120

Surrogate Recovery Control Limits (%)

Sur1 =	o-Terphenyl	50-150
Sur2 =	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/12/2013
Date Analyzed: 12/16/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313712

	Lab Control Sample KWG1313712-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313712-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	1340	1600	83	1400	1600	88	46-140	5	30
Residual Range Organics (RRO)	867	800	108	898	800	112	45-159	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	12/16/2013
		Time Analyzed:	18:07

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1313712-3	**File ID:**	J:\GC21\DATA\121613B\1216F052.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313712

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313712-1	J:\GC21\DATA\121613B\1216F048.D	12/16/13	17:22
Duplicate Lab Control Sample	KWG1313712-2	J:\GC21\DATA\121613B\1216F050.D	12/16/13	17:45
RM11E-MW001-12-2013	K1313401-001	J:\GC21\DATA\121613B\1216F054.D	12/16/13	18:29

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	12/16/2013
		Time Analyzed:	17:22

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1313712-1	**File ID:**	J:\GC21\DATA\121613B\1216F048.D
Extraction Method:	Method	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1313712

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313712-3	J:\GC21\DATA\121613B\1216F052.D	12/16/13	18:07
RM11E-MW001-12-2013	K1313401-001	J:\GC21\DATA\121613B\1216F054.D	12/16/13	18:29

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\102113B-CAL\1021F103.D	I	J:\GC21\DATA\102113B-CAL\1023F019.D
B	J:\GC21\DATA\102113B-CAL\1021F105.D	J	J:\GC21\DATA\102113B-CAL\1023F021.D
C	J:\GC21\DATA\102113B-CAL\1021F107.D	K	J:\GC21\DATA\102113B-CAL\1023F041.D
D	J:\GC21\DATA\102113B-CAL\1021F109.D	L	J:\GC21\DATA\102113B-CAL\1023F043.D
E	J:\GC21\DATA\102113B-CAL\1021F111.D	M	J:\GC21\DATA\102113B-CAL\1023F045.D
F	J:\GC21\DATA\102113B-CAL\1021F113.D	N	J:\GC21\DATA\102113B-CAL\1023F047.D
G	J:\GC21\DATA\102113B-CAL\1023F033.D		
H	J:\GC21\DATA\102113B-CAL\1023F035.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
				G	20	976	H	50	1030				J	500	1030
	K	2000	1030	L	5000	911	M	20000	898	N	50000	856			
Residual Range Organics (RRO)	A	20	695	B	50	689	C	200	626	D	500	603	E	2000	520
	F	5000	598												
o-Terphenyl															
				G	1.0	1380	H	2.5	1430				J	25	1370
	K	100	1340	L	250	1170									
n-Triacontane															
				G	1.0	916	H	2.5	979				J	25	1180
	K	100	1130	L	250	1000									

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/22/2013

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL12862
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	7.7		≤ 20
Residual Range Organics (RRO)	MS	Linear	R2	0.996		≥ 0.99
o-Terphenyl	SURR	AverageRF	% RSD	7.3		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	10.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Calibration Date:**	10/22/2013
		Date Analyzed:	10/22/2013 - 10/23/2013

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL12862
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\102113B-CAL\1021F119.D J:\GC21\DATA\102113B-CAL\1023F049.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	962	943	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	622	626	NA	8	± 15 %	Linear

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/16/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313833
Units: ppm

File ID: J:\GC21\DATA\121613B\1216F027.D
J:\GC21\DATA\121613B\1216F029.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	962	896	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	622	568	NA	-2	± 15 %	Linear
o-Terphenyl	50	46	1340	1240	-7	NA	± 15 %	AverageRF
n-Triacontane	50	49	1040	1010	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/16/2013

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/22/2013
Calibration ID: CAL12862
Analysis Lot: KWG1313833
Units: ppm

File ID: J:\GC21\DATA\121613B\1216F056.D
J:\GC21\DATA\121613B\1216F058.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	890	962	860	-11	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	950	622	552	NA	-5	± 15 %	Linear
o-Terphenyl	50	44	1340	1190	-11	NA	± 15 %	AverageRF
n-Triacontane	50	48	1040	1000	-4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1313833
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1216F027.D	Continuing Calibration Verification	KWG1313833-1	12/16/2013	13:28		12/16/2013	13:44
1216F029.D	Continuing Calibration Verification	KWG1313833-1	12/16/2013	13:50		12/16/2013	14:06
1216F031.D	Instrument Blank	KWG1313833-3	12/16/2013	14:12		12/16/2013	14:28
1216F036.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:09		12/16/2013	15:25
1216F038.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:31		12/16/2013	15:47
1216F040.D	ZZZZZZ	ZZZZZZ	12/16/2013	15:53		12/16/2013	16:09
1216F042.D	ZZZZZZ	ZZZZZZ	12/16/2013	16:15		12/16/2013	16:31
1216F044.D	ZZZZZZ	ZZZZZZ	12/16/2013	16:37		12/16/2013	16:53
1216F048.D	Lab Control Sample	KWG1313712-1	12/16/2013	17:22		12/16/2013	17:38
1216F050.D	Duplicate Lab Control Sample	KWG1313712-2	12/16/2013	17:45		12/16/2013	18:01
1216F052.D	Method Blank	KWG1313712-3	12/16/2013	18:07		12/16/2013	18:23
1216F054.D	RM11E-MW001-12-2013	K1313401-001	12/16/2013	18:29		12/16/2013	18:45
1216F056.D	Continuing Calibration Verification	KWG1313833-2	12/16/2013	18:51		12/16/2013	19:07
1216F058.D	Continuing Calibration Verification	KWG1313833-2	12/16/2013	19:13		12/16/2013	19:29
1216F060.D	Instrument Blank	KWG1313833-4	12/16/2013	19:35		12/16/2013	19:51

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/12/2013

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: Method
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1313712
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-12-2013	K1313401-001	12/10/13	12/11/13	1060mL	2mL	NA	
Method Blank	KWG1313712-3	NA	NA	1060mL	2mL	NA	
Lab Control Sample	KWG1313712-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313712-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Gasoline Range Organics

Organic Analysis:
Gasoline Range Organics

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
RMIIE-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KMasoner

Name: KMasoner

Date: 12/20/13

Title: Chemist

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/2013
Sample Matrix:	Water	**Date Received:**	12/11/2013

Gasoline Range Organics

Sample Name:	RMIIE-MW001-12-2013	**Units:**	ug/L
Lab Code:	K1313401-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPI	ND	U	250	13	1	12/12/13	12/12/13	KWG1313811	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	92	50-150	12/12/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313811-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	12/13/13	12/13/13	KWG1313811	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	88	50-150	12/13/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RMIIE-MW001-12-2013	K1313401-001	92
Batch QC	K1313415-004	91
Batch QCDUP	KWG1313811-1	88
Method Blank	KWG1313811-3	88
Lab Control Sample	KWG1313811-2	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/12/2013
Date Analyzed: 12/12/2013

Duplicate Sample Summary
Gasoline Range Organics

Sample Name: Batch QC
Lab Code: K1313415-004

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Level: Low
Extraction Lot: KWG1313811

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1313811-1 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Gasoline Range Organics-NWTPH	250	13	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/13/2013
Date Analyzed: 12/13/2013

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313811

	Lab Control Sample KWG1313811-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Gasoline Range Organics-NWTPH	2300	2500	92	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/13/2013
Date Analyzed: 12/13/2013
Time Analyzed: 01:02

Method Blank Summary
Gasoline Range Organics

Sample Name: Method Blank
Lab Code: KWG1313811-3

Instrument ID: GC39
File ID: J:\GC39\DATA\121213\1212F017.D

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Level: Low
Extraction Lot: KWG1313811

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RMIIE-MW001-12-2013	K1313401-001	J:\GC39\DATA\121213\1212F006.D	12/12/13	20:40
Batch QC	K1313415-004	J:\GC39\DATA\121213\1212F011.D	12/12/13	22:39
Batch QCDUP	KWG1313811-1	J:\GC39\DATA\121213\1212F012.D	12/12/13	23:03
Lab Control Sample	KWG1313811-2	J:\GC39\DATA\121213\1212F016.D	12/13/13	00:38

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/13/2013
Sample Matrix:	Water	**Date Analyzed:**	12/13/2013
		Time Analyzed:	00:38

Lab Control Sample Summary
Gasoline Range Organics

Sample Name:	Lab Control Sample	**Instrument ID:**	GC39
Lab Code:	KWG1313811-2	**File ID:**	J:\GC39\DATA\121213\1212F016.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1313811

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RMIIE-MW001-12-2013	K1313401-001	J:\GC39\DATA\121213\1212F006.D	12/12/13	20:40
Batch QC	K1313415-004	J:\GC39\DATA\121213\1212F011.D	12/12/13	22:39
Batch QCDUP	KWG1313811-1	J:\GC39\DATA\121213\1212F012.D	12/12/13	23:03
Method Blank	KWG1313811-3	J:\GC39\DATA\121213\1212F017.D	12/13/13	01:02

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Level ID	File ID	Level ID	File ID
A	J:\GC39\Data\101113\1011F009.D	E	J:\GC39\Data\101113\1011F013.D
B	J:\GC39\Data\101113\1011F010.D	F	J:\GC39\Data\101113\1011F014.D
C	J:\GC39\Data\101113\1011F011.D	G	J:\GC39\Data\101113\1011F015.D
D	J:\GC39\Data\101113\1011F012.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Gasoline Range Organics-NWTPH	A	50	85600	B	100	86100	C	200	83700	D	500	77200	E	1000	79400
	F	5000	78900												
1,4-Difluorobenzene	A	100	1.18E+5	B	100	1.19E+5	C	100	1.19E+5	D	100	1.19E+5	E	100	1.20E+5

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/11/2013

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL12840
Instrument ID: GC39

Column: DB-624

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Gasoline Range Organics-NWTPH	MS	AverageRF	% RSD	4.6		≤ 20
1,4-Difluorobenzene	SURR	AverageRF	% RSD	0.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/11/2013
Date Analyzed: 10/11/2013

Second Source Calibration Verification
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration ID: CAL12840
Units: ug/L

File ID: J:\GC39\Data\101113\1011F019.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	480	81800	76900	-6	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/12/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313810
Units: ug/L

File ID: J:\GC39\DATA\121213\1212F004.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	450	81800	74400	-9	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	100	119000	121000	1	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/13/2013

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Gx

Calibration Date: 10/11/2013
Calibration ID: CAL12840
Analysis Lot: KWG1313810
Units: ug/L

File ID: J:\GC39\DATA\121213\1212F018.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	440	81800	71200	-13	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	93	119000	110000	-7	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Gasoline Range Organics

Analysis Method: NWTPH-Gx

Analysis Lot: KWG1313810
Instrument ID: GC39
Column: DB-624

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1212F004.D	Continuing Calibration Verification	KWG1313810-1	12/12/2013	19:45		12/12/2013	20:00
1212F005.D	Instrument Blank	KWG1313810-4	12/12/2013	20:09		12/12/2013	20:24
1212F006.D	RMIIE-MW001-12-2013	K1313401-001	12/12/2013	20:40		12/12/2013	20:55
1212F007.D	ZZZZZZ	ZZZZZZ	12/12/2013	21:04		12/12/2013	21:19
1212F008.D	ZZZZZZ	ZZZZZZ	12/12/2013	21:28		12/12/2013	21:43
1212F009.D	ZZZZZZ	ZZZZZZ	12/12/2013	21:51		12/12/2013	22:06
1212F011.D	Batch QC	K1313415-004	12/12/2013	22:39		12/12/2013	22:54
1212F012.D	Batch QCDUP	KWG1313811-1	12/12/2013	23:03		12/12/2013	23:18
1212F014.D	ZZZZZZ	ZZZZZZ	12/12/2013	23:50		12/13/2013	00:05
1212F015.D	ZZZZZZ	ZZZZZZ	12/13/2013	00:14		12/13/2013	00:29
1212F016.D	Lab Control Sample	KWG1313811-2	12/13/2013	00:38		12/13/2013	00:53
1212F017.D	Method Blank	KWG1313811-3	12/13/2013	01:02		12/13/2013	01:17
1212F018.D	Continuing Calibration Verification	KWG1313810-2	12/13/2013	01:26		12/13/2013	01:41
1212F019.D	Instrument Blank	KWG1313810-5	12/13/2013	01:50		12/13/2013	02:05
1212F020.D	ZZZZZZ	ZZZZZZ	12/13/2013	02:14		12/13/2013	02:29
1212F023.D	ZZZZZZ	ZZZZZZ	12/13/2013	03:25		12/13/2013	03:40
1212F024.D	ZZZZZZ	ZZZZZZ	12/13/2013	03:48		12/13/2013	04:03
1212F025.D	ZZZZZZ	ZZZZZZ	12/13/2013	04:12		12/13/2013	04:27
1212F026.D	ZZZZZZ	ZZZZZZ	12/13/2013	04:35		12/13/2013	04:50
1212F027.D	ZZZZZZ	ZZZZZZ	12/13/2013	04:59		12/13/2013	05:14
1212F028.D	Continuing Calibration Verification	KWG1313810-3	12/13/2013	05:23		12/13/2013	05:38
1212F029.D	Instrument Blank	KWG1313810-6	12/13/2013	05:47		12/13/2013	06:02

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/12/2013

Extraction Prep Log
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Extraction Lot: KWG1313811
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RMIIE-MW001-12-2013	K1313401-001	12/10/13	12/11/13	10ml	10ml	NA	
Batch QCDUP	KWG1313811-1	NA	NA	10ml	10ml	NA	
Method Blank	KWG1313811-3	NA	NA	10ml	10ml	NA	
Batch QC	K1313415-004	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1313811-2	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: 12/23/13 Title: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: 12/10/2013
Date Received: 12/11/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-MW001-12-2013
Lab Code: K1313401-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3535A
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0053	0.0026	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1221	ND	U	0.011	0.0011	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1232	ND	Ui	0.0053	0.0033	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1242	ND	Ui	0.0053	0.0020	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1248	ND	Ui	0.0053	0.0025	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1254	**0.0086**		0.0053	0.0011	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1260	**0.0041**	BJ	0.0053	0.0011	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1262	ND	U	0.0053	0.0011	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1268	ND	U	0.0053	0.0011	1	12/16/13	12/18/13	KWG1313837	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	86	39-140	12/18/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313837-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	**0.0022**	J	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1221	ND	U	0.010	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1232	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1242	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1248	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1254	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1260	**0.0075**		0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1262	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	
Aroclor 1268	ND	U	0.0050	0.00096	1	12/16/13	12/18/13	KWG1313837	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	86	39-140	12/18/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-MW001-12-2013	K1313401-001	86
Method Blank	KWG1313837-3	86
Lab Control Sample	KWG1313837-1	83
Duplicate Lab Control Sample	KWG1313837-2	89

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/16/2013
Date Analyzed: 12/18/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313837

	Lab Control Sample KWG1313837-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313837-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	0.166	0.200	83	0.162	0.200	81	60-103	3	30
Aroclor 1260	0.173	0.200	86	0.171	0.200	86	60-103	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/16/2013
Sample Matrix:	Water	**Date Analyzed:**	12/18/2013
		Time Analyzed:	20:26

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1313837-3	**File ID:**	J:\GC22\DATA\121813UL.B\1218F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313837

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313837-1	J:\GC22\DATA\121813UL.B\1218F005.D	12/18/13	19:41
Duplicate Lab Control Sample	KWG1313837-2	J:\GC22\DATA\121813UL.B\1218F006.D	12/18/13	20:03
RM11E-MW001-12-2013	K1313401-001	J:\GC22\DATA\121813UL.B\1218F009.D	12/18/13	21:12

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/16/2013
Sample Matrix:	Water	**Date Analyzed:**	12/18/2013
		Time Analyzed:	19:41

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC22.i
Lab Code:	KWG1313837-1	**File ID:**	J:\GC22\DATA\121813UL.B\1218F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313837

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313837-3	J:\GC22\DATA\121813UL.B\1218F007.D	12/18/13	20:26
RM11E-MW001-12-2013	K1313401-001	J:\GC22\DATA\121813UL.B\1218F009.D	12/18/13	21:12

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	7.97E+6	B	0.50	8.27E+6	C	5.0	8.08E+6	D	10	7.92E+6	E	20	7.42E+6
	F	50	7.26E+6												
Aroclor 1016 {1}	A	2.5	1.11E+5	B	5.0	1.12E+5	C	50	1.05E+5	D	100	1.04E+5	E	200	93000
	F	500	87600												
Aroclor 1016 {2}	A	2.5	3.79E+5	B	5.0	3.97E+5	C	50	3.68E+5	D	100	3.87E+5	E	200	3.42E+5
	F	500	3.67E+5												
Aroclor 1016 {3}	A	2.5	1.72E+5	B	5.0	1.93E+5	C	50	2.02E+5	D	100	1.93E+5	E	200	1.75E+5
	F	500	1.62E+5												
Aroclor 1016 {4}	A	2.5	2.08E+5	B	5.0	2.10E+5	C	50	2.15E+5	D	100	2.07E+5	E	200	1.90E+5
	F	500	1.78E+5												
Aroclor 1016 {5}	A	2.5	1.50E+5	B	5.0	1.54E+5	C	50	1.64E+5	D	100	1.59E+5	E	200	1.46E+5
	F	500	1.38E+5												
Aroclor 1260 {1}	A	2.5	2.52E+5	B	5.0	2.45E+5	C	50	2.56E+5	D	100	2.47E+5	E	200	2.39E+5
	F	500	2.33E+5												
Aroclor 1260 {2}	A	2.5	3.73E+5	B	5.0	3.70E+5	C	50	3.67E+5	D	100	3.58E+5	E	200	3.30E+5
	F	500	3.15E+5												
Aroclor 1260 {3}	A	2.5	3.82E+5	B	5.0	4.02E+5	C	50	4.07E+5	D	100	3.98E+5	E	200	3.71E+5
	F	500	3.58E+5												
Aroclor 1260 {4}	A	2.5	8.63E+5	B	5.0	8.81E+5	C	50	9.13E+5	D	100	9.25E+5	E	200	8.76E+5
	F	500	8.58E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.24E+5	B	5.0	6.87E+5	C	50	7.11E+5	D	100	7.04E+5	E	200	6.44E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	7.1		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	3.5		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	5.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	3.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	5.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL.b\0710F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	100	102000	103000	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	373000	382000	2	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	183000	186000	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	201000	212000	5	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	120	152000	179000	18	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	90	245000	221000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	352000	390000	11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	386000	426000	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	886000	965000	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	669000	711000	6	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F003.D
B	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F004.D
C	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F005.D
D	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F006.D
E	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F007.D
F	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F008.D
G	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F009.D
H	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F010.D
I	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F011.D
J	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F012.D
K	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F013.D
L	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F014.D
M	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F015.D
N	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F016.D
O	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F017.D
P	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F018.D
Q	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F019.D
R	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F020.D
S	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F021.D
T	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F022.D
U	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F023.D
V	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F024.D
W	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F025.D
X	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F026.D
Y	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F027.D
Z	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F028.D
AA	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F029.D
AB	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F030.D
AC	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F031.D
AD	\\cash1\acqudata\GC22\data\071013UL_r.b\0710F032.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	8.26E+6	B	0.50	8.50E+6	C	5.0	8.66E+6	D	10	8.79E+6	E	20	8.42E+6
	F	50	8.58E+6												
Aroclor 1016 {1}	A	2.5	1.60E+5	B	5.0	1.74E+5	C	50	1.85E+5	D	100	1.83E+5	E	200	1.72E+5
	F	500	1.68E+5												
Aroclor 1016 {2}	A	2.5	2.67E+5	B	5.0	2.62E+5	C	50	2.60E+5	D	100	2.64E+5	E	200	2.51E+5
	F	500	2.52E+5												
Aroclor 1016 {3}	A	2.5	3.64E+5	B	5.0	3.71E+5	C	50	3.80E+5	D	100	3.85E+5	E	200	3.77E+5
	F	500	4.04E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	3.16E+5	C	50	3.10E+5	D	100	3.19E+5	E	200	3.07E+5
	F	500	3.08E+5												
Aroclor 1016 {5}	A	2.5	2.29E+5	B	5.0	2.29E+5	C	50	2.29E+5	D	100	2.29E+5	E	200	2.19E+5
	F	500	2.22E+5												
Aroclor 1260 {1}	A	2.5	2.28E+5	B	5.0	2.37E+5	C	50	2.46E+5	D	100	2.40E+5	E	200	2.34E+5
	F	500	2.35E+5												
Aroclor 1260 {2}	A	2.5	4.95E+5	B	5.0	4.45E+5	C	50	4.27E+5	D	100	4.13E+5	E	200	4.13E+5
	F	500	4.01E+5												
Aroclor 1260 {3}	A	2.5	4.09E+5	B	5.0	4.22E+5	C	50	4.28E+5	D	100	4.32E+5	E	200	4.17E+5
	F	500	4.19E+5												
Aroclor 1260 {4}	A	2.5	9.51E+5	B	5.0	9.41E+5	C	50	1.02E+6	D	100	1.06E+6	E	200	1.03E+6
	F	500	1.07E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	6.15E+5	B	5.0	6.26E+5	C	50	6.44E+5	D	100	6.58E+5	E	200	6.36E+5
	F	500	6.46E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12611
Instrument ID: GC22.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	2.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	2.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	3.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	1.6		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	2.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	7.9		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	2.0		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 07/10/2013
Date Analyzed: 07/11/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12611
Units: ng/mL

File ID:
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F033.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F034.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F035.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F036.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F037.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F038.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F040.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F041.D
\\cash1\acqudata\GC22\data\071013UL_r.b\0710F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	120	174000	200000	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	100	259000	269000	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	100	380000	395000	4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	110	313000	331000	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	100	226000	233000	3	NA	± 100 %	AverageRF
Aroclor 1016	100	110	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	100	110	237000	266000	12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	120	432000	517000	20	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	120	421000	490000	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	120	1010000	1180000	17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	110	638000	696000	9	NA	± 100 %	AverageRF
Aroclor 1260	100	110	NA	NA	NA	15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1314121
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121813UL.B\1218F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	3.8	7820000	6010000	-23	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	65	102000	133000	30		NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	50	373000	375000	0		NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	53	183000	195000	7		NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	201000	200000	-1		NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	49	152000	148000	-2		NA	± 100 %	AverageRF
Aroclor 1016	50	53	NA	NA	NA		7	± 20 %	NA
Aroclor 1260 {1}	50	43	245000	213000	-13		NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	42	352000	299000	-15		NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	42	386000	321000	-17		NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	41	886000	719000	-19		NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	41	669000	548000	-18		NA	± 100 %	AverageRF
Aroclor 1260	50	42	NA	NA	NA		-16	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1314121
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121813UL_R.B\1218F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.6	8530000	7870000	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	49	174000	171000	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	46	259000	238000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	48	380000	367000	-3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	48	313000	301000	-4	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	50	226000	226000	0	NA	± 100 %	AverageRF
Aroclor 1016	50	48	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	50	51	237000	239000	1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	49	432000	423000	-2	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	50	421000	418000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	49	1010000	982000	-3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	48	638000	617000	-3	NA	± 100 %	AverageRF
Aroclor 1260	50	49	NA	NA	NA	-2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1314121
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121813UL.B\1218F012.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.0	7820000	6210000	-21	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	70	102000	142000	39		NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	51	373000	378000	1		NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	56	183000	204000	12		NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	53	201000	214000	6		NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	52	152000	156000	3		NA	± 100 %	AverageRF
Aroclor 1016	50	56	NA	NA	NA		12	± 20 %	NA
Aroclor 1260 {1}	50	43	245000	211000	-14		NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	42	352000	299000	-15		NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	41	386000	319000	-18		NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	41	886000	721000	-19		NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	41	669000	542000	-19		NA	± 100 %	AverageRF
Aroclor 1260	50	42	NA	NA	NA		-17	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 07/10/2013
Calibration ID: CAL12611
Analysis Lot: KWG1314121
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC22\DATA\121813UL_R.B\1218F012.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.2	8530000	8890000	4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	50	174000	175000	1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	47	259000	246000	-5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	50	380000	379000	0	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	50	313000	312000	0	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	52	226000	234000	4	NA	± 100 %	AverageRF
Aroclor 1016	50	50	NA	NA	NA	0	± 20 %	NA
Aroclor 1260 {1}	50	50	237000	238000	1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	50	432000	436000	1	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	51	421000	427000	1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	50	1010000	1010000	0	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	50	638000	643000	1	NA	± 100 %	AverageRF
Aroclor 1260	50	50	NA	NA	NA	1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1314121
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1218F003.D	Continuing Calibration Verification	KWG1314121-1	12/18/2013	18:55		12/18/2013	18:55
1218F004.D	Instrument Blank	KWG1314121-2	12/18/2013	19:18		12/18/2013	19:18
1218F005.D	Lab Control Sample	KWG1313837-1	12/18/2013	19:41		12/18/2013	19:41
1218F006.D	Duplicate Lab Control Sample	KWG1313837-2	12/18/2013	20:03		12/18/2013	20:03
1218F007.D	Method Blank	KWG1313837-3	12/18/2013	20:26		12/18/2013	20:26
1218F008.D	ZZZZZZ	ZZZZZZ	12/18/2013	20:49		12/18/2013	20:49
1218F009.D	RM11E-MW001-12-2013	K1313401-001	12/18/2013	21:12		12/18/2013	21:12
1218F010.D	ZZZZZZ	ZZZZZZ	12/18/2013	21:35		12/18/2013	21:35
1218F011.D	ZZZZZZ	ZZZZZZ	12/18/2013	21:57		12/18/2013	21:57
1218F012.D	Continuing Calibration Verification	KWG1314121-3	12/18/2013	22:20		12/18/2013	22:20
1218F013.D	Instrument Blank	KWG1314121-4	12/18/2013	22:43		12/18/2013	22:43

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/16/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A
Analysis Method: 8082A

Extraction Lot: KWG1313837
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-12-2013	K1313401-001	12/10/13	12/11/13	950mL	2mL	NA	
Method Blank	KWG1313837-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1313837-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1313837-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/2013
Sample Matrix:	Water	**Date Received:**	12/11/2013
		Date Extracted:	12/16/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW001-12-2013	**Units:**	ug/L
Lab Code:	K1313401-001	**Basis:**	NA
		Level:	Low
Extraction Method:	EPA 3535A		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	0.0053	0.0011	0.0086	0.011	24.5		1	12/18/13
Aroclor 1260	0.0053	0.0011	0.0041	0.0047	13.6	BJ	1	12/18/13

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/16/2013

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313837-3	**Basis:**	NA
		Level:	Low
Extraction Method:	EPA 3535A		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1016	0.0050	0.00096	0.0022	0.0022	0.0	J	1	12/18/13
Aroclor 1260	0.0050	0.00096	0.0075	0.0081	7.7		1	12/18/13

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
RMIIE-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013
Trip Blank	K1313401-002	12/10/2013	12/11/2013
RMIIE-MW001-12-2013MS	KWG1313881-1	12/10/2013	12/11/2013
RMIIE-MW001-12-2013DMS	KWG1313881-2	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher
Name: Holly Butcher
Date: 12-20-2013
Title: Scientist

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: 12/10/2013
Date Received: 12/11/2013

Volatile Organic Compounds

Sample Name: RMIIE-MW001-12-2013
Lab Code: K1313401-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/18/13	12/18/13	KWG1313881	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/18/13	12/18/13	KWG1313881	*
Carbon Disulfide	**0.13**	J	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/18/13	12/18/13	KWG1313881	
Chloroform	ND	U	0.50	0.072	1	12/18/13	12/18/13	KWG1313881	
Benzene	ND	U	0.50	0.062	1	12/18/13	12/18/13	KWG1313881	
Trichloroethene (TCE)	**0.20**	J	0.50	0.10	1	12/18/13	12/18/13	KWG1313881	
Toluene	**0.20**	J	0.50	0.054	1	12/18/13	12/18/13	KWG1313881	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/18/13	12/18/13	KWG1313881	
Chlorobenzene	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
Ethylbenzene	ND	U	0.50	0.050	1	12/18/13	12/18/13	KWG1313881	
m,p-Xylenes	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
o-Xylene	ND	U	0.50	0.074	1	12/18/13	12/18/13	KWG1313881	
Isopropylbenzene	ND	U	0.50	0.051	1	12/18/13	12/18/13	KWG1313881	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/18/13	12/18/13	KWG1313881	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	12/18/13	Acceptable
Toluene-d8	96	65-144	12/18/13	Acceptable
4-Bromofluorobenzene	92	68-117	12/18/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: 12/10/2013
Date Received: 12/11/2013

Volatile Organic Compounds

Sample Name: Trip Blank
Lab Code: K1313401-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/18/13	12/18/13	KWG1313881	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/18/13	12/18/13	KWG1313881	*
Carbon Disulfide	ND	U	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/18/13	12/18/13	KWG1313881	
Chloroform	ND	U	0.50	0.072	1	12/18/13	12/18/13	KWG1313881	
Benzene	ND	U	0.50	0.062	1	12/18/13	12/18/13	KWG1313881	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/18/13	12/18/13	KWG1313881	
Toluene	ND	U	0.50	0.054	1	12/18/13	12/18/13	KWG1313881	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/18/13	12/18/13	KWG1313881	
Chlorobenzene	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
Ethylbenzene	ND	U	0.50	0.050	1	12/18/13	12/18/13	KWG1313881	
m,p-Xylenes	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
o-Xylene	ND	U	0.50	0.074	1	12/18/13	12/18/13	KWG1313881	
Isopropylbenzene	ND	U	0.50	0.051	1	12/18/13	12/18/13	KWG1313881	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/18/13	12/18/13	KWG1313881	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	12/18/13	Acceptable
Toluene-d8	96	65-144	12/18/13	Acceptable
4-Bromofluorobenzene	93	68-117	12/18/13	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1313881-5	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	12/18/13	12/18/13	KWG1313881	
1,1-Dichloroethene	ND	U	0.50	0.080	1	12/18/13	12/18/13	KWG1313881	*
Carbon Disulfide	ND	U	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	*
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	12/18/13	12/18/13	KWG1313881	
Chloroform	**0.18**	J	0.50	0.072	1	12/18/13	12/18/13	KWG1313881	
Benzene	ND	U	0.50	0.062	1	12/18/13	12/18/13	KWG1313881	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	12/18/13	12/18/13	KWG1313881	
Toluene	ND	U	0.50	0.054	1	12/18/13	12/18/13	KWG1313881	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	12/18/13	12/18/13	KWG1313881	
Chlorobenzene	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
Ethylbenzene	ND	U	0.50	0.050	1	12/18/13	12/18/13	KWG1313881	
m,p-Xylenes	ND	U	0.50	0.11	1	12/18/13	12/18/13	KWG1313881	
o-Xylene	ND	U	0.50	0.074	1	12/18/13	12/18/13	KWG1313881	
Isopropylbenzene	ND	U	0.50	0.051	1	12/18/13	12/18/13	KWG1313881	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	12/18/13	12/18/13	KWG1313881	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	12/18/13	12/18/13	KWG1313881	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	12/18/13	12/18/13	KWG1313881	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	12/18/13	Acceptable
Toluene-d8	98	65-144	12/18/13	Acceptable
4-Bromofluorobenzene	91	68-117	12/18/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RMIIE-MW001-12-2013	K1313401-001	98	96	92
Trip Blank	K1313401-002	95	96	93
Method Blank	KWG1313881-5	99	98	91
RMIIE-MW001-12-2013MS	KWG1313881-1	100	100	95
RMIIE-MW001-12-2013DMS	KWG1313881-2	99	99	97
Lab Control Sample	KWG1313881-3	98	98	94
Duplicate Lab Control Sample	KWG1313881-4	99	98	97

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013
Time Analyzed: 09:06

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121813\1218F003.D
Instrument ID: MS27
Analysis Method: 8260C

Lab Code: KWG1313876-2
Analysis Lot: KWG1313876

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	768,081	6.43	307,999	9.60	261,841	11.93
	Upper Limit ==>	1,536,162	6.93	615,998	10.10	523,682	12.43
	Lower Limit ==>	384,041	5.93	154,000	9.10	130,921	11.43
	ICAL Result ==>	1,079,071	6.43	433,052	9.60	399,133	11.94
Associated Analyses							
Lab Control Sample	KWG1313881-3	764,876	6.42	305,352	9.60	255,744	11.93
Duplicate Lab Control Sample	KWG1313881-4	796,518	6.43	318,107	9.60	272,312	11.94
RMIIE-MW001-12-2013MS	KWG1313881-1	759,805	6.43	308,752	9.60	261,383	11.94
RMIIE-MW001-12-2013DMS	KWG1313881-2	789,434	6.43	314,052	9.60	261,299	11.94
Method Blank	KWG1313881-5	747,598	6.43	299,254	9.60	209,633	11.94
RMIIE-MW001-12-2013	K1313401-001	739,494	6.43	288,437	9.60	206,748	11.93
Trip Blank	K1313401-002	719,496	6.43	275,718	9.60	200,510	11.93

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/18/2013
Date Analyzed: 12/18/2013

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: RMIIE-MW001-12-2013
Lab Code: K1313401-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313881

		RMIIE-MW001-12-2013MS KWG1313881-1 Matrix Spike			RMIIE-MW001-12-2013DMS KWG1313881-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	ND	13.2	10.0	132	12.4	10.0	124	56-147	6	30
1,1-Dichloroethene	ND	13.7	10.0	137	12.7	10.0	127	59-171	8	30
Carbon Disulfide	0.13	26.5	20.0	132	24.6	20.0	122	52-156	8	30
cis-1,2-Dichloroethene	ND	11.0	10.0	110	10.1	10.0	101	61-139	9	30
Chloroform	ND	11.5	10.0	115	10.7	10.0	107	64-133	7	30
Benzene	ND	11.5	10.0	115	10.7	10.0	107	63-144	8	30
Trichloroethene (TCE)	0.20	12.1	10.0	119	11.3	10.0	111	53-139	7	30
Toluene	0.20	11.2	10.0	110	10.8	10.0	106	71-136	4	30
Tetrachloroethene (PCE)	ND	11.1	10.0	111	10.6	10.0	106	61-131	5	30
Chlorobenzene	ND	10.4	10.0	104	10.0	10.0	100	69-126	4	30
Ethylbenzene	ND	11.1	10.0	111	10.4	10.0	104	66-136	6	30
m,p-Xylenes	ND	21.9	20.0	109	20.8	20.0	104	67-135	5	30
o-Xylene	ND	10.3	10.0	103	10.0	10.0	100	67-127	3	30
Isopropylbenzene	ND	10.4	10.0	104	9.99	10.0	100	58-144	4	30
1,3,5-Trimethylbenzene	ND	11.7	10.0	117	11.5	10.0	115	60-136	2	30
1,2,4-Trimethylbenzene	ND	11.7	10.0	117	11.3	10.0	113	61-132	4	30
1,4-Dichlorobenzene	ND	10.3	10.0	103	10.1	10.0	101	72-121	2	30
1,2-Dichlorobenzene	ND	10.1	10.0	101	9.85	10.0	99	72-119	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/18/2013
Date Analyzed: 12/18/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313881

	Lab Control Sample KWG1313881-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313881-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	10.8	10.0	108	9.77	10.0	98	58-134	10	30
1,1-Dichloroethene	10.7	10.0	107	9.66	10.0	97	66-129	10	30
Carbon Disulfide	20.5	20.0	102	18.6	20.0	93	46-144	10	30
cis-1,2-Dichloroethene	9.10	10.0	91	8.44	10.0	84	71-118	8	30
Chloroform	9.90	10.0	99	9.27	10.0	93	70-129	7	30
Benzene	9.57	10.0	96	8.89	10.0	89	69-124	7	30
Trichloroethene (TCE)	9.94	10.0	99	9.03	10.0	90	67-128	10	30
Toluene	9.27	10.0	93	8.69	10.0	87	69-124	6	30
Tetrachloroethene (PCE)	9.11	10.0	91	8.45	10.0	85	62-126	8	30
Chlorobenzene	9.25	10.0	93	8.63	10.0	86	72-116	7	30
Ethylbenzene	9.30	10.0	93	8.61	10.0	86	67-121	8	30
m,p-Xylenes	18.8	20.0	94	17.2	20.0	86	69-121	9	30
o-Xylene	9.00	10.0	90	8.42	10.0	84	71-119	7	30
Isopropylbenzene	8.64	10.0	86	8.07	10.0	81	67-129	7	30
1,3,5-Trimethylbenzene	10.1	10.0	101	9.05	10.0	91	62-126	11	30
1,2,4-Trimethylbenzene	10.4	10.0	104	9.30	10.0	93	63-122	11	30
1,4-Dichlorobenzene	9.36	10.0	94	8.65	10.0	87	73-115	8	30
1,2-Dichlorobenzene	9.12	10.0	91	8.53	10.0	85	72-115	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/18/2013
Date Analyzed: 12/18/2013
Time Analyzed: 12:34

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1313881-5

Instrument ID: MS27
File ID: J:\MS27\DATA\121813\1218F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1313881

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313881-3	J:\MS27\DATA\121813\1218F004.D	12/18/13	09:48
Duplicate Lab Control Sample	KWG1313881-4	J:\MS27\DATA\121813\1218F005.D	12/18/13	10:16
RMIIE-MW001-12-2013MS	KWG1313881-1	J:\MS27\DATA\121813\1218F006.D	12/18/13	10:43
RMIIE-MW001-12-2013DMS	KWG1313881-2	J:\MS27\DATA\121813\1218F007.D	12/18/13	11:11
RMIIE-MW001-12-2013	K1313401-001	J:\MS27\DATA\121813\1218F014.D	12/18/13	14:24
Trip Blank	K1313401-002	J:\MS27\DATA\121813\1218F015.D	12/18/13	14:52

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/18/2013
Sample Matrix:	Water	**Date Analyzed:**	12/18/2013
		Time Analyzed:	09:48

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS27
Lab Code:	KWG1313881-3	**File ID:**	J:\MS27\DATA\121813\1218F004.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1313881

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RMIIE-MW001-12-2013MS	KWG1313881-1	J:\MS27\DATA\121813\1218F006.D	12/18/13	10:43
RMIIE-MW001-12-2013DMS	KWG1313881-2	J:\MS27\DATA\121813\1218F007.D	12/18/13	11:11
Method Blank	KWG1313881-5	J:\MS27\DATA\121813\1218F010.D	12/18/13	12:34
RMIIE-MW001-12-2013	K1313401-001	J:\MS27\DATA\121813\1218F014.D	12/18/13	14:24
Trip Blank	K1313401-002	J:\MS27\DATA\121813\1218F015.D	12/18/13	14:52

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013
Time Analyzed: 08:36

Tune Summary
Volatile Organic Compounds

File ID: J:\MS27\DATA\121813\1218F002.D
Instrument ID: MS27
Column:

Analysis Method: 8260C
Analysis Lot: KWG1313876

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.2	11080	PASS
75	95	30	60	50.1	30448	PASS
95	95	100	100	100.0	60781	PASS
96	95	5	9	7.5	4575	PASS
173	174	0	2	0.5	245	PASS
174	95	50	120	87.4	53106	PASS
175	174	5	9	6.9	3643	PASS
176	174	95	101	99.3	52736	PASS
177	176	5	9	6.6	3465	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1313876-2	J:\MS27\DATA\121813\1218F003.D	12/18/2013	09:06	
Lab Control Sample	KWG1313881-3	J:\MS27\DATA\121813\1218F004.D	12/18/2013	09:48	
Duplicate Lab Control Sample	KWG1313881-4	J:\MS27\DATA\121813\1218F005.D	12/18/2013	10:16	
RMIIE-MW001-12-2013MS	KWG1313881-1	J:\MS27\DATA\121813\1218F006.D	12/18/2013	10:43	
RMIIE-MW001-12-2013DMS	KWG1313881-2	J:\MS27\DATA\121813\1218F007.D	12/18/2013	11:11	
Method Blank	KWG1313881-5	J:\MS27\DATA\121813\1218F010.D	12/18/2013	12:34	
RMIIE-MW001-12-2013	K1313401-001	J:\MS27\DATA\121813\1218F014.D	12/18/2013	14:24	
Trip Blank	K1313401-002	J:\MS27\DATA\121813\1218F015.D	12/18/2013	14:52	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS27\DATA\100713\1007F018.D	G	J:\MS27\DATA\100713\1007F024.D
B	J:\MS27\DATA\100713\1007F019.D	H	J:\MS27\DATA\100713\1007F025.D
C	J:\MS27\DATA\100713\1007F020.D	I	J:\MS27\DATA\100713\1007F026.D
D	J:\MS27\DATA\100713\1007F021.D	J	J:\MS27\DATA\100713\1007F027.D
E	J:\MS27\DATA\100713\1007F022.D	K	J:\MS27\DATA\100713\1007F028.D
F	J:\MS27\DATA\100713\1007F023.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroethane	A	0.10	0.199	B	0.20	0.159	C	0.50	0.180	D	1.0	0.169	E	2.0	0.167
	F	5.0	0.167	G	10	0.155	H	20	0.165	I	40	0.172	J	60	0.175
	K	80	0.168												
1,1-Dichloroethene	A	0.10	0.206	B	0.20	0.158	C	0.50	0.186	D	1.0	0.163	E	2.0	0.186
	F	5.0	0.176	G	10	0.168	H	20	0.185	I	40	0.197	J	60	0.203
	K	80	0.197												
Carbon Disulfide	A	0.10	0.857	B	0.20	0.692	C	0.50	0.686	D	1.0	0.653	E	2.0	0.680
	F	5.0	0.678	G	10	0.641	H	20	0.717	I	40	0.758	J	60	0.791
	K	80	0.773												
cis-1,2-Dichloroethene	A	0.10	0.320	B	0.20	0.286	C	0.50	0.290	D	1.0	0.287	E	2.0	0.276
	F	5.0	0.302	G	10	0.278	H	20	0.291	I	40	0.296	J	60	0.303
	K	80	0.289												
Chloroform	A	0.10	0.497	B	0.20	0.452	C	0.50	0.460	D	1.0	0.461	E	2.0	0.455
	F	5.0	0.480	G	10	0.440	H	20	0.471	I	40	0.478	J	60	0.484
	K	80	0.466												
Benzene	A	0.10	1.14	B	0.20	0.968	C	0.50	1.03	D	1.0	0.993	E	2.0	0.993
	F	5.0	1.05	G	10	0.968	H	20	1.03	I	40	1.06	J	60	1.08
	K	80	1.05												
Trichloroethene (TCE)	A	0.10	0.295	B	0.20	0.225	C	0.50	0.250	D	1.0	0.253	E	2.0	0.255
	F	5.0	0.263	G	10	0.245	H	20	0.268	I	40	0.278	J	60	0.287
	K	80	0.277												
Toluene	A	0.10	0.773	B	0.20	0.584	C	0.50	0.643	D	1.0	0.632	E	2.0	0.604
	F	5.0	0.652	G	10	0.599	H	20	0.646	I	40	0.667	J	60	0.682
	K	80	0.662												
Tetrachloroethene (PCE)	A	0.10	0.552	B	0.20	0.568	C	0.50	0.529	D	1.0	0.498	E	2.0	0.539
	F	5.0	0.534	G	10	0.499	H	20	0.551	I	40	0.579	J	60	0.595
	K	80	0.574												
Chlorobenzene				B	0.20	2.02	C	0.50	1.87	D	1.0	1.77	E	2.0	1.83
	F	5.0	1.99	G	10	1.78	H	20	1.89	I	40	1.91	J	60	1.93
	K	80	1.86												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Ethylbenzene	A	0.10	1.12	B	0.20	0.988	C	0.50	0.860	D	1.0	0.871	E	2.0	0.852
	F	5.0	0.933	G	10	0.883	H	20	0.945	I	40	0.987	J	60	0.998
	K	80	0.967												
m,p-Xylenes	A	0.20	1.39	B	0.40	1.10	C	1.0	1.05	D	2.0	1.08	E	4.0	1.09
	F	10	1.16	G	20	1.08	H	40	1.17	I	80	1.22	J	120	1.23
o-Xylene	A	0.10	1.56	B	0.20	1.11	C	0.50	1.14	D	1.0	1.04	E	2.0	1.07
	F	5.0	1.18	G	10	1.09	H	20	1.18	I	40	1.20	J	60	1.20
	K	80	1.16												
Isopropylbenzene	A	0.10	3.59	B	0.20	2.82	C	0.50	2.55	D	1.0	2.59	E	2.0	2.64
	F	5.0	2.80	G	10	2.64	H	20	2.90	I	40	3.02	J	60	3.06
	K	80	2.94												
1,3,5-Trimethylbenzene	A	0.10	3.68	B	0.20	2.57	C	0.50	2.32	D	1.0	2.40	E	2.0	2.43
	F	5.0	2.67	G	10	2.44	H	20	2.58	I	40	2.71	J	60	2.73
	K	80	2.66												
1,2,4-Trimethylbenzene				B	0.20	2.76	C	0.50	2.44	D	1.0	2.42	E	2.0	2.51
	F	5.0	2.74	G	10	2.55	H	20	2.66	I	40	2.77	J	60	2.79
	K	80	2.71												
1,4-Dichlorobenzene				B	0.20	2.16	C	0.50	1.66	D	1.0	1.55	E	2.0	1.57
	F	5.0	1.75	G	10	1.56	H	20	1.61	I	40	1.63	J	60	1.63
	K	80	1.57												
1,2-Dichlorobenzene				B	0.20	2.04	C	0.50	1.52	D	1.0	1.51	E	2.0	1.51
	F	5.0	1.69	G	10	1.50	H	20	1.52	I	40	1.54	J	60	1.52
	K	80	1.46												
Dibromofluoromethane	A	10	0.261	B	10	0.261	C	10	0.263	D	10	0.264	E	10	0.267
	F	10	0.270	G	10	0.269	H	10	0.271	I	10	0.274	J	10	0.270
	K	10	0.266												
Toluene-d8	A	10	0.956	B	10	0.956	C	10	0.959	D	10	0.983	E	10	0.988
	F	10	0.977	G	10	0.972	H	10	0.977	I	10	0.982	J	10	1.01
	K	10	0.990												
4-Bromofluorobenzene	A	10	0.868	B	10	0.882	C	10	0.875	D	10	0.876	E	10	0.891
	F	10	0.882	G	10	0.896	H	10	0.924	I	10	0.907	J	10	0.905
	K	10	0.882												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/07/2013

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL12827
Instrument ID: MS27

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Chloroethane	MS	AverageRF	% RSD	6.9		≤ 20	0.171		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.8		≤ 20	0.184		0.100
Carbon Disulfide	MS	AverageRF	% RSD	9.2		≤ 20	0.720		0.100
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.3		≤ 20	0.292		0.100
Chloroform	MS	AverageRF	% RSD	3.5		≤ 20	0.467		0.200
Benzene	MS	AverageRF	% RSD	5.0		≤ 20	1.03		0.500
Trichloroethene (TCE)	MS	AverageRF	% RSD	7.8		≤ 20	0.263		0.200
Toluene	MS	AverageRF	% RSD	7.8		≤ 20	0.649		0.400
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.547		0.200
Chlorobenzene	MS	AverageRF	% RSD	4.3		≤ 20	1.88		0.500
Ethylbenzene	MS	AverageRF	% RSD	8.4		≤ 20	0.946		0.100
m,p-Xylenes	MS	AverageRF	% RSD	8.9		≤ 20	1.16		0.100
o-Xylene	MS	AverageRF	% RSD	11.8		≤ 20	1.18		0.300
Isopropylbenzene	MS	AverageRF	% RSD	10.4		≤ 20	2.87		0.100
1,3,5-Trimethylbenzene	MS	AverageRF	% RSD	13.9		≤ 20	2.65		0.01
1,2,4-Trimethylbenzene	MS	AverageRF	% RSD	5.4		≤ 20	2.63		0.01
1,4-Dichlorobenzene	MS	AverageRF	% RSD	10.9		≤ 20	1.67		0.500
1,2-Dichlorobenzene	MS	AverageRF	% RSD	10.8		≤ 20	1.58		0.400
Dibromofluoromethane	SURR	AverageRF	% RSD	1.6		≤ 20	0.267		0.01
Toluene-d8	SURR	AverageRF	% RSD	1.6		≤ 20	0.977		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	1.9		≤ 20	0.890		0.01

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† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 10/07/2013
Date Analyzed: 10/07/2013

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL12827
Units: PPB

File ID: J:\MS27\DATA\100713\1007F032.D
J:\MS27\DATA\100713\1007F035.D
J:\MS27\DATA\100813\1008F003.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	8.5	0.171	0.145	-15	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.184	0.186	1	NA	± 30 %	AverageRF
Carbon Disulfide	20	17	0.720	0.618	-14	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.3	0.292	0.272	-7	NA	± 30 %	AverageRF
Chloroform	10	9.4	0.467	0.441	-6	NA	± 30 %	AverageRF
Benzene	10	9.3	1.03	0.964	-7	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	9.5	0.263	0.250	-5	NA	± 30 %	AverageRF
Toluene	10	9.3	0.649	0.604	-7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.0	0.547	0.495	-10	NA	± 30 %	AverageRF
Chlorobenzene	10	9.6	1.88	1.80	-4	NA	± 30 %	AverageRF
Ethylbenzene	10	9.1	0.946	0.864	-9	NA	± 30 %	AverageRF
m,p-Xylenes	20	19	1.16	1.08	-7	NA	± 30 %	AverageRF
o-Xylene	10	9.2	1.18	1.08	-8	NA	± 30 %	AverageRF
Isopropylbenzene	10	9.2	2.87	2.63	-8	NA	± 30 %	AverageRF
1,3,5-Trimethylbenzene	10	9.1	2.65	2.40	-9	NA	± 30 %	AverageRF
1,2,4-Trimethylbenzene	10	9.3	2.63	2.44	-7	NA	± 30 %	AverageRF
1,4-Dichlorobenzene	10	9.2	1.67	1.54	-8	NA	± 30 %	AverageRF
1,2-Dichlorobenzene	10	9.1	1.58	1.44	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/18/2013

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/07/2013
Calibration ID: CAL12827
Analysis Lot: KWG1313876
Units: PPB

File ID: J:\MS27\DATA\121813\1218F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Chloroethane	10	8.8	0.100	0.171	0.150	-12		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	7.5	0.100	0.184	0.138	-25	*	NA	± 20 %	AverageRF
Carbon Disulfide	10	6.5	0.100	0.720	0.471	-35	*	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	8.2	0.100	0.292	0.240	-18		NA	± 20 %	AverageRF
Chloroform	10	9.2	0.200	0.467	0.429	-8		NA	± 20 %	AverageRF
Benzene	10	8.5	0.500	1.03	0.874	-15		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	8.9	0.200	0.263	0.233	-11		NA	± 20 %	AverageRF
Toluene	10	8.9	0.400	0.649	0.580	-11		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.7	0.200	0.547	0.474	-13		NA	± 20 %	AverageRF
Chlorobenzene	10	9.4	0.500	1.88	1.77	-6		NA	± 20 %	AverageRF
Ethylbenzene	10	9.3	0.100	0.946	0.883	-7		NA	± 20 %	AverageRF
m,p-Xylenes	20	19	0.100	1.16	1.10	-5		NA	± 20 %	AverageRF
o-Xylene	10	9.3	0.300	1.18	1.09	-7		NA	± 20 %	AverageRF
Isopropylbenzene	10	9.7	0.100	2.87	2.78	-3		NA	± 20 %	AverageRF
1,3,5-Trimethylbenzene	10	10	0.01	2.65	2.78	5		NA	± 20 %	AverageRF
1,2,4-Trimethylbenzene	10	11	0.01	2.63	2.82	7		NA	± 20 %	AverageRF
1,4-Dichlorobenzene	10	9.8	0.500	1.67	1.64	-2		NA	± 20 %	AverageRF
1,2-Dichlorobenzene	10	9.7	0.400	1.58	1.54	-3		NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.8	0.01	0.267	0.260	-3		NA	± 20 %	AverageRF
Toluene-d8	10	9.8	0.01	0.977	0.961	-2		NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.4	0.01	0.890	0.839	-6		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1313876
Instrument ID: MS27

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1218F002.D	GC/MS Tuning - Generic	KWG1313876-1	12/18/2013	08:36		12/18/2013	08:53
1218F003.D	Continuing Calibration Verification	KWG1313876-2	12/18/2013	09:06		12/18/2013	09:23
1218F004.D	Lab Control Sample	KWG1313881-3	12/18/2013	09:48		12/18/2013	10:05
1218F005.D	Duplicate Lab Control Sample	KWG1313881-4	12/18/2013	10:16		12/18/2013	10:33
1218F006.D	RMIIE-MW001-12-2013MS	KWG1313881-1	12/18/2013	10:43		12/18/2013	11:00
1218F007.D	RMIIE-MW001-12-2013DMS	KWG1313881-2	12/18/2013	11:11		12/18/2013	11:28
1218F010.D	Method Blank	KWG1313881-5	12/18/2013	12:34		12/18/2013	12:51
1218F014.D	RMIIE-MW001-12-2013	K1313401-001	12/18/2013	14:24		12/18/2013	14:41
1218F015.D	Trip Blank	K1313401-002	12/18/2013	14:52		12/18/2013	15:09
1218F016.D	ZZZZZZ	ZZZZZZ	12/18/2013	15:20		12/18/2013	15:37
1218F017.D	ZZZZZZ	ZZZZZZ	12/18/2013	15:47		12/18/2013	16:04
1218F018.D	ZZZZZZ	ZZZZZZ	12/18/2013	16:15		12/18/2013	16:32
1218F019.D	ZZZZZZ	ZZZZZZ	12/18/2013	16:42		12/18/2013	16:59
1218F020.D	ZZZZZZ	ZZZZZZ	12/18/2013	17:10		12/18/2013	17:27
1218F021.D	ZZZZZZ	ZZZZZZ	12/18/2013	17:38		12/18/2013	17:55

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/18/2013

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1313881
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RMIIE-MW001-12-2013	K1313401-001	12/10/13	12/11/13	10ml	10ml	NA	
Trip Blank	K1313401-002	12/10/13	12/11/13	10ml	10ml	NA	
Method Blank	KWG1313881-5	NA	NA	10ml	10ml	NA	
RMIIE-MW001-12-2013MS	KWG1313881-1	12/10/13	12/11/13	10ml	10ml	NA	
RMIIE-MW001-12-2013DMS	KWG1313881-2	12/10/13	12/11/13	10ml	10ml	NA	
Lab Control Sample	KWG1313881-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1313881-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RMIIE-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dagen

Date: 1/3/14 Title: Sum Supervisor

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: 12/10/2013
Date Received: 12/11/2013

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RMIIE-MW001-12-2013
Lab Code: K1313401-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.21	0.023	1	12/16/13	12/27/13	KWG1313776	
2-Methylnaphthalene	ND	U	0.21	0.029	1	12/16/13	12/27/13	KWG1313776	*
Acenaphthylene	ND	U	0.21	0.016	1	12/16/13	12/27/13	KWG1313776	
Acenaphthene	ND	U	0.21	0.028	1	12/16/13	12/27/13	KWG1313776	
Fluorene	ND	U	0.21	0.029	1	12/16/13	12/27/13	KWG1313776	
Pentachlorophenol	ND	U	1.1	0.36	1	12/16/13	12/27/13	KWG1313776	
Phenanthrene	ND	U	0.21	0.023	1	12/16/13	12/27/13	KWG1313776	
Anthracene	ND	U	0.21	0.026	1	12/16/13	12/27/13	KWG1313776	
Fluoranthene	ND	U	0.21	0.021	1	12/16/13	12/27/13	KWG1313776	
Pyrene	ND	U	0.21	0.020	1	12/16/13	12/27/13	KWG1313776	
Benz(a)anthracene	ND	U	0.21	0.019	1	12/16/13	12/27/13	KWG1313776	
Chrysene	ND	U	0.21	0.030	1	12/16/13	12/27/13	KWG1313776	
Bis(2-ethylhexyl) Phthalate	**0.68**	J	1.1	0.14	1	12/16/13	12/27/13	KWG1313776	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	12/16/13	12/27/13	KWG1313776	
Benzo(k)fluoranthene	ND	U	0.21	0.026	1	12/16/13	12/27/13	KWG1313776	
Benzo(a)pyrene	ND	U	0.21	0.033	1	12/16/13	12/27/13	KWG1313776	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	12/16/13	12/27/13	KWG1313776	
Dibenz(a,h)anthracene	**0.19**	J	0.21	0.018	1	12/16/13	12/27/13	KWG1313776	
Benzo(g,h,i)perylene	**0.14**	J	0.21	0.020	1	12/16/13	12/27/13	KWG1313776	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	60	26-110	12/27/13	Acceptable
2-Fluorobiphenyl	61	31-94	12/27/13	Acceptable
2,4,6-Tribromophenol	72	23-127	12/27/13	Acceptable
Terphenyl-d14	74	40-127	12/27/13	Acceptable

Comments:

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1313776-5

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270D

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.19	0.022	1	12/16/13	12/23/13	KWG1313776	
2-Methylnaphthalene	ND	U	0.19	0.027	1	12/16/13	12/23/13	KWG1313776	
Acenaphthylene	ND	U	0.19	0.015	1	12/16/13	12/23/13	KWG1313776	
Acenaphthene	ND	U	0.19	0.026	1	12/16/13	12/23/13	KWG1313776	
Fluorene	ND	U	0.19	0.027	1	12/16/13	12/23/13	KWG1313776	
Pentachlorophenol	ND	U	0.95	0.34	1	12/16/13	12/23/13	KWG1313776	
Phenanthrene	ND	U	0.19	0.022	1	12/16/13	12/23/13	KWG1313776	
Anthracene	ND	U	0.19	0.024	1	12/16/13	12/23/13	KWG1313776	
Fluoranthene	ND	U	0.19	0.020	1	12/16/13	12/23/13	KWG1313776	
Pyrene	ND	U	0.19	0.019	1	12/16/13	12/23/13	KWG1313776	
Benz(a)anthracene	ND	U	0.19	0.018	1	12/16/13	12/23/13	KWG1313776	
Chrysene	ND	U	0.19	0.028	1	12/16/13	12/23/13	KWG1313776	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	12/16/13	12/23/13	KWG1313776	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	12/16/13	12/23/13	KWG1313776	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	12/16/13	12/23/13	KWG1313776	
Benzo(a)pyrene	ND	U	0.19	0.031	1	12/16/13	12/23/13	KWG1313776	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	12/16/13	12/23/13	KWG1313776	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	12/16/13	12/23/13	KWG1313776	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	12/16/13	12/23/13	KWG1313776	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	84	26-110	12/23/13	Acceptable
2-Fluorobiphenyl	76	31-94	12/23/13	Acceptable
2,4,6-Tribromophenol	86	23-127	12/23/13	Acceptable
Terphenyl-d14	100	40-127	12/23/13	Acceptable

Comments:

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RMIIE-MW001-12-2013	K1313401-001	60	61	72	74
Method Blank	KWG1313776-5	84	76	86	100
Lab Control Sample	KWG1313776-3	83	79	96	84
Duplicate Lab Control Sample	KWG1313776-4	85	78	90	85

Surrogate Recovery Control Limits (%)

Sur1 =	Nitrobenzene-d5	26-110
Sur2 =	2-Fluorobiphenyl	31-94
Sur3 =	2,4,6-Tribromophenol	23-127
Sur4 =	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/23/2013
Time Analyzed: 11:10

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\122313\1223F005.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1314023-2
Analysis Lot: KWG1314023

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	95,789	10.63	60,853	13.48	124,262	15.91
	Upper Limit ==>	191,578	11.13	121,706	13.98	248,524	16.41
	Lower Limit ==>	47,895	10.13	30,427	12.98	62,131	15.41
	ICAL Result ==>	102,160	10.63	64,625	13.48	128,587	15.91
Associated Analyses							
Method Blank	KWG1313776-5	79,744	10.63	48,934	13.47	92,402	15.91
Lab Control Sample	KWG1313776-3	85,141	10.63	54,305	13.46	105,011	15.90
Duplicate Lab Control Sample	KWG1313776-4	83,177	10.63	54,273	13.46	105,684	15.90

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/23/2013
Time Analyzed: 11:10

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\122313\1223F005.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1314023-2
Analysis Lot: KWG1314023

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	126,499	20.47	98,934	24.15
	Upper Limit ==>	252,998	20.97	197,868	24.65
	Lower Limit ==>	63,250	19.97	49,467	23.65
	ICAL Result ==>	121,280	20.48	97,389	24.16
Associated Analyses					
Method Blank	KWG1313776-5	88,875	20.44	77,271	24.14
Lab Control Sample	KWG1313776-3	103,173	20.45	84,324	24.13
Duplicate Lab Control Sample	KWG1313776-4	104,263	20.45	87,530	24.13

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	12/27/2013
		Time Analyzed:	11:17

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\122713\1227F006.D	**Lab Code:**	KWG1314080-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1314080
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	117,090	10.66	56,175	13.50	143,024	15.94
	Upper Limit ==>	234,180	11.16	112,350	14.00	286,048	16.44
	Lower Limit ==>	58,545	10.16	28,088	13.00	71,512	15.44
	ICAL Result ==>	102,160	10.63	64,625	13.48	128,587	15.91
Associated Analyses							
RMIIE-MW001-12-2013	K1313401-001	68,911	10.65	42,522	13.50	107,706	15.94

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/27/2013
Time Analyzed: 11:17

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\122713\1227F006.D
Instrument ID: MS06
Analysis Method: 8270D

Lab Code: KWG1314080-2
Analysis Lot: KWG1314080

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	154,336	20.51	116,075	24.20
	Upper Limit ==>	308,672	21.01	232,150	24.70
	Lower Limit ==>	77,168	20.01	58,038	23.70
	ICAL Result ==>	121,280	20.48	97,389	24.16
Associated Analyses					
RMIIE-MW001-12-2013	K1313401-001	102,460	20.51	80,702	24.20

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/16/2013
Date Analyzed: 12/23/2013

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1313776

	Lab Control Sample KWG1313776-3 Lab Control Spike			Duplicate Lab Control Sample KWG1313776-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.24	5.00	65	3.32	5.00	66	43-98	3	30
2-Methylnaphthalene	3.14	5.00	63	3.29	5.00	66	38-102	5	30
Acenaphthylene	3.73	5.00	75	3.86	5.00	77	52-108	3	30
Acenaphthene	3.74	5.00	75	3.62	5.00	72	48-102	3	30
Fluorene	3.73	5.00	75	3.89	5.00	78	51-106	4	30
Pentachlorophenol	4.21	5.00	84	4.22	5.00	84	33-106	0	30
Phenanthrene	3.80	5.00	76	4.01	5.00	80	56-103	5	30
Anthracene	3.83	5.00	77	3.99	5.00	80	55-103	4	30
Fluoranthene	4.03	5.00	81	4.23	5.00	85	56-110	5	30
Pyrene	3.84	5.00	77	4.07	5.00	81	59-109	6	30
Benz(a)anthracene	3.88	5.00	78	4.03	5.00	81	61-104	4	30
Chrysene	3.99	5.00	80	4.24	5.00	85	61-107	6	30
Bis(2-ethylhexyl) Phthalate	4.11	5.00	82	4.35	5.00	87	61-118	5	30
Benzo(b)fluoranthene	3.88	5.00	78	3.85	5.00	77	62-107	1	30
Benzo(k)fluoranthene	3.96	5.00	79	3.99	5.00	80	63-108	1	30
Benzo(a)pyrene	3.78	5.00	76	3.85	5.00	77	56-105	2	30
Indeno(1,2,3-cd)pyrene	3.97	5.00	79	4.08	5.00	82	63-108	3	30
Dibenz(a,h)anthracene	4.21	5.00	84	4.37	5.00	87	62-108	4	30
Benzo(g,h,i)perylene	4.17	5.00	83	4.29	5.00	86	62-108	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/16/2013
Sample Matrix:	Water	**Date Analyzed:**	12/23/2013
		Time Analyzed:	12:01

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1313776-5	**File ID:**	J:\MS06\DATA\122313\1223F006.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313776

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313776-3	J:\MS06\DATA\122313\1223F007.D	12/23/13	12:39
Duplicate Lab Control Sample	KWG1313776-4	J:\MS06\DATA\122313\1223F008.D	12/23/13	13:17
RMIIE-MW001-12-2013	K1313401-001	J:\MS06\DATA\122713\1227F008.D	12/27/13	12:40

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/16/2013
Sample Matrix:	Water	**Date Analyzed:**	12/23/2013
		Time Analyzed:	12:39

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1313776-3	**File ID:**	J:\MS06\DATA\122313\1223F007.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1313776

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313776-5	J:\MS06\DATA\122313\1223F006.D	12/23/13	12:01
RMIIE-MW001-12-2013	K1313401-001	J:\MS06\DATA\122713\1227F008.D	12/27/13	12:40

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/23/2013
Time Analyzed: 10:09

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\122313\1223F004.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1314023

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	62.7	37367	PASS
68	69	0	2	0.6	179	PASS
69	198	0	100	46.3	27556	PASS
70	69	0	2	0.4	104	PASS
127	198	25	75	46.1	27432	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	59560	PASS
199	198	5	9	7.2	4266	PASS
275	198	10	30	24.4	14520	PASS
365	198	1	100	6.0	3577	PASS
441	443	0	100	53.9	3417	PASS
442	198	40	110	53.7	32011	PASS
443	442	15	24	19.8	6335	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1314023-2	J:\MS06\DATA\122313\1223F005.D	12/23/2013	11:10	
Method Blank	KWG1313776-5	J:\MS06\DATA\122313\1223F006.D	12/23/2013	12:01	
Lab Control Sample	KWG1313776-3	J:\MS06\DATA\122313\1223F007.D	12/23/2013	12:39	
Duplicate Lab Control Sample	KWG1313776-4	J:\MS06\DATA\122313\1223F008.D	12/23/2013	13:17	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/27/2013
Time Analyzed: 09:24

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\122713\1227F003.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1314080

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	60.7	34428	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	51.4	29180	PASS
70	69	0	2	0.5	153	PASS
127	198	25	75	51.5	29252	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	56762	PASS
199	198	5	9	6.8	3853	PASS
275	198	10	30	22.4	12709	PASS
365	198	1	100	6.0	3407	PASS
441	443	0	100	86.4	4804	PASS
442	198	40	110	60.6	34377	PASS
443	442	15	24	16.2	5561	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1314080-2	J:\MS06\DATA\122713\1227F006.D	12/27/2013	11:17	
RMIIE-MW001-12-2013	K1313401-001	J:\MS06\DATA\122713\1227F008.D	12/27/2013	12:40	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 12/19/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12994
Instrument ID: MS06

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\121913\1219F006.D	G	J:\MS06\DATA\121913\1219F012.D
B	J:\MS06\DATA\121913\1219F007.D	H	J:\MS06\DATA\121913\1219F013.D
C	J:\MS06\DATA\121913\1219F008.D	I	J:\MS06\DATA\121913\1219F014.D
D	J:\MS06\DATA\121913\1219F009.D	J	J:\MS06\DATA\121913\1219F015.D
E	J:\MS06\DATA\121913\1219F010.D		
F	J:\MS06\DATA\121913\1219F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.09	B	100	1.11	C	200	1.09	D	500	1.18	E	1000	1.25
	F	2000	1.17	G	3000	1.22	H	5000	1.28	I	7000	1.39	J	10000	1.47
2-Methylnaphthalene				B	100	0.553	C	200	0.620	D	500	0.668	E	1000	0.710
	F	2000	0.697	G	3000	0.724	H	5000	0.811	I	7000	0.861	J	10000	0.902
Acenaphthylene	A	50	1.61	B	100	1.74	C	200	1.79	D	500	1.89	E	1000	2.11
	F	2000	2.02	G	3000	2.12	H	5000	2.36	I	7000	2.45	J	10000	2.30
Acenaphthene	A	50	0.868	B	100	1.09	C	200	1.12	D	500	1.13	E	1000	1.18
	F	2000	1.16	G	3000	1.23	H	5000	1.36	I	7000	1.41	J	10000	1.37
Fluorene	A	50	1.21	B	100	1.27	C	200	1.46	D	500	1.47	E	1000	1.61
	F	2000	1.59	G	3000	1.75	H	5000	1.97	I	7000	2.05	J	10000	2.07
Pentachlorophenol										D	500	0.0973	E	1000	0.148
	F	2000	0.159	G	3000	0.175	H	5000	0.209	I	7000	0.246	J	10000	0.276
Phenanthrene	A	50	1.14	B	100	1.09	C	200	1.10	D	500	1.13	E	1000	1.18
	F	2000	1.19	G	3000	1.25	H	5000	1.44	I	7000	1.55			
Anthracene	A	50	1.13	B	100	1.14	C	200	0.991	D	500	1.21	E	1000	1.18
	F	2000	1.25	G	3000	1.32	H	5000	1.49	I	7000	1.60			
Fluoranthene	A	50	1.07	B	100	1.18	C	200	1.26	D	500	1.26	E	1000	1.30
	F	2000	1.37	G	3000	1.42	H	5000	1.63	I	7000	1.68			
Pyrene	A	50	1.48	B	100	1.41	C	200	1.37	D	500	1.44	E	1000	1.47
	F	2000	1.47	G	3000	1.63	H	5000	1.67	I	7000	1.70	J	10000	1.57
Benz(a)anthracene	A	50	1.15	B	100	1.11	C	200	1.01	D	500	1.12	E	1000	1.21
	F	2000	1.27	G	3000	1.43	H	5000	1.48	I	7000	1.54	J	10000	1.47
Chrysene	A	50	0.900	B	100	1.01	C	200	1.00	D	500	1.05	E	1000	1.09
	F	2000	1.11	G	3000	1.25	H	5000	1.21	I	7000	1.20	J	10000	1.10
Bis(2-ethylhexyl) Phthalate				B	100	1.40	C	200	1.15	D	500	1.33	E	1000	1.41
	F	2000	1.30	G	3000	1.48	H	5000	1.45	I	7000	1.42	J	10000	1.31
Benzo(b)fluoranthene	A	50	1.11	B	100	1.10	C	200	1.10	D	500	1.12	E	1000	1.15
	F	2000	1.32	G	3000	1.32	H	5000	1.41	I	7000	1.50			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 12/19/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12994
Instrument ID: MS06

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(k)fluoranthene	A	50	0.991	B	100	1.11	C	200	1.21	D	500	1.15	E	1000	1.17
	F	2000	1.31	G	3000	1.33	H	5000	1.42	I	7000	1.52	J	10000	1.45
Benzo(a)pyrene	A	50	0.974	B	100	1.07	C	200	1.04	D	500	1.10	E	1000	1.11
	F	2000	1.24	G	3000	1.27	H	5000	1.33	I	7000	1.41	J	10000	1.45
Indeno(1,2,3-cd)pyrene				B	100	0.963	C	200	0.762	D	500	0.862	E	1000	0.936
	F	2000	0.999	G	3000	1.03	H	5000	1.10	I	7000	1.18	J	10000	1.27
Dibenz(a,h)anthracene				B	100	0.647	C	200	0.737	D	500	0.799	E	1000	0.817
	F	2000	0.959	G	3000	0.952	H	5000	1.13	I	7000	1.26			
Benzo(g,h,i)perylene	A	50	0.798	B	100	0.821	C	200	0.841	D	500	0.952	E	1000	0.931
	F	2000	1.05	G	3000	1.05	H	5000	1.14	I	7000	1.22	J	10000	1.28
Nitrobenzene-d5				B	100	1.87	C	200	1.65	D	500	1.47	E	1000	1.69
	F	2000	1.55	G	3000	1.59	H	5000	1.66	I	7000	1.65	J	10000	1.73
2-Fluorobiphenyl				B	100	1.35	C	200	1.42	D	500	1.59	E	1000	1.76
	F	2000	1.60	G	3000	1.79	H	5000	1.98	I	7000	2.03	J	10000	2.00
2,4,6-Tribromophenol				B	100	0.193	C	200	0.187	D	500	0.196	E	1000	0.207
	F	2000	0.191	G	3000	0.212	H	5000	0.246	I	7000	0.257	J	10000	0.280
Terphenyl-d14				B	100	0.860	C	200	0.807	D	500	0.915	E	1000	0.892
	F	2000	0.900	G	3000	1.03	H	5000	1.02	I	7000	1.07	J	10000	1.02

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 12/19/2013

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL12994
Instrument ID: MS06

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Naphthalene	MS	AverageRF	% RSD	10.4		≤ 20	1.22		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	15.5		≤ 20	0.727		0.300
Acenaphthylene	MS	AverageRF	% RSD	13.8		≤ 20	2.04		0.900
Acenaphthene	MS	AverageRF	% RSD	13.5		≤ 20	1.19		0.700
Fluorene	MS	AverageRF	% RSD	18.8		≤ 20	1.65		0.800
Pentachlorophenol	MS	Quadratic	COD	0.999		≥ 0.990	0.187		0.050
Phenanthrene	MS	AverageRF	% RSD	12.9		≤ 20	1.23		0.600
Anthracene	MS	AverageRF	% RSD	14.9		≤ 20	1.26		0.600
Fluoranthene	MS	AverageRF	% RSD	14.9		≤ 20	1.35		0.600
Pyrene	MS	AverageRF	% RSD	7.4		≤ 20	1.52		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	14.6		≤ 20	1.28		0.600
Chrysene	MS	AverageRF	% RSD	9.8		≤ 20	1.09		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	7.4		≤ 20	1.36		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	12.4		≤ 20	1.24		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	13.2		≤ 20	1.27		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	13.7		≤ 20	1.20		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	15.4		≤ 20	1.01		0.500
Dibenz(a,h)anthracene	MS	Quadratic	COD	1.000		≥ 0.990	0.913		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	16.7		≤ 20	1.01		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	6.9		≤ 20	1.65		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	14.6		≤ 20	1.72		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	15.4		≤ 20	0.219		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	9.7		≤ 20	0.946		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 12/19/2013
Date Analyzed: 12/19/2013

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL12994
Units: ng/ml

File ID: J:\MS06\DATA\121913\1219F016.D
J:\MS06\DATA\121913\1219F017.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2600	1.22	1.05	-14	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	2800	0.727	0.670	-8	NA	± 30 %	AverageRF
Acenaphthylene	3000	2600	2.04	1.75	-14	NA	± 30 %	AverageRF
Acenaphthene	3000	2700	1.19	1.06	-12	NA	± 30 %	AverageRF
Fluorene	3000	2600	1.65	1.44	-13	NA	± 30 %	AverageRF
Pentachlorophenol	3000	2800	0.187	0.165	NA	-8	± 30 %	Quadratic
Phenanthrene	3000	2700	1.23	1.11	-10	NA	± 30 %	AverageRF
Anthracene	3000	2700	1.26	1.12	-11	NA	± 30 %	AverageRF
Fluoranthene	3000	2600	1.35	1.19	-12	NA	± 30 %	AverageRF
Pyrene	3000	2800	1.52	1.42	-7	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2400	1.28	1.04	-18	NA	± 30 %	AverageRF
Chrysene	3000	2800	1.09	1.00	-8	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2800	1.36	1.28	-6	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3000	1.24	1.22	-2	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2700	1.27	1.13	-10	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3000	1.20	1.22	1	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2700	1.01	0.906	-10	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2700	0.913	0.853	NA	-11	± 30 %	Quadratic
Benzo(g,h,i)perylene	3000	2800	1.01	0.929	-8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/23/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/19/2013
Calibration ID: CAL12994
Analysis Lot: KWG1314023
Units: ng/ml

File ID: J:\MS06\DATA\122313\1223F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	0.700	1.22	1.18	-4	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3000	0.300	0.727	0.729	0	NA	± 20 %	AverageRF
Acenaphthylene	3000	3100	0.900	2.04	2.11	3	NA	± 20 %	AverageRF
Acenaphthene	3000	2900	0.700	1.19	1.15	-3	NA	± 20 %	AverageRF
Fluorene	3000	3100	0.800	1.65	1.68	2	NA	± 20 %	AverageRF
Pentachlorophenol	3000	2900	0.050	0.187	0.172	NA	-5	± 20 %	Quadratic
Phenanthrene	3000	2900	0.600	1.23	1.20	-3	NA	± 20 %	AverageRF
Anthracene	3000	3000	0.600	1.26	1.25	0	NA	± 20 %	AverageRF
Fluoranthene	3000	3000	0.600	1.35	1.35	0	NA	± 20 %	AverageRF
Pyrene	3000	2900	0.600	1.52	1.45	-4	NA	± 20 %	AverageRF
Benz(a)anthracene	3000	3000	0.600	1.28	1.27	-1	NA	± 20 %	AverageRF
Chrysene	3000	2900	0.600	1.09	1.07	-2	NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2800	0.010	1.36	1.27	-6	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	2900	0.600	1.24	1.18	-5	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2900	0.600	1.27	1.23	-3	NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	2800	0.600	1.20	1.11	-8	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2800	0.500	1.01	0.957	-5	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2900	0.400	0.913	0.953	NA	-3	± 20 %	Quadratic
Benzo(g,h,i)perylene	3000	2900	0.500	1.01	0.971	-4	NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	2900	0.01	1.65	1.59	-4	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.72	1.74	1	NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	3000	0.01	0.219	0.215	-2	NA	± 20 %	AverageRF
Terphenyl-d14	3000	2900	0.01	0.946	0.911	-4	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 12/27/2013

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/19/2013
Calibration ID: CAL12994
Analysis Lot: KWG1314080
Units: ng/ml

File ID: J:\MS06\DATA\122713\1227F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	3000	2700	0.700	1.22	1.08	-11		NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2400	0.300	0.727	0.581	-20	*	NA	± 20 %	AverageRF
Acenaphthylene	3000	3000	0.900	2.04	2.02	-1		NA	± 20 %	AverageRF
Acenaphthene	3000	2900	0.700	1.19	1.15	-3		NA	± 20 %	AverageRF
Fluorene	3000	3000	0.800	1.65	1.66	1		NA	± 20 %	AverageRF
Pentachlorophenol	3000	3000	0.050	0.187	0.181	NA		-1	± 20 %	Quadratic
Phenanthrene	3000	3000	0.600	1.23	1.22	-1		NA	± 20 %	AverageRF
Anthracene	3000	3100	0.600	1.26	1.28	2		NA	± 20 %	AverageRF
Fluoranthene	3000	3600	0.600	1.35	1.61	19		NA	± 20 %	AverageRF
Pyrene	3000	3200	0.600	1.52	1.63	7		NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2900	0.600	1.28	1.24	-3		NA	± 20 %	AverageRF
Chrysene	3000	3000	0.600	1.09	1.08	-1		NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2800	0.010	1.36	1.25	-8		NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	2700	0.600	1.24	1.09	-12		NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	2800	0.600	1.27	1.19	-6		NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	2700	0.600	1.20	1.08	-10		NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	2500	0.500	1.01	0.845	-16		NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	2700	0.400	0.913	0.859	NA		-11	± 20 %	Quadratic
Benzo(g,h,i)perylene	3000	2800	0.500	1.01	0.929	-8		NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	2700	0.01	1.65	1.48	-10		NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	2900	0.01	1.72	1.68	-2		NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	2400	0.01	0.219	0.172	-22	*	NA	± 20 %	AverageRF
Terphenyl-d14	3000	3000	0.01	0.946	0.951	0		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D

Analysis Lot: KWG1314023
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1223F004.D	GC/MS Tuning - Generic	KWG1314023-1	12/23/2013	10:09		12/23/2013	10:38
1223F005.D	Continuing Calibration Verification	KWG1314023-2	12/23/2013	11:10		12/23/2013	11:39
1223F006.D	Method Blank	KWG1313776-5	12/23/2013	12:01		12/23/2013	12:30
1223F007.D	Lab Control Sample	KWG1313776-3	12/23/2013	12:39		12/23/2013	13:08
1223F008.D	Duplicate Lab Control Sample	KWG1313776-4	12/23/2013	13:17		12/23/2013	13:46
1223F009.D	ZZZZZZ	ZZZZZZ	12/23/2013	13:55		12/23/2013	14:24
1223F010.D	ZZZZZZ	ZZZZZZ	12/23/2013	14:33		12/23/2013	15:02
1223F011.D	ZZZZZZ	ZZZZZZ	12/23/2013	15:10		12/23/2013	15:39
1223F012.D	ZZZZZZ	ZZZZZZ	12/23/2013	15:48		12/23/2013	16:17
1223F013.D	ZZZZZZ	ZZZZZZ	12/23/2013	16:26		12/23/2013	16:55
1223F014.D	ZZZZZZ	ZZZZZZ	12/23/2013	17:04		12/23/2013	17:33
1223F015.D	ZZZZZZ	ZZZZZZ	12/23/2013	17:41		12/23/2013	18:10
1223F016.D	ZZZZZZ	ZZZZZZ	12/23/2013	18:19		12/23/2013	18:48
1223F017.D	ZZZZZZ	ZZZZZZ	12/23/2013	18:57		12/23/2013	19:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D

Analysis Lot: KWG1314080
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1227F003.D	GC/MS Tuning - Generic	KWG1314080-1	12/27/2013	09:24		12/27/2013	09:53
1227F006.D	Continuing Calibration Verification	KWG1314080-2	12/27/2013	11:17		12/27/2013	11:46
1227F007.D	Instrument Blank	KWG1314080-3	12/27/2013	12:02		12/27/2013	12:31
1227F008.D	RMIIE-MW001-12-2013	K1313401-001	12/27/2013	12:40		12/27/2013	13:09
1227F009.D	ZZZZZZ	ZZZZZZ	12/27/2013	13:29		12/27/2013	13:58
1227F010.D	ZZZZZZ	ZZZZZZ	12/27/2013	14:07		12/27/2013	14:36
1227F011.D	ZZZZZZ	ZZZZZZ	12/27/2013	14:45		12/27/2013	15:14
1227F012.D	ZZZZZZ	ZZZZZZ	12/27/2013	15:23		12/27/2013	15:52

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/16/2013

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270D

Extraction Lot: KWG1313776
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RMIIE-MW001-12-2013	K1313401-001	12/10/13	12/11/13	960ml	2ml	NA	
Method Blank	KWG1313776-5	NA	NA	1060ml	2ml	NA	
Lab Control Sample	KWG1313776-3	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1313776-4	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

January 17, 2014

Analytical Report for Service Request No: K1313401
Revised Service Request No: K1313401.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed are the additional pages for the samples submitted to our laboratory on December 11, 2013. For your reference, these analyses have been assigned our service request number K1313401.

Data for the Pesticide analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
10:09 am, Jan 20, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 USA | PHONE +1 360 577 7222 | FAX +1 360 636 1068
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Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1313401
Project:	RM11E/ 487.002.006	**Date Received:**	12/11/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at ALS Environmental on 12/11/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Chloride by EPA Method 300.0:
The matrix spike recovery for sample Batch QC was outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Sulfate by EPA Method 300.0:
The control criteria for matrix spike recoveries for sample Batch QC were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Total and Dissolved Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Calcium, Iron and Manganese for sample RMIIE-MW001-12-2013 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

The matrix spike recovery of Antimony for sample RMIIE-MW001-12-2013 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by Gregory Schatz 1/17/14

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Insufficient sample volume was received to perform a duplicate client sample analysis. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the duplicate analysis for these samples.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

Sample Notes and Discussion:
Only two vials received for NWTPH-Gx.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCVs 1218F003 and 1218F012. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Method Blank Exceptions:
The Method Blank KWG1313837-3 contained low levels of Aroclor 1260 above the Method Reporting Limit (MRL). In accordance with ALS QA/QC policy, all sample results less than twenty times the level found in the Method Blank were flagged as estimated. The associated field sample was not re-extracted and re-analyzed because insufficient sample volume remained for additional testing. No further corrective action was feasible.

Matrix Spike Recovery Exceptions:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for this sample.

Elevated Detection Limits:
The detection limit was elevated for Aroclors 1016, 1232, 1242, and 1248 in sample RM11E-MW001-12-2013. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Notes and Discussion:
Two Aroclors were identified in sample RM11E-MW001-12-2013: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1254 and 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ 1/17/14

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS27\1218F003.D: 1,1-Dichloroethene and Carbon Disulfide. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\1227F006.D: 2-Methylnaphthalene, 2,4,6-Tribromophenol. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Sample Notes and Discussion:
A Matrix Spike/Matrix Spike Duplicate (MS/MSD) was not reported with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Pesticides by GC/MS/MS

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Kathy Carter 1/17/14

Organic Analysis:
Chlorinated Pesticides by HRGC/MS/MS

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RMIIE-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Degn

Date: 1/16/14 Title: Surv Supervisor

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/2013
Sample Matrix:	Water	**Date Received:**	12/11/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RMIIE-MW001-12-2013	**Units:**	ng/L
Lab Code:	K1313401-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.50	0.087	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.50	0.10	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.50	0.075	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.50	0.088	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.50	0.13	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.50	0.12	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.0	0.74	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	0.99	0.16	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.0	2.0	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	91	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	93	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	95	8-146	01/14/14	Acceptable
S_Endrin-13C12	105	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	84	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	100	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Collected: NA
Date Received: NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name: Method Blank
Lab Code: KWG1313628-3

Units: ng/L
Basis: NA

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDE	ND	U	0.50	0.11	1	12/12/13	01/14/14	KWG1313628	
2,4'-DDT	ND	U	0.50	0.087	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDD	ND	U	0.50	0.10	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDE	ND	U	0.50	0.075	1	12/12/13	01/14/14	KWG1313628	
4,4'-DDT	ND	U	0.50	0.088	1	12/12/13	01/14/14	KWG1313628	
alpha-Chlordane	ND	U	0.50	0.13	1	12/12/13	01/14/14	KWG1313628	
cis-Nonachlor	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
gamma-Chlordane	ND	U	0.50	0.17	1	12/12/13	01/14/14	KWG1313628	
trans-Nonachlor	ND	U	0.50	0.12	1	12/12/13	01/14/14	KWG1313628	
Dieldrin	ND	U	5.0	0.74	1	12/12/13	01/14/14	KWG1313628	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	12/12/13	01/14/14	KWG1313628	
Heptachlor Epoxide	ND	U	0.99	0.16	1	12/12/13	01/14/14	KWG1313628	
Oxychlordane	ND	U	5.0	2.0	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	90	5-124	01/14/14	Acceptable
S_Oxychlordane-13C10	101	5-144	01/14/14	Acceptable
S_Heptachlrepox13C10	100	8-146	01/14/14	Acceptable
S_Endrin-13C12	114	20-157	01/14/14	Acceptable
S_4,4'DDD-d4	110	5-120	01/14/14	Acceptable
S_4,4'-DDT-d4	124	13-200	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
RMIIE-MW001-12-2013	K1313401-001	91	93	95	105	84	100
Method Blank	KWG1313628-3	90	101	100	114	110	124
Lab Control Sample	KWG1313628-1	85	99	101	124	104	117
Duplicate Lab Control Sample	KWG1313628-2	85	93	98	114	108	123

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	RT	Area	RT	Area	RT
	Results ==>	32,442	15.26	5,383	11.39	1,650	13.97
	Upper Limit ==>	64,885	15.76	10,767	11.89	3,300	14.47
	Lower Limit ==>	16,221	14.76	269	10.89	83	13.47
	ICAL Result ==>	39,971	15.27	5,220	11.39	1,746	13.97
Associated Analyses							
Method Blank	KWG1313628-3	34,232	15.26	4,761	11.39	1,678	13.97
Lab Control Sample	KWG1313628-1	33,350	15.26	4,350	11.39	1,599	13.97
Duplicate Lab Control Sample	KWG1313628-2	33,745	15.26	4,428	11.39	1,527	13.97
RMIIE-MW001-12-2013	K1313401-001	45,918	15.26	6,405	11.39	2,070	13.97

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

		Heptachlor Epoxide-13C1		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,775	14.07	929	16.40	6,535	16.95
	Upper Limit ==>	3,549	14.57	1,859	16.90	13,071	17.45
	Lower Limit ==>	89	13.57	46	15.90	327	16.45
	ICAL Result ==>	1,714	14.08	1,072	16.40	7,108	16.96
Associated Analyses							
Method Blank	KWG1313628-3	1,713	14.08	1,117	16.40	7,363	16.96
Lab Control Sample	KWG1313628-1	1,672	14.07	1,183	16.40	6,797	16.96
Duplicate Lab Control Sample	KWG1313628-2	1,658	14.07	1,104	16.40	7,149	16.95
RMIIE-MW001-12-2013	K1313401-001	2,177	14.08	1,376	16.40	7,530	16.96

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 01/14/2014
Time Analyzed: 10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\011414\0114F004.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS

Lab Code: KWG1400389-1
Analysis Lot: KWG1400389

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	3,506	17.96
	Upper Limit ==>	7,012	18.46
	Lower Limit ==>	175	17.46
	ICAL Result ==>	4,046	17.97
Associated Analyses			
Method Blank	KWG1313628-3	4,592	17.96
Lab Control Sample	KWG1313628-1	4,219	17.96
Duplicate Lab Control Sample	KWG1313628-2	4,482	17.96
RMIIE-MW001-12-2013	K1313401-001	4,986	17.97

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313628

	Lab Control Sample KWG1313628-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313628-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	19.9	20.0	100	19.2	20.0	96	50-120	4	30
2,4'-DDE	20.3	20.0	101	18.9	20.0	94	24-123	7	30
2,4'-DDT	20.2	20.0	101	18.8	20.0	94	50-120	7	30
4,4'-DDD	19.9	20.0	100	19.3	20.0	96	42-120	3	30
4,4'-DDE	20.1	20.0	100	18.9	20.0	95	50-120	6	30
4,4'-DDT	20.6	20.0	103	20.2	20.0	101	50-120	2	30
alpha-Chlordane	22.4	20.0	112	22.9	20.0	115	50-120	2	30
cis-Nonachlor	22.6	20.0	113	22.9	20.0	115	50-120	1	30
gamma-Chlordane	21.6	20.0	108	22.5	20.0	113	50-120	4	30
trans-Nonachlor	22.0	20.0	110	22.9	20.0	114	50-120	4	30
Dieldrin	17.7	20.0	88	19.8	20.0	99	50-120	11	30
gamma-BHC (Lindane)	20.7	20.0	103	19.8	20.0	99	50-120	4	30
Heptachlor Epoxide	19.4	20.0	97	19.8	20.0	99	50-120	2	30
Oxychlordane	20.4	20.0	102	22.0	20.0	110	50-120	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	11:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313628-3	**File ID:**	J:\MS21\DATA\011414\0114F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313628-1	J:\MS21\DATA\011414\0114F007.D	01/14/14	12:13
Duplicate Lab Control Sample	KWG1313628-2	J:\MS21\DATA\011414\0114F008.D	01/14/14	12:40
RMIIE-MW001-12-2013	K1313401-001	J:\MS21\DATA\011414\0114F015.D	01/14/14	15:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	12:13

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313628-1	**File ID:**	J:\MS21\DATA\011414\0114F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313628-3	J:\MS21\DATA\011414\0114F005.D	01/14/14	11:23
RMIIE-MW001-12-2013	K1313401-001	J:\MS21\DATA\011414\0114F015.D	01/14/14	15:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\011314\0113F005.D	G	J:\MS21\Data\011314\0113F011.D
B	J:\MS21\Data\011314\0113F006.D	H	J:\MS21\Data\011314\0113F012.D
C	J:\MS21\Data\011314\0113F007.D	I	J:\MS21\Data\011314\0113F013.D
D	J:\MS21\Data\011314\0113F008.D	J	J:\MS21\Data\011314\0113F014.D
E	J:\MS21\Data\011314\0113F009.D		
F	J:\MS21\Data\011314\0113F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.967	B	1.0	0.944	C	2.0	0.956	D	5.0	0.944	E	10	0.924
	F	20	0.913	G	40	0.934	H	60	0.992	I	80	0.997	J	100	0.999
2,4'-DDE	A	0.50	0.734	B	1.0	0.729	C	2.0	0.755	D	5.0	0.685	E	10	0.673
	F	20	0.745	G	40	0.675	H	60	0.707	I	80	0.722	J	100	0.713
2,4'-DDT	A	0.50	1.01	B	1.0	1.10	C	2.0	1.04	D	5.0	1.00	E	10	0.993
	F	20	0.979	G	40	0.956	H	60	1.00	I	80	1.01	J	100	0.996
4,4'-DDD	A	0.50	0.904	B	1.0	0.907	C	2.0	0.877	D	5.0	0.920	E	10	0.911
	F	20	0.874	G	40	0.898	H	60	0.929	I	80	0.929	J	100	0.933
4,4'-DDE	A	0.50	0.471	B	1.0	0.507	C	2.0	0.548	D	5.0	0.505	E	10	0.505
	F	20	0.517	G	40	0.503	H	60	0.540	I	80	0.534	J	100	0.528
4,4'-DDT	A	0.50	0.942	B	1.0	0.982	C	2.0	0.960	D	5.0	0.963	E	10	1.00
	F	20	0.963	G	40	1.01	H	60	1.04	I	80	1.07	J	100	1.10
alpha-Chlordane	A	0.50	2.47	B	1.0	2.91	C	2.0	2.59	D	5.0	2.65	E	10	2.82
	F	20	2.53	G	40	2.44	H	60	2.71	I	80	2.42	J	100	2.35
cis-Nonachlor	A	0.50	1.71	B	1.0	1.48	C	2.0	1.46	D	5.0	1.43	E	10	1.49
	F	20	1.42	G	40	1.40	H	60	1.50	I	80	1.36	J	100	1.33
gamma-Chlordane	A	0.50	2.56	B	1.0	2.92	C	2.0	3.15	D	5.0	2.89	E	10	2.93
	F	20	2.78	G	40	2.62	H	60	2.81	I	80	2.58	J	100	2.50
trans-Nonachlor	A	0.50	1.86	B	1.0	1.77	C	2.0	1.82	D	5.0	1.78	E	10	1.83
	F	20	1.73	G	40	1.65	H	60	1.79	I	80	1.63	J	100	1.58
Dieldrin	A	0.50	0.894	B	1.0	1.20	C	2.0	1.09	D	5.0	1.07	E	10	1.03
	F	20	0.946	G	40	0.933	H	60	0.938	I	80	0.944	J	100	0.913
gamma-BHC (Lindane)	A	0.50	0.714	B	1.0	0.543	C	2.0	0.646	D	5.0	0.627	E	10	0.639
	F	20	0.603	G	40	0.628	H	60	0.632	I	80	0.642	J	100	0.660
Heptachlor Epoxide				B	1.0	1.14	C	2.0	0.992	D	5.0	1.09	E	10	1.05
	F	20	1.00	G	40	1.01	H	60	1.08	I	80	1.03	J	100	1.05
Oxychlordane	A	0.50	1.19	B	1.0	1.02	C	2.0	1.35	D	5.0	1.23	E	10	1.25
	F	20	1.07	G	40	1.06	H	60	1.08	I	80	1.03	J	100	0.972

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
S_GBHCD6	A	20	0.811	B	20	0.826	C	20	0.760	D	20	0.814	E	20	0.803
	F	20	0.653	G	20	0.729	H	20	0.755	I	20	0.775	J	20	0.769
S_Oxychlordane-13C10	A	20	0.258	B	20	0.244	C	20	0.239	D	20	0.247	E	20	0.239
	F	20	0.218	G	20	0.233	H	20	0.231	I	20	0.257	J	20	0.267
S_Heptachlrepox13C10	A	20	0.274	B	20	0.263	C	20	0.255	D	20	0.271	E	20	0.271
	F	20	0.214	G	20	0.231	H	20	0.238	I	20	0.244	J	20	0.233
S_Endrin-13C12	A	20	0.135	B	20	0.142	C	20	0.139	D	20	0.144	E	20	0.142
	F	20	0.134	G	20	0.139	H	20	0.152	I	20	0.150	J	20	0.155
S_4,4'DDD-d4	A	5.0	4.08	B	5.0	3.90	C	5.0	3.72	D	5.0	4.18	E	5.0	4.23
	F	5.0	3.56	G	5.0	3.86	H	5.0	3.85	I	5.0	3.90	J	5.0	4.00
S_4,4'-DDT-d4	A	5.0	1.91	B	5.0	1.82	C	5.0	1.82	D	5.0	2.26	E	5.0	2.34
	F	5.0	2.02	G	5.0	2.30	H	5.0	2.31	I	5.0	2.40	J	5.0	2.49

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	3.2		≤ 20	0.957		.01
2,4'-DDE	MS	AverageRF	% RSD	4.0		≤ 20	0.714		.01
2,4'-DDT	MS	AverageRF	% RSD	3.8		≤ 20	1.01		.01
4,4'-DDD	MS	AverageRF	% RSD	2.3		≤ 20	0.908		.01
4,4'-DDE	MS	AverageRF	% RSD	4.4		≤ 20	0.516		.01
4,4'-DDT	MS	AverageRF	% RSD	5.1		≤ 20	1.00		.01
alpha-Chlordane	MS	AverageRF	% RSD	7.0		≤ 20	2.59		.01
cis-Nonachlor	MS	AverageRF	% RSD	7.1		≤ 20	1.46		.01
gamma-Chlordane	MS	AverageRF	% RSD	7.5		≤ 20	2.77		.01
trans-Nonachlor	MS	AverageRF	% RSD	5.4		≤ 20	1.75		.01
Dieldrin	MS	AverageRF	% RSD	9.9		≤ 20	0.997		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	6.8		≤ 20	0.633		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	4.6		≤ 20	1.05		.01
Oxychlordane	MS	AverageRF	% RSD	10.8		≤ 20	1.12		.01
S_GBHCD6	SURR	AverageRF	% RSD	6.6		≤ 20	0.770		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	6.0		≤ 20	0.243		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	8.2		≤ 20	0.249		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	5.0		≤ 20	0.143		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	5.2		≤ 20	3.93		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	11.5		≤ 20	2.17		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014
Date Analyzed: 01/13/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration ID: CAL13037
Units: ng/ml

File ID: J:\MS21\Data\011314\0113F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.957	0.943	-1	NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.714	0.707	-1	NA	± 25 %	AverageRF
2,4'-DDT	20	18	1.01	0.908	-10	NA	± 25 %	AverageRF
4,4'-DDD	20	19	0.908	0.877	-3	NA	± 25 %	AverageRF
4,4'-DDE	20	20	0.516	0.509	-1	NA	± 25 %	AverageRF
4,4'-DDT	20	19	1.00	0.932	-7	NA	± 25 %	AverageRF
alpha-Chlordane	20	23	2.59	2.92	13	NA	± 25 %	AverageRF
cis-Nonachlor	20	24	1.46	1.73	19	NA	± 25 %	AverageRF
gamma-Chlordane	20	22	2.77	3.11	12	NA	± 25 %	AverageRF
trans-Nonachlor	20	22	1.75	1.93	10	NA	± 25 %	AverageRF
Dieldrin	20	19	0.997	0.956	-4	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.633	0.630	-1	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	1.05	1.07	2	NA	± 25 %	AverageRF
Oxychlordane	20	20	1.12	1.12	0	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Date Analyzed: 01/14/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 01/13/2014
Calibration ID: CAL13037
Analysis Lot: KWG1400389
Units: ng/ml

File ID: J:\MS21\DATA\011414\0114F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	.01	0.957	0.915	-4	NA	± 25 %	AverageRF
2,4'-DDE	20	20	.01	0.714	0.702	-2	NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	1.01	1.04	3	NA	± 25 %	AverageRF
4,4'-DDD	20	19	.01	0.908	0.862	-5	NA	± 25 %	AverageRF
4,4'-DDE	20	19	.01	0.516	0.501	-3	NA	± 25 %	AverageRF
4,4'-DDT	20	19	.01	1.00	0.972	-3	NA	± 25 %	AverageRF
alpha-Chlordane	20	19	.01	2.59	2.46	-5	NA	± 25 %	AverageRF
cis-Nonachlor	20	19	.01	1.46	1.41	-3	NA	± 25 %	AverageRF
gamma-Chlordane	20	20	.01	2.77	2.79	1	NA	± 25 %	AverageRF
trans-Nonachlor	20	19	.01	1.75	1.65	-6	NA	± 25 %	AverageRF
Dieldrin	20	20	.01	0.997	0.990	-1	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.633	0.615	-3	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.05	1.05	0	NA	± 25 %	AverageRF
Oxychlordane	20	20	.01	1.12	1.13	1	NA	± 25 %	AverageRF
S_GBHCD6	20	22	.01	0.770	0.830	8	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	21	.01	0.243	0.254	5	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	22	.01	0.249	0.274	10	NA	± 30 %	AverageRF
S_Endrin-13C12	20	20	.01	0.143	0.143	0	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	5.1	.01	3.93	4.03	3	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	5.0	.01	2.17	2.16	0	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1400389
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F004.D	Continuing Calibration Verification	KWG1400389-1	1/14/2014	10:51		1/14/2014	10:51
0114F005.D	Method Blank	KWG1313628-3	1/14/2014	11:23		1/14/2014	11:23
0114F006.D	ZZZZZZ	ZZZZZZ	1/14/2014	11:46		1/14/2014	11:46
0114F007.D	Lab Control Sample	KWG1313628-1	1/14/2014	12:13		1/14/2014	12:13
0114F008.D	Duplicate Lab Control Sample	KWG1313628-2	1/14/2014	12:40		1/14/2014	12:40
0114F009.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:07		1/14/2014	13:07
0114F010.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:35		1/14/2014	13:35
0114F011.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:02		1/14/2014	14:02
0114F012.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:29		1/14/2014	14:29
0114F013.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:56		1/14/2014	14:56
0114F014.D	ZZZZZZ	ZZZZZZ	1/14/2014	15:23		1/14/2014	15:23
0114F015.D	RMIIE-MW001-12-2013	K1313401-001	1/14/2014	15:50		1/14/2014	15:50
0114F016.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:17		1/14/2014	16:17
0114F017.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:44		1/14/2014	16:44
0114F018.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:11		1/14/2014	17:11
0114F019.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:38		1/14/2014	17:38
0114F020.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:05		1/14/2014	18:05
0114F021.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:32		1/14/2014	18:32
0114F022.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:59		1/14/2014	18:59
0114F023.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:27		1/14/2014	19:27
0114F024.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:54		1/14/2014	19:54
0114F026.D	ZZZZZZ	ZZZZZZ	1/14/2014	20:48		1/14/2014	20:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006
Sample Matrix: Water

Service Request: K1313401
Date Extracted: 12/12/2013

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A
Analysis Method: CAS SOC-PESTMS2

Extraction Lot: KWG1313628
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RMIIE-MW001-12-2013	K1313401-001	12/10/13	12/11/13	1020ml	1.0ml	NA	
Method Blank	KWG1313628-3	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313628-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313628-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

March 4, 2014

Analytical Report for Service Request No: K1313401
Revised Service Request No: K1313401.02

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E/487.002.006

Dear Erin:

Enclosed is the additional report for the samples submitted to our laboratory on December 11, 2013. For your reference, these analyses have been assigned our service request number K1313401.

Hexachlorobenzene data from the GC/MS/MS analysis has been added to this report.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

REVISED
10:36 am, Mar 06, 2014

GS/lb

cc: James McAteer, QA/QC Solutions, LLC

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	KI313401
Project:	RM11E/ 487.002.006	**Date Received:**	12/11/13
Sample Matrix:	Water		

Additional Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at ALS Environmental on 12/11/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Chlorinated Pesticides by GC/MS/MS

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by

2023

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RMIIE-MW001-12-2013	K1313401-001	12/10/2013	12/11/2013

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	12/10/2013
Sample Matrix:	Water	**Date Received:**	12/11/2013

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RMIIE-MW001-12-2013	**Units:**	ng/L
Lab Code:	K1313401-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.99	0.27	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	61	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1313628-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorobenzene	ND	U	0.99	0.27	1	12/12/13	01/14/14	KWG1313628	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_HXCBZ13C6	73	5-120	01/14/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006		
Sample Matrix:	Water		

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	Percent
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Sur1
RMIIE-MW001-12-2013	K1313401-001	61
Method Blank	KWG1313628-3	73
Lab Control Sample	KWG1313628-1	75
Duplicate Lab Control Sample	KWG1313628-2	76

Surrogate Recovery Control Limits (%)

Sur1 =	S_HXCBZ13C6	5-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	01/14/2014
		Time Analyzed:	10:51

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\011414\0114F004.D	**Lab Code:**	KWG1400389-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1400389
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**
	Results ==>	32,442	15.26	7,985	11.00
	Upper Limit ==>	64,885	15.76	39,926	11.50
	Lower Limit ==>	16,221	14.76	399	10.50
	ICAL Result ==>	39,971	15.27	8,062	11.00
Associated Analyses					
Method Blank	KWG1313628-3	34,232	15.26	5,956	11.00
Lab Control Sample	KWG1313628-1	33,350	15.26	5,951	11.00
Duplicate Lab Control Sample	KWG1313628-2	33,745	15.26	6,085	11.00
RMIIE-MW001-12-2013	K1313401-001	45,918	15.26	6,646	11.00

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1313628

	Lab Control Sample KWG1313628-1 Lab Control Spike			Duplicate Lab Control Sample KWG1313628-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Hexachlorobenzene	20.7	20.0	104	19.6	20.0	98	50-120	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	11:23

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1313628-3	**File ID:**	J:\MS21\DATA\011414\0114F005.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313628-1	J:\MS21\DATA\011414\0114F007.D	01/14/14	12:13
Duplicate Lab Control Sample	KWG1313628-2	J:\MS21\DATA\011414\0114F008.D	01/14/14	12:40
RMIIE-MW001-12-2013	K1313401-001	J:\MS21\DATA\011414\0114F015.D	01/14/14	15:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water	**Date Analyzed:**	01/14/2014
		Time Analyzed:	12:13

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1313628-1	**File ID:**	J:\MS21\DATA\011414\0114F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1313628

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313628-3	J:\MS21\DATA\011414\0114F005.D	01/14/14	11:23
RMIIE-MW001-12-2013	K1313401-001	J:\MS21\DATA\011414\0114F015.D	01/14/14	15:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\011314\0113F005.D	G	J:\MS21\Data\011314\0113F011.D
B	J:\MS21\Data\011314\0113F006.D	H	J:\MS21\Data\011314\0113F012.D
C	J:\MS21\Data\011314\0113F007.D	I	J:\MS21\Data\011314\0113F013.D
D	J:\MS21\Data\011314\0113F008.D	J	J:\MS21\Data\011314\0113F014.D
E	J:\MS21\Data\011314\0113F009.D		
F	J:\MS21\Data\011314\0113F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene				B	1.0	1.11	C	2.0	1.05	D	5.0	1.00	E	10	1.02
	F	20	0.941	G	40	0.959	H	60	0.930	I	80	0.878	J	100	0.867
S_HXCBZ13C6	A	20	1.17	B	20	1.17	C	20	1.13	D	20	1.16	E	20	1.18
	F	20	1.01	G	20	1.15	H	20	1.25	I	20	1.35	J	20	1.35

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401
Calibration Date: 01/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13037
Instrument ID: MS21

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Hexachlorobenzene	MS	AverageRF	% RSD	8.2		≤20	0.973		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	8.7		≤20	1.19		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Calibration Date:**	01/13/2014
		Date Analyzed:	01/13/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13037
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\011314\0113F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	19	0.973	0.930	-4	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Analyzed:**	01/14/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	01/13/2014
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL13037
		Analysis Lot:	KWG1400389
		Units:	ng/ml

File ID: J:\MS21\DATA\011414\0114F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Hexachlorobenzene	20	20	.01	0.973	0.961	-1	NA	± 25 %	AverageRF
S_HXCBZ13C6	20	21	.01	1.19	1.23	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E/487.002.006

Service Request: K1313401

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2

Analysis Lot: KWG1400389
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F004.D	Continuing Calibration Verification	KWG1400389-1	1/14/2014	10:51		1/14/2014	10:51
0114F005.D	Method Blank	KWG1313628-3	1/14/2014	11:23		1/14/2014	11:23
0114F006.D	ZZZZZZ	ZZZZZZ	1/14/2014	11:46		1/14/2014	11:46
0114F007.D	Lab Control Sample	KWG1313628-1	1/14/2014	12:13		1/14/2014	12:13
0114F008.D	Duplicate Lab Control Sample	KWG1313628-2	1/14/2014	12:40		1/14/2014	12:40
0114F009.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:07		1/14/2014	13:07
0114F010.D	ZZZZZZ	ZZZZZZ	1/14/2014	13:35		1/14/2014	13:35
0114F011.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:02		1/14/2014	14:02
0114F012.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:29		1/14/2014	14:29
0114F013.D	ZZZZZZ	ZZZZZZ	1/14/2014	14:56		1/14/2014	14:56
0114F014.D	ZZZZZZ	ZZZZZZ	1/14/2014	15:23		1/14/2014	15:23
0114F015.D	RM11E-MW001-12-2013	K1313401-001	1/14/2014	15:50		1/14/2014	15:50
0114F016.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:17		1/14/2014	16:17
0114F017.D	ZZZZZZ	ZZZZZZ	1/14/2014	16:44		1/14/2014	16:44
0114F018.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:11		1/14/2014	17:11
0114F019.D	ZZZZZZ	ZZZZZZ	1/14/2014	17:38		1/14/2014	17:38
0114F020.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:05		1/14/2014	18:05
0114F021.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:32		1/14/2014	18:32
0114F022.D	ZZZZZZ	ZZZZZZ	1/14/2014	18:59		1/14/2014	18:59
0114F023.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:27		1/14/2014	19:27
0114F024.D	ZZZZZZ	ZZZZZZ	1/14/2014	19:54		1/14/2014	19:54
0114F026.D	ZZZZZZ	ZZZZZZ	1/14/2014	20:48		1/14/2014	20:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1313401
Project:	RM11E/487.002.006	**Date Extracted:**	12/12/2013
Sample Matrix:	Water		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1313628
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RMIIE-MW001-12-2013	K1313401-001	12/10/13	12/11/13	1020ml	1.0ml	NA	
Method Blank	KWG1313628-3	NA	NA	1020ml	1.0ml	NA	
Lab Control Sample	KWG1313628-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1313628-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

January 10, 2014

Analytical Report for Service Request No: K1400182

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental R1/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the sample submitted to our laboratory on November 22, 2013. For your reference, these analyses have been assigned our service request number K1400182.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

GS/mj

cc: James McAteer, QA/QC Solutions, LLC (Salem, OR)

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1400182
Project:	RM11E Supplemental R1/FS Investigation	**Date Received:**	11/22/13
Sample Matrix:	Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One soil sample was received for analysis at ALS Environmental on 11/22/13. The sample was received in good condition and consistent with the accompanying chain of custody form. The sample was stored frozen at –20°C upon receipt at the laboratory. At the request of GSI Water Solutions, Inc., the sample was released for analysis under this service request.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. The Initial Calibration Verification (ICV) evaluation criteria were not met on the confirmation column for Aroclor 1221 in CAL12952. The ICV criteria were met on the alternate column. The data quality was not affected. No further corrective action was necessary.

Sample Notes and Discussion:
Sample RM11E-SL031 appears to have been subjected to environmental stresses such as weathering, causing pattern degradation and changing the peak ratios. When pattern degradation occurs, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care was taken to report the Aroclors with the best pattern match.

Two Aroclors were identified in sample RM11E-SL031: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. Care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1254 and 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of this sample were observed.

Approved by 01/10/14

Chain of Custody

Gregory Salata

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Tuesday, January 07, 2014 1:47 PM
To: Gregory Salata
Cc: James J. Mc Ateer, Jr.
Subject: RE: RM11E PCB Aroclor Analysis

Importance: High

Oops, correction on the sample ID. It is 'RM11E-SL031' but the lab ID is actually '**K1312857-026**'. Sorry! Gave you the wrong lab ID earlier.

Please confirm that you received this correction and have made the change in your system. I apologize for the confusion.

Erin

From: Gregory Salata [mailto:Gregory.Salata@alsglobal.com]
Sent: Tuesday, January 07, 2014 11:16 AM
To: Erin Carroll Hughes
Cc: James J. Mc Ateer, Jr.; Dave Livesay; Libby Smith
Subject: RE: RM11E PCB Aroclor Analysis

We'll get it processed asap and should be able to turn this quickly.

Take our short online customer survey for a chance to win a FREE iPad!

Gregory Salata, Ph.D.

Client Service Manager
ALS Life Sciences Division | Environmental

1317 S. 13th Ave.
Kelso, WA 98626 USA

D +1 360 501 3376
T +1 360 577 7222 x3376
F +1 360 636 1068

http://www.alsglobal.com/

From: Erin Carroll Hughes [mailto:EcHughes@gsiws.com]
Sent: Tuesday, January 07, 2014 10:21 AM
To: Gregory Salata

Cc: James J. Mc Ateer, Jr.; Dave Livesay; Libby Smith
Subject: RM11E PCB Aroclor Analysis
Importance: High

Greg,

Our clients have requested that we go ahead and run the PCB Aroclor analysis on soil sample RM11E-SL031 (K1312655-004).

Can you please remove this sample from archival and run the PCB Aroclor analysis for us? Please place the remaining material back in archival after the sample aliquots have been run in case future analysis is required.

If there's any chance of getting a quicker turn-around time on this follow-up request, that would be greatly appreciated. Please let me know when I can expect the results so that I can update the Group accordingly.

Thank you,

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

GSI Water Solutions, Inc.

Please note my new name and email (echughes@gsiws.com)

ALS Group: Click here to report this email as spam.

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****

Polychlorinated Biphenyls

Organic Analysis:
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Service Request: K1400182

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-SL031	K1400182-001	11/22/2013	11/22/2013
RM11E-SL031MS	KWG1313283-1	11/22/2013	11/22/2013
RM11E-SL031DMS	KWG1313283-2	11/22/2013	11/22/2013

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Jeffrey M. Smith

Date: 01/08/14 Title: QC Analyst

Analytical Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1400182
Date Collected: 11/22/2013
Date Received: 11/22/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-SL031
Lab Code: K1400182-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8082A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1221	ND	U	7.4	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1254	**2.4**	JP	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1260	**14**		4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/10/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	43-148	12/10/13	Acceptable

Comments:

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1400182
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1313283-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1221	ND	U	5.0	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1232	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1242	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1248	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1254	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1260	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1262	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	
Aroclor 1268	ND	U	4.3	2.1	1	11/25/13	12/07/13	KWG1313283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	12/07/13	Acceptable

Comments:

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1400182

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
RM11E-SL031	K1400182-001	78
Method Blank	KWG1313283-4	83
RM11E-SL031MS	KWG1313283-1	76
RM11E-SL031DMS	KWG1313283-2	74
Lab Control Sample	KWG1313283-3	73

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1400182
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/10/2013

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-SL031	**Units:**	ug/Kg
Lab Code:	K1400182-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

		RM11E-SL031MS KWG1313283-1 Matrix Spike			RM11E-SL031DMS KWG1313283-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	82.6	147	56	91.0	148	62	23-145	10	40
Aroclor 1260	14	102	147	60	102	148	60	24-148	0	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1400182
Date Extracted: 11/25/2013
Date Analyzed: 12/07/2013

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1313283

	Lab Control Sample KWG1313283-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	88.2	200	44	42-122
Aroclor 1260	131	200	66	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1400182
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:46

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-4	**File ID:**	J:\GC32\DATA\120613.B\1206F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1313283-3	J:\GC32\DATA\120613.B\1206F005.D	12/07/13	03:25
RM11E-SL031	K1400182-001	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
RM11E-SL031MS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
RM11E-SL031DMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1400182
Project:	RM11E Supplemental R1/FS Investigation/487.002.004	**Date Extracted:**	11/25/2013
Sample Matrix:	Soil	**Date Analyzed:**	12/07/2013
		Time Analyzed:	03:25

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC32.i
Lab Code:	KWG1313283-3	**File ID:**	J:\GC32\DATA\120613.B\1206F005.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1313283

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1313283-4	J:\GC32\DATA\120613.B\1206F006.D	12/07/13	03:46
RM11E-SL031	K1400182-001	J:\GC32\DATA\121013.B\1210F014.D	12/10/13	21:06
RM11E-SL031MS	KWG1313283-1	J:\GC32\DATA\121013.B\1210F018.D	12/10/13	22:27
RM11E-SL031DMS	KWG1313283-2	J:\GC32\DATA\121013.B\1210F022.D	12/10/13	23:49

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	93800	B	5.0	88900	C	50	75500	D	100	71400	E	200	66800
	F	500	63100												
Aroclor 1016 {1}	A	25	2760	B	50	2600	C	500	2340	D	1000	2140	E	2000	1960
	F	5000	1840												
Aroclor 1016 {2}	A	25	2230	B	50	2150	C	500	1970	D	1000	1810	E	2000	1720
	F	5000	1590												
Aroclor 1016 {3}	A	25	6770	B	50	6340	C	500	6200	D	1000	5760	E	2000	5370
	F	5000	5280												
Aroclor 1016 {4}	A	25	4740	B	50	4460	C	500	4050	D	1000	3780	E	2000	3590
	F	5000	3450												
Aroclor 1016 {5}	A	25	3620	B	50	3560	C	500	3180	D	1000	2980	E	2000	2830
	F	5000	2710												
Aroclor 1260 {1}	A	25	2830	B	50	2820	C	500	2770	D	1000	2720	E	2000	2670
	F	5000	2530												
Aroclor 1260 {2}	A	25	4540	B	50	4440	C	500	4050	D	1000	3920	E	2000	3740
	F	5000	3480												
Aroclor 1260 {3}	A	25	4470	B	50	4560	C	500	4100	D	1000	3990	E	2000	3850
	F	5000	3630												
Aroclor 1260 {4}	A	25	9850	B	50	9590	C	500	8750	D	1000	8720	E	2000	8590
	F	5000	8360												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	7400	B	50	7330	C	500	6600	D	1000	6440	E	2000	6230
	F	5000	5990												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-35MS

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.0		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	13.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.0		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	10.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	8.7		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	6.7		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL.b\1203F148.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	890	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	850	1910	1620	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	780	5950	4630	-22	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	850	4010	3390	-15	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	880	3150	2760	-12	NA	± 100 %	AverageRF
Aroclor 1016	1000	850	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	1000	1000	2720	2720	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4030	4780	19	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1200	4100	4740	16	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	8980	10300	14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	6670	7390	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Level ID	File ID
A	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F105.D
B	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F106.D
C	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F107.D
D	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F108.D
E	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F109.D
F	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F110.D
G	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F111.D
H	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F112.D
I	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F113.D
J	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F114.D
K	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F115.D
L	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F116.D
M	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F117.D
N	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F118.D
O	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F119.D
P	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F120.D
Q	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F121.D
R	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F122.D
S	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F123.D
T	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F124.D
U	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F125.D
V	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F126.D
W	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F127.D
X	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F129.D
Y	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F130.D
Z	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F131.D
AA	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F132.D
AB	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F133.D
AC	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F134.D
AD	\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.27E+6	B	5.0	1.21E+6	C	50	9.81E+5	D	100	9.42E+5	E	200	9.01E+5
	F	500	8.84E+5												
Aroclor 1016 {1}	A	25	39300	B	50	37000	C	500	32500	D	1000	30200	E	2000	28000
	F	5000	26600												
Aroclor 1016 {2}	A	25	55800	B	50	51500	C	500	44600	D	1000	41800	E	2000	38400
	F	5000	36000												
Aroclor 1016 {3}	A	25	59000	B	50	58800	C	500	52100	D	1000	49800	E	2000	47700
	F	5000	48100												
Aroclor 1016 {4}	A	25	44800	B	50	43900	C	500	39100	D	1000	36600	E	2000	35600
	F	5000	34900												
Aroclor 1016 {5}	A	25	42900	B	50	42600	C	500	38500	D	1000	36500	E	2000	35900
	F	5000	34900												
Aroclor 1260 {1}	A	25	53800	B	50	47200	C	500	38300	D	1000	37800	E	2000	36200
	F	5000	34900												
Aroclor 1260 {2}	A	25	65500	B	50	63500	C	500	55900	D	1000	55000	E	2000	54600
	F	5000	52700												
Aroclor 1260 {3}	A	25	60400	B	50	61900	C	500	54900	D	1000	54000	E	2000	53400
	F	5000	52000												
Aroclor 1260 {4}	A	25	1.47E+5	B	50	1.35E+5	C	500	1.22E+5	D	1000	1.24E+5	E	2000	1.24E+5
	F	5000	1.25E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	93700	B	50	85900	C	500	76300	D	1000	74800	E	2000	72800
	F	5000	72300												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL12952
Instrument ID: GC32.i

Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	16.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	15.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	17.1		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	10.9		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	8.9		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	18.1		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.1		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	7.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	7.5		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.9		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Calibration Date: 12/04/2013
Date Analyzed: 12/04/2013

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL12952
Units: ng/mL

File ID:
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F135.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F136.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F137.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F139.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F140.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F141.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F142.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F147.D
\\cash1\acqudata\GC32\Data\120313CAL_r.b\1203F148.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	840	32300	27000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	840	44700	37500	-16	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	880	52600	46200	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	860	39200	33800	-14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	890	38500	34200	-11	NA	± 100 %	AverageRF
Aroclor 1016	1000	860	NA	NA	NA	-14	± 20 %	NA
Aroclor 1260 {1}	1000	970	41400	40200	-3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	57900	68300	18	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	56100	63800	14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	130000	149000	15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	79300	85100	7	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F003.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	76600	72900	-5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	440	2280	2020	-11	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	1910	1790	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	460	5950	5460	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3700	-8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3050	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	440	2720	2420	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	450	4030	3590	-11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	4100	3670	-10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	440	8980	7880	-12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	460	6670	6090	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F003.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	1030000	989000	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	480	32300	31200	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	41800	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	52600	56100	7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	540	39200	42100	7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	540	38500	41300	7	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	470	41400	39300	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	57900	54000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	56100	52900	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	130000	120000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	75100	-5	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613.B\1206F014.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71400	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	500	2280	2260	-1	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	1910	1910	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	480	5950	5710	-4	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	4010	3880	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	3030	-4	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	410	2720	2260	-17	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3360	-17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3500	-15	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7680	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-9	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/07/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313732
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\120613_R.B\1206F014.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	46	1030000	960000	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	32300	33300	3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	500	44700	44600	0	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	52600	54000	3	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	510	39200	40000	2	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	38500	39100	1	NA	± 100 %	AverageRF
Aroclor 1016	500	510	NA	NA	NA	2	± 20 %	NA
Aroclor 1260 {1}	500	420	41400	35100	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	57900	50500	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	450	56100	51000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	450	130000	116000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	79300	74000	-7	NA	± 100 %	AverageRF
Aroclor 1260	500	450	NA	NA	NA	-11	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F004.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	45	76600	69000	-10	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	470	2280	2130	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	460	1910	1770	-7	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	450	5950	5330	-10	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	460	4010	3710	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	480	3150	2990	-5	NA	± 100 %	AverageRF
Aroclor 1016	500	460	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	500	450	2720	2430	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	4030	3530	-12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	4100	3570	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7660	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	440	6670	5880	-12	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-13	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/10/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F004.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	898000	-13	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	490	32300	31500	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	470	44700	42000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	52600	51600	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	480	39200	38000	-3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	38500	37800	-2	NA	± 100 %	AverageRF
Aroclor 1016	500	480	NA	NA	NA	-3	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	37500	-9	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49400	-15	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	56100	48300	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	420	130000	108000	-17	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	430	79300	68100	-14	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013.B\1210F026.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	47	76600	71300	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	2280	2380	5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	510	1910	1960	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	470	5950	5590	-6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	4010	3970	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	3150	3060	-3	NA	± 100 %	AverageRF
Aroclor 1016	500	500	NA	NA	NA	0	± 20 %	NA
Aroclor 1260 {1}	500	430	2720	2330	-15	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	420	4030	3390	-16	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	430	4100	3540	-14	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	8980	7710	-14	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	6670	6030	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	430	NA	NA	NA	-14	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182
Date Analyzed: 12/11/2013

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 12/04/2013
Calibration ID: CAL12952
Analysis Lot: KWG1313733
Units: ng/mL

File ID: \\CASH1\ACQUDATA\GC32\DATA\121013_R.B\1210F026.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	44	1030000	912000	-12	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	590	32300	38000	18	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	550	44700	49300	10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	560	52600	58600	11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	39200	41600	6	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	38500	40800	6	NA	± 100 %	AverageRF
Aroclor 1016	500	550	NA	NA	NA	10	± 20 %	NA
Aroclor 1260 {1}	500	450	41400	36800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	430	57900	49800	-14	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	56100	49800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	130000	113000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	450	79300	71700	-10	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313732
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F003.D	Continuing Calibration Verification	KWG1313732-1	12/7/2013	02:42		12/7/2013	02:42
1206F004.D	Instrument Blank	KWG1313732-2	12/7/2013	03:03		12/7/2013	03:03
1206F005.D	Lab Control Sample	KWG1313283-3	12/7/2013	03:25		12/7/2013	03:25
1206F006.D	Method Blank	KWG1313283-4	12/7/2013	03:46		12/7/2013	03:46
1206F007.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:07		12/7/2013	04:07
1206F008.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:28		12/7/2013	04:28
1206F009.D	ZZZZZZ	ZZZZZZ	12/7/2013	04:49		12/7/2013	04:49
1206F010.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:11		12/7/2013	05:11
1206F011.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:32		12/7/2013	05:32
1206F012.D	ZZZZZZ	ZZZZZZ	12/7/2013	05:53		12/7/2013	05:53
1206F013.D	ZZZZZZ	ZZZZZZ	12/7/2013	06:14		12/7/2013	06:14
1206F014.D	Continuing Calibration Verification	KWG1313732-3	12/7/2013	06:36		12/7/2013	06:36
1206F015.D	Instrument Blank	KWG1313732-4	12/7/2013	06:57		12/7/2013	06:57

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004

Service Request: K1400182

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1313733
Instrument ID: GC32.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1210F004.D	Continuing Calibration Verification	KWG1313733-1	12/10/2013	17:38		12/10/2013	17:38
1210F005.D	Instrument Blank	KWG1313733-2	12/10/2013	18:00		12/10/2013	18:00
1210F006.D	ZZZZZZ	ZZZZZZ	12/10/2013	18:21		12/10/2013	18:21
1210F010.D	ZZZZZZ	ZZZZZZ	12/10/2013	19:43		12/10/2013	19:43
1210F014.D	RM11E-SL031	K1400182-001	12/10/2013	21:06		12/10/2013	21:06
1210F018.D	RM11E-SL031MS	KWG1313283-1	12/10/2013	22:27		12/10/2013	22:27
1210F022.D	RM11E-SL031DMS	KWG1313283-2	12/10/2013	23:49		12/10/2013	23:49
1210F026.D	Continuing Calibration Verification	KWG1313733-3	12/11/2013	01:10		12/11/2013	01:10
1210F027.D	Instrument Blank	KWG1313733-4	12/11/2013	01:31		12/11/2013	01:31
1210F028.D	ZZZZZZ	ZZZZZZ	12/11/2013	01:52		12/11/2013	01:52
1210F032.D	ZZZZZZ	ZZZZZZ	12/11/2013	03:13		12/11/2013	03:13
1210F036.D	ZZZZZZ	ZZZZZZ	12/11/2013	04:35		12/11/2013	04:35
1210F040.D	Continuing Calibration Verification	KWG1313733-5	12/11/2013	05:56		12/11/2013	05:56
1210F041.D	Instrument Blank	KWG1313733-6	12/11/2013	06:17		12/11/2013	06:17

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1400182
Date Extracted: 11/25/2013

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1313283
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-SL031	K1400182-001	11/22/13	11/22/13	30.367g	4mL	90.2	
Method Blank	KWG1313283-4	NA	NA	40.381g	4mL	NA	
RM11E-SL031MS	KWG1313283-1	11/22/13	11/22/13	30.149g	4mL	90.2	
RM11E-SL031DMS	KWG1313283-2	11/22/13	11/22/13	30.023g	4mL	90.2	
Lab Control Sample	KWG1313283-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Confirmation Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental R1/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1400182
Date Collected: 11/22/2013
Date Received: 11/22/2013
Date Extracted: 11/25/2013

Polychlorinated Biphenyls (PCBs)

Sample Name: RM11E-SL031
Lab Code: K1400182-001

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	2.4	3.8	45.2	JP	1	12/10/13
Aroclor 1260	4.3	2.1	14	15	6.9		1	12/10/13

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

May 1, 2014 Analytical Report for Service Request No: K1403697

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on April 15, 2014. For your reference, these analyses have been assigned our service request number K1403697.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

GS/aj

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Incorporated	**Service Request No.:**	K1403697
Project:	River Mile 11 East (RM11E) Supplemental RI/FS/ 487.002.004	**Date Received:**	04/15/14-04/16/14
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Ten water samples were received for analysis at ALS Environmental between 04/15/14 and 04/16/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Divalent Iron (Ferrous Iron) by ApplEnvMic7-87-1536-1540:
Samples RM11E-MW001-04-2014, RM11E-MULT89881-04-2014 and RM11E-MW002s-04-2014 were received past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

No other anomalies associated with the analysis of these samples were observed.

Total and Dissolved Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Calcium for sample RM11E-MW001-04-2014 were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Diesel and Residual Range Organics by Method NWTPH-Dx

No anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

Approved by_____

Chlorinated Pesticides by GC/MS/MS

Surrogate Exceptions:
The upper control criterion was exceeded for gamma-BHCd6 in samples K1403697-001,-002,-003,-004,-008,-009. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

The upper control criterion was exceeded for Hexachlorobenzen-13C6 in samples K1403697-002,-003,-004,-008,-009. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

The control criteria were exceeded for gamma-BHC-d6, and Hexachlorobenzene-13C6 in the Method Blank, Laboratory Control Sample, and the Duplicate Laboratory Control Sample LCS KWG1403509-1, DLCS KWG1403509-2, MB KWG1403509-3. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Calibration Verification Exceptions:
The upper control criterion was exceeded for Hexachlorobenzene in Continuing Calibration Verification (CCV) 0429F021.D. The field samples analyzed in this sequence did not contain the analyte in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Sample Notes and Discussion:
The Hexachlorbenzene hit in sample K1403697-007 is flagged with an X to indicate that the qualifier ion for this analyte is poorly resolved.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Elevated Detection Limits:
The detection limit is elevated for a few Aroclors in sample Method Blank KWG1403491-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the detection limit. Note the level of background was relatively low compared to the detection limit, so the affect on the results was minimal. The results are flagged to indicate the problem.

The detection limit was elevated for all analytes in sample RM11E-MULT1007-04-2014. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The result was flagged to indicate the matrix interference.

The detection limit was elevated, or further elevated, for several Aroclors in couple field samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Matrix Spike Recovery Exceptions:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Approved by_____

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in 0423F021. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Sample Notes and Discussion:
Two Aroclors were identified in RM11E-MW001-04-2014 and RM11E-MW004-04-2014: Aroclor 1242 and Aroclor 1254 or Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254 and/or 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260

No anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Calibration Verification Exceptions:
The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\0422F005.D: Nitrobenzene-d5, and Pentachlorophenol. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.
Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Chain of ustody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1403697

Project Manager:	Erin Carroll Hughes	**Bill to:**	
Client Name:	Groundwater Solutions Inc.	**Company:**	
Address:	55 SW Yamhill Street; Suite 300	**Address:**	
City, State ZIP:	Portland, OR 97219	**City, State ZIP:**	
Email:	ehughes@gsiws.com **Phone:** 503-927-4553	**Email:**	
Project Name:	River Mile 11 East (RM11E) Supplimental RI/FS		
Project Number:	0487.002.004		
P.O. Number:			
Sampler's Name:			

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice
Cooler Custody Seals:	Yes	No	N/A	Total Containers:
Sample Custody Seals:	Yes	No	N/A	

REQUESTED ANALYSIS

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	NWTPH-Dx/SGT (LAG--HCL)	8082A/PCB ULL; SVO LL; Pesticides/Pesticides (LAG--4°C)	ApplEnvMic7-87-1536-1540/Ferrous (250ml AG--4°C)	180.1/Turbidity; 300.0/Chloride; 300.0/SO4; 9050A/Cond Spec; ASTM D1498-00/Redox Pot; SM 2320 B/Bicarb Alk; SM 2320 B/Carbonate Alk; SM 2340 B/Hardness Calc; SM 4500-H+ B/pH (1LP--4°C)	SM 5310 C/TOC T (250ml P--H_2SO_4)	SM 5310 C/TOC D (200ml P--4°C) (Lab Filtered)	6010C/Metals T; 6020A/Metals T; 7470A/Hg T (500ml P--HNO_3)	6010C/Metals D; 6020A/Metals D; 7470A/Hg D (500ml P--4°C) (Lab Filtered)	NWTPH-Gx/NW_GAS (VOA/amber--HCL)					8260C/VOC FP (amber VOA--HCl)					Comments
RM11E-MW001-0414	W	04-14-14	1300		17	1	4	1	1	1	1	1	1	3					3					
RM11E-MW1007-0414			1540		17														3					
RM11E-MW005-0414			1645		17														3					
RM11E-MW505-0414			1645		17														3					
RM11E-TB01-0414			—		2														2					TRIP BLANKS

Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr
Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr

TAT

- ☐ Routine
- ☐ Same Day ***
- ☐ Next Day ***
- ☐ 3 Day
- ☐ 6 Day

*** Please call for availability

Due Date:

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Peter Pellegrin--GSI	Peter Pellegrin	04-15-14; 1000	[illegible]	[illegible]	41514 10:05

PC Mug

Cooler Receipt and Preservation Form

Client / Project: G.S.I. Service Request *K14* 36997

Received: 4-15-14 Opened: 4-15-14 By: DW Unloaded: 4-15-14 By: DW

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 3 - front / side / back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
4.6	4.7	1.8	1.9	+0.1	336			
3.9	3.9	3.1	3.1	0.0	304			
4.1	4.4	1.6	1.9	+0.3	325		-	
3.6	3.7			+0.1	282			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
		SHORT HOLD TIME

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Chain of ustody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1403197

Project Manager:	Erin Carroll Hughes	**Bill to:**	
Client Name:	Groundwater Solutions Inc.	**Company:**	
Address:	55 SW Yamhill Street; Suite 300	**Address:**	
City, State ZIP:	Portland, OR 97219	**City, State ZIP:**	
Email:	ehughes@gsiws.com **Phone:** 503-927-4553	**Email:**	
Project Name:	River Mile 11 East (RM11E) Supplimental RI/FS		
Project Number:	0487.002.004		
P.O. Number:			
Sampler's Name:	Peter Pellegrin - GSI		

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice
Cooler Custody Seals:	Yes	No	N/A	Total Containers:
Sample Custody Seals:	Yes	No	N/A	

REQUESTED ANALYSIS

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	NWTPH-Dx/SGT (LAG--HCL)	8082A/PCB ULL; SVO LL; Pesticides/Pesticides (LAG--4°C)	ApplEnvMic7-87-1536-1540/Ferrous (250ml AG--4°C)	180.1/Turbidity; 300.0/Chloride; 300.0/SO4; 9050A/Cond Spec; ASTM D1498-00/Redox Pot; SM 2320 B/Bicarb Alk; SM 2320 B/Carbonate Alk; SM 2340 B/Hardness Calc; SM 4500-H+ B/pH (1LP--4°C)	SM 5310 C/TOC T (250ml P--H_2SO_4)	SM 5310 C/TOC D (200ml P--4°C) (Lab Filtered)	6010C/Metals T; 6020A/Metals T; 7470A/Hg T (500ml P--HNO_3)	6010C/Metals D; 6020A/Metals D; 7470A/Hg D (500ml P--4°C) (Lab Filtered)	NWTPH-Gx/NW_GAS (VOA/amber--HCL)					8260C/VOC FP (amber VOA--HCl)					Comments
RM11E-003d -0414	W	4-15-14	1525		17	1	4	1	1	1	1	1	1	3					3					
RM11E-MULT 881-0415			1125		17	1	4	1	1	1	1	1	1	3					3					
RM11E-MW005-0414			1650		17	1	4	1	1	1	1	1	1	3					3					
RM11E-MW004-0414			1725		17	1	4	1	1	1	1	1	1	3					3					
RM11E-TB02-0414					2														2					Trip Blank 2 (all VOC in one cooler)

Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr
Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr

TAT

- [x] Routine (14 day)
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 6 Day

*** Please call for availability

Due Date:

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Peter Pellegrin--GSI			[illegible]	[illegible]	4-16-14 11:00
Peter Pellegrin - GSI	PETER PELLEGRIN	04-16-14 : 1000	Holly Steele	[illegible]	4-16-14 12:45

PC Meg

Cooler Receipt and Preservation Form

Client / Project: G.S.I Service Request *K14* 36097

Received: 4/16/14 Opened: 4/16/14 By: TS Unloaded: 4/16/14 By: TS

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 Front 1 Back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
2.2	2.1	6.2	6.1	-.1	322			
1.0	1.0	1.0	1.0	0	304			
2.7	2.7	1.8	1.8	0	339			
2.7	2.6	1.0	.9	-.1	528			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Gregory Salata

From: Erin Carroll Hughes <EcHughes@gsiws.com>
Sent: Wednesday, April 16, 2014 2:47 PM
To: Gregory Salata; Barbie Wygant
Cc: Peter Pellegrin
Subject: RM11E COC - Correction
Attachments: S35C-414041614410.pdf

Greg/Barbie,

We just realized that we listed the sample time on RM11E-MW002s incorrectly on the bottle labels and on today's COC. Can you please change the sample time to 14:50 instead of 16:50 when you log the samples in, as shown on the attached PDF?

And use this COC for your records?

Sorry about that!

Erin Carroll Hughes
GSI Water Solutions, Inc. - Project Hydrogeologist
55 SW Yamhill Street, Suite 300, Portland, OR 97204
Tel: (503) 239-8799, x135 | Direct: (971) 200-8528 | Cell: (503) 927-4553 | Fax: (503) 239-8940

GSI Water Solutions, Inc.

Please note my new name and email (echughes@gsiws.com)

ALS Group: Click here to report this email as spam.

Chain of ustody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

Project Manager:	Erin Carroll Hughes	Bill to:	
Client Name:	Groundwater Solutions Inc.	Company:	
Address:	55 SW Yamhill Street; Suite 300	Address:	
City, State ZIP:	Portland, OR 97219	City, State ZIP:	
Email:	ehughes@gsiws.com Phone: 503-927-4553	Email:	
Project Name:	River Mile 11 East (RM11E) Supplimental RI/FS		
Project Number:	0487.002.004		
P.O. Number:			
Sampler's Name:	Peter Pellegrin - GSI		

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice
Cooler Custody Seals:	Yes	No	N/A	Total Containers:
Sample Custody Seals:	Yes	No	N/A	

REQUESTED ANALYSIS

TAT: [X] Routine/14 day; [ ] Same Day ***; [ ] Next Day ***; [ ] 3 Day; [ ] 6 Day

*** Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	NWTPH-Dx/SGT (LAG--HCL)	8082A/PCB ULL; SVO LL; Pesticides/Pesticides (LAG--4°C)	ApplEnvMic7-87-1536 1540/Ferrous (250ml AG--4°C)	180.1/Turbidity; 300.0/Chloride; 300.0/SO4; 9050A/Cond Spec; ASTM D1498-00/Redox Pot; SM 2320 B/Bicarb Alk; SM 2320 B/Carbonate Alk; SM 2340 B/Hardness Calc; SM 4500-H+ B/pH (1LP--4°C)	SM 5310 C/TOC T (250ml P--H_2SO_4)	SM 5310 C/TOC D (200ml P--4°C) (Lab Filtered)	6010C/Metals T; 6020A/Metals T; 7470A/Hg T (500ml P--HNO_3)	6010C/Metals D; 6020A/Metals D; 7470A/Hg D (500ml P--4°C) (Lab Filtered)	NWTPH-Gx/NW_GAS (VOA/amber--HCL)	8260C/VOC FP (amber VOA--HCL)	Comments
RM11E-003d -0414	W	4-15-14	1525		17	1	4	1	1	1	1	1	1	3	3	
RM11E-MULT 87881-0415			1125		17	1	4	1	1	1	1	1	1	3	3	
RM11E-MW005-0414			1650	1450	17	1	4	1	1	1	1	1	1	3	3	
RM11E-MW004-0414			1725		17	1	4	1	1	1	1	1	1	3	3	
RM11E-TB02-0414					2										2	Trip Blank 2 (all VOC in one cooler)

Times on MW-005 sample labels all say "1650". Actual sample time is 1450. pp 4-16-14.

Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr
Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Peter Pellegrin--GSI			[illegible]	[illegible]	4/16/14 11:00
Peter Pellegrin-GSI	PETER PELLEGRIN	04/16/14 : 1000			

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result		MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**0.18**	**J**	0.20	0.04	1	04/15/14 14:01	
RM11E-MULT1007-04-2014	K1403697-002	**4.16**		0.20	0.04	1	04/15/14 14:01	
RM11E-MW005-04-2014	K1403697-003	**86.1**		0.60	0.12	3	04/15/14 14:01	
RM11E-MW505-04-2014	K1403697-004	**60.6**		0.40	0.08	2	04/15/14 14:01	
RM11E-MW003d-04-2014	K1403697-006	**14.2**		0.20	0.04	1	04/16/14 14:55	
RM11E-MULT89881-04-2014	K1403697-007	**0.15**	**J**	0.20	0.04	1	04/16/14 14:55	
RM11E-MW002s-04-2014	K1403697-008	**463**		5.0	1.0	25	04/16/14 14:55	
RM11E-MW004-04-2014	K1403697-009	**0.58**		0.20	0.04	1	04/16/14 14:55	
Method Blank	K1403697-MB1	**0.05**	**J**	0.20	0.04	1	04/15/14 14:01	
Method Blank	K1403697-MB2	**0.05**	**J**	0.20	0.04	1	04/16/14 14:55	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/15/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW001-04-2014	**Units:**	NTU
Lab Code:	K1403697-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-001DUP Result	Average	RPD	RPD Limit
Turbidity	180.1	0.20	0.04	0.18	0.19	0.185	1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/15/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388714

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	5.50	5.80	95	90-110

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388720

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS2	5.93	5.80	102	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Turbidity

Analysis Method: 180.1 **Units:** NTU

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	388714	KQ1404023-03	04/15/14 14:01	1.00	1.07	107	90-110
CCV2	388714	KQ1404023-04	04/15/14 14:01	20.0	20.5	103	90-110
CCV3	388720	KQ1404024-04	04/16/14 14:55	1.00	1.02	102	90-110
CCV4	388720	KQ1404024-05	04/16/14 14:55	20.0	20.4	102	90-110
CCV5	388720	KQ1404024-06	04/16/14 14:55	1.00	1.01	101	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Turbidity

Analysis Method: 180.1 **Units:**NTU

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	388714	KQ1404023-05	04/15/14 14:01	0.20	0.04	0.05	J
CCB2	388714	KQ1404023-06	04/15/14 14:01	0.20	0.04	0.06	J
CCB3	388720	KQ1404024-07	04/16/14 14:55	0.20	0.04	0.05	J
CCB4	388720	KQ1404024-08	04/16/14 14:55	0.20	0.04	0.05	J
CCB5	388720	KQ1404024-09	04/16/14 14:55	0.20	0.04	0.05	J

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**3.0**	1.0	0.2	5	04/16/14 09:14	
RM11E-MULT1007-04-2014	K1403697-002	**6.2**	1.0	0.2	5	04/16/14 09:24	
RM11E-MW005-04-2014	K1403697-003	**6.8**	1.0	0.2	5	04/16/14 09:33	
RM11E-MW505-04-2014	K1403697-004	**6.8**	1.0	0.2	5	04/16/14 09:43	
RM11E-MW003d-04-2014	K1403697-006	**14.8**	1.0	0.2	5	04/17/14 09:31	
RM11E-MULT89881-04-2014	K1403697-007	**6.5**	1.0	0.2	5	04/17/14 09:40	
RM11E-MW002s-04-2014	K1403697-008	**48**	10	2	50	04/17/14 16:25	
RM11E-MW004-04-2014	K1403697-009	**7.6**	2.0	0.3	10	04/17/14 10:18	
Method Blank	K1403697-MB1	ND U	0.20	0.03	1	04/16/14 08:04	
Method Blank	K1403697-MB2	ND U	0.20	0.03	1	04/16/14 12:53	
Method Blank	K1403697-MB3	ND U	0.20	0.03	1	04/17/14 08:26	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/16/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-001DUP Result	Average	RPD	RPD Limit
Chloride	300.0	1.0	0.2	3.0	3.0	3.03	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/16/14
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Chloride

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1403697-001MS			Duplicate Matrix Spike K1403697-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	3.0	12.9	10.0	99	13.0	10.0	100	90-110	<1	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388485

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	4.90	5.00	98	90-110
Lab Control Sample	K1403697-LCS2	4.87	5.00	97	90-110

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/17/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388715

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS3	4.89	5.00	98	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Chloride

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	388485	KQ1404003-17	04/16/14 07:45	5.00	4.81	96	90-110
CCV2	388485	KQ1404003-18	04/16/14 10:30	5.00	4.82	96	90-110
CCV3	388485	KQ1404003-19	04/16/14 12:32	5.00	4.80	96	90-110
CCV4	388485	KQ1404003-20	04/16/14 14:26	5.00	4.80	96	90-110
CCV5	388485	KQ1404003-21	04/16/14 16:50	5.00	4.81	96	90-110
CCV6	388485	KQ1404003-22	04/16/14 18:47	5.00	4.81	96	90-110
CCV7	388485	KQ1404003-23	04/16/14 20:23	5.00	4.80	96	90-110
CCV8	388715	KQ1404053-12	04/17/14 08:08	5.00	4.82	96	90-110
CCV9	388715	KQ1404053-13	04/17/14 09:59	5.00	4.82	96	90-110
CCV10	388715	KQ1404053-14	04/17/14 11:51	5.00	4.80	96	90-110
CCV11	388715	KQ1404053-15	04/17/14 13:43	5.00	4.79	96	90-110
CCV12	388715	KQ1404053-16	04/17/14 15:36	5.00	4.81	96	90-110
CCV13	388715	KQ1404053-17	04/17/14 17:03	5.00	4.79	96	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Chloride

Analysis Method: 300.0 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	388485	KQ1404003-24	04/16/14 07:54	0.20	0.03	ND	U
CCB2	388485	KQ1404003-25	04/16/14 10:40	0.20	0.03	ND	U
CCB3	388485	KQ1404003-26	04/16/14 12:43	0.20	0.03	ND	U
CCB4	388485	KQ1404003-27	04/16/14 14:37	0.20	0.03	ND	U
CCB5	388485	KQ1404003-28	04/16/14 17:00	0.20	0.03	ND	U
CCB6	388485	KQ1404003-29	04/16/14 18:57	0.20	0.03	ND	U
CCB7	388485	KQ1404003-30	04/16/14 20:32	0.20	0.03	ND	U
CCB8	388715	KQ1404053-18	04/17/14 08:17	0.20	0.03	ND	U
CCB9	388715	KQ1404053-19	04/17/14 10:08	0.20	0.03	ND	U
CCB10	388715	KQ1404053-20	04/17/14 12:01	0.20	0.03	ND	U
CCB11	388715	KQ1404053-21	04/17/14 13:53	0.20	0.03	ND	U
CCB12	388715	KQ1404053-22	04/17/14 15:47	0.20	0.03	ND	U
CCB13	388715	KQ1404053-23	04/17/14 17:14	0.20	0.03	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**26.0**	0.50	0.05	5	04/16/14 09:14	
RM11E-MULT1007-04-2014	K1403697-002	**17.1**	0.50	0.05	5	04/16/14 09:24	
RM11E-MW005-04-2014	K1403697-003	**18.2**	0.50	0.05	5	04/16/14 09:33	
RM11E-MW505-04-2014	K1403697-004	**18.5**	0.50	0.05	5	04/16/14 09:43	
RM11E-MW003d-04-2014	K1403697-006	**21.5**	0.50	0.05	5	04/17/14 09:31	
RM11E-MULT89881-04-2014	K1403697-007	**20.0**	0.50	0.05	5	04/17/14 09:40	
RM11E-MW002s-04-2014	K1403697-008	**293**	5.0	0.5	50	04/17/14 16:25	
RM11E-MW004-04-2014	K1403697-009	**17.2**	1.0	0.1	10	04/17/14 10:18	
Method Blank	K1403697-MB1	ND	0.10	0.01	1	04/16/14 08:26	U
Method Blank	K1403697-MB2	ND	0.10	0.01	1	04/16/14 20:59	U
Method Blank	K1403697-MB3	ND	0.10	0.01	1	04/16/14 08:04	U
Method Blank	K1403697-MB4	ND	0.10	0.01	1	04/16/14 12:53	U
Method Blank	K1403697-MB5	ND	0.10	0.01	1	04/17/14 08:26	U

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/16/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-001DUP Result	Average	RPD	RPD Limit
Sulfate	300.0	0.50	0.05	26.0	25.8	25.9	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/16/14
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	None		

		Matrix Spike K1403697-001MS			Duplicate Matrix Spike K1403697-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	26.0	36.0	10.0	100	36.4	10.0	104	90-110	1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388466

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	4.93	5.00	99	90-110
Lab Control Sample	K1403697-LCS2	4.95	5.00	99	90-110

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388485

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS3	5.08	5.00	102	90-110
Lab Control Sample	K1403697-LCS4	5.07	5.00	101	90-110

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/17/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388715

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS5	5.06	5.00	101	90-110

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Sulfate

Analysis Method: 300.0 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	388466	KQ1403984-14	04/16/14 07:43	5.00	4.88	98	90-110
CCV2	388466	KQ1403984-15	04/16/14 11:48	5.00	4.88	98	90-110
CCV3	388466	KQ1403984-16	04/16/14 14:42	5.00	4.89	98	90-110
CCV4	388466	KQ1403984-17	04/16/14 17:36	5.00	4.88	98	90-110
CCV5	388466	KQ1403984-18	04/16/14 20:29	5.00	4.88	98	90-110
CCV6	388466	KQ1403984-19	04/16/14 23:25	5.00	4.85	97	90-110
CCV7	388466	KQ1403984-20	04/17/14 00:24	5.00	4.87	97	90-110
CCV8	388485	KQ1404003-17	04/16/14 07:45	5.00	5.07	101	90-110
CCV9	388485	KQ1404003-18	04/16/14 10:30	5.00	5.03	101	90-110
CCV10	388485	KQ1404003-19	04/16/14 12:32	5.00	5.02	100	90-110
CCV11	388485	KQ1404003-20	04/16/14 14:26	5.00	5.03	101	90-110
CCV12	388485	KQ1404003-21	04/16/14 16:50	5.00	5.02	100	90-110
CCV13	388485	KQ1404003-22	04/16/14 18:47	5.00	5.01	100	90-110
CCV14	388485	KQ1404003-23	04/16/14 20:23	5.00	5.07	101	90-110
CCV15	388715	KQ1404053-12	04/17/14 08:08	5.00	5.03	101	90-110
CCV16	388715	KQ1404053-13	04/17/14 09:59	5.00	5.04	101	90-110
CCV17	388715	KQ1404053-14	04/17/14 11:51	5.00	5.03	101	90-110
CCV18	388715	KQ1404053-15	04/17/14 13:43	5.00	4.97	99	90-110
CCV19	388715	KQ1404053-16	04/17/14 15:36	5.00	5.03	101	90-110
CCV20	388715	KQ1404053-17	04/17/14 17:03	5.00	4.97	99	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Sulfate

Analysis Method: 300.0 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	388466	KQ1403984-21	04/16/14 07:57	0.10	0.01	ND	U
CCB2	388466	KQ1403984-22	04/16/14 12:03	0.10	0.01	ND	U
CCB3	388466	KQ1403984-23	04/16/14 14:57	0.10	0.01	ND	U
CCB4	388466	KQ1403984-24	04/16/14 17:51	0.10	0.01	ND	U
CCB5	388466	KQ1403984-25	04/16/14 20:44	0.10	0.01	ND	U
CCB6	388466	KQ1403984-26	04/16/14 23:40	0.10	0.01	ND	U
CCB7	388466	KQ1403984-27	04/17/14 00:40	0.10	0.01	ND	U
CCB8	388485	KQ1404003-24	04/16/14 07:54	0.10	0.01	ND	U
CCB9	388485	KQ1404003-25	04/16/14 10:40	0.10	0.01	ND	U
CCB10	388485	KQ1404003-26	04/16/14 12:43	0.10	0.01	ND	U
CCB11	388485	KQ1404003-27	04/16/14 14:37	0.10	0.01	ND	U
CCB12	388485	KQ1404003-28	04/16/14 17:00	0.10	0.01	ND	U
CCB13	388485	KQ1404003-29	04/16/14 18:57	0.10	0.01	ND	U
CCB14	388485	KQ1404003-30	04/16/14 20:32	0.10	0.01	ND	U
CCB15	388715	KQ1404053-18	04/17/14 08:17	0.10	0.01	ND	U
CCB16	388715	KQ1404053-19	04/17/14 10:08	0.10	0.01	ND	U
CCB17	388715	KQ1404053-20	04/17/14 12:01	0.10	0.01	ND	U
CCB18	388715	KQ1404053-21	04/17/14 13:53	0.10	0.01	ND	U
CCB19	388715	KQ1404053-22	04/17/14 15:47	0.10	0.01	ND	U
CCB20	388715	KQ1404053-23	04/17/14 17:14	0.10	0.01	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**473**	2.0	0.4	1	04/23/14 09:00	
RM11E-MULT1007-04-2014	K1403697-002	**347**	2.0	0.4	1	04/23/14 09:00	
RM11E-MW005-04-2014	K1403697-003	**339**	2.0	0.4	1	04/23/14 09:00	
RM11E-MW505-04-2014	K1403697-004	**321**	2.0	0.4	1	04/23/14 09:00	
RM11E-MW003d-04-2014	K1403697-006	**251**	2.0	0.4	1	04/23/14 09:00	
RM11E-MULT89881-04-2014	K1403697-007	**306**	2.0	0.4	1	04/23/14 09:00	
RM11E-MW002s-04-2014	K1403697-008	**1280**	2.0	0.4	1	04/23/14 09:00	
RM11E-MW004-04-2014	K1403697-009	**486**	2.0	0.4	1	04/23/14 09:00	
Method Blank	K1403697-MB1	**1.0**	2.0	0.4	1	04/23/14 09:00	**J**

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/14
Sample Matrix:	Water	**Date Received:**	04/16/14
		Date Analyzed:	04/23/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW002s-04-2014	**Units:**	uMHOS/cm
Lab Code:	K1403697-008	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-008DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	9050A	2.0	0.4	1280	1270	1280	<1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/23/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	9050A	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	389426

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	323	330	98	86-113

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	ApplEnvMic7-87-1536-1540	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Iron, Divalent (Ferrous Iron)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	ND U	0.20	0.05	1	04/15/14 13:15	*
RM11E-MULT1007-04-2014	K1403697-002	**0.27**	0.20	0.05	1	04/15/14 13:15	
RM11E-MW005-04-2014	K1403697-003	**19.8**	2.0	0.5	10	04/15/14 13:15	
RM11E-MW505-04-2014	K1403697-004	**22.5**	2.0	0.5	10	04/15/14 13:15	
RM11E-MW003d-04-2014	K1403697-006	**14.0**	4.0	1.0	20	04/16/14 15:00	
RM11E-MULT89881-04-2014	K1403697-007	ND U	0.20	0.05	1	04/16/14 15:00	*
RM11E-MW002s-04-2014	K1403697-008	**30.8**	4.0	1.0	20	04/16/14 15:00	*
RM11E-MW004-04-2014	K1403697-009	ND U	0.20	0.05	1	04/16/14 15:00	
Method Blank	K1403697-MB1	ND U	0.20	0.05	1	04/15/14 13:15	
Method Blank	K1403697-MB2	ND U	0.20	0.05	1	04/16/14 15:00	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	ApplEnvMic7-87-1536-1540	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MULT1007-04-2014	K1403697-002DUP	0.20	0.05	0.27	0.27	0.272	<1	20	04/15/14
RM11E-MW004-04-2014	K1403697-009DUP	0.20	0.05	ND U	ND U	NC	NC	20	04/16/14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/15/14
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	mg/L
Lab Code:	K1403697-002	**Basis:**	NA
Analysis Method:	ApplEnvMic7-87-1536-1540		
Prep Method:	None		

		Matrix Spike K1403697-002MS			**Duplicate Matrix Spike** K1403697-002DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Iron, Divalent (Ferrous Iron)	0.27	4.31	4.00	101	4.25	4.00	100	75-125	1	20

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/14
Sample Matrix:	Water	**Date Received:**	04/16/14
		Date Analyzed:	04/16/14
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Iron, Divalent (Ferrous Iron)

Sample Name:	RM11E-MW004-04-2014	**Units:**	mg/L
Lab Code:	K1403697-009	**Basis:**	NA
Analysis Method:	ApplEnvMic7-87-1536-1540		
Prep Method:	None		

		Matrix Spike K1403697-009MS			**Duplicate Matrix Spike** K1403697-009DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Iron, Divalent (Ferrous Iron)	ND U	3.99	4.00	100	3.93	4.00	98	75-125	2	20

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Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	388305	KQ1404037-01	04/15/14 13:15	20.0	4.05	20	90-110
CCV2	388305	KQ1404037-03	04/15/14 13:15	20.0	4.03	20	90-110
CCV3	388749	KQ1404038-01	04/16/14 15:00	20.0	3.96	20	90-110
CCV4	388749	KQ1404038-03	04/16/14 15:00	20.0	3.96	20	90-110
CCV5	388749	KQ1404038-05	04/16/14 15:00	20.0	4.09	20	90-110
CCV6	388749	KQ1404038-07	04/16/14 15:00	20.0	3.99	20	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Iron, Divalent (Ferrous Iron)

Analysis Method: ApplEnvMic7-87-1536-1540 **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	388305	KQ1404037-02	04/15/14 13:15	0.20	0.05	ND	U
CCB2	388305	KQ1404037-04	04/15/14 13:15	0.20	0.05	ND	U
CCB3	388749	KQ1404038-02	04/16/14 15:00	0.20	0.05	ND	U
CCB4	388749	KQ1404038-04	04/16/14 15:00	0.20	0.05	ND	U
CCB5	388749	KQ1404038-06	04/16/14 15:00	0.20	0.05	ND	U
CCB6	388749	KQ1404038-08	04/16/14 15:00	0.20	0.05	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Oxidation-Reduction Potential (ORP)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**218**	-	-	1	04/15/14 15:15	H
RM11E-MULT1007-04-2014	K1403697-002	**126**	-	-	1	04/15/14 15:15	H
RM11E-MW005-04-2014	K1403697-003	**-22**	-	-	1	04/15/14 15:15	H
RM11E-MW505-04-2014	K1403697-004	**-34**	-	-	1	04/15/14 15:15	H
RM11E-MW003d-04-2014	K1403697-006	**-40**	-	-	1	04/16/14 17:00	H
RM11E-MULT89881-04-2014	K1403697-007	**190**	-	-	1	04/16/14 17:00	H
RM11E-MW002s-04-2014	K1403697-008	**-116**	-	-	1	04/16/14 17:00	H
RM11E-MW004-04-2014	K1403697-009	**157**	-	-	1	04/16/14 17:00	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Oxidation-Reduction Potential (ORP)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW001-04-2014	K1403697-001DUP	-		218	252	235	14	20	04/15/14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/15/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388327

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	478	480	100	85-115

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Oxidation-Reduction Potential (ORP)

Analysis Method:	ASTM D1498-00	**Units:**	mV
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388653

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS2	476	480	99	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Bicarbonate as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**275**	15	3	1	04/22/14 16:16	
RM11E-MULT1007-04-2014	K1403697-002	**173**	15	3	1	04/22/14 16:16	
RM11E-MW005-04-2014	K1403697-003	**156**	15	3	1	04/22/14 16:16	
RM11E-MW505-04-2014	K1403697-004	**155**	15	3	1	04/22/14 16:16	
RM11E-MW003d-04-2014	K1403697-006	**109**	15	3	1	04/22/14 16:16	
RM11E-MULT89881-04-2014	K1403697-007	**111**	15	3	1	04/22/14 16:16	
RM11E-MW002s-04-2014	K1403697-008	**536**	15	3	1	04/22/14 16:16	
RM11E-MW004-04-2014	K1403697-009	**273**	15	3	1	04/22/14 16:16	
Method Blank	K1403697-MB1	**6**	15	3	1	04/22/14 16:16	**J**

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/22/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-001DUP Result	Average	RPD	RPD Limit
Bicarbonate as CaCO3	SM 2320 B	15	3	275	277	276	<1	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbonate as CaCO3

Sample Name	Lab Code	Result		MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	ND	U	15	3	1	04/22/14 16:16	
RM11E-MULT1007-04-2014	K1403697-002	ND	U	15	3	1	04/22/14 16:16	
RM11E-MW005-04-2014	K1403697-003	ND	U	15	3	1	04/22/14 16:16	
RM11E-MW505-04-2014	K1403697-004	ND	U	15	3	1	04/22/14 16:16	
RM11E-MW003d-04-2014	K1403697-006	ND	U	15	3	1	04/22/14 16:16	
RM11E-MULT89881-04-2014	K1403697-007	ND	U	15	3	1	04/22/14 16:16	
RM11E-MW002s-04-2014	K1403697-008	ND	U	15	3	1	04/22/14 16:16	
RM11E-MW004-04-2014	K1403697-009	ND	U	15	3	1	04/22/14 16:16	
Method Blank	K1403697-MB1	ND	U	15	3	1	04/22/14 16:16	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/22/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1403697-001DUP Result	Average	RPD	RPD Limit
Carbonate as CaCO3	SM 2320 B	15	3	ND	ND	NC	NC	20

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

pH

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**7.39**	-	-	1	04/15/14 17:37	H
RM11E-MULT1007-04-2014	K1403697-002	**7.35**	-	-	1	04/15/14 17:39	H
RM11E-MW005-04-2014	K1403697-003	**6.89**	-	-	1	04/15/14 17:41	H
RM11E-MW505-04-2014	K1403697-004	**7.15**	-	-	1	04/15/14 17:43	H
RM11E-MW003d-04-2014	K1403697-006	**6.91**	-	-	1	04/16/14 17:33	H
RM11E-MULT89881-04-2014	K1403697-007	**7.21**	-	-	1	04/16/14 17:35	H
RM11E-MW002s-04-2014	K1403697-008	**6.84**	-	-	1	04/16/14 17:36	H
RM11E-MW004-04-2014	K1403697-009	**7.10**	-	-	1	04/16/14 17:38	H

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
pH

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1403693-002DUP	-		6.92	6.95	6.94	<1	20	04/15/14
Batch QC	K1403732-001DUP	-		8.26	8.28	8.27	<1	20	04/16/14
Batch QC	K1403765-001DUP	-		8.14	8.13	8.14	<1	20	04/16/14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/15/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	5.40	5.38	100	85-115

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/16/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
pH

Analysis Method:	SM 4500-H+ B	**Units:**	pH Units
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388523

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS2	5.40	5.38	100	85-115

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**2.15**	0.50	0.07	1	04/22/14 16:05	
RM11E-MULT1007-04-2014	K1403697-002	**1.43**	0.50	0.07	1	04/22/14 16:05	
RM11E-MW005-04-2014	K1403697-003	**1.13**	0.50	0.07	1	04/22/14 16:05	
RM11E-MW505-04-2014	K1403697-004	**1.10**	0.50	0.07	1	04/23/14 12:52	
RM11E-MW003d-04-2014	K1403697-006	**1.51**	0.50	0.07	1	04/23/14 12:52	
RM11E-MULT89881-04-2014	K1403697-007	**1.36**	0.50	0.07	1	04/23/14 12:52	
RM11E-MW002s-04-2014	K1403697-008	**11.8**	0.50	0.07	1	04/23/14 12:52	
RM11E-MW004-04-2014	K1403697-009	**4.22**	0.50	0.07	1	04/23/14 12:52	
Method Blank	K1403697-MB1	ND	0.50	0.07	1	04/22/14 16:05	U
Method Blank	K1403697-MB2	ND	0.50	0.07	1	04/23/14 12:52	U

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW001-04-2014	K1403697-001DUP	0.50	0.07	2.15	2.15	2.15	<1	10	04/22/14
RM11E-MULT1007-04-2014	K1403697-002DUP	0.50	0.07	1.43	1.37	1.40	4	10	04/22/14
RM11E-MW005-04-2014	K1403697-003DUP	0.50	0.07	1.13	1.16	1.15	2	10	04/22/14
RM11E-MW505-04-2014	K1403697-004DUP	0.50	0.07	1.10	1.13	1.11	2	10	04/23/14
RM11E-MW003d-04-2014	K1403697-006DUP	0.50	0.07	1.51	1.58	1.54	4	10	04/23/14
RM11E-MULT89881-04-2014	K1403697-007DUP	0.50	0.07	1.36	1.38	1.37	1	10	04/23/14
RM11E-MW002s-04-2014	K1403697-008DUP	0.50	0.07	11.8	11.8	11.8	<1	10	04/23/14
RM11E-MW004-04-2014	K1403697-009DUP	0.50	0.07	4.22	4.19	4.20	<1	10	04/23/14

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/22/14
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1403697-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	2.15	27.0	25.0	99	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/23/14
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Dissolved Organic (DOC)

Sample Name:	RM11E-MW505-04-2014	**Units:**	mg/L
Lab Code:	K1403697-004	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1403697-004MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	1.10	25.3	25.0	97	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/22/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	389322

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	16.8	18.1	93	83-117

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/23/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Dissolved Organic (DOC)

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	389467

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS2	16.4	18.1	90	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	389322	KQ1404214-03	04/22/14 16:05	25.0	25.6	102	90-110
CCV2	389322	KQ1404214-04	04/22/14 16:05	25.0	26.0	104	90-110
CCV3	389467	KQ1404260-03	04/23/14 12:52	25.0	25.1	100	90-110
CCV4	389467	KQ1404260-04	04/23/14 12:52	25.0	24.8	99	90-110
CCV5	389467	KQ1404260-13	04/23/14 12:52	25.0	24.4	97	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	389322	KQ1404214-05	04/22/14 16:05	0.50	0.07	ND	U
CCB2	389322	KQ1404214-06	04/22/14 16:05	0.50	0.07	ND	U
CCB3	389467	KQ1404260-05	04/23/14 12:52	0.50	0.07	ND	U
CCB4	389467	KQ1404260-06	04/23/14 12:52	0.50	0.07	ND	U
CCB5	389467	KQ1404260-14	04/23/14 12:52	0.50	0.07	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-MW001-04-2014	K1403697-001	**2.13**	0.50	0.07	1	04/18/14 15:00	
RM11E-MULT1007-04-2014	K1403697-002	**1.56**	0.50	0.07	1	04/18/14 15:00	
RM11E-MW005-04-2014	K1403697-003	**1.19**	0.50	0.07	1	04/18/14 15:00	
RM11E-MW505-04-2014	K1403697-004	**1.11**	0.50	0.07	1	04/18/14 15:00	
RM11E-MW003d-04-2014	K1403697-006	**0.62**	0.50	0.07	1	04/18/14 15:00	
RM11E-MULT89881-04-2014	K1403697-007	**0.25**	0.50	0.07	1	04/18/14 15:00	**J**
RM11E-MW002s-04-2014	K1403697-008	**14.9**	0.50	0.07	1	04/18/14 15:00	
RM11E-MW004-04-2014	K1403697-009	**3.11**	0.50	0.07	1	04/18/14 15:00	
Method Blank	K1403697-MB1	ND	0.50	0.07	1	04/18/14 15:00	U

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14 - 04/15/14
Sample Matrix:	Water	**Date Received:**	04/15/14 - 04/16/14
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-MW001-04-2014	K1403697-001DUP	0.50	0.07	2.13	1.97	2.05	8	10	04/18/14
RM11E-MULT1007-04-2014	K1403697-002DUP	0.50	0.07	1.56	1.63	1.60	4	10	04/18/14
RM11E-MW005-04-2014	K1403697-003DUP	0.50	0.07	1.19	1.15	1.17	3	10	04/18/14
RM11E-MW505-04-2014	K1403697-004DUP	0.50	0.07	1.11	1.08	1.10	2	10	04/18/14
RM11E-MW003d-04-2014	K1403697-006DUP	0.50	0.07	0.62	0.65	0.635	4	10	04/18/14
RM11E-MULT89881-04-2014	K1403697-007DUP	0.50	0.07	0.25 J	0.24 J	0.242	3	10	04/18/14
RM11E-MW002s-04-2014	K1403697-008DUP	0.50	0.07	14.9	15.2	15.0	2	10	04/18/14
RM11E-MW004-04-2014	K1403697-009DUP	0.50	0.07	3.11	3.17	3.14	2	10	04/18/14

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Analyzed:	04/18/14
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-MW001-04-2014	**Units:**	mg/L
Lab Code:	K1403697-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1403697-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	2.13	28.5	25.0	105	83-117

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/18/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	388930

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1403697-LCS1	16.4	18.1	91	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	388930	KQ1404080-03	04/18/14 15:00	25.0	24.9	99	90-110
CCV2	388930	KQ1404080-04	04/18/14 15:00	25.0	25.1	100	90-110
CCV3	388930	KQ1404080-05	04/18/14 15:00	25.0	24.8	99	90-110
CCV4	388930	KQ1404080-06	04/18/14 15:00	25.0	24.9	100	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	388930	KQ1404080-07	04/18/14 15:00	0.50	0.07	ND	U
CCB2	388930	KQ1404080-08	04/18/14 15:00	0.50	0.07	ND	U
CCB3	388930	KQ1404080-09	04/18/14 15:00	0.50	0.07	ND	U
CCB4	388930	KQ1404080-10	04/18/14 15:00	0.50	0.07	ND	U

Hardness as CaCO3

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14-15-14
Sample Matrix:	Water	**Date Received:**	04/15-16/14

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	6010C/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
RM11E-MW001-04-2014	K1403697-001	0.07	0.002	1	04/17/14	04/24/14	282	
RM11E-MULT1007-04-2014	K1403697-002	0.07	0.002	1	04/17/14	04/24/14	174	
RM11E-MW005-04-2014	K1403697-003	0.07	0.002	1	04/17/14	04/24/14	145	
RM11E-MW505-04-2014	K1403697-004	0.07	0.002	1	04/17/14	04/24/14	146	
RM11E-MW003d-04-2014	K1403697-006	0.07	0.002	1	04/17/14	04/24/14	112	
RM11E-MULT89881-04-2014	K1403697-007	0.07	0.002	1	04/17/14	04/24/14	136	
RM11E-MW002s-04-2014	K1403697-008	0.07	0.002	1	04/17/14	04/24/14	684	
RM11E-MW004-04-2014	K1403697-009	0.07	0.002	1	04/17/14	04/24/14	247	
Method Blank	K1403697-MB	0.07	0.002	1	04/17/14	04/24/14	0.005	J

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/14
Sample Matrix:	Water	**Date Received:**	04/15/14
		Date Extracted:	04/17/14
		Date Analyzed:	04/24/14

Duplicate Summary
Metals

Sample Name:	RM11E-MW001-04-2014	Units:	mg/L (ppm)
Lab Code:	K1403697-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	6010C/SM 2340B	0.07	282	280	281	<1	

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: GSI Water Solutions, Inc
Project Name: River Mile 11 East (RM11E) Supplimental RI/FS
Project No.: 487.002.004

Service Request: K1403697

Sample Name:	Lab Code:
RM11E-MW001-04-2014	K1403697-001
RM11E-MW001-04-2014D	K1403697-001D
RM11E-MW001-04-2014	K1403697-001DISS
RM11E-MW001-04-2014S	K1403697-001S
RM11E-MULT1007-04-2014	K1403697-002
RM11E-MULT1007-04-2014	K1403697-002DISS
RM11E-MW005-04-2014	K1403697-003
RM11E-MW005-04-2014	K1403697-003DISS
RM11E-MW505-04-2014	K1403697-004
RM11E-MW505-04-2014	K1403697-004DISS
RM11E-MW003d-04-2014	K1403697-006
RM11E-MW003d-04-2014	K1403697-006DISS
RM11E-MULT89881-04-2014	K1403697-007
RM11E-MULT89881-04-2014	K1403697-007DISS
RM11E-MW002s-04-2014	K1403697-008
RM11E-MW002s-04-2014	K1403697-008DISS
RM11E-MW004-04-2014	K1403697-009
RM11E-MW004-04-2014	K1403697-009DISS
Method Blank	K1403697-MB

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW001-04-2014** **Lab Code:** **K1403697-001**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.788		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	0.8		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	82.3		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.007	J	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.054		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	92300		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.75		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.195		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	1.37		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	6.7	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.026		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	12600		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	10.9		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.49		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	6520		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	12200		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	6.22		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	17.1		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW001-04-2014** **Lab Code:** **K1403697-001DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.791		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	0.9		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	81.4		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.059		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	91900		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.60		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.183		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	1.27		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	3.7	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.007	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	12400		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	10.9		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.58		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	6520		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	12000		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	5.90		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	16.9		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MULT1007-04-2014** **Lab Code:** **K1403697-002**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.109		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	1.2		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	20.9		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.023		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	42700		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.49		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.682		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	1.06		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	1550		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	1.34		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	16300		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	511		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	4.12		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	3410		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	14100		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	7.27		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	16.7		

Comments:

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MULT1007-04-2014** **Lab Code:** **K1403697-002DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.054		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	0.2	J	
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	18.0		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.018	J	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	42200		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.08	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.585		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.63		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	17.0	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.033		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	15900		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	483		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	3.76		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	3330		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	13500		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	2.00		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	10.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW005-04-2014** **Lab Code:** **K1403697-003**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.011	J	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	6.3		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	51.5		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	32900		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.14	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.130		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.13		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	28100		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	15200		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	3580		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.81		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2880		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	10300		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.21		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	0.4	J	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW005-04-2014** **Lab Code:** **K1403697-003DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	2.6		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	29.3		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	32700		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.08	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.110		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.44		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	16500		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.013	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	15400		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	3490		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.83		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2890		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	10400		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.03	U	
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	0.7		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW505-04-2014** **Lab Code:** **K1403697-004**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.009	J	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	6.3		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	51.6		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	J	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	33300		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.15	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.140		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.11		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	28400		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	15400		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	3550		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.86		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2910		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	10400		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.24		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	0.5	J	

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/14/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/15/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW505-04-2014** **Lab Code:** **K1403697-004DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	2.5		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	29.4		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	32400		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.12	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.130		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.28		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	15600		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.015	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	15200		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	3550		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.85		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2820		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	10200		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.03	U	
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	1.4		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW003d-04-2014** **Lab Code:** **K1403697-006**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.010	J	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	3.5		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	40.8		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.008	J	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	25800		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.84		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.148		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.23		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	18200		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.061		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	11500		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	942		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.00		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	3500		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	11200		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.10	J	
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	84.0		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW003d-04-2014** **Lab Code:** **K1403697-006DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	2.2		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	25.0		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	25600		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.05	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.131		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.51		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	12800		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.018	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	11600		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	926		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.87		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	3520		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	11400		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.03	U	
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	24.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MULT89881-04-2014** **Lab Code:** **K1403697-007**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.062		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	1.6		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	21.3		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	1.44		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	33300		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.19		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.091		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	2.56		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	8.3	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.006	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	12900		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	0.653		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.01		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2850		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	8390		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	9.19		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	10.3		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MULT89881-04-2014** **Lab Code:** **K1403697-007DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.069		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	1.5		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	21.3		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	1.40		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	32900		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.17		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.088		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	2.50		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	4.4	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	12900		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	0.478		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.00		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	2860		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	8430		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	8.42		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	10.3		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW002s-04-2014** **Lab Code:** **K1403697-008**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.034	J	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	3.2		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	153		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.020		
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.018	J	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	161000		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	1.71		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	8.800		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.76		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	77700		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.185		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	68700		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	6840		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	3.66		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	4140		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	44900		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	1.36		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	11.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW002s-04-2014** **Lab Code:** **K1403697-008DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.024	J	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	0.8		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	58.6		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.008	J	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	175000		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.27		
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	7.830		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.88		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	25000		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.018	J	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	75700		
Manganese	6020A	5.000	0.600	100.0	04/17/14	04/23/14	7360		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	3.59		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	4080		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	53700		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.25		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	2.0		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW004-04-2014** **Lab Code:** **K1403697-009**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.642		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	1.3		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	55.9		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	J	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.089		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	80700		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.20	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.670		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	2.27		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	98.8		
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.055		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	11000		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	210		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	2.74		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	6070		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	21800		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	6.85		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	33.0		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	04/15/14
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	04/16/14
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **RM11E-MW004-04-2014** **Lab Code:** **K1403697-009DISS**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.624		
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	1.2		
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	54.9		
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.007	J	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.073		
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	81100		
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.10	J	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	1.690		
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	2.68		
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	16.9	J	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.033		
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	10900		
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	215		
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	2.81		
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	6030		
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	21500		
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	6.65		
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	33.1		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project No.:	487.002.004	**Date Collected:**	
Project Name:	River Mile 11 East (RM11E) Suppl	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **K1403697-MB**

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.005	1.0	04/17/14	04/23/14	0.005	U	
Arsenic	6020A	0.5	0.1	1.0	04/17/14	04/23/14	0.1	U	
Barium	6020A	0.05	0.02	1.0	04/17/14	04/23/14	0.02	U	
Beryllium	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Cadmium	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Calcium	6010C	20.0	0.6	1.0	04/17/14	04/24/14	1.5	J	
Chromium	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.02	U	
Cobalt	6020A	0.020	0.006	1.0	04/17/14	04/23/14	0.006	U	
Copper	6020A	0.10	0.02	1.0	04/17/14	04/23/14	0.02	U	
Iron	6010C	20.0	3.0	1.0	04/17/14	04/24/14	3.0	U	
Lead	6020A	0.020	0.005	1.0	04/17/14	04/23/14	0.005	U	
Magnesium	6010C	5.0	0.2	1.0	04/17/14	04/24/14	0.3	J	
Manganese	6020A	0.050	0.006	1.0	04/17/14	04/23/14	0.006	U	
Mercury	7470A	0.20	0.02	1.0	04/17/14	04/21/14	0.02	U	
Nickel	6020A	0.20	0.02	1.0	04/17/14	04/23/14	0.02	U	
Potassium	6010C	200	50.0	1.0	04/17/14	04/24/14	50.0	U	
Sodium	6010C	200	20.0	1.0	04/17/14	04/24/14	20.0	U	
Vanadium	6020A	0.20	0.03	1.0	04/17/14	04/23/14	0.03	U	
Zinc	6020A	0.5	0.2	1.0	04/17/14	04/23/14	0.2	U	

Comments:

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Antimony	25.0	23.9	96	25.0	24.9	100	24.8	99	6020A
Arsenic	25.0	24.2	97	25.0	24.9	100	25.0	100	6020A
Barium	100.0	93.4	93	25.0	24.8	99	24.7	99	6020A
Beryllium	2.5	2.4	96	25.0	24.9	100	24.7	99	6020A
Cadmium	12.5	12.3	98	25.0	24.7	99	24.9	100	6020A
Calcium	5000	5140	103	500	508	102	513	103	6010C
Calcium	12500	12700	102	10000	10040	100	9956	100	6010C
Chromium	10.0	9.4	94	25.0	25.1	100	25.4	102	6020A
Cobalt	25.0	23.9	96	25.0	25.0	100	25.2	101	6020A
Copper	12.5	11.8	94	25.0	25.2	101	25.0	100	6020A
Iron	2500	2533	101	10000	10090	101	10070	101	6010C
Lead	25.0	23.8	95	25.0	24.8	99	24.9	100	6020A
Magnesium	5000	5187	104	250	253	101	256	102	6010C
Magnesium	12500	12680	101	10000	10120	101	10040	100	6010C
Manganese	25.0	23.7	95	25.0	25.1	100	25.3	101	6020A
Mercury	5.00	5.00	100	5.00	5.00	100	4.90	98	7470A
Nickel	25.0	23.8	95	25.0	25.1	100	25.0	100	6020A
Potassium	12500	12450	100	10000	10010	100	9977	100	6010C
Sodium	12500	12470	100	10000	10010	100	10060	101	6010C
Vanadium	25.0	24.1	96	25.0	25.2	101	25.3	101	6020A
Zinc	25.0	23.8	95	25.0	25.0	100	25.0	100	6020A

Metals
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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Antimony				25.0	24.9	100	24.9	100	6020A
Arsenic				25.0	25.1	100	25.4	102	6020A
Barium				25.0	24.9	100	24.9	100	6020A
Beryllium				25.0	24.5	98	24.8	99	6020A
Cadmium				25.0	25.1	100	25.1	100	6020A
Calcium				10000	9996	100	9899	99	6010C
Calcium				500	508	102	511	102	6010C
Chromium				25.0	25.0	100	25.3	101	6020A
Cobalt				25.0	25.1	100	25.2	101	6020A
Copper				25.0	25.0	100	25.3	101	6020A
Iron				10000	10100	101	9988	100	6010C
Lead				25.0	24.8	99	24.7	99	6020A
Magnesium				10000	10050	100	10290	103	6010C
Magnesium				250	252	101	252	101	6010C
Manganese				25.0	25.4	102	25.1	100	6020A
Mercury				5.00	4.90	98	4.90	98	7470A
Nickel				25.0	25.3	101	25.2	101	6020A
Potassium				10000	9946	99	10210	102	6010C
Sodium				10000	10080	101	10390	104	6010C
Vanadium				25.0	24.9	100	25.2	101	6020A
Zinc				25.0	24.9	100	25.0	100	6020A

Metals

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LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1403697

Contract: 487.002.004 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICVW1									
	Antimony	0.057	0.05	114	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Arsenic	0.47	0.5	94	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Barium	0.051	0.05	102	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Beryllium	0.021	0.02	105	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Cadmium	0.016	0.02	80	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Chromium	0.19	0.20	95	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Cobalt	0.021	0.02	105	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Copper	0.10	0.10	100	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Lead	0.023	0.02	115	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Manganese	0.047	0.05	94	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Nickel	0.17	0.20	85	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Vanadium	0.19	0.20	95	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
	Zinc	0.47	0.50	94	70.0 - 130.0	MS	04/23/14	09:34	042314BMS
LLCCVW1									
	Antimony	0.060	0.05	120	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Arsenic	0.49	0.5	98	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Barium	0.043	0.05	86	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Beryllium	0.020	0.02	100	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Cadmium	0.022	0.02	110	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Chromium	0.18	0.20	90	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Cobalt	0.017	0.02	85	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Copper	0.09	0.10	90	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Lead	0.022	0.02	110	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Manganese	0.049	0.05	98	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Nickel	0.19	0.20	95	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Vanadium	0.17	0.20	85	70.0 - 130.0	MS	04/23/14	11:20	042314BMS
	Zinc	0.46	0.50	92	70.0 - 130.0	MS	04/23/14	11:20	042314BMS

Metals

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LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Client: GSI Water Solutions, Inc **SDG No.:** K1403697

Contract: 487.002.004 **Lab Code:** CASK **Case No.:** **SAS No.:**

Initial Calibration Source: Inorganic Ventures

Continuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCVW2									
	Antimony	0.054	0.05	108	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Arsenic	0.49	0.5	98	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Barium	0.040	0.05	80	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Beryllium	0.020	0.02	100	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Cadmium	0.022	0.02	110	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Chromium	0.19	0.20	95	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Cobalt	0.017	0.02	85	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Copper	0.10	0.10	100	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Lead	0.023	0.02	115	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Manganese	0.049	0.05	98	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Nickel	0.18	0.20	90	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Vanadium	0.20	0.20	100	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
	Zinc	0.46	0.50	92	70.0 - 130.0	MS	04/23/14	13:28	042314BMS
LLICV1									
	Calcium	20.5	20.0	102	70.0 - 130.0	P	04/24/14	08:56	042414AICP
	Iron	22.0	20.0	110	70.0 - 130.0	P	04/24/14	08:56	042414AICP
	Magnesium	5.3	5.0	106	70.0 - 130.0	P	04/24/14	08:56	042414AICP
	Potassium	199.9	200.0	100	70.0 - 130.0	P	04/24/14	08:56	042414AICP
	Sodium	205.1	200.0	103	70.0 - 130.0	P	04/24/14	08:56	042414AICP
LLCCV1									
	Calcium	21.3	20.0	106	70.0 - 130.0	P	04/24/14	11:24	042414AICP
	Iron	20.6	20.0	103	70.0 - 130.0	P	04/24/14	11:24	042414AICP
	Magnesium	6.2	5.0	124	70.0 - 130.0	P	04/24/14	11:24	042414AICP
	Potassium	207.2	200.0	104	70.0 - 130.0	P	04/24/14	11:24	042414AICP
	Sodium	211.1	200.0	106	70.0 - 130.0	P	04/24/14	11:24	042414AICP

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.20	0.20	100					

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony	0.012	J	0.008	J	0.008	J	0.010	J	6020A
Arsenic	0.10	U	0.10	U	0.10	U	0.10	U	6020A
Barium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Beryllium	0.006	U	0.006	U	0.006	U	0.006	U	6020A
Cadmium	0.005	U	0.005	U	0.005	U	0.005	U	6020A
Calcium	0.6	U	0.6	U	1.2	J	0.6	J	6010C
Chromium	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Cobalt	0.006	U	0.006	U	0.006	U	0.006	U	6020A
Copper	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Iron	3.0	U	3.0	U	4.2	J	3.0	U	6010C
Lead	0.005	U	0.005	U	0.005	U	0.005	U	6020A
Magnesium	0.7	J	0.2	U	0.5	J	0.2	U	6010C
Manganese	0.006	U	0.006	U	0.006	U	0.008	J	6020A
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7470A
Nickel	0.02	U	0.02	U	0.02	U	0.02	U	6020A
Potassium	50.0	U	50.0	U	50.0	U	61.1	J	6010C
Sodium	20.0	U	20.0	U	20.0	U	20.0	U	6010C
Vanadium	0.03	U	0.03	U	0.03	U	0.03	U	6020A
Zinc	0.20	U	0.20	U	0.20	U	0.20	U	6020A

Metals

- 3 -

BLANKS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Antimony			0.006	J					6020A
Arsenic			0.10	U					6020A
Barium			0.02	U					6020A
Beryllium			0.006	U					6020A
Cadmium			0.005	U					6020A
Calcium			1.0	J					6010C
Chromium			0.02	U					6020A
Cobalt			0.006	U					6020A
Copper			0.02	U					6020A
Iron			3.0	U					6010C
Lead			0.005	U					6020A
Magnesium			3.1	J					6010C
Manganese			0.006	U					6020A
Mercury			-0.03	J					7470A
Nickel			0.02	U					6020A
Potassium			50.0	U					6010C
Sodium			20.0	U					6010C
Vanadium			0.03	U					6020A
Zinc			0.20	U					6020A

Metals

- 4 -

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: K-ICP-AES-04 **ICS Source:** Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Calcium	500000.0	500000.0	503700.0	479300.0	96			
Iron	200000.0	200000.0	196200.0	184400.0	92			
Magnesium	500000.0	500000.0	556000.0	522600.0	105			
Potassium	0.0		-0.8	-27.9				
Sodium	0.0		26.6	9.2				

Metals

- 4 -

ICP INTERFERENCE CHECK SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: K-ICP-MS-03 **ICS Source:** Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Antimony	0.0		0.23	0.24				
Arsenic	0.00	25.00	-0.08	23.67	95			
Barium	0.00		3.10	3.07				
Beryllium	0.00		0.035	0.032				
Cadmium	0.00	25.00	0.18	23.70	95			
Chromium	0.00	50.00	0.38	49.11	98			
Cobalt	0.0	50.0	0.99	49.03	98			
Copper	0.0	50.0	0.51	46.2	92			
Lead	0.0		0.08	0.08				
Manganese	0.0	50.0	1.41	50.04	100			
Nickel	0.0	50.0	1.30	47.9	96			
Vanadium	0.0	50.0	-0.04	49.95	100			
Zinc	0.0	25.0	1.30	23.9	96			

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dba ALS Environmental

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Units:** UG/L

Project Name: River Mile 11 East (RM11E) Suppl **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW001-04-2014S **Lab Code:** K1403697-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	75 - 125	52.5		0.788		50.00	103.4		6020A
Arsenic	75 - 125	52.1		0.8		50.00	102.6		6020A
Barium	75 - 125	186		82.3		100.00	103.7		6020A
Beryllium	75 - 125	2.52		0.007	J	2.50	100.5		6020A
Cadmium	75 - 125	25.3		0.054		25.00	101.0		6020A
Calcium		103000		92300		10000.00	107.0		6010C
Chromium	75 - 125	10.2		0.75		10.00	94.5		6020A
Cobalt	75 - 125	24.8		0.195		25.00	98.4		6020A
Copper	75 - 125	13.5		1.37		12.50	97.0		6020A
Iron	75 - 125	1040		6.7	J	1000.00	103.3		6010C
Lead	75 - 125	49.4		0.026		50.00	98.7		6020A
Magnesium	75 - 125	22900		12600		10000.00	103.0		6010C
Manganese	75 - 125	35.4		10.9		25.00	98.0		6020A
Mercury	80 - 120	0.98		0.02	U	1.00	98.0		7470A
Nickel	75 - 125	26.0		1.49		25.00	98.0		6020A
Potassium	75 - 125	17000		6520		10000.00	104.8		6010C
Sodium	75 - 125	22700		12200		10000.00	105.0		6010C
Vanadium	75 - 125	30.2		6.22		25.00	95.9		6020A
Zinc	75 - 125	41.6		17.1		25.00	98.0		6020A

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -
POST SPIKE SAMPLE RECOVERY

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Units:** UG/L

Project Name: River Mile 11 East (RM11E) Suppl **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW001-04-2014A **Lab Code:** K1403697-001A

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	80 - 120	22.271		0.788		20.0	107		6020A
Arsenic	80 - 120	22.5		0.8		20.0	108		6020A
Barium	80 - 120	103.78		82.33		20.0	107		6020A
Beryllium	80 - 120	21.047		0.007		20.0	105		6020A
Cadmium	80 - 120	21.112		0.055		20.0	105		6020A
Calcium	80 - 120	102900.0		92290.0		12500	85		6010C
Chromium	80 - 120	20.75		0.75		20.0	100		6020A
Cobalt	80 - 120	20.518		0.195		20.0	102		6020A
Copper	80 - 120	21.64		1.37		20.0	101		6020A
Iron	80 - 120	2470.0		6.7		2500	99		6010C
Lead	80 - 120	20.864		0.026		20.0	104		6020A
Magnesium	80 - 120	24990.0		12600.0		12500	99		6010C
Manganese	80 - 120	31.245		10.907		20.0	102		6020A
Mercury	80 - 120	0.99		0.02		1.0	99		7470A
Nickel	80 - 120	21.46		1.49		20.0	100		6020A
Potassium	80 - 120	19290.0		6516.0		12500	102		6010C
Sodium	80 - 120	24930.0		12220.0		12500	102		6010C
Vanadium	80 - 120	26.19		6.22		20.0	100		6020A
Zinc	80 - 120	37.61		17.08		20.0	103		6020A

Metals

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DUPLICATES

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Units:** UG/L

Project Name: River Mile 11 East (RM11E) Suppl **Basis:** NA

Matrix: WATER

Sample Name: RM11E-MW001-04-2014D **Lab Code:** K1403697-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	0.788		0.812		3.0		6020A
Arsenic		0.8		1.0		22.2		6020A
Barium	20	82.3		82.1		0.2		6020A
Beryllium		0.007	J	0.006	U	200.0		6020A
Cadmium		0.054		0.054		0.0		6020A
Calcium	20	92300		91800		0.5		6010C
Chromium		0.75		0.68		9.8		6020A
Cobalt	20	0.195		0.192		1.6		6020A
Copper	20	1.37		1.36		0.7		6020A
Iron		6.7	J	7.5	J	11.3		6010C
Lead		0.026		0.025		3.9		6020A
Magnesium	20	12600		12300		2.4		6010C
Manganese	20	10.9		10.9		0.0		6020A
Mercury		0.02	U	0.02	U			7470A
Nickel	20	1.49		1.56		4.6		6020A
Potassium	20	6520		6390		2.0		6010C
Sodium	20	12200		11800		3.3		6010C
Vanadium	20	6.22		6.18		0.6		6020A
Zinc	20	17.1		17.3		1.2		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Antimony	50	51.7	103.4					
Arsenic	50	52.2	104.4					
Barium	100	102	102.0					
Beryllium	2.5	2.62	104.8					
Cadmium	25	26.5	106.0					
Calcium	12500	12500	100.0					
Chromium	10	10.4	104.0					
Cobalt	25	26.4	105.6					
Copper	12.5	13.0	104.0					
Iron	2500	2520	100.8					
Lead	50	52.7	105.4					
Magnesium	12500	12800	102.4					
Manganese	25	26.0	104.0					
Mercury	5.00	5.14	102.8					
Nickel	25	26.3	105.2					
Potassium	12500	12600	100.8					
Sodium	12500	12900	103.2					
Vanadium	25	25.4	101.6					
Zinc	25	26.4	105.6					

Metals

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ICP SERIAL DILUTIONS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Units:** UG/L

Project Name: River Mile 11 East (RM11E) Suppl

Sample Name: RM11E-MW001-04-2014L **Lab Code:** K1403697-001L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Antimony	0.788		0.814		3		MS
Arsenic	0.84		0.70	J	17		MS
Barium	82.328		83.550		1		MS
Beryllium	0.007	J	0.030	U	100.0		MS
Cadmium	0.055		0.063	J	15		MS
Calcium	92290.0		93000.0		0.8		P
Chromium	0.75		0.80	J	7		MS
Cobalt	0.195		0.161		17		MS
Copper	1.37		1.47		7		MS
Iron	6.7	J	21.5	J	220.9		P
Lead	0.026		0.036	J	38		MS
Magnesium	12600.0		12360.0		1.9		P
Manganese	10.907		11.631		7		MS
Nickel	1.49		1.65		11	E	MS
Potassium	6516.0		6205.0		4.8		P
Sodium	12220.0		11850.0		3.0		P
Vanadium	6.22		6.74		8		MS
Zinc	17.08		20.05		17	E	MS

Metals

- 10 -

DETECTION LIMITS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP/ICP-MS ID #:

GFAA ID #: **AA ID #:**

Analyte	Wave-length (nm)	Back-ground	MRL ug/L	MDL ug/L	M
Mercury	253.7		0.20	0.02	CV

Comments:

Metals

- 10 -

DETECTION LIMITS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP/ICP-MS ID #:

GFAA ID #: **AA ID #:**

Analyte	Wave-length (nm)	Back-ground	MRL ug/L	MDL ug/L	M
Calcium	393.3		20.0	0.6	P
Iron	259.9		20.0	3.0	P
Magnesium	279.5		5.0	0.2	P
Potassium	766.5		200.0	50.0	P
Sodium	589.5		200.0	20.0	P

Comments:

Metals

- 10 -

DETECTION LIMITS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP/ICP-MS ID #: **K-ICP-MS-03**

GFAA ID #: **AA ID #:**

Analyte	Isotope	Back-ground	MRL ug/L	MDL ug/L	M
Antimony	123		0.050	0.005	MS
Arsenic	75		0.5	0.1	MS
Barium	137		0.05	0.02	MS
Beryllium	9		0.020	0.006	MS
Cadmium	111		0.020	0.005	MS
Chromium	52		0.20	0.020	MS
Cobalt	59		0.020	0.006	MS
Copper	65		0.10	0.02	MS
Lead	208		0.020	0.005	MS
Manganese	55		0.050	0.006	MS
Nickel	60		0.20	0.02	MS
Vanadium	51		0.20	0.03	MS
Zinc	66		0.5	0.2	MS

Comments:

Metals

- 11A -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	B
Aluminum	394.401	0.0000000	0.0001070	0.0000000	0.0000000	0.0000000
Antimony	217.581	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	-0.0000640	0.0000000	0.0000410
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000140	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	-0.0006690	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0001460	0.0000000	0.0000000
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	327.396	0.0000000	0.0000200	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000900	0.0000000	0.0000000	0.0000000	0.0000000
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	260.569	0.0000000	-0.0000050	0.0000100	0.0000000	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000260	0.0000000	0.0000000
Phosphorus	214.914	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	-0.0001640	0.0000000	-0.0000370
Silicon	251.611	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000090
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000130	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

Metals

- 11A -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Zinc	213.856	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Analyte	Wave-length (nm)	Interelement Correction Factors for: Ba	Cd	Co	Cr	Cu
Aluminum	394.401	0.0000000	0.0000000	-0.0001860	0.0004130	0.0000000
Antimony	217.581	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0004520	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0038080	0.0002890	0.0000000
Cadmium	226.502	0.0000000	0.0000000	-0.0000280	0.0000230	0.0000000
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	-0.0001770	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	-0.0005250	0.0000000
Copper	327.396	0.0000000	0.0000000	0.0002800	0.0000000	0.0000000
Iron	259.94	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0044710
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	260.569	0.0000000	-0.0000420	0.0007060	-0.0001240	-0.0000120
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	-0.0001750	0.0000000	0.0000000
Phosphorus	214.914	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0014230	0.0003810	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000000	0.0000280	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	-0.0063260	-0.0000590

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Zinc	213.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0010860

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Analyte	Wave-length (nm)	Interelement Correction Factors for: Mn	Mo	Ni	Pb	Sb
Aluminum	394.401	0.0000000	0.0002510	0.0002820	0.0000000	0.0000000
Antimony	217.581	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	-0.0002570	0.0004610	0.0000000	0.0000000	0.0000000
Barium	455.403	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	-0.0000240	-0.0001730	-0.0000210	0.0000000	0.0000000
Boron	249.678	0.0000000	-0.0014840	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	-0.0000190	-0.0000190	0.0000000	0.0000000
Calcium	393.366	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0001840	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	-0.0000370	0.0001050	0.0000000	0.0000000
Copper	327.396	0.0000000	-0.0000640	0.0000000	0.0000000	0.0000000
Iron	259.94	0.0000000	-0.0008520	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0005090	0.0000000	0.0000000	0.0000000
Lithium	670.784	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	285.213	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	260.569	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000180
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	214.914	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.0	0.0007360	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	251.611	0.0000000	0.0101570	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0001200	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	407.771	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	-0.0006360	0.0000000	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	336.121	0.0000000	0.0000310	0.0001200	0.0000000	0.0000000
Vanadium	292.402	-0.0013700	-0.0000860	0.0000000	0.0000000	0.0000000

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Zinc	213.856	0.0000000	-0.0001090	0.0051730	0.0000000	0.0000000

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Analyte	Wave-length (nm)	Interelement Correction Factors for: Si	Ti	V		
Aluminum	394.401	0.0000000	0.0000000	0.0000000		
Antimony	217.581	-0.0000460	0.0000000	0.0021080		
Arsenic	189.042	0.0000000	0.0000000	0.0000000		
Barium	455.403	0.0000000	0.0000000	0.0000000		
Beryllium	234.861	0.0000000	0.0000000	0.0000000		
Boron	249.678	0.0000000	0.0000000	-0.0004770		
Cadmium	226.502	0.0000040	0.0001350	0.0000000		
Calcium	393.366	0.0000000	0.0000000	0.0000000		
Chromium	267.716	0.0000000	0.0000000	-0.0001070		
Cobalt	228.616	-0.0000080	0.0000000	0.0000000		
Copper	327.396	0.0000000	0.0000960	-0.0001120		
Iron	259.94	0.0000000	0.0000000	0.0000000		
Lead	220.353	0.0013940	0.0000000	0.0000000		
Lithium	670.784	0.0000000	0.0000000	0.0000000		
Magnesium	285.213	0.0000000	0.0000000	0.0000000		
Manganese	260.569	-0.0000030	-0.0000350	0.0000000		
Molybdenum	202.03	0.0000000	0.0000000	0.0000000		
Nickel	231.604	0.0000000	0.0000000	0.0000000		
Phosphorus	214.914	0.0000000	0.0000000	0.0000000		
Potassium	766.491	0.0000000	0.0000000	0.0000000		
Selenium	196.0	0.0000000	0.0000000	0.0000000		
Silicon	251.611	0.0000000	0.0000000	0.0000000		
Silver	328.068	0.0000000	0.0000000	0.0000730		
Sodium	589.592	0.0000000	0.0000000	0.0000000		
Strontium	407.771	0.0000000	0.0000000	0.0000000		
Thallium	190.856	0.0000000	-0.0003060	0.0005750		
Tin	189.989	0.0000000	0.0000000	0.0000000		
Titanium	336.121	0.0000000	0.0000000	0.0000000		
Vanadium	292.402	0.0000000	0.0003820	0.0000000		

Comments:

Metals

- 11B -

ICP INTERELEMENT CORRECTION FACTORS

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Zinc	213.856	0.0000000	-0.0003390	0.0000000		

Comments:

Metals
-12-
ICP LINEAR RANGES (QUARTERLY)

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-MS-03**

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Antimony	15.000	2000	6020A
Arsenic	15.000	2000	6020A
Barium	15.000	2000	6020A
Beryllium	15.000	2000	6020A
Cadmium	15.000	2000	6020A
Chromium	15.000	2000	6020A
Cobalt	15.000	2000	6020A
Copper	15.000	2000	6020A
Lead	15.000	2000	6020A
Manganese	15.000	2000	6020A
Nickel	15.000	2000	6020A
Vanadium	15.000	2000	6020A
Zinc	15.000	2000	6020A

Comments:

Metals
-12-
ICP LINEAR RANGES (QUARTERLY)

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

ICP ID Number: **K-ICP-AES-04**

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Calcium	15.000	450000	6010C
Iron	15.000	360000	6010C
Magnesium	15.000	90000	6010C
Potassium	15.000	450000	6010C
Sodium	15.000	450000	6010C

Comments:

Metals
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PREPARATION LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Method: CV

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
K1403697-001	04/17/14	20.0	20.0
K1403697-001D	04/17/14	20.0	20.0
K1403697-001DISS	04/17/14	20.0	20.0
K1403697-001S	04/17/14	20.0	20.0
K1403697-002	04/17/14	20.0	20.0
K1403697-002DISS	04/17/14	20.0	20.0
K1403697-003	04/17/14	20.0	20.0
K1403697-003DISS	04/17/14	20.0	20.0
K1403697-004	04/17/14	20.0	20.0
K1403697-004DISS	04/17/14	20.0	20.0
K1403697-006	04/17/14	20.0	20.0
K1403697-006DISS	04/17/14	20.0	20.0
K1403697-007	04/17/14	20.0	20.0
K1403697-007DISS	04/17/14	20.0	20.0
K1403697-008	04/17/14	20.0	20.0
K1403697-008DISS	04/17/14	20.0	20.0
K1403697-009	04/17/14	20.0	20.0
K1403697-009DISS	04/17/14	20.0	20.0
K1403697-MB	04/17/14	20.0	20.0
LCSW	04/17/14	20.0	20.0

Metals
-13-
PREPARATION LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Method: P

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
K1403697-001	04/17/14	50.0	50.0
K1403697-001D	04/17/14	50.0	50.0
K1403697-001DISS	04/17/14	50.0	50.0
K1403697-001S	04/17/14	50.0	50.0
K1403697-002	04/17/14	50.0	50.0
K1403697-002DISS	04/17/14	50.0	50.0
K1403697-003	04/17/14	50.0	50.0
K1403697-003DISS	04/17/14	50.0	50.0
K1403697-004	04/17/14	50.0	50.0
K1403697-004DISS	04/17/14	50.0	50.0
K1403697-006	04/17/14	50.0	50.0
K1403697-006DISS	04/17/14	50.0	50.0
K1403697-007	04/17/14	50.0	50.0
K1403697-007DISS	04/17/14	50.0	50.0
K1403697-008	04/17/14	50.0	50.0
K1403697-008DISS	04/17/14	50.0	50.0
K1403697-009	04/17/14	50.0	50.0
K1403697-009DISS	04/17/14	50.0	50.0
K1403697-MB	04/17/14	50.0	50.0
LCSW	04/17/14	50.0	50.0

Metals
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PREPARATION LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004

Project Name: River Mile 11 East (RM11E) Suppl

Method: MS

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
K1403697-001	04/17/14	50.0	50.0
K1403697-001D	04/17/14	50.0	50.0
K1403697-001DISS	04/17/14	50.0	50.0
K1403697-001S	04/17/14	50.0	50.0
K1403697-002	04/17/14	50.0	50.0
K1403697-002DISS	04/17/14	50.0	50.0
K1403697-003	04/17/14	50.0	50.0
K1403697-003DISS	04/17/14	50.0	50.0
K1403697-004	04/17/14	50.0	50.0
K1403697-004DISS	04/17/14	50.0	50.0
K1403697-006	04/17/14	50.0	50.0
K1403697-006DISS	04/17/14	50.0	50.0
K1403697-007	04/17/14	50.0	50.0
K1403697-007DISS	04/17/14	50.0	50.0
K1403697-008	04/17/14	50.0	50.0
K1403697-008DISS	04/17/14	50.0	50.0
K1403697-009	04/17/14	50.0	50.0
K1403697-009DISS	04/17/14	50.0	50.0
K1403697-MB	04/17/14	50.0	50.0
LCSW	04/17/14	50.0	50.0

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ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042114B-HG2

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 04/21/14 **End Date:** 04/21/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.0	15:31																X									
Standard #1	1.0	15:33																X									
Standard #2	1.0	15:34																X									
Standard #3	1.0	15:36																X									
Standard #4	1.0	15:37																X									
Standard #5	1.0	15:39																X									
ICV1	1.0	15:41																X									
ICB1	1.0	15:42																X									
CRA1	1.0	15:44																X									
CCV1	1.0	15:46																X									
CCB1	1.0	15:47																X									
K1403697-MB	1.0	15:49																X									
LCSW	1.0	15:50																X									
ZZZZZZ	1.0	15:52																									
ZZZZZZ	1.0	15:54																									
ZZZZZZ	1.0	15:55																									
K1403697-001	1.0	15:57																X									
K1403697-001A	1.0	15:58																X									
K1403697-001D	1.0	16:00																X									
K1403697-001S	1.0	16:02																X									
K1403697-002	1.0	16:03																X									
CCV2	1.0	16:05																X									
CCB2	1.0	16:07																X									
K1403697-003	1.0	16:08																X									
K1403697-004	1.0	16:10																X									
K1403697-006	1.0	16:11																X									
K1403697-007	1.0	16:13																X									
K1403697-008	1.0	16:15																X									
K1403697-009	1.0	16:16																X									
K1403697-001DISS	1.0	16:18																X									
K1403697-002DISS	1.0	16:19																X									
K1403697-003DISS	1.0	16:21																X									

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

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Metals
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ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042114B-HG2

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 04/21/14 **End Date:** 04/21/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
K1403697-004DISS	1.0	16:23																X									
CCV3	1.0	16:24																X									
CCB3	1.0	16:26																X									
K1403697-006DISS	1.0	16:28																X									
K1403697-007DISS	1.0	16:29																X									
K1403697-008DISS	1.0	16:31																X									
K1403697-009DISS	1.0	16:32																X									
ZZZZZZ	1.0	16:34																									
ZZZZZZ	1.0	16:36																									
CCV4	1.0	16:37																X									
CCB4	1.0	16:39																X									

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

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ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042414AICP04

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-ICP-AES-04 **Method:** P

Start Date: 04/24/14 **End Date:** 04/24/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
BLK	1.0	08:42								X				X		X				X			X				
STD A	1.0	08:44								X						X											
STD B	1.0	08:46								X				X		X				X			X				
ICV1	1.0	08:49								X						X											
ICV1	1.0	08:51								X				X		X				X			X				
ICB1	1.0	08:54								X				X		X				X			X				
LLICV1	1.0	08:56								X				X		X				X			X				
ZZZZZZ	1.0	08:59																									
ZZZZZZ	1.0	09:01																									
ZZZZZZ	1.0	09:04																									
CCV1	1.0	09:08								X				X		X				X			X				
CCV1	1.0	09:14								X						X											
CCB1	1.0	09:20								X				X		X				X			X				
ICS-A1	1.0	09:22								X				X		X				X			X				
ICS-AB1	1.0	09:25								X				X		X				X			X				
ZZZZZZ	1.0	09:28																									
K1403697-MB	1.0	09:45								X				X		X				X			X				
LCSW	1.0	09:48								X				X		X				X			X				
K1403697-001	1.0	09:50								X				X		X				X			X				
K1403697-001L	5.0	09:53								X				X		X				X			X				
K1403697-001D	1.0	09:55								X				X		X				X			X				
K1403697-001S	1.0	09:58								X				X		X				X			X				
K1403697-001A	1.0	10:00								X				X		X				X			X				
K1403697-002	1.0	10:02								X				X		X				X			X				
K1403697-003	1.0	10:05								X				X		X				X			X				
K1403697-004	1.0	10:07								X				X		X				X			X				
CCV2	1.0	10:10								X				X		X				X			X				
CCV2	1.0	10:12								X						X											
CCB2	1.0	10:15								X				X		X				X			X				
K1403697-006	1.0	10:17								X				X		X				X			X				
K1403697-007	1.0	10:20								X				X		X				X			X				
K1403697-008	1.0	10:22								X				X		X				X			X				

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

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Metals
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ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042414AICP04

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-ICP-AES-04 **Method:** P

Start Date: 04/24/14 **End Date:** 04/24/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
K1403697-009	1.0	10:25								X				X		X				X			X				
K1403697-001DISS	1.0	10:27								X				X		X				X			X				
K1403697-002DISS	1.0	10:30								X				X		X				X			X				
K1403697-003DISS	1.0	10:32								X				X		X				X			X				
K1403697-004DISS	1.0	10:35								X				X		X				X			X				
K1403697-006DISS	1.0	10:37								X				X		X				X			X				
K1403697-007DISS	1.0	10:40								X				X		X				X			X				
CCV3	1.0	10:42								X				X		X				X			X				
CCV3	1.0	10:45								X						X											
CCB3	1.0	10:47								X				X		X				X			X				
K1403697-008DISS	1.0	10:50								X				X		X				X			X				
K1403697-009DISS	1.0	10:52								X				X		X				X			X				
ZZZZZZ	1.0	10:55																									
ZZZZZZ	1.0	10:57																									
ZZZZZZ	1.0	11:00																									
ZZZZZZ	1.0	11:02																									
ZZZZZZ	1.0	11:04																									
ZZZZZZ	5.0	11:07																									
ZZZZZZ	1.0	11:10																									
ZZZZZZ	1.0	11:12																									
CCV4	1.0	11:16								X				X		X				X			X				
CCV4	1.0	11:18								X						X											
CCB4	1.0	11:21								X				X		X				X			X				
LLCCV1	1.0	11:24								X				X		X				X			X				

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

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Metals
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ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042314BMS03

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-ICP-MS-03 **Method:** MS

Start Date: 04/23/14 **End Date:** 04/23/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Cal. Blk	1.0	08:50			X	X	X	X	X		X	X	X		X		X		X						X	X	
Cal. Stn	1.0	08:55			X	X	X	X	X		X	X	X		X		X		X						X	X	
ZZZZZZ	1.0	09:00																									
ICV1	1.0	09:06			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCV1	1.0	09:10			X	X	X	X	X		X	X	X		X		X		X						X	X	
ICB1	1.0	09:24			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCB1	1.0	09:29			X	X	X	X	X		X	X	X		X		X		X						X	X	
LLICVW1	1.0	09:34			X	X	X	X	X		X	X	X		X		X		X						X	X	
ICS-A1	1.0	09:46			X	X	X	X	X		X	X	X		X		X		X						X	X	
ICS-AB1	1.0	09:51			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-MB	1.0	10:01			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001	1.0	10:06			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001D	1.0	10:12			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001L	5.0	10:16			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001A	1.0	10:21			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001S	1.0	10:25			X	X	X	X	X		X	X	X		X		X		X						X	X	
LCSW	1.0	10:30			X	X	X	X	X		X	X	X		X		X		X						X	X	
ZZZZZZ	1.0	10:40																									
K1403697-002	1.0	10:46			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-003	1.0	10:59			X	X	X	X	X		X	X	X		X				X						X	X	
CCV2	1.0	11:04			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCB2	1.0	11:16			X	X	X	X	X		X	X	X		X		X		X						X	X	
LLCCVW1	1.0	11:20			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-004	1.0	11:25			X	X	X	X	X		X	X	X		X				X						X	X	
K1403697-006	1.0	11:30			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-007	1.0	11:35			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-008	1.0	11:40			X	X	X	X	X		X	X	X		X				X						X	X	
K1403697-009	1.0	11:47			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-001DISS	1.0	11:52			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-002DISS	1.0	11:57			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-003DISS	1.0	12:02			X	X	X	X	X		X	X	X		X				X						X	X	
K1403697-004DISS	1.0	12:06			X	X	X	X	X		X	X	X		X				X						X	X	

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Metals

- 14 -

ANALYSIS RUN LOG

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project No.: 487.002.004 **Run Number:** 042314BMS03

Project Name: River Mile 11 East (RM11E) Suppl

Instrument ID Number: K-ICP-MS-03 **Method:** MS

Start Date: 04/23/14 **End Date:** 04/23/14

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
K1403697-006DISS	1.0	12:11			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCV3	1.0	12:15			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCB3	1.0	12:25			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-007DISS	1.0	12:30			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-008DISS	1.0	12:35			X	X	X	X	X		X	X	X		X				X						X	X	
K1403697-009DISS	1.0	12:39			X	X	X	X	X		X	X	X		X		X		X						X	X	
K1403697-003	100.0	12:44															X										
K1403697-004	100.0	12:49															X										
K1403697-008	100.0	12:53															X										
K1403697-003DISS	100.0	12:58															X										
K1403697-004DISS	100.0	13:03															X										
K1403697-008DISS	100.0	13:08															X										
CCV4	1.0	13:12			X	X	X	X	X		X	X	X		X		X		X						X	X	
CCB4	1.0	13:23			X	X	X	X	X		X	X	X		X		X		X						X	X	
LLCCVW2	1.0	13:28			X	X	X	X	X		X	X	X		X		X		X						X	X	
ZZZZZZ	1.0	21:01																									
ZZZZZZ	1.0	21:14																									
ZZZZZZ	1.0	21:27																									

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Metals

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS Group USA, Corp. Contract: 487.002.004

Lab Code: CASK Case No.: NRAS No.: SDG NO.: K1403697

ICP-MS Instrument ID: K-ICP-MS-03 Start Date: 04/23/2014 End Date: 04/23/2014

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Li_6	Q	Element Sc_45	Q	Element Ga_71	Q	Element Rh_103	Q	Element In_115	Q	Element Lu_175	Q
Cal. Blk	Cal. Blk	0850	100		100		100		100		100		100	
Cal. Stn	Cal. Stn	0855	98		99		100		100		100		101	
ZZZZZZ	ZZZZZZ	0900												
ICV1	ICV1	0906	100		98		99		98		99		101	
CCV1	CCV1	0910	103		99		100		100		100		101	
ICB1	ICB1	0924	99		95		96		96		96		97	
CCB1	CCB1	0929	100		98		98		98		99		99	
LLICVW1	LLICVW1	0934	102		99		99		99		98		99	
ICS-A1	ICSA	0946	83		83		84		82		85		90	
ICS-AB1	ICSAB	0951	81		81		83		82		86		91	
K1403697-MB	Method Blank	1001	94		90		92		92		92		95	
K1403697-001	RM11E-MW001-04-2	1006	91		96		87		87		89		93	
K1403697-001D	RM11E-MW001-04-2	1012	91		97		88		88		90		95	
K1403697-001L	RM11E-MW001-04-2	1016	98		97		95		95		97		99	
K1403697-001A	RM11E-MW001-04-2	1021	92		98		90		90		93		97	
K1403697-001S	RM11E-MW001-04-2	1025	93		98		90		89		92		96	
LCSW	LCSW	1030	101		96		99		99		100		101	
ZZZZZZ	ZZZZZZ	1040												
K1403697-002	RM11E-MULT1007-0	1046	90		100		88		87		90		94	
K1403697-003	RM11E-MW005-04-2	1059	85		95		85		83		86		92	
CCV2	CCV2	1104	94		89		93		92		93		97	
CCB2	CCB2	1116	92		89		92		92		93		96	
LLCCVW1	LLCCVW1	1120	96		92		94		94		95		96	
K1403697-004	RM11E-MW505-04-2	1125	87		99		87		86		88		92	
K1403697-006	RM11E-MW003d-04-	1130	88		102		89		88		91		95	
K1403697-007	RM11E-MULT89881-	1135	90		100		88		88		89		94	
K1403697-008	RM11E-MW002s-04-	1140	77		84		81		78		83		90	
K1403697-009	RM11E-MW004-04-2	1147	86		94		87		86		90		95	
K1403697-001DISS	RM11E-MW001-04-2	1152	87		94		87		86		89		94	
K1403697-002DISS	RM11E-MULT1007-0	1157	91		99		89		89		91		95	
K1403697-003DISS	RM11E-MW005-04-2	1202	87		99		89		88		90		94	
K1403697-004DISS	RM11E-MW505-04-2	1206	89		101		90		90		92		95	
K1403697-006DISS	RM11E-MW003d-04-	1211	89		104		91		90		93		95	
CCV3	CCV3	1215	96		94		97		97		98		100	
CCB3	CCB3	1225	95		91		94		94		94		95	
K1403697-007DISS	RM11E-MULT89881-	1230	91		100		89		88		90		94	
K1403697-008DISS	RM11E-MW002s-04-	1235	82		88		82		81		85		91	
K1403697-009DISS	RM11E-MW004-04-2	1239	91		95		88		88		91		95	
K1403697-003	RM11E-MW005-04-2	1244	97		92		94		94		95		96	
K1403697-004	RM11E-MW505-04-2	1249	96		93		95		95		96		98	
K1403697-008	RM11E-MW002s-04-	1253	100		94		95		95		95		97	
K1403697-003DISS	RM11E-MW005-04-2	1258	100		95		96		95		96		97	
K1403697-004DISS	RM11E-MW505-04-2	1303	100		94		95		95		95		95	
K1403697-008DISS	RM11E-MW002s-04-	1308	102		96		97		97		97		97	

Metals

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: ALS Group USA, Corp. Contract: 487.002.004

Lab Code: CASK Case No.: NRAS No.: SDG NO.: K1403697

ICP-MS Instrument ID: K-ICP-MS-03 Start Date: 04/23/2014 End Date: 04/23/2014

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Li_6	Q	Element Sc_45	Q	Element Ga_71	Q	Element Rh_103	Q	Element In_115	Q	Element Lu_175	Q
CCV4	CCV4	1312	102		94		95		94		94		94	
CCB4	CCB4	1323	99		92		93		94		94		95	
LLCCVW2	LLCCVW2	1328	104		94		95		94		94		95	
ZZZZZZ	ZZZZZZ	2101												
ZZZZZZ	ZZZZZZ	2114												
ZZZZZZ	ZZZZZZ	2127												

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	98	50-150	04/23/14	Acceptable
n-Triacontane	101	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**42**	J	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	**61**	J	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	97	50-150	04/23/14	Acceptable
n-Triacontane	101	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW005-04-2014	**Units:**	ug/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	11	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	250	19	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	96	50-150	04/23/14	Acceptable
n-Triacontane	99	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW505-04-2014	**Units:**	ug/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	102	50-150	04/23/14	Acceptable
n-Triacontane	102	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ug/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**40**	J	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	**57**	J	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	04/23/14	Acceptable
n-Triacontane	101	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ug/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	69	50-150	04/23/14	Acceptable
n-Triacontane	79	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ug/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	140	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	270	21	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	04/23/14	Acceptable
n-Triacontane	98	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	12	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	260	20	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	04/23/14	Acceptable
n-Triacontane	100	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403497-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	130	11	1	04/18/14	04/23/14	KWG1403497	
Residual Range Organics (RRO)	ND	U	250	19	1	04/18/14	04/23/14	KWG1403497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	89	50-150	04/23/14	Acceptable
n-Triacontane	93	50-150	04/23/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3510C **Units:** Percent
Analysis Method: NWTPH-Dx **Level:** Low

Sample Name	Lab Code	Sur1	Sur2
RM11E-MW001-04-2014	K1403697-001	98	101
RM11E-MULT1007-04-2014	K1403697-002	97	101
RM11E-MW005-04-2014	K1403697-003	96	99
RM11E-MW505-04-2014	K1403697-004	102	102
RM11E-MW003d-04-2014	K1403697-006	95	101
RM11E-MULT89881-04-2014	K1403697-007	69	79
RM11E-MW002s-04-2014	K1403697-008	99	98
RM11E-MW004-04-2014	K1403697-009	100	100
Batch QC	K1403766-002	102	107
Batch QC	K1403766-003	98	104
Batch QCDUP	KWG1403497-1	93	95
Batch QCDUP	KWG1403497-2	88	91
Method Blank	KWG1403497-4	89	93
Lab Control Sample	KWG1403497-3	91	91

Surrogate Recovery Control Limits (%)

Sur1	=	o-Terphenyl	50-150
Sur2	=	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/23/2014

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1403766-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1403497

				Batch QCDUP KWG1403497-1 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	140	12	ND	ND	ND	-	30
Residual Range Organics (RRO)	270	20	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/23/2014

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1403766-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1403497

				Batch QCDUP KWG1403497-2 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	130	12	ND	ND	ND	-	30
Residual Range Organics (RRO)	260	20	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/22/2014

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	NWTPH-Dx	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403497

	Lab Control Sample KWG1403497-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	1210	1600	75	46-140
Residual Range Organics (RRO)	735	800	92	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/23/2014
		Time Analyzed:	00:22

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1403497-4	**File ID:**	J:\GC21\DATA\042214B\0422F059.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1403497

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403497-3	J:\GC21\DATA\042214B\0422F057.D	04/22/14	23:59
RM11E-MW001-04-2014	K1403697-001	J:\GC21\DATA\042214B\0422F061.D	04/23/14	00:44
RM11E-MULT1007-04-2014	K1403697-002	J:\GC21\DATA\042214B\0422F063.D	04/23/14	01:06
RM11E-MW005-04-2014	K1403697-003	J:\GC21\DATA\042214B\0422F065.D	04/23/14	01:29
RM11E-MW505-04-2014	K1403697-004	J:\GC21\DATA\042214B\0422F067.D	04/23/14	01:51
RM11E-MW003d-04-2014	K1403697-006	J:\GC21\DATA\042214B\0422F069.D	04/23/14	02:13
RM11E-MULT89881-04-2014	K1403697-007	J:\GC21\DATA\042214B\0422F071.D	04/23/14	02:36
RM11E-MW002s-04-2014	K1403697-008	J:\GC21\DATA\042214B\0422F079.D	04/23/14	04:05
RM11E-MW004-04-2014	K1403697-009	J:\GC21\DATA\042214B\0422F081.D	04/23/14	04:27
Batch QC	K1403766-002	J:\GC21\DATA\042214B\0422F083.D	04/23/14	04:49
Batch QCDUP	KWG1403497-1	J:\GC21\DATA\042214B\0422F085.D	04/23/14	05:11
Batch QC	K1403766-003	J:\GC21\DATA\042214B\0422F087.D	04/23/14	05:34
Batch QCDUP	KWG1403497-2	J:\GC21\DATA\042214B\0422F089.D	04/23/14	05:56

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/22/2014
		Time Analyzed:	23:59

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1403497-3	**File ID:**	J:\GC21\DATA\042214B\0422F057.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1403497

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1403497-4	J:\GC21\DATA\042214B\0422F059.D	04/23/14	00:22
RM11E-MW001-04-2014	K1403697-001	J:\GC21\DATA\042214B\0422F061.D	04/23/14	00:44
RM11E-MULT1007-04-2014	K1403697-002	J:\GC21\DATA\042214B\0422F063.D	04/23/14	01:06
RM11E-MW005-04-2014	K1403697-003	J:\GC21\DATA\042214B\0422F065.D	04/23/14	01:29
RM11E-MW505-04-2014	K1403697-004	J:\GC21\DATA\042214B\0422F067.D	04/23/14	01:51
RM11E-MW003d-04-2014	K1403697-006	J:\GC21\DATA\042214B\0422F069.D	04/23/14	02:13
RM11E-MULT89881-04-2014	K1403697-007	J:\GC21\DATA\042214B\0422F071.D	04/23/14	02:36
RM11E-MW002s-04-2014	K1403697-008	J:\GC21\DATA\042214B\0422F079.D	04/23/14	04:05
RM11E-MW004-04-2014	K1403697-009	J:\GC21\DATA\042214B\0422F081.D	04/23/14	04:27
Batch QC	K1403766-002	J:\GC21\DATA\042214B\0422F083.D	04/23/14	04:49
Batch QCDUP	KWG1403497-1	J:\GC21\DATA\042214B\0422F085.D	04/23/14	05:11
Batch QC	K1403766-003	J:\GC21\DATA\042214B\0422F087.D	04/23/14	05:34
Batch QCDUP	KWG1403497-2	J:\GC21\DATA\042214B\0422F089.D	04/23/14	05:56

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 04/17/2014

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL13274 **Column:** ZB-1
Instrument ID: GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\041714B\0417F013.D	L	J:\GC21\DATA\041714B\0417F043.D
B	J:\GC21\DATA\041714B\0417F015.D	M	J:\GC21\DATA\041714B\0417F053.D
C	J:\GC21\DATA\041714B\0417F017.D	N	J:\GC21\DATA\041714B\0417F055.D
D	J:\GC21\DATA\041714B\0417F019.D	O	J:\GC21\DATA\041714B\0417F057.D
E	J:\GC21\DATA\041714B\0417F021.D	P	J:\GC21\DATA\041714B\0417F059.D
F	J:\GC21\DATA\041714B\0417F023.D	Q	J:\GC21\DATA\041714B\0417F061.D
G	J:\GC21\DATA\041714B\0417F033.D	R	J:\GC21\DATA\041714B\0417F063.D
H	J:\GC21\DATA\041714B\0417F035.D	S	J:\GC21\DATA\041714B\0417F065.D
I	J:\GC21\DATA\041714B\0417F037.D	T	J:\GC21\DATA\041714B\0417F067.D
J	J:\GC21\DATA\041714B\0417F039.D		
K	J:\GC21\DATA\041714B\0417F041.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
							M	20	1070	N	50	1150	O	200	1150
	P	500	1010	Q	2000	1110	R	5000	1130	S	20000	1050	T	50000	975
Residual Range Organics (RRO)				B	50	706	C	200	658	D	500	638	E	2000	620
	F	5000	531												
o-Terphenyl															
							M	1.0	1300	N	2.5	1470	O	10	1490
	P	25	1300	Q	100	1420	R	250	1440						
n-Triacontane															
							M	1.0	1110	N	2.5	1220	O	10	1220
	P	25	1080	Q	100	1180	R	250	1180						

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 04/17/2014

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL13274 **Column:** ZB-1
Instrument ID: GC21

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	6.0		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	10.2		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	6.1		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	5.2		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	04/17/2014
		Date Analyzed:	04/17/2014 - 04/18/2014

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL13274
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\041714B\0417F049.D J:\GC21\DATA\041714B\0417F029.D J:\GC21\DATA\041714B\0417F069.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	980	1080	1060	-2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	630	625	-1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/22/2014

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	04/17/2014
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL13274
		Analysis Lot:	KWG1403617
		Units:	ppm
File ID:	J:\GC21\DATA\042214B\0422F043.D J:\GC21\DATA\042214B\0422F045.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	1080	1010	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	960	630	605	-4	NA	± 15 %	AverageRF
o-Terphenyl	50	48	1400	1340	-5	NA	± 15 %	AverageRF
n-Triacontane	50	47	1160	1090	-7	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/23/2014

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	04/17/2014
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL13274
		Analysis Lot:	KWG1403617
		Units:	ppm
File ID:	J:\GC21\DATA\042214B\0422F073.D J:\GC21\DATA\042214B\0422F075.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	960	1080	1040	-4	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	970	630	612	-3	NA	± 15 %	AverageRF
o-Terphenyl	50	49	1400	1380	-2	NA	± 15 %	AverageRF
n-Triacontane	50	48	1160	1110	-5	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/23/2014

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	04/17/2014
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL13274
		Analysis Lot:	KWG1403617
		Units:	ppm
File ID:	J:\GC21\DATA\042214B\0422F095.D J:\GC21\DATA\042214B\0422F097.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	1080	1050	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	630	646	2	NA	± 15 %	AverageRF
o-Terphenyl	50	51	1400	1420	1	NA	± 15 %	AverageRF
n-Triacontane	50	50	1160	1170	1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG1403617
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0422F013.D	Continuing Calibration Verification	KWG1403617-1	4/22/2014	15:47		4/22/2014	16:03
0422F015.D	Continuing Calibration Verification	KWG1403617-1	4/22/2014	16:09		4/22/2014	16:25
0422F017.D	Instrument Blank	KWG1403617-5	4/22/2014	16:32		4/22/2014	16:48
0422F019.D	ZZZZZZ	ZZZZZZ	4/22/2014	16:55		4/22/2014	17:11
0422F021.D	ZZZZZZ	ZZZZZZ	4/22/2014	17:17		4/22/2014	17:33
0422F023.D	ZZZZZZ	ZZZZZZ	4/22/2014	17:39		4/22/2014	17:55
0422F025.D	ZZZZZZ	ZZZZZZ	4/22/2014	18:01		4/22/2014	18:17
0422F027.D	ZZZZZZ	ZZZZZZ	4/22/2014	18:24		4/22/2014	18:40
0422F029.D	ZZZZZZ	ZZZZZZ	4/22/2014	18:46		4/22/2014	19:02
0422F031.D	ZZZZZZ	ZZZZZZ	4/22/2014	19:09		4/22/2014	19:25
0422F033.D	ZZZZZZ	ZZZZZZ	4/22/2014	19:31		4/22/2014	19:47
0422F035.D	ZZZZZZ	ZZZZZZ	4/22/2014	19:53		4/22/2014	20:09
0422F037.D	ZZZZZZ	ZZZZZZ	4/22/2014	20:16		4/22/2014	20:32
0422F039.D	ZZZZZZ	ZZZZZZ	4/22/2014	20:38		4/22/2014	20:54
0422F041.D	ZZZZZZ	ZZZZZZ	4/22/2014	21:00		4/22/2014	21:16
0422F043.D	Continuing Calibration Verification	KWG1403617-2	4/22/2014	21:23		4/22/2014	21:39
0422F045.D	Continuing Calibration Verification	KWG1403617-2	4/22/2014	21:45		4/22/2014	22:01
0422F047.D	Instrument Blank	KWG1403617-6	4/22/2014	22:08		4/22/2014	22:24
0422F049.D	ZZZZZZ	ZZZZZZ	4/22/2014	22:30		4/22/2014	22:46
0422F051.D	ZZZZZZ	ZZZZZZ	4/22/2014	22:53		4/22/2014	23:09
0422F053.D	ZZZZZZ	ZZZZZZ	4/22/2014	23:15		4/22/2014	23:31
0422F055.D	ZZZZZZ	ZZZZZZ	4/22/2014	23:37		4/22/2014	23:53
0422F057.D	Lab Control Sample	KWG1403497-3	4/22/2014	23:59		4/23/2014	00:15
0422F059.D	Method Blank	KWG1403497-4	4/23/2014	00:22		4/23/2014	00:38
0422F061.D	RM11E-MW001-04-2014	K1403697-001	4/23/2014	00:44		4/23/2014	01:00
0422F063.D	RM11E-MULT1007-04-2014	K1403697-002	4/23/2014	01:06		4/23/2014	01:22
0422F065.D	RM11E-MW005-04-2014	K1403697-003	4/23/2014	01:29		4/23/2014	01:45
0422F067.D	RM11E-MW505-04-2014	K1403697-004	4/23/2014	01:51		4/23/2014	02:07
0422F069.D	RM11E-MW003d-04-2014	K1403697-006	4/23/2014	02:13		4/23/2014	02:29
0422F071.D	RM11E-MULT89881-04-2014	K1403697-007	4/23/2014	02:36		4/23/2014	02:52
0422F073.D	Continuing Calibration Verification	KWG1403617-3	4/23/2014	02:58		4/23/2014	03:14
0422F075.D	Continuing Calibration Verification	KWG1403617-3	4/23/2014	03:20		4/23/2014	03:36
0422F077.D	Instrument Blank	KWG1403617-7	4/23/2014	03:42		4/23/2014	03:58
0422F079.D	RM11E-MW002s-04-2014	K1403697-008	4/23/2014	04:05		4/23/2014	04:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1403617
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0422F081.D	RM11E-MW004-04-2014	K1403697-009	4/23/2014	04:27		4/23/2014	04:43
0422F083.D	Batch QC	K1403766-002	4/23/2014	04:49		4/23/2014	05:05
0422F085.D	Batch QCDUP	KWG1403497-1	4/23/2014	05:11		4/23/2014	05:27
0422F087.D	Batch QC	K1403766-003	4/23/2014	05:34		4/23/2014	05:50
0422F089.D	Batch QCDUP	KWG1403497-2	4/23/2014	05:56		4/23/2014	06:12
0422F091.D	ZZZZZZ	ZZZZZZ	4/23/2014	06:18		4/23/2014	06:34
0422F093.D	ZZZZZZ	ZZZZZZ	4/23/2014	06:40		4/23/2014	06:56
0422F095.D	Continuing Calibration Verification	KWG1403617-4	4/23/2014	07:02		4/23/2014	07:18
0422F097.D	Continuing Calibration Verification	KWG1403617-4	4/23/2014	07:25		4/23/2014	07:41
0422F099.D	Instrument Blank	KWG1403617-8	4/23/2014	07:47		4/23/2014	08:03

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water		

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3510C	**Extraction Lot:**	KWG1403497
Analysis Method:	NWTPH-Dx	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	1000mL	2mL	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	980mL	2mL	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	980mL	2mL	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	940mL	2mL	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	980mL	2mL	NA	
Batch QCDUP	KWG1403497-1	NA	NA	480mL	1mL	NA	
Batch QCDUP	KWG1403497-2	NA	NA	490mL	1mL	NA	
Method Blank	KWG1403497-4	NA	NA	1000mL	2mL	NA	
Batch QC	K1403766-002	NA	NA	475mL	1mL	NA	
Batch QC	K1403766-003	NA	NA	485mL	1mL	NA	
Lab Control Sample	KWG1403497-3	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014
RM11E-MW001-04-2014	KWG1403461-1	04/14/2014	04/15/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Gasoline Range Organics

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	104	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Gasoline Range Organics

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	99	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Gasoline Range Organics

Sample Name:	RM11E-MW005-04-2014	**Units:**	ug/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Gasoline Range Organics

Sample Name:	RM11E-MW505-04-2014	**Units:**	ug/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	97	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Gasoline Range Organics

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ug/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Gasoline Range Organics

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ug/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	97	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Gasoline Range Organics

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ug/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	97	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Gasoline Range Organics

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403461-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	13	1	04/17/14	04/17/14	KWG1403461	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	97	50-150	04/17/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B **Units:** Percent
Analysis Method: NWTPH-Gx **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-MW001-04-2014	K1403697-001	104
RM11E-MULT1007-04-2014	K1403697-002	99
RM11E-MW005-04-2014	K1403697-003	98
RM11E-MW505-04-2014	K1403697-004	97
RM11E-MW003d-04-2014	K1403697-006	96
RM11E-MULT89881-04-2014	K1403697-007	97
RM11E-MW002s-04-2014	K1403697-008	97
RM11E-MW004-04-2014	K1403697-009	96
RM11E-MW001-04-2014DUP	KWG1403461-1	110
Method Blank	KWG1403461-3	97
Lab Control Sample	KWG1403461-2	102

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/17/2014

Duplicate Sample Summary
Gasoline Range Organics

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1403461

				RM11E-MW001-04-2014DUP KWG1403461-1 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Gasoline Range Organics-NWTPH	250	13	ND	ND	ND	-	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/17/2014

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	NWTPH-Gx	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403461

	Lab Control Sample KWG1403461-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Gasoline Range Organics-NWTPH	470	500	94	80-119

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/17/2014
		Time Analyzed:	22:21

Method Blank Summary
Gasoline Range Organics

Sample Name:	Method Blank	**Instrument ID:**	GC39
Lab Code:	KWG1403461-3	**File ID:**	J:\GC39\DATA\041714\0417F017.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1403461

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MW001-04-2014	K1403697-001	J:\GC39\DATA\041714\0417F005.D	04/17/14	17:36
RM11E-MW001-04-2014DUP	KWG1403461-1	J:\GC39\DATA\041714\0417F006.D	04/17/14	18:00
Lab Control Sample	KWG1403461-2	J:\GC39\DATA\041714\0417F007.D	04/17/14	18:23
RM11E-MULT1007-04-2014	K1403697-002	J:\GC39\DATA\041714\0417F009.D	04/17/14	19:11
RM11E-MW005-04-2014	K1403697-003	J:\GC39\DATA\041714\0417F010.D	04/17/14	19:35
RM11E-MW505-04-2014	K1403697-004	J:\GC39\DATA\041714\0417F011.D	04/17/14	19:59
RM11E-MW003d-04-2014	K1403697-006	J:\GC39\DATA\041714\0417F012.D	04/17/14	20:23
RM11E-MULT89881-04-2014	K1403697-007	J:\GC39\DATA\041714\0417F013.D	04/17/14	20:46
RM11E-MW002s-04-2014	K1403697-008	J:\GC39\DATA\041714\0417F014.D	04/17/14	21:10
RM11E-MW004-04-2014	K1403697-009	J:\GC39\DATA\041714\0417F015.D	04/17/14	21:33

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/17/2014
		Time Analyzed:	18:23

Lab Control Sample Summary
Gasoline Range Organics

Sample Name:	Lab Control Sample	**Instrument ID:**	GC39
Lab Code:	KWG1403461-2	**File ID:**	J:\GC39\DATA\041714\0417F007.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1403461

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MW001-04-2014	K1403697-001	J:\GC39\DATA\041714\0417F005.D	04/17/14	17:36
RM11E-MW001-04-2014DUP	KWG1403461-1	J:\GC39\DATA\041714\0417F006.D	04/17/14	18:00
RM11E-MULT1007-04-2014	K1403697-002	J:\GC39\DATA\041714\0417F009.D	04/17/14	19:11
RM11E-MW005-04-2014	K1403697-003	J:\GC39\DATA\041714\0417F010.D	04/17/14	19:35
RM11E-MW505-04-2014	K1403697-004	J:\GC39\DATA\041714\0417F011.D	04/17/14	19:59
RM11E-MW003d-04-2014	K1403697-006	J:\GC39\DATA\041714\0417F012.D	04/17/14	20:23
RM11E-MULT89881-04-2014	K1403697-007	J:\GC39\DATA\041714\0417F013.D	04/17/14	20:46
RM11E-MW002s-04-2014	K1403697-008	J:\GC39\DATA\041714\0417F014.D	04/17/14	21:10
RM11E-MW004-04-2014	K1403697-009	J:\GC39\DATA\041714\0417F015.D	04/17/14	21:33
Method Blank	KWG1403461-3	J:\GC39\DATA\041714\0417F017.D	04/17/14	22:21

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 02/20/2014

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL13140 **Column:** DB-624
Instrument ID: GC39

Level ID	File ID	Level ID	File ID
A	J:\GC39\Data\022014\0220F013.D	E	J:\GC39\Data\022014\0220F017.D
B	J:\GC39\Data\022014\0220F014.D	F	J:\GC39\Data\022014\0220F018.D
C	J:\GC39\Data\022014\0220F015.D	G	J:\GC39\Data\022014\0220F019.D
D	J:\GC39\Data\022014\0220F016.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Gasoline Range Organics-NWTPH	A	50	73100	B	100	70600	C	200	73700	D	500	79000	E	1000	77500
	F	5000	74300	G	10000	81000									
1,4-Difluorobenzene	A	100	1.20E+5	B	100	1.17E+5	C	100	1.18E+5	D	100	1.25E+5	E	100	1.25E+5

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 02/20/2014

Initial Calibration Summary
Gasoline Range Organics

Calibration ID: CAL13140 **Column:** DB-624
Instrument ID: GC39

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Gasoline Range Organics-NWTPH	MS	AverageRF	% RSD	4.8		≤ 20
1,4-Difluorobenzene	SURR	AverageRF	% RSD	3.2		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	02/20/2014
		Date Analyzed:	02/24/2014

Second Source Calibration Verification
Gasoline Range Organics

Calibration Type:	External Standard	**Calibration ID:**	CAL13140
Analysis Method:	NWTPH-Gx	**Units:**	ug/L
File ID:	J:\GC39\Data\022414\0224F006.D	**Column ID:**	DB-624

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	490	75600	73500	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/17/2014

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type:	External Standard	**Calibration Date:**	02/20/2014
Analysis Method:	NWTPH-Gx	**Calibration ID:**	CAL13140
		Analysis Lot:	KWG1403460
		Units:	ug/L
File ID:	J:\GC39\DATA\041714\0417F003.D	**Column ID:**	DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	460	75600	70200	-7	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	110	121000	128000	5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/17/2014

Continuing Calibration Verification Summary
Gasoline Range Organics

Calibration Type:	External Standard	**Calibration Date:**	02/20/2014
Analysis Method:	NWTPH-Gx	**Calibration ID:**	CAL13140
		Analysis Lot:	KWG1403460
		Units:	ug/L
File ID:	J:\GC39\DATA\041714\0417F018.D	**Column ID:**	DB-624

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	470	75600	70300	-7	NA	± 20 %	AverageRF
1,4-Difluorobenzene	100	95	121000	116000	-5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Gasoline Range Organics

Analysis Method: NWTPH-Gx **Analysis Lot:** KWG1403460
Instrument ID: GC39
Column: DB-624

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0417F003.D	Continuing Calibration Verification	KWG1403460-1	4/17/2014	16:49		4/17/2014	17:04
0417F004.D	Instrument Blank	KWG1403460-3	4/17/2014	17:12		4/17/2014	17:27
0417F005.D	RM11E-MW001-04-2014	K1403697-001	4/17/2014	17:36		4/17/2014	17:51
0417F006.D	RM11E-MW001-04-2014DUP	KWG1403461-1	4/17/2014	18:00		4/17/2014	18:15
0417F007.D	Lab Control Sample	KWG1403461-2	4/17/2014	18:23		4/17/2014	18:38
0417F009.D	RM11E-MULT1007-04-2014	K1403697-002	4/17/2014	19:11		4/17/2014	19:26
0417F010.D	RM11E-MW005-04-2014	K1403697-003	4/17/2014	19:35		4/17/2014	19:50
0417F011.D	RM11E-MW505-04-2014	K1403697-004	4/17/2014	19:59		4/17/2014	20:14
0417F012.D	RM11E-MW003d-04-2014	K1403697-006	4/17/2014	20:23		4/17/2014	20:38
0417F013.D	RM11E-MULT89881-04-2014	K1403697-007	4/17/2014	20:46		4/17/2014	21:01
0417F014.D	RM11E-MW002s-04-2014	K1403697-008	4/17/2014	21:10		4/17/2014	21:25
0417F015.D	RM11E-MW004-04-2014	K1403697-009	4/17/2014	21:33		4/17/2014	21:48
0417F017.D	Method Blank	KWG1403461-3	4/17/2014	22:21		4/17/2014	22:36
0417F018.D	Continuing Calibration Verification	KWG1403460-2	4/17/2014	22:45		4/17/2014	23:00
0417F019.D	Instrument Blank	KWG1403460-4	4/17/2014	23:08		4/17/2014	23:23

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Service Request: K1403697
Date Extracted: 04/17/2014

Extraction Prep Log
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: NWTPH-Gx

Extraction Lot: KWG1403461
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MW001-04-2014DUP	KWG1403461-1	04/14/14	04/15/14	10ml	10ml	NA	
Method Blank	KWG1403461-3	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1403461-2	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Chlorinated Pesticides

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW001-04-2014	**Units:**	ng/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.50	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.50	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.50	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.50	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.50	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	0.99	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.50	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.50	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	5.0	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	0.99	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.0	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.50	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	143	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	117	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	137	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	131	8-146	04/29/14	Acceptable
S_Endrin-13C12	120	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	116	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	118	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ng/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.50	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.50	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	**0.10**	J	0.50	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	**0.27**	J	0.50	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.50	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	0.99	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.50	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.50	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	5.0	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	0.99	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.0	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.50	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	170	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	130	5-120	04/29/14	Outside Control Limits
S_Oxychlordane-13C10	122	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	144	8-146	04/29/14	Acceptable
S_Endrin-13C12	133	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	99	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	95	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW005-04-2014	**Units:**	ng/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.49	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.49	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.49	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.49	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.49	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.49	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.49	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	0.98	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.49	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.49	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	4.9	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.49	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	0.98	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	4.9	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.49	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	161	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	123	5-120	04/29/14	Outside Control Limits
S_Oxychlordane-13C10	127	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	146	8-146	04/29/14	Acceptable
S_Endrin-13C12	117	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	118	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	108	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW505-04-2014	**Units:**	ng/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.50	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.50	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.50	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.50	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.50	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	0.99	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.50	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.50	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	5.0	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	0.99	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.0	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.50	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	131	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	110	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	120	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	129	8-146	04/29/14	Acceptable
S_Endrin-13C12	117	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	101	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	99	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ng/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.50	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.50	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.50	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.50	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	**0.14**	J	0.50	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.50	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	1.0	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.50	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.50	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	5.0	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.50	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	1.0	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.0	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.50	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	88	5-124	04/29/14	Acceptable
S_HXCBZ13C6	95	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	99	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	98	8-146	04/29/14	Acceptable
S_Endrin-13C12	100	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	92	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	87	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ng/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.60	0.14	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.60	0.14	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.60	0.11	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.60	0.12	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.60	0.090	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.60	0.11	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.60	0.16	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	1.2	0.21	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.60	0.21	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.60	0.15	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	6.0	0.89	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.60	0.36	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	1.2	0.20	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	6.0	2.4	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	**0.36**	JX	0.60	0.33	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	118	5-124	04/29/14	Acceptable
S_HXCBZ13C6	86	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	129	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	116	8-146	04/29/14	Acceptable
S_Endrin-13C12	91	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	107	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	101	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ng/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.52	0.12	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.52	0.12	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.52	0.089	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.52	0.11	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.52	0.077	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.52	0.090	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.52	0.14	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	1.1	0.18	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.52	0.18	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.52	0.13	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	5.2	0.76	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.52	0.31	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	1.1	0.17	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.2	2.1	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.52	0.28	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	156	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	113	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	116	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	137	8-146	04/29/14	Acceptable
S_Endrin-13C12	92	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	104	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	102	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-MW004-04-2014	**Units:**	ng/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.53	0.12	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.53	0.12	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.53	0.091	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.53	0.11	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.53	0.079	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.53	0.092	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	**0.18**	J	0.53	0.14	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	1.1	0.18	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	**0.20**	J	0.53	0.18	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.53	0.13	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	**0.90**	J	5.3	0.78	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.53	0.32	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	1.1	0.17	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	5.3	2.1	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.53	0.29	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	153	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	93	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	124	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	134	8-146	04/29/14	Acceptable
S_Endrin-13C12	138	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	109	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	105	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1403509-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.49	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDE	ND	U	0.49	0.11	1	04/21/14	04/29/14	KWG1403509	
2,4'-DDT	ND	U	0.49	0.087	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDD	ND	U	0.49	0.10	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDE	ND	U	0.49	0.075	1	04/21/14	04/29/14	KWG1403509	
4,4'-DDT	ND	U	0.49	0.088	1	04/21/14	04/29/14	KWG1403509	
alpha-Chlordane	ND	U	0.49	0.13	1	04/21/14	04/29/14	KWG1403509	
cis-Nonachlor	ND	U	0.98	0.17	1	04/21/14	04/29/14	KWG1403509	
gamma-Chlordane	ND	U	0.49	0.17	1	04/21/14	04/29/14	KWG1403509	
trans-Nonachlor	ND	U	0.49	0.12	1	04/21/14	04/29/14	KWG1403509	
Dieldrin	ND	U	4.9	0.74	1	04/21/14	04/29/14	KWG1403509	
gamma-BHC (Lindane)	ND	U	0.49	0.30	1	04/21/14	04/29/14	KWG1403509	
Heptachlor Epoxide	ND	U	0.98	0.16	1	04/21/14	04/29/14	KWG1403509	
Oxychlordane	ND	U	4.9	2.0	1	04/21/14	04/29/14	KWG1403509	
Hexachlorobenzene	ND	U	0.49	0.27	1	04/21/14	04/29/14	KWG1403509	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	149	5-124	04/29/14	Outside Control Limits
S_HXCBZ13C6	117	5-120	04/29/14	Acceptable
S_Oxychlordane-13C10	126	5-144	04/29/14	Acceptable
S_Heptachlrepox13C10	139	8-146	04/29/14	Acceptable
S_Endrin-13C12	131	20-157	04/29/14	Acceptable
S_4,4'DDD-d4	118	5-120	04/29/14	Acceptable
S_4,4'-DDT-d4	112	13-200	04/29/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3535A **Units:** Percent
Analysis Method: CAS SOC-PESTMS2 **Level:** Low

Sample Name	Lab Code	Sur1		Sur2		Sur3	Sur4	Sur5	Sur6		Sur7
RM11E-MW001-04-2014	K1403697-001	143	*	117		137	131	120	116		118
RM11E-MULT1007-04-2014	K1403697-002	170	*	130	*	122	144	133	99		95
RM11E-MW005-04-2014	K1403697-003	161	*	123	*	127	146	117	118		108
RM11E-MW505-04-2014	K1403697-004	131	*	110		120	129	117	101		99
RM11E-MW003d-04-2014	K1403697-006	88		95		99	98	100	92		87
RM11E-MULT89881-04-2014	K1403697-007	118		86		129	116	91	107		101
RM11E-MW002s-04-2014	K1403697-008	156	*	113		116	137	92	104		102
RM11E-MW004-04-2014	K1403697-009	153	*	93		124	134	138	109		105
Method Blank	KWG1403509-3	149	*	117		126	139	131	118		112
Lab Control Sample	KWG1403509-1	142	*	99		123	123	126	129	*	115
Duplicate Lab Control Sample	KWG1403509-2	141	*	115		126	144	121	125	*	122

Surrogate Recovery Control Limits (%)

Sur1	=	S_GBHCD6	5-124	Sur5	=	S_Endrin-13C12	20-157
Sur2	=	S_HXCBZ13C6	5-120	Sur6	=	S_4,4'DDD-d4	5-120
Sur3	=	S_Oxychlordane-13C10	5-144	Sur7	=	S_4,4'-DDT-d4	13-200
Sur4	=	S_Heptachlrepox13C10	8-146				

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/29/2014
		Time Analyzed:	17:05

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\042914\0429F021.D	**Lab Code:**	KWG1403895-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1403895
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		gamma-BHC-d6		Hexachlorobenzene-13C6	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	25,422	15.21	1,816	11.37	1,614	10.97
	Upper Limit ==>	50,844	15.71	9,081	11.87	8,068	11.47
	Lower Limit ==>	12,711	14.71	91	10.87	81	10.47
	ICAL Result ==>	23,500	15.21	1,926	11.37	1,332	10.97
Associated Analyses							
Method Blank	KWG1403509-3	23,271	15.22	2,847	11.37	2,015	10.97
Lab Control Sample	KWG1403509-1	23,203	15.22	2,698	11.37	1,705	10.97
Duplicate Lab Control Sample	KWG1403509-2	23,992	15.22	2,770	11.37	2,037	10.97
RM11E-MW001-04-2014	K1403697-001	25,628	15.22	3,001	11.37	2,219	10.97
RM11E-MULT1007-04-2014	K1403697-002	29,764	15.22	4,146	11.37	2,869	10.97
RM11E-MW005-04-2014	K1403697-003	26,216	15.22	3,447	11.37	2,395	10.97
RM11E-MW505-04-2014	K1403697-004	26,980	15.22	2,896	11.37	2,194	10.97
RM11E-MW003d-04-2014	K1403697-006	27,266	15.22	1,957	11.37	1,918	10.97
RM11E-MULT89881-04-2014	K1403697-007	28,623	15.22	2,760	11.37	1,818	10.97
RM11E-MW002s-04-2014	K1403697-008	29,286	15.22	3,732	11.37	2,461	10.97
RM11E-MW004-04-2014	K1403697-009	27,918	15.22	3,491	11.37	1,928	10.97

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/29/2014
Time Analyzed: 17:05

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID: J:\MS21\DATA\042914\0429F021.D
Instrument ID: MS21
Analysis Method: CAS SOC-PESTMS2

Lab Code: KWG1403895-1
Analysis Lot: KWG1403895

		Oxychlordane-13C10		Heptachlor Epoxide-13C1		Endrin-13C12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	936	13.93	856	14.03	559	16.35
	Upper Limit ==>	4,679	14.43	4,281	14.53	2,796	16.85
	Lower Limit ==>	47	13.43	43	13.53	28	15.85
	ICAL Result ==>	893	13.93	1,053	14.03	469	16.35
Associated Analyses							
Method Blank	KWG1403509-3	1,231	13.93	1,197	14.03	689	16.36
Lab Control Sample	KWG1403509-1	1,193	13.93	1,055	14.03	664	16.36
Duplicate Lab Control Sample	KWG1403509-2	1,266	13.93	1,283	14.04	658	16.35
RM11E-MW001-04-2014	K1403697-001	1,474	13.93	1,245	14.04	693	16.36
RM11E-MULT1007-04-2014	K1403697-002	1,515	13.93	1,592	14.04	895	16.36
RM11E-MW005-04-2014	K1403697-003	1,389	13.93	1,416	14.04	696	16.35
RM11E-MW505-04-2014	K1403697-004	1,356	13.93	1,286	14.03	714	16.35
RM11E-MW003d-04-2014	K1403697-006	1,131	13.93	991	14.03	615	16.36
RM11E-MULT89881-04-2014	K1403697-007	1,546	13.93	1,226	14.03	588	16.35
RM11E-MW002s-04-2014	K1403697-008	1,422	13.93	1,489	14.04	612	16.36
RM11E-MW004-04-2014	K1403697-009	1,451	13.93	1,388	14.04	874	16.36

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/29/2014
		Time Analyzed:	17:05

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\042914\0429F021.D	**Lab Code:**	KWG1403895-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1403895
Analysis Method:	CAS SOC-PESTMS2		

		4,4'-DDD-d4		4,4'-DDT-d4	
		Area	**RT**	**Area**	**RT**
	Results ==>	5,197	16.89	4,017	17.90
	Upper Limit ==>	25,984	17.39	20,083	18.40
	Lower Limit ==>	260	16.39	201	17.40
	ICAL Result ==>	4,947	16.89	3,910	17.89
Associated Analyses					
Method Blank	KWG1403509-3	5,887	16.90	4,278	17.90
Lab Control Sample	KWG1403509-1	6,447	16.90	4,366	17.90
Duplicate Lab Control Sample	KWG1403509-2	6,427	16.90	4,812	17.90
RM11E-MW001-04-2014	K1403697-001	6,411	16.90	4,967	17.90
RM11E-MULT1007-04-2014	K1403697-002	6,317	16.90	4,616	17.90
RM11E-MW005-04-2014	K1403697-003	6,643	16.90	4,643	17.90
RM11E-MW505-04-2014	K1403697-004	5,847	16.90	4,377	17.90
RM11E-MW003d-04-2014	K1403697-006	5,388	16.90	3,880	17.90
RM11E-MULT89881-04-2014	K1403697-007	6,588	16.89	4,718	17.90
RM11E-MW002s-04-2014	K1403697-008	6,518	16.90	4,919	17.90
RM11E-MW004-04-2014	K1403697-009	6,559	16.90	4,803	17.90

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/21/2014
Sample Matrix:	Water	**Date Analyzed:**	04/29/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403509

	Lab Control Sample KWG1403509-1 Lab Control Spike			Duplicate Lab Control Sample KWG1403509-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	16.5	20.0	83	17.2	20.0	86	50-120	4	30
2,4'-DDE	15.3	20.0	77	16.7	20.0	83	24-123	8	30
2,4'-DDT	19.6	20.0	98	18.9	20.0	94	50-120	4	30
4,4'-DDD	16.4	20.0	82	17.2	20.0	86	42-120	5	30
4,4'-DDE	15.3	20.0	76	16.3	20.0	81	50-120	6	30
4,4'-DDT	19.9	20.0	99	19.0	20.0	95	50-120	5	30
alpha-Chlordane	16.1	20.0	80	17.7	20.0	88	50-120	10	30
cis-Nonachlor	17.1	20.0	86	16.5	20.0	82	50-120	4	30
gamma-Chlordane	17.3	20.0	87	19.1	20.0	95	50-120	10	30
trans-Nonachlor	17.0	20.0	85	17.2	20.0	86	50-120	1	30
Dieldrin	17.7	20.0	89	18.9	20.0	94	50-120	6	30
gamma-BHC (Lindane)	15.0	20.0	75	11.8	20.0	59	50-120	24	30
Heptachlor Epoxide	17.8	20.0	89	14.7	20.0	74	50-120	19	30
Oxychlordane	19.9	20.0	100	19.5	20.0	98	50-120	2	30
Hexachlorobenzene	25.3	20.0	127 *	19.8	20.0	99	50-120	25	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/21/2014
Sample Matrix:	Water	**Date Analyzed:**	04/29/2014
		Time Analyzed:	17:33

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1403509-3	**File ID:**	J:\MS21\DATA\042914\0429F022.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1403509

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403509-1	J:\MS21\DATA\042914\0429F023.D	04/29/14	17:59
Duplicate Lab Control Sample	KWG1403509-2	J:\MS21\DATA\042914\0429F024.D	04/29/14	18:26
RM11E-MW001-04-2014	K1403697-001	J:\MS21\DATA\042914\0429F025.D	04/29/14	18:53
RM11E-MULT1007-04-2014	K1403697-002	J:\MS21\DATA\042914\0429F026.D	04/29/14	19:20
RM11E-MW005-04-2014	K1403697-003	J:\MS21\DATA\042914\0429F027.D	04/29/14	19:47
RM11E-MW505-04-2014	K1403697-004	J:\MS21\DATA\042914\0429F028.D	04/29/14	20:14
RM11E-MW003d-04-2014	K1403697-006	J:\MS21\DATA\042914\0429F029.D	04/29/14	20:41
RM11E-MULT89881-04-2014	K1403697-007	J:\MS21\DATA\042914\0429F030.D	04/29/14	21:08
RM11E-MW002s-04-2014	K1403697-008	J:\MS21\DATA\042914\0429F031.D	04/29/14	21:36
RM11E-MW004-04-2014	K1403697-009	J:\MS21\DATA\042914\0429F032.D	04/29/14	22:03

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/21/2014
Sample Matrix:	Water	**Date Analyzed:**	04/29/2014
		Time Analyzed:	17:59

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1403509-1	**File ID:**	J:\MS21\DATA\042914\0429F023.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1403509

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1403509-3	J:\MS21\DATA\042914\0429F022.D	04/29/14	17:33
RM11E-MW001-04-2014	K1403697-001	J:\MS21\DATA\042914\0429F025.D	04/29/14	18:53
RM11E-MULT1007-04-2014	K1403697-002	J:\MS21\DATA\042914\0429F026.D	04/29/14	19:20
RM11E-MW005-04-2014	K1403697-003	J:\MS21\DATA\042914\0429F027.D	04/29/14	19:47
RM11E-MW505-04-2014	K1403697-004	J:\MS21\DATA\042914\0429F028.D	04/29/14	20:14
RM11E-MW003d-04-2014	K1403697-006	J:\MS21\DATA\042914\0429F029.D	04/29/14	20:41
RM11E-MULT89881-04-2014	K1403697-007	J:\MS21\DATA\042914\0429F030.D	04/29/14	21:08
RM11E-MW002s-04-2014	K1403697-008	J:\MS21\DATA\042914\0429F031.D	04/29/14	21:36
RM11E-MW004-04-2014	K1403697-009	J:\MS21\DATA\042914\0429F032.D	04/29/14	22:03

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 04/29/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13289 **Column:** MS
Instrument ID: MS21

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\042914\0429F005.D	G	J:\MS21\Data\042914\0429F012.D
B	J:\MS21\Data\042914\0429F006.D	H	J:\MS21\Data\042914\0429F013.D
C	J:\MS21\Data\042914\0429F007.D	I	J:\MS21\Data\042914\0429F014.D
D	J:\MS21\Data\042914\0429F008.D	J	J:\MS21\Data\042914\0429F016.D
E	J:\MS21\Data\042914\0429F009.D		
F	J:\MS21\Data\042914\0429F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	0.934	B	1.0	0.824	C	2.0	0.962	D	5.0	0.897	E	10	0.906
	F	40	0.958	G	60	0.915	H	80	0.913	I	100	0.910	J	20	0.992
2,4'-DDE	A	0.50	0.635	B	1.0	0.588	C	2.0	0.642	D	5.0	0.633	E	10	0.636
	F	40	0.619	G	60	0.594	H	80	0.575	I	100	0.568	J	20	0.640
2,4'-DDT	A	0.50	0.780	B	1.0	0.949	C	2.0	1.02	D	5.0	1.01	E	10	0.956
	F	40	0.945	G	60	0.998	H	80	0.997	I	100	0.953	J	20	1.03
4,4'-DDD	A	0.50	1.05	B	1.0	0.982	C	2.0	0.999	D	5.0	1.01	E	10	1.00
	F	40	1.06	G	60	1.03	H	80	0.987	I	100	1.03	J	20	1.06
4,4'-DDE	A	0.50	0.508	B	1.0	0.461	C	2.0	0.514	D	5.0	0.505	E	10	0.510
	F	40	0.505	G	60	0.489	H	80	0.477	I	100	0.477	J	20	0.527
4,4'-DDT	A	0.50	0.751	B	1.0	0.734	C	2.0	0.891	D	5.0	0.827	E	10	0.799
	F	40	0.846	G	60	0.872	H	80	0.861	I	100	0.860	J	20	0.876
alpha-Chlordane	A	0.50	2.31	B	1.0	1.66	C	2.0	1.94	D	5.0	1.71	E	10	1.60
	F	40	1.62	G	60	1.86	H	80	1.94	I	100	1.60	J	20	2.07
cis-Nonachlor				B	1.0	1.85	C	2.0	1.17	D	5.0	1.62	E	10	1.24
	F	40	1.38	G	60	1.49	H	80	1.60	I	100	1.35	J	20	1.60
gamma-Chlordane	A	0.50	1.64	B	1.0	1.89	C	2.0	2.06	D	5.0	2.13	E	10	1.70
	F	40	1.76	G	60	1.91	H	80	2.02	I	100	1.66	J	20	2.18
trans-Nonachlor	A	0.50	1.31	B	1.0	1.32	C	2.0	1.57	D	5.0	1.51	E	10	1.38
	F	40	1.30	G	60	1.44	H	80	1.59	I	100	1.27	J	20	1.71
Dieldrin										D	5.0	1.16	E	10	0.947
	F	40	0.959	G	60	0.981	H	80	0.910	I	100	0.838	J	20	1.07
gamma-BHC (Lindane)	A	0.50	0.816	B	1.0	0.660	C	2.0	0.728	D	5.0	0.949	E	10	0.874
	F	40	0.874	G	60	1.05	H	80	1.07	I	100	0.854	J	20	0.912
Heptachlor Epoxide	A	0.50	1.44	B	1.0	1.36	C	2.0	1.54	D	5.0	1.51	E	10	1.29
	F	40	1.14	G	60	1.35	H	80	1.25	I	100	1.53	J	20	1.08
Oxychlordane	A	0.50	0.524	B	1.0	0.466	C	2.0	0.583	D	5.0	0.794	E	10	0.635
	F	40	0.658	G	60	0.564	H	80	0.751	I	100	0.606	J	20	0.647

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 04/29/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13289 **Column:** MS
Instrument ID: MS21

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene	A	0.50	1.22	B	1.0	0.849	C	2.0	1.20	D	5.0	1.19	E	10	0.916
	F	40	1.09	G	60	1.01	H	80	1.25	I	100	0.815	J	20	1.54
S_GBHCD6	A	20	0.418	B	20	0.421	C	20	0.413	D	20	0.424	E	20	0.410
	F	20	0.424	G	20	0.346	H	20	0.354	I	20	0.471	J	20	0.410
S_HXCBZ13C6	A	20	0.368	B	20	0.364	C	20	0.377	D	20	0.394	E	20	0.363
	F	20	0.339	G	20	0.356	H	20	0.364	I	20	0.498	J	20	0.283
S_Oxychlordane-13C10	A	20	0.192	B	20	0.221	C	20	0.222	D	20	0.204	E	20	0.225
	F	20	0.225	G	20	0.202	H	20	0.183	I	20	0.230	J	20	0.190
S_Heptachlrepox13C10	A	20	0.156	B	20	0.183	C	20	0.170	D	20	0.180	E	20	0.203
	F	20	0.208	G	20	0.181	H	20	0.194	I	20	0.154	J	20	0.224
S_Endrin-13C12	A	20	0.113	B	20	0.122	C	20	0.114	D	20	0.111	E	20	0.108
	F	20	0.113	G	20	0.108	H	20	0.114	I	20	0.129	J	20	0.0997
S_4,4'DDD-d4	A	5.0	4.37	B	5.0	4.18	C	5.0	4.16	D	5.0	4.32	E	5.0	4.18
	F	5.0	4.21	G	5.0	4.36	H	5.0	4.45	I	5.0	4.52	J	5.0	4.21
S_4,4'-DDT-d4	A	5.0	3.23	B	5.0	3.21	C	5.0	2.89	D	5.0	3.06	E	5.0	3.27
	F	5.0	3.44	G	5.0	3.40	H	5.0	3.28	I	5.0	3.67	J	5.0	3.33

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 04/29/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13289 **Column:** MS
Instrument ID: MS21

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2,4'-DDD	MS	AverageRF	% RSD	4.9		≤ 20	0.921		.01
2,4'-DDE	MS	AverageRF	% RSD	4.7		≤ 20	0.613		.01
2,4'-DDT	MS	AverageRF	% RSD	7.4		≤ 20	0.963		.01
4,4'-DDD	MS	AverageRF	% RSD	2.9		≤ 20	1.02		.01
4,4'-DDE	MS	AverageRF	% RSD	4.1		≤ 20	0.497		.01
4,4'-DDT	MS	AverageRF	% RSD	6.5		≤ 20	0.832		.01
alpha-Chlordane	MS	AverageRF	% RSD	12.9		≤ 20	1.83		.01
cis-Nonachlor	MS	AverageRF	% RSD	14.5		≤ 20	1.48		.01
gamma-Chlordane	MS	AverageRF	% RSD	10.5		≤ 20	1.89		.01
trans-Nonachlor	MS	AverageRF	% RSD	10.3		≤ 20	1.44		.01
Dieldrin	MS	AverageRF	% RSD	10.7		≤ 20	0.980		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	14.5		≤ 20	0.878		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	12.0		≤ 20	1.35		.01
Oxychlordane	MS	AverageRF	% RSD	15.8		≤ 20	0.623		.01
Hexachlorobenzene	MS	AverageRF	% RSD	19.8		≤ 20	1.11		.01
S_GBHCD6	SURR	AverageRF	% RSD	8.8		≤ 20	0.409		.01
S_HXCBZ13C6	SURR	AverageRF	% RSD	14.5		≤ 20	0.371		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	8.2		≤ 20	0.209		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	12.1		≤ 20	0.185		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	6.9		≤ 20	0.113		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	2.9		≤ 20	4.30		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	6.4		≤ 20	3.28		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	04/29/2014
		Date Analyzed:	04/29/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13289
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\042914\0429F017.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	20	0.921	0.933	1	NA	± 25 %	AverageRF
2,4'-DDE	20	19	0.613	0.577	-6	NA	± 25 %	AverageRF
2,4'-DDT	20	18	0.963	0.865	-10	NA	± 25 %	AverageRF
4,4'-DDD	20	20	1.02	1.02	0	NA	± 25 %	AverageRF
4,4'-DDE	20	19	0.497	0.481	-3	NA	± 25 %	AverageRF
4,4'-DDT	20	19	0.832	0.795	-4	NA	± 25 %	AverageRF
alpha-Chlordane	20	21	1.83	1.95	7	NA	± 25 %	AverageRF
cis-Nonachlor	20	21	1.48	1.55	5	NA	± 25 %	AverageRF
gamma-Chlordane	20	21	1.89	2.02	7	NA	± 25 %	AverageRF
trans-Nonachlor	20	22	1.44	1.58	10	NA	± 25 %	AverageRF
Dieldrin	20	21	0.980	1.01	3	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	18	0.878	0.794	-10	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	17	1.35	1.16	-14	NA	± 25 %	AverageRF
Oxychlordane	20	21	0.623	0.645	4	NA	± 25 %	AverageRF
Hexachlorobenzene	20	24	1.11	1.35	22	NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/29/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration Date:**	04/29/2014
Analysis Method:	CAS SOC-PESTMS2	**Calibration ID:**	CAL13289
		Analysis Lot:	KWG1403895
		Units:	ng/ml

File ID: J:\MS21\DATA\042914\0429F021.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
2,4'-DDD	20	21	.01	0.921	0.964	5		NA	± 25 %	AverageRF
2,4'-DDE	20	21	.01	0.613	0.639	4		NA	± 25 %	AverageRF
2,4'-DDT	20	21	.01	0.963	1.04	7		NA	± 25 %	AverageRF
4,4'-DDD	20	21	.01	1.02	1.09	6		NA	± 25 %	AverageRF
4,4'-DDE	20	22	.01	0.497	0.548	10		NA	± 25 %	AverageRF
4,4'-DDT	20	21	.01	0.832	0.886	7		NA	± 25 %	AverageRF
alpha-Chlordane	20	21	.01	1.83	1.90	4		NA	± 25 %	AverageRF
cis-Nonachlor	20	23	.01	1.48	1.68	14		NA	± 25 %	AverageRF
gamma-Chlordane	20	20	.01	1.89	1.94	2		NA	± 25 %	AverageRF
trans-Nonachlor	20	22	.01	1.44	1.62	12		NA	± 25 %	AverageRF
Dieldrin	20	19	.01	0.980	0.928	-5		NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.878	0.826	-6		NA	± 25 %	AverageRF
Heptachlor Epoxide	20	21	.01	1.35	1.43	6		NA	± 25 %	AverageRF
Oxychlordane	20	21	.01	0.623	0.664	7		NA	± 25 %	AverageRF
Hexachlorobenzene	20	27	.01	1.11	1.49	35	*	NA	± 25 %	AverageRF
S_GBHCD6	20	17	.01	0.409	0.357	-13		NA	± 30 %	AverageRF
S_HXCBZ13C6	20	17	.01	0.371	0.317	-14		NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	18	.01	0.209	0.184	-12		NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	18	.01	0.185	0.168	-9		NA	± 30 %	AverageRF
S_Endrin-13C12	20	19	.01	0.113	0.110	-3		NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.8	.01	4.30	4.09	-5		NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	4.8	.01	3.28	3.16	-4		NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1403895
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0429F021.D	Continuing Calibration Verification	KWG1403895-1	4/29/2014	17:05		4/29/2014	17:05
0429F022.D	Method Blank	KWG1403509-3	4/29/2014	17:33		4/29/2014	17:33
0429F023.D	Lab Control Sample	KWG1403509-1	4/29/2014	17:59		4/29/2014	17:59
0429F024.D	Duplicate Lab Control Sample	KWG1403509-2	4/29/2014	18:26		4/29/2014	18:26
0429F025.D	RM11E-MW001-04-2014	K1403697-001	4/29/2014	18:53		4/29/2014	18:53
0429F026.D	RM11E-MULT1007-04-2014	K1403697-002	4/29/2014	19:20		4/29/2014	19:20
0429F027.D	RM11E-MW005-04-2014	K1403697-003	4/29/2014	19:47		4/29/2014	19:47
0429F028.D	RM11E-MW505-04-2014	K1403697-004	4/29/2014	20:14		4/29/2014	20:14
0429F029.D	RM11E-MW003d-04-2014	K1403697-006	4/29/2014	20:41		4/29/2014	20:41
0429F030.D	RM11E-MULT89881-04-2014	K1403697-007	4/29/2014	21:08		4/29/2014	21:08
0429F031.D	RM11E-MW002s-04-2014	K1403697-008	4/29/2014	21:36		4/29/2014	21:36
0429F032.D	RM11E-MW004-04-2014	K1403697-009	4/29/2014	22:03		4/29/2014	22:03

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/21/2014
Sample Matrix:	Water		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1403509
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	1020ml	1.0ml	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	1020ml	1.0ml	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	1030ml	1.0ml	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	1020ml	1.0ml	NA	
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	1000ml	1.0ml	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	840ml	1.0ml	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	980ml	1.0ml	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	960ml	1.0ml	NA	
Method Blank	KWG1403509-3	NA	NA	1030ml	1.0ml	NA	
Lab Control Sample	KWG1403509-1	NA	NA	1000ml	1.0ml	NA	
Duplicate Lab Control Sample	KWG1403509-2	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polychlorinated Biphenyls

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.012	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	**0.0012**	JP	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	**0.0023**	JP	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.016	0.0070	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1221	ND	U	0.031	0.0030	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1232	ND	Ui	0.016	0.012	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1242	ND	Ui	0.016	0.0088	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1248	ND	Ui	0.016	0.0088	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1254	ND	Ui	0.024	0.024	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1260	**0.0092**	JD	0.016	0.0030	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1262	ND	U	0.016	0.0030	3	04/17/14	04/25/14	KWG1403491	
Aroclor 1268	ND	U	0.016	0.0030	3	04/17/14	04/25/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	107	39-140	04/25/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW005-04-2014	**Units:**	ug/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.011	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW505-04-2014	**Units:**	ug/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.011	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0052	0.00098	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ug/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	Ui	0.012	0.0055	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	Ui	0.0057	0.0029	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	Ui	0.0057	0.0013	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	Ui	0.0057	0.0020	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	Ui	0.0057	0.0056	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	Ui	0.0057	0.0057	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0057	0.0011	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	87	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ug/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.011	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	80	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ug/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.011	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0053	0.0011	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	89	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.011	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	**0.0044**	J	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	**0.0013**	J	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0055	0.0011	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403491-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0050	0.0015	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1221	ND	U	0.010	0.00096	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1232	ND	Ui	0.0050	0.0027	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1242	ND	Ui	0.0050	0.0011	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1248	ND	U	0.0050	0.00096	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1254	ND	U	0.0050	0.00096	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1260	ND	U	0.0050	0.00096	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1262	ND	U	0.0050	0.00096	1	04/17/14	04/24/14	KWG1403491	
Aroclor 1268	ND	U	0.0050	0.00096	1	04/17/14	04/24/14	KWG1403491	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	39-140	04/24/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A **Units:** Percent
Analysis Method: 8082A **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-MW001-04-2014	K1403697-001	82
RM11E-MULT1007-04-2014	K1403697-002	107 D
RM11E-MW005-04-2014	K1403697-003	75
RM11E-MW505-04-2014	K1403697-004	84
RM11E-MW003d-04-2014	K1403697-006	87
RM11E-MULT89881-04-2014	K1403697-007	80
RM11E-MW002s-04-2014	K1403697-008	89
RM11E-MW004-04-2014	K1403697-009	78
Method Blank	KWG1403491-3	81
Lab Control Sample	KWG1403491-1	85
Duplicate Lab Control Sample	KWG1403491-2	86

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/24/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Units:**	ug/L
Analysis Method:	8082A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403491

	Lab Control Sample KWG1403491-1 Lab Control Spike			Duplicate Lab Control Sample KWG1403491-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	0.148	0.200	74	0.150	0.200	75	60-103	1	30
Aroclor 1260	0.169	0.200	84	0.166	0.200	83	60-103	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/24/2014
		Time Analyzed:	04:05

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1403491-3	**File ID:**	J:\GC22\DATA\042314UL.B\0423F009.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1403491

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403491-1	J:\GC22\DATA\042314UL.B\0423F007.D	04/24/14	03:20
Duplicate Lab Control Sample	KWG1403491-2	J:\GC22\DATA\042314UL.B\0423F008.D	04/24/14	03:43
RM11E-MW001-04-2014	K1403697-001	J:\GC22\DATA\042314UL.B\0423F013.D	04/24/14	05:37
RM11E-MW005-04-2014	K1403697-003	J:\GC22\DATA\042314UL.B\0423F015.D	04/24/14	06:22
RM11E-MW505-04-2014	K1403697-004	J:\GC22\DATA\042314UL.B\0423F016.D	04/24/14	06:45
RM11E-MW003d-04-2014	K1403697-006	J:\GC22\DATA\042314UL.B\0423F017.D	04/24/14	07:08
RM11E-MULT89881-04-2014	K1403697-007	J:\GC22\DATA\042314UL.B\0423F018.D	04/24/14	07:31
RM11E-MW002s-04-2014	K1403697-008	J:\GC22\DATA\042314UL.B\0423F019.D	04/24/14	07:54
RM11E-MW004-04-2014	K1403697-009	J:\GC22\DATA\042314UL.B\0423F020.D	04/24/14	08:17
RM11E-MULT1007-04-2014	K1403697-002	J:\GC22\DATA\042414UL.B\0424F007.D	04/25/14	07:29

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water	**Date Analyzed:**	04/24/2014
		Time Analyzed:	03:20

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC22.i
Lab Code:	KWG1403491-1	**File ID:**	J:\GC22\DATA\042314UL.B\0423F007.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1403491

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1403491-3	J:\GC22\DATA\042314UL.B\0423F009.D	04/24/14	04:05
RM11E-MW001-04-2014	K1403697-001	J:\GC22\DATA\042314UL.B\0423F013.D	04/24/14	05:37
RM11E-MW005-04-2014	K1403697-003	J:\GC22\DATA\042314UL.B\0423F015.D	04/24/14	06:22
RM11E-MW505-04-2014	K1403697-004	J:\GC22\DATA\042314UL.B\0423F016.D	04/24/14	06:45
RM11E-MW003d-04-2014	K1403697-006	J:\GC22\DATA\042314UL.B\0423F017.D	04/24/14	07:08
RM11E-MULT89881-04-2014	K1403697-007	J:\GC22\DATA\042314UL.B\0423F018.D	04/24/14	07:31
RM11E-MW002s-04-2014	K1403697-008	J:\GC22\DATA\042314UL.B\0423F019.D	04/24/14	07:54
RM11E-MW004-04-2014	K1403697-009	J:\GC22\DATA\042314UL.B\0423F020.D	04/24/14	08:17
RM11E-MULT1007-04-2014	K1403697-002	J:\GC22\DATA\042414UL.B\0424F007.D	04/25/14	07:29

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

Level ID	File ID
A	\\cash1\acqudata\GC22\data\030514UL.b\0305F005.D
B	\\cash1\acqudata\GC22\data\030514UL.b\0305F006.D
C	\\cash1\acqudata\GC22\data\030514UL.b\0305F007.D
D	\\cash1\acqudata\GC22\data\030514UL.b\0305F008.D
E	\\cash1\acqudata\GC22\data\030514UL.b\0305F009.D
F	\\cash1\acqudata\GC22\data\030514UL.b\0305F010.D
G	\\cash1\acqudata\GC22\data\030514UL.b\0305F011.D
H	\\cash1\acqudata\GC22\data\030514UL.b\0305F012.D
I	\\cash1\acqudata\GC22\data\030514UL.b\0305F013.D
J	\\cash1\acqudata\GC22\data\030514UL.b\0305F014.D
K	\\cash1\acqudata\GC22\data\030514UL.b\0305F015.D
L	\\cash1\acqudata\GC22\data\030514UL.b\0305F016.D
M	\\cash1\acqudata\GC22\data\030514UL.b\0305F017.D
N	\\cash1\acqudata\GC22\data\030514UL.b\0305F018.D
O	\\cash1\acqudata\GC22\data\030514UL.b\0305F019.D
P	\\cash1\acqudata\GC22\data\030514UL.b\0305F020.D
Q	\\cash1\acqudata\GC22\data\030514UL.b\0305F021.D
R	\\cash1\acqudata\GC22\data\030514UL.b\0305F022.D
S	\\cash1\acqudata\GC22\data\030514UL.b\0305F023.D
T	\\cash1\acqudata\GC22\data\030514UL.b\0305F024.D
U	\\cash1\acqudata\GC22\data\030514UL.b\0305F025.D
V	\\cash1\acqudata\GC22\data\030514UL.b\0305F026.D
W	\\cash1\acqudata\GC22\data\030514UL.b\0305F027.D
X	\\cash1\acqudata\GC22\data\030514UL.b\0305F028.D
Y	\\cash1\acqudata\GC22\data\030514UL.b\0305F029.D
Z	\\cash1\acqudata\GC22\data\030514UL.b\0305F030.D
AA	\\cash1\acqudata\GC22\data\030514UL.b\0305F031.D
AB	\\cash1\acqudata\GC22\data\030514UL.b\0305F032.D
AC	\\cash1\acqudata\GC22\data\030514UL.b\0305F033.D
AD	\\cash1\acqudata\GC22\data\030514UL.b\0305F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	6.96E+6	B	0.50	6.80E+6	C	2.5	6.01E+6	D	5.0	5.68E+6	E	25	5.17E+6
	F	50	5.14E+6												
Aroclor 1016 {1}	A	2.5	98400	B	5.0	1.06E+5	C	25	1.09E+5	D	50	1.10E+5	E	250	92400
	F	500	87500												
Aroclor 1016 {2}	A	2.5	3.49E+5	B	5.0	3.71E+5	C	25	3.22E+5	D	50	3.21E+5	E	250	3.12E+5
	F	500	2.89E+5												
Aroclor 1016 {3}	A	2.5	2.37E+5	B	5.0	2.25E+5	C	25	2.04E+5	D	50	1.92E+5	E	250	1.71E+5
	F	500	1.66E+5												
Aroclor 1016 {4}	A	2.5	2.01E+5	B	5.0	2.03E+5	C	25	1.70E+5	D	50	1.55E+5	E	250	1.32E+5
	F	500	1.27E+5												
Aroclor 1016 {5}	A	2.5	2.02E+5	B	5.0	1.96E+5	C	25	1.75E+5	D	50	1.58E+5	E	250	1.37E+5
	F	500	1.33E+5												
Aroclor 1260 {1}	A	2.5	3.63E+5	B	5.0	3.54E+5	C	25	3.10E+5	D	50	2.92E+5	E	250	2.62E+5
	F	500	2.57E+5												
Aroclor 1260 {2}	A	2.5	2.01E+5	B	5.0	1.85E+5	C	25	1.67E+5	D	50	1.61E+5	E	250	1.47E+5
	F	500	1.50E+5												
Aroclor 1260 {3}	A	2.5	2.90E+5	B	5.0	2.93E+5	C	25	2.66E+5	D	50	2.51E+5	E	250	2.27E+5
	F	500	2.25E+5												
Aroclor 1260 {4}	A	2.5	6.83E+5	B	5.0	6.86E+5	C	25	6.07E+5	D	50	5.84E+5	E	250	5.52E+5
	F	500	5.53E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	5.26E+5	B	5.0	5.26E+5	C	25	4.59E+5	D	50	4.37E+5	E	250	4.20E+5
	F	500	4.19E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	13.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.3		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	8.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	20.0		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	17.5		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	12.6		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	03/06/2014
		Date Analyzed:	03/06/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13181
Analysis Method:	8082A	**Units:**	ng/mL

File ID: \\cash1\acqudata\GC22\data\030514UL.b\0305F035.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F036.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F037.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F038.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F039.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F040.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F041.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F042.D
\\cash1\acqudata\GC22\data\030514UL.b\0305F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	98	101000	98300	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	77	327000	253000	-23	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	85	199000	169000	-15	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	79	165000	130000	-21	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	84	167000	140000	-16	NA	± 100 %	AverageRF
Aroclor 1016	100	85	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	100	89	306000	274000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	91	169000	153000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	259000	276000	7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	611000	649000	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	100	464000	482000	4	NA	± 100 %	AverageRF
Aroclor 1260	100	99	NA	NA	NA	-1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

Level ID	File ID
A	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F005.D
B	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F006.D
C	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F007.D
D	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F008.D
E	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F009.D
F	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F010.D
G	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F011.D
H	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F012.D
I	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F013.D
J	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F014.D
K	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F015.D
L	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F016.D
M	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F017.D
N	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F018.D
O	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F019.D
P	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F020.D
Q	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F021.D
R	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F022.D
S	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F023.D
T	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F024.D
U	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F025.D
V	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F026.D
W	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F027.D
X	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F029.D
Y	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F030.D
Z	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F031.D
AA	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F032.D
AB	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F033.D
AC	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	1.05E+7	B	0.50	1.04E+7	C	2.5	9.48E+6	D	5.0	9.21E+6	E	25	9.13E+6
	F	50	9.34E+6												
Aroclor 1016 {1}	A	2.5	2.18E+5	B	5.0	2.03E+5	C	25	1.82E+5	D	50	1.77E+5	E	250	1.67E+5
	F	500	1.66E+5												
Aroclor 1016 {2}	A	2.5	2.78E+5	B	5.0	2.84E+5	C	25	2.49E+5	D	50	2.40E+5	E	250	2.29E+5
	F	500	2.27E+5												
Aroclor 1016 {3}	A	2.5	3.82E+5	B	5.0	3.85E+5	C	25	3.19E+5	D	50	3.00E+5	E	250	2.75E+5
	F	500	2.80E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	2.84E+5	C	25	2.27E+5	D	50	2.14E+5	E	250	2.01E+5
	F	500	2.02E+5												
Aroclor 1016 {5}	A	2.5	2.54E+5	B	5.0	2.56E+5	C	25	2.26E+5	D	50	2.15E+5	E	250	2.04E+5
	F	500	2.06E+5												
Aroclor 1260 {1}	A	2.5	6.00E+5	B	5.0	5.81E+5	C	25	5.11E+5	D	50	4.93E+5	E	250	4.76E+5
	F	500	4.81E+5												
Aroclor 1260 {2}	A	2.5	5.08E+5	B	5.0	5.24E+5	C	25	4.51E+5	D	50	4.26E+5	E	250	3.83E+5
	F	500	3.86E+5												
Aroclor 1260 {3}	A	2.5	5.01E+5	B	5.0	4.80E+5	C	25	4.30E+5	D	50	4.15E+5	E	250	4.04E+5
	F	500	4.07E+5												
Aroclor 1260 {4}	A	2.5	1.12E+6	B	5.0	1.09E+6	C	25	1.02E+6	D	50	1.00E+6	E	250	1.03E+6
	F	500	1.05E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	7.29E+5	B	5.0	7.16E+5	C	25	6.59E+5	D	50	6.43E+5	E	250	6.36E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	6.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	11.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	10.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	10.2		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	9.3		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	6.1		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Calibration Date: 03/06/2014
Date Analyzed: 03/06/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration ID: CAL13181
Units: ng/mL

File ID: \\cash1\acqudata\GC22\data\030514UL_r.b\0305F035.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F036.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F037.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F038.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F039.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F040.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F041.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F042.D
\\cash1\acqudata\GC22\data\030514UL_r.b\0305F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	88	185000	163000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	88	251000	220000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	83	324000	269000	-17	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	80	240000	193000	-20	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	88	227000	199000	-12	NA	± 100 %	AverageRF
Aroclor 1016	100	85	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	100	90	524000	469000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	446000	474000	6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	100	439000	455000	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	1050000	1150000	10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	100	671000	687000	2	NA	± 100 %	AverageRF
Aroclor 1260	100	100	NA	NA	NA	2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/24/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403700
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042314UL.B\0423F005.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.2	5960000	5060000	-15	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	46	101000	92900	-8	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	42	327000	272000	-17	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	43	199000	172000	-14	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	41	165000	135000	-18	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	41	167000	138000	-18	NA	± 100 %	AverageRF
Aroclor 1016	50	43	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	50	43	306000	263000	-14	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	42	169000	143000	-15	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	44	259000	228000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	43	611000	530000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	44	464000	407000	-12	NA	± 100 %	AverageRF
Aroclor 1260	50	43	NA	NA	NA	-13	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/24/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403700
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042314UL_R.B\0423F005.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.7	9670000	9020000	-7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	45	185000	168000	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	45	251000	226000	-10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	44	324000	286000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	43	240000	208000	-14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	46	227000	210000	-7	NA	± 100 %	AverageRF
Aroclor 1016	50	45	NA	NA	NA	-10	± 20 %	NA
Aroclor 1260 {1}	50	46	524000	486000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	44	446000	392000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	46	439000	406000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	47	1050000	980000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	46	671000	623000	-7	NA	± 100 %	AverageRF
Aroclor 1260	50	46	NA	NA	NA	-8	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/24/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403700
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042314UL.B\0423F021.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.8	5960000	5670000	-5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	48	101000	95900	-5	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	41	327000	265000	-19	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	47	199000	187000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	44	165000	144000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	45	167000	149000	-11	NA	± 100 %	AverageRF
Aroclor 1016	50	45	NA	NA	NA	-11	± 20 %	NA
Aroclor 1260 {1}	50	46	306000	283000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	46	169000	157000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	47	259000	245000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	47	611000	572000	-6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	48	464000	444000	-4	NA	± 100 %	AverageRF
Aroclor 1260	50	47	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/24/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403700
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042314UL_R.B\0423F021.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	6.1	9670000	11700000	21	*	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	48	185000	177000	-4		NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	49	251000	246000	-2		NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	47	324000	304000	-6		NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	46	240000	223000	-7		NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	50	227000	225000	-1		NA	± 100 %	AverageRF
Aroclor 1016	50	48	NA	NA	NA		-4	± 20 %	NA
Aroclor 1260 {1}	50	50	524000	522000	0		NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	48	446000	425000	-5		NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	50	439000	440000	0		NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	51	1050000	1070000	2		NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	50	671000	669000	0		NA	± 100 %	AverageRF
Aroclor 1260	50	50	NA	NA	NA		-1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/25/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403783
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042414UL.B\0424F005.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.3	5960000	5080000	-15	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	45	101000	90700	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	39	327000	255000	-22	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	42	199000	169000	-15	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	40	165000	131000	-20	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	40	167000	134000	-20	NA	± 100 %	AverageRF
Aroclor 1016	50	41	NA	NA	NA	-17	± 20 %	NA
Aroclor 1260 {1}	50	42	306000	256000	-16	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	42	169000	140000	-17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	43	259000	225000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	42	611000	518000	-15	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	43	464000	404000	-13	NA	± 100 %	AverageRF
Aroclor 1260	50	43	NA	NA	NA	-15	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/25/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403783
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042414UL_R.B\0424F005.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.9	9670000	9410000	-3	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	46	185000	172000	-7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	47	251000	236000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	44	324000	288000	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	44	240000	213000	-11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	47	227000	215000	-5	NA	± 100 %	AverageRF
Aroclor 1016	50	46	NA	NA	NA	-8	± 20 %	NA
Aroclor 1260 {1}	50	48	524000	500000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	45	446000	403000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	48	439000	420000	-4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	49	1050000	1020000	-3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	48	671000	650000	-3	NA	± 100 %	AverageRF
Aroclor 1260	50	48	NA	NA	NA	-5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/25/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type: External Standard
Analysis Method: 8082A

Calibration Date: 03/06/2014
Calibration ID: CAL13181
Analysis Lot: KWG1403783
Units: ng/mL

File ID: \\ALKLSWS002\INSTDATA\GC22\DATA\042414UL.B\0424F018.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.8	5960000	5710000	-4	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	48	101000	97600	-3	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	43	327000	278000	-15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	47	199000	189000	-5	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	45	165000	149000	-9	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	46	167000	153000	-8	NA	± 100 %	AverageRF
Aroclor 1016	50	46	NA	NA	NA	-8	± 20 %	NA
Aroclor 1260 {1}	50	47	306000	285000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	46	169000	156000	-8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	48	259000	251000	-3	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	47	611000	578000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	48	464000	447000	-4	NA	± 100 %	AverageRF
Aroclor 1260	50	47	NA	NA	NA	-5	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/25/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1403783
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\042414UL_R.B\0424F018.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.0	9670000	9750000	1	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	48	185000	177000	-4	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	48	251000	242000	-3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	47	324000	301000	-7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	46	240000	220000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	49	227000	223000	-2	NA	± 100 %	AverageRF
Aroclor 1016	50	48	NA	NA	NA	-5	± 20 %	NA
Aroclor 1260 {1}	50	49	524000	516000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	47	446000	421000	-6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	49	439000	435000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	50	1050000	1060000	0	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	50	671000	670000	0	NA	± 100 %	AverageRF
Aroclor 1260	50	49	NA	NA	NA	-2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697

Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A

Analysis Lot: KWG1403700
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0423F005.D	Continuing Calibration Verification	KWG1403700-1	4/24/2014	02:34		4/24/2014	02:34
0423F006.D	Instrument Blank	KWG1403700-2	4/24/2014	02:57		4/24/2014	02:57
0423F007.D	Lab Control Sample	KWG1403491-1	4/24/2014	03:20		4/24/2014	03:20
0423F008.D	Duplicate Lab Control Sample	KWG1403491-2	4/24/2014	03:43		4/24/2014	03:43
0423F009.D	Method Blank	KWG1403491-3	4/24/2014	04:05		4/24/2014	04:05
0423F013.D	RM11E-MW001-04-2014	K1403697-001	4/24/2014	05:37		4/24/2014	05:37
0423F015.D	RM11E-MW005-04-2014	K1403697-003	4/24/2014	06:22		4/24/2014	06:22
0423F016.D	RM11E-MW505-04-2014	K1403697-004	4/24/2014	06:45		4/24/2014	06:45
0423F017.D	RM11E-MW003d-04-2014	K1403697-006	4/24/2014	07:08		4/24/2014	07:08
0423F018.D	RM11E-MULT89881-04-2014	K1403697-007	4/24/2014	07:31		4/24/2014	07:31
0423F019.D	RM11E-MW002s-04-2014	K1403697-008	4/24/2014	07:54		4/24/2014	07:54
0423F020.D	RM11E-MW004-04-2014	K1403697-009	4/24/2014	08:17		4/24/2014	08:17
0423F021.D	Continuing Calibration Verification	KWG1403700-3	4/24/2014	08:40		4/24/2014	08:40
0423F022.D	Instrument Blank	KWG1403700-4	4/24/2014	09:02		4/24/2014	09:02

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A **Analysis Lot:** KWG1403783
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0424F005.D	Continuing Calibration Verification	KWG1403783-1	4/25/2014	06:44		4/25/2014	06:44
0424F006.D	Instrument Blank	KWG1403783-2	4/25/2014	07:07		4/25/2014	07:07
0424F007.D	RM11E-MULT1007-04-2014	K1403697-002	4/25/2014	07:29		4/25/2014	07:29
0424F009.D	ZZZZZZ	ZZZZZZ	4/25/2014	08:15		4/25/2014	08:15
0424F010.D	ZZZZZZ	ZZZZZZ	4/25/2014	08:38		4/25/2014	08:38
0424F011.D	ZZZZZZ	ZZZZZZ	4/25/2014	09:00		4/25/2014	09:00
0424F012.D	ZZZZZZ	ZZZZZZ	4/25/2014	09:23		4/25/2014	09:23
0424F013.D	ZZZZZZ	ZZZZZZ	4/25/2014	09:46		4/25/2014	09:46
0424F014.D	ZZZZZZ	ZZZZZZ	4/25/2014	10:09		4/25/2014	10:09
0424F015.D	ZZZZZZ	ZZZZZZ	4/25/2014	10:32		4/25/2014	10:32
0424F016.D	ZZZZZZ	ZZZZZZ	4/25/2014	10:55		4/25/2014	10:55
0424F017.D	ZZZZZZ	ZZZZZZ	4/25/2014	11:18		4/25/2014	11:18
0424F018.D	Continuing Calibration Verification	KWG1403783-3	4/25/2014	11:41		4/25/2014	11:41
0424F019.D	Instrument Blank	KWG1403783-4	4/25/2014	12:04		4/25/2014	12:04

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/17/2014
Sample Matrix:	Water		

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1403491
Analysis Method:	8082A	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	880mL	2mL	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	980mL	2mL	NA	
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	880mL	2mL	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	920mL	2mL	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	960mL	2mL	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	920mL	2mL	NA	
Method Blank	KWG1403491-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1403491-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1403491-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014
		Date Extracted:	04/17/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
		Level:	Low
Extraction Method:	EPA 3535A		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	0.0057	0.0011	0.0012	0.0020	50.0	JP	1	04/24/14
Aroclor 1254	0.0057	0.0011	0.0023	0.0057	85.0	JP	1	04/24/14

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014
		Date Extracted:	04/17/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
		Level:	Low
Extraction Method:	EPA 3535A		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	0.016	0.0030	0.0092	0.0095	3.2	JD	3	04/25/14

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014
		Date Extracted:	04/17/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
		Level:	Low
Extraction Method:	EPA 3535A		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	0.0055	0.0011	0.0044	0.0057	25.7	J	1	04/24/14
Aroclor 1260	0.0055	0.0011	0.0013	0.0015	14.3	J	1	04/24/14

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-TB01-04-2014	K1403697-005	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014
RM11E-TB02-04-2014	K1403697-010	04/15/2014	04/16/2014
RM11E-MW001-04-2014MS	KWG1403486-1	04/14/2014	04/15/2014
RM11E-MW001-04-2014DMS	KWG1403486-2	04/14/2014	04/15/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	**0.090**	J	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	92	73-122	04/18/14	Acceptable
Toluene-d8	95	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	90	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Volatile Organic Compounds

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	**0.14**	J	0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	**0.17**	J	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	**1.3**		0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	**1.9**		0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	73-122	04/18/14	Acceptable
Toluene-d8	97	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	88	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW005-04-2014	**Units:**	ug/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	**0.27**	J	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	**40**		0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	**4.7**		0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	**0.090**	J	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	**4.7**		0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	73-122	04/18/14	Acceptable
Toluene-d8	98	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	90	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW505-04-2014	**Units:**	ug/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	**0.29**	J	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	**40**		0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	**4.7**		0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	**4.9**		0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	73-122	04/18/14	Acceptable
Toluene-d8	96	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	90	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Volatile Organic Compounds

Sample Name:	RM11E-TB01-04-2014	**Units:**	ug/L
Lab Code:	K1403697-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	**0.13**	J	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	73-122	04/18/14	Acceptable
Toluene-d8	96	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	88	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ug/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	**2.3**		0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	**4.5**		0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	**0.17**	J	0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	73-122	04/18/14	Acceptable
Toluene-d8	98	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	86	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Volatile Organic Compounds

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ug/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	**0.62**		0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	**0.33**	J	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	**3.2**		0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	**13**		0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	04/18/14	Acceptable
Toluene-d8	99	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	87	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ug/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	**0.16**	J	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	04/18/14	Acceptable
Toluene-d8	100	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	87	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Volatile Organic Compounds

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	**0.19**	J	0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	04/18/14	Acceptable
Toluene-d8	100	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	85	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Volatile Organic Compounds

Sample Name:	RM11E-TB02-04-2014	**Units:**	ug/L
Lab Code:	K1403697-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	**0.14**	J	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	04/18/14	Acceptable
Toluene-d8	100	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	85	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403475-4	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403475	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403475	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403475	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403475	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403475	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403475	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403475	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403475	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403475	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403475	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403475	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403475	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403475	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403475	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403475	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	92	73-122	04/18/14	Acceptable
Toluene-d8	99	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	85	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403486-4	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Chloroethane	ND	U	0.50	0.16	1	04/18/14	04/18/14	KWG1403486	
1,1-Dichloroethene	ND	U	0.50	0.080	1	04/18/14	04/18/14	KWG1403486	
Carbon Disulfide	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
cis-1,2-Dichloroethene	ND	U	0.50	0.067	1	04/18/14	04/18/14	KWG1403486	
Chloroform	ND	U	0.50	0.072	1	04/18/14	04/18/14	KWG1403486	
Benzene	ND	U	0.50	0.062	1	04/18/14	04/18/14	KWG1403486	
Trichloroethene (TCE)	ND	U	0.50	0.10	1	04/18/14	04/18/14	KWG1403486	
Toluene	ND	U	0.50	0.054	1	04/18/14	04/18/14	KWG1403486	
Tetrachloroethene (PCE)	ND	U	0.50	0.099	1	04/18/14	04/18/14	KWG1403486	
Chlorobenzene	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
Ethylbenzene	ND	U	0.50	0.050	1	04/18/14	04/18/14	KWG1403486	
m,p-Xylenes	ND	U	0.50	0.11	1	04/18/14	04/18/14	KWG1403486	
o-Xylene	ND	U	0.50	0.074	1	04/18/14	04/18/14	KWG1403486	
Isopropylbenzene	ND	U	0.50	0.051	1	04/18/14	04/18/14	KWG1403486	
1,3,5-Trimethylbenzene	ND	U	0.50	0.089	1	04/18/14	04/18/14	KWG1403486	
1,2,4-Trimethylbenzene	ND	U	0.50	0.069	1	04/18/14	04/18/14	KWG1403486	
1,4-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	
1,2-Dichlorobenzene	ND	U	0.50	0.12	1	04/18/14	04/18/14	KWG1403486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	73-122	04/18/14	Acceptable
Toluene-d8	97	65-144	04/18/14	Acceptable
4-Bromofluorobenzene	90	68-117	04/18/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B **Units:** Percent
Analysis Method: 8260C **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RM11E-MW001-04-2014	K1403697-001	92	95	90
RM11E-MULT1007-04-2014	K1403697-002	91	97	88
RM11E-MW005-04-2014	K1403697-003	94	98	90
RM11E-MW505-04-2014	K1403697-004	91	96	90
RM11E-TB01-04-2014	K1403697-005	91	96	88
RM11E-MW003d-04-2014	K1403697-006	93	98	86
RM11E-MULT89881-04-2014	K1403697-007	90	99	87
RM11E-MW002s-04-2014	K1403697-008	90	100	87
RM11E-MW004-04-2014	K1403697-009	90	100	85
RM11E-TB02-04-2014	K1403697-010	90	100	85
Method Blank	KWG1403475-4	92	99	85
Method Blank	KWG1403486-4	91	97	90
RM11E-MW001-04-2014MS	KWG1403486-1	102	100	96
RM11E-MW001-04-2014DMS	KWG1403486-2	99	100	98
Lab Control Sample	KWG1403475-3	96	101	91
Lab Control Sample	KWG1403486-3	100	101	97

Surrogate Recovery Control Limits (%)

Sur1	=	Dibromofluoromethane	73-122
Sur2	=	Toluene-d8	65-144
Sur3	=	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/18/2014
		Time Analyzed:	09:41

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\041814\0418F003.D	**Lab Code:**	KWG1403473-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1403473
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	617,458	6.80	237,048	12.56	244,791	15.50
	Upper Limit ==>	1,234,916	7.30	474,096	13.06	489,582	16.00
	Lower Limit ==>	308,729	6.30	118,524	12.06	122,396	15.00
	ICAL Result ==>	646,540	6.81	235,449	12.56	243,855	15.50
Associated Analyses							
Lab Control Sample	KWG1403475-3	628,122	6.80	239,615	12.56	255,495	15.49
Method Blank	KWG1403475-4	629,125	6.80	241,670	12.56	245,051	15.50
RM11E-TB02-04-2014	K1403697-010	631,274	6.80	238,661	12.56	238,894	15.50
RM11E-MW003d-04-2014	K1403697-006	626,453	6.80	237,888	12.56	234,156	15.50
RM11E-MULT89881-04-2014	K1403697-007	629,283	6.80	238,013	12.56	239,792	15.50
RM11E-MW002s-04-2014	K1403697-008	629,203	6.80	241,097	12.56	242,639	15.50
RM11E-MW004-04-2014	K1403697-009	620,043	6.80	240,253	12.56	241,418	15.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/18/2014
		Time Analyzed:	11:30

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS18\DATA\041814\0418F007.D	**Lab Code:**	KWG1403482-2
Instrument ID:	GC-MS 18	**Analysis Lot:**	KWG1403482
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	404,522	6.21	162,430	9.57	161,961	11.99
	Upper Limit ==>	809,044	6.71	324,860	10.07	323,922	12.49
	Lower Limit ==>	202,261	5.71	81,215	9.07	80,981	11.49
	ICAL Result ==>	484,529	6.21	201,632	9.57	206,830	11.99
Associated Analyses							
Lab Control Sample	KWG1403486-3	414,007	6.21	171,243	9.57	165,684	11.99
RM11E-MW001-04-2014MS	KWG1403486-1	416,911	6.21	169,175	9.57	165,021	11.99
RM11E-MW001-04-2014DMS	KWG1403486-2	415,479	6.21	167,291	9.57	165,746	11.99
Method Blank	KWG1403486-4	383,524	6.21	157,053	9.57	147,679	11.99
RM11E-MW001-04-2014	K1403697-001	384,897	6.21	157,737	9.57	139,572	11.99
RM11E-MULT1007-04-2014	K1403697-002	375,197	6.21	155,516	9.57	140,716	11.99
RM11E-MW005-04-2014	K1403697-003	373,917	6.21	154,101	9.57	142,782	11.99
RM11E-MW505-04-2014	K1403697-004	371,671	6.21	148,952	9.57	139,335	11.99
RM11E-TB01-04-2014	K1403697-005	369,976	6.21	151,158	9.57	140,580	11.99

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1403486

		RM11E-MW001-04-2014MS KWG1403486-1 Matrix Spike			RM11E-MW001-04-2014DMS KWG1403486-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chloroethane	ND	12.4	10.0	124	12.5	10.0	125	56-147	1	30
1,1-Dichloroethene	ND	12.9	10.0	129	13.1	10.0	131	59-171	2	30
Carbon Disulfide	ND	18.6	20.0	93	18.7	20.0	93	52-156	0	30
cis-1,2-Dichloroethene	ND	10.8	10.0	108	10.7	10.0	107	61-139	1	30
Chloroform	ND	11.1	10.0	111	11.4	10.0	114	64-133	2	30
Benzene	ND	11.3	10.0	113	11.4	10.0	114	63-144	1	30
Trichloroethene (TCE)	ND	11.0	10.0	110	11.3	10.0	113	53-139	3	30
Toluene	0.090	10.5	10.0	104	10.7	10.0	106	71-136	2	30
Tetrachloroethene (PCE)	ND	11.7	10.0	117	12.3	10.0	123	61-131	5	30
Chlorobenzene	ND	11.1	10.0	111	11.3	10.0	113	69-126	2	30
Ethylbenzene	ND	10.8	10.0	108	11.5	10.0	115	66-136	6	30
m,p-Xylenes	ND	21.9	20.0	109	22.8	20.0	114	67-135	4	30
o-Xylene	ND	10.5	10.0	105	10.9	10.0	109	67-127	3	30
Isopropylbenzene	ND	10.8	10.0	108	11.2	10.0	112	58-144	3	30
1,3,5-Trimethylbenzene	ND	10.5	10.0	105	10.8	10.0	108	60-136	3	30
1,2,4-Trimethylbenzene	ND	10.4	10.0	104	10.7	10.0	107	61-132	3	30
1,4-Dichlorobenzene	ND	11.1	10.0	111	11.3	10.0	113	72-121	2	30
1,2-Dichlorobenzene	ND	10.6	10.0	106	11.2	10.0	112	72-119	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403475

	Lab Control Sample KWG1403475-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Chloroethane	9.39	10.0	94	58-134
1,1-Dichloroethene	9.08	10.0	91	66-129
Carbon Disulfide	14.1	20.0	71	46-144
cis-1,2-Dichloroethene	8.67	10.0	87	71-118
Chloroform	9.27	10.0	93	70-129
Benzene	8.69	10.0	87	69-124
Trichloroethene (TCE)	9.22	10.0	92	67-128
Toluene	8.80	10.0	88	69-124
Tetrachloroethene (PCE)	9.20	10.0	92	62-126
Chlorobenzene	8.55	10.0	86	72-116
Ethylbenzene	8.41	10.0	84	67-121
m,p-Xylenes	16.9	20.0	84	69-121
o-Xylene	8.51	10.0	85	71-119
Isopropylbenzene	8.43	10.0	84	67-129
1,3,5-Trimethylbenzene	8.22	10.0	82	62-126
1,2,4-Trimethylbenzene	8.29	10.0	83	63-122
1,4-Dichlorobenzene	8.38	10.0	84	73-115
1,2-Dichlorobenzene	8.49	10.0	85	72-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403486

	Lab Control Sample KWG1403486-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Chloroethane	11.3	10.0	113	58-134
1,1-Dichloroethene	12.1	10.0	121	66-129
Carbon Disulfide	17.0	20.0	85	46-144
cis-1,2-Dichloroethene	10.0	10.0	100	71-118
Chloroform	10.7	10.0	107	70-129
Benzene	10.8	10.0	108	69-124
Trichloroethene (TCE)	10.4	10.0	104	67-128
Toluene	10.1	10.0	101	69-124
Tetrachloroethene (PCE)	10.7	10.0	107	62-126
Chlorobenzene	10.4	10.0	104	72-116
Ethylbenzene	9.92	10.0	99	67-121
m,p-Xylenes	20.6	20.0	103	69-121
o-Xylene	9.97	10.0	100	71-119
Isopropylbenzene	9.88	10.0	99	67-129
1,3,5-Trimethylbenzene	9.93	10.0	99	62-126
1,2,4-Trimethylbenzene	9.91	10.0	99	63-122
1,4-Dichlorobenzene	10.4	10.0	104	73-115
1,2-Dichlorobenzene	10.3	10.0	103	72-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014
		Time Analyzed:	15:06

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1403475-4	**File ID:**	J:\MS13\DATA\041814\0418F015.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1403475

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403475-3	J:\MS13\DATA\041814\0418F005.D	04/18/14	10:35
RM11E-TB02-04-2014	K1403697-010	J:\MS13\DATA\041814\0418F017.D	04/18/14	16:00
RM11E-MW003d-04-2014	K1403697-006	J:\MS13\DATA\041814\0418F025.D	04/18/14	19:34
RM11E-MULT89881-04-2014	K1403697-007	J:\MS13\DATA\041814\0418F026.D	04/18/14	20:01
RM11E-MW002s-04-2014	K1403697-008	J:\MS13\DATA\041814\0418F027.D	04/18/14	20:28
RM11E-MW004-04-2014	K1403697-009	J:\MS13\DATA\041814\0418F028.D	04/18/14	20:55

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014
		Time Analyzed:	14:00

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1403486-4	**File ID:**	J:\MS18\DATA\041814\0418F013.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1403486

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403486-3	J:\MS18\DATA\041814\0418F008.D	04/18/14	12:04
RM11E-MW001-04-2014MS	KWG1403486-1	J:\MS18\DATA\041814\0418F009.D	04/18/14	12:35
RM11E-MW001-04-2014DMS	KWG1403486-2	J:\MS18\DATA\041814\0418F010.D	04/18/14	12:56
RM11E-MW001-04-2014	K1403697-001	J:\MS18\DATA\041814\0418F014.D	04/18/14	14:21
RM11E-MULT1007-04-2014	K1403697-002	J:\MS18\DATA\041814\0418F017.D	04/18/14	15:31
RM11E-MW005-04-2014	K1403697-003	J:\MS18\DATA\041814\0418F018.D	04/18/14	15:53
RM11E-MW505-04-2014	K1403697-004	J:\MS18\DATA\041814\0418F019.D	04/18/14	16:14
RM11E-TB01-04-2014	K1403697-005	J:\MS18\DATA\041814\0418F020.D	04/18/14	16:35

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014
		Time Analyzed:	10:35

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS13
Lab Code:	KWG1403475-3	**File ID:**	J:\MS13\DATA\041814\0418F005.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1403475

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1403475-4	J:\MS13\DATA\041814\0418F015.D	04/18/14	15:06
RM11E-TB02-04-2014	K1403697-010	J:\MS13\DATA\041814\0418F017.D	04/18/14	16:00
RM11E-MW003d-04-2014	K1403697-006	J:\MS13\DATA\041814\0418F025.D	04/18/14	19:34
RM11E-MULT89881-04-2014	K1403697-007	J:\MS13\DATA\041814\0418F026.D	04/18/14	20:01
RM11E-MW002s-04-2014	K1403697-008	J:\MS13\DATA\041814\0418F027.D	04/18/14	20:28
RM11E-MW004-04-2014	K1403697-009	J:\MS13\DATA\041814\0418F028.D	04/18/14	20:55

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water	**Date Analyzed:**	04/18/2014
		Time Analyzed:	12:04

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1403486-3	**File ID:**	J:\MS18\DATA\041814\0418F008.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1403486

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
RM11E-MW001-04-2014MS	KWG1403486-1	J:\MS18\DATA\041814\0418F009.D	04/18/14	12:35
RM11E-MW001-04-2014DMS	KWG1403486-2	J:\MS18\DATA\041814\0418F010.D	04/18/14	12:56
Method Blank	KWG1403486-4	J:\MS18\DATA\041814\0418F013.D	04/18/14	14:00
RM11E-MW001-04-2014	K1403697-001	J:\MS18\DATA\041814\0418F014.D	04/18/14	14:21
RM11E-MULT1007-04-2014	K1403697-002	J:\MS18\DATA\041814\0418F017.D	04/18/14	15:31
RM11E-MW005-04-2014	K1403697-003	J:\MS18\DATA\041814\0418F018.D	04/18/14	15:53
RM11E-MW505-04-2014	K1403697-004	J:\MS18\DATA\041814\0418F019.D	04/18/14	16:14
RM11E-TB01-04-2014	K1403697-005	J:\MS18\DATA\041814\0418F020.D	04/18/14	16:35

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/18/2014
		Time Analyzed:	09:11

Tune Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\041814\0418F002.D		
Instrument ID:	MS13	**Analysis Method:**	8260C
Column:		**Analysis Lot:**	KWG1403473

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	8126	PASS
75	95	30	60	47.0	23130	PASS
95	95	100	100	100.0	49256	PASS
96	95	5	9	6.9	3393	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	102.9	50698	PASS
175	174	5	9	7.3	3683	PASS
176	174	95	101	95.7	48506	PASS
177	176	5	9	7.4	3578	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1403473-2	J:\MS13\DATA\041814\0418F003.D	04/18/2014	09:41	
Lab Control Sample	KWG1403475-3	J:\MS13\DATA\041814\0418F005.D	04/18/2014	10:35	
Method Blank	KWG1403475-4	J:\MS13\DATA\041814\0418F015.D	04/18/2014	15:06	
RM11E-TB02-04-2014	K1403697-010	J:\MS13\DATA\041814\0418F017.D	04/18/2014	16:00	
RM11E-MW003d-04-2014	K1403697-006	J:\MS13\DATA\041814\0418F025.D	04/18/2014	19:34	
RM11E-MULT89881-04-2014	K1403697-007	J:\MS13\DATA\041814\0418F026.D	04/18/2014	20:01	
RM11E-MW002s-04-2014	K1403697-008	J:\MS13\DATA\041814\0418F027.D	04/18/2014	20:28	
RM11E-MW004-04-2014	K1403697-009	J:\MS13\DATA\041814\0418F028.D	04/18/2014	20:55	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/18/2014
Time Analyzed: 10:55

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\041814\0418F006.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1403482

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.3	8217	PASS
75	95	30	60	49.7	21160	PASS
95	95	100	100	100.0	42560	PASS
96	95	5	9	6.6	2829	PASS
173	174	0	2	0.8	301	PASS
174	95	50	120	89.0	37858	PASS
175	174	5	9	7.3	2773	PASS
176	174	95	101	98.7	37349	PASS
177	176	5	9	7.5	2796	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1403482-2	J:\MS18\DATA\041814\0418F007.D	04/18/2014	11:30	
Lab Control Sample	KWG1403486-3	J:\MS18\DATA\041814\0418F008.D	04/18/2014	12:04	
RM11E-MW001-04-2014MS	KWG1403486-1	J:\MS18\DATA\041814\0418F009.D	04/18/2014	12:35	
RM11E-MW001-04-2014DMS	KWG1403486-2	J:\MS18\DATA\041814\0418F010.D	04/18/2014	12:56	
Method Blank	KWG1403486-4	J:\MS18\DATA\041814\0418F013.D	04/18/2014	14:00	
RM11E-MW001-04-2014	K1403697-001	J:\MS18\DATA\041814\0418F014.D	04/18/2014	14:21	
RM11E-MULT1007-04-2014	K1403697-002	J:\MS18\DATA\041814\0418F017.D	04/18/2014	15:31	
RM11E-MW005-04-2014	K1403697-003	J:\MS18\DATA\041814\0418F018.D	04/18/2014	15:53	
RM11E-MW505-04-2014	K1403697-004	J:\MS18\DATA\041814\0418F019.D	04/18/2014	16:14	
RM11E-TB01-04-2014	K1403697-005	J:\MS18\DATA\041814\0418F020.D	04/18/2014	16:35	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 02/20/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13144 **Column:** MS
Instrument ID: GC-MS 18

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\022014\0220F072.D	G	J:\MS18\DATA\022014\0220F078.D
B	J:\MS18\DATA\022014\0220F073.D	H	J:\MS18\DATA\022014\0220F079.D
C	J:\MS18\DATA\022014\0220F074.D	I	J:\MS18\DATA\022014\0220F080.D
D	J:\MS18\DATA\022014\0220F075.D	J	J:\MS18\DATA\022014\0220F081.D
E	J:\MS18\DATA\022014\0220F076.D	K	J:\MS18\DATA\022014\0220F082.D
F	J:\MS18\DATA\022014\0220F077.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroethane							C	0.50	0.282	D	1.0	0.240	E	2.0	0.229
	F	5.0	0.246	G	10	0.243	H	20	0.223	I	40	0.221	J	60	0.231
	K	80	0.222												
1,1-Dichloroethene				B	0.20	0.275	C	0.50	0.226	D	1.0	0.203	E	2.0	0.182
	F	5.0	0.192	G	10	0.195	H	20	0.182	I	40	0.205	J	60	0.225
	K	80	0.222												
Carbon Disulfide	A	0.10	0.791	B	0.20	0.828	C	0.50	0.681	D	1.0	0.727	E	2.0	0.642
	F	5.0	0.738	G	10	0.768	H	20	0.766	I	40	0.830	J	60	0.883
	K	80	0.872												
cis-1,2-Dichloroethene				B	0.20	0.391	C	0.50	0.313	D	1.0	0.315	E	2.0	0.267
	F	5.0	0.296	G	10	0.310	H	20	0.296	I	40	0.314	J	60	0.325
	K	80	0.318												
Chloroform				B	0.20	0.640	C	0.50	0.468	D	1.0	0.484	E	2.0	0.414
	F	5.0	0.476	G	10	0.492	H	20	0.478	I	40	0.493	J	60	0.507
	K	80	0.496												
Benzene	A	0.10	1.41	B	0.20	1.35	C	0.50	1.15	D	1.0	1.14	E	2.0	1.01
	F	5.0	1.14	G	10	1.19	H	20	1.14	I	40	1.17	J	60	1.20
	K	80	1.18												
Trichloroethene (TCE)	A	0.10	0.309	B	0.20	0.307	C	0.50	0.295	D	1.0	0.274	E	2.0	0.245
	F	5.0	0.285	G	10	0.296	H	20	0.286	I	40	0.297	J	60	0.308
	K	80	0.300												
Toluene	A	0.10	0.988	B	0.20	0.974	C	0.50	0.833	D	1.0	0.801	E	2.0	0.669
	F	5.0	0.781	G	10	0.816	H	20	0.788	I	40	0.814	J	60	0.834
	K	80	0.820												
Tetrachloroethene (PCE)	A	0.10	0.671	B	0.20	0.663	C	0.50	0.598	D	1.0	0.562	E	2.0	0.485
	F	5.0	0.558	G	10	0.615	H	20	0.604	I	40	0.654	J	60	0.654
	K	80	0.656												
Chlorobenzene	A	0.10	1.96	B	0.20	2.31	C	0.50	1.99	D	1.0	2.01	E	2.0	1.75
	F	5.0	2.00	G	10	2.12	H	20	2.09	I	40	2.19	J	60	2.22
	K	80	2.23												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 02/20/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13144 **Column:** MS
Instrument ID: GC-MS 18

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Ethylbenzene	A	0.10	1.31	B	0.20	1.35	C	0.50	1.08	D	1.0	1.08	E	2.0	0.920
	F	5.0	1.12	G	10	1.19	H	20	1.18	I	40	1.24	J	60	1.27
	K	80	1.28												
m,p-Xylenes	A	0.20	1.60	B	0.40	1.51	C	1.0	1.33	D	2.0	1.32	E	4.0	1.16
	F	10	1.36	G	20	1.49	H	40	1.47	I	80	1.53	J	120	1.56
	K	160	1.57												
o-Xylene	A	0.10	1.64	B	0.20	1.56	C	0.50	1.31	D	1.0	1.31	E	2.0	1.13
	F	5.0	1.33	G	10	1.45	H	20	1.43	I	40	1.49	J	60	1.51
	K	80	1.52												
Isopropylbenzene	A	0.10	3.99	B	0.20	4.18	C	0.50	3.38	D	1.0	3.31	E	2.0	2.92
	F	5.0	3.43	G	10	3.69	H	20	3.65	I	40	3.83	J	60	3.90
	K	80	3.92												
1,3,5-Trimethylbenzene	A	0.10	3.73	B	0.20	3.70	C	0.50	3.06	D	1.0	2.95	E	2.0	2.62
	F	5.0	3.04	G	10	3.04	H	20	2.98	I	40	3.11	J	60	3.20
	K	80	3.24												
1,2,4-Trimethylbenzene	A	0.10	3.89	B	0.20	3.67	C	0.50	2.97	D	1.0	3.00	E	2.0	2.61
	F	5.0	3.02	G	10	3.05	H	20	3.01	I	40	3.11	J	60	3.21
	K	80	3.25												
1,4-Dichlorobenzene				B	0.20	2.07	C	0.50	1.74	D	1.0	1.74	E	2.0	1.54
	F	5.0	1.73	G	10	1.77	H	20	1.74	I	40	1.78	J	60	1.82
	K	80	1.84												
1,2-Dichlorobenzene	A	0.10	1.57	B	0.20	2.03	C	0.50	1.54	D	1.0	1.61	E	2.0	1.37
	F	5.0	1.58	G	10	1.63	H	20	1.59	I	40	1.62	J	60	1.69
	K	80	1.72												
Dibromofluoromethane	A	10	0.216	B	10	0.220	C	10	0.219	D	10	0.221	E	10	0.224
	F	10	0.228	G	10	0.226	H	10	0.232	I	10	0.225	J	10	0.231
	K	10	0.228												
Toluene-d8	A	10	0.981	B	10	0.992	C	10	0.992	D	10	0.996	E	10	0.996
	F	10	0.989	G	10	0.995	H	10	0.998	I	10	0.991	J	10	1.01
	K	10	0.984												
4-Bromofluorobenzene	A	10	0.862	B	10	0.873	C	10	0.857	D	10	0.869	E	10	0.867
	F	10	0.882	G	10	0.936	H	10	0.943	I	10	0.919	J	10	0.914
	K	10	0.908												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 02/20/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13144 **Column:** MS
Instrument ID: GC-MS 18

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Chloroethane	MS	AverageRF	% RSD	8.1		≤ 20	0.237		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	13.2		≤ 20	0.211		0.100
Carbon Disulfide	MS	AverageRF	% RSD	9.8		≤ 20	0.775		0.100
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	10.0		≤ 20	0.314		0.100
Chloroform	MS	AverageRF	% RSD	11.5		≤ 20	0.495		0.200
Benzene	MS	AverageRF	% RSD	9.0		≤ 20	1.19		0.500
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.4		≤ 20	0.291		0.200
Toluene	MS	AverageRF	% RSD	10.6		≤ 20	0.829		0.400
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.4		≤ 20	0.611		0.200
Chlorobenzene	MS	AverageRF	% RSD	7.6		≤ 20	2.08		0.500
Ethylbenzene	MS	AverageRF	% RSD	10.8		≤ 20	1.18		0.100
m,p-Xylenes	MS	AverageRF	% RSD	9.3		≤ 20	1.45		0.100
o-Xylene	MS	AverageRF	% RSD	10.1		≤ 20	1.43		0.300
Isopropylbenzene	MS	AverageRF	% RSD	10.0		≤ 20	3.66		0.100
1,3,5-Trimethylbenzene	MS	AverageRF	% RSD	10.2		≤ 20	3.15		0.01
1,2,4-Trimethylbenzene	MS	AverageRF	% RSD	11.1		≤ 20	3.16		0.01
1,4-Dichlorobenzene	MS	AverageRF	% RSD	7.4		≤ 20	1.78		0.500
1,2-Dichlorobenzene	MS	AverageRF	% RSD	9.8		≤ 20	1.63		0.400
Dibromofluoromethane	SURR	AverageRF	% RSD	2.2		≤ 20	0.224		0.01
Toluene-d8	SURR	AverageRF	% RSD	0.8		≤ 20	0.993		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.5		≤ 20	0.894		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	02/20/2014
		Date Analyzed:	02/21/2014

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13144
Analysis Method:	8260C	**Units:**	PPB

File ID: J:\MS18\DATA\022014\0220F085.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	11	0.237	0.261	10	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.211	0.216	3	NA	± 30 %	AverageRF
Carbon Disulfide	20	17	0.775	0.644	-17	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.7	0.314	0.304	-3	NA	± 30 %	AverageRF
Chloroform	10	11	0.495	0.527	7	NA	± 30 %	AverageRF
Benzene	10	10	1.19	1.23	3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.291	0.310	7	NA	± 30 %	AverageRF
Toluene	10	10	0.829	0.827	0	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.611	0.639	5	NA	± 30 %	AverageRF
Chlorobenzene	10	11	2.08	2.21	6	NA	± 30 %	AverageRF
Ethylbenzene	10	10	1.18	1.23	4	NA	± 30 %	AverageRF
m,p-Xylenes	20	21	1.45	1.52	5	NA	± 30 %	AverageRF
o-Xylene	10	11	1.43	1.50	5	NA	± 30 %	AverageRF
Isopropylbenzene	10	10	3.66	3.76	3	NA	± 30 %	AverageRF
1,3,5-Trimethylbenzene	10	10	3.15	3.20	2	NA	± 30 %	AverageRF
1,2,4-Trimethylbenzene	10	10	3.16	3.17	0	NA	± 30 %	AverageRF
1,4-Dichlorobenzene	10	11	1.78	1.87	5	NA	± 30 %	AverageRF
1,2-Dichlorobenzene	10	10	1.63	1.71	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/12/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13250 **Column:** MS
Instrument ID: MS13

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\031214A\0312F011.D	G	J:\MS13\DATA\031214A\0312F017.D
B	J:\MS13\DATA\031214A\0312F012.D	H	J:\MS13\DATA\031214A\0312F018.D
C	J:\MS13\DATA\031214A\0312F013.D	I	J:\MS13\DATA\031214A\0312F019.D
D	J:\MS13\DATA\031214A\0312F014.D	J	J:\MS13\DATA\031214A\0312F020.D
E	J:\MS13\DATA\031214A\0312F015.D	K	J:\MS13\DATA\031214A\0312F021.D
F	J:\MS13\DATA\031214A\0312F016.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroethane				B	0.20	0.183	C	0.50	0.196	D	1.0	0.182	E	2.0	0.188
	F	5.0	0.188	G	10	0.173	H	20	0.177	I	40	0.180	J	60	0.186
	K	80	0.190												
1,1-Dichloroethene				B	0.20	0.249	C	0.50	0.224	D	1.0	0.215	E	2.0	0.219
	F	5.0	0.210	G	10	0.192	H	20	0.204	I	40	0.206	J	60	0.213
	K	80	0.214												
Carbon Disulfide	A	0.10	0.896	B	0.20	0.803	C	0.50	0.796	D	1.0	0.710	E	2.0	0.720
	F	5.0	0.685	G	10	0.631	H	20	0.663	I	40	0.677	J	60	0.706
	K	80	0.724												
cis-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.344	C	0.50	0.298	D	1.0	0.315	E	2.0	0.307
	F	5.0	0.296	G	10	0.276	H	20	0.278	I	40	0.276	J	60	0.288
	K	80	0.294												
Chloroform	A	0.10	0.441	B	0.20	0.423	C	0.50	0.433	D	1.0	0.411	E	2.0	0.406
	F	5.0	0.414	G	10	0.380	H	20	0.388	I	40	0.388	J	60	0.398
	K	80	0.409												
Benzene	A	0.10	1.17	B	0.20	1.21	C	0.50	1.17	D	1.0	1.16	E	2.0	1.15
	F	5.0	1.13	G	10	1.04	H	20	1.06	I	40	1.06	J	60	1.11
	K	80	1.13												
Trichloroethene (TCE)	A	0.10	0.202	B	0.20	0.298	C	0.50	0.291	D	1.0	0.279	E	2.0	0.277
	F	5.0	0.264	G	10	0.246	H	20	0.255	I	40	0.260	J	60	0.269
	K	80	0.274												
Toluene	A	0.10	0.665	B	0.20	0.792	C	0.50	0.771	D	1.0	0.757	E	2.0	0.759
	F	5.0	0.751	G	10	0.701	H	20	0.720	I	40	0.726	J	60	0.755
	K	80	0.775												
Tetrachloroethene (PCE)	A	0.10	0.504	B	0.20	0.645	C	0.50	0.740	D	1.0	0.705	E	2.0	0.741
	F	5.0	0.721	G	10	0.658	H	20	0.702	I	40	0.700	J	60	0.730
	K	80	0.719												
Chlorobenzene	A	0.10	2.19	B	0.20	2.16	C	0.50	2.34	D	1.0	2.27	E	2.0	2.36
	F	5.0	2.30	G	10	2.16	H	20	2.21	I	40	2.17	J	60	2.27
	K	80	2.26												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/12/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13250 **Column:** MS
Instrument ID: MS13

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Ethylbenzene	A	0.10	1.19	B	0.20	1.16	C	0.50	1.32	D	1.0	1.29	E	2.0	1.30
	F	5.0	1.27	G	10	1.18	H	20	1.23	I	40	1.23	J	60	1.28
	K	80	1.27												
m,p-Xylenes	A	0.20	1.43	B	0.40	1.55	C	1.0	1.62	D	2.0	1.60	E	4.0	1.65
	F	10	1.63	G	20	1.47	H	40	1.55	I	80	1.54	J	120	1.60
	K	160	1.59												
o-Xylene	A	0.10	1.31	B	0.20	1.43	C	0.50	1.63	D	1.0	1.57	E	2.0	1.62
	F	5.0	1.56	G	10	1.45	H	20	1.50	I	40	1.48	J	60	1.54
	K	80	1.54												
Isopropylbenzene	A	0.10	3.34	B	0.20	3.81	C	0.50	4.24	D	1.0	4.01	E	2.0	4.01
	F	5.0	3.92	G	10	3.64	H	20	3.83	I	40	3.87	J	60	4.03
	K	80	4.01												
1,3,5-Trimethylbenzene	A	0.10	2.70	B	0.20	3.07	C	0.50	3.21	D	1.0	3.14	E	2.0	3.30
	F	5.0	3.09	G	10	2.90	H	20	3.09	I	40	3.16	J	60	3.18
	K	80	3.24												
1,2,4-Trimethylbenzene	A	0.10	2.55	B	0.20	2.80	C	0.50	2.84	D	1.0	2.92	E	2.0	2.97
	F	5.0	2.93	G	10	2.79	H	20	2.95	I	40	3.06	J	60	3.10
	K	80	3.19												
1,4-Dichlorobenzene	A	0.10	1.90	B	0.20	1.84	C	0.50	1.89	D	1.0	1.95	E	2.0	1.96
	F	5.0	1.93	G	10	1.80	H	20	1.86	I	40	1.88	J	60	1.87
	K	80	1.94												
1,2-Dichlorobenzene	A	0.10	1.50	B	0.20	1.69	C	0.50	1.63	D	1.0	1.71	E	2.0	1.76
	F	5.0	1.73	G	10	1.62	H	20	1.64	I	40	1.67	J	60	1.66
	K	80	1.71												
Dibromofluoromethane										D	4.0	0.217	E	6.0	0.224
	F	8.0	0.195	G	10	0.227	H	12	0.217	I	14	0.214	J	16	0.224
	K	20	0.231												
Toluene-d8										D	4.0	0.938	E	6.0	0.993
	F	8.0	0.809	G	10	1.05	H	12	0.985	I	14	0.992	J	16	1.05
	K	20	1.09												
4-Bromofluorobenzene										D	4.0	0.973	E	6.0	1.02
	F	8.0	0.906	G	10	1.02	H	12	0.988	I	14	0.968	J	16	1.03
	K	20	1.04												

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† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/12/2014

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL13250 **Column:** MS
Instrument ID: MS13

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Chloroethane	MS	AverageRF	% RSD	3.7		≤ 20	0.184		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.215		0.100
Carbon Disulfide	MS	AverageRF	% RSD	10.4		≤ 20	0.728		0.100
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.296		0.100
Chloroform	MS	AverageRF	% RSD	4.7		≤ 20	0.408		0.200
Benzene	MS	AverageRF	% RSD	4.8		≤ 20	1.13		0.500
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.8		≤ 20	0.265		0.200
Toluene	MS	AverageRF	% RSD	4.9		≤ 20	0.743		0.400
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.9		≤ 20	0.688		0.200
Chlorobenzene	MS	AverageRF	% RSD	3.2		≤ 20	2.25		0.500
Ethylbenzene	MS	AverageRF	% RSD	4.3		≤ 20	1.25		0.100
m,p-Xylenes	MS	AverageRF	% RSD	4.4		≤ 20	1.57		0.100
o-Xylene	MS	AverageRF	% RSD	6.1		≤ 20	1.51		0.300
Isopropylbenzene	MS	AverageRF	% RSD	6.1		≤ 20	3.88		0.100
1,3,5-Trimethylbenzene	MS	AverageRF	% RSD	5.5		≤ 20	3.10		0.01
1,2,4-Trimethylbenzene	MS	AverageRF	% RSD	6.0		≤ 20	2.92		0.01
1,4-Dichlorobenzene	MS	AverageRF	% RSD	2.6		≤ 20	1.89		0.500
1,2-Dichlorobenzene	MS	AverageRF	% RSD	4.3		≤ 20	1.67		0.400
Dibromofluoromethane	SURR	AverageRF	% RSD	5.1		≤ 20	0.219		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.7		≤ 20	0.987		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤ 20	0.993		0.01

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† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	03/12/2014
		Date Analyzed:	03/12/2014

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13250
Analysis Method:	8260C	**Units:**	PPB

File ID: J:\MS13\DATA\031214A\0312F026.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	10	0.184	0.186	1	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.4	0.215	0.202	-6	NA	± 30 %	AverageRF
Carbon Disulfide	20	19	0.728	0.675	-7	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.1	0.296	0.269	-9	NA	± 30 %	AverageRF
Chloroform	10	9.2	0.408	0.376	-8	NA	± 30 %	AverageRF
Benzene	10	9.3	1.13	1.05	-7	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	9.4	0.265	0.249	-6	NA	± 30 %	AverageRF
Toluene	10	9.4	0.743	0.698	-6	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.688	0.652	-5	NA	± 30 %	AverageRF
Chlorobenzene	10	9.3	2.25	2.09	-7	NA	± 30 %	AverageRF
Ethylbenzene	10	9.4	1.25	1.17	-6	NA	± 30 %	AverageRF
m,p-Xylenes	20	19	1.57	1.47	-6	NA	± 30 %	AverageRF
o-Xylene	10	9.3	1.51	1.41	-7	NA	± 30 %	AverageRF
Isopropylbenzene	10	9.3	3.88	3.60	-7	NA	± 30 %	AverageRF
1,3,5-Trimethylbenzene	10	9.3	3.10	2.88	-7	NA	± 30 %	AverageRF
1,2,4-Trimethylbenzene	10	9.2	2.92	2.68	-8	NA	± 30 %	AverageRF
1,4-Dichlorobenzene	10	9.4	1.89	1.79	-6	NA	± 30 %	AverageRF
1,2-Dichlorobenzene	10	9.7	1.67	1.61	-3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/18/2014

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type:	Internal Standard	**Calibration Date:**	03/12/2014
Analysis Method:	8260C	**Calibration ID:**	CAL13250
		Analysis Lot:	KWG1403473
		Units:	PPB

File ID: J:\MS13\DATA\041814\0418F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	9.6	0.100	0.184	0.177	-4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.3	0.100	0.215	0.199	-7	NA	± 20 %	AverageRF
Carbon Disulfide	10	8.7	0.100	0.728	0.630	-13	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.2	0.100	0.296	0.271	-8	NA	± 20 %	AverageRF
Chloroform	10	9.9	0.200	0.408	0.402	-2	NA	± 20 %	AverageRF
Benzene	10	9.0	0.500	1.13	1.01	-10	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.200	0.265	0.253	-4	NA	± 20 %	AverageRF
Toluene	10	9.3	0.400	0.743	0.694	-7	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.6	0.200	0.688	0.660	-4	NA	± 20 %	AverageRF
Chlorobenzene	10	9.0	0.500	2.25	2.03	-10	NA	± 20 %	AverageRF
Ethylbenzene	10	8.8	0.100	1.25	1.10	-12	NA	± 20 %	AverageRF
m,p-Xylenes	20	18	0.100	1.57	1.39	-11	NA	± 20 %	AverageRF
o-Xylene	10	8.8	0.300	1.51	1.33	-12	NA	± 20 %	AverageRF
Isopropylbenzene	10	9.0	0.100	3.88	3.47	-11	NA	± 20 %	AverageRF
1,3,5-Trimethylbenzene	10	8.8	0.01	3.10	2.72	-12	NA	± 20 %	AverageRF
1,2,4-Trimethylbenzene	10	9.1	0.01	2.92	2.64	-10	NA	± 20 %	AverageRF
1,4-Dichlorobenzene	10	8.9	0.500	1.89	1.68	-11	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	10	9.0	0.400	1.67	1.50	-10	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.5	0.01	0.219	0.207	-5	NA	± 20 %	AverageRF
Toluene-d8	10	10	0.01	0.987	1.01	2	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.1	0.01	0.993	0.899	-9	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/18/2014

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 02/20/2014
Calibration ID: CAL13144
Analysis Lot: KWG1403482
Units: PPB

File ID: J:\MS18\DATA\041814\0418F007.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Chloroethane	10	10	0.100	0.237	0.246	4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	12	0.100	0.211	0.249	18	NA	± 20 %	AverageRF
Carbon Disulfide	10	9.8	0.100	0.775	0.758	-2	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.314	0.335	6	NA	± 20 %	AverageRF
Chloroform	10	11	0.200	0.495	0.531	7	NA	± 20 %	AverageRF
Benzene	10	11	0.500	1.19	1.28	8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.291	0.309	6	NA	± 20 %	AverageRF
Toluene	10	10	0.400	0.829	0.854	3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.611	0.690	13	NA	± 20 %	AverageRF
Chlorobenzene	10	11	0.500	2.08	2.29	10	NA	± 20 %	AverageRF
Ethylbenzene	10	11	0.100	1.18	1.29	9	NA	± 20 %	AverageRF
m,p-Xylenes	20	22	0.100	1.45	1.60	10	NA	± 20 %	AverageRF
o-Xylene	10	11	0.300	1.43	1.53	7	NA	± 20 %	AverageRF
Isopropylbenzene	10	11	0.100	3.66	3.97	9	NA	± 20 %	AverageRF
1,3,5-Trimethylbenzene	10	10	0.01	3.15	3.26	4	NA	± 20 %	AverageRF
1,2,4-Trimethylbenzene	10	10	0.01	3.16	3.27	3	NA	± 20 %	AverageRF
1,4-Dichlorobenzene	10	11	0.500	1.78	1.91	7	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	10	11	0.400	1.63	1.76	8	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.7	0.01	0.224	0.219	-3	NA	± 20 %	AverageRF
Toluene-d8	10	10	0.01	0.993	0.989	0	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.9	0.01	0.894	0.884	-1	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C **Analysis Lot:** KWG1403482
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0418F006.D	GC/MS Tuning - Bromofluorobenzene	KWG1403482-1	4/18/2014	10:55		4/18/2014	11:11
0418F007.D	Continuing Calibration Verification	KWG1403482-2	4/18/2014	11:30		4/18/2014	11:46
0418F008.D	Lab Control Sample	KWG1403486-3	4/18/2014	12:04		4/18/2014	12:20
0418F009.D	RM11E-MW001-04-2014MS	KWG1403486-1	4/18/2014	12:35		4/18/2014	12:51
0418F010.D	RM11E-MW001-04-2014DMS	KWG1403486-2	4/18/2014	12:56		4/18/2014	13:12
0418F013.D	Method Blank	KWG1403486-4	4/18/2014	14:00		4/18/2014	14:16
0418F014.D	RM11E-MW001-04-2014	K1403697-001	4/18/2014	14:21		4/18/2014	14:37
0418F015.D	ZZZZZZ	ZZZZZZ	4/18/2014	14:49		4/18/2014	15:05
0418F016.D	ZZZZZZ	ZZZZZZ	4/18/2014	15:10		4/18/2014	15:26
0418F017.D	RM11E-MULT1007-04-2014	K1403697-002	4/18/2014	15:31		4/18/2014	15:47
0418F018.D	RM11E-MW005-04-2014	K1403697-003	4/18/2014	15:53		4/18/2014	16:09
0418F019.D	RM11E-MW505-04-2014	K1403697-004	4/18/2014	16:14		4/18/2014	16:30
0418F020.D	RM11E-TB01-04-2014	K1403697-005	4/18/2014	16:35		4/18/2014	16:51
0418F021.D	ZZZZZZ	ZZZZZZ	4/18/2014	16:56		4/18/2014	17:12
0418F022.D	ZZZZZZ	ZZZZZZ	4/18/2014	17:17		4/18/2014	17:33
0418F023.D	ZZZZZZ	ZZZZZZ	4/18/2014	17:39		4/18/2014	17:55
0418F024.D	ZZZZZZ	ZZZZZZ	4/18/2014	18:00		4/18/2014	18:16
0418F025.D	ZZZZZZ	ZZZZZZ	4/18/2014	18:21		4/18/2014	18:37
0418F026.D	ZZZZZZ	ZZZZZZ	4/18/2014	18:42		4/18/2014	18:58
0418F027.D	ZZZZZZ	ZZZZZZ	4/18/2014	19:03		4/18/2014	19:19
0418F028.D	ZZZZZZ	ZZZZZZ	4/18/2014	19:24		4/18/2014	19:40
0418F029.D	ZZZZZZ	ZZZZZZ	4/18/2014	19:46		4/18/2014	20:02
0418F030.D	ZZZZZZ	ZZZZZZ	4/18/2014	20:07		4/18/2014	20:23
0418F032.D	ZZZZZZ	ZZZZZZ	4/18/2014	20:49		4/18/2014	21:05
0418F033.D	ZZZZZZ	ZZZZZZ	4/18/2014	21:10		4/18/2014	21:26
0418F034.D	ZZZZZZ	ZZZZZZ	4/18/2014	21:31		4/18/2014	21:47
0418F035.D	ZZZZZZ	ZZZZZZ	4/18/2014	21:53		4/18/2014	22:09
0418F036.D	ZZZZZZ	ZZZZZZ	4/18/2014	22:14		4/18/2014	22:30
0418F037.D	ZZZZZZ	ZZZZZZ	4/18/2014	22:35		4/18/2014	22:51

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C **Analysis Lot:** KWG1403473
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0418F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1403473-1	4/18/2014	09:11		4/18/2014	09:30
0418F003.D	Continuing Calibration Verification	KWG1403473-2	4/18/2014	09:41		4/18/2014	10:00
0418F005.D	Lab Control Sample	KWG1403475-3	4/18/2014	10:35		4/18/2014	10:54
0418F009.D	ZZZZZZ	ZZZZZZ	4/18/2014	12:26		4/18/2014	12:45
0418F010.D	ZZZZZZ	ZZZZZZ	4/18/2014	12:52		4/18/2014	13:11
0418F015.D	Method Blank	KWG1403475-4	4/18/2014	15:06		4/18/2014	15:25
0418F017.D	RM11E-TB02-04-2014	K1403697-010	4/18/2014	16:00		4/18/2014	16:19
0418F018.D	ZZZZZZ	ZZZZZZ	4/18/2014	16:26		4/18/2014	16:45
0418F019.D	ZZZZZZ	ZZZZZZ	4/18/2014	16:53		4/18/2014	17:12
0418F020.D	ZZZZZZ	ZZZZZZ	4/18/2014	17:20		4/18/2014	17:39
0418F021.D	ZZZZZZ	ZZZZZZ	4/18/2014	17:47		4/18/2014	18:06
0418F022.D	ZZZZZZ	ZZZZZZ	4/18/2014	18:14		4/18/2014	18:33
0418F023.D	ZZZZZZ	ZZZZZZ	4/18/2014	18:41		4/18/2014	19:00
0418F024.D	ZZZZZZ	ZZZZZZ	4/18/2014	19:08		4/18/2014	19:27
0418F025.D	RM11E-MW003d-04-2014	K1403697-006	4/18/2014	19:34		4/18/2014	19:53
0418F026.D	RM11E-MULT89881-04-2014	K1403697-007	4/18/2014	20:01		4/18/2014	20:20
0418F027.D	RM11E-MW002s-04-2014	K1403697-008	4/18/2014	20:28		4/18/2014	20:47
0418F028.D	RM11E-MW004-04-2014	K1403697-009	4/18/2014	20:55		4/18/2014	21:14

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Service Request: K1403697
Date Extracted: 04/18/2014

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1403475
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	10ml	10ml	NA	
RM11E-TB02-04-2014	K1403697-010	04/15/14	04/16/14	10ml	10ml	NA	
Method Blank	KWG1403475-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1403475-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/18/2014
Sample Matrix:	Water		

Extraction Prep Log
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1403486
Analysis Method:	8260C	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-TB01-04-2014	K1403697-005	04/14/14	04/15/14	10ml	10ml	NA	
Method Blank	KWG1403486-4	NA	NA	10ml	10ml	NA	
RM11E-MW001-04-2014MS	KWG1403486-1	04/14/14	04/15/14	10ml	10ml	NA	
RM11E-MW001-04-2014DMS	KWG1403486-2	04/14/14	04/15/14	10ml	10ml	NA	
Lab Control Sample	KWG1403486-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-MW001-04-2014	K1403697-001	04/14/2014	04/15/2014
RM11E-MULT1007-04-2014	K1403697-002	04/14/2014	04/15/2014
RM11E-MW005-04-2014	K1403697-003	04/14/2014	04/15/2014
RM11E-MW505-04-2014	K1403697-004	04/14/2014	04/15/2014
RM11E-MW003d-04-2014	K1403697-006	04/15/2014	04/16/2014
RM11E-MULT89881-04-2014	K1403697-007	04/15/2014	04/16/2014
RM11E-MW002s-04-2014	K1403697-008	04/15/2014	04/16/2014
RM11E-MW004-04-2014	K1403697-009	04/15/2014	04/16/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW001-04-2014	**Units:**	ug/L
Lab Code:	K1403697-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.21	0.028	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.21	0.016	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.21	0.027	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.21	0.028	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.1	0.35	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.21	0.025	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.21	0.021	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.21	0.019	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.21	0.029	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.21	0.032	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	89	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	87	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	90	23-127	04/22/14	Acceptable
Terphenyl-d14	95	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MULT1007-04-2014	**Units:**	ug/L
Lab Code:	K1403697-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	**0.066**	J	0.21	0.028	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.21	0.016	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.21	0.027	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.21	0.028	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.1	0.35	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.21	0.025	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	**0.029**	J	0.21	0.021	1	04/16/14	04/22/14	KWG1403401	
Pyrene	**0.028**	J	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.21	0.019	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.21	0.029	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	**8.3**		1.1	0.14	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.21	0.032	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	79	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	81	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	85	23-127	04/22/14	Acceptable
Terphenyl-d14	80	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW005-04-2014	**Units:**	ug/L
Lab Code:	K1403697-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.0	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	1.0	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	81	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	74	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	76	23-127	04/22/14	Acceptable
Terphenyl-d14	87	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/14/2014
Sample Matrix:	Water	**Date Received:**	04/15/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW505-04-2014	**Units:**	ug/L
Lab Code:	K1403697-004	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.0	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	1.0	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	81	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	74	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	77	23-127	04/22/14	Acceptable
Terphenyl-d14	81	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW003d-04-2014	**Units:**	ug/L
Lab Code:	K1403697-006	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.032**	J	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.21	0.029	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.21	0.016	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.21	0.028	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.21	0.029	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.1	0.36	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.21	0.023	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.21	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.21	0.021	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.21	0.019	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.21	0.030	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	**0.28**	J	1.1	0.14	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.21	0.026	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.21	0.033	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	91	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	84	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	76	23-127	04/22/14	Acceptable
Terphenyl-d14	87	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MULT89881-04-2014	**Units:**	ug/L
Lab Code:	K1403697-007	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.054**	J	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	0.97	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	0.97	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	82	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	78	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	76	23-127	04/22/14	Acceptable
Terphenyl-d14	87	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW002s-04-2014	**Units:**	ug/L
Lab Code:	K1403697-008	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.026**	J	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.0	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	**0.028**	J	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	1.0	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	79	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	77	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	82	23-127	04/22/14	Acceptable
Terphenyl-d14	78	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	04/15/2014
Sample Matrix:	Water	**Date Received:**	04/16/2014

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	RM11E-MW004-04-2014	**Units:**	ug/L
Lab Code:	K1403697-009	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.040**	J	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	1.0	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	**0.16**	J	1.0	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	85	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	73	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	83	23-127	04/22/14	Acceptable
Terphenyl-d14	82	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1403401-3	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
2-Methylnaphthalene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Acenaphthylene	ND	U	0.20	0.015	1	04/16/14	04/22/14	KWG1403401	
Acenaphthene	ND	U	0.20	0.026	1	04/16/14	04/22/14	KWG1403401	
Fluorene	ND	U	0.20	0.027	1	04/16/14	04/22/14	KWG1403401	
Pentachlorophenol	ND	U	0.97	0.34	1	04/16/14	04/22/14	KWG1403401	*
Phenanthrene	ND	U	0.20	0.022	1	04/16/14	04/22/14	KWG1403401	
Anthracene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Fluoranthene	ND	U	0.20	0.020	1	04/16/14	04/22/14	KWG1403401	
Pyrene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	
Benz(a)anthracene	ND	U	0.20	0.018	1	04/16/14	04/22/14	KWG1403401	
Chrysene	ND	U	0.20	0.028	1	04/16/14	04/22/14	KWG1403401	
Bis(2-ethylhexyl) Phthalate	ND	U	0.97	0.13	1	04/16/14	04/22/14	KWG1403401	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	04/16/14	04/22/14	KWG1403401	
Benzo(a)pyrene	ND	U	0.20	0.031	1	04/16/14	04/22/14	KWG1403401	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	04/16/14	04/22/14	KWG1403401	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	04/16/14	04/22/14	KWG1403401	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	04/16/14	04/22/14	KWG1403401	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	91	26-110	04/22/14	Acceptable
2-Fluorobiphenyl	81	31-94	04/22/14	Acceptable
2,4,6-Tribromophenol	74	23-127	04/22/14	Acceptable
Terphenyl-d14	91	40-127	04/22/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C **Units:** Percent
Analysis Method: 8270D **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
RM11E-MW001-04-2014	K1403697-001	89	87	90	95
RM11E-MULT1007-04-2014	K1403697-002	79	81	85	80
RM11E-MW005-04-2014	K1403697-003	81	74	76	87
RM11E-MW505-04-2014	K1403697-004	81	74	77	81
RM11E-MW003d-04-2014	K1403697-006	91	84	76	87
RM11E-MULT89881-04-2014	K1403697-007	82	78	76	87
RM11E-MW002s-04-2014	K1403697-008	79	77	82	78
RM11E-MW004-04-2014	K1403697-009	85	73	83	82
Method Blank	KWG1403401-3	91	81	74	91
Lab Control Sample	KWG1403401-1	94	86	87	92
Duplicate Lab Control Sample	KWG1403401-2	87	80	84	83

Surrogate Recovery Control Limits (%)

Sur1	=	Nitrobenzene-d5	26-110
Sur2	=	2-Fluorobiphenyl	31-94
Sur3	=	2,4,6-Tribromophenol	23-127
Sur4	=	Terphenyl-d14	40-127

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/22/2014
		Time Analyzed:	11:11

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\042214\0422F005.D	**Lab Code:**	KWG1403645-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1403645
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	219,965	10.66	104,659	13.51	158,556	15.95
	Upper Limit ==>	439,930	11.16	209,318	14.01	317,112	16.45
	Lower Limit ==>	109,983	10.16	52,330	13.01	79,278	15.45
	ICAL Result ==>	278,201	10.68	154,201	13.52	235,645	15.96
Associated Analyses							
Method Blank	KWG1403401-3	215,928	10.66	96,731	13.50	155,582	15.95
Lab Control Sample	KWG1403401-1	203,348	10.66	102,077	13.51	153,779	15.95
Duplicate Lab Control Sample	KWG1403401-2	196,159	10.66	109,826	13.50	165,872	15.95
RM11E-MW001-04-2014	K1403697-001	197,325	10.67	92,925	13.51	159,564	15.95
RM11E-MULT1007-04-2014	K1403697-002	168,377	10.66	110,536	13.51	169,731	15.95
RM11E-MW005-04-2014	K1403697-003	196,758	10.67	96,971	13.51	163,306	15.95
RM11E-MW505-04-2014	K1403697-004	196,914	10.67	94,062	13.51	158,770	15.95
RM11E-MW003d-04-2014	K1403697-006	198,568	10.66	93,179	13.51	160,001	15.95
RM11E-MULT89881-04-2014	K1403697-007	197,480	10.67	93,632	13.51	157,872	15.95
RM11E-MW002s-04-2014	K1403697-008	197,345	10.67	98,365	13.51	153,428	15.95
RM11E-MW004-04-2014	K1403697-009	202,324	10.67	97,821	13.51	152,378	15.96

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Analyzed:**	04/22/2014
		Time Analyzed:	11:11

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS06\DATA\042214\0422F005.D	**Lab Code:**	KWG1403645-2
Instrument ID:	MS06	**Analysis Lot:**	KWG1403645
Analysis Method:	8270D		

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	163,767	20.51	148,726	24.19
	Upper Limit ==>	327,534	21.01	297,452	24.69
	Lower Limit ==>	81,884	20.01	74,363	23.69
	ICAL Result ==>	215,443	20.52	206,311	24.21
Associated Analyses					
Method Blank	KWG1403401-3	139,075	20.50	138,060	24.19
Lab Control Sample	KWG1403401-1	151,826	20.51	145,107	24.19
Duplicate Lab Control Sample	KWG1403401-2	164,350	20.51	144,645	24.19
RM11E-MW001-04-2014	K1403697-001	143,768	20.51	135,457	24.19
RM11E-MULT1007-04-2014	K1403697-002	147,802	20.51	152,890	24.20
RM11E-MW005-04-2014	K1403697-003	142,760	20.50	133,596	24.20
RM11E-MW505-04-2014	K1403697-004	146,378	20.51	133,240	24.20
RM11E-MW003d-04-2014	K1403697-006	143,136	20.51	132,936	24.20
RM11E-MULT89881-04-2014	K1403697-007	142,360	20.51	132,728	24.20
RM11E-MW002s-04-2014	K1403697-008	152,768	20.51	139,655	24.21
RM11E-MW004-04-2014	K1403697-009	151,986	20.51	137,687	24.20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/16/2014
Sample Matrix:	Water	**Date Analyzed:**	04/22/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3520C	**Units:**	ug/L
Analysis Method:	8270D	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1403401

	Lab Control Sample KWG1403401-1 Lab Control Spike			Duplicate Lab Control Sample KWG1403401-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	3.70	5.00	74	3.44	5.00	69	43-98	7	30
2-Methylnaphthalene	3.76	5.00	75	3.73	5.00	75	38-102	1	30
Acenaphthylene	4.16	5.00	83	3.81	5.00	76	52-108	9	30
Acenaphthene	4.15	5.00	83	3.70	5.00	74	48-102	11	30
Fluorene	4.59	5.00	92	4.02	5.00	80	51-106	13	30
Pentachlorophenol	3.06	5.00	61	2.76	5.00	55	33-106	10	30
Phenanthrene	4.11	5.00	82	3.92	5.00	78	56-103	5	30
Anthracene	4.38	5.00	88	4.09	5.00	82	55-103	7	30
Fluoranthene	5.33	5.00	107	4.45	5.00	89	56-110	18	30
Pyrene	4.52	5.00	90	3.80	5.00	76	59-109	17	30
Benz(a)anthracene	4.72	5.00	94	4.57	5.00	91	61-104	3	30
Chrysene	4.18	5.00	84	4.05	5.00	81	61-107	3	30
Bis(2-ethylhexyl) Phthalate	4.36	5.00	87	4.14	5.00	83	61-118	5	30
Benzo(b)fluoranthene	5.04	5.00	101	4.76	5.00	95	62-107	6	30
Benzo(k)fluoranthene	4.75	5.00	95	4.45	5.00	89	63-108	6	30
Benzo(a)pyrene	5.27	5.00	105	4.93	5.00	99	56-105	7	30
Indeno(1,2,3-cd)pyrene	5.30	5.00	106	5.34	5.00	107	63-108	1	30
Dibenz(a,h)anthracene	4.88	5.00	98	4.79	5.00	96	62-108	2	30
Benzo(g,h,i)perylene	4.79	5.00	96	4.78	5.00	96	62-108	0	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/16/2014
Sample Matrix:	Water	**Date Analyzed:**	04/22/2014
		Time Analyzed:	11:50

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS06
Lab Code:	KWG1403401-3	**File ID:**	J:\MS06\DATA\042214\0422F006.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1403401

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1403401-1	J:\MS06\DATA\042214\0422F007.D	04/22/14	12:28
Duplicate Lab Control Sample	KWG1403401-2	J:\MS06\DATA\042214\0422F008.D	04/22/14	13:06
RM11E-MW001-04-2014	K1403697-001	J:\MS06\DATA\042214\0422F013.D	04/22/14	16:17
RM11E-MULT1007-04-2014	K1403697-002	J:\MS06\DATA\042214\0422F014.D	04/22/14	16:55
RM11E-MW005-04-2014	K1403697-003	J:\MS06\DATA\042214\0422F015.D	04/22/14	17:33
RM11E-MW505-04-2014	K1403697-004	J:\MS06\DATA\042214\0422F016.D	04/22/14	18:10
RM11E-MW003d-04-2014	K1403697-006	J:\MS06\DATA\042214\0422F017.D	04/22/14	18:48
RM11E-MULT89881-04-2014	K1403697-007	J:\MS06\DATA\042214\0422F018.D	04/22/14	19:26
RM11E-MW002s-04-2014	K1403697-008	J:\MS06\DATA\042214\0422F019.D	04/22/14	20:03
RM11E-MW004-04-2014	K1403697-009	J:\MS06\DATA\042214\0422F020.D	04/22/14	20:41

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/16/2014
Sample Matrix:	Water	**Date Analyzed:**	04/22/2014
		Time Analyzed:	12:28

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS06
Lab Code:	KWG1403401-1	**File ID:**	J:\MS06\DATA\042214\0422F007.D
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1403401

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1403401-3	J:\MS06\DATA\042214\0422F006.D	04/22/14	11:50
RM11E-MW001-04-2014	K1403697-001	J:\MS06\DATA\042214\0422F013.D	04/22/14	16:17
RM11E-MULT1007-04-2014	K1403697-002	J:\MS06\DATA\042214\0422F014.D	04/22/14	16:55
RM11E-MW005-04-2014	K1403697-003	J:\MS06\DATA\042214\0422F015.D	04/22/14	17:33
RM11E-MW505-04-2014	K1403697-004	J:\MS06\DATA\042214\0422F016.D	04/22/14	18:10
RM11E-MW003d-04-2014	K1403697-006	J:\MS06\DATA\042214\0422F017.D	04/22/14	18:48
RM11E-MULT89881-04-2014	K1403697-007	J:\MS06\DATA\042214\0422F018.D	04/22/14	19:26
RM11E-MW002s-04-2014	K1403697-008	J:\MS06\DATA\042214\0422F019.D	04/22/14	20:03
RM11E-MW004-04-2014	K1403697-009	J:\MS06\DATA\042214\0422F020.D	04/22/14	20:41

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/22/2014
Time Analyzed: 10:33

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\042214\0422F004.D
Instrument ID: MS06
Column:

Analysis Method: 8270D
Analysis Lot: KWG1403645

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	42.8	13819	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	46.2	14925	PASS
70	69	0	2	0.0	0	PASS
127	198	25	75	57.5	18552	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	32287	PASS
199	198	5	9	6.9	2231	PASS
275	198	10	30	27.1	8743	PASS
365	198	1	100	4.1	1313	PASS
441	443	0	100	75.8	3334	PASS
442	198	40	110	70.0	22615	PASS
443	442	15	24	19.4	4397	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1403645-2	J:\MS06\DATA\042214\0422F005.D	04/22/2014	11:11	
Method Blank	KWG1403401-3	J:\MS06\DATA\042214\0422F006.D	04/22/2014	11:50	
Lab Control Sample	KWG1403401-1	J:\MS06\DATA\042214\0422F007.D	04/22/2014	12:28	
Duplicate Lab Control Sample	KWG1403401-2	J:\MS06\DATA\042214\0422F008.D	04/22/2014	13:06	
RM11E-MW001-04-2014	K1403697-001	J:\MS06\DATA\042214\0422F013.D	04/22/2014	16:17	
RM11E-MULT1007-04-2014	K1403697-002	J:\MS06\DATA\042214\0422F014.D	04/22/2014	16:55	
RM11E-MW005-04-2014	K1403697-003	J:\MS06\DATA\042214\0422F015.D	04/22/2014	17:33	
RM11E-MW505-04-2014	K1403697-004	J:\MS06\DATA\042214\0422F016.D	04/22/2014	18:10	
RM11E-MW003d-04-2014	K1403697-006	J:\MS06\DATA\042214\0422F017.D	04/22/2014	18:48	
RM11E-MULT89881-04-2014	K1403697-007	J:\MS06\DATA\042214\0422F018.D	04/22/2014	19:26	
RM11E-MW002s-04-2014	K1403697-008	J:\MS06\DATA\042214\0422F019.D	04/22/2014	20:03	
RM11E-MW004-04-2014	K1403697-009	J:\MS06\DATA\042214\0422F020.D	04/22/2014	20:41	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/27/2014

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL13234 **Column:** MS
Instrument ID: MS06

Level ID	File ID	Level ID	File ID
A	J:\MS06\DATA\032714\0327F005.D	G	J:\MS06\DATA\032714\0327F011.D
B	J:\MS06\DATA\032714\0327F006.D	H	J:\MS06\DATA\032714\0327F012.D
C	J:\MS06\DATA\032714\0327F007.D	I	J:\MS06\DATA\032714\0327F013.D
D	J:\MS06\DATA\032714\0327F008.D	J	J:\MS06\DATA\032714\0327F014.D
E	J:\MS06\DATA\032714\0327F009.D		
F	J:\MS06\DATA\032714\0327F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.06	B	100	1.08	C	200	1.15	D	500	1.13	E	1000	1.08
	F	2000	1.05	G	3000	1.02	H	5000	0.989	I	7000	0.975	J	10000	0.881
2-Methylnaphthalene	A	50	0.517	B	100	0.552	C	200	0.626	D	500	0.580	E	1000	0.597
	F	2000	0.584	G	3000	0.593	H	5000	0.510	I	7000	0.507	J	10000	0.458
Acenaphthylene	A	50	1.92	B	100	1.95	C	200	2.12	D	500	2.09	E	1000	2.07
	F	2000	2.09	G	3000	1.96	H	5000	2.04	I	7000	2.00	J	10000	1.93
Acenaphthene	A	50	1.11	B	100	1.15	C	200	1.26	D	500	1.22	E	1000	1.17
	F	2000	1.16	G	3000	1.09	H	5000	1.10	I	7000	1.07	J	10000	1.02
Fluorene	A	50	1.25	B	100	1.21	C	200	1.36	D	500	1.38	E	1000	1.31
	F	2000	1.34	G	3000	1.29	H	5000	1.27	I	7000	1.23	J	10000	1.18
Pentachlorophenol										D	500	0.145	E	1000	0.156
	F	2000	0.169	G	3000	0.173	H	5000	0.198	I	7000	0.201	J	10000	0.197
Phenanthrene	A	50	1.11	B	100	1.13	C	200	1.21	D	500	1.19	E	1000	1.14
	F	2000	1.13	G	3000	1.07	H	5000	1.12	I	7000	1.09	J	10000	1.01
Anthracene	A	50	1.07	B	100	1.09	C	200	1.20	D	500	1.20	E	1000	1.18
	F	2000	1.17	G	3000	1.12	H	5000	1.17	I	7000	1.15	J	10000	1.06
Fluoranthene	A	50	0.915	B	100	0.941	C	200	1.08	D	500	1.16	E	1000	1.06
	F	2000	1.07	G	3000	1.08	H	5000	1.17	I	7000	1.14	J	10000	1.07
Pyrene	A	50	1.31	B	100	1.20	C	200	1.33	D	500	1.41	E	1000	1.26
	F	2000	1.28	G	3000	1.28	H	5000	1.36	I	7000	1.31	J	10000	1.30
Benz(a)anthracene	A	50	0.988	B	100	0.940	C	200	1.02	D	500	1.03	E	1000	1.01
	F	2000	1.01	G	3000	0.967	H	5000	1.00	I	7000	0.986	J	10000	0.960
Chrysene	A	50	1.02	B	100	1.04	C	200	1.13	D	500	1.07	E	1000	1.03
	F	2000	1.04	G	3000	1.02	H	5000	1.06	I	7000	1.07	J	10000	1.05
Bis(2-ethylhexyl) Phthalate				B	100	0.828	C	200	1.01	D	500	1.04	E	1000	1.04
	F	2000	1.02	G	3000	1.08	H	5000	1.08	I	7000	1.07	J	10000	1.03
Benzo(b)fluoranthene	A	50	0.798	B	100	0.858	C	200	0.925	D	500	0.997	E	1000	1.01
	F	2000	0.963	G	3000	0.979	H	5000	1.03	I	7000	1.08	J	10000	1.06

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/27/2014

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL13234 **Column:** MS
Instrument ID: MS06

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(k)fluoranthene	A	50	0.986	B	100	1.00	C	200	1.15	D	500	1.10	E	1000	1.11
	F	2000	1.12	G	3000	1.11	H	5000	1.12	I	7000	1.10	J	10000	0.994
Benzo(a)pyrene	A	50	0.717	B	100	0.728	C	200	0.844	D	500	0.895	E	1000	0.914
	F	2000	0.936	G	3000	0.931	H	5000	0.987	I	7000	0.987	J	10000	0.944
Indeno(1,2,3-cd)pyrene	A	50	0.608	B	100	0.639	C	200	0.706	D	500	0.753	E	1000	0.811
	F	2000	0.839	G	3000	0.800	H	5000	0.904	I	7000	0.910	J	10000	0.879
Dibenz(a,h)anthracene	A	50	0.758	B	100	0.757	C	200	0.824	D	500	0.854	E	1000	0.897
	F	2000	0.919	G	3000	0.860	H	5000	0.990	I	7000	0.995	J	10000	0.933
Benzo(g,h,i)perylene	A	50	0.838	B	100	0.878	C	200	0.930	D	500	0.926	E	1000	0.977
	F	2000	0.969	G	3000	0.911	H	5000	0.999	I	7000	1.01	J	10000	0.946
Nitrobenzene-d5				B	100	1.15	C	200	1.15	D	500	1.16	E	1000	1.05
	F	2000	1.07	G	3000	0.971	H	5000	1.10	I	7000	1.10	J	10000	1.06
2-Fluorobiphenyl				B	100	1.32	C	200	1.40	D	500	1.36	E	1000	1.34
	F	2000	1.35	G	3000	1.24	H	5000	1.33	I	7000	1.30	J	10000	1.24
2,4,6-Tribromophenol							C	200	0.134	D	500	0.157	E	1000	0.149
	F	2000	0.158	G	3000	0.157	H	5000	0.173	I	7000	0.175	J	10000	0.171
Terphenyl-d14				B	100	0.798	C	200	0.828	D	500	0.916	E	1000	0.799
	F	2000	0.826	G	3000	0.810	H	5000	0.881	I	7000	0.868	J	10000	0.844

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004 **Calibration Date:** 03/27/2014

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL13234 **Column:** MS
Instrument ID: MS06

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	7.5		≤ 20	1.04		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	9.5		≤ 20	0.552		0.300
Acenaphthylene	MS	AverageRF	% RSD	3.6		≤ 20	2.02		0.900
Acenaphthene	MS	AverageRF	% RSD	6.3		≤ 20	1.13		0.700
Fluorene	MS	AverageRF	% RSD	5.2		≤ 20	1.28		0.800
Pentachlorophenol	MS	AverageRF	% RSD	12.6		≤ 20	0.177		0.050
Phenanthrene	MS	AverageRF	% RSD	5.1		≤ 20	1.12		0.600
Anthracene	MS	AverageRF	% RSD	4.7		≤ 20	1.14		0.600
Fluoranthene	MS	AverageRF	% RSD	8.0		≤ 20	1.07		0.600
Pyrene	MS	AverageRF	% RSD	4.5		≤ 20	1.30		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	3.0		≤ 20	0.992		0.600
Chrysene	MS	AverageRF	% RSD	3.1		≤ 20	1.05		0.600
Bis(2-ethylhexyl) Phthalate	MS	AverageRF	% RSD	7.5		≤ 20	1.02		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	9.0		≤ 20	0.969		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	5.7		≤ 20	1.08		0.600
Benzo(a)pyrene	MS	AverageRF	% RSD	10.9		≤ 20	0.888		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	13.6		≤ 20	0.785		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	9.6		≤ 20	0.879		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	5.7		≤ 20	0.938		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	5.5		≤ 20	1.09		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	4.2		≤ 20	1.32		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	8.7		≤ 20	0.159		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	4.8		≤ 20	0.841		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Calibration Date:**	03/27/2014
		Date Analyzed:	03/27/2014

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13234
Analysis Method:	8270D	**Units:**	ng/ml

File ID: J:\MS06\DATA\032714\0327F015.D
J:\MS06\DATA\032714\0327F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	1.04	0.994	-5	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	2900	0.552	0.535	-3	NA	± 30 %	AverageRF
Acenaphthylene	3000	2700	2.02	1.84	-9	NA	± 30 %	AverageRF
Acenaphthene	3000	2800	1.13	1.07	-6	NA	± 30 %	AverageRF
Fluorene	3000	2900	1.28	1.22	-5	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3100	0.177	0.182	3	NA	± 30 %	AverageRF
Phenanthrene	3000	2900	1.12	1.07	-5	NA	± 30 %	AverageRF
Anthracene	3000	2900	1.14	1.11	-3	NA	± 30 %	AverageRF
Fluoranthene	3000	3000	1.07	1.08	1	NA	± 30 %	AverageRF
Pyrene	3000	2700	1.30	1.19	-8	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2700	0.992	0.884	-11	NA	± 30 %	AverageRF
Chrysene	3000	2800	1.05	0.974	-7	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3000	1.02	1.02	0	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	3000	3100	0.969	1.00	3	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	2900	1.08	1.03	-5	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3100	0.888	0.924	4	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3000	0.785	0.782	0	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	2800	0.879	0.824	-6	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.938	0.884	-6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GSI Water Solutions, Inc
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Service Request: K1403697
Date Analyzed: 04/22/2014

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 03/27/2014
Calibration ID: CAL13234
Analysis Lot: KWG1403645
Units: ng/ml

File ID: J:\MS06\DATA\042214\0422F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	3000	3000	0.700	1.04	1.04	0		NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3100	0.300	0.552	0.577	5		NA	± 20 %	AverageRF
Acenaphthylene	3000	3000	0.900	2.02	2.04	1		NA	± 20 %	AverageRF
Acenaphthene	3000	3000	0.700	1.13	1.12	-1		NA	± 20 %	AverageRF
Fluorene	3000	3100	0.800	1.28	1.32	3		NA	± 20 %	AverageRF
Pentachlorophenol	3000	2000	0.050	0.177	0.118	-33	*	NA	± 20 %	AverageRF
Phenanthrene	3000	2800	0.600	1.12	1.06	-5		NA	± 20 %	AverageRF
Anthracene	3000	2900	0.600	1.14	1.11	-3		NA	± 20 %	AverageRF
Fluoranthene	3000	3300	0.600	1.07	1.18	10		NA	± 20 %	AverageRF
Pyrene	3000	2900	0.600	1.30	1.27	-3		NA	± 20 %	AverageRF
Benz(a)anthracene	3000	2900	0.600	0.992	0.972	-2		NA	± 20 %	AverageRF
Chrysene	3000	2800	0.600	1.05	0.967	-8		NA	± 20 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2800	0.010	1.02	0.966	-5		NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3200	0.600	0.969	1.02	6		NA	± 20 %	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.08	1.10	2		NA	± 20 %	AverageRF
Benzo(a)pyrene	3000	3300	0.600	0.888	0.978	10		NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3400	0.500	0.785	0.886	13		NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	3000	3200	0.400	0.879	0.926	5		NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	3000	3200	0.500	0.938	0.987	5		NA	± 20 %	AverageRF
Nitrobenzene-d5	3000	3600	0.01	1.09	1.31	20	*	NA	± 20 %	AverageRF
2-Fluorobiphenyl	3000	3300	0.01	1.32	1.43	8		NA	± 20 %	AverageRF
2,4,6-Tribromophenol	3000	3100	0.01	0.159	0.164	3		NA	± 20 %	AverageRF
Terphenyl-d14	3000	3200	0.01	0.841	0.896	7		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1403697
Project: River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1403645
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0422F004.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1403645-1	4/22/2014	10:33		4/22/2014	11:02
0422F005.D	Continuing Calibration Verification	KWG1403645-2	4/22/2014	11:11		4/22/2014	11:40
0422F006.D	Method Blank	KWG1403401-3	4/22/2014	11:50		4/22/2014	12:19
0422F007.D	Lab Control Sample	KWG1403401-1	4/22/2014	12:28		4/22/2014	12:57
0422F008.D	Duplicate Lab Control Sample	KWG1403401-2	4/22/2014	13:06		4/22/2014	13:35
0422F009.D	ZZZZZZ	ZZZZZZ	4/22/2014	13:44		4/22/2014	14:13
0422F010.D	ZZZZZZ	ZZZZZZ	4/22/2014	14:22		4/22/2014	14:51
0422F011.D	ZZZZZZ	ZZZZZZ	4/22/2014	15:00		4/22/2014	15:29
0422F012.D	ZZZZZZ	ZZZZZZ	4/22/2014	15:38		4/22/2014	16:07
0422F013.D	RM11E-MW001-04-2014	K1403697-001	4/22/2014	16:17		4/22/2014	16:46
0422F014.D	RM11E-MULT1007-04-2014	K1403697-002	4/22/2014	16:55		4/22/2014	17:24
0422F015.D	RM11E-MW005-04-2014	K1403697-003	4/22/2014	17:33		4/22/2014	18:02
0422F016.D	RM11E-MW505-04-2014	K1403697-004	4/22/2014	18:10		4/22/2014	18:39
0422F017.D	RM11E-MW003d-04-2014	K1403697-006	4/22/2014	18:48		4/22/2014	19:17
0422F018.D	RM11E-MULT89881-04-2014	K1403697-007	4/22/2014	19:26		4/22/2014	19:55
0422F019.D	RM11E-MW002s-04-2014	K1403697-008	4/22/2014	20:03		4/22/2014	20:32
0422F020.D	RM11E-MW004-04-2014	K1403697-009	4/22/2014	20:41		4/22/2014	21:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1403697
Project:	River Mile 11 East (RM11E) Supplimental RI/FS/487.002.004	**Date Extracted:**	04/16/2014
Sample Matrix:	Water		

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3520C	**Extraction Lot:**	KWG1403401
Analysis Method:	8270D	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-MW001-04-2014	K1403697-001	04/14/14	04/15/14	980ml	2ml	NA	
RM11E-MULT1007-04-2014	K1403697-002	04/14/14	04/15/14	980ml	2ml	NA	
RM11E-MW005-04-2014	K1403697-003	04/14/14	04/15/14	1000ml	2ml	NA	
RM11E-MW505-04-2014	K1403697-004	04/14/14	04/15/14	1000ml	2ml	NA	
RM11E-MW003d-04-2014	K1403697-006	04/15/14	04/16/14	960ml	2ml	NA	
RM11E-MULT89881-04-2014	K1403697-007	04/15/14	04/16/14	1040ml	2ml	NA	
RM11E-MW002s-04-2014	K1403697-008	04/15/14	04/16/14	1000ml	2ml	NA	
RM11E-MW004-04-2014	K1403697-009	04/15/14	04/16/14	1000ml	2ml	NA	
Method Blank	KWG1403401-3	NA	NA	1040ml	2ml	NA	
Lab Control Sample	KWG1403401-1	NA	NA	1000ml	2ml	NA	
Duplicate Lab Control Sample	KWG1403401-2	NA	NA	1000ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

May 13, 2014 Analytical Report for Service Request No: K1404419

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed are the results of the samples submitted to our laboratory on October 31, 2013. For your reference, these analyses have been assigned our service request number K1404419.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

GS/aj

RIGHT SOLUTIONS | RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	10/31/13-05/03/14
Sample Matrix:	Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four soil samples were received for analysis at ALS Environmental between 10/31/13 and 05/03/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory. Sample RM11E-G072 was re-issued from previous Service Request K1311862 and sample RM11E-G075 was re-issued from previous Service Request K1311918.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 0506F003. The results for Decachlorobiphenyl were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

The upper control criterion was exceeded for Aroclor 1016 in Continuing Calibration Verification (CCV) 0506F003. The associated target Aroclors were not detected above the Method Reporting Limit (MRL) in the associated field sample. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Environmental in Houston, Texas. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

original w/courier -3 coolers

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1404419

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: _____

Analysis Requested

Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	High-Resolution Pesticides (EPA 1699M)	Dioxins/Furans (1613B)	Archive Frozen									REMARKS
RM11E-G078	5/2/2014	8:59		Sediment	4	X	X	X	X			A									
RM11E-G080	5/2/2014	9:55		Sediment	4	X	X	X	X			A									
RM11E-G081	5/2/2014	11:20		Sediment	4	X	X	X	X			A									
RM11E-G083	5/1/2014	12:00		Sediment	5	X	X	X	X		H	A									Hold dioxin/furan analysis until authorized
RM11E-G084	5/1/2014	11:17		Sediment	4	X	X	X	X	X		A									
RM11E-G085	5/2/2014	13:50		Sediment	4	X	X	X	X			A									
RM11E-G086	5/2/2014	12:55		Sediment	5	X	X	X	X		H	A									Hold D/F analysis until authorized
RM11E-G087	5/2/2014	15:10		Sediment	5	X	X	X	X		X	A									
RM11E-G088	5/1/2014	14:40		Sediment	5	X	X	X	R		R	A									3 Day Rush on PCB and D/F's
RM11E-G089	5/1/2014	13:50		Sediment	4	H	H	H	H		H	A									Hold analysis until authorized. Archive extra material.
RM11E-G578	5/2/2014	9:20		Sediment	2	X	X	X	X			A									
RM11E-G978	5/2/2014	8:15		Water	3	X			X			A									

Relinquished By	Received By
Signature: Erin Carroll Hughes	Signature: [signature]
Printed Name: GSI Water Solutions	Printed Name: A Reynoso
Firm	Firm: ALS 5/3/14 0900
Date/Time	Date/Time

TURNAROUND REQUIREMENTS

____ 24 hr ____ 48 hr ____ 5 day

R Rush 3 days for preliminary results; 5-7 for report. Email preliminary results as soon as available

X Rush 7 days

H Hold until verbal authorization is granted to run. Dependent upon results of RM11E-G088.

A Two 8-oz jars provided for frozen archival

Requested Report Date 12-May-14

REPORT REQUIREMENTS

____ I. Routine Report

X II. Report (includes DUP, MS MSD, as required, may be charged as samples)

X III. Data Validation Report (includes All Raw Data)

____ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. # _____

Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: _____

Shipping #: _____

Condition: _____

Lab No: _____

Relinquished By	Received By
Signature	Signature
Printed Name	Printed Name
Firm	Firm
Date/Time	Date/Time

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.
See recent email communication or contact Greg Salata on the need for rushed and phase analysis. 14 day TAT requested on all with 3 day preliminary results on the PCB and Dioxin/Furan analysis for RM11E-G088. Please hold Dioxin/Furan analysis on RM11E-G083, -G086, and G089 until results of G088 are received and Erin provides verbal authorization to proceed. For efficiency, please ship those bottles to Houston along with RM11E-G088 **and two existing archived samples (RM11E-G072 [K1311862-004] and RM11E-G075 [K1311918-007]) together**. Dioxin/Furan analysis should be commenced immediately on RM11E-G087, RM11E-G088, K1311862-004, and K1311918-007.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553) or echughes@gsiws.com

PC GKG

Cooler Receipt and Preservation Form

Client / Project: GS1 Service Request K14 04419

Received: 5/3/14 Opened: 5/3/14 By: [illegible] Unloaded: 5/3/14 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front & back 1, side

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
5.3	5.1	5.7	5.5	-0.2	321			
3.0	3.1	1.3	1.4	+0.1	334			
5.8	5.8	5.8	5.8	Ø	323			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Polychlorinated Biphenyls

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G088	K1404419-001	05/01/2014	05/03/2014
RM11E-G088MS	KWG1404122-1	05/01/2014	05/03/2014
RM11E-G088DMS	KWG1404122-2	05/01/2014	05/03/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Soil	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G088	**Units:**	ug/Kg
Lab Code:	K1404419-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1221	ND	U	8.2	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1260	**2.5**	J	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	43-148	05/06/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1404122-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1221	ND	U	5.0	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1260	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/06/14	KWG1404122	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	43-148	05/06/14	Acceptable

Comments:

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: 8082A **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-G088	K1404419-001	73
Method Blank	KWG1404122-4	74
RM11E-G088MS	KWG1404122-1	66
RM11E-G088DMS	KWG1404122-2	63
Lab Control Sample	KWG1404122-3	73

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/06/2014

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G088	**Units:**	ug/Kg
Lab Code:	K1404419-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404122

		RM11E-G088MS KWG1404122-1 Matrix Spike			RM11E-G088DMS KWG1404122-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	140	163	86	141	163	86	23-145	1	40
Aroclor 1260	2.5	170	163	103	122	163	73	24-148	33	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/06/2014

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1404122

	Lab Control Sample KWG1404122-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	179	200	90	42-122
Aroclor 1260	169	200	85	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/06/2014
		Time Analyzed:	20:35

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC28.i
Lab Code:	KWG1404122-4	**File ID:**	J:\GC28\DATA\050614.B\0506F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404122

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1404122-3	J:\GC28\DATA\050614.B\0506F005.D	05/06/14	20:13
RM11E-G088	K1404419-001	J:\GC28\DATA\050614.B\0506F007.D	05/06/14	20:58
RM11E-G088MS	KWG1404122-1	J:\GC28\DATA\050614.B\0506F008.D	05/06/14	21:20
RM11E-G088DMS	KWG1404122-2	J:\GC28\DATA\050614.B\0506F009.D	05/06/14	21:43

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/06/2014
		Time Analyzed:	20:13

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC28.i
Lab Code:	KWG1404122-3	**File ID:**	J:\GC28\DATA\050614.B\0506F005.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404122

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1404122-4	J:\GC28\DATA\050614.B\0506F006.D	05/06/14	20:35
RM11E-G088	K1404419-001	J:\GC28\DATA\050614.B\0506F007.D	05/06/14	20:58
RM11E-G088MS	KWG1404122-1	J:\GC28\DATA\050614.B\0506F008.D	05/06/14	21:20
RM11E-G088DMS	KWG1404122-2	J:\GC28\DATA\050614.B\0506F009.D	05/06/14	21:43

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-35MS
Instrument ID: GC28.i

Level ID	File ID
A	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F005.D
B	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F006.D
C	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F007.D
D	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F008.D
E	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F009.D
F	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F010.D
G	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F011.D
H	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F012.D
I	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F013.D
J	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F014.D
K	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F015.D
L	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F016.D
M	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F017.D
N	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F018.D
O	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F019.D
P	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F020.D
Q	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F021.D
R	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F022.D
S	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F023.D
T	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F024.D
U	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F025.D
V	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F026.D
W	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F027.D
X	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F028.D
Y	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F029.D
Z	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F030.D
AA	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F031.D
AB	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F032.D
AC	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F033.D
AD	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	8.55E+5	B	5.0	8.21E+5	C	50	6.73E+5	D	100	6.75E+5	E	200	6.41E+5
	F	500	5.91E+5												
Aroclor 1016 {1}	A	25	11700	B	50	11000	C	500	9180	D	1000	9520	E	2000	8470
	F	5000	8490												
Aroclor 1016 {2}	A	25	35400	B	50	32200	C	500	30200	D	1000	34400	E	2000	30200
	F	5000	29500												
Aroclor 1016 {3}	A	25	25000	B	50	24200	C	500	20400	D	1000	20700	E	2000	19200
	F	5000	18900												
Aroclor 1016 {4}	A	25	20100	B	50	19600	C	500	15900	D	1000	16000	E	2000	14400
	F	5000	14100												
Aroclor 1016 {5}	A	25	19600	B	50	19200	C	500	16500	D	1000	16700	E	2000	15400
	F	5000	15100												
Aroclor 1260 {1}	A	25	18500	B	50	18300	C	500	16800	D	1000	17500	E	2000	17200
	F	5000	16700												
Aroclor 1260 {2}	A	25	33500	B	50	32800	C	500	28000	D	1000	28100	E	2000	26700
	F	5000	25300												
Aroclor 1260 {3}	A	25	33300	B	50	32300	C	500	28200	D	1000	28600	E	2000	27600
	F	5000	26200												
Aroclor 1260 {4}	A	25	77800	B	50	74800	C	500	67600	D	1000	70400	E	2000	69500
	F	5000	67500												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1404419
Calibration Date: 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284
Instrument ID: GC28.i
Column: DB-35MS

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	58900	B	50	57700	C	500	51500	D	1000	53100	E	2000	51900
	F	5000	49700												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-35MS
Instrument ID: GC28.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	14.8		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	13.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	7.6		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	12.2		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	15.4		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	11.1		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.2		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	9.5		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.8		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	6.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	04/25/2014
		Date Analyzed:	04/25/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13284
Analysis Method:	8082A	**Units:**	ng/mL

File ID: \\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F035.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F036.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F037.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F038.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F039.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F040.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F041.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F042.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	920	9720	8980	-8	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	960	32000	30600	-4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	920	21400	19600	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	870	16700	14500	-13	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	940	17100	16100	-6	NA	± 100 %	AverageRF
Aroclor 1016	1000	920	NA	NA	NA	-8	± 20 %	NA
Aroclor 1260 {1}	1000	960	17500	16800	-4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	29100	32900	13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	29400	32300	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	71300	79300	11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	53800	58200	8	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	8	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-XLB
Instrument ID: GC28.i

Level ID	File ID
A	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F005.D
B	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F006.D
C	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F007.D
D	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F008.D
E	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F009.D
F	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F010.D
G	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F011.D
H	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F012.D
I	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F013.D
J	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F014.D
K	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F015.D
L	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F016.D
M	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F017.D
N	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F018.D
O	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F019.D
P	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F020.D
Q	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F021.D
R	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F022.D
S	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F023.D
T	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F024.D
U	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F025.D
V	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F026.D
W	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F027.D
X	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F028.D
Y	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F029.D
Z	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F030.D
AA	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F031.D
AB	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F032.D
AC	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F033.D
AD	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F034.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.29E+5	B	5.0	1.26E+5	C	50	1.12E+5	D	100	1.10E+5	E	200	1.06E+5
	F	500	94800												
Aroclor 1016 {1}	A	25	2960	B	50	2780	C	500	2340	D	1000	2340	E	2000	2090
	F	5000	1920												
Aroclor 1016 {2}	A	25	6770	B	50	6610	C	500	5590	D	1000	5580	E	2000	5180
	F	5000	5000												
Aroclor 1016 {3}	A	25	4500	B	50	4280	C	500	3740	D	1000	3720	E	2000	3390
	F	5000	3190												
Aroclor 1016 {4}	A	25	3400	B	50	3380	C	500	2850	D	1000	2810	E	2000	2570
	F	5000	2340												
Aroclor 1016 {5}	A	25	3260	B	50	3270	C	500	2830	D	1000	2810	E	2000	2570
	F	5000	2370												
Aroclor 1260 {1}	A	25	8020	B	50	7370	C	500	6210	D	1000	6060	E	2000	5720
	F	5000	5230												
Aroclor 1260 {2}	A	25	4960	B	50	5290	C	500	4690	D	1000	4630	E	2000	4420
	F	5000	3990												
Aroclor 1260 {3}	A	25	6050	B	50	5680	C	500	4950	D	1000	4910	E	2000	4750
	F	5000	4330												
Aroclor 1260 {4}	A	25	13400	B	50	12400	C	500	11100	D	1000	11100	E	2000	10900
	F	5000	10100												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-XLB
Instrument ID: GC28.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	8400	B	50	8010	C	500	7390	D	1000	7360	E	2000	7220
	F	5000	6550												

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1404419
Calibration Date: 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284
Instrument ID: GC28.i
Column: DB-XLB

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Decachlorobiphenyl	SURR	AverageRF	% RSD	11.3		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	16.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	12.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.3		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	16.4		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	12.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	10.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	04/25/2014
		Date Analyzed:	04/25/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13284
Analysis Method:	8082A	**Units:**	ng/mL

File ID: \\alklsws002\instdata\GC28\Data\042414CAL.b\0424F035.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F036.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F037.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F038.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F039.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F040.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F041.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F042.D
\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F043.D

Column ID: DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	930	2410	2250	-7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	920	5790	5310	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	930	3800	3560	-7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	930	2890	2700	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	960	2850	2740	-4	NA	± 100 %	AverageRF
Aroclor 1016	1000	940	NA	NA	NA	-6	± 20 %	NA
Aroclor 1260 {1}	1000	940	6440	6030	-6	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4660	5480	17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5110	5520	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	11500	12600	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	7490	8060	8	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404126
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050614_R.B\0506F003.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	53	709000	756000	7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	580	9720	11200	16	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	570	32000	36300	14	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	560	21400	23800	11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	560	16700	18700	12	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	560	17100	19100	11	NA	± 100 %	AverageRF
Aroclor 1016	500	560	NA	NA	NA	13	± 20 %	NA
Aroclor 1260 {1}	500	520	17500	18200	4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	510	29100	29900	3	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	520	29400	30400	3	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	510	71300	73300	3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	530	53800	56600	5	NA	± 100 %	AverageRF
Aroclor 1260	500	520	NA	NA	NA	4	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404126
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050614.B\0506F003.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift		Criteria	Curve Fit
Decachlorobiphenyl	50	62	113000	139000	23	*	NA		± 20 %	AverageRF
Aroclor 1016 {1}	500	610	2410	2950	23		NA		± 100 %	AverageRF
Aroclor 1016 {2}	500	600	5790	6940	20		NA		± 100 %	AverageRF
Aroclor 1016 {3}	500	610	3800	4670	23		NA		± 100 %	AverageRF
Aroclor 1016 {4}	500	620	2890	3580	24		NA		± 100 %	AverageRF
Aroclor 1016 {5}	500	620	2850	3520	23		NA		± 100 %	AverageRF
Aroclor 1016	500	610	NA	NA	NA		23	*	± 20 %	NA
Aroclor 1260 {1}	500	580	6440	7510	17		NA		± 100 %	AverageRF
Aroclor 1260 {2}	500	620	4660	5770	24		NA		± 100 %	AverageRF
Aroclor 1260 {3}	500	600	5110	6110	19		NA		± 100 %	AverageRF
Aroclor 1260 {4}	500	590	11500	13600	18		NA		± 100 %	AverageRF
Aroclor 1260 {5}	500	610	7490	9090	21		NA		± 100 %	AverageRF
Aroclor 1260	500	600	NA	NA	NA		20		± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404126
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050614_R.B\0506F010.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	45	709000	642000	-9	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	510	9720	9870	2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	460	32000	29700	-7	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	490	21400	20900	-2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	500	16700	16500	-1	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	490	17100	16900	-1	NA	± 100 %	AverageRF
Aroclor 1016	500	490	NA	NA	NA	-2	± 20 %	NA
Aroclor 1260 {1}	500	440	17500	15600	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	440	29100	25800	-11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	440	29400	26000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	430	71300	61700	-13	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	440	53800	47600	-11	NA	± 100 %	AverageRF
Aroclor 1260	500	440	NA	NA	NA	-12	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404126
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050614.B\0506F010.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	53	113000	121000	7	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	540	2410	2580	7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	520	5790	6020	4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	3800	4000	5	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	540	2890	3130	8	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	540	2850	3080	8	NA	± 100 %	AverageRF
Aroclor 1016	500	530	NA	NA	NA	6	± 20 %	NA
Aroclor 1260 {1}	500	510	6440	6520	1	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	520	4660	4870	4	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	510	5110	5170	1	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	500	11500	11500	0	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	520	7490	7750	3	NA	± 100 %	AverageRF
Aroclor 1260	500	510	NA	NA	NA	2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A **Analysis Lot:** KWG1404126
Instrument ID: GC28.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0506F003.D	Continuing Calibration Verification	KWG1404126-1	5/6/2014	19:28		5/6/2014	19:28
0506F004.D	Instrument Blank	KWG1404126-2	5/6/2014	19:50		5/6/2014	19:50
0506F005.D	Lab Control Sample	KWG1404122-3	5/6/2014	20:13		5/6/2014	20:13
0506F006.D	Method Blank	KWG1404122-4	5/6/2014	20:35		5/6/2014	20:35
0506F007.D	RM11E-G088	K1404419-001	5/6/2014	20:58		5/6/2014	20:58
0506F008.D	RM11E-G088MS	KWG1404122-1	5/6/2014	21:20		5/6/2014	21:20
0506F009.D	RM11E-G088DMS	KWG1404122-2	5/6/2014	21:43		5/6/2014	21:43
0506F010.D	Continuing Calibration Verification	KWG1404126-3	5/6/2014	22:05		5/6/2014	22:05
0506F011.D	Instrument Blank	KWG1404126-4	5/6/2014	22:27		5/6/2014	22:27

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil		

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1404122
Analysis Method:	8082A	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G088	K1404419-001	05/01/14	05/03/14	40.265g	4mL	60.8	
Method Blank	KWG1404122-4	NA	NA	40.377g	4mL	NA	
RM11E-G088MS	KWG1404122-1	05/01/14	05/03/14	40.377g	4mL	60.8	
RM11E-G088DMS	KWG1404122-2	05/01/14	05/03/14	40.373g	4mL	60.8	
Lab Control Sample	KWG1404122-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Soil	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G088	**Units:**	ug/Kg
Lab Code:	K1404419-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	2.5	2.7	7.7	J	1	05/06/14

Dioxins and Furans

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

May 09, 2014 Service Request No: K1404419

Gregory Salata, Ph.D...

ALS Environmental
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Results for: GSI Water Solutions, Ins.

Dear Gregory:

Enclosed are the results of the sample(s) submitted to our laboratory on May 06, 2014. For Your reference, these analyses have been assigned our service request number: **K1404419**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided.
All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the NELAC 2003 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My direct line is 281-575-2279. You may also contact me via email at Arthi.Kodur@alsglobal.com

Respectfully submitted,

ALS Group USA Corp., dba ALS Environmental

for
Arthi Kodur
Project Manager

Page 1 of _____

For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com.

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc.	**Service Request No.:**	K1404419
Project:	R M 11 E Supplemental RI/FS Investigation	**Date Received:**	**5/ 3/14**
Sample Matrix:	Soil		

ALS ENVIRONMENTAL NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three soil samples were received for analysis at ALS Environmental on 5/ 3/14.

Please note the reporting forms are currently referencing the date ALS Environmental-Kelso received the samples (5/ 3/14) and not the date ALS Environmental-Houston received the samples (5/6/14).

The samples were received at 0°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

ISM was performed at ALS-Kelso.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1400225-01 contained low levels of various analytes at or below the Method Reporting Limit (MRL).

The associated compounds in the samples are flagged with 'B' flags.

MS/MSD/DUPLICATE

EQ1400225: Laboratory Control Spike (LCS)/Duplicate Laboratory Control Spike (DLCS) sample was analyzed and reported in lieu of an MS/MSD/DUPLCIATE for this extraction batch. The batch quality control criteria were met.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions were sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

Where the EDL exceeds the MRL, the MRL is raised to equal the EDL.

The MRL = DoD LOQ, but the EDL is not directly correlated to LOD. The LOD is instrument and prep-method specific. ND compounds are reported to the LOD. LOD information can be found in the tables accompanying this report.

The TEQ Summary results for each sample have been calculated by ALS ENVIRONMENTAL/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'
- The 1:1 and associated dilution have been combined into one TEQ Summary report

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: GSI Water Solutions, Inc. **Service Request:** K1404419
Project: RM11E Supplemental RI/FS Investigation/487.002.004

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1404419-001	RM11E-G088	5/1/14	14:40
K1404419-002	RM11E-G087	5/2/14	15:10
K1404419-003	RM11E-G072	10/30/13	14:40
K1404419-004	RM11E-G075	10/31/13	16:55

Service Request Summary

Folder #: **K1404419**
Client Name: GSI Water Solutions, Inc
Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004

Report To: Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204
Phone Number: 971-200-8528
Cell Number: 503-927-4553
Fax Number: 503-239-8940
E-mail: echughes@gsiws.com

Project Chemist: Arthi Kodur
Originating Lab: KELSO
Logged By: ARYNEVICH
Date Received: 10/31 - 5/ 3/14
Internal Due Date: 5/7/14
QAP: LAB QAP
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: Y
Report to MDL?: N,Y
P.O. Number: 487.002
EDD: Striplin GSI

5 - 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: EHRMS-WIC 5D, K-Delilah-61

RUSH

					KELSO	SVM		SMO
Lab Samp No.	**Client Samp No.**	**Matrix**	**Collected**		8082A/ PCB LL	1613B/ Dioxins Furans	CAS SOP/ Total Solids	Archive/ Archive -20C
K1404419-001	RM11E-G088	Soil	5/1/14	1440	**V**	**V**	**IV**	**V**
K1404419-002	RM11E-G087	Soil	5/2/14	1510		**V**	**V**	**V**
K1404419-003	RM11E-G072	Soil	10/30/13	1440		**V**	**V**	**V**
K1404419-004	RM11E-G075	Soil	10/31/13	1655		**V**	**V**	**V**

Folder Comments:

Samples -003 and -004 re-issued from K1311862-004 and K1311918-007.

Superset Summary

Service Request: K1404419 **SuperSet Reference:** 14-0000288056 rev 00

1613B/Dioxins Furans

Calibrations: 02/01/14

Data Files:

Raw Data	*Begin CCAL*	*Method Blank*	*Lab ID*
P228825	P228821	P228825	EQ1400225-01
P228826	P228821	P228825	K1404419-001
P228829	P228821	P228825	EQ1400225-02
P228830	P228821	P228825	EQ1400225-03
P228850	P228844	P228825	K1404419-002
P228851	P228844	P228825	K1404419-003
P228852	P228844	P228825	K1404419-004

CAS SOP/Total Solids

Calibrations:

Data Files:

Raw Data	*Begin CCAL*	*Method Blank*	*Lab ID*

Laboratory Certifications
2013-2014

STATE/PROGRAM	AGENCY	CERT#	EXP DATE	CERTIFIED?
ARIZONA	AZ-DHS	AZ0725	05/27/14	Yes
ARKANSAS	ADEQ	12-035-0	06/16/14	Yes
CALIFORNIA	CA-ELAP	2452	02/28/15	Yes
DOD ELAP	A2LA	2897.01	11/30/14	Yes
FLORIDA/NELAP	FL-DOHS	E87611	06/30/14	Yes
HAWAII	HI-DOH	N/A	06/30/14	Yes
ILLINOIS/NELAP	IL-EPA	003004	10/06/14	Yes
ISO 17025	A2LA	2897.01	01/31/14	Yes
KANSAS	KS-DHE	E-10406	11/30/14	Yes
LOUISIANA/NELAP	LELAP	03048	06/30/14	Yes
LOUISIANA/NELAP	LDHH	LA120014	12/31/14	Yes
MAINE	ME-DOHS	2012017	06/05/14	Yes
MARYLAND	MDE	343	06/30/14	Yes
MICHIGAN	MIDEQ	9971	06/30/14	Yes
MINNESOTA	MDH	048-999-427	12/31/14	Yes
NEVADA	NDEP	TX014112013A	07/31/14	Yes
NEW JERSEY	NJDEP	TX008	06/30/14	Yes
NEW MEXICO	NMED-DWB	N/A	06/30/14	Yes
NEW YORK/NELAP	NY-DOH	11707	04/01/14	Yes
OKLAHOMA	OKDEQ	2012-133	08/31/14	Yes
OREGON/NELAP	ORELAP	TX200002-009	03/24/14	Yes
PENNSYLVANIA/NELAP	PLAP	68-03441	06/30/14	Yes
SOIL IMPORT PERMIT	USDA	P330-12-00002	01/13/15	Yes
TENNESSEE	TNDEC	TN04016	06/30/14	Yes
TEXAS/NELAP	TCEQ	T104704216-12-3	06/30/14	Yes
UTAH/NELAP	UTELCP	TX014112013-2	06/30/14	Yes
WASHINGTON/NELAP	WA-Ecology	C819-12	11/14/14	Yes
WEST VIRGINIA	WVDEP	347	07/31/14	Yes

Abbreviations, Acronyms & Definitions

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

Data Qualifier Flags – Dioxin/Furans

B Indicates the associated analyte is found in the method blank, as well as in the sample

C 2378-TCDF is detected on the DB-5 column above the MRL, confirmation analysis was performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result are used in determining the TEQ value for TCDF.

E The reported result is above the instrument calibration range and is an estimated value.

J Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL)

K Ion abundance ratios between the primary and secondary ions were outside of theoretical acceptance limits. The reported result is an estimated maximum possible concentration (EMPC)

i The associated MRL/MDL has been elevated due to matrix interference.

U Indicates the compound was analyzed for, but not detected (ND)

Y C13-Labeled standard percent recoveries are outside of method acceptance limits

S Peak is saturated; data not reportable

P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.

X See case narrative

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1404419 DB-5 DB-5MSUI DB-225 SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date: 5/9/14	Analyst: cer	Samples: -001

Second Level - Data Review – to be filled by person doing peer review

Date: 05/9/14	Analyst: [illegible]	Samples: 001

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1404419 DB-5 DB-5MSUI DB-225 SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date: 5/9/14	Analyst: [illegible]	Samples: 2-4

Second Level - Data Review – to be filled by person doing peer review

Date: 05/09/14	Analyst: [illegible]	Samples: 002-004

PEER REVIEW PAGE.DOC

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 1/14 1440
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G088	**Units:**	ng/Kg
Lab Code:	K1404419-001	**Basis:**	Dry
		Percent Solids:	60.8

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	ND	U	0.274	0.783			1	5/8/14	0739	5/6/14
1,2,3,7,8-PeCDD	ND	U	0.0899	3.91			1	5/8/14	0739	5/6/14
1,2,3,4,7,8-HxCDD	**0.519**	JK	0.168	3.91	1.99	1.001	1	5/8/14	0739	5/6/14
1,2,3,6,7,8-HxCDD	**2.66**	J	0.189	3.91	1.07	1.000	1	5/8/14	0739	5/6/14
1,2,3,7,8,9-HxCDD	**0.854**	JK	0.172	3.91	1.69	1.007	1	5/8/14	0739	5/6/14
1,2,3,4,6,7,8-HpCDD	**56.3**		0.196	3.91	1.05	1.000	1	5/8/14	0739	5/6/14
OCDD	**454**		0.123	7.83	0.92	1.000	1	5/8/14	0739	5/6/14
2,3,7,8-TCDF	ND	U	0.151	0.783			1	5/8/14	0739	5/6/14
1,2,3,7,8-PeCDF	ND	U	0.106	3.91			1	5/8/14	0739	5/6/14
2,3,4,7,8-PeCDF	ND	U	0.109	3.91			1	5/8/14	0739	5/6/14
1,2,3,4,7,8-HxCDF	**0.965**	J	0.253	3.91	1.24	1.000	1	5/8/14	0739	5/6/14
1,2,3,6,7,8-HxCDF	**0.349**	JK	0.224	3.91	1.57	1.000	1	5/8/14	0739	5/6/14
1,2,3,7,8,9-HxCDF	ND	U	0.283	3.91			1	5/8/14	0739	5/6/14
2,3,4,6,7,8-HxCDF	**0.541**	JK	0.248	3.91	0.99	1.000	1	5/8/14	0739	5/6/14
1,2,3,4,6,7,8-HpCDF	**9.05**		0.368	3.91	1.00	1.000	1	5/8/14	0739	5/6/14
1,2,3,4,7,8,9-HpCDF	**0.691**	JK	0.582	3.91	0.72	1.000	1	5/8/14	0739	5/6/14
OCDF	**29.5**		0.191	7.83	0.89	1.005	1	5/8/14	0739	5/6/14
Total Tetra-Dioxins	ND	U	0.274	0.783			1	5/8/14	0739	5/6/14
Total Penta-Dioxins	**0.475**	J	0.0899	3.91	1.61		1	5/8/14	0739	5/6/14
Total Hexa-Dioxins	**9.02**		0.176	3.91	1.33		1	5/8/14	0739	5/6/14
Total Hepta-Dioxins	**101**		0.196	3.91	1.08		1	5/8/14	0739	5/6/14
Total Tetra-Furans	ND	U	0.151	0.783			1	5/8/14	0739	5/6/14
Total Penta-Furans	ND	U	0.0960	3.91			1	5/8/14	0739	5/6/14
Total Hexa-Furans	**13.2**		0.250	3.91	1.40		1	5/8/14	0739	5/6/14
Total Hepta-Furans	**45.8**		0.461	3.91	1.00		1	5/8/14	0739	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 1/14 1440
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G088	**Units:**	Percent
Lab Code:	K1404419-001	**Basis:**	Dry
		Percent Solids:	60.8

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1351.770	68		25-164	0.78	1.021
13C-1,2,3,7,8-PeCDD	2000	1828.279	91		25-181	1.60	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1488.190	74		32-141	1.30	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1409.094	70		28-130	1.27	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1334.220	67		23-140	1.07	1.067
13C-OCDD	4000	2089.014	52		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1447.077	72		24-169	0.80	0.991
13C-1,2,3,7,8-PeCDF	2000	1314.281	66		24-185	1.58	1.149
13C-2,3,4,7,8-PeCDF	2000	1313.969	66		21-178	1.59	1.182
13C-1,2,3,4,7,8-HxCDF	2000	1209.020	60		26-152	0.52	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1327.647	66		26-123	0.53	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1324.846	66		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1369.613	68		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1054.849	53		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	1002.095	50		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	445.005	56		35-197	NA	1.022

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 1/14 1440
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G088	**Units:**	ng/Kg
Lab Code:	K1404419-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.274	0.783	1	1	
1,2,3,7,8-PeCDD	ND	0.0899	3.91	1	1	
1,2,3,4,7,8-HxCDD	**0.519**	0.168	3.91	1	0.1	0.0519
1,2,3,6,7,8-HxCDD	**2.66**	0.189	3.91	1	0.1	0.266
1,2,3,7,8,9-HxCDD	**0.854**	0.172	3.91	1	0.1	0.0854
1,2,3,4,6,7,8-HpCDD	**56.3**	0.196	3.91	1	0.01	0.563
OCDD	**454**	0.123	7.83	1	0.0003	0.136
2,3,7,8-TCDF	ND	0.151	0.783	1	0.1	
1,2,3,7,8-PeCDF	ND	0.106	3.91	1	0.03	
2,3,4,7,8-PeCDF	ND	0.109	3.91	1	0.3	
1,2,3,4,7,8-HxCDF	**0.965**	0.253	3.91	1	0.1	0.0965
1,2,3,6,7,8-HxCDF	**0.349**	0.224	3.91	1	0.1	0.0349
1,2,3,7,8,9-HxCDF	ND	0.283	3.91	1	0.1	
2,3,4,6,7,8-HxCDF	**0.541**	0.248	3.91	1	0.1	0.0541
1,2,3,4,6,7,8-HpCDF	**9.05**	0.368	3.91	1	0.01	0.0905
1,2,3,4,7,8,9-HpCDF	**0.691**	0.582	3.91	1	0.01	0.00691
OCDF	**29.5**	0.191	7.83	1	0.0003	0.00885
		Total TEQ				1.39

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 1/14 1440
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G088	**Units:**	Percent
Lab Code:	K1404419-001	**Basis:**	Dry
		Percent Solids:	60.8

Total Solids Run Create

Analytical Method: CAS SOP
Prep Method: None

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Total Solids	60.8			1	NA	5/7/14 16:34		391579	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 2/14 1510
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G087	**Units:**	ng/Kg
Lab Code:	K1404419-002	**Basis:**	Dry
		Percent Solids:	70.3

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	ND	U	0.225	0.688			1	5/9/14	0441	5/6/14
1,2,3,7,8-PeCDD	**1.13**	J	0.170	3.44	1.57	1.001	1	5/9/14	0441	5/6/14
1,2,3,4,7,8-HxCDD	**1.46**	JK	0.163	3.44	1.56	1.000	1	5/9/14	0441	5/6/14
1,2,3,6,7,8-HxCDD	**8.31**		0.184	3.44	1.23	1.000	1	5/9/14	0441	5/6/14
1,2,3,7,8,9-HxCDD	**3.14**	J	0.168	3.44	1.14	1.007	1	5/9/14	0441	5/6/14
1,2,3,4,6,7,8-HpCDD	**183**		0.245	3.44	1.03	1.000	1	5/9/14	0441	5/6/14
OCDD	**1780**		0.208	6.88	0.90	1.000	1	5/9/14	0441	5/6/14
2,3,7,8-TCDF	**0.839**		0.185	0.688	0.75	1.001	1	5/9/14	0441	5/6/14
1,2,3,7,8-PeCDF	**0.564**	J	0.246	3.44	1.54	1.001	1	5/9/14	0441	5/6/14
2,3,4,7,8-PeCDF	**0.634**	J	0.226	3.44	1.41	1.000	1	5/9/14	0441	5/6/14
1,2,3,4,7,8-HxCDF	**3.47**		0.290	3.44	1.15	1.000	1	5/9/14	0441	5/6/14
1,2,3,6,7,8-HxCDF	**1.36**	J	0.259	3.44	1.28	1.000	1	5/9/14	0441	5/6/14
1,2,3,7,8,9-HxCDF	**0.807**	JK	0.330	3.44	0.96	1.001	1	5/9/14	0441	5/6/14
2,3,4,6,7,8-HxCDF	**2.53**	J	0.276	3.44	1.21	1.000	1	5/9/14	0441	5/6/14
1,2,3,4,6,7,8-HpCDF	**33.8**		0.322	3.44	1.08	1.000	1	5/9/14	0441	5/6/14
1,2,3,4,7,8,9-HpCDF	**2.57**	J	0.409	3.44	0.88	1.000	1	5/9/14	0441	5/6/14
OCDF	**134**		0.340	6.88	0.87	1.005	1	5/9/14	0441	5/6/14
Total Tetra-Dioxins	**0.486**	J	0.225	0.688	0.75		1	5/9/14	0441	5/6/14
Total Penta-Dioxins	**4.62**		0.170	3.44	1.61		1	5/9/14	0441	5/6/14
Total Hexa-Dioxins	**43.4**		0.172	3.44	1.29		1	5/9/14	0441	5/6/14
Total Hepta-Dioxins	**329**		0.245	3.44	1.03		1	5/9/14	0441	5/6/14
Total Tetra-Furans	**8.48**		0.185	0.688	0.74		1	5/9/14	0441	5/6/14
Total Penta-Furans	**27.8**		0.0882	3.44	1.59		1	5/9/14	0441	5/6/14
Total Hexa-Furans	**67.7**		0.286	3.44	1.21		1	5/9/14	0441	5/6/14
Total Hepta-Furans	**163**		0.364	3.44	1.08		1	5/9/14	0441	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 2/14 1510
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G087	**Units:**	Percent
Lab Code:	K1404419-002	**Basis:**	Dry
		Percent Solids:	70.3

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1197.160	60		25-164	0.79	1.022
13C-1,2,3,7,8-PeCDD	2000	1665.687	83		25-181	1.62	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1259.135	63		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1230.275	62		28-130	1.31	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1043.609	52		23-140	1.07	1.067
13C-OCDD	4000	1378.617	34		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1307.248	65		24-169	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1179.349	59		24-185	1.60	1.149
13C-2,3,4,7,8-PeCDF	2000	1237.290	62		21-178	1.61	1.183
13C-1,2,3,4,7,8-HxCDF	2000	1013.362	51		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1129.543	56		26-123	0.53	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1169.441	58		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1164.578	58		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	769.432	38		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	912.329	46		26-138	0.45	1.080
37Cl-2,3,7,8-TCDD	800	357.596	45		35-197	NA	1.022

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 2/14 1510
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G087	**Units:**	ng/Kg
Lab Code:	K1404419-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.225	0.688	1	1	
1,2,3,7,8-PeCDD	**1.13**	0.170	3.44	1	1	1.13
1,2,3,4,7,8-HxCDD	**1.46**	0.163	3.44	1	0.1	0.146
1,2,3,6,7,8-HxCDD	**8.31**	0.184	3.44	1	0.1	0.831
1,2,3,7,8,9-HxCDD	**3.14**	0.168	3.44	1	0.1	0.314
1,2,3,4,6,7,8-HpCDD	**183**	0.245	3.44	1	0.01	1.83
OCDD	**1780**	0.208	6.88	1	0.0003	0.534
2,3,7,8-TCDF	**0.839**	0.185	0.688	1	0.1	0.0839
1,2,3,7,8-PeCDF	**0.564**	0.246	3.44	1	0.03	0.0169
2,3,4,7,8-PeCDF	**0.634**	0.226	3.44	1	0.3	0.190
1,2,3,4,7,8-HxCDF	**3.47**	0.290	3.44	1	0.1	0.347
1,2,3,6,7,8-HxCDF	**1.36**	0.259	3.44	1	0.1	0.136
1,2,3,7,8,9-HxCDF	**0.807**	0.330	3.44	1	0.1	0.0807
2,3,4,6,7,8-HxCDF	**2.53**	0.276	3.44	1	0.1	0.253
1,2,3,4,6,7,8-HpCDF	**33.8**	0.322	3.44	1	0.01	0.338
1,2,3,4,7,8,9-HpCDF	**2.57**	0.409	3.44	1	0.01	0.0257
OCDF	**134**	0.340	6.88	1	0.0003	0.0402
		Total TEQ				6.30

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/ 2/14 1510
Sample Matrix:	Soil	**Date Received:**	5/ 3/14
Sample Name:	RM11E-G087	**Units:**	Percent
Lab Code:	K1404419-002	**Basis:**	Dry
		Percent Solids:	70.3

Total Solids Run Create

Analytical Method: CAS SOP
Prep Method: None

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Total Solids	70.3			1	NA	5/7/14 16:34		391579	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/30/13 1440
Sample Matrix:	Soil	**Date Received:**	10/31/13
Sample Name:	RM11E-G072	**Units:**	ng/Kg
Lab Code:	K1404419-003	**Basis:**	Dry
		Percent Solids:	57.6

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	ND	U	0.316	0.832			1	5/9/14	0528	5/6/14
1,2,3,7,8-PeCDD	**0.401**	J	0.0876	4.16	1.34	1.001	1	5/9/14	0528	5/6/14
1,2,3,4,7,8-HxCDD	**0.722**	J	0.131	4.16	1.35	1.000	1	5/9/14	0528	5/6/14
1,2,3,6,7,8-HxCDD	**4.72**		0.146	4.16	1.38	1.000	1	5/9/14	0528	5/6/14
1,2,3,7,8,9-HxCDD	**1.54**	JK	0.134	4.16	1.90	1.007	1	5/9/14	0528	5/6/14
1,2,3,4,6,7,8-HpCDD	**98.2**		0.319	4.16	1.08	1.000	1	5/9/14	0528	5/6/14
OCDD	**650**		0.170	8.32	0.90	1.000	1	5/9/14	0528	5/6/14
2,3,7,8-TCDF	ND	U	0.187	0.832			1	5/9/14	0528	5/6/14
1,2,3,7,8-PeCDF	ND	U	0.226	4.16			1	5/9/14	0528	5/6/14
2,3,4,7,8-PeCDF	**0.663**	JK	0.222	4.16	1.97	1.001	1	5/9/14	0528	5/6/14
1,2,3,4,7,8-HxCDF	**1.77**	J	0.263	4.16	1.27	1.000	1	5/9/14	0528	5/6/14
1,2,3,6,7,8-HxCDF	**0.663**	JK	0.235	4.16	1.02	1.000	1	5/9/14	0528	5/6/14
1,2,3,7,8,9-HxCDF	ND	U	0.304	4.16			1	5/9/14	0528	5/6/14
2,3,4,6,7,8-HxCDF	**0.940**	JK	0.252	4.16	1.01	1.000	1	5/9/14	0528	5/6/14
1,2,3,4,6,7,8-HpCDF	**19.8**		0.277	4.16	1.08	1.000	1	5/9/14	0528	5/6/14
1,2,3,4,7,8,9-HpCDF	**1.72**	J	0.359	4.16	1.16	1.000	1	5/9/14	0528	5/6/14
OCDF	**73.4**		0.254	8.32	0.94	1.005	1	5/9/14	0528	5/6/14
Total Tetra-Dioxins	**2.25**		0.316	0.832	0.82		1	5/9/14	0528	5/6/14
Total Penta-Dioxins	**2.10**	J	0.0876	4.16	1.53		1	5/9/14	0528	5/6/14
Total Hexa-Dioxins	**20.2**		0.137	4.16	1.28		1	5/9/14	0528	5/6/14
Total Hepta-Dioxins	**192**		0.319	4.16	1.06		1	5/9/14	0528	5/6/14
Total Tetra-Furans	ND	U	0.187	0.832			1	5/9/14	0528	5/6/14
Total Penta-Furans	**1.49**	J	0.104	4.16			1	5/9/14	0528	5/6/14
Total Hexa-Furans	**24.5**		0.261	4.16	1.24		1	5/9/14	0528	5/6/14
Total Hepta-Furans	**95.5**		0.316	4.16	1.08		1	5/9/14	0528	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/30/13 1440
Sample Matrix:	Soil	**Date Received:**	10/31/13
Sample Name:	RM11E-G072	**Units:**	Percent
Lab Code:	K1404419-003	**Basis:**	Dry
		Percent Solids:	57.6

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1192.562	60		25-164	0.79	1.022
13C-1,2,3,7,8-PeCDD	2000	1697.829	85		25-181	1.60	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1323.030	66		32-141	1.38	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1233.581	62		28-130	1.20	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1026.334	51		23-140	1.10	1.068
13C-OCDD	4000	1383.998	35		17-157	0.92	1.142
13C-2,3,7,8-TCDF	2000	1288.400	64		24-169	0.80	0.992
13C-1,2,3,7,8-PeCDF	2000	1214.322	61		24-185	1.61	1.149
13C-2,3,4,7,8-PeCDF	2000	1188.042	59		21-178	1.60	1.183
13C-1,2,3,4,7,8-HxCDF	2000	1047.907	52		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1172.875	59		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1175.969	59		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1197.382	60		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	753.250	38		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	868.069	43		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	377.981	47		35-197	NA	1.022

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/30/13 1440
Sample Matrix:	Soil	**Date Received:**	10/31/13
Sample Name:	RM11E-G072	**Units:**	ng/Kg
Lab Code:	K1404419-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.316	0.832	1	1	
1,2,3,7,8-PeCDD	**0.401**	0.0876	4.16	1	1	0.401
1,2,3,4,7,8-HxCDD	**0.722**	0.131	4.16	1	0.1	0.0722
1,2,3,6,7,8-HxCDD	**4.72**	0.146	4.16	1	0.1	0.472
1,2,3,7,8,9-HxCDD	**1.54**	0.134	4.16	1	0.1	0.154
1,2,3,4,6,7,8-HpCDD	**98.2**	0.319	4.16	1	0.01	0.982
OCDD	**650**	0.170	8.32	1	0.0003	0.195
2,3,7,8-TCDF	ND	0.187	0.832	1	0.1	
1,2,3,7,8-PeCDF	ND	0.226	4.16	1	0.03	
2,3,4,7,8-PeCDF	**0.663**	0.222	4.16	1	0.3	0.199
1,2,3,4,7,8-HxCDF	**1.77**	0.263	4.16	1	0.1	0.177
1,2,3,6,7,8-HxCDF	**0.663**	0.235	4.16	1	0.1	0.0663
1,2,3,7,8,9-HxCDF	ND	0.304	4.16	1	0.1	
2,3,4,6,7,8-HxCDF	**0.940**	0.252	4.16	1	0.1	0.0940
1,2,3,4,6,7,8-HpCDF	**19.8**	0.277	4.16	1	0.01	0.198
1,2,3,4,7,8,9-HpCDF	**1.72**	0.359	4.16	1	0.01	0.0172
OCDF	**73.4**	0.254	8.32	1	0.0003	0.0220
		Total TEQ				3.05

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/30/13 1440
Sample Matrix:	Soil	**Date Received:**	10/31/13
Sample Name:	RM11E-G072	**Units:**	Percent
Lab Code:	K1404419-003	**Basis:**	Dry
		Percent Solids:	57.6

Total Solids Run Create

Analytical Method: CAS SOP
Prep Method: None

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Total Solids	57.6			1	NA	5/7/14 16:34		391579	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/31/13 1655
Sample Matrix:	Soil	**Date Received:**	11/ 1/13
Sample Name:	RM11E-G075	**Units:**	ng/Kg
Lab Code:	K1404419-004	**Basis:**	Dry
		Percent Solids:	73.8

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	ND	U	0.264	0.676			1	5/9/14	0616	5/6/14
1,2,3,7,8-PeCDD	**0.325**	J	0.0793	3.38	1.59	1.001	1	5/9/14	0616	5/6/14
1,2,3,4,7,8-HxCDD	**0.904**	J	0.0637	3.38	1.12	1.000	1	5/9/14	0616	5/6/14
1,2,3,6,7,8-HxCDD	**6.29**		0.0734	3.38	1.30	1.001	1	5/9/14	0616	5/6/14
1,2,3,7,8,9-HxCDD	**1.77**	J	0.0661	3.38	1.31	1.007	1	5/9/14	0616	5/6/14
1,2,3,4,6,7,8-HpCDD	**162**		0.152	3.38	1.07	1.000	1	5/9/14	0616	5/6/14
OCDD	**1540**		0.149	6.76	0.91	1.000	1	5/9/14	0616	5/6/14
2,3,7,8-TCDF	ND	U	0.146	0.676			1	5/9/14	0616	5/6/14
1,2,3,7,8-PeCDF	**0.315**	JK	0.146	3.38	2.13	1.000	1	5/9/14	0616	5/6/14
2,3,4,7,8-PeCDF	**0.972**	JK	0.144	3.38	2.00	1.001	1	5/9/14	0616	5/6/14
1,2,3,4,7,8-HxCDF	**2.20**	J	0.334	3.38	1.32	1.000	1	5/9/14	0616	5/6/14
1,2,3,6,7,8-HxCDF	**0.695**	JK	0.296	3.38	1.55	1.000	1	5/9/14	0616	5/6/14
1,2,3,7,8,9-HxCDF	**0.562**	J	0.385	3.38	1.12	1.001	1	5/9/14	0616	5/6/14
2,3,4,6,7,8-HxCDF	**1.23**	JK	0.317	3.38	1.50	1.001	1	5/9/14	0616	5/6/14
1,2,3,4,6,7,8-HpCDF	**25.1**		0.493	3.38	1.05	1.000	1	5/9/14	0616	5/6/14
1,2,3,4,7,8,9-HpCDF	**1.89**	JK	0.662	3.38	0.82	1.000	1	5/9/14	0616	5/6/14
OCDF	**114**		0.196	6.76	0.90	1.005	1	5/9/14	0616	5/6/14
Total Tetra-Dioxins	**1.25**		0.264	0.676	0.87		1	5/9/14	0616	5/6/14
Total Penta-Dioxins	**1.26**	J	0.0793	3.38	1.67		1	5/9/14	0616	5/6/14
Total Hexa-Dioxins	**42.0**		0.0676	3.38	1.28		1	5/9/14	0616	5/6/14
Total Hepta-Dioxins	**441**		0.152	3.38	1.06		1	5/9/14	0616	5/6/14
Total Tetra-Furans	ND	U	0.146	0.676			1	5/9/14	0616	5/6/14
Total Penta-Furans	**3.71**		0.0736	3.38	1.48		1	5/9/14	0616	5/6/14
Total Hexa-Furans	**39.9**		0.330	3.38	1.21		1	5/9/14	0616	5/6/14
Total Hepta-Furans	**137**		0.574	3.38	1.05		1	5/9/14	0616	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/31/13 1655
Sample Matrix:	Soil	**Date Received:**	11/ 1/13
Sample Name:	RM11E-G075	**Units:**	Percent
Lab Code:	K1404419-004	**Basis:**	Dry
		Percent Solids:	73.8

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1208.593	60		25-164	0.77	1.022
13C-1,2,3,7,8-PeCDD	2000	1766.061	88		25-181	1.59	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1361.614	68		32-141	1.30	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1225.256	61		28-130	1.30	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1052.387	53		23-140	1.10	1.068
13C-OCDD	4000	1321.238	33		17-157	0.92	1.142
13C-2,3,7,8-TCDF	2000	1289.040	64		24-169	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1245.370	62		24-185	1.60	1.149
13C-2,3,4,7,8-PeCDF	2000	1229.247	61		21-178	1.59	1.182
13C-1,2,3,4,7,8-HxCDF	2000	1036.053	52		26-152	0.51	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1178.389	59		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1201.437	60		29-147	0.52	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1220.490	61		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	786.617	39		28-143	0.45	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	901.277	45		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	383.630	48		35-197	NA	1.022

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/31/13 1655
Sample Matrix:	Soil	**Date Received:**	11/ 1/13
Sample Name:	RM11E-G075	**Units:**	ng/Kg
Lab Code:	K1404419-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.264	0.676	1	1	
1,2,3,7,8-PeCDD	**0.325**	0.0793	3.38	1	1	0.325
1,2,3,4,7,8-HxCDD	**0.904**	0.0637	3.38	1	0.1	0.0904
1,2,3,6,7,8-HxCDD	**6.29**	0.0734	3.38	1	0.1	0.629
1,2,3,7,8,9-HxCDD	**1.77**	0.0661	3.38	1	0.1	0.177
1,2,3,4,6,7,8-HpCDD	**162**	0.152	3.38	1	0.01	1.62
OCDD	**1540**	0.149	6.76	1	0.0003	0.462
2,3,7,8-TCDF	ND	0.146	0.676	1	0.1	
1,2,3,7,8-PeCDF	**0.315**	0.146	3.38	1	0.03	0.00945
2,3,4,7,8-PeCDF	**0.972**	0.144	3.38	1	0.3	0.292
1,2,3,4,7,8-HxCDF	**2.20**	0.334	3.38	1	0.1	0.220
1,2,3,6,7,8-HxCDF	**0.695**	0.296	3.38	1	0.1	0.0695
1,2,3,7,8,9-HxCDF	**0.562**	0.385	3.38	1	0.1	0.0562
2,3,4,6,7,8-HxCDF	**1.23**	0.317	3.38	1	0.1	0.123
1,2,3,4,6,7,8-HpCDF	**25.1**	0.493	3.38	1	0.01	0.251
1,2,3,4,7,8,9-HpCDF	**1.89**	0.662	3.38	1	0.01	0.0189
OCDF	**114**	0.196	6.76	1	0.0003	0.0342
		Total TEQ				4.38

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	10/31/13 1655
Sample Matrix:	Soil	**Date Received:**	11/ 1/13
Sample Name:	RM11E-G075	**Units:**	Percent
Lab Code:	K1404419-004	**Basis:**	Dry
		Percent Solids:	73.8

Total Solids Run Create

Analytical Method: CAS SOP
Prep Method: None

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Total Solids	73.8			1	NA	5/7/14 16:34		391579	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1400225-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	ND	U	0.130	0.485			1	5/8/14	0651	5/6/14
1,2,3,7,8-PeCDD	ND	U	0.0695	2.43			1	5/8/14	0651	5/6/14
1,2,3,4,7,8-HxCDD	ND	U	0.0722	2.43			1	5/8/14	0651	5/6/14
1,2,3,6,7,8-HxCDD	ND	U	0.0809	2.43			1	5/8/14	0651	5/6/14
1,2,3,7,8,9-HxCDD	ND	U	0.0740	2.43			1	5/8/14	0651	5/6/14
1,2,3,4,6,7,8-HpCDD	**0.599**	J	0.116	2.43	0.96	1.000	1	5/8/14	0651	5/6/14
OCDD	**1.93**	J	0.131	4.85	0.90	1.000	1	5/8/14	0651	5/6/14
2,3,7,8-TCDF	ND	U	0.0510	0.485			1	5/8/14	0651	5/6/14
1,2,3,7,8-PeCDF	ND	U	0.0808	2.43			1	5/8/14	0651	5/6/14
2,3,4,7,8-PeCDF	ND	U	0.0781	2.43			1	5/8/14	0651	5/6/14
1,2,3,4,7,8-HxCDF	ND	U	0.104	2.43			1	5/8/14	0651	5/6/14
1,2,3,6,7,8-HxCDF	ND	U	0.0821	2.43			1	5/8/14	0651	5/6/14
1,2,3,7,8,9-HxCDF	ND	U	0.118	2.43			1	5/8/14	0651	5/6/14
2,3,4,6,7,8-HxCDF	ND	U	0.0863	2.43			1	5/8/14	0651	5/6/14
1,2,3,4,6,7,8-HpCDF	**0.233**	JK	0.128	2.43	0.82	1.000	1	5/8/14	0651	5/6/14
1,2,3,4,7,8,9-HpCDF	ND	U	0.262	2.43			1	5/8/14	0651	5/6/14
OCDF	**0.459**	JK	0.0845	4.85	1.12	1.005	1	5/8/14	0651	5/6/14
Total Tetra-Dioxins	ND	U	0.130	0.485			1	5/8/14	0651	5/6/14
Total Penta-Dioxins	ND	U	0.0695	2.43			1	5/8/14	0651	5/6/14
Total Hexa-Dioxins	ND	U	0.0758	2.43			1	5/8/14	0651	5/6/14
Total Hepta-Dioxins	**0.599**	J	0.116	2.43	0.96		1	5/8/14	0651	5/6/14
Total Tetra-Furans	ND	U	0.0510	0.485			1	5/8/14	0651	5/6/14
Total Penta-Furans	ND	U	0.0663	2.43			1	5/8/14	0651	5/6/14
Total Hexa-Furans	ND	U	0.0952	2.43			1	5/8/14	0651	5/6/14
Total Hepta-Furans	**0.493**	J	0.177	2.43	0.98		1	5/8/14	0651	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1400225-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1408.267	70		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1995.015	100		25-181	1.59	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1683.905	84		32-141	1.35	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1629.959	81		28-130	1.22	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1592.201	80		23-140	1.08	1.067
13C-OCDD	4000	2699.018	67		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1497.270	75		24-169	0.79	0.991
13C-1,2,3,7,8-PeCDF	2000	1401.388	70		24-185	1.58	1.149
13C-2,3,4,7,8-PeCDF	2000	1431.986	72		21-178	1.59	1.182
13C-1,2,3,4,7,8-HxCDF	2000	1165.964	58		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1505.269	75		26-123	0.53	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1353.255	68		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1540.146	77		28-136	0.53	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1270.582	64		28-143	0.45	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	901.509	45		26-138	0.45	1.080
37Cl-2,3,7,8-TCDD	800	441.636	55		35-197	NA	1.022

Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Soil

Service Request: K1404419
Date Analyzed: 5/ 8/14

Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Units: ng/Kg
Basis: Dry

Extraction Lot: 207775

	Lab Control Sample EQ1400225-02			Duplicate Lab Control Sample EQ1400225-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,3,7,8-TCDD	20.6	19.5	105	21.3	19.6	109	67 - 158	3	50
1,2,3,7,8-PeCDD	81.0	97.7	83	82.1	97.8	84	70 - 142	1	50
1,2,3,4,7,8-HxCDD	88.4	97.7	91	88.2	97.8	90	70 - 164	<1	50
1,2,3,6,7,8-HxCDD	95.8	97.7	98	96.1	97.8	98	76 - 134	<1	50
1,2,3,7,8,9-HxCDD	82.7	97.7	85	93.1	97.8	95	64 - 162	12	50
1,2,3,4,6,7,8-HpCDD	107	97.7	110	108	97.8	110	70 - 140	<1	50
OCDD	229	195	117	235	196	120	78 - 144	2	50
2,3,7,8-TCDF	16.9	19.5	86	17.0	19.6	87	75 - 158	<1	50
1,2,3,7,8-PeCDF	102	97.7	104	103	97.8	106	80 - 134	1	50
2,3,4,7,8-PeCDF	98.2	97.7	100	98.5	97.8	101	68 - 160	<1	50
1,2,3,4,7,8-HxCDF	102	97.7	104	103	97.8	105	72 - 134	1	50
1,2,3,6,7,8-HxCDF	89.7	97.7	92	91.7	97.8	94	84 - 130	2	50
1,2,3,7,8,9-HxCDF	97.4	97.7	100	100	97.8	103	78 - 130	3	50
2,3,4,6,7,8-HxCDF	91.2	97.7	93	91.7	97.8	94	70 - 156	<1	50
1,2,3,4,6,7,8-HpCDF	103	97.7	106	107	97.8	109	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	91.3	97.7	93	100	97.8	103	78 - 138	10	50
OCDF	213	195	109	203	196	104	63 - 170	5	50

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1400225-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	**20.6**		0.154	0.488	0.77	1.001	1	5/8/14	1012	5/6/14
1,2,3,7,8-PeCDD	**81.0**		0.102	2.44	1.62	1.001	1	5/8/14	1012	5/6/14
1,2,3,4,7,8-HxCDD	**88.4**		0.0559	2.44	1.25	1.001	1	5/8/14	1012	5/6/14
1,2,3,6,7,8-HxCDD	**95.8**		0.0611	2.44	1.26	1.000	1	5/8/14	1012	5/6/14
1,2,3,7,8,9-HxCDD	**82.7**		0.0566	2.44	1.28	1.007	1	5/8/14	1012	5/6/14
1,2,3,4,6,7,8-HpCDD	**107**		0.118	2.44	1.04	1.000	1	5/8/14	1012	5/6/14
OCDD	**229**		0.0841	4.88	0.89	1.000	1	5/8/14	1012	5/6/14
2,3,7,8-TCDF	**16.9**		0.0838	0.488	0.77	1.001	1	5/8/14	1012	5/6/14
1,2,3,7,8-PeCDF	**102**		0.101	2.44	1.60	1.001	1	5/8/14	1012	5/6/14
2,3,4,7,8-PeCDF	**98.2**		0.104	2.44	1.59	1.001	1	5/8/14	1012	5/6/14
1,2,3,4,7,8-HxCDF	**102**		0.0511	2.44	1.27	1.000	1	5/8/14	1012	5/6/14
1,2,3,6,7,8-HxCDF	**89.7**		0.0440	2.44	1.25	1.000	1	5/8/14	1012	5/6/14
1,2,3,7,8,9-HxCDF	**97.4**		0.0630	2.44	1.30	1.000	1	5/8/14	1012	5/6/14
2,3,4,6,7,8-HxCDF	**91.2**		0.0475	2.44	1.25	1.000	1	5/8/14	1012	5/6/14
1,2,3,4,6,7,8-HpCDF	**103**		0.179	2.44	1.02	1.000	1	5/8/14	1012	5/6/14
1,2,3,4,7,8,9-HpCDF	**91.3**		0.298	2.44	1.02	1.000	1	5/8/14	1012	5/6/14
OCDF	**213**		0.114	4.88	0.90	1.005	1	5/8/14	1012	5/6/14
Total Tetra-Dioxins	**20.6**		0.154	0.488	0.77		1	5/8/14	1012	5/6/14
Total Penta-Dioxins	**81.4**		0.102	2.44	1.62		1	5/8/14	1012	5/6/14
Total Hexa-Dioxins	**268**		0.0579	2.44	1.24		1	5/8/14	1012	5/6/14
Total Hepta-Dioxins	**117**		0.118	2.44	0.99		1	5/8/14	1012	5/6/14
Total Tetra-Furans	**17.5**		0.0838	0.488	0.69		1	5/8/14	1012	5/6/14
Total Penta-Furans	**203**		0.0553	2.44			1	5/8/14	1012	5/6/14
Total Hexa-Furans	**385**		0.0504	2.44	1.27		1	5/8/14	1012	5/6/14
Total Hepta-Furans	**218**		0.228	2.44	1.02		1	5/8/14	1012	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1400225-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1294.110	65		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1283.046	64		25-181	1.60	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1645.049	82		32-141	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1538.216	77		28-130	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1453.723	73		23-140	1.06	1.067
13C-OCDD	4000	2287.574	57		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1368.890	68		24-169	0.79	0.992
13C-1,2,3,7,8-PeCDF	2000	1221.758	61		24-185	1.63	1.149
13C-2,3,4,7,8-PeCDF	2000	1145.754	57		21-178	1.58	1.182
13C-1,2,3,4,7,8-HxCDF	2000	1254.775	63		26-152	0.52	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1427.282	71		26-123	0.53	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1268.310	63		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1473.518	74		28-136	0.53	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	965.625	48		28-143	0.45	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	832.726	42		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	398.093	50		35-197	NA	1.023

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1400225-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor	Date Analyzed	Time Analyzed	Date Extracted
2,3,7,8-TCDD	**21.3**		0.161	0.489	0.75	1.001	1	5/8/14	1100	5/6/14
1,2,3,7,8-PeCDD	**82.1**		0.0690	2.44	1.54	1.001	1	5/8/14	1100	5/6/14
1,2,3,4,7,8-HxCDD	**88.2**		0.0672	2.44	1.26	1.000	1	5/8/14	1100	5/6/14
1,2,3,6,7,8-HxCDD	**96.1**		0.0755	2.44	1.28	1.000	1	5/8/14	1100	5/6/14
1,2,3,7,8,9-HxCDD	**93.1**		0.0689	2.44	1.25	1.007	1	5/8/14	1100	5/6/14
1,2,3,4,6,7,8-HpCDD	**108**		0.0967	2.44	1.07	1.000	1	5/8/14	1100	5/6/14
OCDD	**235**		0.135	4.89	0.90	1.000	1	5/8/14	1100	5/6/14
2,3,7,8-TCDF	**17.0**		0.0653	0.489	0.77	1.001	1	5/8/14	1100	5/6/14
1,2,3,7,8-PeCDF	**103**		0.0998	2.44	1.58	1.001	1	5/8/14	1100	5/6/14
2,3,4,7,8-PeCDF	**98.5**		0.0994	2.44	1.56	1.001	1	5/8/14	1100	5/6/14
1,2,3,4,7,8-HxCDF	**103**		0.0759	2.44	1.25	1.000	1	5/8/14	1100	5/6/14
1,2,3,6,7,8-HxCDF	**91.7**		0.0673	2.44	1.23	1.000	1	5/8/14	1100	5/6/14
1,2,3,7,8,9-HxCDF	**100**		0.0928	2.44	1.25	1.000	1	5/8/14	1100	5/6/14
2,3,4,6,7,8-HxCDF	**91.7**		0.0717	2.44	1.28	1.000	1	5/8/14	1100	5/6/14
1,2,3,4,6,7,8-HpCDF	**107**		0.134	2.44	1.03	1.000	1	5/8/14	1100	5/6/14
1,2,3,4,7,8,9-HpCDF	**100**		0.233	2.44	1.03	1.000	1	5/8/14	1100	5/6/14
OCDF	**203**		0.152	4.89	0.92	1.004	1	5/8/14	1100	5/6/14
Total Tetra-Dioxins	**21.3**		0.161	0.489	0.75		1	5/8/14	1100	5/6/14
Total Penta-Dioxins	**82.1**		0.0690	2.44	1.54		1	5/8/14	1100	5/6/14
Total Hexa-Dioxins	**278**		0.0704	2.44	1.09		1	5/8/14	1100	5/6/14
Total Hepta-Dioxins	**118**		0.0967	2.44	0.99		1	5/8/14	1100	5/6/14
Total Tetra-Furans	**17.7**		0.0653	0.489	0.82		1	5/8/14	1100	5/6/14
Total Penta-Furans	**205**		0.0644	2.44			1	5/8/14	1100	5/6/14
Total Hexa-Furans	**392**		0.0758	2.44	1.37		1	5/8/14	1100	5/6/14
Total Hepta-Furans	**227**		0.175	2.44	1.03		1	5/8/14	1100	5/6/14

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404419
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1400225-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1236.424	62		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1752.347	88		25-181	1.60	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1474.318	74		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1356.877	68		28-130	1.31	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1312.993	66		23-140	1.07	1.068
13C-OCDD	4000	2044.198	51		17-157	0.92	1.142
13C-2,3,7,8-TCDF	2000	1332.935	67		24-169	0.80	0.992
13C-1,2,3,7,8-PeCDF	2000	1217.322	61		24-185	1.62	1.149
13C-2,3,4,7,8-PeCDF	2000	1201.455	60		21-178	1.61	1.183
13C-1,2,3,4,7,8-HxCDF	2000	1143.041	57		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1257.278	63		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1188.095	59		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1304.773	65		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	993.270	50		28-143	0.44	1.043
13C-1,2,3,4,7,8,9-HpCDF	2000	869.897	43		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	366.151	46		35-197	NA	1.023

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

May 22, 2014

Analytical Report for Service Request No: K1404420
Revised Service Request Number: K1404420.01

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed is the revised report for the samples submitted to our laboratory on May 03, 2014. For your reference, these analyses have been assigned our service request number K1404420.01.

Hexachlorobenzene has been added to the Chlorinated Pesticide data package for sample RM11E-G084 and the Case Narrative has been revised.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services Manager

GS/aj

RIGHT SOLUTIONS | RIGHT PARTNER

REVISED
8:00 am, May 22, 2014

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/ 487.002.004	**Date Received:**	05/03/14
Sample Matrix:	Water and Soil		

Revised Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and eleven soil samples were received for analysis at ALS Environmental on 05/03/14. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC and frozen at –20ºC as required upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Calibration Verification Exceptions:
The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 0507F033. The associated results for Decachlorobiphenyl were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

The upper control criterion was exceeded for Aroclor 1016 in Continuing Calibration Verification (CCV) 0507F033. The associated target Aroclors were not detected above the Method Reporting Limit (MRL) in the associated field samples. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Matrix Spike Recovery Exceptions:
The matrix spike/duplicate matrix spike recoveries of Aroclor 1260 for sample RM11E-G078 were outside control criteria. The variability in the results was attributed to the heterogeneous character of the sample. The sample contained relatively large amounts of sand and plant material (i.e., sticks and roots), which complicated the homogenization process. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample. Recovery in the associated Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate matrix spike analyses of Aroclor 1260 for sample RM11E-G078 was outside control criteria. The variability in the results was attributed to the heterogeneous character of the sample. The sample contained relatively large amounts of sand and plant material (i.e., sticks and roots), which complicated the homogenization process. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

Approved by_____

REVISED
8:00 am, May 22, 2014

Sample Confirmation Notes:
The confirmation comparison criterion of 40% difference was exceeded for Aroclor 1254 in samples RM11E-G081, RM11E-G085, and RM11E-G086. The lower of the two values was reported when no evidence of a matrix interference was observed.

Elevated Detection Limits:
The detection limit was elevated for one or more target Aroclors in several field samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

The detection limit was elevated for Aroclors 1221, 1232, 1242, 1248, and 1254 in Method Blank KWG1404093-3. The chromatogram indicated the presence of non-target background components that were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the normal limit. Note the level of background was relatively low compared to the normal detection limit, so the effect on the results was minimal. The results were flagged to indicate the interference.

The detection limits were elevated for all target Aroclors in sample RM11E-G087. The sample extract was black in color and viscous, which prevented concentration of the extract to the normal final volume. The sample was concentrated to the lowest feasible volume prior to instrumental analysis. The detection limits were elevated to reflect the higher final volume.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) for extraction lot KWG1404093. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for this extraction batch.

The sediment samples in this data set appear to have been subjected to environmental stresses such as weathering, causing pattern degradation and changing the peak ratios. When pattern degradation occurs, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, differentiating amongst the similar elution patterns of Aroclors 1016, 1232, 1242, and 1248 can be difficult. Care was taken to report the Aroclor(s) with the best pattern match.

Multiple target Aroclors were identified in several field samples: Aroclor 1248, Aroclor 1254, and/or Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

A review of the sample chromatograms for a few samples indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1248 was identified and quantitated for these samples. Although the presence of Aroclor 1242 could not be ruled out, Aroclor 1248 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclors 1254 and 1260 were identified based on the presence of later eluting PCB peaks in the chromatogram.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1248, 1254, and/or 1260 is present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

REVISED
8:00 am, May 22, 2014

Chlorinated Pesticides by GC/MS/MS

Internal Standard Exceptions:
The internal standard recovery of Pyrene-d10 in samples RM11E-G084, RM11E-G084MS, and RM11E-G084DMS was outside control criteria because of suspected matrix interference. That this effect was repeated in this triplicate analysis confirms that it is this samples matrix that is causing this. The results quantified using this internal standard were flagged to indicate the problem.

Matrix Spike Recovery Exceptions:
The matrix spike recoveries of several analytes for sample RM11E-G084 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for 2,4'-DDE in Laboratory Control Sample (LCS) KWG1404049-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

The upper control criterion was exceeded for 4,4'-DDE and Hexachlorobenzene in Laboratory Control Sample (LCS) KWG1404049-3. The %Recovery Limits are default limits in use until Laboratory Control Limits are established. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Second Source Exceptions:
The upper control criterion was exceeded for Dieldrin, and Oxychlordane in Initial Calibration Verification (ICV) 0513F015.D. The field samples analyzed with this ICV did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Elevated Detection Limits:
The detection limit was elevated for all analytes in sample RM11E-G084. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution.) The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

REVISED
8:00 am, May 22, 2014

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

GSI Water Solutions, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K1404420

Lab submittal: ALS Environmental, 1317 South 13th Ave., Kelso, WA 98626

Project Name: RM11E Supplemental RI/FS Investigation
Project Number: 487.002.004
Project Manager: Erin Carroll Hughes
Company/Address:
55 SW Yamhill Street, Suite 300
Portland, OR
Phone: (503) 239-8799 **Fax:** (503) 239-8940

Sampler's Signature: Erin Carroll Hughes

Analysis Requested

	Sample I.D.	Date	Time	LAB I.D.	Sample Matrix	Number of Containers[1]	Total organic carbon (Plumb 1981)	Total solids (PSEP 1986)	Grain size (ASTM D422-CB)	PCB Aroclors (8082)	High-Resolution Pesticides (EPA 1699M)	Dioxins/Furans (1613B)	Archive Frozen									REMARKS
1	RM11E-G078	5/2/2014	8:59		Sediment	4	X	X	X	X			A									
2	RM11E-G080	5/2/2014	9:55		Sediment	4	X	X	X	X			A									
3	RM11E-G081	5/2/2014	11:20		Sediment	4	X	X	X	X			A									
4	RM11E-G083	5/1/2014	12:00		Sediment	5	X	X	X	X		H	A									Hold dioxin/furan analysis until authorized
5	RM11E-G084	5/1/2014	11:17		Sediment	4	X	X	X	X	X		A									
6	RM11E-G085	5/2/2014	13:50		Sediment	4	X	X	X	X			A									
7	RM11E-G086	5/2/2014	12:55		Sediment	5	X	X	X	X		H	A									Hold D/F analysis until authorized
8	RM11E-G087	5/2/2014	15:10		Sediment	5	X	X	X	X		X	A									
9	RM11E-G088	5/1/2014	14:40		Sediment	5	X	X	X	R		R	A									3 Day Rush on PCB and D/Fs
10	RM11E-G089	5/1/2014	13:50		Sediment	4	H	H	H	H		H	A									Hold analysis until authorized. Archive extra material.
11	RM11E-G578	5/2/2014	9:20		Sediment	2	X	X	X	X			A									
12	RM11E-G978	5/2/2014	8:15		Water	3	X			X			A									

Relinquished By	Received By
Signature: Erin Carroll Hughes	Signature: [illegible]
Printed Name: Erin Carroll Hughes	Printed Name: [illegible]
Firm: GSI Water Solutions	Firm: [illegible]
Date/Time: 5/3/13 800	Date/Time: 4-5-14 8:00

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr ___ 5 day

R — Rush 3 days for preliminary results; 5-7 for report. Email preliminary results as soon as available

X — Rush 7 days

H — Hold until verbal authorization is granted to run. Dependent upon results of RM11E-G088.

A — Two 8-oz jars provided for frozen archival

Requested Report Date: 12-May-14

REPORT REQUIREMENTS

___ I. Routine Report

X II. Report (includes DUP, MS MSD, as required, may be charged as samples)

X III. Data Validation Report (includes All Raw Data)

___ RWQCB (MDLs/PQLs/TRACE#)

INVOICE INFORMATION

P.O. #: ___

Bill to: Same as above

SAMPLE RECEIPT

Shipping VIA: ___

Shipping #: ___

Condition: ___

Lab No: ___

Relinquished By	Received By
Signature: [illegible]	Signature: [illegible]
Printed Name:	Printed Name: ALS
Firm:	Firm: 5/3/14 0900
Date/Time:	Date/Time:

Special Instructions/Comments:

Per Final Surface Sediment Sampling and Analysis Workplan Addendum (October 2013) and the contract between GSI and ALS.
See recent email communication or contact Greg Salata on the need for rushed and phase analysis. 14 day TAT requested on all with 3 day preliminary results on the PCB and Dioxin/Furan analysis for RM11E-G088. Please hold Dioxin/Furan analysis on RM11E-G083, -G086, and G089 until results of G088 are received and Erin provides verbal authorization to proceed. For efficiency, please ship those bottles to Houston along with RM11E-G088 **and two existing archived samples (RM11E-G072 [K1311862-004] and RM11E-G075 [K1311918-007]) together**. Dioxin/Furan analysis should be commenced immediately on RM11E-G087, RM11E-G088, K1311862-004, and K1311918-007.

Samples provided in 3 coolers.

Please call Erin Carroll Hughes with questions at 971-200-8528 (cell: 503-927-4553) or echughes@gsiws.com

PC Greg

Cooler Receipt and Preservation Form

Client / Project: GS 1 Service Request *K14* 4490

Received: 5/3/14 Opened: 5/3/14 By: [illegible] Unloaded: 5/3/14 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front + back 1, 8
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
5.3	5.1	5.7	5.5	-0.2	321			
3.0	3.1	1.3	1.4	+0.1	334			
5.8	5.8	2.8	2.8	Ø	323			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G078
Lab Code: K1404420-001

Sand Fraction: Weight (Grams)	25.2603
Sand Fraction: Weight Recovered (Grams)	25.2803
Sand Fraction: Percent Recovery	100.08

Weight as received (Grams)	51.0366
Percent Solids	68.2
Weight Oven-Dried (Grams)	34.8070

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.1923	0.55
Gravel, Fine	2.00 mm	10	0.6215	1.79
Sand, Very Coarse	0.850 mm	20	0.5276	1.52
Sand, Coarse	0.425 mm	40	0.3751	1.08
Sand, Medium	0.250 mm	60	1.5612	4.49
Sand, Fine	0.106 mm	140	16.6964	47.97
Sand, Very Fine	0.075 mm	200	4.0661	11.68
Silt			5.9250	17.0
Clay			1.8850	5.4
		Total	31.8502	91.5

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G080
Lab Code: K1404420-002

Sand Fraction: Weight (Grams)	27.7893
Sand Fraction: Weight Recovered (Grams)	27.8129
Sand Fraction: Percent Recovery	100.08

Weight as received (Grams)	52.2329
Percent Solids	65.6
Weight Oven-Dried (Grams)	34.2648

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	2.7668	8.07
Gravel, Fine	2.00 mm	10	5.0748	14.81
Sand, Very Coarse	0.850 mm	20	3.4601	10.10
Sand, Coarse	0.425 mm	40	1.8713	5.46
Sand, Medium	0.250 mm	60	2.6627	7.77
Sand, Fine	0.106 mm	140	8.6949	25.38
Sand, Very Fine	0.075 mm	200	2.3734	6.93
Silt			5.8950	17.2
Clay			1.4700	4.3
		Total	34.2690	100.01

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G081
Lab Code: K1404420-003

Sand Fraction: Weight (Grams)	9.6685
Sand Fraction: Weight Recovered (Grams)	9.6410
Sand Fraction: Percent Recovery	99.72

Weight as received (Grams)	37.6768
Percent Solids	51.4
Weight Oven-Dried (Grams)	19.3659

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.2557	1.32
Gravel, Fine	2.00 mm	10	0.1229	0.63
Sand, Very Coarse	0.850 mm	20	0.0917	0.47
Sand, Coarse	0.425 mm	40	0.1012	0.52
Sand, Medium	0.250 mm	60	0.3557	1.84
Sand, Fine	0.106 mm	140	5.5929	28.88
Sand, Very Fine	0.075 mm	200	2.0121	10.39
Silt			8.8150	45.5
Clay			2.4700	12.8
		Total	19.8172	102.32

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/1/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G083
Lab Code: K1404420-004

Sand Fraction: Weight (Grams)	13.8905
Sand Fraction: Weight Recovered (Grams)	13.7552
Sand Fraction: Percent Recovery	99.03

Weight as received (Grams)	53.8414
Percent Solids	41.9
Weight Oven-Dried (Grams)	22.5595

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0893	0.40
Gravel, Fine	2.00 mm	10	0.5204	2.31
Sand, Very Coarse	0.850 mm	20	0.3313	1.47
Sand, Coarse	0.425 mm	40	0.2314	1.03
Sand, Medium	0.250 mm	60	0.6014	2.67
Sand, Fine	0.106 mm	140	7.3486	32.57
Sand, Very Fine	0.075 mm	200	2.9877	13.24
Silt			9.3750	41.6
Clay			0.4200	1.9
		Total	21.9051	97.11

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/1/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G084
Lab Code: K1404420-005

Sand Fraction: Weight (Grams)	29.8946
Sand Fraction: Weight Recovered (Grams)	29.8186
Sand Fraction: Percent Recovery	99.75

Weight as received (Grams)	50.6353
Percent Solids	65.1
Weight Oven-Dried (Grams)	32.9636

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	22.7862	69.13
Gravel, Fine	2.00 mm	10	1.4017	4.25
Sand, Very Coarse	0.850 mm	20	1.0182	3.09
Sand, Coarse	0.425 mm	40	0.6569	1.99
Sand, Medium	0.250 mm	60	0.5822	1.77
Sand, Fine	0.106 mm	140	1.6508	5.01
Sand, Very Fine	0.075 mm	200	1.2187	3.70
Silt			5.2800	16.0
Clay			1.1700	3.6
		Total	35.7647	108.51

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G085
Lab Code: K1404420-006

Sand Fraction: Weight (Grams)	67.9898
Sand Fraction: Weight Recovered (Grams)	68.0465
Sand Fraction: Percent Recovery	100.08

Weight as received (Grams)	85.1543
Percent Solids	77.9
Weight Oven-Dried (Grams)	66.3352

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	47.4664	71.56
Gravel, Fine	2.00 mm	10	8.7303	13.16
Sand, Very Coarse	0.850 mm	20	4.4502	6.71
Sand, Coarse	0.425 mm	40	2.6558	4.00
Sand, Medium	0.250 mm	60	2.3271	3.51
Sand, Fine	0.106 mm	140	2.0108	3.03
Sand, Very Fine	0.075 mm	200	0.3308	0.50
Silt			1.6400	2.5
Clay			0.0650	0.1
		Total	69.6764	105.04

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G086
Lab Code: K1404420-007

Sand Fraction: Weight (Grams)	48.3507
Sand Fraction: Weight Recovered (Grams)	48.4687
Sand Fraction: Percent Recovery	100.24

Weight as received (Grams)	62.0863
Percent Solids	80.2
Weight Oven-Dried (Grams)	49.7932

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	18.2127	36.58
Gravel, Fine	2.00 mm	10	4.1929	8.42
Sand, Very Coarse	0.850 mm	20	3.3901	6.81
Sand, Coarse	0.425 mm	40	4.5807	9.20
Sand, Medium	0.250 mm	60	7.8988	15.86
Sand, Fine	0.106 mm	140	8.8108	17.69
Sand, Very Fine	0.075 mm	200	1.1774	2.36
Silt			1.2700	2.6
Clay			0.2900	0.6
		Total	49.8234	100.05

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G087
Lab Code: K1404420-008

Sand Fraction: Weight (Grams)	31.4474
Sand Fraction: Weight Recovered (Grams)	31.4942
Sand Fraction: Percent Recovery	100.15

Weight as received (Grams)	44.8458
Percent Solids	75.9
Weight Oven-Dried (Grams)	34.0380

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	7.4884	22.00
Gravel, Fine	2.00 mm	10	5.6030	16.46
Sand, Very Coarse	0.850 mm	20	4.5061	13.24
Sand, Coarse	0.425 mm	40	4.4483	13.07
Sand, Medium	0.250 mm	60	3.3003	9.70
Sand, Fine	0.106 mm	140	4.9061	14.41
Sand, Very Fine	0.075 mm	200	1.0417	3.06
Silt			1.9300	5.7
Clay			0.3900	1.2
		Total	33.6139	98.76

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/1/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G088
Lab Code: K1404420-009

Sand Fraction: Weight (Grams)	16.4719
Sand Fraction: Weight Recovered (Grams)	16.4375
Sand Fraction: Percent Recovery	99.79

Weight as received (Grams)	48.7594
Percent Solids	69.9
Weight Oven-Dried (Grams)	34.0828

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	1.4623	4.29
Gravel, Fine	2.00 mm	10	1.3044	3.83
Sand, Very Coarse	0.850 mm	20	0.4680	1.37
Sand, Coarse	0.425 mm	40	0.3967	1.16
Sand, Medium	0.250 mm	60	0.4907	1.44
Sand, Fine	0.106 mm	140	6.1044	17.91
Sand, Very Fine	0.075 mm	200	3.2624	9.57
Silt			14.3550	42.1
Clay			3.1500	9.2
		Total	30.9939	90.93

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/1/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G089
Lab Code: K1404420-010

Sand Fraction: Weight (Grams)	38.6145
Sand Fraction: Weight Recovered (Grams)	38.8569
Sand Fraction: Percent Recovery	100.63

Weight as received (Grams)	68.7049
Percent Solids	62.8
Weight Oven-Dried (Grams)	43.1467

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	10.1347	23.49
Gravel, Fine	2.00 mm	10	1.9167	4.44
Sand, Very Coarse	0.850 mm	20	1.3685	3.17
Sand, Coarse	0.425 mm	40	1.5513	3.60
Sand, Medium	0.250 mm	60	3.9174	9.08
Sand, Fine	0.106 mm	140	13.2657	30.75
Sand, Very Fine	0.075 mm	200	4.7307	10.96
Silt			2.8950	6.7
Clay			2.4750	5.7
		Total	42.2550	97.94

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G578
Lab Code: K1404420-011

Sand Fraction: Weight (Grams)	31.9039
Sand Fraction: Weight Recovered (Grams)	32.2487
Sand Fraction: Percent Recovery	101.08

Weight as received (Grams)	66.3325
Percent Solids	62.8
Weight Oven-Dried (Grams)	41.6568

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.6945	1.67
Gravel, Fine	2.00 mm	10	0.5253	1.26
Sand, Very Coarse	0.850 mm	20	0.6593	1.58
Sand, Coarse	0.425 mm	40	0.4784	1.15
Sand, Medium	0.250 mm	60	1.9561	4.70
Sand, Fine	0.106 mm	140	22.0048	52.82
Sand, Very Fine	0.075 mm	200	4.2200	10.13
Silt			8.5150	20.4
Clay			2.6200	6.3
		Total	41.6734	100.04

ALS Group USA, Corp.
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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.0	**Date Collected:**	5/2/2014
Sample Matrix:	Sediment	**Date Received:**	5/3/2014
		Date Analyzed:	5/6/2014

Particle Size Determination
ASTM D422M

Sample Name: RM11E-G078
Lab Code: K1404420-001DUP

Sand Fraction: Weight (Grams)	25.4145
Sand Fraction: Weight Recovered (Grams)	25.7576
Sand Fraction: Percent Recovery	101.35

Weight as received (Grams)	50.7495
Percent Solids	68.2
Weight Oven-Dried (Grams)	34.6112

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.3433	0.99
Gravel, Fine	2.00 mm	10	0.6797	1.96
Sand, Very Coarse	0.850 mm	20	0.5889	1.70
Sand, Coarse	0.425 mm	40	0.3719	1.07
Sand, Medium	0.250 mm	60	1.8382	5.31
Sand, Fine	0.106 mm	140	17.3377	50.09
Sand, Very Fine	0.075 mm	200	3.7146	10.73
Silt			5.8500	16.9
Clay			1.8750	5.4
		Total	32.5993	94.17

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/3/14
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-G078	K1404420-001	**0.875**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G080	K1404420-002	**2.22**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G081	K1404420-003	**2.09**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G083	K1404420-004	**2.30**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G084	K1404420-005	**2.50**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G085	K1404420-006	**1.35**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G086	K1404420-007	**0.487**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G087	K1404420-008	**2.87**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G088	K1404420-009	**1.27**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G578	K1404420-011	**1.00**	0.050	0.020	1	05/08/14 13:30	5/8/14	
Method Blank	K1404420-MB2	ND U	0.050	0.020	1	05/08/14 13:30	5/8/14	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
		Date Analyzed:	05/08/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G078	**Units:**	Percent
Lab Code:	K1404420-001	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1404420-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	PSEP TOC	0.050	0.020	0.875	0.850	0.862	3	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
		Date Analyzed:	05/8/14
		Date Extracted:	05/8/14

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-G078	**Units:**	Percent
Lab Code:	K1404420-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1404420-001MS			**Duplicate Matrix Spike** K1404420-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.875	3.96	3.06	101	3.91	3.04	100	69-123	<1	27

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/14
Sample Matrix:	Sediment	**Date Extracted:**	05/08/14

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	391889

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1404420-LCS1	0.255	0.275	93	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	391889	KQ1404985-01	05/08/14 13:30	20.0	19.8	99	90-110
CCV2	391889	KQ1404985-02	05/08/14 13:30	20.0	19.7	98	90-110
CCV3	391889	KQ1404985-03	05/08/14 13:30	20.0	19.9	99	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	391889	KQ1404985-04	05/08/14 13:30	0.050	0.020	ND	U
CCB2	391889	KQ1404985-05	05/08/14 13:30	0.050	0.020	ND	U
CCB3	391889	KQ1404985-06	05/08/14 13:30	0.050	0.020	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/3/14
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G078	K1404420-001	**64.3**	-	-	1	05/07/14 14:50	
RM11E-G080	K1404420-002	**66.5**	-	-	1	05/07/14 14:50	
RM11E-G081	K1404420-003	**52.0**	-	-	1	05/07/14 14:50	
RM11E-G083	K1404420-004	**42.8**	-	-	1	05/07/14 14:50	
RM11E-G084	K1404420-005	**60.2**	-	-	1	05/07/14 14:50	
RM11E-G085	K1404420-006	**78.7**	-	-	1	05/07/14 14:50	
RM11E-G086	K1404420-007	**79.1**	-	-	1	05/07/14 14:50	
RM11E-G087	K1404420-008	**73.2**	-	-	1	05/07/14 14:50	
RM11E-G088	K1404420-009	**66.1**	-	-	1	05/07/14 14:50	
RM11E-G578	K1404420-011	**62.5**	-	-	1	05/07/14 14:50	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	5/2/14
Sample Matrix:	Sediment	**Date Received:**	5/3/14
		Date Analyzed:	5/ 7/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G078	**Units:**	Percent
Lab Code:	K1404420-001	**Basis:**	As Received

Analyte Name	MRL	MDL	Sample Result	RM11E-G078DUP Duplicate Sample K1404420-001DUP Result	RM11E-G078TRP Triplicate Sample K1404420-001TRP Result	Average	RSD	RSD Limit
Solids, Total			64.3	63.6	63.5	63.8	<1	10

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/2/14
Sample Matrix:	Water	**Date Received:**	05/3/14
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G978	K1404420-012	**0.09 J**	0.50	0.07	1	05/05/14 16:11	
Method Blank	K1404420-MB1	ND U	0.50	0.07	1	05/05/14 16:11	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/14
Sample Matrix:	Water	**Date Received:**	05/03/14
		Date Analyzed:	05/05/14

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	RM11E-G978	**Units:**	mg/L
Lab Code:	K1404420-012	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1404420-012DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.07	0.09	0.08	0.0865	8	10

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/14
Sample Matrix:	Water	**Date Received:**	05/03/14
		Date Analyzed:	05/5/14
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	RM11E-G978	**Units:**	mg/L
Lab Code:	K1404420-012	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1404420-012MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.09 J	24.4	25.0	97	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/05/14
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	391170

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1404420-LCS2	17.8	18.1	98	83-117

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	391170	KQ1404787-03	05/05/14 16:11	25.0	25.1	100	90-110
CCV2	391170	KQ1404787-04	05/05/14 16:11	25.0	24.7	99	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	391170	KQ1404787-05	05/05/14 16:11	0.50	0.07	ND	U
CCB2	391170	KQ1404787-06	05/05/14 16:11	0.50	0.07	ND	U

Polychlorinated Biphenyls

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G078	K1404420-001	05/02/2014	05/03/2014
RM11E-G080	K1404420-002	05/02/2014	05/03/2014
RM11E-G081	K1404420-003	05/02/2014	05/03/2014
RM11E-G083	K1404420-004	05/01/2014	05/03/2014
RM11E-G084	K1404420-005	05/01/2014	05/03/2014
RM11E-G085	K1404420-006	05/02/2014	05/03/2014
RM11E-G086	K1404420-007	05/02/2014	05/03/2014
RM11E-G087	K1404420-008	05/02/2014	05/03/2014
RM11E-G578	K1404420-011	05/02/2014	05/03/2014
RM11E-G978	K1404420-012	05/02/2014	05/03/2014
RM11E-G078MS	KWG1404167-1	05/02/2014	05/03/2014
RM11E-G078DMS	KWG1404167-2	05/02/2014	05/03/2014

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Water	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G978	**Units:**	ug/L
Lab Code:	K1404420-012	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	0.0053	0.0013	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1221	ND	Ui	0.011	0.0047	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1232	ND	Ui	0.0053	0.0046	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1242	ND	Ui	0.0053	0.0017	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1248	ND	U	0.0053	0.0011	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1254	ND	U	0.0053	0.0011	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1260	ND	U	0.0053	0.0011	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1262	ND	U	0.0053	0.0011	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1268	ND	U	0.0053	0.0011	1	05/05/14	05/06/14	KWG1404093	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	39-140	05/06/14	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1404093-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.00096	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1221	ND	Ui	0.010	0.0054	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1232	ND	Ui	0.0050	0.0043	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1242	ND	Ui	0.0050	0.0011	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1248	ND	Ui	0.0050	0.0017	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1254	ND	Ui	0.0050	0.0015	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1260	ND	U	0.0050	0.00096	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1262	ND	U	0.0050	0.00096	1	05/05/14	05/06/14	KWG1404093	
Aroclor 1268	ND	U	0.0050	0.00096	1	05/05/14	05/06/14	KWG1404093	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	39-140	05/06/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G078	**Units:**	ug/Kg
Lab Code:	K1404420-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	7.8	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**510**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G080	**Units:**	ug/Kg
Lab Code:	K1404420-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	7.6	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**130**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	90	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G081	**Units:**	ug/Kg
Lab Code:	K1404420-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	16	16	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	9.7	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	Ui	15	15	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	Ui	9.8	9.8	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	Ui	28	28	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	**58**	P	4.9	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**68**		4.9	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.9	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.9	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G083	**Units:**	ug/Kg
Lab Code:	K1404420-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	16	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	**3.6**	JP	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**11**		7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	7.8	3.3	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G084	**Units:**	ug/Kg
Lab Code:	K1404420-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	31	31	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	Ui	8.3	7.0	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	Ui	45	45	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	Ui	22	22	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	Ui	19	19	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	**63**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**34**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G085	**Units:**	ug/Kg
Lab Code:	K1404420-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	6.4	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	**25**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	**23**	P	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**15**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G086	**Units:**	ug/Kg
Lab Code:	K1404420-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	6.4	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	**19**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	**13**	P	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**8.9**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G087	**Units:**	ug/Kg
Lab Code:	K1404420-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	26	26	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	18	3.6	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	Ui	30	30	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	Ui	24	24	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	Ui	31	31	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	8.6	3.6	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**250**		8.6	3.6	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	8.6	3.6	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	8.6	3.6	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G578	**Units:**	ug/Kg
Lab Code:	K1404420-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	5.9	5.9	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	8.0	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	Ui	5.8	5.8	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	Ui	5.6	5.6	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	Ui	8.9	8.9	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**150**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1404167-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	5.0	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	89	43-148	05/08/14	Acceptable

Comments:

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Water

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535A **Units:** Percent
Analysis Method: 8082A **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-G978	K1404420-012	83
Method Blank	KWG1404093-3	81
Lab Control Sample	KWG1404093-1	86
Duplicate Lab Control Sample	KWG1404093-2	81

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 39-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Sediment

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: 8082A **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-G078	K1404420-001	83
RM11E-G080	K1404420-002	90
RM11E-G081	K1404420-003	78
RM11E-G083	K1404420-004	75
RM11E-G084	K1404420-005	68
RM11E-G085	K1404420-006	84
RM11E-G086	K1404420-007	84
RM11E-G087	K1404420-008	81
RM11E-G578	K1404420-011	73
Method Blank	KWG1404167-4	89
RM11E-G078MS	KWG1404167-1	82
RM11E-G078DMS	KWG1404167-2	89
Lab Control Sample	KWG1404167-3	82

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G078	**Units:**	ug/Kg
Lab Code:	K1404420-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404167

		RM11E-G078MS KWG1404167-1 Matrix Spike			RM11E-G078DMS KWG1404167-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	122	154	80	149	154	97	23-145	19	40
Aroclor 1260	510	267	154	-155 *	435	154	-46 *	24-148	48 *	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Water	**Date Analyzed:**	05/06/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Units:**	ug/L
Analysis Method:	8082A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1404093

	Lab Control Sample KWG1404093-1 Lab Control Spike			Duplicate Lab Control Sample KWG1404093-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	0.142	0.200	71	0.139	0.200	70	60-103	2	30
Aroclor 1260	0.154	0.200	77	0.152	0.200	76	60-103	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1404167

	Lab Control Sample KWG1404167-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	155	200	77	42-122
Aroclor 1260	157	200	78	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Water	**Date Analyzed:**	05/06/2014
		Time Analyzed:	01:56

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC22.i
Lab Code:	KWG1404093-3	**File ID:**	J:\GC22\DATA\050514UL.B\0505F010.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404093

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1404093-1	J:\GC22\DATA\050514UL.B\0505F008.D	05/06/14	01:10
Duplicate Lab Control Sample	KWG1404093-2	J:\GC22\DATA\050514UL.B\0505F009.D	05/06/14	01:33
RM11E-G978	K1404420-012	J:\GC22\DATA\050514UL.B\0505F011.D	05/06/14	02:19

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014
		Time Analyzed:	01:44

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC28.i
Lab Code:	KWG1404167-4	**File ID:**	J:\GC28\DATA\050714.B\0507F018.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404167

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1404167-3	J:\GC28\DATA\050714.B\0507F017.D	05/08/14	01:21
RM11E-G078	K1404420-001	J:\GC28\DATA\050714.B\0507F019.D	05/08/14	02:06
RM11E-G078MS	KWG1404167-1	J:\GC28\DATA\050714.B\0507F020.D	05/08/14	02:28
RM11E-G078DMS	KWG1404167-2	J:\GC28\DATA\050714.B\0507F021.D	05/08/14	02:50
RM11E-G080	K1404420-002	J:\GC28\DATA\050714.B\0507F022.D	05/08/14	03:13
RM11E-G081	K1404420-003	J:\GC28\DATA\050714.B\0507F023.D	05/08/14	03:35
RM11E-G083	K1404420-004	J:\GC28\DATA\050714.B\0507F024.D	05/08/14	03:57
RM11E-G084	K1404420-005	J:\GC28\DATA\050714.B\0507F025.D	05/08/14	04:20
RM11E-G085	K1404420-006	J:\GC28\DATA\050714.B\0507F026.D	05/08/14	04:42
RM11E-G086	K1404420-007	J:\GC28\DATA\050714.B\0507F027.D	05/08/14	05:04
RM11E-G087	K1404420-008	J:\GC28\DATA\050714.B\0507F028.D	05/08/14	05:27
RM11E-G578	K1404420-011	J:\GC28\DATA\050714.B\0507F032.D	05/08/14	06:56

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Water	**Date Analyzed:**	05/06/2014
		Time Analyzed:	01:10

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC22.i
Lab Code:	KWG1404093-1	**File ID:**	J:\GC22\DATA\050514UL.B\0505F008.D
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404093

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1404093-3	J:\GC22\DATA\050514UL.B\0505F010.D	05/06/14	01:56
RM11E-G978	K1404420-012	J:\GC22\DATA\050514UL.B\0505F011.D	05/06/14	02:19

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014
		Time Analyzed:	01:21

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC28.i
Lab Code:	KWG1404167-3	**File ID:**	J:\GC28\DATA\050714.B\0507F017.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404167

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1404167-4	J:\GC28\DATA\050714.B\0507F018.D	05/08/14	01:44
RM11E-G078	K1404420-001	J:\GC28\DATA\050714.B\0507F019.D	05/08/14	02:06
RM11E-G078MS	KWG1404167-1	J:\GC28\DATA\050714.B\0507F020.D	05/08/14	02:28
RM11E-G078DMS	KWG1404167-2	J:\GC28\DATA\050714.B\0507F021.D	05/08/14	02:50
RM11E-G080	K1404420-002	J:\GC28\DATA\050714.B\0507F022.D	05/08/14	03:13
RM11E-G081	K1404420-003	J:\GC28\DATA\050714.B\0507F023.D	05/08/14	03:35
RM11E-G083	K1404420-004	J:\GC28\DATA\050714.B\0507F024.D	05/08/14	03:57
RM11E-G084	K1404420-005	J:\GC28\DATA\050714.B\0507F025.D	05/08/14	04:20
RM11E-G085	K1404420-006	J:\GC28\DATA\050714.B\0507F026.D	05/08/14	04:42
RM11E-G086	K1404420-007	J:\GC28\DATA\050714.B\0507F027.D	05/08/14	05:04
RM11E-G087	K1404420-008	J:\GC28\DATA\050714.B\0507F028.D	05/08/14	05:27
RM11E-G578	K1404420-011	J:\GC28\DATA\050714.B\0507F032.D	05/08/14	06:56

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

Level ID	File ID	Level ID	File ID
A	\\cash1\acqudata\GC22\data\030514UL.b\0305F005.D	Q	\\cash1\acqudata\GC22\data\030514UL.b\0305F021.D
B	\\cash1\acqudata\GC22\data\030514UL.b\0305F006.D	R	\\cash1\acqudata\GC22\data\030514UL.b\0305F022.D
C	\\cash1\acqudata\GC22\data\030514UL.b\0305F007.D	S	\\cash1\acqudata\GC22\data\030514UL.b\0305F023.D
D	\\cash1\acqudata\GC22\data\030514UL.b\0305F008.D	T	\\cash1\acqudata\GC22\data\030514UL.b\0305F024.D
E	\\cash1\acqudata\GC22\data\030514UL.b\0305F009.D	U	\\cash1\acqudata\GC22\data\030514UL.b\0305F025.D
F	\\cash1\acqudata\GC22\data\030514UL.b\0305F010.D	V	\\cash1\acqudata\GC22\data\030514UL.b\0305F026.D
G	\\cash1\acqudata\GC22\data\030514UL.b\0305F011.D	W	\\cash1\acqudata\GC22\data\030514UL.b\0305F027.D
H	\\cash1\acqudata\GC22\data\030514UL.b\0305F012.D	X	\\cash1\acqudata\GC22\data\030514UL.b\0305F028.D
I	\\cash1\acqudata\GC22\data\030514UL.b\0305F013.D	Y	\\cash1\acqudata\GC22\data\030514UL.b\0305F029.D
J	\\cash1\acqudata\GC22\data\030514UL.b\0305F014.D	Z	\\cash1\acqudata\GC22\data\030514UL.b\0305F030.D
K	\\cash1\acqudata\GC22\data\030514UL.b\0305F015.D	AA	\\cash1\acqudata\GC22\data\030514UL.b\0305F031.D
L	\\cash1\acqudata\GC22\data\030514UL.b\0305F016.D	AB	\\cash1\acqudata\GC22\data\030514UL.b\0305F032.D
M	\\cash1\acqudata\GC22\data\030514UL.b\0305F017.D	AC	\\cash1\acqudata\GC22\data\030514UL.b\0305F033.D
N	\\cash1\acqudata\GC22\data\030514UL.b\0305F018.D	AD	\\cash1\acqudata\GC22\data\030514UL.b\0305F034.D
O	\\cash1\acqudata\GC22\data\030514UL.b\0305F019.D		
P	\\cash1\acqudata\GC22\data\030514UL.b\0305F020.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	6.96E+6	B	0.50	6.80E+6	C	2.5	6.01E+6	D	5.0	5.68E+6	E	25	5.17E+6
	F	50	5.14E+6												
Aroclor 1016 {1}	A	2.5	98400	B	5.0	1.06E+5	C	25	1.09E+5	D	50	1.10E+5	E	250	92400
	F	500	87500												
Aroclor 1016 {2}	A	2.5	3.49E+5	B	5.0	3.71E+5	C	25	3.22E+5	D	50	3.21E+5	E	250	3.12E+5
	F	500	2.89E+5												
Aroclor 1016 {3}	A	2.5	2.37E+5	B	5.0	2.25E+5	C	25	2.04E+5	D	50	1.92E+5	E	250	1.71E+5
	F	500	1.66E+5												
Aroclor 1016 {4}	A	2.5	2.01E+5	B	5.0	2.03E+5	C	25	1.70E+5	D	50	1.55E+5	E	250	1.32E+5
	F	500	1.27E+5												
Aroclor 1016 {5}	A	2.5	2.02E+5	B	5.0	1.96E+5	C	25	1.75E+5	D	50	1.58E+5	E	250	1.37E+5
	F	500	1.33E+5												
Aroclor 1260 {1}	A	2.5	3.63E+5	B	5.0	3.54E+5	C	25	3.10E+5	D	50	2.92E+5	E	250	2.62E+5
	F	500	2.57E+5												
Aroclor 1260 {2}	A	2.5	2.01E+5	B	5.0	1.85E+5	C	25	1.67E+5	D	50	1.61E+5	E	250	1.47E+5
	F	500	1.50E+5												
Aroclor 1260 {3}	A	2.5	2.90E+5	B	5.0	2.93E+5	C	25	2.66E+5	D	50	2.51E+5	E	250	2.27E+5
	F	500	2.25E+5												
Aroclor 1260 {4}	A	2.5	6.83E+5	B	5.0	6.86E+5	C	25	6.07E+5	D	50	5.84E+5	E	250	5.52E+5
	F	500	5.53E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	5.26E+5	B	5.0	5.26E+5	C	25	4.59E+5	D	50	4.37E+5	E	250	4.20E+5
	F	500	4.19E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-35MS
Instrument ID: GC22.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	13.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	9.3		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	8.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	20.0		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	17.5		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	14.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	12.6		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	9.9		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.7		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	03/06/2014
		Date Analyzed:	03/06/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13181
Analysis Method:	8082A	**Units:**	ng/mL
File ID:	\\cash1\acqudata\GC22\data\030514UL.b\0305F035.D	**Column ID:**	DB-35MS
	\\cash1\acqudata\GC22\data\030514UL.b\0305F036.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F037.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F038.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F039.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F040.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F041.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F042.D		
	\\cash1\acqudata\GC22\data\030514UL.b\0305F043.D		

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	98	101000	98300	-2	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	77	327000	253000	-23	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	85	199000	169000	-15	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	79	165000	130000	-21	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	84	167000	140000	-16	NA	± 100 %	AverageRF
Aroclor 1016	100	85	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	100	89	306000	274000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	91	169000	153000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	110	259000	276000	7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	611000	649000	6	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	100	464000	482000	4	NA	± 100 %	AverageRF
Aroclor 1260	100	99	NA	NA	NA	-1	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

Level ID	File ID	Level ID	File ID
A	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F005.D	P	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F020.D
B	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F006.D	Q	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F021.D
C	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F007.D	R	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F022.D
D	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F008.D	S	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F023.D
E	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F009.D	T	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F024.D
F	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F010.D	U	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F025.D
G	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F011.D	V	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F026.D
H	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F012.D	W	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F027.D
I	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F013.D	X	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F029.D
J	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F014.D	Y	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F030.D
K	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F015.D	Z	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F031.D
L	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F016.D	AA	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F032.D
M	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F017.D	AB	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F033.D
N	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F018.D	AC	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F034.D
O	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F019.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	0.25	1.05E+7	B	0.50	1.04E+7	C	2.5	9.48E+6	D	5.0	9.21E+6	E	25	9.13E+6
	F	50	9.34E+6												
Aroclor 1016 {1}	A	2.5	2.18E+5	B	5.0	2.03E+5	C	25	1.82E+5	D	50	1.77E+5	E	250	1.67E+5
	F	500	1.66E+5												
Aroclor 1016 {2}	A	2.5	2.78E+5	B	5.0	2.84E+5	C	25	2.49E+5	D	50	2.40E+5	E	250	2.29E+5
	F	500	2.27E+5												
Aroclor 1016 {3}	A	2.5	3.82E+5	B	5.0	3.85E+5	C	25	3.19E+5	D	50	3.00E+5	E	250	2.75E+5
	F	500	2.80E+5												
Aroclor 1016 {4}	A	2.5	3.15E+5	B	5.0	2.84E+5	C	25	2.27E+5	D	50	2.14E+5	E	250	2.01E+5
	F	500	2.02E+5												
Aroclor 1016 {5}	A	2.5	2.54E+5	B	5.0	2.56E+5	C	25	2.26E+5	D	50	2.15E+5	E	250	2.04E+5
	F	500	2.06E+5												
Aroclor 1260 {1}	A	2.5	6.00E+5	B	5.0	5.81E+5	C	25	5.11E+5	D	50	4.93E+5	E	250	4.76E+5
	F	500	4.81E+5												
Aroclor 1260 {2}	A	2.5	5.08E+5	B	5.0	5.24E+5	C	25	4.51E+5	D	50	4.26E+5	E	250	3.83E+5
	F	500	3.86E+5												
Aroclor 1260 {3}	A	2.5	5.01E+5	B	5.0	4.80E+5	C	25	4.30E+5	D	50	4.15E+5	E	250	4.04E+5
	F	500	4.07E+5												
Aroclor 1260 {4}	A	2.5	1.12E+6	B	5.0	1.09E+6	C	25	1.02E+6	D	50	1.00E+6	E	250	1.03E+6
	F	500	1.05E+6												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	2.5	7.29E+5	B	5.0	7.16E+5	C	25	6.59E+5	D	50	6.43E+5	E	250	6.36E+5
	F	500	6.43E+5												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 03/06/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13181 **Column:** DB-XLB
Instrument ID: GC22.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	6.2		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	11.2		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	9.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	15.2		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	19.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	10.2		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	10.2		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	13.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	9.3		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	4.1		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	6.1		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	03/06/2014
		Date Analyzed:	03/06/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13181
Analysis Method:	8082A	**Units:**	ng/mL
File ID:	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F035.D	**Column ID:**	DB-XLB
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F036.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F037.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F038.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F039.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F040.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F041.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F042.D		
	\\cash1\acqudata\GC22\data\030514UL_r.b\0305F043.D		

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	100	88	185000	163000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {2}	100	88	251000	220000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {3}	100	83	324000	269000	-17	NA	± 100 %	AverageRF
Aroclor 1016 {4}	100	80	240000	193000	-20	NA	± 100 %	AverageRF
Aroclor 1016 {5}	100	88	227000	199000	-12	NA	± 100 %	AverageRF
Aroclor 1016	100	85	NA	NA	NA	-15	± 20 %	NA
Aroclor 1260 {1}	100	90	524000	469000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {2}	100	110	446000	474000	6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	100	100	439000	455000	4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	100	110	1050000	1150000	10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	100	100	671000	687000	2	NA	± 100 %	AverageRF
Aroclor 1260	100	100	NA	NA	NA	2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-35MS
Instrument ID: GC28.i

Level ID	File ID	Level ID	File ID
A	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F005.D	Q	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F021.D
B	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F006.D	R	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F022.D
C	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F007.D	S	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F023.D
D	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F008.D	T	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F024.D
E	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F009.D	U	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F025.D
F	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F010.D	V	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F026.D
G	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F011.D	W	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F027.D
H	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F012.D	X	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F028.D
I	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F013.D	Y	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F029.D
J	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F014.D	Z	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F030.D
K	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F015.D	AA	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F031.D
L	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F016.D	AB	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F032.D
M	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F017.D	AC	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F033.D
N	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F018.D	AD	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F034.D
O	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F019.D		
P	\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F020.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	8.55E+5	B	5.0	8.21E+5	C	50	6.73E+5	D	100	6.75E+5	E	200	6.41E+5
	F	500	5.91E+5												
Aroclor 1016 {1}	A	25	11700	B	50	11000	C	500	9180	D	1000	9520	E	2000	8470
	F	5000	8490												
Aroclor 1016 {2}	A	25	35400	B	50	32200	C	500	30200	D	1000	34400	E	2000	30200
	F	5000	29500												
Aroclor 1016 {3}	A	25	25000	B	50	24200	C	500	20400	D	1000	20700	E	2000	19200
	F	5000	18900												
Aroclor 1016 {4}	A	25	20100	B	50	19600	C	500	15900	D	1000	16000	E	2000	14400
	F	5000	14100												
Aroclor 1016 {5}	A	25	19600	B	50	19200	C	500	16500	D	1000	16700	E	2000	15400
	F	5000	15100												
Aroclor 1260 {1}	A	25	18500	B	50	18300	C	500	16800	D	1000	17500	E	2000	17200
	F	5000	16700												
Aroclor 1260 {2}	A	25	33500	B	50	32800	C	500	28000	D	1000	28100	E	2000	26700
	F	5000	25300												
Aroclor 1260 {3}	A	25	33300	B	50	32300	C	500	28200	D	1000	28600	E	2000	27600
	F	5000	26200												
Aroclor 1260 {4}	A	25	77800	B	50	74800	C	500	67600	D	1000	70400	E	2000	69500
	F	5000	67500												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-35MS
Instrument ID: GC28.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	58900	B	50	57700	C	500	51500	D	1000	53100	E	2000	51900
	F	5000	49700												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-35MS
Instrument ID: GC28.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	14.8		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	13.8		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	7.6		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	12.2		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	15.4		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	11.1		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	4.2		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	11.5		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	9.5		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.8		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	6.8		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	04/25/2014
		Date Analyzed:	04/25/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13284
Analysis Method:	8082A	**Units:**	ng/mL

File ID: \\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F035.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F036.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F037.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F038.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F039.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F040.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F041.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F042.D
\\alklsws002\instdata\GC28\Data\042414CAL_r.b\0424F043.D

Column ID: DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	920	9720	8980	-8	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	960	32000	30600	-4	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	920	21400	19600	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	870	16700	14500	-13	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	940	17100	16100	-6	NA	± 100 %	AverageRF
Aroclor 1016	1000	920	NA	NA	NA	-8	± 20 %	NA
Aroclor 1260 {1}	1000	960	17500	16800	-4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	29100	32900	13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	29400	32300	10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	71300	79300	11	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	53800	58200	8	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	8	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Service Request: K1404420
Calibration Date: 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284
Instrument ID: GC28.i
Column: DB-XLB

Level ID	File ID	Level ID	File ID
A	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F005.D	Q	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F021.D
B	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F006.D	R	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F022.D
C	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F007.D	S	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F023.D
D	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F008.D	T	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F024.D
E	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F009.D	U	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F025.D
F	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F010.D	V	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F026.D
G	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F011.D	W	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F027.D
H	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F012.D	X	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F028.D
I	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F013.D	Y	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F029.D
J	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F014.D	Z	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F030.D
K	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F015.D	AA	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F031.D
L	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F016.D	AB	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F032.D
M	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F017.D	AC	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F033.D
N	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F018.D	AD	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F034.D
O	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F019.D		
P	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F020.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.29E+5	B	5.0	1.26E+5	C	50	1.12E+5	D	100	1.10E+5	E	200	1.06E+5
	F	500	94800												
Aroclor 1016 {1}	A	25	2960	B	50	2780	C	500	2340	D	1000	2340	E	2000	2090
	F	5000	1920												
Aroclor 1016 {2}	A	25	6770	B	50	6610	C	500	5590	D	1000	5580	E	2000	5180
	F	5000	5000												
Aroclor 1016 {3}	A	25	4500	B	50	4280	C	500	3740	D	1000	3720	E	2000	3390
	F	5000	3190												
Aroclor 1016 {4}	A	25	3400	B	50	3380	C	500	2850	D	1000	2810	E	2000	2570
	F	5000	2340												
Aroclor 1016 {5}	A	25	3260	B	50	3270	C	500	2830	D	1000	2810	E	2000	2570
	F	5000	2370												
Aroclor 1260 {1}	A	25	8020	B	50	7370	C	500	6210	D	1000	6060	E	2000	5720
	F	5000	5230												
Aroclor 1260 {2}	A	25	4960	B	50	5290	C	500	4690	D	1000	4630	E	2000	4420
	F	5000	3990												
Aroclor 1260 {3}	A	25	6050	B	50	5680	C	500	4950	D	1000	4910	E	2000	4750
	F	5000	4330												
Aroclor 1260 {4}	A	25	13400	B	50	12400	C	500	11100	D	1000	11100	E	2000	10900
	F	5000	10100												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-XLB
Instrument ID: GC28.i

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Aroclor 1260 {5}	A	25	8400	B	50	8010	C	500	7390	D	1000	7360	E	2000	7220
	F	5000	6550												

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 04/25/2014

Initial Calibration Summary
Polychlorinated Biphenyls (PCBs)

Calibration ID: CAL13284 **Column:** DB-XLB
Instrument ID: GC28.i

		Calibration Evaluation				
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**
Decachlorobiphenyl	SURR	AverageRF	% RSD	11.3		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	16.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	12.8		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	13.3		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	14.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.7		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	16.4		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	9.6		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	12.4		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	10.3		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	8.6		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	04/25/2014
		Date Analyzed:	04/25/2014

Second Source Calibration Verification
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration ID:**	CAL13284
Analysis Method:	8082A	**Units:**	ng/mL
File ID:	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F035.D	**Column ID:**	DB-XLB
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F036.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F037.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F038.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F039.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F040.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F041.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F042.D		
	\\alklsws002\instdata\GC28\Data\042414CAL.b\0424F043.D		

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016 {1}	1000	930	2410	2250	-7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	920	5790	5310	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	930	3800	3560	-7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	930	2890	2700	-7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	960	2850	2740	-4	NA	± 100 %	AverageRF
Aroclor 1016	1000	940	NA	NA	NA	-6	± 20 %	NA
Aroclor 1260 {1}	1000	940	6440	6030	-6	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1200	4660	5480	17	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5110	5520	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	11500	12600	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	7490	8060	8	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1404228
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\050514UL.B\0505F005.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.6	5960000	5490000	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	47	101000	94700	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	42	327000	276000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	45	199000	177000	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	42	165000	139000	-16	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	42	167000	141000	-16	NA	± 100 %	AverageRF
Aroclor 1016	50	44	NA	NA	NA	-13	± 20 %	NA
Aroclor 1260 {1}	50	44	306000	269000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	44	169000	147000	-13	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	46	259000	240000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	45	611000	556000	-9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	46	464000	431000	-7	NA	± 100 %	AverageRF
Aroclor 1260	50	45	NA	NA	NA	-10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1404228
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\050514UL_R.B\0505F005.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.8	9670000	9220000	-5	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	45	185000	167000	-10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	46	251000	230000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	44	324000	284000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	44	240000	212000	-12	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	47	227000	211000	-7	NA	± 100 %	AverageRF
Aroclor 1016	50	45	NA	NA	NA	-10	± 20 %	NA
Aroclor 1260 {1}	50	47	524000	489000	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	45	446000	399000	-11	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	47	439000	412000	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	48	1050000	1000000	-5	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	47	671000	632000	-6	NA	± 100 %	AverageRF
Aroclor 1260	50	47	NA	NA	NA	-7	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1404228
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\050514UL.B\0505F022.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	4.6	5960000	5470000	-8	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	47	101000	95000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	41	327000	272000	-17	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	45	199000	178000	-11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	42	165000	139000	-15	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	43	167000	142000	-15	NA	± 100 %	AverageRF
Aroclor 1016	50	44	NA	NA	NA	-13	± 20 %	NA
Aroclor 1260 {1}	50	44	306000	269000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	44	169000	148000	-12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	45	259000	233000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	45	611000	547000	-10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	46	464000	430000	-7	NA	± 100 %	AverageRF
Aroclor 1260	50	45	NA	NA	NA	-10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/06/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	03/06/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13181
		Analysis Lot:	KWG1404228
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC22\DATA\050514UL_R.B\0505F022.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	5.0	5.0	9670000	9620000	-1	NA	± 20 %	AverageRF
Aroclor 1016 {1}	50	47	185000	173000	-6	NA	± 100 %	AverageRF
Aroclor 1016 {2}	50	48	251000	239000	-5	NA	± 100 %	AverageRF
Aroclor 1016 {3}	50	46	324000	297000	-8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	50	45	240000	218000	-9	NA	± 100 %	AverageRF
Aroclor 1016 {5}	50	48	227000	217000	-4	NA	± 100 %	AverageRF
Aroclor 1016	50	47	NA	NA	NA	-7	± 20 %	NA
Aroclor 1260 {1}	50	48	524000	505000	-4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	50	48	446000	429000	-4	NA	± 100 %	AverageRF
Aroclor 1260 {3}	50	48	439000	422000	-4	NA	± 100 %	AverageRF
Aroclor 1260 {4}	50	49	1050000	1040000	-1	NA	± 100 %	AverageRF
Aroclor 1260 {5}	50	49	671000	655000	-2	NA	± 100 %	AverageRF
Aroclor 1260	50	48	NA	NA	NA	-3	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714_R.B\0507F015.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	49	709000	697000	-2	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	520	9720	10200	4	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	510	32000	32900	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	510	21400	21800	2	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	520	16700	17200	3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	510	17100	17600	3	NA	± 100 %	AverageRF
Aroclor 1016	500	520	NA	NA	NA	3	± 20 %	NA
Aroclor 1260 {1}	500	470	17500	16300	-7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	29100	27200	-6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	29400	27600	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	71300	66100	-7	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	480	53800	51500	-4	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714.B\0507F015.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	59	113000	133000	17	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	570	2410	2720	13	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	550	5790	6390	10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	560	3800	4260	12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	570	2890	3300	14	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	570	2850	3250	14	NA	± 100 %	AverageRF
Aroclor 1016	500	560	NA	NA	NA	13	± 20 %	NA
Aroclor 1260 {1}	500	540	6440	6910	7	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	560	4660	5240	12	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	550	5110	5570	9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	540	11500	12500	8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	550	7490	8280	11	NA	± 100 %	AverageRF
Aroclor 1260	500	550	NA	NA	NA	10	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714_R.B\0507F029.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	48	709000	685000	-3	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	560	9720	10800	12	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	520	32000	33100	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	530	21400	22500	5	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	530	16700	17800	7	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	530	17100	18200	6	NA	± 100 %	AverageRF
Aroclor 1016	500	530	NA	NA	NA	7	± 20 %	NA
Aroclor 1260 {1}	500	480	17500	16700	-4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	470	29100	27600	-5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	470	29400	27600	-6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	460	71300	65500	-8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	470	53800	50700	-6	NA	± 100 %	AverageRF
Aroclor 1260	500	470	NA	NA	NA	-6	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714.B\0507F029.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	59	113000	133000	18	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	580	2410	2810	17	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	570	5790	6590	14	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	580	3800	4400	16	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	590	2890	3430	19	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	590	2850	3370	18	NA	± 100 %	AverageRF
Aroclor 1016	500	580	NA	NA	NA	17	± 20 %	NA
Aroclor 1260 {1}	500	550	6440	7130	11	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	580	4660	5380	15	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	540	5110	5550	9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	540	11500	12500	9	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	560	7490	8400	12	NA	± 100 %	AverageRF
Aroclor 1260	500	560	NA	NA	NA	11	± 20 %	NA

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714_R.B\0507F033.D	**Column ID:**	DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	50	50	709000	715000	1	NA	± 20 %	AverageRF
Aroclor 1016 {1}	500	570	9720	11000	13	NA	± 100 %	AverageRF
Aroclor 1016 {2}	500	570	32000	36700	15	NA	± 100 %	AverageRF
Aroclor 1016 {3}	500	540	21400	23100	8	NA	± 100 %	AverageRF
Aroclor 1016 {4}	500	550	16700	18400	11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	500	550	17100	18700	10	NA	± 100 %	AverageRF
Aroclor 1016	500	560	NA	NA	NA	11	± 20 %	NA
Aroclor 1260 {1}	500	500	17500	17500	0	NA	± 100 %	AverageRF
Aroclor 1260 {2}	500	490	29100	28600	-1	NA	± 100 %	AverageRF
Aroclor 1260 {3}	500	490	29400	28800	-2	NA	± 100 %	AverageRF
Aroclor 1260 {4}	500	480	71300	69000	-3	NA	± 100 %	AverageRF
Aroclor 1260 {5}	500	490	53800	53100	-1	NA	± 100 %	AverageRF
Aroclor 1260	500	490	NA	NA	NA	-2	± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/2014

Continuing Calibration Verification Summary
Polychlorinated Biphenyls (PCBs)

Calibration Type:	External Standard	**Calibration Date:**	04/25/2014
Analysis Method:	8082A	**Calibration ID:**	CAL13284
		Analysis Lot:	KWG1404301
		Units:	ng/mL
File ID:	\\ALKLSWS002\INSTDATA\GC28\DATA\050714.B\0507F033.D	**Column ID:**	DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D		%Drift		Criteria	Curve Fit
Decachlorobiphenyl	50	61	113000	137000	21	*	NA		± 20 %	AverageRF
Aroclor 1016 {1}	500	600	2410	2890	20		NA		± 100 %	AverageRF
Aroclor 1016 {2}	500	590	5790	6810	18		NA		± 100 %	AverageRF
Aroclor 1016 {3}	500	590	3800	4520	19		NA		± 100 %	AverageRF
Aroclor 1016 {4}	500	610	2890	3550	23		NA		± 100 %	AverageRF
Aroclor 1016 {5}	500	610	2850	3500	23		NA		± 100 %	AverageRF
Aroclor 1016	500	600	NA	NA	NA		20	*	± 20 %	NA
Aroclor 1260 {1}	500	580	6440	7410	15		NA		± 100 %	AverageRF
Aroclor 1260 {2}	500	610	4660	5660	21		NA		± 100 %	AverageRF
Aroclor 1260 {3}	500	580	5110	5940	16		NA		± 100 %	AverageRF
Aroclor 1260 {4}	500	570	11500	13100	14		NA		± 100 %	AverageRF
Aroclor 1260 {5}	500	590	7490	8900	19		NA		± 100 %	AverageRF
Aroclor 1260	500	590	NA	NA	NA		17		± 20 %	NA

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A **Analysis Lot:** KWG1404228
Instrument ID: GC22.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0505F005.D	Continuing Calibration Verification	KWG1404228-1	5/6/2014	00:02		5/6/2014	00:02
0505F006.D	Instrument Blank	KWG1404228-2	5/6/2014	00:25		5/6/2014	00:25
0505F007.D	ZZZZZZ	ZZZZZZ	5/6/2014	00:48		5/6/2014	00:48
0505F008.D	Lab Control Sample	KWG1404093-1	5/6/2014	01:10		5/6/2014	01:10
0505F009.D	Duplicate Lab Control Sample	KWG1404093-2	5/6/2014	01:33		5/6/2014	01:33
0505F010.D	Method Blank	KWG1404093-3	5/6/2014	01:56		5/6/2014	01:56
0505F011.D	RM11E-G978	K1404420-012	5/6/2014	02:19		5/6/2014	02:19
0505F012.D	ZZZZZZ	ZZZZZZ	5/6/2014	02:42		5/6/2014	02:42
0505F013.D	ZZZZZZ	ZZZZZZ	5/6/2014	03:04		5/6/2014	03:04
0505F014.D	ZZZZZZ	ZZZZZZ	5/6/2014	03:27		5/6/2014	03:27
0505F015.D	ZZZZZZ	ZZZZZZ	5/6/2014	03:50		5/6/2014	03:50
0505F016.D	ZZZZZZ	ZZZZZZ	5/6/2014	04:13		5/6/2014	04:13
0505F017.D	ZZZZZZ	ZZZZZZ	5/6/2014	04:35		5/6/2014	04:35
0505F018.D	ZZZZZZ	ZZZZZZ	5/6/2014	04:58		5/6/2014	04:58
0505F019.D	ZZZZZZ	ZZZZZZ	5/6/2014	05:21		5/6/2014	05:21
0505F020.D	ZZZZZZ	ZZZZZZ	5/6/2014	05:44		5/6/2014	05:44
0505F021.D	ZZZZZZ	ZZZZZZ	5/6/2014	06:06		5/6/2014	06:06
0505F022.D	Continuing Calibration Verification	KWG1404228-3	5/6/2014	06:29		5/6/2014	06:29
0505F023.D	Instrument Blank	KWG1404228-4	5/6/2014	06:52		5/6/2014	06:52
0505F025.D	ZZZZZZ	ZZZZZZ	5/6/2014	07:37		5/6/2014	07:37
0505F026.D	ZZZZZZ	ZZZZZZ	5/6/2014	08:00		5/6/2014	08:00
0505F027.D	ZZZZZZ	ZZZZZZ	5/6/2014	08:23		5/6/2014	08:23
0505F028.D	ZZZZZZ	ZZZZZZ	5/6/2014	08:46		5/6/2014	08:46
0505F029.D	ZZZZZZ	ZZZZZZ	5/6/2014	09:08		5/6/2014	09:08
0505F030.D	ZZZZZZ	ZZZZZZ	5/6/2014	09:31		5/6/2014	09:31
0505F032.D	ZZZZZZ	ZZZZZZ	5/6/2014	10:17		5/6/2014	10:17
0505F033.D	ZZZZZZ	ZZZZZZ	5/6/2014	10:40		5/6/2014	10:40
0505F034.D	Continuing Calibration Verification	KWG1404228-5	5/6/2014	11:03		5/6/2014	11:03
0505F035.D	Instrument Blank	KWG1404228-6	5/6/2014	11:27		5/6/2014	11:27

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A **Analysis Lot:** KWG1404301
Instrument ID: GC28.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0507F003.D	Continuing Calibration Verification	KWG1404301-1	5/7/2014	20:08		5/7/2014	20:08
0507F004.D	Instrument Blank	KWG1404301-2	5/7/2014	20:30		5/7/2014	20:30
0507F005.D	ZZZZZZ	ZZZZZZ	5/7/2014	20:53		5/7/2014	20:53
0507F006.D	ZZZZZZ	ZZZZZZ	5/7/2014	21:15		5/7/2014	21:15
0507F007.D	ZZZZZZ	ZZZZZZ	5/7/2014	21:38		5/7/2014	21:38
0507F008.D	ZZZZZZ	ZZZZZZ	5/7/2014	22:00		5/7/2014	22:00
0507F011.D	ZZZZZZ	ZZZZZZ	5/7/2014	23:07		5/7/2014	23:07
0507F014.D	ZZZZZZ	ZZZZZZ	5/8/2014	00:14		5/8/2014	00:14
0507F015.D	Continuing Calibration Verification	KWG1404301-3	5/8/2014	00:37		5/8/2014	00:37
0507F016.D	Instrument Blank	KWG1404301-4	5/8/2014	00:59		5/8/2014	00:59
0507F017.D	Lab Control Sample	KWG1404167-3	5/8/2014	01:21		5/8/2014	01:21
0507F018.D	Method Blank	KWG1404167-4	5/8/2014	01:44		5/8/2014	01:44
0507F019.D	RM11E-G078	K1404420-001	5/8/2014	02:06		5/8/2014	02:06
0507F020.D	RM11E-G078MS	KWG1404167-1	5/8/2014	02:28		5/8/2014	02:28
0507F021.D	RM11E-G078DMS	KWG1404167-2	5/8/2014	02:50		5/8/2014	02:50
0507F022.D	RM11E-G080	K1404420-002	5/8/2014	03:13		5/8/2014	03:13
0507F023.D	RM11E-G081	K1404420-003	5/8/2014	03:35		5/8/2014	03:35
0507F024.D	RM11E-G083	K1404420-004	5/8/2014	03:57		5/8/2014	03:57
0507F025.D	RM11E-G084	K1404420-005	5/8/2014	04:20		5/8/2014	04:20
0507F026.D	RM11E-G085	K1404420-006	5/8/2014	04:42		5/8/2014	04:42
0507F027.D	RM11E-G086	K1404420-007	5/8/2014	05:04		5/8/2014	05:04
0507F028.D	RM11E-G087	K1404420-008	5/8/2014	05:27		5/8/2014	05:27
0507F029.D	Continuing Calibration Verification	KWG1404301-5	5/8/2014	05:49		5/8/2014	05:49
0507F030.D	Instrument Blank	KWG1404301-6	5/8/2014	06:11		5/8/2014	06:11
0507F031.D	ZZZZZZ	ZZZZZZ	5/8/2014	06:34		5/8/2014	06:34
0507F032.D	RM11E-G578	K1404420-011	5/8/2014	06:56		5/8/2014	06:56
0507F033.D	Continuing Calibration Verification	KWG1404301-7	5/8/2014	07:18		5/8/2014	07:18
0507F034.D	Instrument Blank	KWG1404301-8	5/8/2014	07:41		5/8/2014	07:41

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Water		

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3535A	**Extraction Lot:**	KWG1404093
Analysis Method:	8082A	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G978	K1404420-012	05/02/14	05/03/14	960mL	2mL	NA	
Method Blank	KWG1404093-3	NA	NA	1000mL	2mL	NA	
Lab Control Sample	KWG1404093-1	NA	NA	1000mL	2mL	NA	
Duplicate Lab Control Sample	KWG1404093-2	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Sediment

Service Request: K1404420
Date Extracted: 05/05/2014

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Extraction Lot: KWG1404167
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G078	K1404420-001	05/02/14	05/03/14	40.383g	4mL	64.3	
RM11E-G080	K1404420-002	05/02/14	05/03/14	40.038g	4mL	66.5	
RM11E-G081	K1404420-003	05/02/14	05/03/14	40.021g	4mL	52.0	
RM11E-G083	K1404420-004	05/01/14	05/03/14	30.281g	4mL	42.8	
RM11E-G084	K1404420-005	05/01/14	05/03/14	40.337g	4mL	60.2	
RM11E-G085	K1404420-006	05/02/14	05/03/14	40.316g	4mL	78.7	
RM11E-G086	K1404420-007	05/02/14	05/03/14	40.053g	4mL	79.1	
RM11E-G087	K1404420-008	05/02/14	05/03/14	40.031g	10mL	73.2	
RM11E-G578	K1404420-011	05/02/14	05/03/14	40.196g	4mL	62.5	
Method Blank	KWG1404167-4	NA	NA	40.390g	4mL	NA	
RM11E-G078MS	KWG1404167-1	05/02/14	05/03/14	40.401g	4mL	64.3	
RM11E-G078DMS	KWG1404167-2	05/02/14	05/03/14	40.390g	4mL	64.3	
Lab Control Sample	KWG1404167-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G078	**Units:**	ug/Kg
Lab Code:	K1404420-001	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	510	560	9.3		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G080	**Units:**	ug/Kg
Lab Code:	K1404420-002	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	130	180	32.3		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G081	**Units:**	ug/Kg
Lab Code:	K1404420-003	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.9	2.1	58	110	61.9	P	1	05/08/14
Aroclor 1260	4.9	2.1	68	95	33.1		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G083	**Units:**	ug/Kg
Lab Code:	K1404420-004	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	7.8	3.3	3.6	7.5	70.3	JP	1	05/08/14
Aroclor 1260	7.8	3.3	11	14	24.0		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G084	**Units:**	ug/Kg
Lab Code:	K1404420-005	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1254	4.3	2.1	63	93	38.5		1	05/08/14
Aroclor 1260	4.3	2.1	34	44	25.6		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G085	**Units:**	ug/Kg
Lab Code:	K1404420-006	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1248	4.3	2.1	25	28	11.3		1	05/08/14
Aroclor 1254	4.3	2.1	23	35	41.4	P	1	05/08/14
Aroclor 1260	4.3	2.1	15	17	12.5		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G086	**Units:**	ug/Kg
Lab Code:	K1404420-007	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1248	4.3	2.1	19	25	27.3		1	05/08/14
Aroclor 1254	4.3	2.1	13	21	47.1	P	1	05/08/14
Aroclor 1260	4.3	2.1	8.9	10	11.6		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G087	**Units:**	ug/Kg
Lab Code:	K1404420-008	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	8.6	3.6	250	310	21.4		1	05/08/14

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Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G578	**Units:**	ug/Kg
Lab Code:	K1404420-011	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1260	4.3	2.1	150	180	18.2		1	05/08/14

Chlorinated Pesticides

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Chlorinated Pesticides by HRGC/MS/MS

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G084	K1404420-005	05/01/2014	05/03/2014
RM11E-G084MS	KWG1404049-1	05/01/2014	05/03/2014
RM11E-G084DMS	KWG1404049-2	05/01/2014	05/03/2014

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G084	**Units:**	ug/Kg
Lab Code:	K1404420-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	**1.6**		0.33	0.14	1	05/05/14	05/13/14	KWG1404049	*
2,4'-DDE	ND	U	0.33	0.18	1	05/05/14	05/13/14	KWG1404049	*
2,4'-DDT	ND	U	0.33	0.16	1	05/05/14	05/13/14	KWG1404049	*
4,4'-DDD	**4.8**		0.33	0.13	1	05/05/14	05/13/14	KWG1404049	*
4,4'-DDE	**3.1**		0.33	0.23	1	05/05/14	05/13/14	KWG1404049	*
4,4'-DDT	ND	U	0.33	0.23	1	05/05/14	05/13/14	KWG1404049	*
alpha-Chlordane	**0.88**		0.33	0.16	1	05/05/14	05/13/14	KWG1404049	*
cis-Nonachlor	**0.21**	J	0.33	0.15	1	05/05/14	05/13/14	KWG1404049	*
gamma-Chlordane	**1.5**		0.33	0.13	1	05/05/14	05/13/14	KWG1404049	*
trans-Nonachlor	ND	Ui	0.60	0.60	1	05/05/14	05/13/14	KWG1404049	*
Dieldrin	ND	U	0.80	0.19	1	05/05/14	05/13/14	KWG1404049	*
gamma-BHC (Lindane)	ND	U	0.33	0.12	1	05/05/14	05/13/14	KWG1404049	*
Heptachlor Epoxide	ND	U	0.33	0.20	1	05/05/14	05/13/14	KWG1404049	*
Oxychlordane	ND	U	0.80	0.52	1	05/05/14	05/13/14	KWG1404049	*
Hexachlorobenzene	**0.16**		0.092	0.092	1	05/05/14	05/13/14	KWG1404049	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	83	5-124	05/13/14	Acceptable
S_Oxychlordane-13C10	73	5-144	05/13/14	Acceptable
S_Heptachlrepox13C10	76	8-146	05/13/14	Acceptable
S_Endrin-13C12	81	20-157	05/13/14	Acceptable
S_4,4'DDD-d4	66	5-120	05/13/14	Acceptable
S_4,4'-DDT-d4	75	13-200	05/13/14	Acceptable

Comments:

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Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1404049-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4'-DDD	ND	U	0.063	0.063	1	05/05/14	05/13/14	KWG1404049	
2,4'-DDE	ND	U	0.079	0.079	1	05/05/14	05/13/14	KWG1404049	*
2,4'-DDT	ND	U	0.094	0.094	1	05/05/14	05/13/14	KWG1404049	
4,4'-DDD	ND	U	0.049	0.035	1	05/05/14	05/13/14	KWG1404049	
4,4'-DDE	ND	U	0.070	0.070	1	05/05/14	05/13/14	KWG1404049	*
4,4'-DDT	ND	U	0.049	0.047	1	05/05/14	05/13/14	KWG1404049	
alpha-Chlordane	ND	U	0.062	0.062	1	05/05/14	05/13/14	KWG1404049	
cis-Nonachlor	ND	U	0.098	0.097	1	05/05/14	05/13/14	KWG1404049	
gamma-Chlordane	ND	U	0.064	0.064	1	05/05/14	05/13/14	KWG1404049	
trans-Nonachlor	ND	U	0.058	0.058	1	05/05/14	05/13/14	KWG1404049	
Dieldrin	ND	U	0.20	0.077	1	05/05/14	05/13/14	KWG1404049	
gamma-BHC (Lindane)	ND	U	0.049	0.031	1	05/05/14	05/13/14	KWG1404049	
Heptachlor Epoxide	ND	U	0.073	0.073	1	05/05/14	05/13/14	KWG1404049	
Oxychlordane	ND	U	0.25	0.13	1	05/05/14	05/13/14	KWG1404049	
Hexachlorobenzene	ND	U	0.092	0.092	1	05/05/14	05/13/14	KWG1404049	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
S_GBHCD6	63	5-124	05/13/14	Acceptable
S_Oxychlordane-13C10	72	5-144	05/13/14	Acceptable
S_Heptachlrepox13C10	71	8-146	05/13/14	Acceptable
S_Endrin-13C12	67	20-157	05/13/14	Acceptable
S_4,4'DDD-d4	59	5-120	05/13/14	Acceptable
S_4,4'-DDT-d4	53	13-200	05/13/14	Acceptable

Comments:

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QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Sediment

Surrogate Recovery Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: CAS SOC-PESTMS2 **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5		Sur6	
RM11E-G084	K1404420-005	83	73	76	81	66	#	75	#
Method Blank	KWG1404049-5	63	72	71	67	59		53	
RM11E-G084MS	KWG1404049-1	79	68	75	81	62	#	64	#
RM11E-G084DMS	KWG1404049-2	78	77	70	118	58	#	54	#
Lab Control Sample	KWG1404049-3	61	77	71	72	60		56	
Duplicate Lab Control Sample	KWG1404049-4	54	70	68	73	61		57	

Surrogate Recovery Control Limits (%)

Sur1 =	S_GBHCD6	5-124	Sur5 =	S_4,4'DDD-d4	5-120
Sur2 =	S_Oxychlordane-13C10	5-144	Sur6 =	S_4,4'-DDT-d4	13-200
Sur3 =	S_Heptachlrepox13C10	8-146			
Sur4 =	S_Endrin-13C12	20-157			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/13/2014
		Time Analyzed:	16:19

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\051314\0513F019.D	**Lab Code:**	KWG1404354-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1404354
Analysis Method:	CAS SOC-PESTMS2		

		Pyrene-d10		gamma-BHC-d6		Oxychlordane-13C10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	21,120	15.20	3,807	11.36	1,596	13.92
	Upper Limit ==>	42,240	15.70	19,037	11.86	7,979	14.42
	Lower Limit ==>	10,560	14.70	190	10.86	80	13.42
	ICAL Result ==>	17,533	15.20	3,671	11.35	1,657	13.90
Associated Analyses							
Method Blank	KWG1404049-5	31,649	15.20	3,991	11.36	2,204	13.92
Lab Control Sample	KWG1404049-3	31,387	15.20	3,869	11.36	2,319	13.92
Duplicate Lab Control Sample	KWG1404049-4	30,653	15.20	3,336	11.36	2,064	13.92
RM11E-G084MS	KWG1404049-1	45,343*	15.21	1,804*	11.36	744*	13.92
RM11E-G084DMS	KWG1404049-2	44,207*	15.21	1,747*	11.36	816*	13.93
RM11E-G084	K1404420-005	47,692*	15.21	1,998*	11.36	840*	13.92

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/13/2014
		Time Analyzed:	16:19

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\051314\0513F019.D	**Lab Code:**	KWG1404354-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1404354
Analysis Method:	CAS SOC-PESTMS2		

		Heptachlor Epoxide-13C10		Endrin-13C12		4,4'-DDD-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,386	14.02	631	16.34	6,394	16.88
	Upper Limit ==>	6,928	14.52	3,156	16.84	31,968	17.38
	Lower Limit ==>	69	13.52	32	15.84	320	16.38
	ICAL Result ==>	1,234	14.02	755	16.33	6,488	16.88
Associated Analyses							
Method Blank	KWG1404049-5	1,743	14.02	893	16.34	6,987	16.88
Lab Control Sample	KWG1404049-3	1,718	14.02	954	16.34	7,138	16.88
Duplicate Lab Control Sample	KWG1404049-4	1,614	14.02	949	16.34	7,090	16.88
RM11E-G084MS	KWG1404049-1	659*	14.03	386*	16.35	2,637*	16.91
RM11E-G084DMS	KWG1404049-2	602*	14.03	552*	16.35	2,404*	16.91
RM11E-G084	K1404420-005	703*	14.03	406*	16.35	2,989*	16.91

Results flagged with an asterisk (*) indicate values outside control criteria.

REVISED
8:01 am, May 22, 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/13/2014
		Time Analyzed:	16:19

Internal Standard Area and RT Summary
Chlorinated Pesticides by HRGC/MS/MS

File ID:	J:\MS21\DATA\051314\0513F019.D	**Lab Code:**	KWG1404354-1
Instrument ID:	MS21	**Analysis Lot:**	KWG1404354
Analysis Method:	CAS SOC-PESTMS2		

		4,4'-DDT-d4	
		Area	**RT**
	Results ==>	3,737	17.88
	Upper Limit ==>	18,685	18.38
	Lower Limit ==>	187	17.38
	ICAL Result ==>	4,187	17.87
Associated Analyses			
Method Blank	KWG1404049-5	3,929	17.89
Lab Control Sample	KWG1404049-3	4,105	17.88
Duplicate Lab Control Sample	KWG1404049-4	4,087	17.88
RM11E-G084MS	KWG1404049-1	1,699*	17.92
RM11E-G084DMS	KWG1404049-2	1,408*	17.92
RM11E-G084	K1404420-005	2,089*	17.92

Results flagged with an asterisk (*) indicate values outside control criteria.

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8:01 am, May 22, 2014

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/13/2014

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	RM11E-G084	**Units:**	ug/Kg
Lab Code:	K1404420-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1404049

		RM11E-G084MS KWG1404049-1 Matrix Spike			RM11E-G084DMS KWG1404049-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	1.6	3.38	1.63	110	2.82	1.62	76	50-120	18	30
2,4'-DDE	ND	2.18	1.63	134 *	2.50	1.62	154 *	24-123	14	30
2,4'-DDT	ND	2.38	1.63	146 *	2.17	1.62	134 *	50-120	9	30
4,4'-DDD	4.8	4.87	1.63	3 *	4.29	1.62	-34 *	42-120	13	30
4,4'-DDE	3.1	5.61	1.63	152 *	4.77	1.62	100	50-120	16	30
4,4'-DDT	ND	2.56	1.63	158 *	2.57	1.62	158 *	50-120	0	30
alpha-Chlordane	0.88	2.23	1.63	83	1.90	1.62	63	50-120	16	30
cis-Nonachlor	0.21	1.53	1.63	82	1.51	1.62	81	50-120	1	30
gamma-Chlordane	1.5	2.53	1.63	62	2.26	1.62	45 *	50-120	11	30
trans-Nonachlor	ND	1.77	1.63	109 #	1.62	1.62	100 #	50-120	9	30
Dieldrin	ND	ND	1.63	0 *	0.889	1.62	55	50-120	NC	30
gamma-BHC (Lindane)	ND	1.60	1.63	98	1.51	1.62	93	50-120	5	30
Heptachlor Epoxide	ND	1.55	1.63	95	1.58	1.62	97	50-120	2	30
Oxychlordane	ND	2.40	1.63	148 *	3.13	1.62	193 *	50-120	26	30
Hexachlorobenzene	0.16	1.72	1.63	96	1.91	1.62	108	50-120	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/13/2014

Lab Control Spike/Duplicate Lab Control Spike Summary
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	CAS SOC-PESTMS2	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1404049

	Lab Control Sample KWG1404049-3 Lab Control Spike			Duplicate Lab Control Sample KWG1404049-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	2.31	2.00	115	2.25	2.00	113	50-120	2	30
2,4'-DDE	2.90	2.00	145 *	2.78	2.00	139 *	24-123	4	30
2,4'-DDT	2.21	2.00	111	2.23	2.00	111	50-120	1	30
4,4'-DDD	1.97	2.00	99	1.96	2.00	98	42-120	1	30
4,4'-DDE	2.56	2.00	128 *	2.52	2.00	126 *	50-120	1	30
4,4'-DDT	2.05	2.00	102	2.00	2.00	100	50-120	3	30
alpha-Chlordane	2.13	2.00	107	2.26	2.00	113	50-120	6	30
cis-Nonachlor	2.05	2.00	102	2.05	2.00	102	50-120	0	30
gamma-Chlordane	2.20	2.00	110	2.36	2.00	118	50-120	7	30
trans-Nonachlor	1.94	2.00	97	2.12	2.00	106	50-120	9	30
Dieldrin	2.13	2.00	107	2.16	2.00	108	50-120	1	30
gamma-BHC (Lindane)	2.08	2.00	104	2.06	2.00	103	50-120	1	30
Heptachlor Epoxide	2.20	2.00	110	2.11	2.00	106	50-120	4	30
Oxychlordane	1.93	2.00	97	2.26	2.00	113	50-120	16	30
Hexachlorobenzene	2.44	2.00	122 *	2.73	2.00	136 *	50-120	11	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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8:01 am, May 22, 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/13/2014
		Time Analyzed:	16:57

Method Blank Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	MS21
Lab Code:	KWG1404049-5	**File ID:**	J:\MS21\DATA\051314\0513F020.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1404049

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1404049-3	J:\MS21\DATA\051314\0513F021.D	05/13/14	17:21
Duplicate Lab Control Sample	KWG1404049-4	J:\MS21\DATA\051314\0513F022.D	05/13/14	17:48
RM11E-G084MS	KWG1404049-1	J:\MS21\DATA\051314\0513F026.D	05/13/14	19:37
RM11E-G084DMS	KWG1404049-2	J:\MS21\DATA\051314\0513F027.D	05/13/14	20:04
RM11E-G084	K1404420-005	J:\MS21\DATA\051314\0513F028.D	05/13/14	20:31

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Soil	**Date Analyzed:**	05/13/2014
		Time Analyzed:	17:21

Lab Control Sample Summary
Chlorinated Pesticides by HRGC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS21
Lab Code:	KWG1404049-3	**File ID:**	J:\MS21\DATA\051314\0513F021.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	CAS SOC-PESTMS2	**Extraction Lot:**	KWG1404049

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1404049-5	J:\MS21\DATA\051314\0513F020.D	05/13/14	16:57
RM11E-G084MS	KWG1404049-1	J:\MS21\DATA\051314\0513F026.D	05/13/14	19:37
RM11E-G084DMS	KWG1404049-2	J:\MS21\DATA\051314\0513F027.D	05/13/14	20:04
RM11E-G084	K1404420-005	J:\MS21\DATA\051314\0513F028.D	05/13/14	20:31

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 05/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13326 **Column:** MS
Instrument ID: MS21

Level ID	File ID	Level ID	File ID
A	J:\MS21\Data\051314\0513F005.D	G	J:\MS21\Data\051314\0513F011.D
B	J:\MS21\Data\051314\0513F006.D	H	J:\MS21\Data\051314\0513F012.D
C	J:\MS21\Data\051314\0513F007.D	I	J:\MS21\Data\051314\0513F013.D
D	J:\MS21\Data\051314\0513F008.D	J	J:\MS21\Data\051314\0513F014.D
E	J:\MS21\Data\051314\0513F009.D		
F	J:\MS21\Data\051314\0513F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2,4'-DDD	A	0.50	1.03	B	1.0	0.765	C	2.0	0.912	D	5.0	0.868	E	10	0.846
	F	20	1.00	G	40	0.829	H	60	0.899	I	80	0.841	J	100	0.812
2,4'-DDE	A	0.50	0.458	B	1.0	0.452	C	2.0	0.520	D	5.0	0.502	E	10	0.479
	F	20	0.595	G	40	0.496	H	60	0.565	I	80	0.485	J	100	0.461
2,4'-DDT	A	0.50	1.35	B	1.0	1.05	C	2.0	0.948	D	5.0	1.00	E	10	1.07
	F	20	1.20	G	40	1.06	H	60	1.07	I	80	1.07	J	100	1.06
4,4'-DDD	A	0.50	1.18	B	1.0	0.912	C	2.0	1.15	D	5.0	1.08	E	10	1.02
	F	20	1.25	G	40	1.02	H	60	1.04	I	80	1.05	J	100	1.06
4,4'-DDE	A	0.50	0.427	B	1.0	0.412	C	2.0	0.468	D	5.0	0.466	E	10	0.441
	F	20	0.523	G	40	0.414	H	60	0.451	I	80	0.426	J	100	0.397
4,4'-DDT	A	0.50	0.864	B	1.0	0.869	C	2.0	0.955	D	5.0	0.960	E	10	0.944
	F	20	1.10	G	40	0.976	H	60	0.960	I	80	0.962	J	100	1.03
alpha-Chlordane	A	0.50	1.95	B	1.0	2.07	C	2.0	1.84	D	5.0	1.92	E	10	1.78
	F	20	1.97	G	40	1.87	H	60	1.74	I	80	1.64	J	100	1.62
cis-Nonachlor							C	2.0	1.05	D	5.0	1.34	E	10	1.05
	F	20	1.18	G	40	1.10	H	60	0.946	I	80	0.978	J	100	0.913
gamma-Chlordane	A	0.50	1.59	B	1.0	2.01	C	2.0	2.12	D	5.0	1.96	E	10	1.81
	F	20	2.09	G	40	1.90	H	60	1.82	I	80	1.71	J	100	1.64
trans-Nonachlor	A	0.50	1.38	B	1.0	1.32	C	2.0	1.29	D	5.0	1.09	E	10	1.06
	F	20	1.17	G	40	1.09	H	60	1.01	I	80	0.988	J	100	0.937
Dieldrin				B	1.0	0.776	C	2.0	0.881	D	5.0	1.09	E	10	1.03
	F	20	1.06	G	40	1.06	H	60	0.992	I	80	1.06	J	100	1.03
gamma-BHC (Lindane)	A	0.50	1.00	B	1.0	0.934	C	2.0	0.880	D	5.0	0.883	E	10	0.916
	F	20	0.939	G	40	0.935	H	60	0.940	I	80	0.911	J	100	0.896
Heptachlor Epoxide				B	1.0	1.51	C	2.0	0.855	D	5.0	1.51	E	10	1.25
	F	20	1.49	G	40	1.28	H	60	1.31	I	80	1.21	J	100	1.30
Oxychlordane										D	5.0	0.589	E	10	0.603
	F	20	0.679	G	40	0.704	H	60	0.616	I	80	0.581	J	100	0.582

Results flagged with an asterisk (*) indicate values outside control criteria.

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8:02 am, May 22, 2014

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QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 05/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13326 **Column:** MS
Instrument ID: MS21

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Hexachlorobenzene	A	0.50	1.53	B	1.0	1.23	C	2.0	1.20	D	5.0	1.20	E	10	1.15
	F	20	1.19	G	40	1.14	H	60	1.10	I	80	1.11	J	100	1.01
S_GBHCD6	A	20	1.00	B	20	0.961	C	20	0.846	D	20	0.920	E	20	0.881
	F	20	1.05	G	20	1.04	H	20	1.11	I	20	1.01	J	20	1.26
S_Oxychlordane-13C10	A	20	0.476	B	20	0.445	C	20	0.396	D	20	0.449	E	20	0.466
	F	20	0.473	G	20	0.505	H	20	0.585	I	20	0.543			
S_Heptachlrepox13C10	A	20	0.395	B	20	0.385	C	20	0.391	D	20	0.334	E	20	0.364
	F	20	0.352	G	20	0.414	H	20	0.409	I	20	0.387	J	20	0.444
S_Endrin-13C12	A	20	0.198	B	20	0.214	C	20	0.208	D	20	0.192	E	20	0.211
	F	20	0.215	G	20	0.210	H	20	0.235	I	20	0.196	J	20	0.235
S_4,4'DDD-d4	A	5.0	8.14	B	5.0	7.82	C	5.0	6.95	D	5.0	7.44	E	5.0	7.40
	F	5.0	7.40	G	5.0	7.53	H	5.0	7.19	I	5.0	7.39	J	5.0	8.19
S_4,4'-DDT-d4	A	5.0	5.34	B	5.0	4.86	C	5.0	4.32	D	5.0	4.55	E	5.0	4.48
	F	5.0	4.78	G	5.0	4.62	H	5.0	4.54	I	5.0	4.38	J	5.0	4.89

Results flagged with an asterisk (*) indicate values outside control criteria.

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8:02 am, May 22, 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004 **Calibration Date:** 05/13/2014

Initial Calibration Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration ID: CAL13326 **Column:** MS
Instrument ID: MS21

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
2,4'-DDD	MS	AverageRF	% RSD	9.3		≤ 20	0.880		.01
2,4'-DDE	MS	AverageRF	% RSD	9.4		≤ 20	0.501		.01
2,4'-DDT	MS	AverageRF	% RSD	10.2		≤ 20	1.09		.01
4,4'-DDD	MS	AverageRF	% RSD	9.0		≤ 20	1.08		.01
4,4'-DDE	MS	AverageRF	% RSD	8.3		≤ 20	0.443		.01
4,4'-DDT	MS	AverageRF	% RSD	7.1		≤ 20	0.962		.01
alpha-Chlordane	MS	AverageRF	% RSD	8.1		≤ 20	1.84		.01
cis-Nonachlor	MS	AverageRF	% RSD	12.9		≤ 20	1.07		.01
gamma-Chlordane	MS	AverageRF	% RSD	9.8		≤ 20	1.86		.01
trans-Nonachlor	MS	AverageRF	% RSD	13.3		≤ 20	1.13		.01
Dieldrin	MS	AverageRF	% RSD	10.3		≤ 20	0.997		.01
gamma-BHC (Lindane)	MS	AverageRF	% RSD	3.8		≤ 20	0.924		.01
Heptachlor Epoxide	MS	AverageRF	% RSD	15.7		≤ 20	1.30		.01
Oxychlordane	MS	AverageRF	% RSD	7.9		≤ 20	0.622		.01
Hexachlorobenzene	MS	AverageRF	% RSD	11.6		≤ 20	1.18		.01
S_GBHCD6	SURR	AverageRF	% RSD	11.8		≤ 20	1.01		.01
S_Oxychlordane-13C10	SURR	AverageRF	% RSD	11.6		≤ 20	0.482		.01
S_Heptachlrepox13C10	SURR	AverageRF	% RSD	8.2		≤ 20	0.387		.01
S_Endrin-13C12	SURR	AverageRF	% RSD	7.0		≤ 20	0.211		.01
S_4,4'DDD-d4	SURR	AverageRF	% RSD	5.2		≤ 20	7.55		.01
S_4,4'-DDT-d4	SURR	AverageRF	% RSD	6.4		≤ 20	4.68		.01

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Calibration Date:**	05/13/2014
		Date Analyzed:	05/13/2014

Second Source Calibration Verification
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type:	Internal Standard	**Calibration ID:**	CAL13326
Analysis Method:	CAS SOC-PESTMS2	**Units:**	ng/ml

File ID: J:\MS21\Data\051314\0513F015.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D		%Drift	Criteria	Curve Fit
2,4'-DDD	20	19	0.880	0.851	-3		NA	± 25 %	AverageRF
2,4'-DDE	20	20	0.501	0.499	0		NA	± 25 %	AverageRF
2,4'-DDT	20	18	1.09	0.991	-9		NA	± 25 %	AverageRF
4,4'-DDD	20	18	1.08	0.994	-8		NA	± 25 %	AverageRF
4,4'-DDE	20	19	0.443	0.417	-6		NA	± 25 %	AverageRF
4,4'-DDT	20	18	0.962	0.887	-8		NA	± 25 %	AverageRF
alpha-Chlordane	20	22	1.84	1.99	8		NA	± 25 %	AverageRF
cis-Nonachlor	20	22	1.07	1.18	10		NA	± 25 %	AverageRF
gamma-Chlordane	20	21	1.86	2.00	7		NA	± 25 %	AverageRF
trans-Nonachlor	20	21	1.13	1.19	5		NA	± 25 %	AverageRF
Dieldrin	20	26	0.997	1.29	29	*	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	20	0.924	0.923	0		NA	± 25 %	AverageRF
Heptachlor Epoxide	20	18	1.30	1.15	-12		NA	± 25 %	AverageRF
Oxychlordane	20	25	0.622	0.784	26	*	NA	± 25 %	AverageRF
Hexachlorobenzene	20	20	1.18	1.16	-2		NA	± 25 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

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QA/QC Results

Client: GSI Water Solutions, Inc
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Service Request: K1404420
Date Analyzed: 05/13/2014

Continuing Calibration Verification Summary
Chlorinated Pesticides by HRGC/MS/MS

Calibration Type: Internal Standard
Analysis Method: CAS SOC-PESTMS2

Calibration Date: 05/13/2014
Calibration ID: CAL13326
Analysis Lot: KWG1404354
Units: ng/ml

File ID: J:\MS21\DATA\051314\0513F019.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4'-DDD	20	21	.01	0.880	0.922	5	NA	± 25 %	AverageRF
2,4'-DDE	20	22	.01	0.501	0.540	8	NA	± 25 %	AverageRF
2,4'-DDT	20	20	.01	1.09	1.09	0	NA	± 25 %	AverageRF
4,4'-DDD	20	20	.01	1.08	1.07	-1	NA	± 25 %	AverageRF
4,4'-DDE	20	23	.01	0.443	0.499	13	NA	± 25 %	AverageRF
4,4'-DDT	20	20	.01	0.962	0.970	1	NA	± 25 %	AverageRF
alpha-Chlordane	20	23	.01	1.84	2.16	17	NA	± 25 %	AverageRF
cis-Nonachlor	20	23	.01	1.07	1.23	15	NA	± 25 %	AverageRF
gamma-Chlordane	20	23	.01	1.86	2.18	17	NA	± 25 %	AverageRF
trans-Nonachlor	20	22	.01	1.13	1.23	9	NA	± 25 %	AverageRF
Dieldrin	20	24	.01	0.997	1.19	19	NA	± 25 %	AverageRF
gamma-BHC (Lindane)	20	19	.01	0.924	0.879	-5	NA	± 25 %	AverageRF
Heptachlor Epoxide	20	20	.01	1.30	1.29	-1	NA	± 25 %	AverageRF
Oxychlordane	20	25	.01	0.622	0.768	23	NA	± 25 %	AverageRF
Hexachlorobenzene	20	20	.01	1.18	1.16	-2	NA	± 25 %	AverageRF
S_GBHCD6	20	18	.01	1.01	0.901	-11	NA	± 30 %	AverageRF
S_Oxychlordane-13C10	20	16	.01	0.482	0.378	-22	NA	± 30 %	AverageRF
S_Heptachlrepox13C10	20	17	.01	0.387	0.328	-15	NA	± 30 %	AverageRF
S_Endrin-13C12	20	14	.01	0.211	0.149	-29	NA	± 30 %	AverageRF
S_4,4'DDD-d4	5.0	4.0	.01	7.55	6.05	-20	NA	± 30 %	AverageRF
S_4,4'-DDT-d4	5.0	3.8	.01	4.68	3.54	-24	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

REVISED
8:02 am, May 22, 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Chlorinated Pesticides by HRGC/MS/MS

Analysis Method: CAS SOC-PESTMS2 **Analysis Lot:** KWG1404354
Instrument ID: MS21

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0513F019.D	Continuing Calibration Verification	KWG1404354-1	5/13/2014	16:19		5/13/2014	16:19
0513F020.D	Method Blank	KWG1404049-5	5/13/2014	16:57		5/13/2014	16:57
0513F021.D	Lab Control Sample	KWG1404049-3	5/13/2014	17:21		5/13/2014	17:21
0513F022.D	Duplicate Lab Control Sample	KWG1404049-4	5/13/2014	17:48		5/13/2014	17:48
0513F023.D	ZZZZZZ	ZZZZZZ	5/13/2014	18:15		5/13/2014	18:15
0513F024.D	ZZZZZZ	ZZZZZZ	5/13/2014	18:42		5/13/2014	18:42
0513F025.D	ZZZZZZ	ZZZZZZ	5/13/2014	19:10		5/13/2014	19:10
0513F026.D	RM11E-G084MS	KWG1404049-1	5/13/2014	19:37		5/13/2014	19:37
0513F027.D	RM11E-G084DMS	KWG1404049-2	5/13/2014	20:04		5/13/2014	20:04
0513F028.D	RM11E-G084	K1404420-005	5/13/2014	20:31		5/13/2014	20:31
0513F029.D	ZZZZZZ	ZZZZZZ	5/13/2014	20:58		5/13/2014	20:58
0513F030.D	ZZZZZZ	ZZZZZZ	5/13/2014	21:25		5/13/2014	21:25
0513F031.D	ZZZZZZ	ZZZZZZ	5/13/2014	21:52		5/13/2014	21:52
0513F032.D	ZZZZZZ	ZZZZZZ	5/13/2014	22:19		5/13/2014	22:19
0513F033.D	ZZZZZZ	ZZZZZZ	5/13/2014	22:46		5/13/2014	22:46
0513F034.D	ZZZZZZ	ZZZZZZ	5/13/2014	23:13		5/13/2014	23:13
0513F035.D	ZZZZZZ	ZZZZZZ	5/13/2014	23:40		5/13/2014	23:40
0513F036.D	ZZZZZZ	ZZZZZZ	5/14/2014	00:07		5/14/2014	00:07

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

REVISED
8:02 am, May 22, 2014

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment		

Extraction Prep Log
Chlorinated Pesticides by HRGC/MS/MS

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1404049
Analysis Method:	CAS SOC-PESTMS2	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G084	K1404420-005	05/01/14	05/03/14	20.369g	1mL	60.2	
Method Blank	KWG1404049-5	NA	NA	20.480g	1ml	NA	
RM11E-G084MS	KWG1404049-1	05/01/14	05/03/14	20.444g	1ml	60.2	
RM11E-G084DMS	KWG1404049-2	05/01/14	05/03/14	20.480g	1ml	60.2	
Lab Control Sample	KWG1404049-3	NA	NA	10.000g	1ml	NA	
Duplicate Lab Control Sample	KWG1404049-4	NA	NA	10.000g	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

REVISED
8:02 am, May 22, 2014

ALS Environmental
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626
T: +1 360 577 7222
F: +1 360 636 1068
www.alsglobal.com

June 4, 2014
Revised

Analytical Report for Service Request No: K1404420
Service Request Number: K1404420.02

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: RM11E Supplemental RI/FS Investigation/487.002.004

Dear Erin:

Enclosed is the revised report for the samples submitted to our laboratory on May 03, 2014. For your reference, these analyses have been assigned our service request number K1404420.02.

Total Organic Carbon, Total Solids, and PCB's have been added to sample RM11E-G089 per your request.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Gregory Salata

Gregory Salata, Ph.D.
Client Services Manager

GS/aj

RIGHT SOLUTIONS | RIGHT PARTNER

REVISED
4:57 pm, Jun 04, 2014

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/3/14
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
RM11E-G078	K1404420-001	**0.875**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G080	K1404420-002	**2.22**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G081	K1404420-003	**2.09**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G083	K1404420-004	**2.30**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G084	K1404420-005	**2.50**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G085	K1404420-006	**1.35**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G086	K1404420-007	**0.487**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G087	K1404420-008	**2.87**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G088	K1404420-009	**1.27**	0.050	0.020	1	05/08/14 13:30	5/8/14	
RM11E-G089	K1404420-010	**0.771**	0.050	0.020	1	06/02/14 09:30	6/2/14	
RM11E-G578	K1404420-011	**1.00**	0.050	0.020	1	05/08/14 13:30	5/8/14	
Method Blank	K1404420-MB2	ND U	0.050	0.020	1	05/08/14 13:30	5/8/14	
Method Blank	K1404420-MB3	ND U	0.050	0.020	1	06/02/14 09:30	6/2/14	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Replicate Sample Summary
Carbon, Total Organic (TOC)

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-G078	K1404420-001DUP	0.050	0.020	0.875	0.850	0.862	3	27	05/08/14
RM11E-G089	K1404420-010DUP	0.050	0.020	0.771	0.722	0.746	7	27	06/02/14

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
		Date Analyzed:	05/8/14
		Date Extracted:	05/8/14

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-G078	**Units:**	Percent
Lab Code:	K1404420-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1404420-001MS			**Duplicate Matrix Spike** K1404420-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.875	3.96	3.06	101	3.91	3.04	100	69-123	<1	27

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ALS Group USA, Corp.
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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
		Date Analyzed:	06/2/14
		Date Extracted:	06/2/14

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	RM11E-G089	**Units:**	Percent
Lab Code:	K1404420-010	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	CAS SOP		

		Matrix Spike K1404420-010MS			**Duplicate Matrix Spike** K1404420-010DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.771	3.72	2.95	100	3.79	3.00	101	69-123	<1	27

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	05/08/14
Sample Matrix:	Sediment	**Date Extracted:**	05/08/14

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	391889

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1404420-LCS1	0.255	0.275	93	74-118

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Analyzed:**	06/02/14
Sample Matrix:	Sediment	**Date Extracted:**	06/02/14

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	395151

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1404420-LCS2	0.262	0.275	95	74-118

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	391889	KQ1404985-01	05/08/14 13:30	20.0	19.8	99	90-110
CCV2	391889	KQ1404985-02	05/08/14 13:30	20.0	19.7	98	90-110
CCV3	391889	KQ1404985-03	05/08/14 13:30	20.0	19.9	99	90-110
CCV4	395151	KQ1405991-01	06/02/14 09:30	20.0	19.8	99	90-110
CCV5	395151	KQ1405991-02	06/02/14 09:30	20.0	19.9	99	90-110

Client: GSI Water Solutions, Inc **Service Request:**K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	391889	KQ1404985-04	05/08/14 13:30	0.050	0.020	ND	U
CCB2	391889	KQ1404985-05	05/08/14 13:30	0.050	0.020	ND	U
CCB3	391889	KQ1404985-06	05/08/14 13:30	0.050	0.020	ND	U
CCB4	395151	KQ1405991-03	06/02/14 09:30	0.050	0.020	ND	U
CCB5	395151	KQ1405991-04	06/02/14 09:30	0.050	0.020	ND	U

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Analytical Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/3/14
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
RM11E-G078	K1404420-001	**64.3**	-	-	1	05/07/14 14:50	
RM11E-G080	K1404420-002	**66.5**	-	-	1	05/07/14 14:50	
RM11E-G081	K1404420-003	**52.0**	-	-	1	05/07/14 14:50	
RM11E-G083	K1404420-004	**42.8**	-	-	1	05/07/14 14:50	
RM11E-G084	K1404420-005	**60.2**	-	-	1	05/07/14 14:50	
RM11E-G085	K1404420-006	**78.7**	-	-	1	05/07/14 14:50	
RM11E-G086	K1404420-007	**79.1**	-	-	1	05/07/14 14:50	
RM11E-G087	K1404420-008	**73.2**	-	-	1	05/07/14 14:50	
RM11E-G088	K1404420-009	**66.1**	-	-	1	05/07/14 14:50	
RM11E-G089	K1404420-010	**72.1**	-	-	1	06/03/14 16:04	
RM11E-G578	K1404420-011	**62.5**	-	-	1	05/07/14 14:50	

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QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/14 - 05/02/14
Sample Matrix:	Sediment	**Date Received:**	05/03/14
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Solids, Total

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
RM11E-G078	K1404420-001DUP	-	-	64.3	63.6	64.0	1	10	05/07/14
RM11E-G089	K1404420-010DUP	-	-	72.1	70.7	71.4	2	10	06/03/14

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Polychlorinated Biphenyls

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RM11E-G078	K1404420-001	05/02/2014	05/03/2014
RM11E-G080	K1404420-002	05/02/2014	05/03/2014
RM11E-G081	K1404420-003	05/02/2014	05/03/2014
RM11E-G083	K1404420-004	05/01/2014	05/03/2014
RM11E-G084	K1404420-005	05/01/2014	05/03/2014
RM11E-G085	K1404420-006	05/02/2014	05/03/2014
RM11E-G086	K1404420-007	05/02/2014	05/03/2014
RM11E-G087	K1404420-008	05/02/2014	05/03/2014
RM11E-G089	K1404420-010	05/01/2014	05/03/2014
RM11E-G578	K1404420-011	05/02/2014	05/03/2014
RM11E-G978	K1404420-012	05/02/2014	05/03/2014
RM11E-G078MS	KWG1404167-1	05/02/2014	05/03/2014
RM11E-G078DMS	KWG1404167-2	05/02/2014	05/03/2014

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G089	**Units:**	ug/Kg
Lab Code:	K1404420-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1221	ND	U	7.0	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1232	ND	Ui	4.3	3.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1242	**2.3**	JP	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1248	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1254	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1260	**13**		4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1262	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	
Aroclor 1268	ND	U	4.3	2.1	1	05/05/14	05/08/14	KWG1404167	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	69	43-148	05/08/14	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004
Sample Matrix: Sediment

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: 8082A **Level:** Low

Sample Name	Lab Code	Sur1
RM11E-G078	K1404420-001	83
RM11E-G080	K1404420-002	90
RM11E-G081	K1404420-003	78
RM11E-G083	K1404420-004	75
RM11E-G084	K1404420-005	68
RM11E-G085	K1404420-006	84
RM11E-G086	K1404420-007	84
RM11E-G087	K1404420-008	81
RM11E-G089	K1404420-010	69
RM11E-G578	K1404420-011	73
Method Blank	KWG1404167-4	89
RM11E-G078MS	KWG1404167-1	82
RM11E-G078DMS	KWG1404167-2	89
Lab Control Sample	KWG1404167-3	82

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014
		Time Analyzed:	01:44

Method Blank Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Instrument ID:**	GC28.i
Lab Code:	KWG1404167-4	**File ID:**	J:\GC28\DATA\050714.B\0507F018.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404167

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1404167-3	J:\GC28\DATA\050714.B\0507F017.D	05/08/14	01:21
RM11E-G078	K1404420-001	J:\GC28\DATA\050714.B\0507F019.D	05/08/14	02:06
RM11E-G078MS	KWG1404167-1	J:\GC28\DATA\050714.B\0507F020.D	05/08/14	02:28
RM11E-G078DMS	KWG1404167-2	J:\GC28\DATA\050714.B\0507F021.D	05/08/14	02:50
RM11E-G080	K1404420-002	J:\GC28\DATA\050714.B\0507F022.D	05/08/14	03:13
RM11E-G081	K1404420-003	J:\GC28\DATA\050714.B\0507F023.D	05/08/14	03:35
RM11E-G083	K1404420-004	J:\GC28\DATA\050714.B\0507F024.D	05/08/14	03:57
RM11E-G084	K1404420-005	J:\GC28\DATA\050714.B\0507F025.D	05/08/14	04:20
RM11E-G085	K1404420-006	J:\GC28\DATA\050714.B\0507F026.D	05/08/14	04:42
RM11E-G086	K1404420-007	J:\GC28\DATA\050714.B\0507F027.D	05/08/14	05:04
RM11E-G087	K1404420-008	J:\GC28\DATA\050714.B\0507F028.D	05/08/14	05:27
RM11E-G089	K1404420-010	J:\GC28\DATA\050714.B\0507F031.D	05/08/14	06:34
RM11E-G578	K1404420-011	J:\GC28\DATA\050714.B\0507F032.D	05/08/14	06:56

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment	**Date Analyzed:**	05/08/2014
		Time Analyzed:	01:21

Lab Control Sample Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Lab Control Sample	**Instrument ID:**	GC28.i
Lab Code:	KWG1404167-3	**File ID:**	J:\GC28\DATA\050714.B\0507F017.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1404167

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1404167-4	J:\GC28\DATA\050714.B\0507F018.D	05/08/14	01:44
RM11E-G078	K1404420-001	J:\GC28\DATA\050714.B\0507F019.D	05/08/14	02:06
RM11E-G078MS	KWG1404167-1	J:\GC28\DATA\050714.B\0507F020.D	05/08/14	02:28
RM11E-G078DMS	KWG1404167-2	J:\GC28\DATA\050714.B\0507F021.D	05/08/14	02:50
RM11E-G080	K1404420-002	J:\GC28\DATA\050714.B\0507F022.D	05/08/14	03:13
RM11E-G081	K1404420-003	J:\GC28\DATA\050714.B\0507F023.D	05/08/14	03:35
RM11E-G083	K1404420-004	J:\GC28\DATA\050714.B\0507F024.D	05/08/14	03:57
RM11E-G084	K1404420-005	J:\GC28\DATA\050714.B\0507F025.D	05/08/14	04:20
RM11E-G085	K1404420-006	J:\GC28\DATA\050714.B\0507F026.D	05/08/14	04:42
RM11E-G086	K1404420-007	J:\GC28\DATA\050714.B\0507F027.D	05/08/14	05:04
RM11E-G087	K1404420-008	J:\GC28\DATA\050714.B\0507F028.D	05/08/14	05:27
RM11E-G089	K1404420-010	J:\GC28\DATA\050714.B\0507F031.D	05/08/14	06:34
RM11E-G578	K1404420-011	J:\GC28\DATA\050714.B\0507F032.D	05/08/14	06:56

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: GSI Water Solutions, Inc **Service Request:** K1404420
Project: RM11E Supplemental RI/FS Investigation/487.002.004

Analysis Run Log
Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A **Analysis Lot:** KWG1404301
Instrument ID: GC28.i
Column: DB-35MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0507F003.D	Continuing Calibration Verification	KWG1404301-1	5/7/2014	20:08		5/7/2014	20:08
0507F004.D	Instrument Blank	KWG1404301-2	5/7/2014	20:30		5/7/2014	20:30
0507F005.D	ZZZZZZ	ZZZZZZ	5/7/2014	20:53		5/7/2014	20:53
0507F006.D	ZZZZZZ	ZZZZZZ	5/7/2014	21:15		5/7/2014	21:15
0507F007.D	ZZZZZZ	ZZZZZZ	5/7/2014	21:38		5/7/2014	21:38
0507F008.D	ZZZZZZ	ZZZZZZ	5/7/2014	22:00		5/7/2014	22:00
0507F011.D	ZZZZZZ	ZZZZZZ	5/7/2014	23:07		5/7/2014	23:07
0507F014.D	ZZZZZZ	ZZZZZZ	5/8/2014	00:14		5/8/2014	00:14
0507F015.D	Continuing Calibration Verification	KWG1404301-3	5/8/2014	00:37		5/8/2014	00:37
0507F016.D	Instrument Blank	KWG1404301-4	5/8/2014	00:59		5/8/2014	00:59
0507F017.D	Lab Control Sample	KWG1404167-3	5/8/2014	01:21		5/8/2014	01:21
0507F018.D	Method Blank	KWG1404167-4	5/8/2014	01:44		5/8/2014	01:44
0507F019.D	RM11E-G078	K1404420-001	5/8/2014	02:06		5/8/2014	02:06
0507F020.D	RM11E-G078MS	KWG1404167-1	5/8/2014	02:28		5/8/2014	02:28
0507F021.D	RM11E-G078DMS	KWG1404167-2	5/8/2014	02:50		5/8/2014	02:50
0507F022.D	RM11E-G080	K1404420-002	5/8/2014	03:13		5/8/2014	03:13
0507F023.D	RM11E-G081	K1404420-003	5/8/2014	03:35		5/8/2014	03:35
0507F024.D	RM11E-G083	K1404420-004	5/8/2014	03:57		5/8/2014	03:57
0507F025.D	RM11E-G084	K1404420-005	5/8/2014	04:20		5/8/2014	04:20
0507F026.D	RM11E-G085	K1404420-006	5/8/2014	04:42		5/8/2014	04:42
0507F027.D	RM11E-G086	K1404420-007	5/8/2014	05:04		5/8/2014	05:04
0507F028.D	RM11E-G087	K1404420-008	5/8/2014	05:27		5/8/2014	05:27
0507F029.D	Continuing Calibration Verification	KWG1404301-5	5/8/2014	05:49		5/8/2014	05:49
0507F030.D	Instrument Blank	KWG1404301-6	5/8/2014	06:11		5/8/2014	06:11
0507F031.D	RM11E-G089	K1404420-010	5/8/2014	06:34		5/8/2014	06:34
0507F032.D	RM11E-G578	K1404420-011	5/8/2014	06:56		5/8/2014	06:56
0507F033.D	Continuing Calibration Verification	KWG1404301-7	5/8/2014	07:18		5/8/2014	07:18
0507F034.D	Instrument Blank	KWG1404301-8	5/8/2014	07:41		5/8/2014	07:41

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Extracted:**	05/05/2014
Sample Matrix:	Sediment		

Extraction Prep Log
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1404167
Analysis Method:	8082A	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RM11E-G078	K1404420-001	05/02/14	05/03/14	40.383g	4mL	64.3	
RM11E-G080	K1404420-002	05/02/14	05/03/14	40.038g	4mL	66.5	
RM11E-G081	K1404420-003	05/02/14	05/03/14	40.021g	4mL	52.0	
RM11E-G083	K1404420-004	05/01/14	05/03/14	30.281g	4mL	42.8	
RM11E-G084	K1404420-005	05/01/14	05/03/14	40.337g	4mL	60.2	
RM11E-G085	K1404420-006	05/02/14	05/03/14	40.316g	4mL	78.7	
RM11E-G086	K1404420-007	05/02/14	05/03/14	40.053g	4mL	79.1	
RM11E-G087	K1404420-008	05/02/14	05/03/14	40.031g	10mL	73.2	
RM11E-G089	K1404420-010	05/01/14	05/03/14	40.033g	4mL	72.1	
RM11E-G578	K1404420-011	05/02/14	05/03/14	40.196g	4mL	62.5	
Method Blank	KWG1404167-4	NA	NA	40.390g	4mL	NA	
RM11E-G078MS	KWG1404167-1	05/02/14	05/03/14	40.401g	4mL	64.3	
RM11E-G078DMS	KWG1404167-2	05/02/14	05/03/14	40.390g	4mL	64.3	
Lab Control Sample	KWG1404167-3	NA	NA	20.000g	4mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

Confirmation Results

Client:	GSI Water Solutions, Inc	**Service Request:**	K1404420
Project:	RM11E Supplemental RI/FS Investigation/487.002.004	**Date Collected:**	05/01/2014
Sample Matrix:	Sediment	**Date Received:**	05/03/2014
		Date Extracted:	05/05/2014

Polychlorinated Biphenyls (PCBs)

Sample Name:	RM11E-G089	**Units:**	ug/Kg
Lab Code:	K1404420-010	**Basis:**	Dry
		Level:	Low
Extraction Method:	EPA 3541		
Analysis Method:	8082A		

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Aroclor 1242	4.3	2.1	2.3	3.7	46.7	JP	1	05/08/14
Aroclor 1260	4.3	2.1	13	16	20.7		1	05/08/14

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Work Request # (Original) K1404420

Tier: V

Date Analyzed: 6/2/14

Analyst: AB

Analysis: TOC Soil/PSEP

Run # 395151

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA RUSH due 6/3/14

COMMENTS:

Rush

Final Approved by: AB Date: 6/3/14

DQREPORT

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Analytical Results Summary

Instrument Name: K-TOC-02 **Analyst:** DBRADBURY **Analysis Lot:** 395151 **Method/Testcode:** PSEP TOC/PSEP TOC T

ab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
1404420-010	Carbon, Total Organic (TOC)	N/A		Sediment	0.77 Percent	1 mg	0.771 Percent	1	0.020	0.050			6/2/14 09:30	N	V
Q1405990-01	Carbon, Total Organic (TOC)	DUP	K1404420-010	Sediment	0.72 Percent	1 mg	0.722 Percent	1	0.020	0.050		7	6/2/14 09:30	N	V
Q1405990-02	Carbon, Total Organic (TOC)	TRP	K1404420-010	Sediment	0.78 Percent	1 mg	0.778 Percent	1	0.020	0.050		4	6/2/14 09:30	N	V
Q1405990-03	Carbon, Total Organic (TOC)	MS	K1404420-010	Sediment	3.72 Percent	1 mg	3.72 Percent	1	0.020	0.050	100		6/2/14 09:30	N	V
Q1405990-04	Carbon, Total Organic (TOC)	DMS	K1404420-010	Sediment	3.79 Percent	1 mg	3.79 Percent	1	0.020	0.050	101	<1	6/2/14 09:30	N	V
Q1405990-05	Carbon, Total Organic (TOC)	LCS		Sediment	0.26 Percent	1 mg	0.262 Percent	1	0.020	0.050	95		6/2/14 09:30	N	V
Q1405990-06	Carbon, Total Organic (TOC)	MB		Sediment	0.00 Percent	1 mg	0.050 Percent U	1	0.020	0.050			6/2/14 09:30	N	V
Q1405991-01	Carbon, Total Organic (TOC)	CCV		Sediment	19.84 Percent	1 mg	19.8 Percent	1			99		6/2/14 09:30	N	V
Q1405991-02	Carbon, Total Organic (TOC)	CCV		Sediment	19.89 Percent	1 mg	19.9 Percent	1			99		6/2/14 09:30	N	V
Q1405991-03	Carbon, Total Organic (TOC)	CCB		Sediment	0.01 Percent	1 mg	0.050 Percent U	1	0.020	0.050			6/2/14 09:30	N	V
Q1405991-04	Carbon, Total Organic (TOC)	CCB		Sediment	0.00 Percent	1 mg	0.050 Percent U	1	0.020	0.050			6/2/14 09:30	N	V

AB 6/2/14

973

indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Columbia Analytical Services, Inc.

Run # 395151

Service Request #: K1404420
Analysis For: Total Organic Carbon (TOC)

Method: PSEP (Combustion/Coulometric)
Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon	% Carbon Reported
CCV-1	11.0	2189.2	6.5	2182.7	19.843	19.8
CCB-1	50.0	9.0	6.5	2.5	0.005	<0.02
LCS-1	42.3	117.3	6.5	110.8	0.262	0.262
MB-1	50.0	7.0	6.5	0.5	0.001	<0.02
K1404420-010	49.7	389.5	6.5	383.0	0.771	0.771
K1404420-010d	49.5	363.7	6.5	357.2	0.722	0.722
K1404420-010t	49.7	393.2	6.5	386.7	0.778	0.778
K1404420-010ms	29.2	1091.3	6.5	1084.8	3.715	3.72
K1404420-010msd	29.3	1117.8	6.5	1111.3	3.793	3.79
CCV-2	11.5	2293.8	6.5	2287.3	19.890	19.9
CCB-2	50.0	8.3	6.5	1.8	0.004	<0.02

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Revision 2

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** $\frac{\text{(Net Reading)(µg 0.1)}}{\text{mg Sample Injected}}$

LCS: ERA Cat#: 542 Lot#: D076-542 ID#: TOCS/1-17-D TV = 0.275%C %REC = 95

CCV : Urea EMD (lot #3229B230) ID#: TOCS/1-11-M TV = 20.0%C

CCV1 = 99 CCV2 = 99 CCV3 = 0

HCl: 10% ID#Toc/2-80-O **Balance**: K-Balance-33

Oven ID# K-OVEN-01 **Thermometer** ID# K31316

K1404420-010ms = 4.3mg x 20 / 29.2 = 2.95 % REC = 100 RSD = 2

K1404420-010msd = 4.4mg x 20 / 29.3 = 3.00 % REC = 101

			date	time
Analyzed By:	AB	Date:	6/2/14	9:30
Reveiwed By:		Date:	6/2/14	

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TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked
CCV-1	11.0	2189.2	%REC=99
CCB-1	50.0	9.0	
LCS-1	42.3	117.3	%REC=95
MB-1	50.0	7.0	
K1404420-010	49.7	389.5	5/30/2014
K1404420-010d	49.5	363.7	5/30/2014
K1404420-010t	49.7	393.2	5/30/2014
K1404420-010ms	29.2	1091.3	5/30/2014
K1404420-010msd	29.3	1117.8	5/30/2014
CCV-2	11.5	2293.8	%REC=99
CCB-2	50.0	8.3	

Baseline
6.5
6.4
6.6
AVG
6.5

AB 6/2/14

Big dish

Date weighed: 6/2/14 AB

Sample ID:	LCS	MB			
Wgt. mg:	42.3	—			
Sample ID:	4420-10	-10d			
Wgt. mg:	49.7	49.5			
Sample ID:	-10t	-10MS			
Wgt. mg:	49.7	29.2			
Sample ID:	-10MSD				
Wgt. mg:	29.3				
Sample ID:					
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Prep Run # 209796

Run # 395151

little dish

Sample ID:			
Wgt. mg:			
Sample ID:			
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Sample ID:			
Wgt. mg:			
Sample ID:			
Wgt. mg:			

This form is intended to work as a map for sample layout
The wgts may not correspond to final weights on the run
Wgts can change due to boat breakage, machine problems etc...

Work Request # Original (K140) 442D

Tier: 1V

Date Analyzed: 5/3/14

Analyst: PF

Analysis: PSEP TS

395413

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: Rush Data Due Date 6/2/14

Final Approved by: [signature] Date: 06/04/14

DQREPORT

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Analytical Results Summary

Instrument Name: K-Balance-20 **Analyst:** PFAIMAN **Analysis Lot:** 395413 **Method/Testcode:** PSEP TS/PSEP TS

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1404420-010	Solids, Total	N/A		Sediment	72.10 Percent	g	72.1 Percent	1					6/3/14 16:04:00	N	V
KQ1406054-01	Solids, Total	DUP	K1404420-010	Sediment	70.70 Percent	g	70.7 Percent	1				2	6/3/14 16:04:00	N	V
KQ1406054-02	Solids, Total	TRP	K1404420-010	Sediment	71.10 Percent	g	71.1 Percent	1					6/3/14 16:04:00	N	V

6/4/14

06/04/14

978

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request #: **Method:** PSEP TS

Analysis For: Total Solids - As Received

Pan ID	Lab Code	Tare + Wet Wt. (g)	Tare (g)	Tare + Dry Wt. (g)	Dry Weight (g)	% Total Solids
AS REC'D	K1404420-010	11.06	1.29	8.330	7.04	72.1%
AS REC'D	K1404420-010D	11.56	1.30	8.550	7.25	70.7%
AS REC'D	K1404420-010T	12.92	1.28	9.560	8.28	71.1%
AS REC'D	CCV	1.00	1.00			
AS REC'D	CCV	100.00	100.00			
AS REC'D	CCV	1.00	1.00			
AS REC'D	CCV	100.01	100.00			
AS REC'D						
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Oven Temp : 105 /105 Time In : 6/3/2014 Time Out : 6/4/14 7:05

Comments:

K1404420-010/d x = 71.4 RPD = 2%

K1404420-010/T x = 71.3 RPD = 1%

RUN #: 395413 **Thermometer ID#:** K-OVEN-07 **Balance ID:** K-Balance-16

Analyst: PF Date: 6/3/2014

Reviewed By: [signature] Date: 06/04/14

K1404420-010 PSEP TST.xls

APPENDIX F
CULTURAL RESOURCE MONITORING REPORT

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST
PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:
RM11E GROUP

Legal description: T1 N, R1 E, Sec. 27,28 and 33
County: Multnomah
USGS quad: *Portland, Oreg.*
Project Acreage: approx. 42
Acres Surveyed: N/A
Findings: -
Fieldnotes: WillametteCRA
Curation: N/A

Archaeological Monitoring for the River Mile 11 East Supplemental Remedial Investigation Multnomah County, Oregon

Prepared by:
Matt Goodwin, B.S.

May 28, 2014

Prepared for
GSI Water Solutions
Portland, Oregon

Willamette Cultural Resources Associates, Ltd.

Portland, Oregon

WillametteCRA Report Number 13-30

Archaeological Monitoring for the River Mile 11 East Supplemental Remedial Investigation Multnomah County, Oregon

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Introduction

In late 2013 and early 2014, the River Mile East (RM11E) Group conducted surface sediment sampling, riverbank soil sampling, and monitoring well installation as part of a Supplemental Remedial Investigation and Feasibility Study (RI/FS). This work was conducted pursuant to the Statement of Work (SOW) contained within the Administrative Settlement Agreement and Order on Consent (Settlement Agreement) (U.S. Environmental Protection Agency [EPA] Region 10, CERCLA Docket No. 10-2013-0087). This investigation is supplementary to the RI/FS for the Portland Harbor Superfund Site and targeted to facilitate selection and design of a final remedy at theRM11E Project Area. The RM11E Project Area lies within and along the Willamette River in Portland, Oregon, and includes the in-water area and the riverbank (Figures 1 and 2).

The work is being conducted in accordance with the *Final Supplemental Remedial Investigation/Feasibility Study Work Plan* (GSI 2013) developed to comply with the requirements of the Settlement Agreement. The purpose of the RM11E Supplemental RI/FS is further characterize, study, and conduct an analysis of the Project Area to support preliminary design of a final remedy following issuance of the Record of Decision for Portland Harbor.

Fieldwork includes ground-disturbing activities (i.e., collection of subsurface soil and sediment samples, and groundwater monitoring well installation). To ensure compliance with Oregon statutes that protect Indian graves and archaeological resources (ORS 97.740 through 97.760 and 358.905 through 358.961) and Executive Order 96-30, the Oregon Department of Environmental Quality (DEQ) has developed guidelines for addressing cultural resources for proposed cleanup actions. These guidelines direct responsible parties to comply with the appropriate cultural resource statutes. To assist in this process, GSI Water Solutions (GSI), a consultant for the RM11E Group, retained the services of Willamette Cultural Resources Associates, Ltd. (WillametteCRA), to conduct cultural resources identification training for GSI staff and provide monitoring oversight for sampling work in the RM11E Project Area.

All monitoring was conducted within the framework of an approved Inadvertent Discovery Plan (IDP) (GSI 2013). The IDP detailed the protocol for recognizing and reporting the inadvertent discovery of cultural material and for the documentation and disposition of any archaeological material encountered. As part of the approved IDP, WillametteCRA staff conducted training for GSI personnel on identifying resources of lesser cultural or archaeological significance for which a professional archaeologist was not deemed necessary to be present. This training was conducted on October 22, 2013, by WillametteCRA Principal Archaeologist David Ellis. The results of the WillametteCRA monitoring are presented in this report. For in-depth background information on the environmental and cultural setting of the

project area the reader is referred to the monitoring report prepared by SWCA Environmental Consultants (Steinkamp et al. 2010).

Field Investigations

WillametteCRA monitored or provided on-call monitoring and oversight of ground-disturbing sampling activity for the RM11E Project during four phases of work. These four sampling efforts included:

- in-water surface sediment power grab sampling conducted October 30-31, 2013;
- surface soil sampling October 31 and November 18 and 22, 2013;
- subsurface soil sampling/monitoring well drilling November 19-23, 2013;
- and in-water surface sediment manual grab sampling May 1-2, 2014.

During those portions of the sampling efforts when WillametteCRA staff was not on-site, GSI personnel were instructed to exercise judgment (based on the training session and in-field guidance provided by WillametteCRA staff) and to follow the protocols established in the IDP should they encounter unanticipated cultural material.

WillametteCRA archaeologist Matt Goodwin, B.A., monitored the collection of in-water surface sediment power grab samples and shoreline soil samples on October 31, 2013, and subsurface upland soil borings for groundwater monitoring wells on November 19, 2013. Mr. Goodwin monitored portions of sampling activities, took field notes regarding the soil and presence or absence of cultural material (i.e., artifacts likely to have been generated by human activities, such as fragments of tools, ceramic vessels, or animal remains with evidence of human use), and took representative photographs of the sample locations and soil samples. WillametteCRA observed no evidence of any diagnostic cultural material (i.e., archaeological deposits) during the monitoring of in-water surface sediment power grab sampling or upland monitoring well borings. During monitoring of upland surface soil sampling, Mr. Goodwin observed a scatter of historic-period artifacts near the location of surface soil sample SL035. This scatter was recorded as archaeological site 13-30-1 (Appendix A). No artifacts were observed during monitoring of surface soil sample collection in this area. Details of these activities are presented in the following sections.

In-water and Shoreline Sampling

On October 31, 2013, WillametteCRA archaeologist Matt Goodwin monitored a total of five in-water power-grab samples and two shoreline soil samples in the RM11E Project Area. Mr. Goodwin spent half of the day monitoring in-water grab samples on the research vessel and half of the day monitoring shoreline soil sampling activities.

In-water samples were collected with a power grab sampling mechanism that employed a steel "clamshell" type bucket operated by remote from the research vessel deck (Figure 3). The grab sampling mechanism extracted sediments from the top 30 centimeters (cm) of the river bottom. In most instances multiple attempts were required to obtain a grab sample with at least 20 cm of penetration. At some sampling locations, after numerous attempts and consultation with the Project Manager, a lesser penetration depth was accepted. Upon removal from the river, Mr. Goodwin examined each sample for evidence of cultural material while GSI staff, collected the necessary samples for analytical testing.

Two of the five in-water power grab samples monitored contained cultural material, sample G079 and sample G082; however, only non-diagnostic material was observed. In sample G079 a single brick fragment measuring 5 cm by 10cm was observed. No markings were present on the brick. In sample G082 a portion of a small plastic disk, a single piece of colorless glass, and a brick fragment were recovered (Figure 4). None of these items had any markings or temporally diagnostic attributes. These items were noted, photographed, and discarded. Sediments encountered during sampling were relatively homogeneous and consisted of gray to grayish brown silt, sand, and gravel. Occasionally, modern debris was observed, including a plastic screw cap and plastic sheeting; non-diagnostic window glass; a metal bolt and screws; rope; electrical cords; plywood; and paint chips. No evidence of diagnostic cultural material (i.e., archaeological deposits) was observed during monitoring of in-water power grab sampling.

Mr. Goodwin monitored the collection of two surface soil samples in the shoreline portion of the RM11E Project Area, samples SL035 and SL036. These samples were collected in an area known as "the cove" located between the Cargill and Glacier Northwest facilities (Figure 5). This area is inundated during high water periods and is strewn with drift logs and other debris. The samples did not contain any evidence of subsurface cultural material. A surface scatter of historic period artifacts was observed. Additional detail is discussed in the following section.

During portions of the in-water and shoreline sampling efforts that were not directly overseen by a WillametteCRA archaeologist, GSI staff recorded some non-diagnostic anthropogenic material (including brick, metal, and wood fragments) in some of the samples. Review of GSI sample logs indicated that no diagnostic cultural material was encountered during the subsequent unmonitored in-water or shoreline sampling efforts.

Site 13-30-1

While GSI staff were preparing equipment and identifying the designated sample locations at "the cove," Mr. Goodwin observed a surface scatter of historic period artifacts. Approximately 150 artifacts were observed, most of which were unidentifiable metal fragments, screws, nuts, bolts, and nails. Only three temporal diagnostic artifacts were observed during site

recording: 2 black glass bottle bases and 1 ceramic fragment. Analysis indicates that these three artifacts in the scatter date back as far as the middle 19th century. One of the bottle bases features a pontil scar that appears to have been made with a bare iron rod (Figure 6). Not enough of the bottle was present to determine the specific manufacture technique but the apparent pontil scar indicated a pre-1870s manufacture date (Rock 1981). It is unclear if this artifact scatter represents waste material that was deposited on site by humans, or if some or all of the items were deposited by alluvial processes during high water episodes. This scatter was recorded as archaeological site 13-30-1 (temporary field number). A detailed description of the site area and the observed artifacts is provided in the site record form (Appendix A).

Subsurface Soil Sampling/Monitoring Well Drilling

On November 19, 2013, WillametteCRA staff archaeologist Matt Goodwin monitored the drilling of monitoring well MW003d and the collection of subsurface soil samples from this monitoring well boring. Mr. Goodwin examined the samples for evidence of cultural material while GSI staff collected the necessary samples for analytical testing (Figure 7). The monitoring well location was drilled to total depth of 106 ft. below ground surface (bgs) using a core sampler advanced with a rotosonic drilling rig (Figure 8). Approximately five-foot segments of soil were examined for evidence of cultural material, and the necessary subsurface soil samples were collected for analytical testing or archival down to a depth of 35 ft. bgs. Fluctuation in drilling conditions and encountered subsurface soil determined the length of each soil sample and samples varied from 2 to 10 ft. in length.

The general location of monitoring well MW003d is characterized by approximately 15-25 ft. of imported fill material/overburden. The drilling at this precise location indicated the fill/native soil interface was located at approximately 18 ft bgs. Mr. Goodwin carefully examined all soil samples from 15 ft. to 46 ft. bgs for any evidence of archaeological material. Soil profiles were fairly homogeneous and typically consisted of gray brown to gray silt/sandy silt/silty clay, occasionally containing modern material, and organic material (e.g., milled wood, burnt wood, and reeds) (Figure 9). No evidence of subsurface cultural deposits was observed.

During portions of this effort that were not directly overseen by a WillametteCRA archaeologist, GSI staff recorded some non-diagnostic anthropogenic material (including brick, metal, and wood fragments) in some of the samples. Review of GSI sample logs indicated that no diagnostic cultural material was encountered during the subsequent unmonitored upland soil sampling efforts.

Surface Sediment Manual Grab Sampling

On May 1 and 2, 2014, GSI staff collected diver-assisted manual grab samples. These samples were collected from locations under active commercial docks and required the assistance of a certified diver in addition to the GSI scientists. GSI personnel consulted with Willamette CRA and it was decided that, due to safety concerns relating to the available space on the research vessel, and the lack of cultural material observed during previous sediment sampling events, WillametteCRA staff would provide on-call monitoring and oversight for this portion of the sampling effort.

A total of seven manual grab samples were collected during this period. GSI staff did not report observing any cultural material during this diver-assisted sampling effort.

Conclusions and Recommendations

WillametteCRA has completed archaeological monitoring and provided oversight of upland soil borings and surface soil sample collection, and in-water power grab and diver-assisted grab sediment sample collections for the RM11E Project Area. Our investigation included direct monitoring during the collection of five in-water power grab surface sediment samples, two surface riverbank soil samples, and installation of one groundwater monitoring well in the upland area. All monitoring and oversight was conducted within the framework of an approved IDP (GSI 2013). WillametteCRA field staff observed no evidence of cultural material (i.e., archaeological deposits) in any of the samples and GSI staff did not report observing any diagnostic cultural material during the sampling effort.

WillametteCRA staff did record a surface scatter of historic period artifacts dating to the late nineteenth century. Incidental discovery of historic period artifacts of this kind would not be considered unexpected at this location. Review of historic-period maps (Sanborn 1889, 1901) indicates that the Project Area has been developed for industrial use since the nineteenth century. The historic-period Sanborn maps also indicate that a large portion of the riverbank in this area consists of imported fill material, much of which was referenced as "refuse." Should future ground-disturbing sampling or remediation efforts be required at this location, it is recommended that a qualified archaeological monitor be present. WillametteCRA recommends no further field investigations for the RM11E Project Area at this time.

Should unanticipated archaeological or historical resources be encountered during future activities at this location, all ground-disturbing activity in the vicinity of the find should be halted and the Oregon State Historic Preservation Office (SHPO) notified immediately in accordance with the IDP (GSI 2013). In the event that evidence of human skeletal remains is encountered during future work, all ground-disturbing activity in the vicinity of the discovery should be

halted immediately, efforts taken to protect such evidence in place, and SHPO, Oregon State Police, Legislative Commission on Indian Services, appropriate Tribes, and Multnomah County Medical Examiner promptly notified to ensure compliance with state and federal laws.

References Cited

GSI Water Solutions, Inc.
2013 *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile Eleven East Portland, Oregon.* GSI Water Solutions, Inc., Portland, Oregon..

Rock, Jim
1981 *Glass Bottles: Basic Identification.* Manuscript on file, WillametteCRA, Portland, Oregon

Sanborn Map and Publishing Company
1889 *Insurance Maps of Portland, Oregon*. Volume 1. Sanborn Map & Publishing Company, New York. On file, Multnomah County Library.
1901 *Insurance Maps of Portland, Oregon*. Volume 1. Sanborn Map & Publishing Company, New York. On file, Multnomah County Library.

Steinkamp, Matthew J., R. Todd Baker, and Jason M. Allen
2010 *Cultural Resources Monitoring for River Mile 11 East Focused Sediment Characterization, Willamette River, Multnomah County, Oregon.* SWCA Environmental Consultants., Portland, Oregon.

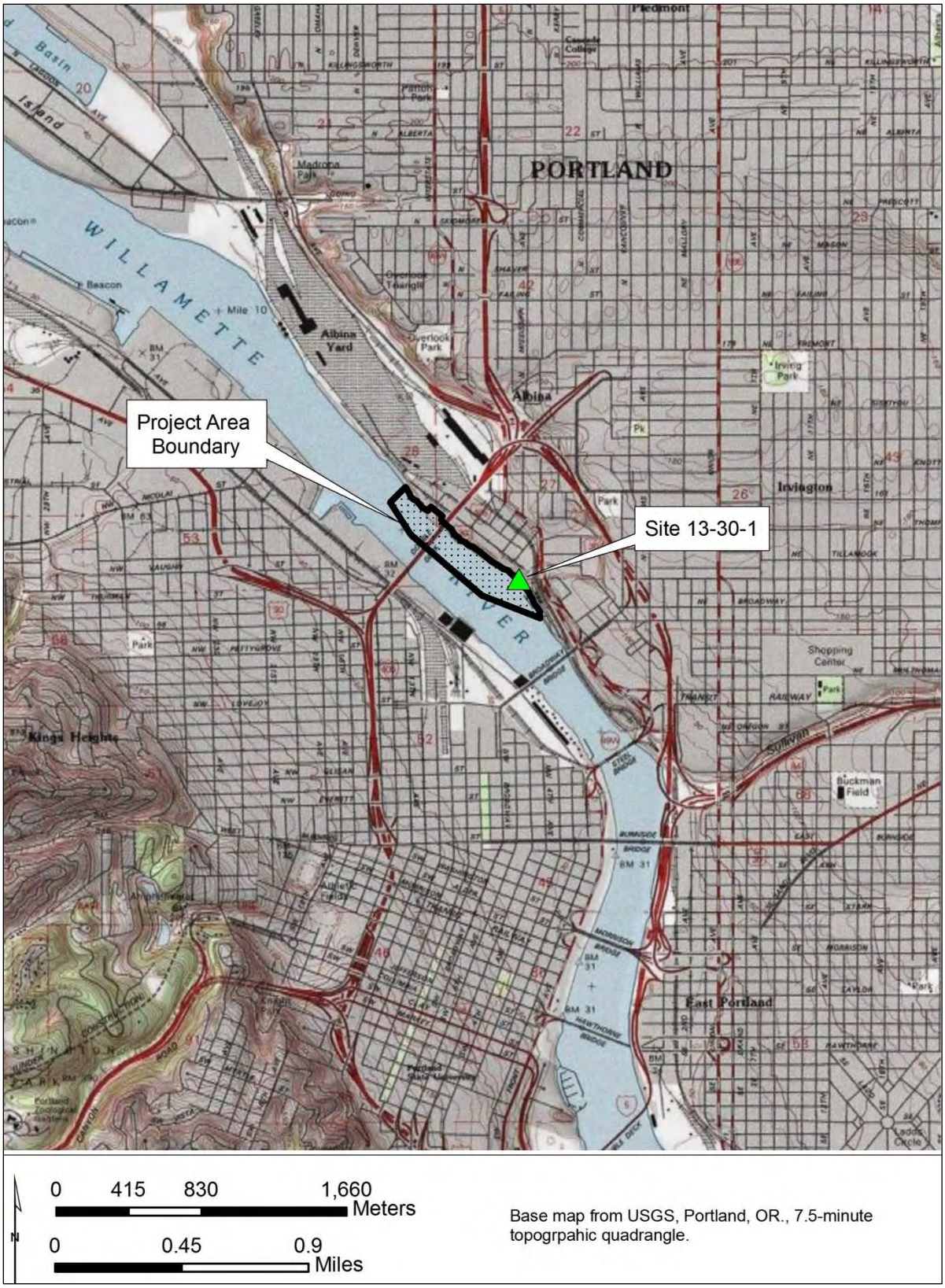

Figure 1. Map showing the RM11E Project Area location and the location of site 13-30-1.

Figure 2. Aerial photo detailing the RM11E Project Area boundaries.

Figure 3. View facing west of the in-water surface sediment power grab rig on board the project research vessel.

Figure 4. View of the anthropogenic material observed in power grab sample G082.

Figure 5. View facing northwest of the surface soil sampling area referred to as "the cove".

Figure 6. View of black glass bottle base with apparent "pontil scar" dating to the 19th century.

Figure 7. View of GSI personnel logging samples from the upland monitoring well MW003d.

Figure 8. View facing west of the rotosonic drill rig, with GSI personnel in the foreground.

Figure 9. View of the sample from the 40-46 ft. segment of the soil core for MW003d.

Appendix A:

Oregon Archaeological Site Form for 13-30-1

12782

State of Oregon Archaeological Site Record

Administrative Data

Smithsonian Number:		Alt Site Numbers:	13-30-1
Site Name:		Form Type:	New
Managing Office*:		County:	Multnomah

National Register Status :	Status	Role	Date	Author
	Not Eligible	Fieldworker	05/15/2014	Matt Goodwin

Administrative Data

Site Type	• Refuse Scatter	Owners(s):	
Features*:		Cultural Periods(s)*:	• 19th Century • Depression/WWII (1929-1950)

Ownership/Management Notes	

Size/Type/Age

Dimensions:	Length	60	Width	30	Units	Feet	Area	1800 Sq f
Depth of Cultural Deposits	0 cm							
General Age	Historic							

Location Data

Legal Description:	Township	Range	Section	¼	¼	¼	DLC	Meridian
	1 N	1 E	27	SW	SE	SW	0	Willamette

UTM Coordinates	Type	East	North	Method	Zone	Datum
	Centerpoint	568845	5058317	GPS < 1m	10	83

Map References	Map Name/Year	Revision Year
	PORTLAND 7'	2011

Access Description	From the intersection of NE Broadway and NE Grand turn right onto NE Broadway for approximately 0.5 miles and then turn right onto N Larrabee and continue for 0.2 miles. Take a slight right to merge onto N Interstate and turn left onto N Tillamook, then take your 1st right onto N Lewis. Now take your 1st righ onto N Loring and then turn right onto N Albina which turns into N River. Take the road until it ends. The site is approximately 100 ft. northwest on the shore of the Willamette River.

Environmental Data

Province	Willamette Valley
Basin	Willamette
Subbasin	
Drainage Name	Willamette River

State of Oregon Archaeological Site Record

Elevation	From 150 To 150 ft
Aspect	Aspect: W
Depositional Environment	• Alluvial
Soil Description	
Culturally Significant Vegetation	
Culturally Significant Vegetation Description	
Water Sources	Name Type Stream Type Stream Class Distance Direction Willamette River River Perennial 10 *meters* 270 *deg*
Site Setting	This site sits in the Willamette Valley on the east bank of the Willamette River in Portland near an industrial area.

Site Description

Site Description	This site is a historic refuse scatter identified along the east bank of the Willamette River during archaeological monitoring. The materials were likely redeposited through alluvial processes at this location and may not be in their original context. The majority of the artifacts observed were unidentifiable metal fragments, screws, nuts, bolts and nails. The only temporally diagnostic artifacts observed were a single ceramic sherd and two black glass bottle bases. The ceramic sherd is most likely an unrefined whiteware and the decoration appears to be from either a flow-blue Transferprint or sponged whiteware. Although these ware types have long manufacture ranges and reproduction Transferprint wares are still produced today, they are most common an archaeological sites that date from the mid- to late 1800s. Transferprinted whitewares were most popular in American households between the early and mid-nineteenth century, but also experienced a brief revival in popularity in the last few decades of the nineteenth century (Samford 1997:20). Blue was the first and most popular color for printed decoration on transferprinted wares, and the intentional flowing of the color became popular in the 1840s (Samford 1997:24). Sponge or Spatter ware was also popular around the mid-nineteenth century, and has a peak popularity date of 1830 to 1860 (Stelle 2011).Two black glass bottle bases with pronounced kick-ups and a pontil scars: Black glass, which is actually a very dark green or blue, is generally associated with liquor, beer, wine, and medicine bottles. This color of glass is most common on archaeological sites that date between 1840 and 1880 (Rock 1981). One of these bases features a pontil scar that appears to have been made with a bare iron rod (The one in the attached photos). The majority of bottles with a pontil scar were free blown or dip molded. Not enough of these two bottles is present to determine the specific manufacture technique but the pontil indicates a pre-1870s manufacture for both bases (Rock 1981).
Dates of Use	From To BP/AD/BC Method 1850 1870 AD Historic Artifact

State of Oregon Archaeological Site Record

Site Observations	Present Quantity Ceramics 1 Bottles 2	
Estimated Counts		historic:150

Rock Art

No Rock Art Specified

Site Condition

Visit Date	10/31/2013
Site Condition	• Poor- Site Damage >60% and
Recorder	Matt Goodwin
Artifacts Collected?	No
Activities/Work Performed	Monitoring
Protective Measures Recommended	
Impacts/Impact Agents	• Water/Inundated • Weathering • Erosion

Bibliographic References

Author	Publication Year	Title	Agency/Organization	Primary Reference	User Agency
Samford, Patricia M.	1997	Response to a Market: Dating English Underglaze Transfer-Printed Wares. Historical Archaeology		No	WillametteCRA
Stelle, Lenville J.	2001	An Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin, Central Illinois, USA.		No	WillametteCRA
Rock, Jim	1981	Glass Bottles: Basic Identification.		No	WillametteCRA

Files Uploads

• 13-30-1 Site Form Upload Doc.pdf

Recorder data:	Recorder	Recorded Date
	Matt Goodwin	10/31/2013

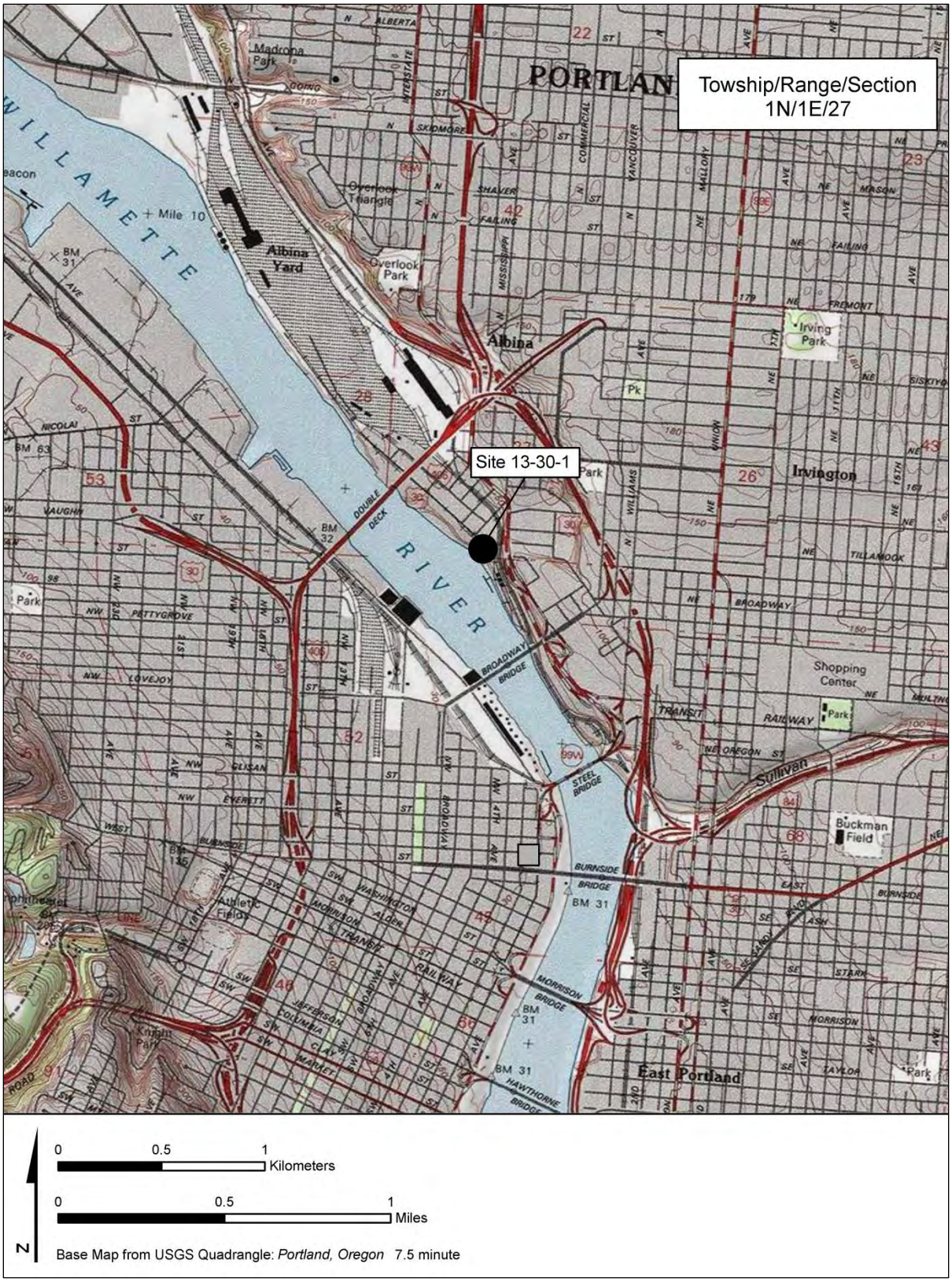

Figure 1. Site 13-30-1 location.

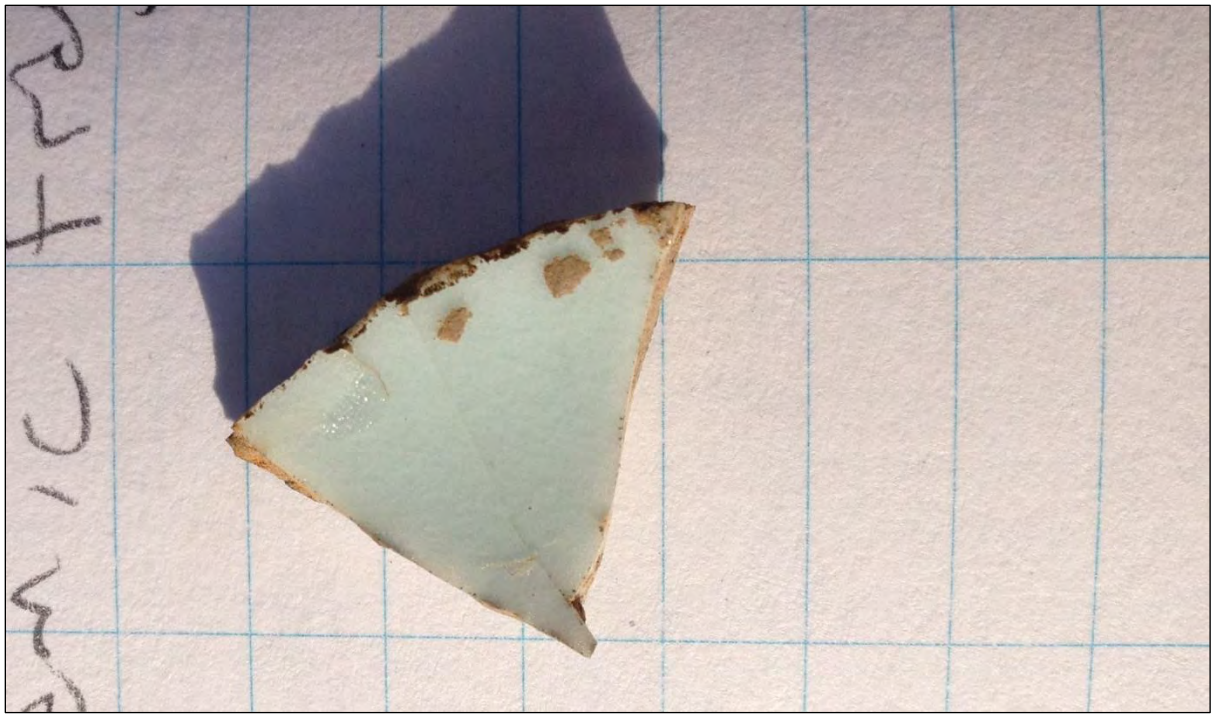

Figure 2. Detail view of ceramic sherd.

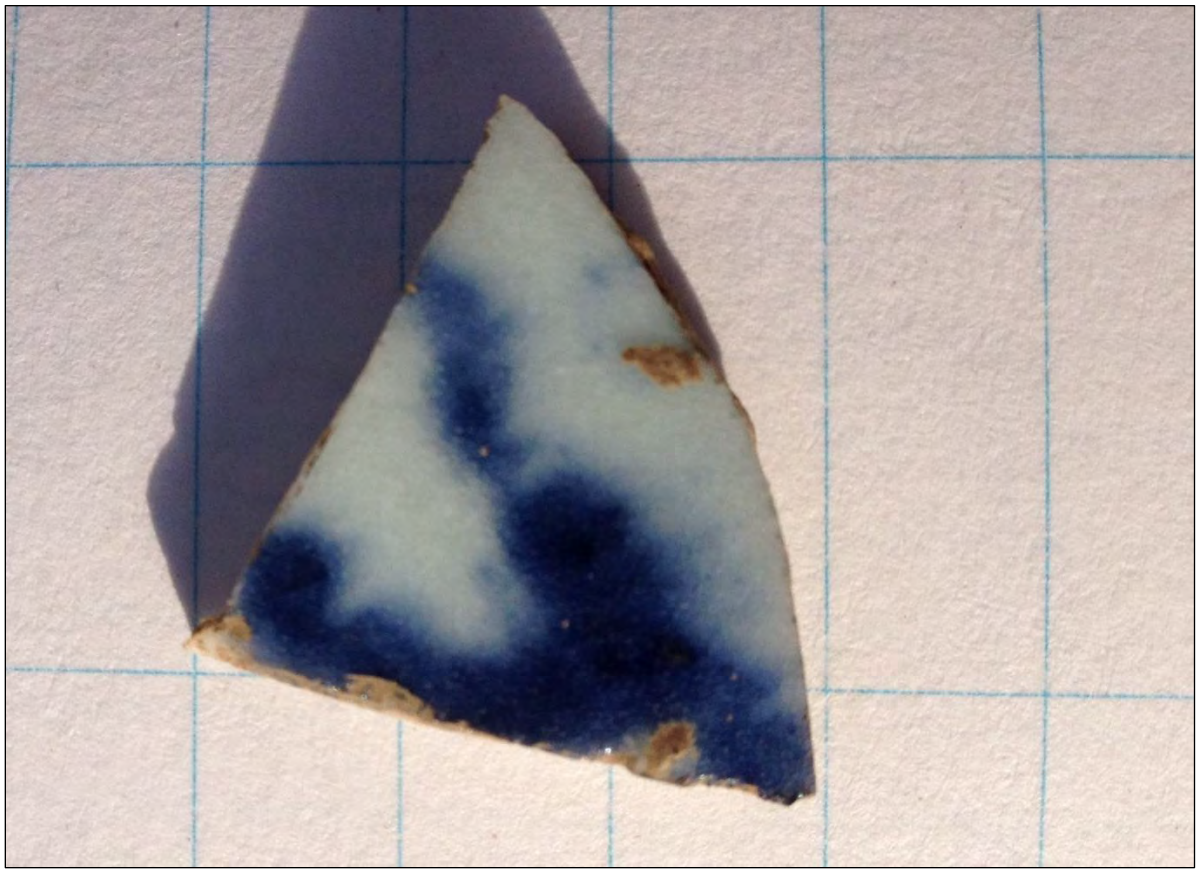

Figure 3. Detail view of ceramic sherd.

Figure 4. Detail view of black glass bottle base.

Figure 5. Detail view of black glass bottle base.

APPENDIX G
DATA VALIDATION

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

APPENDIX G1
DATA VALIDATION REPORT

QA/QC Solutions, LLC

James J. Mc Ateer, Jr., Managing Member
7532 Champion Hill Rd. SE
Salem, Oregon 97306
Telephone: 503.763.6948
Facsimile: 503.566.2114
Cellular: 503.881.1501
email: jjmcateer@msn.com

June 5, 2014

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill Street, Suite 400
Portland, Oregon 97204

Subject: Data Validation Summary for Supplemental RI/FS for River Mile 11 East
GSI Project No.: 0487.002.006, Task Order Agreement No. 3
QA/QC Solutions, LLC Project No.: 120313.1 (QA/QC Support RM11E Supplemental RI/FS for 2013 and 2014)

Dear Erin:

This letter documents the results of the validation of analytical data for the analyses of selected organic compounds, metals, and conventional parameters completed on solid and aqueous samples. The samples were collected between October 2013 and May 2014 at locations along the east side of the Willamette River between river mile RM 10.9 and 11.6 (referred to as RM11E) in Portland, Oregon. The data are associated with the *Final Supplemental Remedial Investigation/Feasibility Study Work Plan, River Mile 11 East, Portland, Oregon* (GSI and DOF 2013), herein after referred to as *Work Plan*. The *Work Plan* provides a description of the study and the rationale for the sampling and analysis program, including the sampling and analysis procedures.

The data were validated to verify the laboratory quality assurance and quality control (QA/QC) procedures were documented and that the overall quality of the data reported is sufficient to support its intended purpose(s). A summary of the data set, the analytical methods used to complete the chemical analyses, the data validation procedures used, and the overall assessment of data quality is presented below.

Data Set

The data set consisted of surface sediments; surface bank soil samples; groundwater monitoring well samples; subsurface soil samples (from monitoring well borings); and, associated field quality control samples (i.e., field splits, equipment rinsate blanks, and trip blanks). Samples were collected between October 2013 and May 2014. A summary of the samples collected and the associated analyses completed is presented in Table 1.

The contract laboratory is ALS Group USA Corp. dba ALS Environmental (ALS) located in Kelso, Washington, who completed the majority of the analyses. All polychlorinated dibenzo-*p*-dioxin and polychlorinated dibenzofuran (PCDD/F) analyses were completed by the ALS located in Houston, Texas, ALS submitted both summary and complete hardcopy data validation deliverables and electronic data deliverables (EDDs). Data were submitted in a total of 12 data packages under the following work orders: K1311862, K1311918, K1312655, K1312803, K1312857, K1313208, K1313248.01, K1313401.01, K1400182, K1404419, K1404420.02, and K1403697.

Analytical Methods

A summary of the analytical methods used to complete the analyses on the sediment samples, soil samples, groundwater samples, and other water samples (i.e., equipment rinsate blanks and trip blanks) are summarized in Table 2. In some instances, the laboratory utilized different, but equivalent, methods than those that were cited in the quality assurance project plan (QAPP) (GSI and DOF 2013). Methods used by the laboratory that were different than those cited in the QAPP are highlighted in Table 2. The analytical methods used by the laboratory are equivalent (or are identical) to those that are cited in the QAPP; are routinely used in similar types of investigations; are considered acceptable; and, their use does not affect the overall quality and usability of the data reported for its intended purpose(s).

Data Validation Procedures

Data validation procedures included evaluating the sample results and applicable quality control results reported by the laboratory. The analytical data were validated following the applicable guidance and requirements specified in:

- *Guidance on Environmental Data Verification and Validation* (U.S. EPA 2002)
- *USEPA Analytical Services Branch (ASB) National Functional Guidelines for Chlorinated Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review* (U.S. EPA 2005) for PCDD/Fs.
- *USEPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review*. Final. OSWER 9240.1-45. USEPA/540/R-08/01 (U.S. EPA 2008).
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Superfund Data Review*. Final. OSWER 9240.1-51. EPA 540-R-10-011 (U.S. EPA 2010).
- Method-specific and laboratory-established quality control requirements, as applicable.

Data validation procedures were modified to accommodate QA/QC requirements for methods (e.g., total solids, conventional constituents, and petroleum hydrocarbon analyses) that are not specifically addressed by the USEPA functional guidelines. In this situation, method-specific and laboratory-established control limits were used, as necessary, to determine if qualification of the data was necessary.

All of the data reported were generally validated according to abbreviated data validation requirements (i.e., a summary review of the results reported for the samples and applicable quality control measurement data), as specified in the QAPP (GSI and DOF 2013). More in-depth data review that was not specified nor required by the QAPP (GSI and DOF 2013), but was conducted through consultation with GSI included the following: 1) review of sample and standard chromatograms associated with the analysis of organochlorine pesticides; 2) review sample and standard chromatograms associated with the analysis of polychlorinated biphenyls (PCBs); 3) review of sample and standard chromatograms associated with the analysis of diesel- and residual-range petroleum hydrocarbons; 4) review of all applicable instrument calibration data. Review of sample chromatograms, laboratory bench sheets, and instrument calibration data was not specified nor required and is a deviation from the validation procedures specified in the QAPP (GSI and DOF 2013).

To complete the abbreviated data validation (i.e., a summary review of the results reported), the laboratory data deliverables that were reviewed included the following:

- Case narratives discussing analytical problems (if any) and procedures.
- Chain-of-custody documentation to verify completeness of the data set.
- Sample preparation logs or laboratory summary result forms to verify analytical holding times were met.
- Results for applicable instrument tuning, initial calibrations, and continuing calibration verification (CCV) results to assess instrument performance. Note, review this quality control data was not specified or required by the QAPP (GSI and DOF 2013), but was reviewed during data validation.
- Results for applicable instrument blanks (i.e., initial calibration blanks [ICBs] and continuing calibration blanks [CCBs]), method blanks, equipment rinsate blanks, and trip blanks to determine whether an analyte reported as detected in any sample was the result of possible contamination introduced at the laboratory, during field samples, and/or during sample shipment.
- Results for applicable internal standards performance to ensure that instrument sensitivity and response was stable during the analysis of the samples.
- Results for applicable method-specific quality control measurements (e.g., serial dilutions and interference check samples for metals analyses and dual column confirmation results for applicable organic compound analyses) to assess potential matrix interference effects.
- Results for applicable surrogate compound, laboratory control sample [LCS] (i.e., blank spike), duplicate LCS, matrix spike (MS), and matrix spike duplicate (MSD) recoveries to assess analytical accuracy.
- Results for applicable duplicate LCS and MSD analyses to assess analytical precision.
- Laboratory summaries of analytical results reported for the analyses completed.

Verification of applicable laboratory calculations, transcriptions, review of instrument printouts, and review of bench sheets were generally not completed during the abbreviated validation effort unless specifically stated herein. All data subjected to the abbreviated data validation review may have analytical problems that can only be identified by completing a 100-percent review of all original instrument printouts and associated analytical quality control results. Verification that all possible factors that could result in the degradation of data quality cannot be made nor should be inferred at this time. The laboratory case narratives did not indicate any significant problems with data reported. The adequacy of the sampling procedures was not completed during the data validation.

Performance based control limits established by the laboratory and control limits provided in the method protocols were used to evaluate data quality and determine the need for data qualification. Applicable laboratory control limits for surrogate compound recoveries, LCSs and LCS duplicate recoveries, and MS/MSD recoveries were used during data validation. Data qualifiers were assigned during data validation to the EDD when applicable QA/QC limits were not met and the qualification of the data was warranted. Data qualifiers were assigned following guidance specified by U.S. EPA (2002, 2005, 2008, and 2010), the quality control requirements specified in the SAP, and applicable method-specific quality control requirements.

Overall Quality of Data

Overall, the data reported are of good quality and the results for the applicable QA/QC procedures that were used by the laboratory during the analysis of the samples are generally acceptable. A total of 3,859 sample results were reported and the following number of results were qualified:

- A total of 432 results (11.2 percent) reported as detected were qualified as estimated (assigned a *J* qualifier).
- A total of five results (0.1 percent) reported as detected were qualified as tentatively identified and estimated (assigned a *NJ* qualifier).
- A total of 64 results (1.6 percent) reported as detected were restated as undetected (assigned a *U* qualifier).
- A total of 4 results (0.1 percent) reported as undetected were qualified as estimated (assigned a *UJ* qualifier).
- No results (0 percent) required rejection (*R*).

A summary of the qualified data is presented in Table 3. Selected sample results required qualification during data validation because method-specific QA/QC criteria were not met; results maybe qualified for more than one reason. Analytical data that did not meet method- and/or laboratory-established control limits for applicable quality control measurements were qualified as estimated (*J*) by the laboratory or during data validation (*J* or *UJ*). These qualified data usable and represent data of good quality and reasonable confidence and have an acceptable degree of uncertainty (i.e., may be less precise or less accurate than unqualified data). Analytical data that were reported as undetected (*U*) by the laboratory or that were restated as undetected (*U*) during data validation are usable.

Data completeness (i.e., the total number of acceptable field sample results [non-rejected data] points compared to the total number of field sample results generated, excluding laboratory quality control samples) for the samples submitted to the laboratory for analysis is 100-percent since no results required rejection (*R*).

In some instances, selected samples required dilution to complete the analysis (as is required by the analytical methods) to obtain concentrations of target compounds present in the sample that are within the linear range of the instrument or to minimize the effects of matrix interferences to obtain reportable results for undetected and/or detected target compounds.

Data users should be aware that when multiple target PCBs, in addition to non-target PCB compounds, are present in a sample, interferences resulting in the inability of the instrument to differentiate target-specific analytes from interfering non-target compounds may be encountered. The laboratory noted in the case narratives when this situation was encountered that care was taken to identify and report the concentrations of each PCB mixture that was identified as present in a sample as accurately as possible and that “the potential exists for a high bias from contribution of one Aroclor to another due to common peaks that cannot be completely resolved.”

Summary of Qualified Data for Surface Sediment Samples

A total of 93 sample results required qualification as estimated (*J*) or restatement as undetected (*U*) during data validation because method-specific QA/QC criteria were not met; results may be qualified for one, or more, reasons. The data and reasons for qualification included the following:

- A total of 53 results reported as detected at a concentration above the method detection limit (MDL), but less than the method reporting limit (MRL) were qualified as estimated (*J*). These data were qualified because there is a greater degree of uncertainty than a concentration that is reported above the MRL.
- The result reported for total solids in one sample (i.e., RM11E-G068) was qualified as estimated (*J*) due to a larger variability for the triplicate results (ranged from 63.3 percent to 85.6 percent).
- The results reported for medium gravel fraction in Sample RM11E-G078 and RM11E-G578 (field duplicate of RM11E-G078) were qualified as estimated (*J*) because the relative percent difference (RPD) control limit of 50 percent specified in the QAPP for field duplicate samples was not met.
- The result reported as detected for hexachlorobenzene in Sample RM11E-G079 was restated as undetected (*U*) because the compound was also present in the associated method blank. Since the concentration in the sample was less than the concentration in the method blank, this result was restated up to the concentration found in the method blank.
- Seven results reported as detected for organochlorine pesticides in Sample RM11E-G084 were qualified as estimated (*J*) because the area count for the internal standard (perylene-d10) was above the applicable upper control limit.
- For the analysis of PCBs, nine results reported as detected were qualified as estimated (*J*) because the 40 percent difference method-specific control limit for the concentrations quantified between the two chromatographic columns was not met.
- For the analysis of PCBs, four results reported as detected in two sets of field duplicate samples (i.e., RM11E-G078/RM11E-578 and RM11E-G079/RM11E/RM11-G579) were qualified as estimated (*J*) because the RPD control limit of 50 percent specified in the QAPP for field duplicate samples was not met.
- Sixteen PCDD/F results reported as detected were qualified as estimated (*J*) because the results were flagged and reported by the laboratory at an Estimated Maximum Possible Concentration (EMPC). Results are reported as an EMPC when at least one of the qualitative criteria is not met.

A summary of the qualified sediment sample data and the reason(s) for qualification is presented in Table 3.

Summary of Qualified Data for Surface Bank Soil Samples

A total of 116 sample results required qualification as estimated (*J* or *UJ*) or restatement as undetected (*U*) during data validation because method-specific QA/QC criteria were not met; results may be qualified for one, or more, reasons. The data and reasons for qualification included the following:

- A total of 47 results reported as detected at a concentration above the method detection limit (MDL), but less than the method reporting limit (MRL) were qualified as estimated (*J*). These data were qualified because there is a greater degree of uncertainty than a concentration that is reported above the MRL.

- For the analysis of metals, 10 results reported as detected were qualified as estimated (*J*) because the recoveries in the associated matrix spike were above the applicable control limit of 125 percent.
- For the analysis of metals, eight results reported as detected were qualified as estimated (*J*) because the recoveries in the associated matrix spike were below the applicable control limit of 75 percent.
- For the analysis of metals, 20 results reported as detected were qualified as estimated (*J*) because the RPD between the concentration of the element in the sample and laboratory duplicate sample analysis was above the applicable laboratory control limit of 20 RPD.
- Nine results reported as detected for diesel-range petroleum hydrocarbons and eight results reported as detected for residual-range petroleum hydrocarbons were qualified as estimated (*J*) because qualitative identification was not definitive based on review of sample chromatograms. The laboratory flagged results to indicate that 1) the chromatographic fingerprint of the sample resembles a petroleum product, the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard or 2) that the chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- The results reported as detected for Dieldrin (an organochlorine pesticide) in a sample and the associated field duplicate samples (i.e., RM11E-SL032/ RM11E-SL532) were qualified as estimated (*J*) because the RPD control limit of 50 percent specified in the QAPP for field duplicate samples was not met.
- For the analysis of PCBs, two results reported as detected were qualified as estimated (*J*) because the 40 percent difference method-specific control limit for the concentrations quantified between the two chromatographic columns was not met.
- For the analysis of PCB, the result reported as detected for Aroclor® 1268 in Sample RM11E-SL032 and as undetected in the associated field duplicate RM11E-SL532 were qualified as estimated (*J* and *UJ*, respectively) because the RPD control limit of 50 percent specified in the QAPP for field duplicate samples was not met.
- For the analysis of semivolatile organic compounds (SVOCs), results reported as detected for Bis-2(ethylhexyl) phthalate and pentachlorophenol in Sample RM11E-SL032 and the associated field duplicate RM11E-SL532 were qualified as estimated (*J*) because the RPD control limit of 50 percent specified in the QAPP for field duplicate samples was not met.
- For the analysis of SVOCs, the results reported as detected for Indeno(1,2,3-cd) perylene in four samples were qualified as estimated (*J*) because the recovery of this SVOC in the associated LCS and LCS duplicate were above the applicable upper control limit.

A summary of the qualified surface bank soil sample data and the reason(s) for qualification is presented in Table 3.

Summary of Qualified Data for Groundwater Monitoring Well Samples

A total of 232 sample results required qualification as estimated (*J*, *NJ*, or *UJ*) or restatement as undetected (*U*) during data validation because method-specific QA/QC criteria were not met; results may be qualified for one, or more, reasons. The data and reasons for qualification included the following:

- A total of 99 results reported as detected at a concentration above the method detection limit (MDL), but less than the method reporting limit (MRL) were qualified as estimated (*J*). These data were qualified because there is a greater degree of uncertainty than a concentration that is reported above the MRL.
- Results reported as detected for total organic carbon (TOC) and dissolved organic carbon (DOC) in four samples were restated as undetected (*U*) at the concentrations reported because they were ! 5 times the concentration found in the associated method blank.
- All 16 results reported of pH were qualified as estimated (*J*) because the recommended holding time criterion (i.e., analyze immediately and <0.25 hr.) was not met in the laboratory. Field measurements of pH in groundwater were also collected, as discussed in the Field Sampling and Data Report.
- Results reported as detected for turbidity in five samples were restated as undetected (*U*) at the concentrations reported because they were ! 5 times the concentration found in the associated method blank.
- Results reported as detected for sulfate in five samples were qualified as estimated (*J*) because the recoveries in the associated in MS/MSD were above the upper control limit of 110 percent.
- Eight results reported as detected for oxidation-reduction potential (ORP) were qualified as estimated (*J*) because the recommended holding time criterion of 24 hr.
- For the analysis of metals, a total of 35 results reported as detected were restated as undetected (*U*) at the concentrations reported because they were ! 2 times the concentration found in the associated method blanks and/or CCBs. The ! 2 times action criterion was used during data validation since USEPA function guidelines (U.S.EPA 2010) criteria for qualification of samples data is based on the CRQLs and analyses completed under Superfund and are not applicable to this data set.
- For the analysis of metals, two results reported as detected were qualified as estimated (*J*) because the recoveries in the associated matrix spike were below the applicable control limit of 75 percent.
- For the analysis of metals, 16 nickel and 16 zinc results reported as detected were qualified as estimated (*J*) because the criteria for ICP serial dilution was not met.
- Two results reported as detected for diesel-range petroleum hydrocarbons and five results reported as detected for residual-range petroleum hydrocarbons were restated as undetected (*U*) at the concentrations reported because they were ! 5 times the concentration found in the associated method blank.
- One diesel-range petroleum hydrocarbon result was restated as undetected (*U*) at the concentrations reported due to very poor chromatographic match.

- Two results reported as detected for diesel-range petroleum hydrocarbons and two results reported as detected for residual-range petroleum hydrocarbons were qualified as estimated (*J*) because qualitative identification was not definitive based on review of sample chromatograms.
- One result reported as detected for gasoline-range petroleum hydrocarbons was qualified as estimated (*J*) because qualitative identification was not definitive based on review of sample chromatogram.
- One result reported as detected for hexachlorobenzene (as an organochlorine pesticide) was qualified as estimated (*J*) due to poor chromatographic resolution as noted by the laboratory.
- One results reported for Aroclor® 1260 was restated as undetected (*U*) at the concentration reported because it was ! 5 times the concentration found in the associated method blank.
- Two PCB results reported as detected were qualified as estimated (*J*) because the 40 percent difference method-specific control limit for the concentrations quantified between the two chromatographic columns was not met.
- Five PCB results reported as detected were qualified as tentatively identified and estimated (*NJ*) because review of the associated chromatograms indicated exhibit marginal pattern-matching quality and presence of many non-target compounds.
- For the analysis of VOCs, six results reported for either chloroform or toluene were restated as undetected (*U*) because the concentration in samples were ! 5 times the concentration found in the associated method blank.

A summary of the qualified groundwater monitoring well sample data and the reason(s) for qualification is presented in Table 3.

Summary of Qualified Data for Subsurface Soil Samples (from Monitoring Well Borings)

A total of 62 sample results required qualification as estimated (*J*) during data validation because method-specific QA/QC criteria were not met; results may be qualified for one, or more, reasons. The data and reasons for qualification included the following:

- A total of 36 results reported as detected at a concentration above the method detection limit (MDL), but less than the method reporting limit (MRL) were qualified as estimated (*J*). These data were qualified because there is a greater degree of uncertainty than a concentration that is reported above the MRL.
- For the analysis of metals, nine results reported as detected were qualified as estimated (*J*) because the recoveries in the associated matrix spike were above the applicable control limit of 125 percent.
- For the analysis of metals, nine results reported as detected were qualified as estimated (*J*) because the recoveries in the associated matrix spike were below the applicable control limit of 75 percent.
- For the analysis of metals, 27 results reported as detected were qualified as estimated (*J*) because the RPD between the concentration of the element in the sample and laboratory duplicate sample analysis was above the applicable laboratory control limit of 20 RPD.

- Nine results reported as detected for diesel-range petroleum hydrocarbons and six results reported as detected for residual-range petroleum hydrocarbons were qualified as estimated (*J*) because qualitative identification was not definitive based on review of sample chromatograms.
- Two PCB results reported as detected were qualified as estimated (*J*) because the 40 percent difference method-specific control limit for the concentrations quantified between the two chromatographic columns was not met.

A summary of the qualified subsurface soil (from monitoring well borings) sample data and the reason(s) for qualification is presented in Table 3.

Summary of Quality Control Exceedances Not Resulting in Qualification

During data validation, specific QA/QC criteria were identified as not meeting applicable control limits or requirements. Qualification of the associated sample results was not required because the overall quality of the data reported was not affected. The information contained herein was not specified or required by the QAPP (GSI and DOF 2013), but is presented to provide additional information to the data users.

The QA/QC criteria that were not met and that did not result in qualification of sample results included, in part, the following:

- Although not requested, the laboratory inadvertently reported results for grain size distribution for Sample RM11-G089. During the data validation review of sample chromatograms (a procedure that was not specified nor required by the QAPP [GSI and DOF 2013]), it was noted that laboratory also inadvertently analyzed Sample RM11E-G089 for PCBs (reported only on wet-wt. basis on instrument printouts. Upon notification to the project manager, reportable results were requested from the laboratory for total solids, PCBs, and TOC.
- For the analysis of organochlorine pesticides, results for hexachlorobenzene were not initially reported for several samples, although the data were present. The laboratory was contacted about this omission and corrected data were re-issued.
- Several target analytes were detected in the equipment rinsate blanks a relatively low concentrations, many of which were comparable to the concentrations found in some of the lab blanks. These detections did not result in qualification of the associated sediment/soil data after normalization from an aqueous concentration to a solid concentration.
- For the analysis of PCBs on surface sediment samples in K1311862 and K1311918, the laboratory noted the initial calibration verification (ICV) criteria was not met for Aroclor® 1232 on the confirmation column. Since the criteria for this PCB mixture was acceptable for the primary column (from which data are reported), no action was required.
- For the analysis of PCBs on surface sediment samples in K1311862, the laboratory noted the initial analysis of the Batch QC MS/MSD associated with extraction batch KWG1312651 resulted in failure of the closing CCV. The laboratory completed a re-analysis of this MS/MSD and obtained similar results. As a result, no further action was taken and the data were reported.
- For the analysis of PCBs, the laboratory noted in several data packages that when the criterion for acceptable CCV analyses is met for both columns, the

lower of the two samples results is generally reported. In some instances, the primary evaluation criteria were not met on the confirmation column, so the results were reported for the column with an acceptable CCV. The data quality is not affected and no further corrective action was necessary.

- For the analysis of PCBs. the percent difference of the calibration factors (CFs) in some CCVs for selected target components were above the method-specific control limit of 15 percent reported on one of the two chromatographic columns. Qualification of the sample results was not required because the percent difference reported for the other chromatographic column was acceptable.
- For the analysis of PCBs in K1404419 and K1404420, the control limit was not met for Aroclor® 1016 in a CCV. This PCB mixture was not detected in the associated samples. The laboratory noted this exceedance equates to a high bias; therefore, no additional action was required.
- For the analysis of PCBs in K1404420, the MS/MSD recoveries and associated RPD for Aroclor® 1260 for Sample RM11E-G078 cannot be accurately calculated because the concentration of this PCB mixture in the sample used to complete the MS/MSD was greater than the concentration used in the spiking solution and due to the suspected heterogeneity characteristic of the matrix, as was previously noted by the large RPD between the results reported for this sample and its associated field duplicate (i.e., RM11E-578).
- For the analysis of organochlorine pesticides in K1404420 for the MS/MSD completed on Sample RM11E-G084, five MS recoveries and four MSD recoveries were above the upper control limit of 120 percent, and two MS recoveries and two MSD recoveries were below the lower control limit of 50 percent. These results indicate a potential high and/or low bias in this matrix.
- For the analysis of organochlorine pesticides in K1404420, the LCS and LCS duplicate recoveries reported for 2,4'-DDE and 4,4'-DDE were above the upper control limit of 120 percent. The result reported for 2,4'-DDE did not require qualification because this compound was not detected in the associated sample (i.e., RM11E-G084) and high recoveries indicate a potential high bias. The result reported as detected for 4,4'-DDE was previously qualified as estimated (*J*), so no additional qualification was necessary.
- For the analysis of organochlorine pesticides in K1404420, the laboratory noted the ICV criteria were not met for Dieldrin and Oxychlordane; a high bias was indicated. Since these two compounds were not detected in the associated sample (i.e., RM11E-G084) and a high bias was indicated, no action was required.
- For the analysis of organochlorine pesticides in K1312655, the laboratory did not document the results in the case narrative. During data validation, the following items not previously discussed were identified: 1) gamma-BHC (Lindane) was detected in the equipment rinsate blank RM11E-SL-932; 2) one MS recovery and seven MSD recoveries (Sample RM11E-532 used) were above the upper control limit of 120 percent; and, 3) one of 28 LCS/LCS duplicate recoveries was above the upper control limit of 120 percent. No sample results were qualified as this time for these reasons because either the compound was not detected in the sample (method blank issue); was present a concentration above the adjusted method blank concentration; and, results are not qualified solely based on MS/MSD results. Data users should note that many of the target

organochlorine pesticides were detected in the samples in K1312655; however, it may be possible the concentrations may exhibit a positive bias.

- For the analysis of organochlorine pesticides in K1312803, two MS recoveries and eight MSD recoveries in a batch QC sample were above the upper control limit of 120 percent. No sample results were qualified as this time for these reasons because either the compound was not detected in the sample (method blank issue); was present at a concentration above the adjusted method blank concentration; and, because results are not qualified solely based on MS/MSD recoveries. Data users should note that many of the target organochlorine pesticides were detected in the samples in K1312655; however, it may be possible the concentrations of the compounds reported as detected may exhibit a positive bias.
- For the analysis of organochlorine pesticides in K1312857, the following items were noted: 1) the upper control limit for the surrogate compound Oxychlordane-13C10 was reported for Sample RM11E-MWS005-05_21' and MSD completed on this sample. The recovery for the other five surrogate compounds were acceptable, so no corrective action was required; 2) Sample RM11E-G079 was added to this work order but past extraction holding time constraint; therefore, a sample stored frozen was used, which is acceptable; 3) The area counts for all internal standards reported for the initial analysis of RM11E-MWS005-05_21' and the MS/MSD completed on this sample were outside applicable control limits. Results for the re-analyses were acceptable; and, 4) Nine MS recoveries, seven MSD recoveries, and one RPD were outside applicable control limits for the MS/MSD completed on Sample RM11E-MWS005-05_21'. Sample results are not qualified solely based on MS/MSD recoveries. The recoveries of the LCS and LCS duplicate were acceptable; however, it may be possible the concentrations of the compounds reported as may exhibit a positive or negative bias.
- For the analysis of diesel-range petroleum hydrocarbons and residual-range petroleum hydrocarbons laboratory duplicate samples in several data packages, the RPD criterion was not applicable in some instances because one, or both, of the hydrocarbons, were reported as detected in one of the two samples at a concentration near the MDL and/or not detected in the associated laboratory duplicate samples. In this situation, an accurate RPD cannot be calculated.
- For the analysis of diesel-range petroleum hydrocarbons residual-range petroleum hydrocarbons in K1312803, the surrogate recoveries in one Batch QC laboratory duplicate analyses were above the upper control limit of 150 percent. Surrogate recoveries are sample-specific; therefore, qualification of the associated project sample results was not required.
- For the analysis of diesel-range petroleum hydrocarbons residual-range petroleum hydrocarbons in K1312857, the surrogate recoveries in one laboratory duplicate analysis completed on RM11E-SL030 were above the upper control limit of 150 percent. Surrogate recoveries are sample-specific; therefore, qualification of the associated project sample results was not required;
- For the analysis of SVOCs in several data packages, the percent difference for selected target compounds were above the method-specific control limit of 20 percent in some CCVs. No data required qualification because more than 80 percent of the target compounds were within method-specific control limit allowed (U.S. EPA 2014).

- For the analysis of SVOCs, some surrogate recoveries could not be reliably calculated because the sample extract required dilution to complete analysis.
- For the analysis of SVOCs, in K1312655, the Batch QC MS/MSD recoveries for indeno(1,2,3-cd)perylene were above the upper control limit. In addition, in K1312655 and K1312803, the recovery for Bis(2-ethylhexyl) phthalate in the MS and the associated RPD between the MS/MSD were above the upper control limit. No sample results were qualified as this time for these reasons because sample results are not qualified solely based on MS/MSD results. Data users should note the results reported for the affected SVOCs might exhibit a positive bias.
- For the analysis of SVOCs in K1312857, the recovery for Benzo(k)fluoranthene in the LCS was below the applicable lower control limit and the recovery of indeno(1,2,3-cd)perylene in the LCS duplicate was above the applicable lower control limit. The recoveries of the affected SVOCs in the LCS duplicate and LCS, respectively were acceptable and no corrective action was required.
- For the analysis of metals in several data packages, the recoveries of specific target elements in some MSs could not be calculated because the concentration of the element in the samples used to complete the MSs was significantly greater than the concentration of the element used in the spiking solution. In this situation, accurate MS recoveries cannot be calculated (U.S. EPA 2010). No data required qualification for this reason.
- For the analysis of metals of laboratory duplicate samples in several data packages, the RPD criterion was not applicable because either an element was reported as detected in one (or both) of the samples at a concentration near the MDL and not detected in the associated sample or laboratory duplicate sample. In this situation, an accurate RPD cannot be calculated.
- Although many antimony results reported for analyses on sediment samples and soil samples were previously qualified as estimated (*J*) due to low MS recoveries (and hence a likely negatively biased is associated with the sample results), the laboratory noted these low MS recoveries are typically encountered when using the EPA Method 3050B digestion procedure, even though it is still generally considered an accepted procedure for solid matrices. While alternative procedures are available that may address the low antimony bias issue, they were not requested for this investigation.
- Some target metals were reported as detected in the ICBs, CCBs in several data packages, preparation blanks, and method blanks at low concentrations. Qualification of the associated sample data was not required (unless previously specified above) because the metals were either not detected in associated samples or were detected, but at a concentration above the applicable action limit.
- For the grain size distribution analyses in K1311918, the Batch QC duplicate analysis completed on a non-project sample had an RPD for the medium gravel fraction above the control limit. No action was required since the sample is not associated with this project.
- For the grain size distribution analyses in K1312857, the laboratory case narrative noted a 110 RPD of fine gravel fraction (i.e., fraction retained on 2.00 mm) for the laboratory duplicate analysis completed on Sample RM11E-MWS001-24_29'. No material was retained for medium gravel. Fine gravel was

<1 percent of the total percent total weight so the RPD limit is not applicable and this information was presented with narration, as stated by the laboratory.

- For the analysis of the conventional parameters (solid and aqueous samples) in several data packages, target constituents were detected in some laboratory method blanks at low concentrations. Qualification of the associated sample data was not required (unless previously specified above) because the metals were either not detected in associated samples or were detected, but at a concentration above the applicable action limit.
- For the analysis of TOC on an equipment rinsate blank (i.e., RM11E-SL932), the RPD criterion of 10 percent for replicate sample analysis is not applicable because the concentrations were only between the MDL and MRL.
- In K1312655, the laboratory incorrectly labeled Sample RM11E-SL034 as RM11E-SL094 for total solids determination. The sample ID was subsequently corrected by GSI prior to inclusion in their report tables and data files.
- For the analyses on groundwater samples, insufficient sample was collected to complete all applicable MS/MSD analyses in some instance. The results of the applicable LCS and or LCS duplicate analyses were used to assess accuracy.
- For the analysis of some conventional parameters in groundwater samples in several data packages, the recoveries of specific target constituents in some MSs and/or MSDs could not be calculated because the concentration of the constituents in the samples used to complete the MS and/or MSD was significantly greater than the concentration of the constituents used in the spiking solution. In this situation, accurate MS recoveries cannot be calculated. No data required qualification for this reason.
- For the duplicate sample analysis of some conventional parameters in groundwater samples in several data packages, the RPD criterion was not applicable because either a constituent was reported as detected in one (or both of the samples at a concentration near the MDL and was not detected in the associated sample or laboratory duplicate sample. In this situation, an accurate RPD cannot be calculated.
- For the analysis of sulfate on groundwater samples in K1313208, the upper control limit was not met in a CCV not associated with the analysis of the samples. No corrective action was required for this reason. In addition, the recovery in the associated MS was slightly above the upper control limit. The recovery in the MSD was acceptable, so no corrective action was taken.
- For the analysis of chloride on groundwater samples in K1313401, the recovery of chloride in the Batch QC MS was below the lower control limit. The recovery in the MSD was acceptable, so no corrective was taken.
- For the analysis of sulfate on groundwater samples in K1313401, the recoveries of sulfate in one of two Batch QC MS/MSD analyses were above the upper control limit. The concentration in the sample used to complete this MS/MSD was three times greater than the amount spiked. The MS/MSD recoveries in the other Batch QC analysis were acceptable, so no action was taken.
- For the analysis of metals on groundwater samples, the 10 percent difference control limit for the serial dilutions in some data packages was not met in a few instances. Qualification of the data, however, was not required because the

concentration in the original sample was not >50 times the MDL (U.S. EPA 2010).

- For the analysis of PCBs on groundwater samples in K1313208 and K1312489, the upper control limit was not met for Aroclor® 1260 in the LCD duplicate. The recovery in the LCS was acceptable, so no corrective action was taken.
- For the analysis of PCBs on groundwater samples in K1313401, Aroclors® 1016 and 1260 were reported as detected in the method blank. Aroclor® 1016 was not detected in the associated samples, so no action was required. One results for reported for Aroclor® 1260 required restatement as undetected, as previously mentioned.
- For the analysis of organochlorine pesticides on groundwater samples in K1403697, several surrogate recoveries for gamma-BHCd6, Hexachlrobenzene-13C6, and 4,4'-DDD-d4 were above the applicable upper control limit. These elevated recoveries equate to a potential high bias; however, since no target compounds were reported as detected in the associated samples, no action was required.
- For the analysis of organochlorine pesticides on groundwater samples in K1403697, the recovery of hexachlorobenzene in the LCS and in one CCV was above the applicable control limit. These recoveries equate to a high bias. This compound was not detected in any of the associated samples, so no action was required.
- For the analysis of VOCs on groundwater samples, the percent difference for selected target compounds were above the method-specific control limit of 20 percent in some CCVs. No data required qualification because more than 80 percent of the target compounds were within method-specific control limit allowed (U.S. EPA 2014).

This concludes the data validation summary. Should you have any questions regarding the information presented herein, please contact me by telephone at 503.763.6948 or by e-mail at jjmcateer@msn.com.

Cordially,

QA/QC Solutions, LLC
James J. Mc Ateer, Jr., Managing Member

Attachments

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Table 1. Summary of Sample Analyses Completed*

Sample Identifier	Total Solids by PSEP/160.3M	Grain Size Distribution by ASTM D422	TOC by PSEP or SM5310C	Total Metals by 6010C	Total Metals by 6020A	Total Mercury by 7471B	Total Mercury by 7470A	Dissolved Metals by 6010C	Dissolved Metals by 6020A	Dissolved Mercury by 7470A	PCBs by 8082A	Organochlorine Pesticides by HRGC/MS/MS	SVOCs by 8270C	NWTPH-Dx by WDOE Method with SGT	NWTPH-Gx by WDOE Method	PCDD/Fs by 1613B
Sediment Samples																
RM11E-G068	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G069	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G070	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G071	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G072	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	√
RM11E-G073	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G074	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G075	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	√
RM11E-G076	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G077	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G078	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G578	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G079	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G579	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G080	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G081	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G082	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G083	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G084	√	√	√	-	-	-	-	-	-	-	√	√	-	-	-	-
RM11E-G085	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G086	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G087	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	√
RM11E-G088	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	√
RM11E-G089	√	√	√	-	-	-	-	-	-	-	√	-	-	-	-	-
Number of Samples:	24	24	24	0	0	0	0	0	0	0	24	6	0	0	0	4
Surface Bank Soil Samples																
RM11E-SL028	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL029	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL030	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-

Table 1, continued

Sample Identifier	Total Solids by PSEP/160.3M	Grain Size Distribution by ASTM D422	TOC by PSEP or SM5310C	Total Metals by 6010C	Total Metals by 6020A	Total Mercury by 7471B	Total Mercury by 7470A	Dissolved Metals by 6010C	Dissolved Metals by 6020A	Dissolved Mercury by 7470A	PCBs by 8082A	Organochlorine Pesticides by HRGC/MS/MS	SVOCs by 8270C	NWTPH-Dx by WDOE Method with SGT	NWTPH-Gx by WDOE Method	PCDD/Fs by 1613B
RM11E-SL031	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL032	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL532	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL033	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL034	√	-	√		√	√	-	-	√	-	√	√	√	√	-	-
RM11E-SL035	√	-	√		√	√	-	-	√	-	√	√	√		-	-
RM11E-SL036	√	-	√		√	√	-	-	√	-	√	√	√		-	-
Number of Samples:	10	0	10	0	10	10	0	0	10	0	10	10	10	8	0	0
Groundwater Monitoring Well Samples																
RM11E-MULT89881-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-5MULT89881-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RMIIE-MW001-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW002s-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW003d-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW004-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW005-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MULT1007-12-2013	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MULT89881-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW001-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW002s-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW003d-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW004-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW005-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MW505-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
RM11E-MULT1007-04-2014	-	-	-	-	-	-	-	√	√	√	√	√	√	√	√	-
Trip Blank(12/04/2013)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank(12/05/2013)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RM11E-TB01-04-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RM11E-TB01-04-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of Samples:	0	0	0	0	0	0	0	16	16	16	16	16	16	16	16	0
Subsurface Soil Samples (from monitoring well borings)																
RM11E-MWS001-5_24'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS001-24_29'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-

Table 1, continued

Sample Identifier	Total Solids by PSEP/160.3M	Grain Size Distribution by ASTM D422	TOC by PSEP or SM5310C	Total Metals by 6010C	Total Metals by 6020A	Total Mercury by 7471B	Total Mercury by 7470A	Dissolved Metals by 6010C	Dissolved Metals by 6020A	Dissolved Mercury by 7470A	PCBs by 8082A	Organochlorine Pesticides by HRGC/MS/MS	SVOCs by 8270C	NWTPH-Dx by WDOE Method with SGT	NWTPH-Gx by WDOE Method	PCDD/Fs by 1613B
RM11E-MWS002s-5_20'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS002s-20_25'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS004-05_24'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS004-24_29'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS504-24_29'	√			-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS005-05_21'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
RM11E-MWS005-21_26'	√	√	√	-	√	√	-	-	√	-	√	√	-	√	-	-
Number of Samples:	9	8	8	0	9	9	0	0	9	0	9	9	0	9	0	0
Rinsate Blank Samples																
RM11E-G978 (w/sediment)	-	-	√	-	-	-	-	-	-	-	√	-	-	-	-	-
RM11E-G979 (w/sediment)	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
RM11E-SL932 (w/surface soil)	-	-	√	√	√		√	√	√	√	√	√	√	√	-	-
RM11E-SL904-24_29'	-	-	√	√	√		√	√	√	√	√	√	√	√	-	-
Number of Samples:	0	0	3	2	2	0	2	2	2	2	3	2	2	2	0	0

Table 1, continued

Sample Identifier	Turbidity by 180.1	Chloride and Sulfate by 300.0	Conductivity by 9050A	Iron, Divalent (Ferrous Iron) by ApplEnvMic7-87-1536-1540	Oxidation-Reduction Potential by ASTM D1498-00	Bicarbonate and Carbonate (as CaCO3) by SM 2320B	pH by SM 4500-H^+B	Total and Dissolved Organic Carbon by SM 5310C	Hardness by 6010C and SM 2340B	VOCs by 8260B
Sediment Samples										
RM11E-G068	-	-	-	-	-	-	-	-	-	-
RM11E-G069	-	-	-	-	-	-	-	-	-	-
RM11E-G070	-	-	-	-	-	-	-	-	-	-
RM11E-G071	-	-	-	-	-	-	-	-	-	-
RM11E-G072	-	-	-	-	-	-	-	-	-	-
RM11E-G073	-	-	-	-	-	-	-	-	-	-
RM11E-G074	-	-	-	-	-	-	-	-	-	-
RM11E-G075	-	-	-	-	-	-	-	-	-	-
RM11E-G076	-	-	-	-	-	-	-	-	-	-
RM11E-G077	-	-	-	-	-	-	-	-	-	-
RM11E-G078	-	-	-	-	-	-	-	-	-	-
RM11E-G578	-	-	-	-	-	-	-	-	-	-
RM11E-G079	-	-	-	-	-	-	-	-	-	-
RM11E-G579	-	-	-	-	-	-	-	-	-	-
RM11E-G080	-	-	-	-	-	-	-	-	-	-
RM11E-G081	-	-	-	-	-	-	-	-	-	-
RM11E-G082	-	-	-	-	-	-	-	-	-	-
RM11E-G083	-	-	-	-	-	-	-	-	-	-
RM11E-G084	-	-	-	-	-	-	-	-	-	-
RM11E-G085	-	-	-	-	-	-	-	-	-	-
RM11E-G086	-	-	-	-	-	-	-	-	-	-
RM11E-G087	-	-	-	-	-	-	-	-	-	-
RM11E-G088	-	-	-	-	-	-	-	-	-	-
RM11E-G089	-	-	-	-	-	-	-	-	-	-
Number of Samples:	0	0	0	0	0	0	0	0	0	0
Surface Bank Soil Samples										
RM11E-SL028	-	-	-	-	-	-	-	-	-	-
RM11E-SL029	-	-	-	-	-	-	-	-	-	-
RM11E-SL030	-	-	-	-	-	-	-	-	-	-

Table 1, continued

Sample Identifier	Turbidity by 180.1	Chloride and Sulfate by 300.0	Conductivity by 9050A	Iron, Divalent (Ferrous Iron) by ApplEnvMic7-87-1536-1540	Oxidation-Reduction Potential by ASTM D1498-00	Bicarbonate and Carbonate (as CaCO3) by SM 2320B	pH by SM 4500-H^+B	Total and Dissolved Organic Carbon by SM 5310C	Hardness by 6010C and SM 2340B	VOCs by 8260B
RM11E-SL031	-	-	-	-	-	-	-	-	-	-
RM11E-SL032	-	-	-	-	-	-	-	-	-	-
RM11E-SL532	-	-	-	-	-	-	-	-	-	-
RM11E-SL033	-	-	-	-	-	-	-	-	-	-
RM11E-SL034	-	-	-	-	-	-	-	-	-	-
RM11E-SL035	-	-	-	-	-	-	-	-	-	-
RM11E-SL036	-	-	-	-	-	-	-	-	-	-
Number of Samples:	0	0	0	0	0	0	0	0	0	0
RM11E-MULT89881-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-5MULT89881-12-2013	√	√	√	√	√	√	√	√	√	√
RMIIE-MW001-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MW002s-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MW003d-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MW004-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MW005-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MULT1007-12-2013	√	√	√	√	√	√	√	√	√	√
RM11E-MULT89881-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW001-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW002s-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW003d-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW004-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW005-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MW505-04-2014	√	√	√	√	√	√	√	√	√	√
RM11E-MULT1007-04-2014	√	√	√	√	√	√	√	√	√	√
Trip Blank(12/04/2013)	-	-	-	-	-	-	-	-	-	√
Trip Blank(12/05/2013)	-	-	-	-	-	-	-	-	-	√
RM11E-TB01-04-2014	-	-	-	-	-	-	-	-	-	√
RM11E-TB01-04-2014	-	-	-	-	-	-	-	-	-	√
Number of Samples:	16	16	16	16	16	16	16	16	16	20
RM11E-MWS001-5_24'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS001-24_29'	-	-	-	-	-	-	-	-	-	-

Table 1, continued

Sample Identifier	Turbidity by 180.1	Chloride and Sulfate by 300.0	Conductivity by 9050A	Iron, Divalent (Ferrous Iron) by ApplEnvMic7-87-1536-1540	Oxidation-Reduction Potential by ASTM D1498-00	Bicarbonate and Carbonate (as CaCO3) by SM 2320B	pH by SM 4500-H^+B	Total and Dissolved Organic Carbon by SM 5310C	Hardness by 6010C and SM 2340B	VOCs by 8260B
RM11E-MWS002s-5_20'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS002s-20_25'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS004-05_24'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS004-24_29'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS504-24_29'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS005-05_21'	-	-	-	-	-	-	-	-	-	-
RM11E-MWS005-21_26'	-	-	-	-	-	-	-	-	-	-
Number of Samples:	0	0	0	0	0	0	0	0	0	0
Rinsate Blank Samples										
RM11E-G978 (w/sediment)	-	-	-	-	-	-	-	-	-	-
RM11E-G979 (w/sediment)	-	-	-	-	-	-	-	-	-	-
RM11E-SL932 (w/surface soil)	-	-	-	-	-	-	-	-	-	-
RM11E-SL904-24_29'	-	-	-	-	-	-	-	-	-	-
Number of Samples:	0	0	0	0	0	0	0	0	0	0

Notes:

* See Analytical Methods section for further discussion
Dx - diesel-range and oil-range hydrocarbons
Gx - gasoline-range hydrocarbons
HRGC/MS/MS - high resolution gas chromatography/mass spectrometry/mass spectrometry
M - modified
NWTPH - Northwest Total Petroleum Hydrocarbons
PCB - polychlorinated biphenyl
PCDD - polychlorinated dibenzo-p-dioxin
PCDF - polychlorinated dibenzofuran
PSEP - Puget Sound Estuary Program
TOC - total organic carbon
SGT - silica get treatment
SIM - selected ion monitoring
SVOC - semivolatile organic compound
VOC - volatile organic compound
WDOE - Washington Department of Ecology

Table 2. Laboratory Methods for Analysis of Sediment, Soil, and Groundwater

Analyte Group	Individual Analytes	Sediment and Soil				Groundwater			
		Sample Preparation		Laboratory Method		Sample Preparation		Laboratory Method	
		Protocol	Procedure	Protocol	Procedure	Protocol	Procedure	Protocol	Procedure
Conventionals	Total organic carbon	PSEP (QAPP specified Plumb 1981)	Acid pretreatment	PSEP (QAPP specified Plumb 1981)	Combustion; coulometric titration	SM 5310C (QAPP specified Plumb 1981)	Acid pretreatment	SM 5310C (QAPP specified Plumb 1981); SM 5310C is appropriate method for low TOC content	Persulfate oxidation and Infrared detection (QAPP specified UV detection)
	Total solids	PSEP 1986 or 160.3 modified (select soils only)	Desiccation at 105 °C	PSEP 1986 or 160.3 modified (select soils only)	Gravimetric determination	--	--	--	--
	Grain size *(medium gravel, fine gravel, very coarse sand, coarse sand, medium sand, fine sand, very fine sand, silt, clay, and total fines)*	ASTM D422-C	--	ASTM D422-C	Sieve and pipette and gravimetric determination	--	--	--	--
	Carbonate and/or bicarbonate (as $CaCO_3$)	(was specified in QAPP, but required for water samples only)	--	(was specified in QAPP, but required for water samples only)	(was specified in QAPP, but required for water samples only)	SM 2320B (was not specified in QAPP)	SM 2320B (was not specified in QAPP)	SM 2320B (was not specified in QAPP)	pH/Burette (was not specified in QAPP)
	Chloride and/or sulfate	(was specified in QAPP, but required for water samples only)	--	(was specified in QAPP, but required for water samples only)	(was specified in QAPP, but required for water samples only)	EPA 300.0 (was not specified in QAPP)	EPA 300.0 (was not specified in QAPP)	EPA 300.0 (was not specified in QAPP)	IC (was not specified in QAPP)
	Dissolved organic carbon	--	--	--	--	SM 5310C	--	SM 5310C (QAPP specified USGS 1993); SM 5310C similar and is appropriate method for low DOC content	UV-Promoted Persulfate Oxidation and Infrared Spectrometry
	Hardness	--	--	--	--	EPA 6010C/SM 2340B (QAPP specified EPA 200.7/SM 2340B)	Acid Digestion (none specified in QAPP)	EPA 6010C/SM 2340B (QAPP specified EPA 200.7/SM 2340B)	ICP-AES
	Iron, divalent (ferrous iron)	--	--	--	--	ApplEnvMic 7-87, 1536-1540 (QAPP cited SM 3500-Fe B.4.c)	--	ApplEnvMic 7-87, 1536-1540 (QAPP cited SM 3500-Fe B.4.c)	UV-VIS
	Oxidation-reduction potential	--	--	--	--	ASTM D4198-00 (QAPP specified SM 2580B)	--	ASTM D4198-00 (QAPP specified SM 2580B)	Electrometric
	pH	--	--	--	--	SM 4500-H^+B	--	SM 4500-H^+B	Electrometric
	Specific conductance	--	--	--	--	SM 2510B	--	SM 2510B	Cond Meter
	Turbidity	--	--	--	--	EPA 180.1	--	EPA 180.1	Nephelometry
Total PCBs	Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268	EPA 3541	Automated Soxhlet Extraction	EPA 8082A	GC/ECD	EPA 3535A (QAPP specified EPA 3535)	Solid Phase Extraction	EPA 8082A	GC/ECD
		EPA 3640A (as needed)	Gel permeation chromatography			EPA 3640A (as needed)	Gel permeation chromatography		
		EPA 3665A (as needed)	Sulfuric acid cleanup			EPA 3665A (as needed)	Sulfuric acid cleanup		
		EPA 3660B (as needed)	Sulfur cleanup			EPA 3660B (as needed)	Sulfur cleanup		
Metals	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Vanadium, and Zinc	EPA 3050B	Strong acid digestion	EPA 6020A (QAPP cited EPA 6020)	ICP/MS	CLP Digestion; dissolved fractions subjected to filtering at lab (not specified in QAPP)	Strong acid digestion	EPA 6020A (QAPP cited EPA 6020)	ICP/MS
	Calcium, Iron, Magnesium, Potassium, and Sodium	EPA 3050B	Strong acid digestion	EPA 6010C (not specified in QAPP)	ICP-AES	EPA 3005; dissolved fractions subjected to filtering at lab (not specified in QAPP)	Strong acid digestion	EPA 6010C (not specified in QAPP)	ICP-AES
	Mercury	EPA 7471A	Acid digestion/ oxidation	EPA 7471A	CVAA	EPA 7470A	Acid digestion/ oxidation	EPA 7470A	CVAA
Petroleum Hydrocarbons	Diesel and Residual Range Hydrocarbons (C-10 to C-12 aliphatic/aromatic)	NWTPH-Dx	Solvent extraction	NWTPH-Dx	GC/FID	NWTPH-Dx	Solvent extraction	NWTPH-Dx	GC/FID
			Silica gel cleanup (as needed)				Silica gel cleanup (as needed)		
	Gasoline Range Hydrocarbons (C4-C6 aliphatic, C6-C8 aliphatic, and C8-C10	NWTPH-Gx	Methanol extraction	NWTPH-Gx	GC/FID	NWTPH-Gx		NWTPH-Gx	GC/FID
			Purge and trap				Purge and trap		
VOCs	Benzene, Carbon disulfide, Chlorobenzene, Chloroethane, Chloroform, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, 1,1-Dichloroethene, cis-1,2-Dichloroethene, Ethylbenzene, Isopropylbenzene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Toluene, Tetrachloroethylene, Trichloroethene, o-Xylene, and m,p-Xylene	(was specified in QAPP, but required for water samples only)	(was specified in QAPP, but required for water samples only)	(was specified in QAPP, but required for water samples only)	(was specified in QAPP, but required for water samples only)	EPA 5030B (EPA 5030 was specified in QAPP)	Purge and trap	EPA 8260C (EPA 8260B was specified in QAPP)	GC/MS

Table 2. Laboratory Methods for Analysis of Sediment, Soil, and Groundwater

Analyte Group	Individual Analytes	Sediment and Soil				Groundwater			
		Sample Preparation		Laboratory Method		Sample Preparation		Laboratory Method	
		Protocol	Procedure	Protocol	Procedure	Protocol	Procedure	Protocol	Procedure

Table 2, continued

Analyte Group	Individual Analytes	Sediment and Soil				Groundwater			
		Sample Preparation		Laboratory Method		Sample Preparation		Laboratory Method	
		Protocol	Procedure	Protocol	Procedure	Protocol	Procedure	Protocol	Procedure
Organochlorine Pesticides	Dieldrin, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Gamma-Hexachlorocyclohexane (Lindane), Heptachlor Epoxide, Hexachlorobenzene (this compound not specified in QAPP), cis-Chlordane (i.e., alpha-chlordane), trans-Chlordane (i.e., gamma-chlordane), Oxychlordane, cis-Nonachlor, and trans-Nonachlor.	EPA 3541	Automated Soxhlet Extraction	EPA 1699M (CAS SOC-PESTMS2)	HRGC/MS/ MS	EPA 3535A (EPA 3535 was specified in QAPP)	Solid Phase Extraction	EPA 1699M (CAS SOC-PESTMS2)	HRGC/MS/ MS
SVOCs	Hexachlorobenzene	EPA 3541	Automated Soxhlet Extraction Gel permeation chromatography (as needed)	EPA 8270D LL	GC/MS	EPA 3520C (EPA 3520 was specified in QAPP) EPA 3640A	Liquid-Liquid Extraction Gel permeation chromatography (as needed)	EPA 8270D LL	GC/MS
SVOCs	2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, and Pyrene								
Phthalates	Bis(2-Ethylhexyl) Phthalate								
Phenols	Pentachlorophenol								
PCDD/Fs (analysis not specified in QAPP)	Results reported for seven (7) PCDDs, ten (10) PCDFs, total tetra- through Hepta-CDD, and total tetra- through Hepta-CDF	EPA 1613B	Soxhlet/Dean-Stark Extraction	EPA 1613B	HRGC/HRMS	--	--	--	--

Notes:

¨ Not applicable to sampling program.
ApplEnvMic - Applied Environmental of Microbiology
ASTM - American Society for Testing and Materials
CaCO3 - calcium carbonate
CVAA - cold vapor atomic absorption spectrometry
Dx - diesel-range hydrocarbons (extended to include residual range hydrocarbons)
EPA - U.S. Environmental Protection Agency
GC/ECD - gas chromatography/electron capture detection
GC/FID - gas chromatography/flame ionization detection
GC/MS - gas chromatography/mass spectrometry
Gx - gasoline range hydrocarbons
HRGC/HRMS - high resolution gas chromatography/high resolution mass spectrometry
HRGC/MS/MS - high resolution gas chromatography/mass spectrometry/mass spectrometry
IC - ion chromatography
ICP-AES - inductively coupled plasma-atomic emission spectrometry
ICP/MS - inductively coupled plasma - mass spectrometry
TPH - total petroleum hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD - polychlorinated dibenzo-*p*-dioxin
PCDF- polychlorinated dibenzofuran
PSEP - Puget Sound Estuary Program
QAPP - quality assurance project plan
SM 0- standard methods
SVOC - semivolatile organic compound
UV-VIS - ultraviolet-visible spectroscopy
VOC - volatile organic compound

Table 3. Summary of Qualified Data

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
Sediment Samples							
Conventional Parameters							
RM11E-G978	Total organic carbon	0.09	mg/L	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G979	Total organic carbon	0.45	mg/L	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G068	Solids, Total	63.3	percent		J	Results of triplicate analysis reported at 63.3%, 64.6%, and 85.6% indicate possible heterogeneity issue	Low or High
RM11E-G078	Medium Gravel	0.55	percent		J	RPD between sample and field duplicate sample at 101%	Low or high
RM11E-G578	Medium Gravel	1.67	percent		J	RPD between sample and field duplicate sample at 101%	Low or high
Organochlorine Pesticides							
RM11E-G068	trans-Nonachlor	0.15	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	alpha-Chlordane	0.28	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,4'-DDD	0.21	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G076	trans-Nonachlor	0.28	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	4,4'-DDT	0.25	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G079	Hexachlorobenzene	1.1	ug/kg	B	U	Detected in method blank	False positive
RM11E-G082	trans-Nonachlor	0.13	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	alpha-Chlordane	0.19	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,4'-DDD	0.26	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	gamma-Chlordane	0.28	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G084	Hexachlorobenzene	0.16	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
	alpha-Chlordane	0.88	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
	cis-Nonachlor	0.21	ug/kg	J	J	Concentration >MDL, <MRL and area count for the perylene-d10 internal standard above applicable upper control limit	Low or High
	2,4'-DDD	1.6	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
	gamma-Chlordane	1.5	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
	4,4'-DDD	4.8	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
	4,4'-DDE	3.1	ug/kg		J	Area count for the perylene-d10 internal standard above applicable upper control limit	High
PCBs							
RM11E-G068	Aroclor 1242	7.7	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
	Aroclor 1254	28	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G071	Aroclor 1254	51	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G073	Aroclor 1254	2.7	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G076	Aroclor 1254	16	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G078	Aroclor 1260	510	ug/kg		J	RPD between sample and field duplicate sample at 109%	Low or high
RM11E-G578	Aroclor 1260	150	ug/kg		J	RPD between sample and field duplicate sample at 109%	Low or high

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-G079	Aroclor 1260	2200	ug/kg	D	J	RPD between sample and field duplicate sample at 113%	Low or high
RM11E-G579	Aroclor 1260	610	ug/kg		J	RPD between sample and field duplicate sample at 113%	Low or high
RM11E-G081	Aroclor 1254	58	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G083	Aroclor 1254	3.6	ug/kg	JP	J	Concentration >MDL, <MRL and criteria for dual column confirmation not met	Low or high
RM11E-G085	Aroclor 1254	23	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G086	Aroclor 1254	13	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-G088	Aroclor 1260	2.5	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G089?	Aroclor 1242	2.3	ug/kg	JP	J	Concentration >MDL, <MRL and criteria for dual column confirmation not met	Low or high
PCDD/Fs							
RM11E-G072	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.54	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	Pentachlorodibenzofuran	1.49	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	Pentachlorodibenzo-p-dioxin	2.10	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.722	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.401	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.72	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,3,4,7,8-Pentachlorodibenzofuran	0.663	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,6,7,8-Hexachlorodibenzofuran	0.663	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	2,3,4,6,7,8-Hexachlorodibenzofuran	0.940	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,4,7,8-Hexachlorodibenzofuran	1.77	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G075	Pentachlorodibenzo-p-dioxin	1.26	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,3,4,7,8-Pentachlorodibenzofuran	0.972	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	2,3,4,6,7,8-Hexachlorodibenzofuran	1.23	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.77	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.904	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.325	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.89	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,7,8-Pentachlorodibenzofuran	0.315	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,6,7,8-Hexachlorodibenzofuran	0.695	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,4,7,8-Hexachlorodibenzofuran	2.20	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,7,8,9-Hexachlorodibenzofuran	0.562	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-G087	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	3.14	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.46	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.13	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	Tetrachlorodibenzo-p-dioxin	0.486	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.57	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,3,4,7,8-Pentachlorodibenzofuran	0.634	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,7,8-Pentachlorodibenzofuran	0.564	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,6,7,8-Hexachlorodibenzofuran	1.36	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,3,4,6,7,8-Hexachlorodibenzofuran	2.53	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,7,8,9-Hexachlorodibenzofuran	0.807	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
RM11E-G088	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.854	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	Pentachlorodibenzo-p-dioxin	0.475	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.519	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.691	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
	1,2,3,6,7,8-Hexachlorodibenzofuran	0.349	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	2.66	ng/kg	J	J	Concentration >MDL, <MRL	Low or High
	2,3,4,6,7,8-Hexachlorodibenzofuran	0.541	ng/kg	JK	J	Concentration >MDL, <MRL and result reported as EMPC	High
	1,2,3,4,7,8-Hexachlorodibenzofuran	0.965	ng/kg	J	J		
Surface Bank Soil Samples							
Conventional Parameters							
RM11E-SL932	Total organic carbon	0.19	mg/l	J	J	Concentration >MDL, <MRL	Low or High
Metals							
RM11E-SL028	Antimony	0.208	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	21.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	15.9	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Zinc	85.9	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	28.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL029	Antimony	0.115	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	76.1	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	13.8	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Zinc	126	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	34.0	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL030	Antimony	0.275	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	43.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	13.2	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Zinc	77.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	25.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL031	Antimony	0.609	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	39.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	46.8	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Zinc	85.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	33.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL032	Antimony	1.12	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	180	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	54.2	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Copper	96.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	385	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL532	Antimony	1.88	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	124	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	61.4	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Copper	112	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	378	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL033	Antimony	0.342	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	86.1	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	16.4	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Copper	44.4	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	282	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-SL034	Antimony	0.176	mg/kg	N	J	Matrix spike recovery <75 percent	Low
	Lead	14.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	17.4	mg/kg	N	J	Matrix spike recovery >125 percent	High
	Copper	24.8	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	129	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-SL035	Lead	218	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Nickel	759	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Antimony	1.200	mg/kg	N	J	Matrix spike recovery <75 percent	Low
RM11E-SL036	Lead	178	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Nickel	691	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Antimony	6.300	mg/kg	N	J	Matrix spike recovery <75 percent	Low
RM11E-SL932	Lead	0.019	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Iron	5.3	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Magnesium	1.8	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Calcium	14.0	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Nickel	0.06	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Antimony	0.03	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Copper	0.07	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Vanadium	0.07	ug/l	J	J	Concentration >MDL, <MRL	Low or High
Petroleum Hydrocarbons							
RM11E-SL028	Diesel Range Organics	17	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	300	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL029	Diesel Range Organics	17	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	260	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL030	Diesel Range Organics	11	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	110	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-SL031	Diesel Range Organics	19	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	160	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL032	Diesel Range Organics	24	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	150	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL532	Diesel Range Organics	22	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	130	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL033	Diesel Range Organics	30	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	160	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL034	Diesel Range Organics	61	mg/kg	H	J	Identification not definitive	Low or high
	Residual Range Organics	310	mg/kg	O	J	Identification not definitive	Low or high
RM11E-SL932	Diesel Range Organics	20	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
Organochlorine Pesticides							
RM11E-SL032	Dieldrin	2.9	ug/kg		J	RPD between sample and field duplicate sample at 163%	Low or high
RM11E-SL532	Dieldrin	0.30	ug/kg		J	RPD between sample and field duplicate sample at 163%	Low or high
RM11E-SL033	gamma-Hexachlorocyclohexane	0.042	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-SL034	Dieldrin	0.13	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-SL036	4,4'-DDT	0.063	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	4,4'-DDD	0.070	ug/kg	J	J	Concentration >MDL, <MRL	Low or High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
PCBs							
RM11E-SL028	Aroclor 1254	6.8	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
RM11E-SL029	Aroclor 1260	2.6	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-SL031	Aroclor 1254	2.4	ug/kg	JP	J	Concentration >MDL, <MRL and criteria for dual column confirmation not met	Low or high
RM11E-SL032	Aroclor 1268	7.0	ug/kg		J	Detected in sample and not detected in field duplicate sample	Low or high
RM11E-SL532	Aroclor 1268	3.9	ug/kg	Ui	UJ	Detected in sample and not detected in field duplicate sample	Low or high
SVOCs							
RM11E-SL028	Acenaphthylene	56	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-SL030	Benz(a)anthracene	26	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-SL031	Phenanthrene	20	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-SL032	Bis(2-ethylhexyl) phthalate	92	ug/kg	JD	J	Concentration >MDL, <MRL and RPD between sample and field duplicate sample at 87.2%	Low or High
	Indeno(1,2,3-cd)pyrene	240	ug/kg	D	J	Recoveries in the LCS and LCS duplicate above applicable upper control limit	High
	Pentachlorophenol	68	ug/kg	JD	J	Concentration >MDL, <MRL and RPD between sample and field duplicate sample at 59.5%	Low or High
RM11E-SL532	Bis(2-ethylhexyl) phthalate	170	ug/kg	JD	J	Concentration >MDL, <MRL and RPD between sample and field duplicate sample at 87.2%	Low or High
	Indeno(1,2,3-cd)pyrene	340	ug/kg	D	J	Recoveries in the LCS and LCS duplicate above applicable upper control limit	Low or High
	Pentachlorophenol	120	ug/kg	JD	J	Concentration >MDL, <MRL and RPD between sample and field duplicate sample at 59.5%	Low or High
RM11E-SL033	Anthracene	93	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Indeno(1,2,3-cd)pyrene	810	ug/kg	D	J	Recoveries in the LCS and LCS duplicate above applicable upper control limit	Low or High
	Dibenz(a,h)anthracene	99	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-SL034	Bis(2-ethylhexyl) phthalate	240	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Indeno(1,2,3-cd)pyrene	65	ug/kg	D	J	Recoveries in the LCS and LCS duplicate above applicable upper control limit	Low or High
	Benz(a)anthracene	27	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Phenanthrene	28	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Pentachlorophenol	99	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-SL035	Bis(2-ethylhexyl) phthalate	20	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Anthracene	9.2	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Acenaphthylene	5.5	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Dibenz(a,h)anthracene	9.2	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Acenaphthene	4.2	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Fluorene	4.0	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-SL036	Bis(2-ethylhexyl) phthalate	31	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-SL932	Bis(2-ethylhexyl) phthalate	0.56	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.094	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	2-Methylnaphthalene	0.032	ug/l	J	J	Concentration >MDL, <MRL	Low or High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
Groundwater Monitoring Well Samples							
Conventional Parameters							
RM11E-MULT89881-12-2013	Total organic carbon	0.44	mg/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Organic Carbon	0.25	mg/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-5MULT89881-12-2013	Total organic carbon	0.4	mg/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Organic Carbon	0.35	mg/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-12-2013	Total organic carbon	0.60	mg/l		U	Detected in method blank	False positive
	Dissolved Organic Carbon	0.38	mg/l	J	U	Detected in method blank	False positive
RM11E-MW004-12-2013	Total organic carbon	1.21	mg/l		U	Detected in method blank	False positive
	Dissolved Organic Carbon	0.86	mg/l		U	Detected in method blank	False positive
RM11E-MW005-12-2013	Total organic carbon	0.97	mg/l		U	Detected in method blank	False positive
	Dissolved Organic Carbon	0.98	mg/l		U	Detected in method blank	False positive
RM11E-MULT1007-12-2013	Total organic carbon	0.56	mg/l		U	Detected in method blank	False positive
	Dissolved Organic Carbon	0.36	mg/l	J	U	Detected in method blank	False positive
RM11E-MULT89881-04-2014	Total organic carbon	0.25	mg/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-12-2013	pH	7.11	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MULT89881-12-2013	pH	7.57	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-5MULT89881-12-2013	pH	7.56	ph units		J	Analysis completed past holding time constraint	Low or high
RMIIE-MW001-12-2013	pH	7.05	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW002s-12-2013	pH	6.91	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW003d-12-2013	pH	6.95	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW004-12-2013	pH	6.95	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW005-12-2013	pH	6.84	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MULT1007-04-2014	pH	7.35	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MULT89881-04-2014	pH	7.21	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW001-04-2014	pH	7.39	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW002s-04-2014	pH	6.84	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW003d-04-2014	pH	6.91	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW004-04-2014	pH	7.10	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW005-04-2014	pH	6.89	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MW505-04-2014	pH	7.15	ph units		J	Analysis completed past holding time constraint	Low or high
RM11E-MULT89881-12-2013	Turbidity	0.12	ntu	J	U	Detected in method blank	False positive

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-5MULT89881-12-2013	Turbidity	0.13	ntu	J	U	Detected in method blank	False positive
RM11E-MW004-12-2013	Turbidity	0.26	ntu		U	Detected in method blank	False positive
RM11E-MULT89881-04-2014	Turbidity	0.15	ntu	J	U	Detected in method blank	False positive
RM11E-MW001-04-2014	Turbidity	0.18	ntu	J	U	Detected in method blank	False positive
RM11E-MULT1007-12-2013	Sulfate	19.7	mg/l		J	MS/MSD recoveries above upper control limit	High
RM11E-MW002s-12-2013	Sulfate	76.8	mg/l		J	MS/MSD recoveries above upper control limit	High
RM11E-MW003d-12-2013	Sulfate	25.4	mg/l		J	MS/MSD recoveries above upper control limit	High
RM11E-MW004-12-2013	Sulfate	20.9	mg/l		J	MS/MSD recoveries above upper control limit	High
RM11E-MW005-12-2013	Sulfate	19.4	mg/l		J	MS/MSD recoveries above upper control limit	High
RM11E-MULT1007-12-2013	Oxidation-Reduction Potential (ORP)	263	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-MULT89881-12-2013	Oxidation-Reduction Potential (ORP)	277	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-5MULT89811-12-2013	Oxidation-Reduction Potential (ORP)	284	mv		J	Analysis completed past holding time constraint	Low or high
RMIIE-MW001-12-2013	Oxidation-Reduction Potential (ORP)	246	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-MW002s-12-2013	Oxidation-Reduction Potential (ORP)	78.8	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-MW003d-12-2013	Oxidation-Reduction Potential (ORP)	71.4	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-MW004-12-2013	Oxidation-Reduction Potential (ORP)	246	mv		J	Analysis completed past holding time constraint	Low or high
RM11E-MW005-12-2013	Oxidation-Reduction Potential (ORP)	17	mv		J	Analysis completed past holding time constraint	Low or high
Metals							
RM11E-MULT89881-04-2014	Iron, Divalent	0.05	mg/l	U	UJ	Analysis completed past holding time constraint	Low or high
RM11E-MW001-04-2014	Iron, Divalent	0.05	mg/l	U	UJ	Analysis completed past holding time constraint	Low or high
RM11E-MW002s-04-2014	Iron, Divalent	30.8	mg/l		J	Analysis completed past holding time constraint	Low or high
RM11E-MW004-04-2014	Iron, Divalent	0.05	mg/l	U	UJ	Analysis completed past holding time constraint	Low or high
RMIIE-MW001-12-2013	Dissolved Iron	10.8	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-12-2013	Iron	9.2	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MULT1007-04-2014	Dissolved Iron	17.0	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT89881-04-2014	Iron	8.3	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MULT89881-04-2014	Dissolved Iron	4.4	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW001-04-2014	Iron	6.7	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW001-04-2014	Dissolved Iron	3.7	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-MW004-04-2014	Iron	16.9	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MWS904-24_29'	Magnesium	1.3	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Calcium	7.6	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-12-2013	Lead	0.068	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
	Antimony	0.054	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MULT1007-12-2013	Dissolved Lead	0.015	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Antimony	0.044	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-89881-12-2013	Lead	0.007	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Antimony	0.079	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
RM11E-89881-12-2013	Dissolved Antimony	0.050	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-5MULT89811-12-2013	Antimony	0.069	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
RM11E-5MULT89811-12-2013	Dissolved Antimony	0.051	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
RMIIE-MW001-12-2013	Antimony	0.147	ug/l	N	J	Matrix spike recovery <75 percent	Low
RMIIE-MW001-12-2013	Dissolved Lead	0.013	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Antimony	0.125	ug/l	N	J	Matrix spike recovery <75 percent	Low
	Dissolved Beryllium	0.015	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Cadmium	0.054	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Chromium	0.09	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW002s-12-2013	Antimony	0.123	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
	Beryllium	0.019	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Cadmium	0.012	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW002s-12-2013	Dissolved Lead	0.015	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Antimony	0.099	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
	Dissolved Cadmium	0.008	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Chromium	0.13	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Vanadium	0.15	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-12-2013	Beryllium	0.008	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Vanadium	0.19	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-12-2013	Lead	0.015	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Antimony	0.106	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
	Beryllium	0.013	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW004-12-2013	Dissolved Antimony	0.106	ug/l		U	Detected in laboratory method blanks or CCBs	False positive
RM11E-MW005-12-2013	Chromium	0.06	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Copper	0.08	ug/l	J	U	Detected in laboratory method blanks or CCBs	False positive
	Zinc	0.4	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW005-12-2013	Dissolved Zinc	0.4	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-04-2014	Nickel	4.12	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Zinc	16.7	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MULT1007-04-2014	Dissolved Nickel	3.76	ug/l		J	ICP Serial dilution criterion not met	Low or High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
	Dissolved Arsenic	0.2	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Cadmium	0.018	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Chromium	0.08	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	10.8	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MULT89881-04-2014	Lead	0.006	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Nickel	1.01	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Zinc	10.3	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MULT89881-04-2014	Dissolved Nickel	1.00	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Zinc	10.3	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW001-04-2014	Nickel	1.49	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Beryllium	0.007	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	17.1	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW001-04-2014	Dissolved Lead	0.007	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Nickel	1.58	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Zinc	16.9	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW002s-04-2014	Nickel	3.66	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Antimony	0.034	ug/l	J	U	Detected method blank or CCBs	False positive
	Cadmium	0.018	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	11.8	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW002s-04-2014	Dissolved Lead	0.018	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Nickel	3.59	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Antimony	0.024	ug/l	J	U	Detected method blank or CCBs	False positive
	Dissolved Cadmium	0.008	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	2.0	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW003d-04-2014	Nickel	1.00	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Antimony	0.010	ug/l	J	U	Detected method blank or CCBs	False positive
	Beryllium	0.008	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Vanadium	0.10	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	84.0	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW003d-04-2014	Dissolved Lead	0.018	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Nickel	0.87	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Chromium	0.05	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	24.8	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW004-04-2014	Nickel	2.74	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Beryllium	0.006	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Chromium	0.20	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	33.0	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW004-04-2014	Dissolved Nickel	2.81	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Beryllium	0.007	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Chromium	0.10	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	33.1	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW005-04-2014	Nickel	0.81	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Antimony	0.011	ug/l	J	U	Detected method blank or CCBs	False positive
	Chromium	0.14	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	0.4	ug/l	J	J	Concentration >MDL, <MRL and ICP Serial dilution criterion not met	Low or High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-MW005-04-2014	Dissolved Lead	0.013	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Nickel	0.83	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Chromium	0.08	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	0.7	ug/l		J	ICP Serial dilution criterion not met	Low or High
RM11E-MW505-04-2014	Nickel	0.86	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Antimony	O.01	ug/l	J	U	Detected method blank or CCBs	False positive
	Beryllium	0.006	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Chromium	0.15	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	0.5	ug/l	J	J	Concentration >MDL, <MRL and ICP Serial dilution criterion not met	Low or High
RM11E-MW505-04-2014	Dissolved Lead	0.015	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Nickel	0.85	ug/l		J	ICP Serial dilution criterion not met	Low or High
	Dissolved Chromium	0.12	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dissolved Zinc	1.4	ug/l		J	ICP Serial dilution criterion not met	Low or High
Petroleum Hydrocarbons							
RM11E-MULT1007-12-2013	Residual Range Organics	24	ug/l	J	U	Detected in method blank	False positive
RM11E-MW001-12-2013	Diesel Range Organics	49	ug/l	J	U	Detected in method blank	False positive
	Residual Range Organics	130	ug/l	J	U	Detected in method blank	False positive
RM11E-MW002s-12-2013	Diesel Range Organics	11	ug/l	J	U	Identificaion not definitive (extremely poor match)	False positive
	Residual Range Organics	27	ug/l	J	U	Detected in method blank	False positive
RM11E-MW003d-12-2013	Residual Range Organics	31	ug/l	J	U	Detected in method blank	False positive
RM11E-MW004-12-2013	Residual Range Organics	26	ug/l	J	U	Detected in method blank	False positive
RM11E-MW005-12-2013	Residual Range Organics	25	ug/l	J	U	Detected in method blank	False positive
RM11E-MULT1007-04-2014	Diesel Range Organics	42	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	61	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-MW003d-04-2014	Diesel Range Organics	40	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	57	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-MW002s-12-2013	Gasoline Range Organics	56	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
Organochlorine Pesticides							
RM11E-MULT1007-04-2014	4,4'-DDT	0.27	ng/l	J	J	Concentration >MDL, <MRL	Low or High
	4,4'-DDE	0.10	ng/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT89881-04-2014	Hexachlorobenzene	0.36	ng/l	JX	J	Concentration >MDL, <MRL and poor chromatographic resolution noted by laboratory	Low or High
RM11E-MW003d-04-2014	4,4'-DDT	0.14	ng/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-04-2014	alpha-Chlordane	0.18	ng/l	J	J	Concentration >MDL, <MRL	Low or High
	gamma-Chlordane	0.20	ng/l	J	J	Concentration >MDL, <MRL	Low or High
	Dieldrin	0.90	ng/l	J	J	Concentration >MDL, <MRL	Low or High
PCBs							
RM11E-MW001-12-2013	Aroclor 1260	0.0075	ug/l	BJ	U	Detected in method blank	False positive

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-MULT1007-04-2014	Aroclor 1260	0.0092	ug/l	JD	NJ	Concentration >MDL, <MRL and identification should be considered presumptive	Low or High
RM11E-MW001-04-2014	Aroclor 1242	0.0012	ug/l	JP	NJ	Concentration >MDL, <MRL, criteria for dual column confirmation not met, and identification should be considered presumptive	Low or High
	Aroclor 1254	0.0023	ug/l	JP	NJ	Concentration >MDL, <MRL, Criteria for dual column confirmation not met, and identification should be considered presumptive	Low or High
RM11E-MW004-04-2014	Aroclor 1254	0.0044	ug/l	J	NJ	Concentration >MDL, <MRL and identification should be considered presumptive	Low or High
	Aroclor 1260	0.0013	ug/l	J	NJ	Concentration >MDL, <MRL and identification should be considered presumptive	Low or High
VOCs							
RM11E-MULT1007-12-2013	cis-1,2-Dichloroethene	0.070	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Chloroform	0.30	ug/l	J	U	Detected in method blank	False positive
RM11E-MULT89881-12-2013	Chloroform	0.36	ug/l	J	U	Detected in method blank	False positive
	1,1-Dichloroethene	0.12	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-5MULT89881-12-2013	Chloroform	0.33	ug/l	J	U	Detected in method blank	False positive
	1,1-Dichloroethene	0.11	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RMIIE-MW001-12-2013	Toluene	0.20	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Carbon disulfide	0.13	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Trichloroethene	0.20	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW002s-12-2013	Carbon disulfide	0.080	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-12-2013	1,1-Dichloroethene	0.10	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-12-2013	Toluene	0.060	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Chloroform	0.23	ug/l	J	U	Detected in method blank	False positive
RM11E-MW005-12-2013	1,1-Dichloroethene	0.32	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-04-2014	cis-1,2-Dichloroethene	0.14	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Chloroform	0.17	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT89881-04-2014	Chloroform	0.33	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW001-04-2014	Toluene	0.14	ug/l	J	U	Detected in trip blank	False positive
RM11E-MW002s-04-2014	Carbon disulfide	0.16	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-04-2014	Tetrachloroethene	0.17	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-04-2014	Tetrachloroethene	0.19	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW005-04-2014	Toluene	0.14	ug/l	J	U	Detected in trip blank	False positive
	1,1-Dichloroethene	0.27	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW505-04-2014	1,1-Dichloroethene	0.29	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-TB01-04-2014	Toluene	0.13	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-TB02-04-2014	Toluene	0.14	ug/l	J	J	Concentration >MDL, <MRL	Low or High

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
SVOCs							
RM11E-89881-12-2013	Naphthalene	0.071	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-5MULT89811-12-2013	Naphthalene	0.068	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-12-2013	Bis(2-ethylhexyl) phthalate	0.13	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.048	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RMIIE-MW001-12-2013	Bis(2-ethylhexyl) phthalate	0.68	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Benzo(g,h,i)perylene	0.14	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Dibenz(a,h)anthracene	0.19	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW002s-12-2013	Naphthalene	0.071	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-12-2013	Naphthalene	0.049	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-12-2013	Phenanthrene	0.024	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.071	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW005-12-2013	Naphthalene	0.048	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT1007-04-2014	Pyrene	0.028	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Fluoranthene	0.029	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	2-Methylnaphthalene	0.066	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MULT89881-04-2014	Naphthalene	0.054	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW002s-04-2014	Fluoranthene	0.028	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.026	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW003d-04-2014	Bis(2-ethylhexyl) phthalate	0.28	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.032	ug/l	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MW004-04-2014	Bis(2-ethylhexyl) phthalate	0.16	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Naphthalene	0.040	ug/l	J	J	Concentration >MDL, <MRL	Low or High
Subsurface Soil Samples (from monitoring well borings)							
Metals							
RM11E-MWS001-5_24'	Antimony	0.629	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	551	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	20.6	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	146	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	269	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS001-24_29'	Antimony	0.147	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	32.0	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	19.5	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	22.8	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	62.8	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS002s-5_20'	Antimony	0.430	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	142	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	38.3	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	89.0	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	224	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-MWS002s-20_25'	Antimony	0.046	mg/kg	J,N	J	Concentration >MDL, <MRL and matrix spike recovery <75 percent	Low
	Lead	13.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	30.3	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	27.2	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	63.4	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS004-05_24'	Antimony	0.490	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	106	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	19.9	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	35.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	138	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS004-24_29'	Antimony	0.163	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	13.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	13.7	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	22.3	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	66.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS504-24_29'	Antimony	0.160	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	14.0	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	14.2	mg/kg	N	J	matrix spike recovery >125 percent	High
	Copper	22.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Zinc	68.8	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS005-05_21'	Antimony	0.451	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	54.5	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	23.5	mg/kg	N	J	matrix spike recovery >125 percent	High
	Zinc	121	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	34.2	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS005-21_26'	Antimony	0.288	mg/kg	N	J	matrix spike recovery <75 percent	Low
	Lead	38.6	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Chromium	20.9	mg/kg	N	J	matrix spike recovery >125 percent	High
	Zinc	73.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
	Copper	34.7	mg/kg	*	J	Laboratory duplicate results >20 RPD	Low or high
RM11E-MWS904-24_29'	Nickel	0.04	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Barium	0.02	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Copper	0.05	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Vanadium	0.06	ug/l	J	J	Concentration >MDL, <MRL	Low or High
	Zinc	0.35	ug/l	J	J	Concentration >MDL, <MRL	Low or High
Petroleum Hydrocarbons							
RM11E-MWS001-5_24'	Diesel Range Organics	140	mg/kg	Y	J	Identification not definitive	Low or high
	Residual Range Organics	190	mg/kg	O	J	Identification not definitive	Low or high
RM11E-MWS001-24_29'	Diesel Range Organics	24	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	79	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-MWS002s-5_20'	Diesel Range Organics	33	mg/kg	H	J	Identification not definitive	Low or high
	Residual Range Organics	220	mg/kg	O	J	Identification not definitive	Low or high
RM11E-MWS004-05_24'	Diesel Range Organics	20	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
	Residual Range Organics	37	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-MWS004-24_29'	Diesel Range Organics	2.6	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high

Table 3, continued

Sample	Chemical	Concentration	Units	Laboratory Data Flag	Data Validation Qualifier	Reason	Potential Bias
RM11E-MWS504-24_29'	Diesel Range Organics	3.9	mg/kg	J	J	Concentration >MDL, <MRL and identification not definitive	Low or high
RM11E-MWS005-05_21'	Diesel Range Organics	280	mg/kg	Y	J	Identification not definitive	Low or high
	Residual Range Organics	1400	mg/kg	O	J	Identification not definitive	Low or high
RM11E-MWS005-21_26'	Diesel Range Organics	55	mg/kg	H	J	Identification not definitive	Low or high
	Residual Range Organics	150	mg/kg	O	J	Identification not definitive	Low or high
RM11E-MWS904-24_29'	Diesel Range Organics	19	ug/l	J	J	Concentration >MDL, <MRL and identification not definitive	Low or High
Organochlorine Pesticides							
RM11E-MWS004-24_29'	4,4'-DDD	0.036	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS005-21_26'	4,4'-DDD	0.041	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
PCBs							
RM11E-MWS002s-5_20'	Aroclor 1242	4.4	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
	Aroclor 1254	8.2	ug/kg	P	J	Criteria for dual column confirmation not met	Low or high
SVOCs							
RM11E-MWS001-5_24'	Bis(2-ethylhexyl) phthalate	210	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Anthracene	53	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Acenaphthylene	30	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS001-24_29'	Bis(2-ethylhexyl) phthalate	66	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Anthracene	4.8	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Benzo(k)fluoranthene	6.2	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Acenaphthylene	6.3	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS002s-5_20'	Anthracene	23	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Acenaphthylene	30	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Dibenz(a,h)anthracene	20	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS004-05_24'	Acenaphthene	4.7	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
	Fluorene	5.1	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS004-24_29'	Pyrene	4.7	ug/kg	J	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS005-05_21'	Bis(2-ethylhexyl) phthalate	94	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Benz(a)anthracene	54	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS005-21_26'	Anthracene	31	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Benzo(k)fluoranthene	21	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Acenaphthylene	20	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	Acenaphthene	20	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
	2-Methylnaphthalene	18	ug/kg	JD	J	Concentration >MDL, <MRL	Low or High
RM11E-MWS904-24_29'	Naphthalene	0.065	ug/l	J	J	Concentration >MDL, <MRL	Low or High

Notes on next page

Results qualified "J" -	432
Results qualified "NJ" -	5
Results qualified "UJ" -	4
Results qualified "U" -	64
Results qualified "R" -	0

Table 3, continued

Notes:

* - laboratory duplicate sample analysis RPD not within control limits
B - compound also detected in method blank
CCBs - continuing calibration blanks
D - the reported result is from a dilution
EMPC - estimated maximum possible concentration
J - estimated
H - chromatographic fingerprint of the sample resembles a petroleum product, the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard
K - EMPC; flag used when ion abundance ratios associated with a particular compound are outside the QC limits
LCS - laboratory control sample
MDL - method detection limit
MRL - method reporting limit
MS - matrix spike
MSD - matrix spike duplicate
N - recovery in associated matrix spike not within applicable control limits
NA - not applicable
ND - not detected
O - chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard
P - the GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the tow analytical results.
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD - polychlorinated dibenzo-p-dioxin
PCDF - polychlorinated dibenzofuran
R - rejected
RPD - relative percent difference
SVOC - semivolatile organic compound
U - undetected at detection limit shown
Ui - interferences noted by laboratory; result repoted undetected at elevated detection limit shown
Y - chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but does not match the calibration standard
X - poor chromatographic resolution note by laboratory

APPENDIX G2
ANALYTICAL RESULTS OF RINSATE BLANKS

Appendix G2
Analytical Results for Rinsate Blanks

Analyte	Sample ID / Unit	RM11E-G978	RM11E-G979	RM11E-SL932	RM11E-MWS904-24 29'
Conventionals					
Total organic carbon	mg/l	0.09 J	0.45 J	0.19 J	0.07 U
PCBs					
Aroclor 1016	ug/l	0.0013 U	0.00096 U	0.0098 U	0.011 U
Aroclor 1221	ug/l	0.0047 U	0.0037 U	0.0098 U	0.011 U
Aroclor 1232	ug/l	0.0046 U	0.0023 U	0.0098 U	0.011 U
Aroclor 1242	ug/l	0.0017 U	0.0030 U	0.0098 U	0.011 U
Aroclor 1248	ug/l	0.0011 U	0.0018 U	0.0098 U	0.011 U
Aroclor 1254	ug/l	0.0011 U	0.00096 U	0.0098 U	0.011 U
Aroclor 1260	ug/l	0.0011 U	0.00096 U	0.0098 U	0.011 U
Aroclor 1262	ug/l	0.0011 U	0.00096 U	0.0098 U	0.011 U
Aroclor 1268	ug/l	0.0011 U	0.00096 U	0.0098 U	0.011 U
Total PCBs (FS Calc)	ug/l	0.0047 UT	0.0037 UT	0.0098 UT	0.011 UT
Pesticides					
2,4'-DDD	ng/l	--	--	0.12 U	0.11 U
2,4'-DDE	ng/l	--	--	0.12 U	0.11 U
2,4'-DDT	ng/l	--	--	0.093 U	0.087 U
4,4'-DDD	ng/l	--	--	0.11 U	0.10 U
4,4'-DDE	ng/l	--	--	0.080 U	0.075 U
4,4'-DDT	ng/l	--	--	0.094 U	0.088 U
GSI Total DDD (FS Calc)	ng/l	--	--	0.12 UT	0.11 UT
GSI Total DDE (FS Calc)	ng/l	--	--	0.12 UT	0.11 UT
GSI Total DDT (FS Calc)	ng/l	--	--	0.094 UT	0.088 UT
GSI Total DDx (FS Calc)	ng/l	--	--	0.12 UT	0.11 UT
cis-Chlordane	ng/l	--	--	0.14 U	0.13 U
cis-Nonachlor	ng/l	--	--	0.19 U	0.17 U
trans-Chlordane	ng/l	--	--	0.19 U	0.17 U
trans-Nonachlor	ng/l	--	--	0.13 U	0.12 U
Dieldrin	ng/l	--	--	0.79 U	0.74 U
gamma-Hexachlorocyclohexane	ng/l	--	--	6.3	4.9
Heptachlor epoxide	ng/l	--	--	0.18 U	0.16 U
Hexachlorobenzene	ng/l	--	--	0.29 U	0.27 U
Oxychlordane	ng/l	--	--	2.2 U	2.0 U

Appendix G2
Analytical Results for Rinsate Blanks

Analyte	Sample ID / Unit	RM11E-G978	RM11E-G979	RM11E-SL932	RM11E-MWS904-24 29'
Hydrocarbons					
Diesel Range Hydrocarbons	ug/l	--	--	20 J	19 J
Residual Range Organics	ug/l	--	--	21 U	21 U
Metals					
Antimony	ug/l	--	--	0.03 J	0.02 U
Arsenic	ug/l	--	--	0.07 U	0.07 U
Barium	ug/l	--	--	0.12	0.02 J
Beryllium	ug/l	--	--	0.003 U	0.003 U
Cadmium	ug/l	--	--	0.027	0.003 U
Calcium	ug/l	--	--	14.0 J	7.6 J
Chromium	ug/l	--	--	0.24	0.26
Cobalt	ug/l	--	--	0.003 U	0.003 U
Copper	ug/l	--	--	0.07 J	0.05 J
Iron	ug/l	--	--	5.3 J	3.0 U
Lead	ug/l	--	--	0.019 J	0.005 U
Magnesium	ug/l	--	--	1.8 J	1.3 J
Manganese	ug/l	--	--	0.283	0.107
Mercury	ug/l	--	--	0.02 U	0.02 U
Nickel	ug/l	--	--	0.06 J	0.04 J
Potassium	ug/l	--	--	60.0 U	60.0 U
Sodium	ug/l	--	--	20.0 U	20.0 U
Vanadium	ug/l	--	--	0.07 J	0.06 J
Zinc	ug/l	--	--	1.16	0.35 J
PAHs					
2-Methylnaphthalene	ug/l	--	--	0.032 J	0.029 U
Acenaphthene	ug/l	--	--	0.026 U	0.028 U
Acenaphthylene	ug/l	--	--	0.015 U	0.016 U
Anthracene	ug/l	--	--	0.024 U	0.026 U
Benz(a)anthracene	ug/l	--	--	0.018 U	0.020 U
Benzo(a)pyrene	ug/l	--	--	0.031 U	0.033 U
Benzo(b)fluoranthene	ug/l	--	--	0.017 U	0.019 U
Benzo(g,h,i)perylene	ug/l	--	--	0.019 U	0.021 U
Benzo(k)fluoranthene	ug/l	--	--	0.024 U	0.026 U

Appendix G2
Analytical Results for Rinsate Blanks

Analyte	Sample ID / Unit	RM11E-G978	RM11E-G979	RM11E-SL932	RM11E-MWS904-24_29'
Chrysene	ug/l	--	--	0.028 U	0.030 U
Dibenz(a,h)anthracene	ug/l	--	--	0.017 U	0.019 U
Fluoranthene	ug/l	--	--	0.020 U	0.022 U
Fluorene	ug/l	--	--	0.027 U	0.029 U
Indeno(1,2,3-cd)pyrene	ug/l	--	--	0.021 U	0.023 U
Naphthalene	ug/l	--	--	0.094 J	0.065 J
Phenanthrene	ug/l	--	--	0.022 U	0.024 U
Pyrene	ug/l	--	--	0.019 U	0.021 U
GSI Total LPAH (FS Calc)	ug/l	--	--	0.18 JT	0.14 JT
GSI Total HPAH (FS Calc)	ug/l	--	--	0.031 UT	0.033 UT
GSI Total PAH (FS Calc)	ug/l	--	--	0.29 JT	0.26 JT
GSI Total cPAH (BaPeq) (FS Calc)	ug/l	--	--	0.031 UT	0.033 UT
Phenols					
Pentachlorophenol	ug/l	--	--	0.34 U	0.37 U
Phthalates					
Bis(2-ethylhexyl) phthalate	ug/l	--	--	0.56 J	0.14 U

Notes:

-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

These samples are rinsate blanks as denoted by the '900' series number in the sample ID.

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

APPENDIX G3
ANALYTICAL RESULTS OF TRIP BLANKS

Appendix G3
Analytical Results for Trip Blanks

Analyte	Sample ID / Unit	RM11E-TB01-04-2014	RM11E-TB01-12-2013	RM11E-TB02-04-2014	RM11E-TB02-12-2013	RM11E-TB03-12-2013
VOCs						
1,1-Dichloroethene	ug/l	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trimethylbenzene	ug/l	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U
1,2-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1,3,5-Trimethylbenzene	ug/l	0.089 U	0.089 U	0.089 U	0.089 U	0.089 U
1,4-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Benzene	ug/l	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U
Carbon disulfide	ug/l	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U
Chlorobenzene	ug/l	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Chloroethane	ug/l	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Chloroform	ug/l	0.072 U	0.072 U	0.072 U	0.072 U	0.072 U
cis-1,2-Dichloroethene	ug/l	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
Ethylbenzene	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	ug/l	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U
m,p-Xylene	ug/l	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
o-Xylene	ug/l	0.074 U	0.074 U	0.074 U	0.074 U	0.074 U
Tetrachloroethene	ug/l	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U
Toluene	ug/l	0.13 J	0.054 U	0.14 J	0.054 U	0.054 U
Trichloroethene	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
GSI Total BTEX (FS Calc)	ug/l	0.28 JT	0.11 UT	0.29 JT	0.11 UT	0.11 UT
GSI Total Xylene (FS Calc)	ug/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT

Notes:
FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

Definition of data qualifiers:
U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

APPENDIX H
ANALYTICAL RESULTS AND DATA REDUCTION OF FIELD SPLITS

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Analyte	Sample ID	RM11E-MW005-04-2014			RM11E-MULT89881-12-2013		
	Unit	Parent	Split	Average	Parent	Split	Average
Conventionals							
Dissolved organic carbon	mg/l	1.13	1.10	1.12 T	0.25 J	0.35 J	0.3 JT
Total organic carbon	mg/l	1.19	1.11	1.15 T	0.44 J	0.40 J	2 JT
PCBs							
Aroclor 1016	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0016 U	0.0011 U	0.0011 UT
Aroclor 1221	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0035 U	0.0024 U	0.0024 UT
Aroclor 1232	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0039 U	0.0031 U	0.0031 UT
Aroclor 1242	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0028 U	0.0011 U	0.0011 UT
Aroclor 1248	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0011 U	0.0013 U	0.0011 UT
Aroclor 1254	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0013 U	0.0012 U	0.0012 UT
Aroclor 1260	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0011 U	0.0011 U	0.0011 UT
Aroclor 1262	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0011 U	0.0011 U	0.0011 UT
Aroclor 1268	ug/l	0.00098 U	0.00098 U	0.00098 UT	0.0011 U	0.0011 U	0.0011 UT
Total PCBs (FS Calc)	ug/l	0.00098 UT	0.00098 UT	0.00098 UT	0.0039 UT	0.0031 UT	0.0031 UT
Total PCBs (RI Calc)	ug/l	0.00098 UT	0.00098 UT	0.00098 UT	0.0039 UT	0.0031 UT	0.0031 UT
Dissolved Metals							
Antimony	ug/l	0.005 U	0.005 U	0.005 UT	0.050 U	0.051 U	0.05 UT
Arsenic	ug/l	2.6	2.5	2.6 T	1.6	1.7	1.7 T
Barium	ug/l	29.3	29.4	29.4 T	20.4	20.1	20.3 T
Beryllium	ug/l	0.006 U	0.006 U	0.006 JT	0.006 U	0.006 U	0.006 UT
Cadmium	ug/l	0.005 U	0.005 U	0.005 U	0.124	0.144	0.134 T
Calcium	ug/l	32700	32400	32550 T	35300	34800	35050 T
Chromium	ug/l	0.08 J	0.12 J	0.1 JT	1.35	1.33	1.34 T
Cobalt	ug/l	1.110	1.130	1.12 T	0.089	0.088	0.089 T
Copper	ug/l	0.44	0.28	0.36 T	2.29	2.25	2.27 T
Iron	ug/l	16500	15600	16050 T	3.0 U	3.0 U	3 UT
Lead	ug/l	0.013 J	0.015 J	0.014 JT	0.005 U	0.005 U	0.005 U
Magnesium	ug/l	15400	15200	15300 T	13100	13000	13050 T
Manganese	ug/l	3490	3550	3520 T	3.110	3.100	3.1 T
Mercury	ug/l	0.02 U	0.02 U	0.02 T	0.02 U	0.02 U	0.02 U
Nickel	ug/l	0.83 J	0.85 J	0.84 JT	1.10	1.09	1.1 T
Potassium	ug/l	2890	2820	2855 T	3120	3110	3115 T

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Analyte	Sample ID	RM11E-MW005-04-2014			RM11E-MULT89881-12-2013		
	Unit	Parent	Split	Average	Parent	Split	Average
Sodium	ug/l	10400	10200	10300 T	8480	8330	8405 T
Vanadium	ug/l	0.03 U	0.03 U	0.03 UT	9.49	9.41	9.45 T
Zinc	ug/l	0.7 J	1.4 J	1.1 JT	12.4	12.3	12.4 T
Total Metals							
Antimony	ug/l	0.011 U	0.01 U	0.01 U	0.079 U	0.069 U	0.148 UT
Arsenic	ug/l	6.3	6.3	6.3 T	1.8	1.6	1.7 T
Barium	ug/l	51.5	51.6	51.6 T	20.5	20.0	20 T
Beryllium	ug/l	0.006 U	0.006 J	0.006 U	0.006 U	0.006 U	0.006 UT
Cadmium	ug/l	0.005 U	0.005 U	0.005 UT	0.152	0.154	0.153 T
Calcium	ug/l	32900	33300	33100 T	35600	35500	35550 T
Chromium	ug/l	0.14 J	0.15 J	0.15 JT	1.39	1.34	1.37 T
Cobalt	ug/l	1.130	1.140	1.135 T	0.103	0.097	0.1 T
Copper	ug/l	0.13	0.11	0.12 T	2.42	2.27	2.35 T
Iron	ug/l	28100	28400	28250 T	3.0 U	3.0 U	3 UT
Lead	ug/l	0.005 U	0.005 U	0.005 UT	0.007 U	0.005 U	0.005 UT
Magnesium	ug/l	15200	15400	15300 T	13200	13100	13150 T
Manganese	ug/l	3580	3550	3565 T	3.200	3.180	3.19 T
Mercury	ug/l	0.02 U	0.02 U	0.02 UT	0.02 U	0.02 U	0.02 U
Nickel	ug/l	0.81 J	0.86 J	0.84 JT	1.09	1.07	1.08 T
Potassium	ug/l	2880	2910	2895 T	3100	3100	3100 T
Sodium	ug/l	10300	10400	10350 T	8500	8390	8445 T
Vanadium	ug/l	0.21	0.24	0.23 T	10.1	9.54	9.78 T
Zinc	ug/l	0.4 J	0.5 J	0.5 JT	12.8	12.3	12.6 T
PAHs							
2-Methylnaphthalene	ug/l	0.027 U	0.027 U	0.027 UT	0.030 U	0.028 U	0.028 UT
Acenaphthene	ug/l	0.026 U	0.026 U	0.026 UT	0.029 U	0.027 U	0.027 UT
Acenaphthylene	ug/l	0.015 U	0.015 U	0.015 UT	0.017 U	0.016 U	0.016 UT
Anthracene	ug/l	0.024 U	0.024 U	0.024 UT	0.027 U	0.025 U	0.025 UT
Benzo(a)anthracene	ug/l	0.018 U	0.018 U	0.018 UT	0.020 U	0.019 U	0.019 UT
Benzo(a)pyrene	ug/l	0.031 U	0.031 U	0.031 UT	0.035 U	0.032 U	0.032 UT
Benzo(b)fluoranthene	ug/l	0.017 U	0.017 U	0.017 UT	0.019 U	0.018 U	0.018 UT
Benzo(g,h,i)perylene	ug/l	0.019 U	0.019 U	0.019 UT	0.021 U	0.020 U	0.02 UT

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Analyte	Sample ID	RM11E-MW005-04-2014			RM11E-MULT89881-12-2013		
	Unit	Parent	Split	Average	Parent	Split	Average
Benzo(k)fluoranthene	ug/l	0.024 U	0.024 U	0.024 UT	0.027 U	0.025 U	0.025 UT
Chrysene	ug/l	0.028 U	0.028 U	0.028 UT	0.031 U	0.029 U	0.029 UT
Dibenzo(a,h)anthracene	ug/l	0.017 U	0.017 U	0.017 UT	0.019 U	0.018 U	0.018 UT
Fluoranthene	ug/l	0.020 U	0.020 U	0.02 UT	0.022 U	0.021 U	0.021 UT
Fluorene	ug/l	0.027 U	0.027 U	0.027 UT	0.030 U	0.028 U	0.028 UT
Indeno(1,2,3-cd)pyrene	ug/l	0.021 U	0.021 U	0.021 UT	0.024 U	0.022 U	0.022 UT
Naphthalene	ug/l	0.022 U	0.022 U	0.022 UT	0.071 J	0.068 J	0.068 JT
Phenanthrene	ug/l	0.022 U	0.022 U	0.022 UT	0.025 U	0.023 U	0.023 UT
Pyrene	ug/l	0.019 U	0.019 U	0.019 UT	0.021 U	0.020 U	0.02 UT
Total LPAH (FS Calc)	ug/l	0.027 UT	0.027 UT	0.027 UT	0.15 JT	0.14 JT	0.14 JT
Total HPAH (FS Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.035 UT	0.032 UT	0.032 UT
Total PAH (FS Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.27 JT	0.25 JT	0.25 JT
Total cPAH (BaPeq) (FS Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.035 UT	0.032 UT	0.032 UT
Total LPAH (RI Calc)	ug/l	0.027 UT	0.027 UT	0.027 UT	0.071 JT	0.068 JT	0.068 JT
Total HPAH (RI Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.035 UT	0.032 UT	0.032 UT
Total PAH (RI Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.071JT	0.068 JT	0.068 JT
Total cPAH (BaPeq) (RI Calc)	ug/l	0.031 UT	0.031 UT	0.031 UT	0.035 UT	0.032 UT	0.032 UT
Pesticides							
2,4'-DDD	ng/l	0.11 U	0.11 U	0.11 UT	0.11 U	0.12 U	0.11 UT
2,4'-DDE	ng/l	0.11 U	0.11 U	0.11 UT	0.11 U	0.12 U	0.11 UT
2,4'-DDT	ng/l	0.087 U	0.087 U	0.087 UT	0.087 U	0.089 U	0.087 UT
Total 2,4-DDx (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
Total 2,4-DDx (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
4,4'-DDD	ng/l	0.10 U	0.10 U	0.1 UT	0.10 U	0.11 U	0.1 UT
4,4'-DDE	ng/l	0.075 U	0.075 U	0.075 UT	0.075 U	0.077 U	0.075 UT
4,4'-DDT	ng/l	0.088 U	0.088 U	0.088 UT	0.088 U	0.090 U	0.088 UT
Total 4,4-DDx (FS Calc)	ng/l	0.10 UT	0.10 UT	0.1 UT	0.10 UT	0.11 UT	0.1 UT
Total 4,4-DDx (RI Calc)	ng/l	0.10 UT	0.10 UT	0.1 UT	0.10 UT	0.11 UT	0.1 UT
Total DDD (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
Total DDD (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
Total DDE (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
Total DDE (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Analyte	Sample ID	RM11E-MW005-04-2014			RM11E-MULT89881-12-2013		
	Unit	Parent	Split	Average	Parent	Split	Average
Total DDT (FS Calc)	ng/l	0.088 UT	0.088 UT	0.088 UT	0.088 UT	0.09 UT	0.088 UT
Total DDT (RI Calc)	ng/l	0.088 UT	0.088 UT	0.088 UT	0.088 UT	0.09 UT	0.088 UT
Total DDx (FS Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
Total DDx (RI Calc)	ng/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.12 UT	0.11 UT
cis-Chlordane	ng/l	0.13 U	0.13 U	0.13 UT	0.13 U	0.14 U	0.13 UT
cis-Nonachlor	ng/l	0.17 U	0.17 U	0.17 UT	0.17 U	0.18 U	0.17 UT
trans-Chlordane	ng/l	0.17 U	0.17 U	0.17 UT	0.17 U	0.18 U	0.17 UT
trans-Nonachlor	ng/l	0.12 U	0.12 U	0.12 UT	0.12 U	0.13 U	0.12 UT
Oxychlordane	ng/l	2.0 U	2.0 U	2 UT	2.0 U	2.1 U	2 U
Total Chlordane (FS Calc)	ng/l	2 UT	2 UT	2 UT	2.0 U	2.1 U	2 UT
Total Chlordane (RI Calc)	ng/l	2 UT	2 UT	2 UT	2.0 U	2.1 U	2 UT
Dieldrin	ng/l	0.74 U	0.74 U	0.74 UT	0.74 U	0.76 U	0.74 UT
gamma-Hexachlorocyclohexane	ng/l	0.30 U	0.30 U	0.3 UT	0.30 U	0.31 U	0.3 UT
Heptachlor epoxide	ng/l	0.16 U	0.16 U	0.16 UT	0.16 U	0.17 U	0.16 UT
Hexachlorobenzene	ng/l	0.27 U	0.27 U	0.27 UT	0.27 U	0.31 J	0.31 JT
Hydrocarbons							
Diesel Range Hydrocarbons	ug/l	11 U	12 U	11 UT	13 U	11 U	11 U
Gasoline Range Hydrocarbons	ug/l	13 U	13 U	13 UT	13 U	13 U	13 U
Residual Range Hydrocarbons	ug/l	19 U	20 U	19 UT	22 U	19 U	19 U
Phenols							
Pentachlorophenol	ug/l	0.34 U	0.34 U	0.34 UT	0.38 U	0.35 U	0.35 U
Phthalates							
Bis(2-ethylhexyl) phthalate	ug/l	0.13 U	0.13 U	0.13 UT	0.15 U	0.14 U	0.014 U
VOCs							
1,1-Dichloroethene	ug/l	0.27 J	0.29 J	0.28 JT	0.12 J	0.11 J	0.11 JT
1,2,4-Trimethylbenzene	ug/l	0.069 U	0.069 U	0.069 UT	0.069 U	0.069 U	0.069 UT
1,2-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 UT	0.12 U	0.12 U	0.12 UT
1,3,5-Trimethylbenzene	ug/l	0.089 U	0.089 U	0.089 UT	0.089 U	0.089 U	0.089 UT
1,4-Dichlorobenzene	ug/l	0.12 U	0.12 U	0.12 UT	0.12 U	0.12 U	0.12 UT
Benzene	ug/l	0.062 U	0.062 U	0.062 UT	0.062 U	0.062 U	0.062 UT
Carbon disulfide	ug/l	0.069 U	0.069 U	0.069 UT	0.069 U	0.069 U	0.069 UT
Chlorobenzene	ug/l	0.11 U	0.11 U	0.11 UT	0.11 U	0.11 U	0.11 UT

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Analyte	Sample ID	RM11E-MW005-04-2014			RM11E-MULT89881-12-2013		
	Unit	Parent	Split	Average	Parent	Split	Average
Chloroethane	ug/l	0.16 U	0.16 U	0.16 UT	0.16 U	0.16 U	0.16 UT
Chloroform	ug/l	0.072 U	0.072 U	0.072 UT	0.36 U	0.33 U	0.36 UT
cis-1,2-Dichloroethene	ug/l	40	40	40 T	0.88	0.88	0.88 T
Ethylbenzene	ug/l	0.050 U	0.050 U	0.05 UT	0.050 U	0.050 U	0.05 UT
Isopropylbenzene	ug/l	0.051 U	0.051 U	0.051 UT	0.051 U	0.051 U	0.051 UT
m,p-Xylene	ug/l	0.11 U	0.11 U	0.11 UT	0.11 U	0.11 U	0.11 UT
o-Xylene	ug/l	0.074 U	0.074 U	0.074 UT	0.074 U	0.074 U	0.074 UT
Tetrachloroethene	ug/l	4.7	4.9	4.8 T	15	15	15 T
Toluene	ug/l	0.14 U	0.054 U	0.054 UT	0.054 U	0.054 U	0.054 UT
Trichloroethene	ug/l	4.7	4.7	4.7 T	3.8	3.8	3.8 T
Total BTEX (FS Calc)	ug/l	0.14 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total BTEX (RI Calc)	ug/l	0.14 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total Xylene (FS Calc)	ug/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Total Xylene (RI Calc)	ug/l	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT	0.11 UT
Major Cations/Anions and General Chemistry							
Bicarbonate	mg/l	156	155	156 T	119	120	120 T
Carbonate	mg/l	3 U	3 U	3 UT	3 U	3 U	3 UT
Chloride	mg/l	6.8	6.8	6.8 T	6.5	6.5	6.5 T
Conductivity	umhos/cm	339	321	330 T	325	325	325 T
Hardness as CaCO3	mg/l	145	146	146 T	143	142	142 T
Oxidation-Reduction Potential	mv	-22	-34	-28 T	277 J	284 J	281 JT
Iron, Divalent	mg/l	19.8	22.5	21.2 T	0.05 U	0.05 U	0.05 T
pH	ph units	6.89 J	7.15 J	7.02 JT	7.57 J	7.56 J	7.57 JT
Sulfate	mg/l	18.2	18.5	18.4 T	19.5	19.6	19.6 T
Turbidity	ntu	86.1	60.6	73.4 T	0.12 U	0.13 U	0.12 UT

Table H1
Analytical Results and Data Reduction of Groundwater Field Splits

Notes:

RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).

J = The associated numerical value is an estimated quantity.

T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

N= There is presumptive evidence that the compound is present

Table H2
Analytical Results and Data Reduction for Soil Field Splits

Analyte	Sample ID	RM11E-SL032			RM11E-MWS004-24_29'		
	Unit	Parent	Split	Average	Parent	Split	Average
Conventionals							
Total organic carbon	percent	1.70	1.82	1.8 T	0.080	0.113	0.1 T
Total solids	percent	83.3	82.9	83.6 T	70.9	70.6	70.8 T
PCBs							
Aroclor 1016	ug/kg	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 UT
Aroclor 1221	ug/kg	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 UT
Aroclor 1232	ug/kg	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 UT
Aroclor 1242	ug/kg	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 UT
Aroclor 1248	ug/kg	2.1 U	2.1 U	2.1 UT	2.1 U	2.1 U	2.1 UT
Aroclor 1254	ug/kg	8.7	9.1	8.9 T	2.1 U	2.1 U	2.1 UT
Aroclor 1260	ug/kg	24	25	25 T	2.1 U	2.1 U	2.1 UT
Aroclor 1262	ug/kg	2.1 U	2.1 U	2.1 T	2.1 U	2.1 U	2.1 UT
Aroclor 1268	ug/kg	7.0 J	3.9 UJ	5 JT	2.1 U	2.1 U	2.1 UT
Total PCBs (FS Calc)	ug/kg	46 JT	42 JT	46 JT	2.1 UT	2.1 UT	2.1 UT
Total PCBs (RI Calc)	ug/kg	40 JT	38 JT	41 JT	2.1 UT	2.1 UT	2.1 UT
Metals							
Antimony	mg/kg	1.12 J	1.88 J	1.5 JT	0.163 J	0.160 J	0.32 JT
Arsenic	mg/kg	5.38	5.78	5.58 T	5.21	4.84	5.03 T
Cadmium	mg/kg	0.707	0.612	0.66 T	0.175	0.185	0.18 T
Chromium	mg/kg	54.2 J	61.4 J	57.8 JT	13.7 J	14.2 J	14 JT
Copper	mg/kg	96.5 J	112 J	104 JT	22.3 J	22.6 J	22.5 JT
Lead	mg/kg	180 J	124 J	152 JT	13.7 J	14.0 J	13.9 JT
Mercury	mg/kg	0.107	2.10	1.1 T	0.026	0.023	0.025 T
Nickel	mg/kg	56.9	64.4	60.7 T	17.6	18.2	17.9 T
Zinc	mg/kg	385 J	378 J	382 JT	66.7 J	68.8 J	67.8 JT
PAHs							
2-Methylnaphthalene	ug/kg	14 U	14 U	14 UT	2.8 U	2.8 U	2.8 UT
Acenaphthene	ug/kg	16 U	16 U	16 UT	3.2 U	3.2 U	3.2 UT
Acenaphthylene	ug/kg	39	33	36 T	2.6 U	2.6 U	2.6 UT
Anthracene	ug/kg	59	49	54 T	3.2 U	3.2 U	3.2 UT
Benzo(a)anthracene	ug/kg	170	190	180 T	3.6 U	3.6 U	3.6 UT

Table H2
Analytical Results and Data Reduction for Soil Field Splits

Analyte	Sample ID	RM11E-SL032			RM11E-MWS004-24_29'		
	Unit	Parent	Split	Average	Parent	Split	Average
Benzo(a)pyrene	ug/kg	210	250	230 T	3.6 U	3.6 U	3.6 UT
Benzo(b)fluoranthene	ug/kg	330	410	370 T	3.4 U	3.4 U	3.4 UT
Benzo(g,h,i)perylene	ug/kg	210	170	190 T	3.7 U	3.7 U	3.7 UT
Benzo(k)fluoranthene	ug/kg	110	110	110 T	4.0 U	4.0 U	4 UT
Chrysene	ug/kg	260	280	270 T	4.1 U	4.1 U	4.1 UT
Dibenzo(a,h)anthracene	ug/kg	38	39	38.5 T	3.0 U	3.0 U	3 UT
Fluoranthene	ug/kg	370	400	385 T	3.7 U	3.7 U	3.7 UT
Fluorene	ug/kg	17 U	17 U	17 UT	3.3 U	3.3 U	3.3 UT
Indeno(1,2,3-cd)pyrene	ug/kg	240 J	340 J	290 JT	3.2 U	3.2 U	3.2 UT
Naphthalene	ug/kg	15 U	15 U	15 UT	2.9 U	2.9 U	2.9 UT
Phenanthrene	ug/kg	150	160	155 T	3.6 U	3.6 U	3.6 UT
Pyrene	ug/kg	370	450	410 T	4.7 J	3.7 U	4.7 JT
Total LPAH (FS Calc)	ug/kg	280 T	270 T	280 T	3.6 UT	3.6 UT	3.6 UT
Total LPAH (RI Calc)	ug/kg	248 T	242 T	245 T	3.6 UT	3.6 UT	3.6 UT
Total HPAH (FS Calc)	ug/kg	2300 JT	2600 JT	2500 JT	21 JT	4.1 UT	21 JT
Total HPAH (RI Calc)	ug/kg	2300 JT	2600 JT	2500 JT	4.7 JT	4.4 UT	4.7 JT
Total PAH (FS Calc)	ug/kg	2600 JT	2900 JT	2700 JT	32 JT	4.1 UT	32 JT
Total PAH (RI Calc)	ug/kg	2600 JT	2900 JT	2700 JT	4.7 JT	4.1 UT	4.7 JT
Total cPAH (BaPeq) (FS Calc)	ug/kg	320 JT	380 JT	350 JT	3.6 UT	3.6 UT	3.6 UT
Total cPAH (BaPeq) (RI Calc)	ug/kg	320 JT	380 JT	350 JT	3.6 UT	3.6 UT	3.6 UT
Pesticides							
2,4'-DDD	ug/kg	0.098	0.080	0.09 T	0.063 U	0.063 U	0.063 UT
2,4'-DDE	ug/kg	0.079 U	0.079 U	0.079 UT	0.079 U	0.079 U	0.073 UT
2,4'-DDT	ug/kg	0.24	0.18	0.21 T	0.094 U	0.094 U	0.094 UT
Total 2,4-DDx (FS Calc)	ug/kg	0.38 T	0.30 T	0.34 T	0.094 UT	0.094 UT	0.094 UT
Total 2,4-DDx (RI Calc)	ug/kg	0.34 T	0.26 T	0.3 T	0.094 UT	0.094 UT	0.094 UT
4,4'-DDD	ug/kg	0.26	0.23	0.25 T	0.036 J	0.097	0.067 JT
4,4'-DDE	ug/kg	0.32	0.31	0.32 T	0.070 U	0.070 U	0.07 UT
4,4'-DDT	ug/kg	1.6	1.9	1.8 T	0.047 U	0.047 U	0.047 UT
Total 4,4-DDx (FS Calc)	ug/kg	2.2 T	2.4 T	2.4 T	0.095 JT	0.16 JT	0.13 JT
Total 4,4-DDx (RI Calc)	ug/kg	2.2 T	2.4 T	2.4 T	0.036 JT	0.097 JT	0.067 JT

Table H2
Analytical Results and Data Reduction for Soil Field Splits

Analyte	Sample ID	RM11E-SL032			RM11E-MWS004-24_29'		
	Unit	Parent	Split	Average	Parent	Split	Average
Total DDD (FS Calc)	ug/kg	0.36 T	0.31 T	0.34 T	0.068 JT	0.13 T	0.099 JT
Total DDD (RI Calc)	ug/kg	0.36 T	0.31 T	0.34 T	0.036 JT	0.097 T	0.067 JT
Total DDE (FS Calc)	ug/kg	0.36 T	0.35 T	0.36 T	0.079 UT	0.079 UT	0.073 UT
Total DDE (RI Calc)	ug/kg	0.32 T	0.31 T	0.32 T	0.079 UT	0.079 UT	0.073 UT
Total DDT (FS Calc)	ug/kg	1.8 T	2.1 T	2 T	0.094 UT	0.094 UT	0.094 UT
Total DDT (RI Calc)	ug/kg	1.8 T	2.1 T	2 T	0.094 UT	0.094 UT	0.094 UT
Total DDx (FS Calc)	ug/kg	2.6 T	2.7 T	2.7 T	0.21 JT	0.27 T	0.24 JT
Total DDx (RI Calc)	ug/kg	2.5 T	2.7 T	2.7 T	0.036 JT	0.097 T	0.067 JT
cis-Chlordane	ug/kg	0.56	0.58	0.57 T	0.062 U	0.062 U	0.062 UT
cis-Nonachlor	ug/kg	0.32	0.31	0.32 T	0.097 U	0.097 U	0.097 UT
trans-Chlordane	ug/kg	0.68	0.68	0.68 T	0.064 U	0.064 U	0.064 UT
trans-Nonachlor	ug/kg	0.85	0.84	0.85 T	0.058 U	0.058 U	0.058 UT
Total Chlordane (FS Calc)	ug/kg	2.5 T	2.5 T	2.5 T	0.13 UT	0.13 UT	0.13 UT
Total Chlordane (RI Calc)	ug/kg	2.4 T	2.4 T	2.4 T	0.13 UT	0.13 UT	0.13 UT
Dieldrin	ug/kg	2.9 J	0.30 J	2 JT	0.077 U	0.077 U	0.077 UT
gamma-Hexachlorocyclohexane	ug/kg	0.031 U	0.062	0.062 T	0.031 U	0.031 U	0.031 UT
Heptachlor epoxide	ug/kg	0.073 U	0.073 U	0.073 UT	0.073 U	0.073 U	0.073 UT
Hexachlorobenzene	ug/kg	0.15	0.16	0.16 T	0.092 U	0.092 U	0.092 UT
Oxychlordane	ug/kg	0.13 U	0.13 U	0.13 UT	0.13 U	0.13 U	0.13 UT
Hydrocarbons							
Diesel Range Hydrocarbons	mg/kg	24 J	22 J	23 JT	2.6 J	3.9 J	3.25 JT
Residual Range Hydrocarbons	mg/kg	150 J	130 J	140 JT	5.5 U	5.5 U	5.5 UT
Phenols							
Pentachlorophenol	ug/kg	68 J	120 J	94 JT	5.3 U	5.3 U	5.3 UT
Phthalates							
Bis(2-ethylhexyl) phthalate	ug/kg	92 J	170 J	262 JT	8.9 U	8.9 U	8.9 UT

Table H2
Analytical Results and Data Reduction for Soil Field Splits

Notes:

All sample results are reported on a dry-weight

-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.

RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).

J = The associated numerical value is an estimated quantity.

T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

Table H3
Analytical Results and Data Reduction for Surface Sediment Field Splits

Analyte	Sample ID	RM11E-G078			RM11E-G079		
	Unit	Parent	Split	Average	Parent	Split	Average
Conventionals							
Total organic carbon	percent	0.875	1.00	1 T	0.491	0.476	0.484 T
Total solids	percent	64.3	62.5	63.4 T	82.6	64.2	73.4 T
PCBs							
Aroclor 1016	ug/kg	2.1 U	5.9 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1221	ug/kg	2.1 U	2.1 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1232	ug/kg	2.1 U	5.8 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1242	ug/kg	2.1 U	5.6 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1248	ug/kg	2.1 U	8.9 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1254	ug/kg	2.1 U	2.1 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1260	ug/kg	510 J	150 J	330 JT	2200 J	610 J	1405 JT
Aroclor 1262	ug/kg	2.1 U	2.1 U	2.1 UT	21 U	2.1 U	2.1 UT
Aroclor 1268	ug/kg	2.1 U	2.1 U	2.1 UT	21 U	2.1 U	2.1 UT
Total PCBs (FS Calc)	ug/kg	520 JT	170 JT	340 JT	2300 JT	620 JT	1400 JT
Total PCBs (RI Calc)	ug/kg	510 JT	150 JT	330 JT	2200 JT	610 JT	1405 JT
Grain Size							
Clay	percent	5.4	6.3	5.9 T	1.85	1.80	1.8 T
Silt	percent	17.0	20.4	18.7 T	5.55	4.76	5.16 T
Total Fines	percent	22.4 T	26.7 T	25 T	7.4 T	6.56 T	7 T
Very fine sand	percent	11.68	10.13	10.91 T	1.23	1.41	1.32 T
Fine sand	percent	47.97	52.82	50.4 T	9.51	9.74	9.63 T
Medium sand	percent	4.49	4.70	4.6 T	15.34	14.71	15.03 T
Coarse sand	percent	1.08	1.15	1.12 T	12.54	14.75	13.65 T
Very coarse sand	percent	1.52	1.58	1.55 T	5.30	4.85	5.1 T
Fine gravel	percent	1.79	1.26	1.53 T	6.98	4.46	5.72 T
Medium gravel	percent	0.55 J	1.67 J	1.11 JT	41.63	49.53	49.58 T

Table H3
Analytical Results and Data Reduction for Surface Sediment Field Splits

Notes:

RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit
J = The associated numerical value is an estimated quantity.
T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

APPENDIX I
SAFETY MEETING RECORDS AND FIELD LOGBOOKS

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

SAFETY MEETING RECORD

Project: RMIIE Supplemental RI/FS – Sediment Sampling

Date: October 30, 2013

Time: 4:45

Person Conducting the Meeting: E. Carroll Hughes, P. Pellegrin, E. Parker

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

Eric Carroll Hughes

CDM

Peter Pellegrin

RSS

RSS

SAFETY MEETING RECORD

Project: RMIIE Supplemental RI/FS - Sediment Sampling

Date: 1/31/13

Time: 4:30

Person Conducting the Meeting: Erin Carroll Hughes

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

Erin Carroll Hughes

Andrew Greazel

[illegible]

[illegible] RSS

Matt [illegible]

Peter Pellegrin — GSI

SAFETY MEETING RECORD

Project: RM1E

Date: 11/18/13

Time: 6:30

Person Conducting the Meeting: E. Hughes, P. Pellegrin, B. Dacote

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

Eric Cecil Hughes

Peter Pellegrin

Josh Marsh

Kenny Meyer

Brad Bibbens

Marc Chalone

Melanie Bandas

SAFETY MEETING RECORD

Project: RMIIE

Date: 11/19/13

Time: 6:00

Person Conducting the Meeting:

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

Eric Gerald Thomas

Rodney LaBrosso

SAFETY MEETING RECORD

Project: RM11E

Date: 11/20/13

Time: 7:30 AM

Person Conducting the Meeting: E. Hughes B Cascade

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

SAFETY MEETING RECORD

Project: RMIE

Date: 11/21/13

Time: 7:40

Person Conducting the Meeting: E Hughes, P. Pellegrin

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics: Slippery surfaces, Cold Stress
- New work zone

Signatures of Persons Attending Meeting:

[illegible]	peter pellegrin 7-632
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	

SAFETY MEETING RECORD

Project: RMIIE

Date: 11/22/13

Time: 7:10 am

Person Conducting the Meeting: E Hughes

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

[illegible] Hughes	BRYAN WIGGINTON
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	
[illegible]	

SAFETY MEETING RECORD

Project: RMIIE upland groundwater / bank soil Investigatio

Date: 11.25.13

Time: 0800

Person Conducting the Meeting: K. Jones

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics:_____
- _____

Signatures of Persons Attending Meeting:

Kenny Jones

Peter Pellegrini

SAFETY MEETING RECORD

Project: RMIIE upland groundwater / bank soil investigation

Date: 12·4·13

Time: 0830

Person Conducting the Meeting: K. [illegible]

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics: cold weather, slippery surfaces
-

Signatures of Persons Attending Meeting:

Kenny [illegible]	
Peter [illegible] OSI	

SAFETY MEETING RECORD

Project: RMIIE-GW Sampling

Date: 12/5/13

Time: 9:30

Person Conducting the Meeting: E. Hughes (Glacier) & K. Jansen (Cargill)

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics: Cold stress, move frequently, stay warm
- Pinch points w/ well heads

Signatures of Persons Attending Meeting:

Eric Cancall Hughes

Kary [illegible]

Peter Pellegrin

Note: K. Jansen led safety briefing w/ CDM & DEA on Cargill site while E. Hughes & P. Pellegrin held briefing on Glacier site.

SAFETY MEETING RECORD

Project: RMIIE Supplemental RI/FS

Date: 12/6/13

Time: 9:30

Person Conducting the Meeting: E. Hughes, A Baker [DM] present

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests. + layers for warmth!
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics: Cold weather conditions, bundle up, watch slip hazards,
- take breaks to warm up, watch ice on walkway, gloves under Nitriles & hats under hard hats.
- Glass handling, cut hazards
- stay alert, it's Friday, don't rush

Signatures of Persons Attending Meeting:

Eric Hughes

Peter Pellegrin

SAFETY MEETING RECORD

Project: RM11E - GW Sampling

Date: 12/10/13

Time: 15:30

Person Conducting the Meeting: E. Hughes & K. Jansen

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, and safety vests.
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Other topics: splash hazards while sampling
- watch each others back for traffic

Signatures of Persons Attending Meeting:

Eric Cornell Hughes

Kenny Jansen

SAFETY MEETING RECORD

Project: RMIIE

Date: 4/15/14

Time: 10:00

Person Conducting the Meeting: E. Hughes, P. Pellegrin

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics: Heavy traffic
-

Signatures of Persons Attending Meeting:

Eric Cuell Hughes

Peter Pellegrin

Donald [illegible] orSM

SAFETY MEETING RECORD

Project: RM11E

Date: 4/14/14

Time: 9:15

Person Conducting the Meeting: E. Hughes

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics: pinch points, HCL preservative, splash protection
- Communication

Signatures of Persons Attending Meeting:

Erin Cassell Hughes

Jacob Morris

Peter Pellegrin

SAFETY MEETING RECORD

Project: RMIIE Supplemental RI/FS

Date: 5/1/14

Time:

Person Conducting the Meeting: Enn Carroll Hughes (GSI) & Justin Siewert (BMC)

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location. Legacy Emanual - East Bank Legacy Good Sam - West bank
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs). → long sleeves
- Other safety procedures and information, such as MSDS and the buddy system. Decon solutions & air space monitoring
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics: Heat stress: drink water, rest if needed, sunblock, shade
- Slip-trip: lots of equip in limited space, keep clean & watch out for yourself & each other
- over-water work

Signatures of Persons Attending Meeting:

Enn Carroll Hughes

Peter Pellegrin BST

CM Smith

SAFETY MEETING RECORD

Project: RM11E Supplemental RI/FS

Date: 5/2/14

Time: 7:30 B 15:55 w T. Thompson R.R.

Person Conducting the Meeting: E.C. Hughes B Justin Siewert (BMC)

Topics Addressed:

- Emergency procedures, such as location of first aid kits and AED, evacuation routes, and meeting point location.
- Site activities and features (as appropriate), such as moving/unloading vehicles; barge, ship, and rail traffic; dock precautions; conveyors; overhead structures or power lines; heavy equipment operations; steep armored bank conditions; presence of high voltage transmission lines; and facility operations.
- Proper personal protective gear, such as foot (steel toe boots required), eye, head (hard hats required), ear, and hand protection, appropriate clothing, safety vests, and personal flotation devices (PFDs).
- Other safety procedures and information, such as MSDS and the buddy system.
- Spill reporting requirements and cleanup/containment procedures.
- General housekeeping, site tidiness and material handling and storage.
- Potential for biological hazards of direct contact with Willamette River water.
- Other topics: PPE - modified for hot weather
- Heat stress - lots of water

Signatures of Persons Attending Meeting:

Eric Hughes	Peter [illegible] - GSI
Shane [illegible]	[illegible] SEE
Michael Wright	
[illegible] CBMSmith	
[illegible]	
Justin	

INCH

Rite in the Rain®
ALL-WEATHER WRITING PAPER

Name Erin Carroll Hughes

Address

Phone

Project

GSI Water Solutions, Inc.

Erin Carroll Hughes, RG
Project Hydrogeologist

GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, OR 97204
Direct: 971.200.8528
Cell: 503.927.4553
Fax: 503.239.8940
E-mail: echughes@gsiws.com

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PAGE	REFERENCE	DATE
2-16	RMIE surface Sed. samp	10/30/13 10/31/13

RMIIE Surface Sediment 10/30/13
Power-grab sampling

7:00 Peter & Erin arrive @ GSI office to load supplies
9:00 Peter & Erin arrive at Swan Island Boat Ramp
Eric & Brian (RSS) ~~said that~~ are already in-water (the boat)
8:00-8:20 Loading supplies onto vessel
8:10 Shawn from CDM shows up
8:40-9:10 Site Health & Safety Kick-off Meeting
w/ Eric Parker, Shawn (CDM), Brian (RSS), Peter, Erin, & Matt (Willamette CRT)
9:10- Heading from Swan Island to RMIIE area
Starting with RMIIE-G069
9:43 Arrive at RMIIE area
setting up grab sampler again & resolving sample coordinate issues.
Current is strong & lead line drifts & overestimates depth by ~10ft.
will use sounder instead.

Scale: 1 square = _____ Eric Carroll Hoffer

10:23 am 10/30/13
G069 R1 successful
WD ≈ 41 ft w/elect. sounder
N 690716.685
E 7642497.147
• 2.4 ft off target
23.5 cm recovery
10:45-11:30
GPS tower not working. Resolving equipment issues.
11:38 R2 - G068
WD = 43 ft elec. sounder
Reject door held open by wood & metal
11:48 R3 - G068
WD = 43.2 ft elec
Reject door held open by 3-4" rounded cobbles
• moving 10-15 ft upstream to try again.
12:04 G068 R3, Reject cobbles
~~12:13 to lunch~~
12:15 G068 R4, Reject, cobbles

Scale: 1 square = _____ Rite in the Rain

G068 coordinates

R1 690665.717 7642422.032
0.728 ft

R2 690664.459 7642422.948
0.95 ft

R3 690656.506 7642429.808
11.4 ft upstream

R4 690674.403 7642415.924
11.6 ft downstream

Let D. Livesay know we hit refusal due to gravel & are moving on

13:00 Headed for RM11E-G071
R1 13:13 successful
690611.561 7642549.09
2.2 ft from target

13:57 R1 @ G070 [690556.272 / 7642486.581]
Rejected
2 big cobbles 8" sub-rounded in sampler

Moving about 10 ft upstream

Scale: 1 square = _____ ECH

14:04 R2 @ G070 [690547.255 / 7642492.942]
reject, Sampler fell over then came up w some 2-5" cobbles in it

~~14:05 R3 @ G070~~
ECH some attempt as above

WD=46.9 elec

moving 20ft shoreward of target to attempt again

14:15 R3 @ G70
insufficient penetration ~8 cm, but most fines we've seen amidst gravels
Bottled it up
[690570.324 / 7642502.943]

~~2:3~~ ECH moved to G072, had to move off-shore
14:38 due to cement armoring on bank

14:40 R1 G072
retained
sticks in bottom of sampler but sufficient recovery

Scale: 1 square = _____ ECH

Rite in the Rain

10/30/13

G072 690636.194
14:40 7642670.477
11.1 ft offstation
Retained 15:00 moved to G073
*Peter noted sheen on water surface, not from us

G073-R1 15:10
reject large rock ~18" in jaw
WD=36.1

G073 R2 15:15
WD=36.0
~6.5 ft offshore
reject

G073 R3 15:24 - Reject
WD-43.4
~18" Boulder in sampler
This stn was 20 ft offshore of target

moved 10 ft shoreward of target for fourth attempt.

G073 R4 15:32 - retain
WD=34.0 ft ~~elec~~
9ft shoreward of target

Scale: 1 square = _____ CCH

10/30/13

Coordinates

G073 R1 690503.371
7642702.149
1.3ft from Target

R2 690501.602
7642697.077
6.5ft from target offshore

R3 690441.047
7642689.721
18.3ft offshore

R4 690509.895
7642709.402
9 ft towards shore

Moving to:

G075 R1 16:03
WD=37 ft
Reject empty
feel large rip rap on bottom w/ lead line

G075 R2 16:20 - reject empty
WD=35
moved ~20 ft offshore for
R3 16:34

Scale: 1 square = _____ CCH Rite in the Rain

10/30/13

16:30 had discussion w/ Shawn about sheen on water, which appears to be coming from upstream. ~~where~~ CCH

G074 R1- 16:47
WD = 46.2 ft elec
690441.715
7642646.518
1.7 ft

17:20-17:44
Mobilizing back to Swan Island Boat Ramp

18:00-19:00 Erin packs cooler & seals COC inside w/ fresh ice. ALS to pick up at GSI tomorrow morning.

Cari Cornell Hughes

Scale: 1 square = _____

10/31/13

8:00 Erin, Peter, Matt (Willamette CRA), Andy (COM) arrive ~~on site~~ at Sherrits dock to meet Eric & Brian (RSS) CCH

8:15 Erin gave Andy more detailed H&S briefing (since he wasn't present yesterday)

8:30am Daily safety meeting

9:13 on station G076
R1 @ 9:15
Eric said the sampler fell over & slid downhill about 5 feet. Had trouble pulling it up like it was on a rope/cable
RSS (Eric) showed us the bottom profile & said the sample location is on a slope, he's moving about 6ft off-shore to toe of slope to get sample.

Cari Cornell Hughes

Scale: 1 square = _____

10/31/13

G076 R2 Retained
WD = 48.6
wood in Sampler, wash out on some of right side but left side looks in tact.

G076 R1 689719.33
coordinates 7643548.097
on station & side down

R2 689723.490
7643543.729
6 ft from target
Retained

10:00 Moved to G077
R1 4.5 ft from target
10:06 689455.953
7643670.333

R2 689453.012
10:12 7643673.353
0.3 ft from target
Retained

Scale: 1 square = _____ ECH

10/31/13

G079 10:43 R1 - reject cobbles in jaw, fines washed out

G079 10:48 R2 - reject clothes & debris in jaw

G074 R3 - moving south 5 ft. got some material in case we can't get better penetration. called D. Livesay to discuss

G082 R1 11:23
rejected due to low recovery

G082 R2 11:44
rejected due to low recovery

RSS adding extra weight to grab sampler to try to get better penetration

G082 R3 12:02
retained 20 cm penetration

Scale: 1 square = _____ ECH

Rite in the Rain

10/31/13

12:30 - 13:30 modifying grap sampler to get deeper penetration & eat lunch.

13:45 Arrive at 'cove' to scope out bank soil sample locations. Staked out two locations in upper portion of cove. Lots of woody debris, anthropogenic debris etc. Hard to find erodible soils.

13:45 - 15:00 Peter is collecting composite soil samples while Erin decons bowls & spoons. & collects rinsate blank (RMIE-6979)

15:00 Erin, Matt, Eric, & Brian head back to G079 for 4th attempt while Peter & Andy stay in cove

Scale: 1 square = _____ ECH

10/31/13

15:15 R4 Moved 20 ft SW of target wood in grab. Moved about 5 ft further & also got wood in grab (reject) (R5 15:25)

R6 moved 20 ft east of target 15:33 - reject

R7 split difference between target & R6

Retained R7! collected

Coordinates from Eric

G079 R1 689302.713
7644001.288

R2 689304.973
7644000.90

R3 689297.842
7643999.57

Scale: 1 square = _____ ECH

Rite in the Rain

10/31/13

G082 R1 689103.813
7644280.116

R2 689105.466
7644279.15

R3 689107.114
7644280.413

G079 R4 689290.625
7643984.371

R5 689294.327
7643983.742

R6 689302.587
7644014.912

R7 689302.868
7644009.5
9.8 ft

ECH

Scale: 1 square = _____

10/31/13

Moving back to G075
Trying 30 ft upstream
of target as per
EPA

G075 R4 ECH ~~30~~ Reject
no recovery

G075 R5 50 ft upstream
of target
successful 15cm penetration
but OK'd to retain
- lots of debris
- lucky to get this

G075 R4 690396.406
7642782.818

R5 690376.406
7642793.055
49.44 ft upstream of
target

17:15 Start mobilizing to pick up
Peter & Andy from cove

Scale: 1 square = _____

ECH

Rite in the Rain

10/31/13

G068, Moved 50 ft downstream of target. RS
Big Cobbles/Rocks - Reject

D. Livesay we can call it good but we'll try one more, 50 ft upstream & then call it good.

R6 18:00 Returned.

G068 RS 690705.044
7642391.524

R6 690626.734
7642451.718
- 483 ft upstream

18:20 - 18:40 unloading supplies from boat

Gi Caswell Hughes

Scale: 1 square = _____

Scale: 1 square = _____

Rite in the Rain

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ALL-WEATHER WRITING PAPER

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Project RMI/E upland groundwater and Bank soil Investigation
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PAGE	REFERENCE	DATE
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PMIIE GW & Bank
487.002

11.18.13 1/5
K [illegible]

Rainy & cool

0730 – Arrive Cargill / Tenco facility; met w/ site crews

0800 – checked in @ facility office attended safety meeting? video

0930 – site specific safety meeting in preparation / advance of potholing / air knifing

0940 – Airknife rig setting up on GRI #3 bacehole @ Cargill.

0950 – Begin potholing @ GRI-B3

1010 – Finished airknifing @ GRIB3
PID: 0.0 ppm
dense @ ~ 4 ft

grave / sand w/ some silt; fill trace cobbles up to 4"
subangular / rounded
/ chal
* No utilities apparent

1020 – move to MW00 4 locations

1030 – Begin airknifing @ MW00 4

Rite in the Rain

RMNE GW & Bank 11.18.13 2/
487.002 K. Passmore

1102 → Finished first air knife @ MW004; fill same as @ GR1 B3; no utilities apparent, some construction debris: bricks, concrete and old clay tile

1110 - Begin air knifing @ second MW004 location

~1030 Begin setting up @ GR1 B3 for drilling (Western States)

1130 Hit obstruction; concrete block and brick @ ~ 2.5 to 3 ft bgs

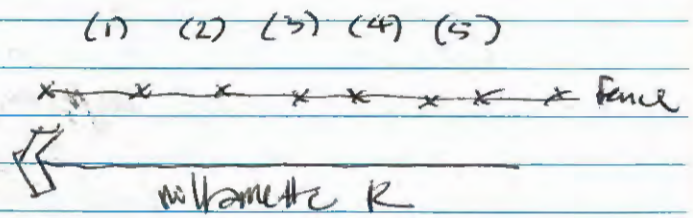
1200 Completed second airknife location @ MW004; no utilities apparent; materials same as other MW004 airknife hole but with more construction debris

RMNE GW & Bank 11.18.13 3/5
487.002 K. Passmore

1215 - GR1 B3 depth @ ~ 17 ft bgs mostly silt w/ some sand and gravel; cobble obstruct.

1215 - Airknife crew mobilizing to MW002S and 3d locations

1400 - Completed 1st airknife hole @ MW002S & 3d monitoring well locations



(1) - depth airknife = 5 ft; no utilities apparent; asphalt @ 4.5 ft bgs; some hard plastic (4) ~~bag~~ debris @ bottom of hole loose, ~~dog~~ moist, dark brown gravelly (fill) SILT w/ sand; angular gravels up to 1½" dia.; some concrete & woody debris.

Rite in the Rain

RMIIE GW Bank 11.18.13 4/5
487.002 K. Jansen

1420 - GRI B3 losing mud circulation @ ~20-25 ft bgs; switched to casing advance; silt/clay @ ~ 25; cased into silt/clay layer and switched back to mud rotary. GRI thinks fill extends to ~ 25 feet bgs at this location.

1430 - GRI B3 sample interval 30'-30.5 ft; soft moist dark gray SILT w/ trace organics

1450 - Second airknife hole @ MW002S and 3d (2) Soil same as (1); w/ concrete and brick debris; metal (?) obstruction @ 5 ft bgs

1530 - GRI B3: Gravel w/ sand and silt @ 45' bgs

RMIIE GW Bank 11.18.13 5/5
487.002 K. Jansen

1550 - Completed third airknife hole @ MW002d and 3d (3) location; No utilities apparent; cleared 6" hole to 5 ft bgs; cuttings similar to the first two airknife locations

1600 - moving to 4th airknife location @ MW002S and 3d

1640 - 4th airknife hole @ MW002S and 3d location to ~ 4 ft bgs, lots of construction debris (concrete & bricks); crew is stopping work for today; will finish to 5 ft bgs tomorrow.

1650 - K. Jansen off site

Ken Jansen

Rite in the Rain

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K. Jensen

TAMUFG GW: Bank 11.19.13 1/2
487-002 K. Jensen

0845 – K. Jensen arrive @ Cargill facility; crew beginning to finish 4th airknife hole @ MW 002s; 3d location

0930 – 4th airknife hole complete; to 5 ft bgs; no utilities apparent; cuttings given to other holes; airknife crew preparing to mobilize to next site; Geoprobe rig crew preparing to set up @ MW 003d.

1040 – Airknifing @ GRI B2 down ~ 2 ft; pulling large debris (concrete) and cobbles

1045 – Geoprobe setup on MW003d tooling up; ready to go

1100 – Airknife complete @ GRI B2; no utilities apparent. K. Jensen offsite

Rite in the Rain

RMIIE GW : Bank 11.19.13 2/2
0487.002 K. Nissen

1140 - K. Nissen onsite

1245 - Airknife crew completed two holes to 5 ft bgs @ MW001 No utilities apparent. Cuttings were fill material; gravelly sand w/ silt.

1600 - Airknifing completed @ MW005, GR1B1 to 5 ft bgs each. No utilities apparent gravelly sand w/ silt

1645 - K. Nissen offsite

Dark & porous intermittently left black

K. Nissen

RMIIE GW & Bank 11.20.13 1/2
487.002 K. Nissen

0830 - K. Nissen arrive onsite; MW003d to depth of 110 ft bgs; tagged top of Truckee Formation; build well w/ 10 ft screen from 90-100 ft bgs

1000 - GR1B2; depth to 10 ft; split spoon sample was coarse sand w/ some gravel; very poor recovery (~ 10-20%)

1015 - MW003d; well construction continuing.

1020 - GR1B2;
15 to 16.5 ft split spoon; coarse sand w/ gravel and some woody debris; poor core recovery ~ 25%, some black sand/gravel, but no sheen and no odor.

17.5 to 19 ft; appears to be transition to native formation; fine to med sand w/ some silt and organics; olive gray to dark gray in color

Rite in the Rain

RMHE GW & Bank 11.20.13
457.002 K. Jensen 2/2

1035 - 20 - 21.5 ft; Sandy silt w/ some woody debris & organics (peat?) and some clay (OL - PT) (ML)

1045 - 25 - 26.5 ft; olive gray to dark gray silt w/ sand and some woody debris, alternating thin layers of silt & sand med to low plasticity

1055 - 30 - 31.5 ft; greenish to olive gray clay w/ trace sand; med dense; poor core recovery.

1700 - K. Jensen offsite; see field data sheets and forms for additional information.

Rest of page intentionally left blank
K. Jensen

RMHE GW & Bank 12.9.13
457.002 K. Jensen 1/1

1445 - Arrived (K. Jensen) MW003d; ~~preparing~~ (KJ) programming transducer and preparing for deployment
- Transducer type = INW PT2X
- Rating = 50 psia
- polling interval = 15 min
- S/n = 6021347021

1517 - MW003d DTW = 24.43 ft bmp mp = mark on top of casing; transducer deployed.

1527 - MW002S DTW = 21.02 ft bmp; mp = mark on top of casing

1540 - Deployed BP sensor @ MULTI 1007

1606 - MW001 DTW = 22.94 ft bmp; mp = mark on top of casing; purged well

1630 K. Jensen offsite

Rest of page intentionally left blank
K. Jensen

Rite in the Rain

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K. Kinsman

RMIIE GW & Bank 12.10.13 1/1
487.002 K. Kinsman

1430 – K. Kinsman arrived MW002S; programming transducer and preparing for deployment
- transducer type = INW PT2X
- Transducer rating = 50 psia
- polling interval = 15 min
- s/n = 0021347020

1457 – MW002S DTW = 21.42 ft bmp
mp = mark on top of casing; transducer deployed

1510 – MW004 DTW = 23.73 ft bmp; mp = mark on top of casing

1524 – MW001 DTW = 23.09 ft bmp; mp = mark on top of casing

1600 – K. Kinsman departs

Rest of page intentionally left blank
K. Kinsman

Rite in the Rain

page intentionally left blank
K. Kinsler

RMIIE GW ? Bank
487.002

1.17.14 1/2
K. Kinsler

0833 – MW004 DTW = 23.60 ft bmp
0838 – K. Kinsler arrives MW003d
0845 – MW003d DTW = 24.10 ft bmp; removed transducer and downloading data; status = active; batt = 3.1V; 3712 records out of 50,000; polling interval = 15 min
0850 – MW003d transducer redeployed
0850 – MW002S DTW = 20.55 ft bmp; removed transducer and downloading data; status = active; battery = 3.0V; 3713/50,000 records; polling interval = 15 min
0904 – MW002S transducer redeployed
0914 – MULT 89881 DTW = 44.42 ft bmp; mp = top of casing.
** Water level much deeper than previous measurements; confirmation measurement ⇒ DTW = 44.43 ft
0945 – MW005 DTW = 24.85 ft bmp
0950 – MULT 1007 DTW = 25.02 ft bmp; mp = top of inner well casing

Rite in the Rain

RMIIE GW & Bank 1.17.14 2/2
487.002 K. Jensen

0952 - Downloading barometric pressure sensor data; status = active; battery = 3.0 V; 3,716/50,000 records; polling every 15 min.

0955 - Redeployed BP sensor @ ~~MW007~~ MULT 1007

1004 - MW 001 DTW = 22.79 ft bmp

1030 - K. Jensen offsite

Rest of page intentionally left blank
K. Jensen

RMIIE GW & Bank 3.11.14 1/4
0487.002 K. Jensen & P. Pellegrin

Mostly sunny, warm ~ 60°F

1232 DTW @ MW 2s = 18.93 ft bmp

1235 DTW @ MW 3d = 19.61 ft bmp

1239 removed transducer from MW 2s. Status = active; battery = 3.0 V; 8,811 records out of 50,000; polls every 15 minutes.

1245 MW 2s transducer redeployed

1249 Downloading MW 3d transducer; status = active; battery = 3.0 V; 8,812 records of 50,000; polling interval = 15 minutes.

1254 MW 3d transducer redeployed.

1255 DTW @ MW 4 = 18.42 ft bmp

1305 Cargill site; 18 total drums
~ 14 soil
~ 4 water
one total drum available for purge water from space available in 3 drums.

Rite in the Rain

1319 Downloaded BP sensor
status = active; battery = 2.9V;
8,814 records of 131,000;
polls every 15 min.

1322 Redeployed

1328 MWLT 89881 TD = 53.81 ft bmp
DTW = 44.50 ft bmp; well cap was loose and vault filled w/ water; some overland flow to well?? locking sealable well cap doesn't appear to seat firm against casing. well cap, seal, and bolts should be replaced.

$53.81 - 44.50 = 9.31$ ft
$V = \pi r^2 h$
$= \pi (0.04167\text{ ft})^2 9.31$ ft
$= 0.0507$ ft^3
$= 0.38$ gallons

1355 DTW @ MWLT 89881 = 18.72 ft bmp
* Measured using field-fashioned "plunker" on nylon cord.
Socket tied to nylon cord and waterproofed using duct tape.

1406 MWLT 1007 DTW = 19.36 ft bmp

1418 MW005 DTW = 17.88 ft bmp

1423 Glacier Site drum count:
10 total drums
~ 5 water
~ 5 soil
~ 1/2 drum available for purge water.

1445 MW001 DTW = 16.26 btoc
Gently surge 37' to 22' by raising and lowering bailer with line spool. Complete ~25 cycles then measure DTW =

Connect peristaltic pumps and purge

TIME	MINS.	PURGE VOLUME	DTW	COMMENTS.
1540	0	0	16.26	
1545	5	0.6	16.26	No drawdown!!
1550	10	1.0	16.26	water is clear;
1555	15	1.6	16.27	purge rate ≈ 400 ml per minute
1600	20	2.0	16.26	purge rate = 400 ml/min
1605	25	2.6	16.27	
1620		4.0	Run for additional cleaning.	

Rite in the Rain

RMIIE GW : Bank 0487.002 4/4

3.11.14 K. Larsson & P. Pellegrin

1624 MW001 all secured - cleaning up site & disposing of purge water

1635 K. Larsson & P. Pellegrin off site

Rest of page intentionally left blank

K. Larsson

RM11E - Upland work 11/18/13

7:30 Arrive on-site
Everyone congregating in parking lot

8 - 9:00 Safety briefing at Cargill
GSI, Cascade, GRI, Western States
CDM (for EPA), Foth, Blake

9 - 9:30 Tailgate safety meeting led by Cascade

*See K. Jansen's logbook for detailed notes for 11/18/13

- P. Pellegrin & I were observing drilling and collecting bank samples SL032, SL033, and SL034 on Cargill property. Also collected rinsate blank & field duplicate.

Sample time

12:10 SL932 rinsate blank collected
12:50 SL032
13:00 SL532
14:45 SL033
1545 SL034

Erin Carroll
Kelly Jones

ECH

11/19/13

RMIIE upland work continues.

7:40 arrive on-site

8:00 Safety briefing at Temco
Cascade - Matt, Rodney, ___
Willamette CRA - Matt, Kiani
GSI - E. Hughes, D. Livesay
DEQ - D. Hafley
CDM - Andy

10:45 Started drilling on MW003d, northern hole of four that were cleared w/ air knife/vac truck. Hole was cleared to 5ft yesterday w/ air knife.

10:45 Transfered 1st cooler w/ samples from 10/18/13 to AIS

Driller dumped 0-5ft section in drum due to air knifing yesterday. Said it was 'muck' & disturbed.

10:50 5-10' drive, concrete fill barrel only

11/19/13 14' ECH

11:05-11:13 10-15' drive length drilled though rebar 4' drive
cooled drill bit w/ H2O

11:15-11:30 Drilled 14-16', more concrete fill, good recovery on that section.
cooled drill bit w/ H2O

11:30-11:45 16-18', more concrete fill 1.5' recovery, wet because he cooled his drill bit.

11:45-12:00 18-20'
dust came out of end of core barrel like concrete dust.

Native contact at 18.7ft
18-18.7' rounded cobbles in silt matrix underlain by dark grey silt
0.0 on PID

no water yet. Decided to collect composite sample of unsaturated fill 0-18.7 ft

12-12:30 dropping casing, clearing hole advancing from 20-23.5 full recovery, native silt.

Rite in the Rain.

11/19/13 ECH

12:50 Casing @ 28ft
hole open to 20
we's pulling casing up to 22' so we can see if water comes in while we eat lunch. dry so far.
Casing at 25' hole open to 23'

13:00-13:30 Lunch break
13:15 GRI reached TD of 100' bgs sand to 100
13:30 Started drilling again. No water yet.

13:30-13:45 30-40' drive 100% recovery. Same silty material w/ a couple thin woody layers one @ 31.3 and one @ 34'. (<.25" thick)

1345-1400 40-46' drive 100% recovery hole open/tagged @ 44'. Still no water.

Scale: 1 square = _____

11/19/13 ECH

14:00-14:20 46-56 same material
14:20-14:40 56-66 same material
15:00-15:20 66-76 silt, w/ med-coarse sand w/ gravels (rounded) 0.25-0.75"
15:20-15:40 76-86' clean fine sands. when driller removed flap it spilled all over them.
ECH
15:40-16:00 86-96' clean fine sands.

16:00-16:45 Demob & Clean-up for day

Eric Cawall Thomas

Scale: 1 square = _____

Rite in the Rain

11/20/13 RMI/E Continue on MW003D

7:30 - Arrive onsite, 8:00 H&S Briefing

WL= 38.6 - 6'3" = 35.4 ft bgs
casing to 96', likely vertical gradient (upward)

8:30-8:45 advanced 96-106, hit gravels @ 105!

Casing
105-100 5ft Sump; centralizer @ 103
90-100 10 slot screen
100-0 2" casing; centralizer @ 89 @ 49

Filterpack: - Chips med: 101-106 (21 bags)
req'd to be 1' below well screen
- 10/20 sand 88-101 (~5 bags)
- Chips 84-88 (~4 bags) pure gold med
- Quick grout - 120 gallons
- depth grout @ 31 ft; add 111 bag chips; chip depth @ ~18 ft bags
- Adding chips; 1 TNL bags
- chip depth @ 10 ft

Scale: 1 square = _____ ECH

11/20/13

9:30-12:00 well installation of MW003d

12-12:30 setting up on MW002S
11 ft from MW003d (parallel to river in SW direction)

12:30-1300 Lunch

13:00 began drilling MW002S

0-5 ft run - Air Knife, no recovery
5-10 ft run
10-~~20~~ 13 ft run
15-25 ft run
25-35 ft run 35-43 ft run

Drilling completed at ~~3:00~~ 15:00 ECH

Sample ID	Time		
MW5002S-	1340	-5_10	archive
	1350	-10_15	archive
	1405	-15_20	archive
same as unsaturated →	1440	-20_25	analyze + archive
GW division	1445	-5-20	analyze + archive
Real division =19.7' vs. 20'	1450	-25-30	archive

Scale: 1 square = _____ ECH

Rite in the Rain

11/20/13

well completion 3-4pm
screen set ~~18-35~~ 17.5-37.5 ft bgs
5 ft sump

16:00-16:45 clean-up & demob for day

Cancell
Heffes

11/21/13

730 Arrive on-site
7:40-755 GSI/Cascade Tailgate safety meeting
8-9 drillers de-mobing off MW002s & completing flush monuments at MW003d/MW002s. will be setting up on MW004.
8:30 checking in w/ GRI on
845 GRI Borehole #2 collecting split-spoon from 80-81.5 ft bgs grayish brown fine-med sand med dense

9:15 Began drilling MW004

11:00 Finished drilling to 41 ft bgs

11:15-13:30
well installation, screen set 20-35' bgs w/ 5' sump

10:30-11:00 D. Hatley DEQ on-site observed soil cuttings discussed

Rite in the Rain

11/21/13 ECH

progress. He seemed to agree w/ all fill/native designations & screened interval decisions to date. He wanted to screen across the woody interval so we went from 20-35. Which includes woody layer & fill and a foot of sand at the bottom. Let him know that to date we haven't seen any visible evidence of contamination (odor or sheen), apart from anthropogenic & construction debris

11:45 Drillers having trouble starting Landa motor. Green liquid started coming out & I let them know right away & they contained it in a bucket & used absorbant pads to remove from ground

11/21/13 ECH

13:30 - 14:00 Lunch

14:00 - 14:30 moving to Glacier

14:30 Started drilling on MW001
0-5 air knifed, no recovery
Asked for 5' runs so
5-10
10-15
15-20
20-21 hit cement or basalt & drilled through
Still on it at start of next run

TD = 40 ft

14:30-17:00 E. Hughes & K. Jansen busy logging & sampling on MW001 while P. Pellegrin worked on development of wells on Cargill site.

Eric Cecell Hughes

Rite in the Rain

11/22/13

7:00 water level in MW001 = 24' bgs
7:00 Arrive on-site
7:10 - Safety briefing w/ Cascade
7:20 & Brian
7:20-7:40 Finished drilling to 40' bgs
Determined screened interval of 17-32' bgs wanted to straddle water table & make sure we could capture base of fill when/if saturated but also the native that is saturated year round

7:40-8:30 Constructing well
Kenny documented const. specs

deep bottom 10
bottom 5
30, 30, 70
4 gallon Sat bag
ECH

9:15 collected SL031, 5-pt composite sample.

11/22/13

10:17 All set up on MW005 on N. end of Glacier property

10:30 Began drilling

12:00 Ended drilling @ 38' bgs
screening 17-32' bgs
~~* Note that it was windy when sampling~~
17-32 req'd, but installed 16.5-31.5

16.5-31.5 Screen
36.5 sump
36.5-32.5 chips 4 bags 10 bottom
14.5 Sand 8.5 sand 30 top

After installing MW005, GSI finished collecting upland bank samples on Glacier property & submitted those & MW005 samples to lab courier in the afternoon.

Note that the wind picked up when sampling ~~&~~ the deep
ECH

Rite in the Rain

11/22/13

Soil from MW005 & that parking lot dust could have entered core bags.

Eric Cavell Hughes

Scale: 1 square = _____

Field activity Summary

11/25/13 K. Jansen & Cascade performed additional well development.
COM oversight (Andy)

12/4/13 P. Pellegrin & K. Jansen began ground water sampling on MULT1007
COM oversight (Andy)

12/5 – 12/6/13
P. Pellegrin & E. Hughes collected groundwater samples at MW005, MW003d, MW002s, MW004, and MULT 881881.
COM oversight (Andy)

DEA survey on 12/5 also

12/9/13 K. Jansen bailed MW001 dry (~4 gallons)
Note: It was also bailed dry on 12/6/13

12/10/13 K. Jansen & E. Hughes collected final groundwater sample in MW001

Eric Cavell Hughes

Scale: 1 square = _____

Rite in the Rain.

INCH

Rite in the Rain®
ALL-WEATHER WRITING PAPER

Name Erin Carroll Hughes

Address

Phone

Project

GSI Water Solutions, Inc.

Erin Carroll Hughes, RG
Project Hydrogeologist

GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, OR 97204
Direct: 971.200.8528
Cell: 503.927.4553
Fax: 503.239.8940
E-mail: echughes@gsiws.com

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CONTENTS

PAGE	REFERENCE	DATE
2	RM11E Diver-Assisted	5/1/14
20	Sediment Sampling	5/2/14

5/1/14 RMIIE diver-assisted Sediment Sampling

8-8:45 setting up materials on boat & conducting tailgate safety meeting (8:25-8:45)

8:45 Heading out on water, leaving Swan Island Lagoon boat ramp & heading to RMIIE project Area.

Intending to start on RMIIE-G083.

The tailgate safety meeting included the pre-dive briefing & walking through the diver SOP.

En-route to RMIIE Project Area divers are setting up core tubes. They are advancing tubes 1ft past top of core catcher. Core catcher

Scale: 1 square = _____ ECH

5/1/14

will be cut off & upper 1-ft will be given to us for processing.

Sunny weather, going to be in the 80's today. GSI & BMC stocked up on water.

On site today:
GSI: Erin Carroll Hughes
peter pellegrin

CDM: Sean Olivera

BMC: Justin Siewert
steven
mike & Shane

Dropped bouy on location right under center of dock. GPS point entered says it's 17.18ft off-shore of target & bouy is positioned righ under center of dock.
45.53566994°N
122.67584223°W } G083

Scale: 1 square = _____ ECH Rite in the Rain

5/1/14

Dropped bouy right on location RMIIE-G084. Located ~8ft downstream ECH ~~in line w/~~ of northern ~~end~~ edge of walkway.

Steven

10:35 Diver in water on RMIIE-G084
WD = 16', rocks under 1" in size
woody debris, piling,
piece of silt curtain rope,
he says we have 1" soft over rock, moved 3ft ds & 3ft off shore, got to bottom & saw same thing.
very little silt or sediment
lots of gravel, 5ft off s
gravel is 3" minus getting
Big logs makes it difficult to reach bottom.
gravel,
old pilings & bullards went almost 10 ft offshore getting to be denser wood, moved back to bouy & upstream toward shore a couple feet, in line w/N. end of dock! ECH

45° slope

Scale: 1 square = _____ ECH

5/1/14

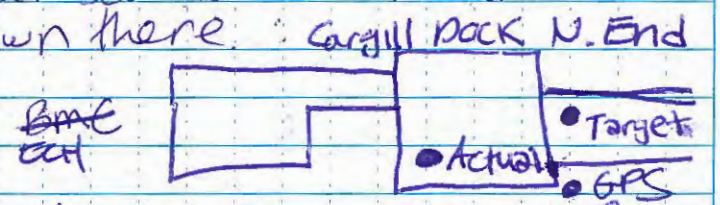
10:59 on video. (about 5 minutes fast)
drove to target depth (1' tether)
tape mark on tube
withdrawing tube on RMIIE-G084
R1-Got it back on board, only 6" recovery, dark black sediment (silty gravel?). photographed, dumped on station
- handle wasn't enough (method A) so came back for ~~drive~~ slide hammer (method B). Note that a wrench was used instead of the handle. ECH
11:17 Reached full depth on 2nd attempt of G084 & 10 ft upstream from original target.
SMC collected coordinates
difficult to drive in.
retained 20cm recovery.
11:30 Diver attempting to collect RMIIE-~~G084~~ G083 ECH
35' water depth
sandy bottom
concrete pour feature

Scale: 1 square = _____ ECH

Rite in the Rain

5/1/14

on bottom. Diver moving offshore slightly, moving along metal on surface below dock.
Having issues w/ pneumo coming to surface
Sandy w/sticks & twigs
12:00 collected sample G083
penetration = ~~2 ft~~ 1.5 ft above cutter head
recovery = 36 cm above metal
WD = 41 ft pneumo
Diver indicates he found sandy sediment
Moved about 8 ft N. under dock at base of H beam
- Cut off top of tube for processing
24 cm in upper foot
Diver saw lots of fish (bass) down there.



See photo IMG_9858 for sample location. GPS non-functional

5/1/14

13:30 began diving on G089

R1 31" minus river rock
Couldn't penetrate at all really on station
- No recovery
Moved ~3 ft off-shore & downstream
water depth = 35 ft
- moved downstream
- hit refusal at 1 ft
13:50 taking sample up
#
Bouy is right in center of x under dock & right upstream ~~in line w/~~ of ECH overhead pipe feature. In reality, diver was on downstream ~~end~~ of x-brace side of that by about 5 ft. See IMG_9861.
14:20 on G088, gravel on bottom attempted right on bouy/station (placed on target by GPS) moved upstream 2nd attempt
no recovery - 0 ft 1-2"

5/1/14

Moving down stream & offshore
~10 ft ~4 ft

for 3rd attempt on
G088

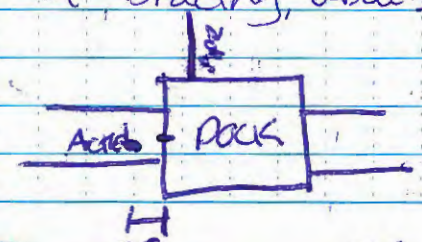
14:40 Drove Sample 1 ft & hit
refusal, bringing it up
12 ft water depth before
he moved offshore & it
was ~9. at station

Measured w/ lead line &
water depth = 21.7 at bouy
N 45.53543055 } G088
W 122.67543784 }

Bouy may have shifted downstream

GPS seems inaccurate, see Img_9862.

- I took several cordinates of
G089 as satelite coverage
was poor, basically
the sample was centered
15 under dock just downstream
of bracing, about 10 feet.



Scale: 1 square = 5ft

ECH

5/1/14

15-15:30 Ballard changing diver to
Shane venture

15:30 Shane enters water
& heads to bouy located @
center of Cargill tower

G086 says it's gravelly, 2" minus
-1/4" felt around 5 ft
radius, going to try it
there. Rep 1

He moved a rock to gain
access before advancing
core tube, reject on 1st attempt after ~4" drive
@ bottom about 10 ft
down stream from center
of tower,

2" & 1" Sand & gravel
31 ft water depth.
tough going w/ sampler
made it through to 8 ft
penetration line.
Rep 2

16:10 pulling sampler out of
ground. G086 collected.

Scale: 1 square =

ECH

Rite in the Rain

5/1/14

Recovery in tube about 21cm to bottom of core catcher less than 50% recovery
Pumped after photo, no fines to analyze, all gravel

16:30 Rep 3, dumped #2 due to inadequate recovery & course grained nature of sediment. Lots of weedy debris before he can get to bottom. 6.5' offshore of center bracing found exposed bottom under debris, 1/4" mows
water depth is 38ft based on pnemo.
2" gravel
1/2-1" soft & all gravel underneath lots of rocks, soft stuff suspends.

16:42 Trying once more at NW corner of dolphin. Concrete chunks all over w/ gravel & bigger rocks

R4 moving to center of dolphin & about 10-15ft

Scale: 1 square = _____ ECH

5/1/14

downstream. Same thing 1/2-2" soft material over gravel. Abandoning station & moving to KMIIE-G085, about 35 ft toward shore from G086 target.

measuring distance to center of X-brace 15ft, diver moving 35 more ft toward shore & so 50ft from outer edge of dock. Em Cull

1.5 ft penetration (2nd tape mark)
36 ft water depth on pnemo

8:35 Coming up with sample R1. unfortunately only 4" of fines around fingers looks like most drained out when pulled out of water.
Going back down to try again. will drive a little farther in hopes of getting weight in sampler to retain fines

Belongs on pg 13 of G08 - 5/2/14

Scale: 1 square = _____ ECH

Rite in the Rain

5/2/14 RMIIE Supplemental RI/FS

6:30 BMC mobilizes boat at Swan Island Lagoon. & GSI bringing equipment to Sherrif dock

7:00 GSI & Sean Olivera (COM) meet at Sherrif's dock & wait for BMC to arrive & attach barge (which was parked there overnight).

7:20-7:35 Health & Safety briefing & pre-dive briefing at Sherrifs dock
COM: Sean Olivera
GSI: Erin Carroll Hughes, Peter Pellegrin
BMC: Justin, Mike, Shane, Steven

7:40-7:50 mob over to Glacier NW dock
RMIIE-G078
Peter & I collected rinsate blank while divers gear up. (G078)

8:25 Mike Wright (BMC) in water for Ballard. dropped buoy on target at RMIIE-G078
36 ft on bottom.
Can penetrate sediment by hand
pushed tube in 8" by

5/2/14

hand & is now applying fence post driver (method B)
pilings & rip rap in area
he did move a piece of rip rap before collecting sample

see notes on pg 11. ~~1st~~ sample collected just ~~several ft~~ Shorewards ~~East~~ of BMC GPS point. Good Signal.

2nd attempt - just a couple ft from GPS pt.
- Sandy sediment w/ woody debris
Hit refusal at 1 ft & going to pull out. Having difficulty getting it out
water depth = 37 ft. (pneumo)

8:59 Diver was able to pull it out
RMIIE-G078-R2, Successful!
100% recovery, kept upper 12" for sample

9:42 RMIIE-G080
8" minus rock, lots of woody debris,
found location right under dock w/ harder mud.
Diver advanced to a little past 1' mark

5/2/14

37 ft = waterdepth memo
9:55 coming up w/ sampler
Successful, 18" recovery
(full penetration, kept upper
12"

RM11E-G080

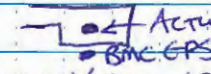
R1 Rocks, rip-rap closer to shore,
feels like clay underneath
He tried, but couldn't advance
rocky right under mud.
Trying again in adjacent
spot. rip-rap
Moved 6-8 ft looking for
exposed sediment

10:48 I asked him to move
R2 shoreward & upstream.
Right under center of
dock
33 ft water depth
10:55 pulled out sample.
Not enough recovery ~10" w/
cutter head. I asked

5/2/14

them to try again.

11:00 Heading back for R3
pushed just over 1.5 ft tape line
34 ft depth
collected right in center of
S end of dock



11:05 diver coming up w/ sample
rejected due to low recovery,
trying again in approx same
location. R4
11:20 diver coming up w/ sample
Stopped at 1st tape 1 ft.
water depth = 33 ft.
R4 RM11E-G081
drove 18" & had 18" of recovery
Success on G081.
Moving to Cargill to try
RM11E-G085 & G086 again
12:00 Placed buoy 25 ft horizontal (in-line)
w/ shore downstream of barge
(can't get in further)
→ for sample RM11E-G085.

Rite in the Rain.

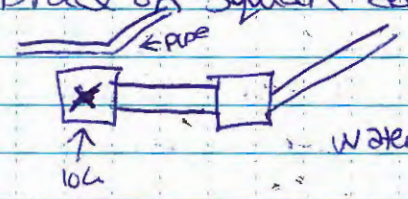
5/2/14

point = 45.5350449°N
122.67500961°W
13.78 ft MSL
+ 25 ft downstream in-line ☆
w/ shore.

- Decided to try G086 again w/ core first.
mike back in water @ 12:

- Going back for method C
collecting material from upper
couple inches.
below that it's only gravel
sampling w/i a 3-ft radius
of anchor.

Sampling right in center of cross
brace on square dock stx.



12:55 heading up w/ sample
G086
ECH

Scale: 1 square = _____

5/2/14

13:00 Diver heading for G085
while peter processes G086

- Refusal at station on R1
- moved 3 ft downstream
made 3 attempts w/o success
- Attempting travel ~10 ft upstream from anchor
- Scooped sample using method C
brough two jars up at 13:50
★ collected in line w/ N edge of dock □

14:50 diver on bottom @ final
sample location RM11E-G087
large metal rod painted
yellow on river bottom
soft silt over gravel, diver
is going to try right on
new buoy/GPS location.

Had to move target station
due to crane & barge
operations at RISG.
Concerned about safety.
I also called RISG &
got through to Brad in

Scale: 1 square = _____

ECH

Rite in the Rain

5/2/14

the crane. Asked if he could see our buoy, let him know we'd be diving for a sample, found out if he was comfortable w/ us diving in this area & if he was going to move crane any further forward (because they just did.) He said they won't need to move it further & he was ok w/ us working there.

15:10 Getting sampler out of sed. drove 8" & hit refusal. Bringing it out. full recovery, a keeper! water depth = 26 ft

15:20-15:25 motoring over to sheriff's dock

15:30 met T. Thompson @ sheriff's dock. Started off-loading sampling gear & on-loading pore water gear.

15:50 2nd Health & Safety briefing

Scale: 1 square = _____ ECH

5/2/14

due to addition of new member. Also conducted pre-dive briefing for the porewater recon. Tim gave demo of PW sampling device.

~~16:30 Porewater Station PWECH~~

Peter got off boat to bring some supplies to office while Tim got on. I will package coolers tonight.

Begining porewater Recon 16:15

16:30 successfully deployed/recovered RMIIE-PW003 w/o sig tears or rips

17:00 on RMIIE-PW006, diver on bottom

17:07 Sampler @ target depth

17:09 pulling slowly

17:10 coming up w/ sampler

1730 Started positioning on PW001 but due to tide & clouds, Tim

Scale: 1 square = _____ ECH

Rite in the Rain

5/2/14

decided that trying RMIIE-PW002 is more important, so we are moving there.

1756 diver on bottom at PW002
woody debris & sediment.
Side doors in-tact
1757 PW sampler in & doors being removed. Successl No rips or tears
18:00 Heading back to dock.

Note that T. Thompson took additional notes on the porewater recon activities.

APPENDIX J
ANALYTICAL RESULTS AND DATA REDUCTION OF RE-OCCUPIED SEDIMENT SAMPLE LOCATIONS

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.

Appendix J

Analytical Results and Data Reduction of Re-Occupied Sediment Sample Locations

Analyte	Sample ID	LW3-G771	RM11E-G071	WLCDRD05PG06363	RM11E-G073	RM11E-G009	RM11E-G076[1]	RM11E-G017	RM11E-G077
		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair	
	Sample Date	12/6/2007	10/30/2013	5/23/2005	10/30/2013	5/6/2009	10/31/2013	5/7/2009	10/31/2013
	Unit								
Conventionals									
Total organic carbon	percent	1.14	1.38	1.47	1.03	1.38	0.974	0.83	0.280
Total solids	percent	62	66.0	56	75.1	68.6	69.7	72.7	79.1
PCBs									
Aroclor 1016	ug/kg	1.3 U	2.1 U	2.4 U	2.1 U	20 U	2.6 U	5 U	2.1 U
Aroclor 1221	ug/kg	1.3 U	2.1 U	2.4 U	2.1 U	20 U	2.1 U	5 U	2.1 U
Aroclor 1232	ug/kg	1.3 U	2.1 U	2.4 U	2.1 U	20 U	3.7 U	5 U	2.1 U
Aroclor 1242	ug/kg	6.4 NJ	17	2.4 U	2.1 U	20 U	2.1 U	5 U	2.1 U
Aroclor 1248	ug/kg	1.3 U	2.1 U	2.4 U	2.1 U	20 U	5.8 U	5 U	2.1 U
Aroclor 1254	ug/kg	29	51 J	2.4 U	2.7 J	20 U	16 J	5 U	2.1 U
Aroclor 1260	ug/kg	55	110	190 J	13	2800 J	87	390 J	280
Aroclor 1262	ug/kg	1.3 U	2.1 U	2.4 U	2.1 U	20 U	2.1 U	5 U	2.1 U
Aroclor 1268	ug/kg	2.1 U	2.1 U	2.4 U	2.1 U	20 U	2.1 U	5 U	2.1 U
Total PCBs (FS Calc)	ug/kg	95 NJT	180 JT	200 JT	23 JT	2900 JT	110 JT	410 JT	290 T
Grain Size									
>9 Phi clay	percent	1.76	--	--	--	--	--	--	--
8-9 Phi clay	percent	1.27	--	--	--	--	--	--	--
Fine silt	percent	3.02	--	--	--	--	--	--	--
Medium silt	percent	3.99	--	--	--	--	--	--	--
Coarse silt	percent	12.4	--	--	--	--	--	--	--
Fines	percent	24.7 T	--	29.3 T	--	--	--	--	--
Clay	percent	--	3.89	4.08	1.36	--	1.94	--	1.06
Silt	percent	--	23.85	25.2	5.74	--	7.05	--	4.00
Total Fines	percent	--	27.7 T	29.3 T	7.1 T	--	8.99 T	--	5.06 T
Very fine sand	percent	19.1	6.29	19.3	6.08	--	2.16	--	1.06
Fine sand	percent	23.6	24.33	46.4	23.58	--	28.66	--	9.24
Medium sand	percent	14.9	15.72	4.27	4.90	--	22.94	--	14.09
Coarse sand	percent	3.95	6.66	1.59	2.27	--	21.45	--	17.67
Very coarse sand	percent	2.35	4.65	0.91	2.52	--	8.23	--	8.39
Fine gravel	percent	2.57	6.14	0.5	9.04	--	6.44	--	8.20
Medium gravel	percent	0.04	0.63	0.2	45.53	--	0.63	--	41.24
Pesticides									
2,4'-DDD	ug/kg	2.1 J	--	3.3	--	--	0.38	--	0.063 U
2,4'-DDE	ug/kg	0.7 U	--	0.42 U	--	--	0.18 U	--	0.079 U
2,4'-DDT	ug/kg	3.6 NJ	--	2.2 U	--	--	0.16 U	--	0.094 U
GSI Total 2,4-DDx (FS Calc)	ug/kg	6.1 NJT	--	4.6 T	--	--	0.55 T	--	0.094 UT
GSI Total 2,4-DDx (RI Calc)	ug/kg	5.7 NJT	--	3.3 T	--	--	0.38 T	--	0.094 UT
4,4'-DDD	ug/kg	0.52	--	1.7 U	--	--	0.98	--	0.074
4,4'-DDE	ug/kg	1.6 NJ	--	1.5 NJ	--	--	0.81	--	0.17
4,4'-DDT	ug/kg	4.1	--	12 J	--	--	0.25 J	--	0.047 U
GSI Total 4,4-DDx (FS Calc)	ug/kg	6.2 NJT	--	14 NJT	--	--	2 JT	--	0.27 T
GSI Total 4,4-DDx (U= 0)	ug/kg	6.2 NJT	--	14 NJT	--	--	2 JT	--	0.244 T
GSI Total DDD (FS Calc)	ug/kg	2.6 JT	--	4.2 T	--	--	1.4 T	--	0.11 T
GSI Total DDD (RI Calc)	ug/kg	2.6 JT	--	3.3 T	--	--	1.36 T	--	0.074 JT
GSI Total DDE (FS Calc)	ug/kg	2 NJT	--	1.7 NJT	--	--	0.9 T	--	0.21 T

Appendix J

Analytical Results and Data Reduction of Re-Occupied Sediment Sample Locations

Analyte	Sample ID	LW3-G771	RM11E-G071	WLCDRD05PG06363	RM11E-G073	RM11E-G009	RM11E-G076[1]	RM11E-G017	RM11E-G077
		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair	
	Sample Date	12/6/2007	10/30/2013	5/23/2005	10/30/2013	5/6/2009	10/31/2013	5/7/2009	10/31/2013
	Unit								
GSI Total DDE (RI Calc)	ug/kg	1.6 NJT	--	1.5 NJT	--	--	0.81 T	--	0.17 T
GSI Total DDT (FS Calc)	ug/kg	7.7 NJT	--	13 JT	--	--	0.33 JT	--	0.094 UT
GSI Total DDT (RI Calc)	ug/kg	7.7 NJT	--	12 JT	--	--	0.25 JT	--	0.094 UT
GSI Total DDx (FS Calc)	ug/kg	12 NJT	--	19 NJT	--	--	2.6 JT	--	0.39 T
GSI Total DDx (RI Calc)	ug/kg	12 NJT	--	17 NJT	--	--	2.2 JT	--	.24 T
cis-Chlordane	ug/kg	0.031 U	--	0.2 U	--	--	0.36	--	0.062 U
cis-Nonachlor	ug/kg	3.9 U	--	0.29 U	--	--	0.15 U	--	0.097 U
trans-Chlordane	ug/kg	0.17 U	--	1 U	--	--	0.51	--	0.064 U
trans-Nonachlor	ug/kg	0.2 U	--	0.29 U	--	--	0.28 J	--	0.058 U
GSI Total Chlordane (FS Calc)	ug/kg	3.9 UT	--	1 UT	--	--	1.5 JT	--	0.13 UT
GSI Total Chlordane (RI Calc)	ug/kg	3.9 UT	--	1 UT	--	--	1.2 JT	--	0.13 UT
Dieldrin	ug/kg	0.58 J	--	1 U	--	--	0.19 U	--	0.077 U
gamma-Hexachlorocyclohexane	ug/kg	0.17 U	--	0.4 U	--	--	0.12 U	--	0.031 U
Heptachlor epoxide	ug/kg	0.27 U	--	1 U	--	--	0.20 U	--	0.073 U
Hexachlorobenzene	ug/kg	0.17 U	--	0.56 J	--	--	0.36	--	0.10
Oxychlordane	ug/kg	0.061 U	--	0.29 U	--	--	0.52 U	--	0.13 U
Dioxins/Furans									
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--
Total Dioxin/Furan TEQ (FS Calc)	pg/g	--	--	--	--	--	--	--	--
Total PCDD/F (FS Calc)	pg/g	--	--	--	--	--	--	--	--
Dioxins/Furan Homologs									
Hexachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--
Hexachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--
Heptachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--
Heptachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--
Pentachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--
Pentachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--
Tetrachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--
Tetrachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--
Octachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--
Octachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--

Appendix J

Analytical Results and Data Reduction of Re-Occupied Sediment Sample Locations

Analyte	Sample ID	LW3-UG02	RM11E-G079	LW3-UG03	RM11E-G082 [1]	RM11E-G036	RM11E-G084	RM11E-G064	RM11E-G085	RM11E-G039	RM11E-G088
		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair	
	Sample Date	1/31/2007	10/31/2013	1/31/2007	10/31/2013	6/15/2009	5/1/2014	6/15/2009	5/2/2014	6/15/2009	5/1/2014
	Unit										
Conventionals											
Total organic carbon	percent	0.36	0.484 T	0.73	0.626	1.4	2.50	0.59	1.35	0.61 T	1.27
Total solids	percent	79.5	73.4 T	71.4	69.3	64.9	60.2	85.5	78.7	70.5 T	66.1
PCBs											
Aroclor 1016	ug/kg	22 U	2.1 UT	320 U	69 U	13 U	31 U	13 U	2.1 U	1.3 UT	2.1 U
Aroclor 1221	ug/kg	22 U	2.1 UT	12 U	8.4 U	13 U	7.0 U	13 U	2.1 U	1.3 UT	2.1 U
Aroclor 1232	ug/kg	22 U	2.1 UT	170 U	190 U	13 U	45 U	13 U	2.1 U	1.3 UT	2.1 U
Aroclor 1242	ug/kg	22 U	2.1 UT	190 U	99 U	13 U	22 U	13 U	2.1 U	1.3 UT	2.1 U
Aroclor 1248	ug/kg	22 U	2.1 UT	160 U	190 U	13 U	19 U	1500 J	25	1.3 UT	2.1 U
Aroclor 1254	ug/kg	1300 J	2.1 UT	310 J	130 U	900 J	63	13 U	23 J	7.3 JT	2.1 U
Aroclor 1260	ug/kg	4600 J	1405 JT	450	560	390 J	34	30 J	15	9.7 JT	2.5 J
Aroclor 1262	ug/kg	22 U	2.1 UT	12 U	2.1 U	13 U	2.1 U	13 U	2.1 U	1.3 UT	2.1 U
Aroclor 1268	ug/kg	22 U	2.1 UT	12 U	2.1 U	13 U	2.1 U	13 U	2.1 U	1.3 UT	2.1 U
Total PCBs (FS Calc)	ug/kg	6000 JT	1400 JT	1200 JT	910 T	1300 JT	160 T	1600 JT	69 JT	22 JT	11 JT
Grain Size											
>9 Phi clay	percent	0.58	--	0.48	--	--	--	--	--	--	--
8-9 Phi clay	percent	0.31	--	0.28	--	--	--	--	--	--	--
Fine silt	percent	0.49	--	0.31	--	--	--	--	--	--	--
Medium silt	percent	0.79	--	0.64	--	--	--	--	--	--	--
Coarse silt	percent	0.92	--	1.1	--	--	--	--	--	--	--
Fines	percent	3.66 T	--	3.56 T	--	17.4 T	--	--	--	18.8 T	--
Clay	percent	--	1.8 T	--	0.99	2.1	3.6	--	0.1	3.78 T	9.2
Silt	percent	--	5.16 T	--	3.82	15.3	16.0	--	2.5	15 T	42.1
Total Fines	percent	--	7 T	--	4.8 T	--	20 T	--	2.6 T	--	51 T
Very fine sand	percent	1.22	1.32 T	5.06	4.15	26.2	3.70	--	0.50	16 T	9.57
Fine sand	percent	4.58	9.63 T	18.3	31.47	32.9	5.01	--	3.03	28.8 T	17.91
Medium sand	percent	14	15.03 T	21.6	22.57	9.94	1.77	--	3.51	9.9 T	1.44
Coarse sand	percent	11	13.65 T	7.6	11.78	1.63	1.99	--	4.00	5.43 T	1.16
Very coarse sand	percent	6.8	5.1 T	3.49	3.81	1.07	3.09	--	6.71	5.1 T	1.37
Fine gravel	percent	10.9	5.72 T	7.86	4.73	1.01	4.25	--	13.16	7.2 T	3.83
Medium gravel	percent	50.6	49.58 T	29	24.12	7.21	69.13	--	71.56	10.6 JT	4.29
Pesticides											
2,4'-DDD	ug/kg	86	0.063 U	10 J	0.26 J	0.56	1.6 J	--	--	0.53	--
2,4'-DDE	ug/kg	20 U	0.079 U	0.99 U	0.18 U	0.03 J	0.18 U	--	--	0.15 U	--
2,4'-DDT	ug/kg	47 U	0.094 U	13 NJ	0.16 U	0.006 U	0.16 U	--	--	1 J	--
GSI Total 2,4-DDx (FS Calc)	ug/kg	120 T	0.094 UT	23 NJT	0.43 JT	0.59 JT	1.8 JT	--	--	1.6 JT	--
GSI Total 2,4-DDx (RI Calc)	ug/kg	86 T	0.094 UT	23 NJT	0.26 JT	0.59 JT	1.6 JT	--	--	1.53 JT	--
4,4'-DDD	ug/kg	1.6 U	0.30	0.43 J	0.95	1.8	4.8 J	--	--	0.15 U	--
4,4'-DDE	ug/kg	1.3 U	0.23	0.99 U	0.67	0.79	3.1 J	--	--	0.079 J	--
4,4'-DDT	ug/kg	280 U	0.11 U	2.6 U	0.23 U	0.59	0.23 U	--	--	0.63 U	--
GSI Total 4,4-DDx (FS Calc)	ug/kg	280 UT	0.59 T	2.2 JT	1.7 T	3.2 T	8 JT	--	--	0.47 JT	--
GSI Total 4,4-DDx (U= 0)	ug/kg	280 UT	0.53 T	0.43 JT	1.62 T	3.2 T	7.9 JT	--	--	0.079 JT	--
GSI Total DDD (FS Calc)	ug/kg	87 T	0.33 T	10 JT	1.2 JT	2.4 T	6.4 JT	--	--	0.61 T	--
GSI Total DDD (RI Calc)	ug/kg	86 T	0.30 T	10 JT	1.21 JT	2.4 T	6.4 JT	--	--	0.53 T	--
GSI Total DDE (FS Calc)	ug/kg	20 UT	0.27 T	0.99 UT	0.76 T	0.82 JT	3.2 JT	--	--	0.15 JT	--

Appendix J

Analytical Results and Data Reduction of Re-Occupied Sediment Sample Locations

Analyte	Sample ID	LW3-UG02	RM11E-G079	LW3-UG03	RM11E-G082 [1]	RM11E-G036	RM11E-G084	RM11E-G064	RM11E-G085	RM11E-G039	RM11E-G088
		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair		Re-occupied Pair	
	Sample Date	1/31/2007	10/31/2013	1/31/2007	10/31/2013	6/15/2009	5/1/2014	6/15/2009	5/2/2014	6/15/2009	5/1/2014
	Unit										
GSI Total DDE (RI Calc)	ug/kg	20 UT	0.23 T	0.99 UT	0.67 T	0.82 JT	3.1 JT	--	--	0.079 JT	--
GSI Total DDT (FS Calc)	ug/kg	280 UT	0.11 UT	14 NJT	0.23 UT	0.59 T	0.23 UT	--	--	1.3 JT	--
GSI Total DDT (RI Calc)	ug/kg	280 UT	0.11 UT	13 NJT	0.23 UT	0.59 T	0.23 UT	--	--	1 JT	--
GSI Total DDx (FS Calc)	ug/kg	260 T	0.7 T	26 NJT	2.2 JT	3.8 JT	9.8 JT	--	--	2.1 JT	--
GSI Total DDx (RI Calc)	ug/kg	86 T	0.53 T	23 NJT	1.9 JT	3.8 JT	9.5 JT	--	--	1.6 JT	--
cis-Chlordane	ug/kg	4.7 U	0.062 U	4.5 U	0.19 J	0.21	0.88 J	--	--	0.063 U	--
cis-Nonachlor	ug/kg	300 U	0.097 U	0.99 U	0.15 U	0.072 J	0.21 J	--	--	0.15 U	--
trans-Chlordane	ug/kg	14 U	0.064 U	5.1 U	0.28 J	0.29	1.5 J	--	--	0.25	--
trans-Nonachlor	ug/kg	1.2 U	0.058 U	0.99 U	0.13 J	0.13 J	0.60 U	--	--	0.057 U	--
GSI Total Chlordane (FS Calc)	ug/kg	300 UT	0.13 UT	5.1 UT	0.94 JT	0.75 JT	3.2 JT	--	--	0.4 T	--
GSI Total Chlordane (RI Calc)	ug/kg	300 UT	0.13 UT	5.1 UT	0.6 JT	.63 JT	2.6 JT	--	--	0.25 T	--
Dieldrin	ug/kg	45 U	0.077 U	3.6 U	0.19 U	0.098 U	0.19 U	--	--	0.3 U	--
gamma-Hexachlorocyclohexane	ug/kg	1.9 U	0.031 U	4.5 NJ	0.12 U	0.011 U	0.12 U	--	--	0.051 U	--
Heptachlor epoxide	ug/kg	10 U	0.073 U	0.99 U	0.20 U	0.03 U	0.20 U	--	--	0.15 U	--
Hexachlorobenzene	ug/kg	1 U	1.1 U	0.12 U	0.18	0.051 J	0.16 J	--	--	0.093 U	--
Oxychlordane	ug/kg	10 U	0.13 U	0.52 U	0.52 U	0.092 U	0.52 U	--	--	0.038 U	--
Dioxins/Furans											
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	--	--	--	--	22.5	--	--	--	72.9	9.05
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	--	--	--	--	380	--	--	--	1070	56.3
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	--	--	--	--	0.729 J	--	--	--	1.29 J	0.691 J
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	1.76 J	--	--	--	5.07 J	0.965 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	1.26 J	--	--	--	0.499 J	0.519 J
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	1.3 J	--	--	--	1.83 J	0.349 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	16.8	--	--	--	49.3	2.66 J
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	--	--	--	--	0.25 U	--	--	--	0.368 U	0.283 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	4.45 J	--	--	--	3.78 J	0.854 J
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	0.774 J	--	--	--	1.08 J	0.106 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	--	--	--	--	0.463 J	--	--	--	0.294 J	0.0899 U
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	1.53 J	--	--	--	3.15 J	0.541 J
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	0.806 J	--	--	--	0.861 J	0.109 U
2,3,7,8-Tetrachlorodibenzofuran	pg/g	--	--	--	--	0.762 J	--	--	--	1.56	0.151 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	--	--	--	--	0.0591 U	--	--	--	0.0393 U	0.274 U
Total Dioxin/Furan TEQ (FS Calc)	pg/g	--	--	--	--	8.5 JT	--	--	--	21.6 JT	1.49 JT
Total PCDD/F (FS Calc)	pg/g	--	--	--	--	3600 JT	--	--	--	11300 JT	556 JT
Dioxins/Furan Homologs											
Hexachlorodibenzofuran homologs	pg/g	--	--	--	--	60.8	--	--	--	193	13.2
Hexachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	87	--	--	--	177	9.02
Heptachlorodibenzofuran homologs	pg/g	--	--	--	--	68.2	--	--	--	214	45.8
Heptachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	697	--	--	--	1920	101
Pentachlorodibenzofuran homologs	pg/g	--	--	--	--	30.3	--	--	--	74.9	0.0960 U
Pentachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	17.5	--	--	--	35.2	0.475 J
Tetrachlorodibenzofuran homologs	pg/g	--	--	--	--	9.4	--	--	--	15.2	0.151 U
Tetrachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	3.6	--	--	--	9.59	0.274 U
Octachlorodibenzofuran	pg/g	--	--	--	--	32.7	--	--	--	75.5	29.5
Octachlorodibenzo-p-dioxin	pg/g	--	--	--	--	3110	--	--	--	9990 J	454

Appendix J
Analytical Results and Data Reduction of Re-Occupied Sediment Sample Locations

Notes:

The data for the re-occupied stations are shown side by side, with the original result in the left column and newer reoccupied result collected by the RM11E Group in the right column. Where available, the data from the RM11E Supplemental RI/FS was used in place of the older data on Figures 10-2 through 10-5. For certain analyte groups (e.g. pesticides), where the analysis was not run on the reoccupied sample, the original results and sample station were used. For reference, the data retained for mapping and evaluation purposes is highlighted in pink. Both sets of data are included in the comprehensive data file in Appendix J, however the outdated (non-highlighted) data is marked as 'replaced' due to the availability of newer data.

All sample results are reported on a dry-weight basis.

-- = Not Analyzed. Refer to Table 3-1 of the Quality Assurance Plan Addendum (Appendix A of the Supplemental RI/FS Work Plan) for the project sampling and analytical approach.

RI Calc = This result was calculated using the Remedial Investigation (RI) data rules for the Portland Harbor as described in Section 7.3 of the Final Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan (GSI and DOF, 2013).

FS Calc = This result was calculated using the Feasibility Study (FS) data rules for the Portland Harbor, which are consistent with the risk assessment and background data set data rules, as described in Section 7.3 of the Final Supplemental RI/FS Work Plan (GSI and DOF, 2013).

[1] The detection limit was elevated for select PCB Aroclors in samples RM11E-G076 and RM11E-G082. The chromatogram indicated the presence of non-target background components that prevented adequate resolution of the target compounds at the normal limit. The results were flagged as estimated (J) to indicate matrix interference.

Definition of data qualifiers:

U = The material was analyzed for, but was not detected. The associated numerical value is the method detection limit (MDL).

J = The associated numerical value is an estimated quantity.

T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte).

APPENDIX K
DATA FILE

(Provided as separate Excel file)

FINAL
FIELD SAMPLING AND DATA REPORT
RM11E SUPPLEMENTAL RI/FS

RIVER MILE 11 EAST

PORTLAND, OREGON

SEPTEMBER 2014

Prepared for:

RM11E GROUP

Prepared By:

GSI Water Solutions, Inc.