Final Removal Action Area Characterization Report

Arkema Early Action

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ACRONYMS AND ABBREVIATIONS

AOC	administrative order on consent
ASTM	American Society for Testing and Materials
bml	below mudline
COI	constituent of interest
CPT	cone penetration test
DDx	total of 2,4′- and 4,4′-DDD, DDE, DDT
DEA	David Evans and Associates, Inc.
DEQ	Oregon Department of Environmental Quality
DGPS	differential global positioning system
DOT	U.S. Department of Transportation
DSL	Oregon Division of State Lands
EE/CA	engineering evaluation and cost analysis
EPA	U.S. Environmental Protection Agency
EVS	environmental visual software
IDW	investigation-derived waste
Integral	Integral Consulting Inc.
LSS	Legacy Site Services LLC
NAD 1983	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NTCRA	non-time-critical removal action
OCDD	octachlorinated dibenzo-p-dioxin
OCDF	octachlorodibenzofuran
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD/F	polychlorinated dibenzo-*p*-dioxin and polychlorinated dibenzofuran
PCDF	polychlorinated dibenzofuran
PEC	probable effect concentration
PID	photoionization detector

ppm	parts per million
PRG	preliminary remediation goal
RAA	removal action area
RAAC	removal action area characterization
RAL	remedial action level
RQD	rock quality description
SCR	solid core recovery
SLV	screening level value
SOW	statement of work
SPT	standard penetration test
SVOC	semivolatile organic compound
TCLP	toxicity characteristic leaching procedure
TCR	total core recovery
TEC	threshold effects concentration
TEQ	toxic equivalent
TOC	total organic carbon
Vandehey	Vandehey Soil Exploration, LLC
VOC	volatile organic compound

1 INTRODUCTION

This removal action area characterization (RAAC) report was prepared for the engineering evaluation/cost analysis (EE/CA) non-time-critical removal action (NTCRA) for the Arkema Inc. (Arkema) facility in Portland, Oregon (site). The RAAC report is required by the Administrative Order on Consent (AOC) Statement of Work (SOW) between U.S. Environmental Protection Agency (EPA) and Arkema, effective June 27, 2005 (Docket No. CERCLA 10-2005-0191). The report content is pursuant to the AOC SOW; the May 23, 2008, Final Decision on Disputes from Dan Opalski, Director, Office of Environmental Cleanup (2008 Opalski Decision; USEPA 2008; Appendix A); subsequent written comments and responses between EPA and Legacy Site Services LLC (LSS), agent for Arkema; and the August 31, 2011 Final Decision on Disputes from Dan Opalski (2011 Opalski Decision; Opalski 2011). The EE/CA field investigation was conducted in accordance with the Final EE/CA Work Plan for the site which includes the EPA/Parametrix work plan (Parametrix 2007), along with a work plan addendum (Integral 2008) and appendices (Integral 2009) that were completed in accordance with EPA and LSS agreements between May 2007 and May 4, 2009, and EPA findings (USEPA 2008).

A brief summary of the report purpose, project background, EE/CA characterization activities, and agreements between EPA and LSS are provided below.

1.1 PURPOSE

The purpose of this report is to present the results of the EE/CA investigation and data analysis completed in 2009-2010, provide an updated description and summary of the nature and extent of site constituents of interest (COIs), complete the environmental visualization software (EVS) analysis of the updated data set for the site, and to provide a horizontal removal action area (RAA) boundary to be used for the EE/CA evaluation based on the 5 mg/kg DDx contour as defined by the EVS model. In accordance with the 2011 Opalski Decision, the vertical RAA boundary will be determined after evaluating various removal action alternatives, including the impacts of dredging or other removal actions, to a range of concentrations vertically. The criteria for evaluating the vertical extent will include, at a minimum, the Portland Harbor preliminary remediation goals (PRGs), the 5 mg/kg DDx contour, and mass-to-volume relationships for selected COIs. The removal action alternatives and proposed final RAA boundary will be presented in the EE/CA report.

1.2 PROJECT BACKGROUND

The site is located in Portland, Oregon, on the southwest bank of the lower Willamette River between approximate river mile 6.9 and 7.6 (Figure 1-1). The upland portion of the site encompasses approximately 54 acres of land. The in-water portion of the site is defined as the land below mean high water (18.1 ft City of Portland Datum[1]).[2] The EE/CA NTCRA is primarily focused on the in-water portion of the site. However, elements of the EE/CA removal action will integrate portions of the riverbank above mean high water to the top of bank to facilitate engineering and planning for construction of potential riverbank source control measures in those areas. The remainder of the riverbank will be addressed, as needed, with the Oregon Department of Environmental Quality (DEQ) in accordance with the Agreed Order on Consent dated October 31, 2008. Ultimately, the timing of and coordination between the upland source control measure and NTCRA projects will dictate under which regulatory program selected portions of the riverbank will be addressed.

The primary objective of the 2009 EE/CA characterization field investigation was to fill data gaps to further refine the 5 mg/kg DDx[3] preliminary horizontal RAA boundary. The additional characterization falls into two general categories, defining sediment quality characteristics and defining sediment physical and engineering characteristics. The horizontal RAA boundary presented in this report is based on the results of the 2009 EE/CA characterization activities, historical studies at the site, and ultimately the EPA directed boundary deemed in the 2011 Opalski Decision. This horizontal RAA boundary will be utilized throughout the remainder of the EE/CA evaluation process.

1.3 EE/CA CHARACTERIZATION ACTIVITIES

The 2009 EE/CA characterization activities were conducted in accordance with the Final EE/CA Work Plan for the site (except for the deviations presented in Section 2.10). The Final EE/CA Work Plan consists of the following components:

- The EPA/Parametrix Arkema early action EE/CA work plan (Parametrix 2007)
- The EE/CA work plan addendum (Integral 2008)
- The EE/CA work plan addendum appendices (Integral 2009).

The EE/CA characterization activities were conducted from August 18 to October 30, 2009. Sediment samples were collected from 36 roto-sonic chemistry boreholes and 3 mud rotary geotechnical boreholes. Representatives from EPA's consultant, CDM, collected and analyzed split sediment samples from selected chemistry boreholes in accordance with their *Draft Sampling and Analysis Plan for Sediment Split Sampling* (CDM 2009). The sediment samples were analyzed for a number of chemical and physical parameters in accordance with the Final EE/CA

[1] This elevation corresponds to 20.2 ft North American Vertical Datum of 1988 (NAVD88).
[2] The in-water portion of the site below mean low tide is leased from the Oregon Division of State Lands.
[3] DDx is defined as the total of 2,4′- and 4,4′-DDD, DDE, and DDT.

Work Plan. In addition to the sediment sampling activities, 14 cone penetration test (CPT) boreholes were advanced and a visual surface debris survey was conducted at the site.

Several rounds of chemical analysis were conducted on sediment samples in accordance with the Final EE/CA Work Plan and EPA/LSS agreements. An initial round of sediment samples and associated quality control samples from the 36 chemistry boreholes were analyzed in accordance with Table 2-3 of Appendix A of the EE/CA work plan addendum (Integral 2009). The unvalidated results for these samples were provided to the EPA team so decisions regarding the analysis of archived sediment samples could be made in a timely manner. The first round of archived sediment samples that were analyzed were from "step-out" boreholes based on Table 2-3 (from Appendix A of Integral 2009) and subsequent agreements between EPA and LSS. The unvalidated results from the first round of archived samples were also provided to EPA and an agreement was reached between EPA and LSS for the analysis of a final round of archived sediment samples.

1.4 AGREEMENTS BETWEEN EPA AND LSS

Agreements reached between LSS and EPA following completion of the EE/CA characterization field work are recorded in documents presented in Appendix A. A brief chronological description of the agreements is provided below:

- March 3, 2010: EPA submitted a letter to LSS proposing a 7-step process to continue moving forward with the project prior to completing the data validation on the initial round of chemistry sample data (Sheldrake 2010a).

- March 11, 2010: LSS submitted a letter to EPA responding to the 7-step process for the analysis of archived sediment samples. LSS agreed to the general process outlined by EPA and also agreed to proactively analyze all sediment samples collected from boreholes WB-52 and WB-55 for the standard analyte list (Slater 2010a).

- March 22, 2010: EPA submitted a letter to LSS accepting LSS' March 11, 2010 response to EPA's 7-step process for the analysis of archived sediment samples (Sheldrake 2010b).

- July 8, 2010: LSS submitted a letter to EPA proposing the final round of archived sediment sample analyses and providing the updated EVS DDx model (Slater 2010b).

- July 29, 2010: EPA submitted a letter to LSS providing comments on LSS' proposal for the final round of archived sediment samples (Sheldrake 2010c).

- August 3, 2010: EPA and LSS representatives participated in a conference call to discuss the five summary bullets presented at the end of EPA's July 29, 2010 letter. The agreements reached on the conference call were recorded in an e-mail message from

D. Livermore (Integral Consulting Inc. [Integral]) to S. Sheldrake (EPA) on August 4, 2010 and were approved by EPA with a few conditions in an e-mail message from S. Sheldrake to D. Livermore on August 5, 2010 (Slater 2010d, Attachment 1).

- August 30, 2010: LSS submitted a letter to EPA summarizing total chlordane and lindane (gamma-hexachlorocyclohexane) data in sediment at the Arkema site (Slater 2010d). LSS concluded in the letter that no further chlordane or lindane analyses were needed at the site. The letter was drafted in response to a request from EPA in their July 29, 2010 letter.

- September 8, 2010: EPA submitted a letter to LSS responding to LSS' August 30, 2010 presentation of chlordane and lindane data in sediment at the Arkema site. EPA agreed with LSS that sufficient data on these pesticides are available to support the Arkema EE/CA (Sheldrake 2010d).

- February 19, 2011: EPA submitted a letter to LSS providing 9 general and 22 specific comments on the draft RAAC report (Sheldrake 2011a).

- March 21, 2011: LSS submitted a letter to EPA providing a response to EPA's comments on the draft RAAC report (Slater 2011a).

- May 20, 2011: EPA submitted a response to LSS' March 21, 2011 response letter. In this letter, EPA made 8 of the 9 general comments and 16 of the 22 specific comments provided in the February 19, 2011 letter directed comments.

- June 3, 2011: LSS submitted a letter to EPA invoking the dispute resolution process regarding the directed general and specific comments from EPA's May 20, 2011 letter. (Slater 2011b).

- July 8, 2011: EPA submitted a dispute position letter to D. Opalski (Sheldrake 2011c).

- July 15, 2011: LSS submitted a reply to EPA's July 8, 2011 dispute position letter to D. Opalski (Slater 2011c).

- July 20, 2011: EPA submitted a response to LSS' July 15, 2011 letter replying to EPA's July 8, 2011 dispute position letter (Sheldrake 2011d).

- August 31, 2011: D. Opalski provided a final decision on the disputes of June 3, 2011 (Opalski 2011).

The remainder of this report is organized as follows:

- Section 2: Field Investigation Methods – This section details the methodology for the sediment characterization and visual surface debris survey field work.

- Section 3: Data Summary – This section briefly presents the chemistry data, geotechnical data, and visual surface debris survey results from the 2009 EE/CA characterization activities.
- Section 4: Nature and Extent of Constituents of Interest – This section presents the nature and extent of COIs within the preliminary RAA boundary. Based on an analysis of this information, the horizontal RAA boundary is provided.
- Section 5: Summary – This section summarizes the key findings presented in this report.
- Section 6: References – References cited in this document.

2 FIELD INVESTIGATION METHODS

This section of the report summarizes the chronology and describes the methods used for the 2009 EE/CA characterization fieldwork. A description of deviations from the Final EE/CA Work Plan is provided in Section 2.10.

2.1 FIELDWORK CHRONOLOGY

The EE/CA characterization fieldwork was conducted in five phases:

- August 18–October 1, 2009 – Advanced 36 roto-sonic sediment chemistry boreholes
- October 12–20, 2009 – Advanced 14 CPT boreholes
- October 16–19, 2009 – Advanced 3 mud rotary boreholes
- October 23–27, 2009 – Conducted an in-water visual surface debris survey
- October 28–30, 2009 – Conducted a riverbank visual surface debris survey.

In support of the EE/CA characterization fieldwork listed above, two support cables on Dock 2 and a support cable between Docks 1 and 2 were disconnected by Boart Longyear and Diversified Marine, Inc. (Diversified Marine) personnel on August 14, 2009, to allow for access around the docks. The cables were reconnected by Boart Longyear and Diversified Marine personnel on October 26, 2009, after the drilling work was completed.

2.2 UTILITY CLEARANCE AND NOTIFICATIONS

Prior to commencing field activities, a utility survey was conducted to identify known utilities within the study area. LSS representatives were contacted regarding the location of the private utilities in the study area, including stormwater outfalls and other utilities associated with former plant operations. The Oregon Utility Notification Center (1-800-332-2344) was contacted to locate public utilities in the study area. No public utilities were identified within the study area. The active outfalls (Outfalls 001 through 004) and several historical outfalls were identified by LSS representatives and the presence and location of the outfalls was discussed with the field crew.

The portion of the site below mean low tide is leased from the Oregon Division of State Lands (DSL). The work on DSL property was conducted in accordance with State Access Agreement No. 35068-LI. Representatives from DSL were notified of the schedule and scope of work verbally on July 16, 2009, and in a letter from Integral to DSL dated August 3, 2009 (Livermore 2009, pers. comm.).

The U.S. Coast Guard was notified of the in-water work schedule and vessel information by Integral representatives on August 12, 2009, and at the U.S. Coast Guard's request, they were notified by Integral representatives each day work was to be conducted in the navigation channel.

2.3 POSITIONING AND NAVIGATION

Drilling of roto-sonic, mud rotary, and CPT boreholes in river sediments was accomplished by drilling from a barge platform. The barge was guided to each borehole location using a differential global positioning system (DGPS) unit with an accuracy of approximately 3–4 ft using real-time differential corrections. The drilling location on the barge (i.e., moon pool) was positioned within 20 ft of the coordinates presented in Appendix A of the EE/CA work plan addendum (Integral 2009) for each borehole, with a few exceptions that were approved by EPA (see Section 2.10 below).

Once the barge was secured with the spud anchoring system, the DGPS beacon was positioned where the drilling occurred (i.e., moon pool). The horizontal location of the station was recorded in latitude and longitude (North American Datum of 1983 [NAD 1983]) in the field and converted to state plane coordinates (Oregon North, International Feet). The horizontal locations were differentially corrected following completion of the field work to an accuracy of approximately 2– 3 feet.

Four staff gauges were attached to pilings throughout the site and surveyed to NAVD88 by David Evans and Associates, Inc. (DEA), an Oregon licensed professional land surveyor. The mudline elevation at each station was calculated using the staff gauges at the site. The depth to mudline from the river surface was measured to an accuracy of 0.1 ft using a weighted fiberglass tape measure. The river stage elevation was estimated by reading the elevation on one of the staff gauges that DEA installed at the site. The mudline elevation was calculated as the river stage elevation minus the depth to mudline from the top of the river's surface.

Selected boreholes were advanced from the riverbank. For these boreholes, the field crew navigated to the borehole location by foot and marked the location for the drilling crew with a wooden stake. The elevations of the boreholes advanced from the riverbank were estimated based on land survey and bathymetric data for the site.

The differentially corrected horizontal coordinates, mudline elevation, and sediment thickness at each borehole are presented in Table 2-1. The borehole locations are presented on Figure 2-1.

2.4 EQUIPMENT DECONTAMINATION

All equipment was decontaminated between sample locations and prior to removing the equipment from the site. All decontamination fluids except hexane were containerized in properly labeled U.S. Department of Transportation (DOT)-approved 55-gallon drums. Hexane was containerized in a separate, properly labeled 5-gallon container. Investigation-derived waste (IDW) was managed in accordance with Section 2.5.

Decontamination activities occurred in a 4- by 8-ft decontamination pad that had a 2- by 4-in. frame around the perimeter to contain decontamination fluids and solid materials (Photo IMGP3554, Appendix B). The decontamination pad was lined with several layers of heavy-duty tarp material and was surrounded on three sides (back side and both ends) with a 6-ft-tall tarp curtain to catch spray that occurred from the decontamination activities. Water and solids were periodically pumped or shoveled from the decontamination pad and placed into properly labeled 55-gallon drums.

Potable water (City of Portland water) was supplied to the barge through a garden hose attached to a water spigot on the upland portion of the site. Polyethylene tanks with potable water were utilized when City of Portland water was not available through the garden hose.

All of the split-spoon samplers, vibracore sampler assemblies, mixing bowls and paddles, and spoons were decontaminated using the following steps:

1. Potable water rinse
2. Liquinox™ detergent wash
3. Potable water rinse
4. Solvent rinse (if visible contamination is observed)[4]
5. Laboratory-supplied deionized water rinse.

Between August 17 and 21, the drill rods, casing, and other materials that did not contact the sediment samples were decontaminated with potable water using a hot-water pressure washer. The water heater malfunctioned on August 21 and the drilling contractor was not able to repair it. Beginning on August 21, the drill rods, casing, and other materials that did not contact the sediment samples were decontaminated using the following steps:

1. Potable water rinse using the pressure washer
2. Liquinox™ detergent wash
3. Potable water rinse using the pressure washer.

[4] Solvent rinse included the use of clean paper towels to remove water followed by a hexane rinse. The hexane solvent rinse was only used if visible non-aqueous-phase liquid was observed on the sampling equipment.

After the EE/CA characterization drilling activities were completed, the barge deck was decontaminated using a pressure washer and a Liquinox™ detergent solution. The decontamination fluids and debris were removed from the barge deck using a shop vacuum and placed into a properly-labeled, DOT-approved 55-gallon drum.

2.5 INVESTIGATION-DERIVED WASTE MANAGEMENT

The IDW generated during the EE/CA characterization activities included the following:

- Sediment cuttings
- Drilling mud with sediment cuttings
- Decontamination water
- Hexane rinsate fluid
- Personal protective equipment and miscellaneous solid waste.

The following sections briefly discuss IDW management for the EE/CA characterization activities.

2.5.1 Sediment Cuttings and Drilling Mud

Sediment cuttings and excess or rejected sediments samples from roto-sonic drilling activities were placed in properly labeled DOT-approved 55-gallon drums and temporarily stored on the barge deck. Drilling mud and sediment cuttings from the mud rotary drilling activities were also placed into properly labeled DOT-approved 55-gallon drums and temporarily stored on the barge deck. A total of 26 drums of sediment cuttings and drilling mud were offloaded from the barge to Dock 2 using a crane operated by Boart Longyear personnel on October 5 and 23. The drums were transported from Dock 2 to a staging area on the upland portion of the site using a fork lift.

Consistent with previous waste disposal activities at the site, drums with sediment cuttings and drilling mud were profiled and properly disposed of in Waste Management's Subtitle C Landfill in Arlington, Oregon.

2.5.2 Decontamination Water

Decontamination water was placed in properly labeled DOT-approved 55-gallon drums and temporarily stored on the barge deck. The decontamination water contained small amounts of Liquinox™ detergent, sediment, and drilling mud. A total of 40 drums of decontamination water were offloaded from the barge to Dock 2 using a crane operated by Boart Longyear personnel on October 5 and 23. The drums were transported from Dock 2 to a staging area on the upland portion of the site using a fork lift.

As previously noted, hexane was only used in the decontamination process if non-aqueous-phase liquids were observed on the sampling equipment. A very small amount of hexane rinse fluid (approximately 0.5 gallon) was generated during the EE/CA characterization activities and placed in a properly labeled 5-gallon bucket with a lid for temporary storage. The majority of the hexane rinsate fluid was deionized water that was used as a final rinse to remove residual hexane from the sampling equipment. A sample was collected for a flash point analysis and sent to Columbia Analytical Services (CAS) of Kelso, Washington. The sample passed the flash point test (i.e., flashpoint was >212°F), so the hexane rinsate fluid was transferred to one of the decontamination wastewater drums for proper disposal.

Consistent with previous waste disposal activities at the site, drums with decontamination water were profiled and properly disposed of in Waste Management's Subtitle C Landfill in Arlington, Oregon.

2.5.3 Personal Protective Equipment and Miscellaneous Solid Waste

The EE/CA characterization activities generated soiled personal protective equipment and miscellaneous solid waste. Gross contamination, if present, was removed from these items and the items were placed in plastic garbage bags. The garbage bags were disposed of in a solid waste dumpster on the upland portion of the site at the end of each day. Clean cardboard, plastic bottles, and aluminum foil were placed in separate garbage bags or boxes and recycled.

2.6 HEALTH AND SAFETY MONITORING

Air monitoring in the breathing zone of sediment processing and drilling personnel was conducted at approximately 10 minute intervals during drilling and sediment processing activities using a photoionization detector (PID). The PID was calibrated daily using zero gas (ambient air) and 100 parts per million (ppm) isobutylene in accordance with the manufacturer's recommendations.

There were no exceedances of the action level (2 ppm above background for 1 minute) specified in the site health and safety plan (Integral 2009) during breathing zone monitoring for the EE/CA characterization activities.

2.7 CHEMISTRY BOREHOLE METHODS

A total of 36 chemistry boreholes were advanced as part of the EE/CA sediment investigation from August 18 through October 1, 2009. Chemistry borehole locations, including horizontal extent, vertical extent, and waste characterization boreholes, are shown on Figure 2-1. Borehole logs are presented in Appendix C. One step-out chemistry borehole (WB-59) was not advanced because it was inaccessible to the drill rig (see FCR-8 in Appendix D).

The following sections describe the drilling, sampling, and processing methods, and quality control samples collected for the chemistry boreholes.

2.7.1 Drilling Method

The chemistry boreholes were advanced by Boart Longyear of Tualatin, Oregon, using a track-mounted roto-sonic drill rig (Photo IMGP4773, Appendix B). A tug boat (vessel name: Crown Z; vessel length: 45 ft) and barge (vessel name: Daniel Matheny IV; vessel size: 24 ft wide x 60 ft long) were supplied by Boart Longyear's subcontractor, Diversified Marine of Portland, Oregon (Photo IMGP4294, Appendix B). A skiff equipped with an outboard motor was utilized by Diversified Marine to move personnel and samples to and from the barge. The tug boat and skiff were operated by a captain licensed in the State of Oregon.

The overwater boreholes were advanced through one of the two moon holes near the rear of the barge. During advancement of the over-water boreholes, the river stage was monitored periodically (typically every 30–45 minutes) by viewing one of the four staff gauges at the site with binoculars, and the sample intervals were adjusted based on the river stage changes. The river stage and sample interval calculations were displayed on a white board near the drill rig so the drilling crew could refer to them prior to collecting each sediment sample (Photo IMGP4156, Appendix B).

A total of 6 of the 36 boreholes (WB-42, -46, -47, -52, -55, and -64) were advanced from the riverbank (Photo IMGP4028, Appendix B). For these 6 boreholes, the track-mounted drill rig was offloaded from the barge as close as possible to the borehole location. The roto-sonic casing, potable water, and other equipment were offloaded from the barge and transported to the borehole location using a skid steer. The boreholes were advanced from the riverbank during low tide so the drill rig and ancillary equipment would be above water. Each sediment sample was transported to the barge for processing using a skid steer.

2.7.2 Sampling Methods

Sediment samples were collected using either a 4-in.-diameter split-spoon sampler or a 3-in.-diameter vibracore sampler. The following sections describe the sample collection method using these sampling devices.

2.7.2.1 Split-Spoon Sampler

At the first borehole (WB-65), sediment samples were collected in 5-ft drives using a 4-in.-diameter by 5-ft-long split-spoon sampler (Photo IMGP4780, Appendix B). The shoe at the end of the sampler was equipped with a flapper valve that helped keep the sediment from falling out of the bottom of the sampler (Photo IMGP3558, Appendix B). The 5-ft drives resulted in poor sample recovery, and it was difficult to determine which portion of the 5-ft interval the recovered sediment represented.

For the remaining 35 chemistry boreholes, sediment samples were collected in 2-ft drives with a 4-in.-diameter split-spoon sampler to achieve better sample recovery and increase confidence in the sample interval represented. Six-in.-diameter casing was advanced when the bearing capacity of the sediments was sufficient to support the weight of the casing. The 6-in. casing typically comes in 5-ft lengths, but the drilling contractor had two 2-ft-long sections of casing. These 2-ft sections of casing were added or removed each time the casing was advanced so it could be advanced at approximately 2-ft intervals rather than the standard 5-ft intervals. The casing was typically advanced within 6 in. of the top of the sample interval prior to sample collection.

Once the casing was advanced to the approximate top of the sample interval, the split-spoon sampler was advanced ahead of the end of the casing to collect a representative sediment sample. The split-spoon sampler was pushed to the top of the sample interval with the valve connected to the hole inside the drill rods closed, sonic vibrations were turned on, the valve was opened, and the sampler was advanced to the bottom of the sample interval. Once the sampler was retrieved, the casing was advanced to the bottom of the previously sampled interval while potable water was pumped at high pressure through the casing to keep sediment from entering the casing. The sample intervals/casing depths were adjusted approximately every 30–45 minutes to compensate for tidal fluctuations in the Willamette River.

The casing needed to be pulled up about 2 ft each time casing was added or removed so the clamps on the drill rig could grab onto the two sections of casing and unscrew them. The casing was then pushed back down to the top of the next sample interval prior to collecting the sample. As a result, slough from up to 2 ft above the target sample interval could be pushed into the sampler. The slough was visually identified and not incorporated into the sample. In addition, the sediment that came in contact with the split spoon sampler was scraped away to avoid incorporating any slough that was smeared onto the sides of the sampler.

The sediment samples were processed in accordance with Section 2.7.3.

2.7.2.2 Vibracore Sampler

A vibracore sampler (Photo IMGP3735, Appendix B) was used to collect the top 5–10 ft of sediment samples from 13 chemistry boreholes (WB-30, -31, -33, -38, -40, -44, -45, -48 -49, -50,

-51, -57, and -62) to avoid collecting samples from an uncased borehole. The roto-sonic drill rig did not have auxiliary clamps for holding the casing in soft sediments. Collecting sediment samples from uncased boreholes could result in excessive amounts of slough in the sampler. The use of a vibracore sampler was approved by EPA and documented in field change request form FCR-3 (Appendix C).

The vibracore tubes were made of aluminum and were 3 inches in diameter and approximately 12 ft long. The wall thickness of the tubes was approximately 0.06 in. A stainless steel shoe with a sediment catcher was attached to the bottom end of the aluminum tube. A piston with a cable attached to the top was inserted into the tube and pushed down to the shoe at the bottom of the tube. The piston cable was attached to a winch line once the bottom of the vibracore sampler was positioned at the mudline. The piston was held at the same elevation by the cable as the vibracore tube was pushed into the sediment, to keep a continuous suction on the sample so the soft sediment did not fall out the bottom of the tube. The top end of the vibracore tube was attached to an adaptor that fit onto the sonic head on the drill rig (Photos IMGP3736 and IMGP3737, Appendix B).

The vibracore sampler was typically pushed 2–3 ft into the soft sediment and then high frequency sonic vibrations were used during the remainder of the push (Photo IMGP3747, Appendix B). Sonic vibrations were utilized to allow the vibracore tube to penetrate sand layers without packing sand into the tube, which would cause the sampler to push sediment ahead or "pile drive" into the sediment and cause poor sample recovery.

Once the vibracore tube was pushed to depth, it was pulled up and placed on a clean piece of aluminum foil on the logging table. Buckets were placed at each end of the tube to catch any water that flowed from the sampler. The adapter on the top of the tube and the shoe at the bottom of the tube were removed. The tube was cut open lengthwise using an electric metal shear (Photo IMGP3774, Appendix B). The sediment sample was separated into the appropriate sample intervals and processed in accordance with Section 2.7.3.

2.7.2.3 Solid Core Barrel

A solid-core barrel with a carbide button drill bit was used to collect samples of coarse gravels and basalt bedrock (Photo IMGP3561, Appendix B). The solid core barrel was 4⅞ in. in diameter by 5 ft long. The penetration into basalt ranged from a few inches to a few feet, depending on the competency of the basalt. The samples collected with the solid core barrel were for visual inspection only and were not submitted to an analytical laboratory.

2.7.3 Sample Processing and Shipment

Sediment from each borehole was continuously collected and logged by an Oregon registered geologist using American Society for Testing and Materials (ASTM 2000) guidelines. Each sample was screened for volatile organic compounds (VOCs) using a PID and photographed prior to sample homogenization. All sediment samples were processed on the barge (Photo IMGP4782, Appendix B).

Samples slated for VOC analysis were immediately placed into appropriate pre-labeled sample containers, using a decontaminated stainless steel spoon, without homogenization. Each sediment sample collected for potential non-VOC analysis was transferred to a decontaminated stainless steel bowl and homogenized for 5 minutes using a commercial Hobart mixer (Photos IMGP4781 and IMGP3607, Appendix B) equipped with an aluminum mixing paddle, except for samples containing gravel. The Hobart mixer could not be used to mix gravelly sediment because the mixer would malfunction; therefore, gravelly sediment samples were thoroughly homogenized by hand using a stainless steel spoon. After each sediment sample was homogenized with the Hobart mixer, a stainless steel spoon was used to mix in any remaining sediment beyond the reach of the Hobart mixing paddles, and confirm that the sample was mixed to a consistent texture and color.

Waste characterization sediment samples (6 to 12 ft samples) were collected from seven boreholes between Docks 1 and 2 (WB-35, -36, -37, -39, -41, -42, and -43) for waste characterization purposes. Two 4-oz VOC jars were filled with zero headspace from each 2-ft interval (one for archive at the analytical laboratory and one for the composite sample) prior to homogenization. Once the VOC jars were filled, the remaining sediment was homogenized in accordance with the procedures described above. The homogenized sediment was placed in one 16-oz jar and one 8-oz jar so an equal volume of sediment could be collected from each 2-ft subsample. After all of the subsamples were collected, an equal aliquot of sediment from one VOC jar from each subsample was quickly placed in a pre-labeled sediment sample container with zero headspace. The 16-oz and 8-oz jars of sediment from each subsample were placed into a stainless steel bowl and homogenized in accordance with the mixing procedures described above. The homogenized sediment was placed in the appropriate pre-labeled sediment sample containers as described below.

After processing[5], the sediment samples were placed in the appropriate pre-labeled containers. Additional sample jars were collected for potential analysis if visual evidence of COIs was observed in the sediment (i.e., sheen or PID reading over 10 ppm). If sample recovery was poor and there was insufficient sediment to fill all the sample jars, the jars slated for analysis of DDx were preferentially filled before jars for conventional analyses. Pieces of gravel and debris greater than approximately 0.5-in. diameter were removed from the sample prior to filling the containers. Clear tape was placed over the sample labels to reduce the potential for the labels becoming detached from the jars. Each container was placed in a separate plastic bag in case of breakage. Samples for potential chemical analysis were immediately placed in a cooler with ice for preservation. All materials contacting the sediment were decontaminated in accordance

[5] With the exception of samples collected for VOCs.

with Section 2.4. Excess sediment was transferred to properly labeled DOT-approved 55-gallon drums and managed in accordance with Section 2.5.

All samples submitted to TestAmerica were transported to the lab by a private courier. The samples submitted to NVL Laboratories, Inc. for asbestos analysis were shipped in a single cooler by Federal Express.

2.7.4 Field Quality Control Samples

Field quality control samples for the EE/CA characterization activities included field duplicates, equipment rinsate blanks, transfer blanks, and trip blanks. The following sections briefly describe the collection methods and number of each type of field quality control sample.

2.7.4.1 Field Duplicates

Field duplicates were generated by the field team by splitting the sediment sample into two aliquots for laboratory analysis. Data from field duplicates are used to evaluate sample handling, processing, and analysis procedures, and used in the evaluation of precision of the results. The field duplicates were submitted blind to the analytical laboratory (i.e., the sample number and time were different than the parent sample). A total of 16 field duplicates were collected during the EE/CA characterization fieldwork.

2.7.4.2 Equipment Rinsate Blanks

Equipment rinsate blanks are used to monitor equipment decontamination procedures and to check for other sources of contamination. Equipment rinsate blanks were collected by pouring laboratory-supplied deionized water over the decontaminated sample homogenization equipment (i.e., mixing bowl, mixing paddles and spoons, vibracore tube, and split-spoon sampler) and into pre-labeled sample containers (Photos IMGP4088 and IMGP3769, Appendix B). A total of 15 equipment rinsate blanks were collected during the EE/CA characterization fieldwork.

2.7.4.3 Transfer Blanks

A transfer blank was collected to test the laboratory-supplied deionized water for contamination. The transfer blank was collected by filling pre-labeled sample containers directly with laboratory-supplied deionized water. One transfer blank was collected during the EE/CA characterization fieldwork.

2.7.4.4 Trip Blanks

Trip blanks were collected to monitor for cross-contamination during sample shipment and storage. Trip blanks were used only for samples analyzed for volatile constituents. Trip blanks were included in each cooler with VOC samples. A total of 11 trip blanks were analyzed for VOCs during the EE/CA characterization fieldwork.

2.7.5 Borehole Abandonment

The in-water boreholes were abandoned with a high-solids bentonite grout, mixed according to the manufacturer's specifications, and placed inside the roto-sonic casing through a tremie pipe as the casing was withdrawn (Photos IMGP3076 and IMGP3077, Appendix B). Once each in-water borehole was grouted, the casing and drill rods were brought to the decontamination pad on the barge deck and decontaminated.

The boreholes advanced from the riverbank were abandoned with high-solids bentonite grout (as described above) and/or ¾-in.-diameter bentonite hole plug pellets. Once each riverbank borehole was abandoned, the casing and drill rods were transported back to the barge for decontamination using a skid steer.

2.8 GEOTECHNICAL INVESTIGATION METHODS

The geotechnical field investigation was carried out between October 12 and October 20, 2009, to collect geotechnical subbottom information, including sediment physical and engineering characteristics data. The geotechnical investigation included the drilling of 3 in-water borings and advancement of 14 CPT explorations. The locations of these explorations are shown on Figure 2-1. Disturbed split spoon samples and relatively undisturbed thin-walled tube samples (Shelby tubes) were collected during drilling of the 3 in-water borings for visual classification and geotechnical laboratory testing. Rock coring was performed in 1 of the in-water borings (SPT-1) for evaluation of the physical and engineering characteristics of the bedrock that underlies the sediment.

2.8.1 Geotechnical Field Investigation Methods

The following methods were used as part of the geotechnical field investigation:

- CPT explorations
- Mud-rotary borings
- Standard penetration test (SPT) and visual logging of split spoon samples
- Thin-walled tube sampling
- Rock coring.

Descriptions of these field investigation methods are provided below.

All of the geotechnical explorations were advanced by Boart Longyear of Tualatin, Oregon, using a barge-mounted Mobile B-59 drill rig. A spud barge supplied by Boart Longyear's subcontractor Diversified Marine of Vancouver, Washington, was used as the floating platform for the work. A tugboat and a support boat were mobilized with the barge for barge positioning and to transport personnel to and from the work area.

The drilling and cone penetration testing were continuously observed by an engineer or geologist from ARCADIS. Exploration logs were prepared for each exploration. Appendix C presents soil boring and CPT data collected by ARCADIS.

2.8.1.1 Exploration Locations

A handheld Trimble GeoXT GPS unit was used to navigate to the exploration locations provided in the field sampling plan. Some of the exploration locations were moved slightly in the field due to access limitations. These locations were moved in accordance with Field Change Request FCR-11, which was approved by EPA. Once on station, the barge's spuds were set such that deployment was generally within approximately 15 ft of the proposed location, and another GPS reading was taken and used to provide the actual coordinates for the exploration. Northings and eastings of the exploration locations are provided in Table 2-1.

2.8.1.2 Cone Penetration Testing

Boart Longyear and their CPT subcontractors performed 14 in-water CPT explorations with pore pressure measurements using standardized equipment. The CPT explorations were performed in general accordance with ASTM D 5778 – Electronic Friction Cone and Piezocone Penetration Testing of Soils (ASTM 2009a). The CPT logs are provided in Appendix C. The soil behavior type provided on the CPT logs was estimated based on a method developed at the University of British Columbia (UBC 1983).

CPT subcontractor Vandehey Soil Exploration, LLC, of Banks, Oregon (Vandehey), performed 10 CPT explorations between October 12 and 15, 2009. CPT subcontractor In-Situ Engineering of Snohomish, Washington, performed 4 CPT explorations on October 20, 2009. Boart Longyear was forced to switch CPT contractors because Vandehey's equipment broke down on October 15 and needed to be shipped to the manufacturer for repair. To avoid schedule impacts, Boart Longyear retained In-Situ Engineering to finish the CPT program on October 20, 2009. Although only 3 CPT explorations remained per the field sampling plan after the equipment breakdown, 1 additional CPT exploration was completed by In-Situ Engineering to confirm that Vandehey's equipment produced valid data until it experienced problems. CPT-9R was co-located with CPT-9. Based on comparison of the data, the validity of the data collected by Vandehey was confirmed.

For the testing at the Arkema site, the CPT cone and push rods were advanced into the sediment using the same Mobile B-59 drill rig that was used for drilling of the mud-rotary borings. A set of two concentric casings (2-in.-diameter inner casing with centralizers inside a 5-in.-diameter outer casing) were temporarily lowered from the barge to the mudline to provide lateral rigidity to the cone and push rods to avoid damage during advancement of the equipment. The cone was advanced into the sediment at a steady rate using the hydraulic frame of the drill rig. A real-time data acquisition computer system continuously recorded the parameters measured by the sensors, which enabled the CPT operator to monitor and review the data as they were recorded.

2.8.1.3 Mud-Rotary Drilling and Geotechnical Sampling

Boart Longyear drilled three in-water geotechnical borings between October 16 and 19, 2010, using mud rotary techniques. The boring logs are presented in Appendix C. The first geotechnical borehole log figure presents a key to the exploration logs.

Boart Longyear used a Mobile B-59 drill rig to set casing and advance the tri-cone drill bit. To maintain separation of drilling fluid from the surrounding water column, a 5-in.-diameter temporary casing was lowered into the sediment. This provided a solid pipe from above the barge deck to below mudline before drilling began. Soon after drilling began, a bentonite-based drilling fluid was circulated into the borehole to maintain borehole stability and remove cuttings. Cuttings and excess drilling fluid were placed in 55-gallon drums for proper disposal.

Disturbed samples were recovered using SPT split-spoon samplers. Thin-walled sampling tubes (Shelby tubes) were used to collect relatively undisturbed samples of cohesive soils from selected intervals.

2.8.1.4 Standard Penetration Test

SPTs were performed during drilling of the mud-rotary borings to obtain estimates of soil density/consistency and to recover disturbed soil samples. The tests were performed in general accordance with ASTM D1586 (ASTM 2009a) using a standard 2-in.-outside-diameter split-spoon sampler. Before each test, the split-spoon sampler was attached to steel rods and lowered to the bottom of the hole. The sampler was driven using a standard automatic hammer. The number of hammer blows was recorded for each 6-in. interval of driving. Borehole refusal was established when more than 50 blow counts were required to advance the sampler 6 inches.

The sediments at the site were typically very soft such that the split-spoon and attached pipe string advanced the full 18 in. under the weight of the hammer, without any blows of the hammer. This is identified on the boring logs as "WOH" (weight of hammer). Disturbed sediment samples were recovered from the split-spoon sampler, visually classified, and placed into 16-oz polyethylene sample jars with threaded plastic lids to preserve moisture. Photographs of the split-spoon samples are provided in Appendix B. After completion of the geotechnical field activities, the samples were transported to a laboratory (Kleinfelder of Beaverton, Oregon) for further geotechnical testing.

2.8.1.5 Thin-Walled Tube Sampling

Relatively undisturbed soil samples of cohesive material were recovered from the borings using 30-in.-long, 3-in.-diameter, thin-walled, seamless stainless steel sampling tubes (Shelby tubes) in general accordance with ASTM D1587 (ASTM 2009a). The Shelby tubes were collected using a piston sampler to minimize sample disturbance and maximize sample recovery.

Before the test, the Shelby tube, along with the piston sampler, was attached to the drill rods and carefully lowered to the bottom of the borehole. The tube was then hydraulically pushed in one continuous, relatively rapid motion without overfilling the tube. The tube was then carefully removed from the hole and sealed at both ends with specially designed plugs and caps to protect the sample and preserve moisture. After completion of the geotechnical field activities, the Shelby tubes were taken to the geotechnical laboratory (Kleinfelder) for testing.

2.8.1.6 Rock Coring

The drilling contractor, Boart Longyear, recovered rock cores at the bottom of in-water boring SPT-1 on October 17, 2010. The rock core was advanced to a total depth of 20 ft below the top of bedrock.

Rock coring is the process of recovering cylindrical cores of rock by means of rotating a hollow steel tube (core barrel) equipped with a coring bit. The drilled core is carefully collected in the core barrel as the drilling progresses. Samples were collected for visual classification and laboratory testing. Rock cores were collected in general accordance with ASTM D2113 (ASTM 2009a). Once bedrock was encountered in the boring, a core barrel equipped with an NX size (2.38-in. inside diameter) diamond-impregnated core bit was used to core the bedrock. Prior to placing the core barrel into the hole, the driller used water circulation to remove cuttings in the boring that may clog the barrel. Drilling rods were then carefully centered in the initial borehole, to reduce the potential for core breakage. During rock core advancement, drilling fluid (i.e., potable water) was continuously circulated in the borehole to maintain bit pressure, cool the bit, and clear rock cuttings. Drilling fluids were collected in a settling trough on the barge. Drilling fluids and settled rock cuttings were placed in 55-gallon drums for proper disposal.

A geologist visually classified the rock using the description guidelines provided on the geotechnical boring logs in Appendix C. The descriptions are provided on the boring log for SPT-1 (Appendix C). The core samples were placed in core boxes with increasing depths aligned left to right, and core runs separated by labeled paper placeholders placed at the end of each core run. The recovered cores were photographed in the labeled core box. The photos are provided in Appendix B. Upon completion of the geotechnical field investigation, the rock core samples were transported to the geotechnical laboratory (Kleinfelder) for strength testing.

In addition to the visual classifications, the boring log for SPT-1 provides the following three parameters used to define the quality of the rock:

- Total Core Recovery (TCR): TCR is the sum total length of the recovered rock pieces, <u>including</u> non-intact pieces, expressed as a percentage of the total length of the core run.
- Solid Core Recovery (SCR): SCR is the sum total length of the recovered rock pieces, <u>excluding</u> non-intact pieces, expressed as a percentage of the total length of the core run.
- Rock Quality Designation (RQD): The RQD is an index related to the degree of fracturing of a rock core. The RQD is calculated by measuring the total length of all pieces of core in a core run with lengths greater than 4 in., discounting fractures due to drilling. These lengths are then added together and the total length is expressed as a percentage of the length of the core run. Low values of RQD indicate closely fractured rock, while an RQD of 100% indicates all pieces of core are longer than 4 in.

2.8.2 Sample Handling and Shipment

After completion of the geotechnical field activities, the sediment and rock samples were transported to the geotechnical laboratory (Kleinfelder) by ARCADIS staff. Particular care was taken to minimize disturbance to the Shelby tube samples. The Shelby tubes were placed in boxes with soft foam padding to protect the tubes from impacts and minimize exposure to vibrations during transport.

2.9 VISUAL SURFACE DEBRIS SURVEY METHODS

A visual surface debris survey was conducted to catalog and identify the locations of outfalls, pilings, concrete, and other debris within the preliminary RAA boundary. The purpose of the survey was to identify any debris or structures that could affect the implementation of the Final EE/CA Work Plan and potential in-water removal and/or remedial actions.

The following sections briefly describe the in-water and riverbank visual surface debris surveys.

2.9.1 In-Water Debris Survey

The survey was conducted from October 23 to 27, 2009, during a relatively low river stage when the riverbank and sediments were most visible. The in-water portion of the debris survey was conducted using an aluminum jet boat operated by Gravity Consulting LLC and a hand-held DGPS unit with an accuracy of approximately 3–4 ft.

The boat was maneuvered to each structure or piece of debris and the horizontal location of the debris was recorded in latitude and longitude (NAD 1983) in the field and converted to state plane coordinates (Oregon North, International Feet). Each structure or piece of debris was photographed and a brief description (e.g., type of debris, size) was recorded on field data sheets.

2.9.2 Riverbank Debris Survey

The riverbank area was surveyed from October 28 to 30, 2009, during a relatively low river stage after removal of some of the blackberry bushes and other vegetation on the riverbank. The riverbank survey was conducted using a DGPS unit with an accuracy of approximately 3–4 ft.

The hand-held DGPS unit was positioned directly on top of the structure or debris and the horizontal location of the debris was recorded in latitude and longitude (NAD 1983) in the field and converted to state plane coordinates (Oregon North, International Feet). Dense areas of debris were mapped as areas rather than discrete points. Each structure, piece of debris, or debris area was photographed and a brief description (e.g., type of debris, size) was recorded on field data sheets.

2.10 DEVIATIONS FROM THE FINAL EE/CA WORK PLAN

A total of 11 deviations from the Final EE/CA Work Plan occurred during the EE/CA characterization fieldwork. Field change request forms were submitted to and approved by EPA for each of these deviations (FCR-1 through FCR-11). Each deviation is briefly summarized in Table 2-2. The field change request forms are presented in Appendix D.

2.11 HYDRAULIC FLUID LEAKS

Three small hydraulic fluid leaks occurred on the roto-sonic drill rig during advancement of the chemistry boreholes on August 19, 21, and September 1, 2009. Drilling was immediately stopped when the leaks occurred so the hydraulic fluid could be cleaned up and necessary repairs could be made to the hydraulic system on the drill rig. The hydraulic fluid leaks did not affect the integrity of the sediment samples collected during the EE/CA characterization activities.

On August 19 and 21, 2009, a small amount of hydraulic fluid (a mixture of vegetable oil and CITGO A/W Hydraulic Oil 68) was released on the barge deck and into the water in the moon pool. The release on both days was due to the same faulty O-ring seal on one of the hydraulic manifolds on the roto-sonic drill rig. The hydraulic fluid was immediately cleaned up using absorbent pads on the barge deck and a pressure washer and Alconox™ solution to cut the oil. Absorbent pads and a shop vacuum were used for skimming the hydraulic fluid floating on the water in the moon pool. All decontamination materials were containerized in properly labeled DOT-approved 55-gallon drums. The U.S. Coast Guard, Oregon Emergency Response System (State Incident Number 20091919), and EPA were notified of the release. No additional action was required by these agencies because the hydraulic fluid was contained on the barge deck and inside the moon pool and immediately cleaned up. No hydraulic fluid was released to the river outside the barge.

On September 1, 2009, a few drops of hydraulic fluid (a mixture of vegetable oil and CITGO A/W Hydraulic Oil 68) dripped onto the barge deck. The leak was from a hydraulic cylinder on the casing clamp on the drill rig. There was no release of hydraulic fluid to the moon pool or to the river. A representative from EPA's consultant, CDM, was notified of the leak, but it was not necessary to report the leak to the U.S. Coast Guard or Oregon Emergency Response System because there was no release to the river.

3 DATA SUMMARY

The following sections present the 2009 EE/CA characterization chemistry and geotechnical data and the results of the visual surface debris survey. Historical sediment sample data were presented and screened in the EE/CA Work Plan (Parametrix 2007).

3.1 CHEMISTRY DATA

A majority of the sediment samples were analyzed for total organic carbon (TOC) and DDx compounds (2,4′- and 4,4′-DDD, DDE, DDT), referred to as the standard analyte list. A subset of these samples was analyzed for semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), VOCs, organochlorine pesticides, and polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans (PCDD/Fs). In addition, potential waste disposal characterization sediment samples selected from the known highest concentration areas were also analyzed by toxicity characteristic leaching procedure (TCLP) for herbicides, metals, organochlorine pesticides, SVOCs, and VOCs. Data for the sediment samples are presented in Tables 3-1 through 3-4 and for the waste characterization analyses in Table 3-5. Data validation reports for the newly generated EE/CA characterization data are provided in Appendix E.

Twenty split sediment samples were collected and analyzed by EPA for SVOCs, PCBs, PCDD/Fs, and butyltins. Thirty-five split sediment samples were analyzed for organochlorine pesticides, 23 sediment samples were analyzed for VOCs, and four sediment samples were analyzed for asbestos. Data from the EPA split samples and associated quality control reports are presented in Appendix F.

Summary statistics for all samples, including the EPA split samples, are presented in Tables 3-6a and 3-6b. For this report, sediment sample data were screened against EPA Region 9 industrial PRGs for cancer and non-cancer risk[6], MacDonald probable effect concentrations (PECs), threshold effects concentrations (TECs), DEQ bioaccumulative sediment screening level values (SLVs), DEQ eco bioaccumulative COI, and DEQ human health subsistence bioaccumulative COI SLVs, and the results of these screenings are presented in Tables 3-7a through 3-7g. In addition based on EPA comments on the draft RAAC report and the 2011 Opalski Decision, Portland Harbor PRGs will be used in the EE/CA to evaluate the vertical extent of COIs within the RAA when evaluating the vertical extent of removal action alternatives.

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[6] Note that the EPA Region 9 industrial PRGs, which were used in the 2007 EPA/Parametrix work plan, have been superseded by EPA Regional Screening Levels (RSLs). The majority of the RSL values for non-cancer risk (HG=0.1) and a few of the cancer risk (10^{-6}) values differ from the old Region 9 PRGs. Additional evaluation using the most contemporary Portland Harbor PRGs will be completed in the EE/CA.

The SLVs presented in this section are not cleanup levels. The SLV screening in this section is provided for comparative reference only. Site-specific cleanup levels for the Portland Harbor Superfund Site will be established in the EPA Portland Harbor Record of Decision using applicable or relevant and appropriate requirements and risk-based levels.

3.1.1 DDx

Data for sediment samples analyzed for DDx compounds are presented in Table 3-1 and on Figure 3-1. Summary statistics are presented in Table 3-6a.

Total DDD[7] was detected in 80.7% of the sediment samples, ranging from 0.00017 to 1,200 mg/kg, with a median value of 0.043 mg/kg. The maximum concentration was detected in borehole WB-37 at a depth of 10 to 12 ft below mudline (bml; waste characterization sample ARK-WB-37-10-12). For the 19.3% of samples for which total DDD was not detected, detection limits ranged from 0.00014 to 0.00032 mg/kg.

Total DDE[8] was detected in 68.8% of the sediment samples, ranging from 0.00014 to 22 mg/kg, with a median value of 0.018 mg/kg. The maximum concentration was detected in borehole WB-36 at a depth of 10 to 22 ft bml (waste characterization sample ARK-WB-36-10-22). For the 31.2% of samples for which total DDE was not detected, detection limits ranged from 0.00009 to 4 mg/kg.

Total DDT[9] was detected in 81.6% of the sediment samples, ranging from 0.00021 to 1,500 mg/kg, with a median value of 0.063 mg/kg. The maximum concentration was detected in borehole WB-36 at a depth of 10 to 22 ft bml (waste characterization sample ARK-WB-36-10-22). For the 18.4% of samples for which total DDT was not detected, detection limits ranged from 0.00013 to 0.00086 mg/kg.

Total DDx was detected in 85.4% of the sediment samples. Total DDx values range from 0.0004 mg/kg to 1,800 mg/kg, with a median value of 0.120 mg/kg. The maximum concentration was detected in borehole WB-36 at a depth of 10 to 22 ft bml (waste characterization sample ARK-WB-36-10-22). For the 14.6% of samples for which total DDx was not detected, detection limits ranged from 0.00014 to 0.00086 mg/kg.

Data screening results for total DDD, total DDE, total DDT, and where applicable, total DDx and individual DDx isomers are summarized in Tables 3-7a-g.

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[7] The sum of 2,4′- and 4,4′-DDD.
[8] The sum of 2,4′- and 4,4′-DDE.
[9] The sum of 2,4′- and 4,4′-DDT.

3.1.2 TOC

Data for sediments analyzed for TOC are presented in Table 3-1. Summary statistics are presented in Table 3-6a.

Organic carbon was detected in 83.1% of the sediment samples, with values ranging from 0.07 to 5.9%, with a median value of 0.48%. The maximum concentration was detected in borehole WB-66 from 10 to 12 ft bml (sample ARK-WB-66-10-12). For the 16.9% of samples for which organic carbon was not detected, detection limits ranged from 0.061 to 0.16% organic carbon.

3.1.3 Non-DDx Organochlorine Pesticides

Data for samples analyzed for organochlorine pesticides are presented in Table 3-4. Summary statistics are presented in Table 3-6a.

3.1.3.1 Total Chlordanes

Total chlordanes[10] were detected in 28.6% of the sediment samples, ranging from 0.062 to 1.1 mg/kg, with a median value of 0.120 mg/kg. The maximum concentration was detected in borehole WB-35 at a depth of 0 to 10 ft bml (waste characterization sample ARK-WB-35-0-10). For the 71.4% of samples for which total chlordanes were not detected, detection limits ranged from 0.048 to 10 mg/kg, with a median detection limit of 0.47 mg/kg.

3.1.3.2 gamma-Hexachlorocyclohexane (Lindane)

gamma-Hexachlorocyclohexane, also referred to as lindane, was not detected in any of the sediment samples analyzed. gamma-Hexachlorocyclohexane detection limits ranged from 0.024 to 9.9 mg/kg.

3.1.3.3 Other Non-DDx Organochlorine Pesticides

Of the remaining non-DDx organochlorine pesticides analyzed, only 6 were detected: beta-hexachlorocyclohexane, endosulfan sulfate (a constituent of total endosulfans), endrin ketone, heptachlor epoxide, methoxychlor, and trans-chlordane (a constituent of total chlordanes). Detection frequencies ranged from 7.1% for endrin ketone to 28.6% for endosulfan sulfate and trans-chlordane. The maximum detected value was 4.6 mg/kg for total endosulfans in borehole WB-42 from 6 to 14 ft bml (waste characterization sample ARK-WB-42-6-14).

Data screening results for the non-DDx organochlorine pesticides are summarized in Tables 3-7a-g.

[10] The sum of cis-chlordane, trans-chlordane, oxychlordane, cis-nonachlor, and trans-nonachlor.

3.1.4 SVOCs

Data for sediment samples analyzed for SVOCs are presented in Tables 3-3 and 3-4 and in Appendix F. Summary statistics are presented in Table 3-6a. Summaries for selected SVOCs or SVOC subgroups are provided below.

3.1.4.1 PAHs

Polycyclic aromatic hydrocarbon (PAH) detection frequencies ranged from 55.9% (acenaphthylene) to 100% (1-methylnaphthalene) with concentrations ranging from 0.0074 to 5.1 mg/kg (both for naphthalene), with the maximum concentration found in borehole WB-42 at a depth of 6 to 14 ft bml (waste characterization sample ARK-WB-42-6-14). PAH detection limits ranged from 0.00046 to 0.0038 mg/kg.

Data screening results for PAHs are summarized in Table 3-7a-g.

3.1.4.2 Phenols

The most frequently detected phenols were 3 & 4-methylphenol (detection frequency of 92.9%) and 2-chlorophenol (35.3%); other phenols were not detected or had detection frequencies of less than 10%. The maximum concentration was 0.31 mg/kg for 2-chlorophenol in borehole WB-42 at a depth of 6 to 14 ft bml (waste characterization sample ARK-WB-42-6-14). Phenol detection limits ranged from 0.00032 to 0.32 mg/kg.

Data screening results for phenols are summarized in Table 3-7a-g.

3.1.4.3 Phthalates

The most frequently detected phthalates were bis(2-ethylhexyl) phthalate (detection frequency of 23.5%) and di-n-octyl phthalate (11.8%); other phthalates were not detected or had detection frequencies of less than 10%. The maximum concentration was 0.32 mg/kg for bis(2-ethylhexyl) phthalate in borehole 35 at a depth of 0 to 10 ft bml (sample ARK-WB-35-0-10). Phthalate detection limits ranged from 0.0002 to 0.32 mg/kg.

No phthalate results exceeded any SLV (Table 3-7a-g).

3.1.4.4 Hexachlorobenzene

Hexachlorobenzene was detected in 26.5% of the sediment samples, ranging from 0.0067 to 0.064 mg/kg, with a median value of 0.043 mg/kg. The maximum concentration was detected in borehole WB-39 at a depth of 0 to 8 ft bml (waste characterization sample ARK-WB-39-0-8). For the 73.5% of samples for which hexachlorobenzene was not detected, detection limits ranged from 0.00028 to 0.032 mg/kg.

3.1.4.5 Other SVOCs

Of the other detected SVOCs, detection frequencies ranged from 2.9% (2-chloronaphthalene, isophorone, and n-nitrosodipropylamine) to 44.1% (dibenzofuran). The maximum concentration of 2.0 mg/kg 1,4-dichlorobenzene was found in the EPA split sample from borehole WB-35 from 10 to 20 ft bml (waste characterization sample ARK-WB-35-10-20_EPAsplit).

Data screening results for other SVOCs are summarized in Table 3-7a-g.

3.1.5 PCBs

Data for sediment samples analyzed for PCBs are presented in Table 3-4, Appendix F, and on Figure 3-2. Summary statistics are presented in Table 3-6a.

PCBs were not detected in any sediment samples. PCB detection limits ranged from 0.0012 to 1.8 mg/kg. EPA's analytical laboratory was able to achieve a lower detection limit of approximately 0.0012 mg/kg for 20 of the analyzed sediment samples collected in upstream, downstream, or deeper sample depths. LSS' analytical laboratory was not able to achieve the lower detection limit for the 14 waste characterization samples because of the chemical interference with the DDx in the samples.

3.1.6 VOCs

Data for samples analyzed for VOCs are presented in Tables 3-3 and 3-4 and in Appendix F. Summary statistics are presented in Table 3-6a.

Of the detected VOCs, detection frequencies ranged from 2.5% (1,2-dichloropropene and chlorodibromomethane) to 75% (chlorobenzene). The maximum concentration of 390 mg/kg chlorobenzene was found in the EPA split sample from borehole WB-35 from 10 to 20 ft bml (waste characterization sample ARK-WB-35-10-20_EPA split). Detection limits for VOCs ranged from 0.000093 to 6.2 mg/kg.

Data screening results for VOCs are summarized in Table 3-7a-g.

3.1.7 PCDD/Fs

Data for sediments analyzed for PCDD/Fs are presented in Tables 3-2 and 3-4, Appendix F, and on Figures 3-3 (total PCDD/F) and 3-4 (PCDD/F TEQ). Summary statistics are presented in Table 3-6a.

PCDD/Fs were detected in 98.4 % of the sediments, with total PCDD/F concentrations ranging from 6.11 to 425,000 pg/g, with a median value of 94.8 pg/g. The toxic equivalent (TEQ) for

PCDD/Fs ranged from 0.0375 to 24,400 pg/g, with a median value of 3.25 pg/g. The highest total PCDD/F concentration and TEQ were both found in borehole WB-36 from 0 to 10 ft bml (waste characterization sample ARK-WB-36-0-10). The detection limit for the sample without detected total PCDD/F was 5.06 pg/g.

Data screening results for PCDD/Fs are summarized in Table 3-7a-g.

3.1.8 Tributyltin and Asbestos

Several EPA split samples were analyzed for butyltins; these data are reported in Appendix F and summary statistics are presented in Table 3-6a. Butyltins were not detected in any sediment samples. Tributyltin detection limits ranged from 0.013 to 0.020 mg/kg.

Data for samples analyzed for asbestos are presented in Table 3-4 and in Appendix F. Of the 14 sediment samples collected by Integral that were analyzed for asbestos, asbestos was detected in 57.1%, ranging from 0.1 to 0.4%, with a median value of 0.3%. Chrysotile was detected in all four of the sediments analyzed by the EPA for asbestos, ranging from a trace to 4.5% (Appendix E). The data quality review of the quantitative analysis for the LSS results verified the accuracy of the point-count quantitation method. EPA provided their data quality review which indicated that the asbestos quantitation combined both volumetric and weight quantitation methodologies for different asbestos size fractions. Based on LSS' review of the analytical reports and data at this time, no further asbestos analyses are required and the LSS asbestos quantitation is deemed sufficient for assessing asbestos concentrations in sediment in the RAA. If additional data become available or additional method comparison data are needed, additional asbestos analysis could be considered in the EE/CA and could be conducted as part of the remedial design for the removal action.

3.1.9 Waste Characterization/Toxicity Characteristics Leaching Procedure

Data for samples analyzed by TCLP are presented in Table 3-5. Summary statistics are presented in Table 3-6b.

3.1.9.1 Herbicides

Herbicides were not detected in any TCLP sample.

3.1.9.2 Metals

Several metals were detected in the TCLP samples. Detection frequencies ranged from 0% for silver to 100% for barium, and concentrations ranged from 0.00045 mg/L (mercury) to 11 mg/L (lead). The median concentration for lead was 0.064 mg/L and the highest lead concentration was found in borehole WB-39 from 0 to 8 ft bml (waste characterization sample ARK-WB-39-0-8).

3.1.9.3 Pesticides

Of the seven pesticides analyzed for in the TCLP samples, only gamma-hexachlorocyclohexane was detected, with a detection frequency of 21.4%. Concentrations ranged from 0.00015 to 0.00035 mg/L, with a median of 0.00019 mg/L. The highest concentration was detected in borehole WB-42 from 0 to 6 ft bml (waste characterization sample ARK-WB-42-0-6).

3.1.9.4 SVOCs

Phenols were not detected in any TCLP sample.

Hexachlorobutadiene and 1,4-dichlorobenzene were detected in the TCLP samples, with detection frequencies of 7.1% and 35.7%, respectively. Concentrations ranged from 0.0031 to 0.036 mg/L (both 1,4-dichlorobenzene), with medians of 0.0037 µg/L for hexachlorobutadiene and 0.005 µg/L for 1,4-dichlorobenzene. The highest concentration was detected in borehole WB-36 from 10 to 22 ft bml (waste characterization sample ARK-WB-36-10-22).

3.1.9.5 VOCs

Several VOCs were detected in the TCLP samples. Of the detected VOCs, detection frequencies ranged from 14.3% for benzene to 85.7% for chlorobenzene and concentrations ranged from 0.014 to 22 mg/L (both chlorobenzene). The median concentration for chlorobenzene was 5.1 mg /L and the highest concentration was found in borehole WB-39 from 8 to 18 ft bml (waste characterization sample ARK-WB-39-8-18).

3.2 GEOTECHNICAL DATA

The geotechnical data collected as part of the geotechnical investigation can generally be subdivided into the following data types:

- Generalized subsurface conditions as observed in the geotechnical explorations (additionally, soil descriptions are provided on the chemistry borings logs)
- *In-situ* test data consisting of CPT and SPT data
- Laboratory test results.

An overview of the available geotechnical data is provided below. As is typical in geotechnical engineering, interpretation of the test data will require the use of experience and engineering judgment by the project engineer.

3.2.1 Generalized Subsurface Conditions

The following geologic units were identified in the in-water geotechnical explorations and chemistry boreholes:

3.2.1.1 River Sediment

The river sediment generally consists of two sediment types: a) very soft to soft organic silt and silt, and b) very loose to loose sand with various amounts of silt. Gravel layers that contained various amounts of sand and silt were encountered in a few of the explorations, typically directly overlying the basalt bedrock. The gravel appeared to be derived from the underlying bedrock and was typically less than 3 ft thick in the geotechnical explorations. The gravel layer was slightly thicker in some of the chemistry borings and was typically less than 5 ft, with the exception of borehole WB-32-2 where the observed thickness was nearly 10 feet (refer to Appendix C). A mudline elevation map is presented in Figure 3-5.

The stratigraphy varies significantly across the site in terms of the layering of the sand and silt units. Generally, the following typical sediment profiles were encountered in the explorations:

- Predominantly sand
- Predominantly silt
- Significant sand layer over silt deposit
- Significant silt layer over sand deposit.

3.2.1.2 Columbia River Basalt Group

Basalt bedrock was encountered in all of the boreholes at depths ranging from approximately 4 to 49 ft below sediment surface. A basalt elevation map is provided on Figure 3-6. Figure 3-7 presents a sediment thickness map, also referred to as an isopach map. Coring of the basalt bedrock was performed in boring SPT-1. The quality of the rock generally increased significantly with depth in the 20 ft of core that was recovered. Fracturing and weathering generally decreased with depth. Rock quality parameters and detailed descriptions of the cores are provided on the boring log for SPT-1 in Appendix C.

3.2.2 Geotechnical *In-Situ* Test Data

In-situ testing consisted of CPTs and SPTs performed in the geotechnical borings. These methods are described in Sections 2.8.1.2 and 2.8.1.4, respectively. The SPT results (N-values) are provided on the geotechnical boring logs in Appendix C. The CPT results are presented on the CPT logs in Appendix C.

Both methods provide an indication of the consistency of cohesive materials and the relative density of cohesionless materials. In addition, CPT provides a virtually continuous record of cone tip resistance, sleeve friction, and pore pressure. These three parameters are used to estimate the soil behavior type, which typically correlates well with stratigraphy obtained from drilling and sampling in a co-located boring. CPT parameters can also be correlated with other important soil parameters used in geotechnical analysis and design, such as stress history parameters and sediment shear strength. Three borings were co-located with CPT explorations:

- SPT-1 and CPT-8
- SPT-2 and CPT-9 (CPT-9R was co-located with CPT-9 as described in Section 2.8.1.2)
- SPT-3 and CPT-13.

Laboratory testing was performed on samples from each of the borings to develop correlations between CPT parameters and soil parameters. Information regarding the laboratory test program is provided in Section 3.2.3.

The CPT logs in Appendix C also provide the soil behavior type that is estimated based on the cone tip resistance and friction ratio. The soil behavior type generally correlates well with soil classification on actual sediment samples. Some variation can occur. For example, the CPT sometimes indicated soil behavior type "6 – sandy silt to clay silt," but in the co-located borings, this material was described as soil behavior type "7 – silty sand to sandy silt."

3.2.3 Geotechnical Laboratory Test Data

Geotechnical testing was performed in general accordance with ASTM test methods (ASTM 2009a,b). The ASTM designations are provided below. The laboratory test data that was collected as part of the geotechnical investigation can generally be subdivided into three categories:

- Index properties predominantly used for soil classification and estimation of general soil behavior:
  - Moisture content determination – ASTM D2216
  - Grain size analysis – ASTM D422
  - Atterberg limits – ASTM D4318
  - Organic content determination – ASTM D2974 (Method C)
  - Specific gravity determination – ASTM D854
- Advanced testing on relatively undisturbed sediment samples (i.e., material from thin-wall tube sampling [Shelby tube sampling]):
  - Unconsolidated, undrained triaxial compressive strength test – ASTM D2850

  - Consolidated, undrained triaxial compressive strength test – ASTM D4767
  - Consolidation test – ASTM D2435 (Method B)
  - Hydraulic conductivity test – ASTM D5084 (Method C)
- Rock strength testing:
  - Point load test – ASTM D5731
  - Unconfined compressive strength test – ASTM D 7012.

A summary of the available sediment samples from the three borings and the tests performed on the samples is provided in Table 3-8. Table 3-9 provides a summary of the tests performed on the rock core samples. All laboratory testing was performed by Kleinfelder. Kleinfelder's test reports are provided in Appendix G.

3.2.3.1 Index Property Data

A summary of the index property data is provided in Table 3-10. Grain size and Atterberg limit results were used to classify the selected sediment samples in general accordance with ASTM D2487. The laboratory classifications were used to verify selected visual/manual classifications performed in the field.

The fine grain sediment that was encountered in the geotechnical borings was predominantly classified as organic silt of high plasticity, based on the Atterberg limit test results, which included oven-dried liquid limit tests on selected samples. Moisture contents of up to 203% indicated the presence of organic material in the samples. Organic contents ranged from 4.6 to 9.2%.

3.2.3.2 Testing on Relatively Undisturbed Sediment Samples

Shear strength, consolidation, and hydraulic conductivity testing was performed on relatively undisturbed sediment samples as outlined above. The test data are provided in Appendix G.

3.2.3.3 Rock Strength Test Data

Point load tests and unconfined compressive strength tests were performed on rock samples as outlined above. The rock strength test results are provided in Appendix G, along with the laboratory test data for the sediment samples.

3.3 VISUAL SURFACE DEBRIS SURVEY RESULTS

Figure 3-8 presents selected photographs of debris that was observed and cataloged during the visual surface debris survey. The visual surface debris survey results are presented in Figures

3-9a, b, and c for the northern, central, and southern portions of the preliminary RAA boundary, respectively. A summary of the field observations from the surface debris survey are provided in Table 3-11. Photographs of the debris referenced in Table 3-11 are presented in Appendix H.

Surface debris observed on the riverbank and in-water portions of the site in the area downstream of Dock 2 is presented in Figure 3-9a. The northern portion of this area includes a piling field from a historical dock. Miscellaneous concrete debris, metal debris, and some logs were also observed in this area. In addition, one active outfall and associated Parshall flume (Outfall 004) and an inactive historical outfall were observed in this area.

Surface debris observed on the riverbank and in-water portions of the site in the area between Docks 1 and 2 is presented in Figure 3-9b. The surface debris in this area consists primarily of concrete, historical pilings and dolphins, metal debris, logs, and other miscellaneous debris. Blackberry bushes were particularly thick in this area, which limited the amount of surface debris that was visible during the survey. Two active outfalls and associated Parshall flumes (Outfalls 002 and 003) were also observed in this area.

Surface debris observed on the riverbank and in-water portions of the site in the area between Dock 1 and the Salt Dock is presented in Figure 3-9c. The debris in this area consists primarily of concrete debris, with smaller amounts of scrap metal, logs, pilings, and a few dolphins also observed in this area. In addition, one active outfall and associated Parshall flume (Outfall 001) was observed in this area.

4 NATURE AND EXTENT OF CONSTITUENTS OF INTEREST WITHIN THE HORIZONTAL RAA BOUNDARY

This section of the report summarizes the nature and extent of COIs within the preliminary RAA boundary at the site. Based on the 2008 and 2011 Opalski Decisions (USEPA 2008; Opalski 2011; Appendix A), the Final EE/CA Work Plan, and subsequent correspondence and agreements between EPA and LSS, the primary COI for defining the horizontal RAA boundary for the EE/CA is DDx. Section 4.1 provides a summary of the nature and extent of DDx and the horizontal RAA boundary based on the 5 mg/kg DDx contour. Other COIs, including PCDD/Fs (in particular furans [PCDFs]), warranted further evaluation. Therefore, sediment samples were also extensively analyzed for PCDD/Fs to provide additional data to evaluate the PCDD/F distribution in sediments with respect to the RAA boundary for DDx. Finally, other COIs have been identified by EPA (e.g., see Sheldrake 2011b), and the sediment data for each of these COIs is summarized in this section of the report. The focus of this nature and extent section is, therefore, on the distribution of DDx (Section 4.1), PCDD/Fs (Section 4.2), and other COIs (Section 4.3) in sediments.

A revised breakpoint analyses for DDx and a new breakpoint analysis for total PCDD/Fs are also presented in this section of the report. The breakpoint analyses are based on the expanded and more robust EE/CA sediment data set and EVS model analysis. Per the EPA directed change as clarified in the 2011 Opalski Decision, the revised breakpoint analyses will not be used at this time but will be used in the evaluation of EE/CA alternatives presented in the EE/CA report.

4.1 DDX

DDx sediment data[11] from the EE/CA investigation were incorporated into the EVS model for the preliminary RAA at the Arkema site (Appendix I). The revised and updated EVS model contains more than 550 DDx sediment sample results in the preliminary RAA area.

Prior to the EE/CA investigation, and based on the 2008 Opalski Decision, the focus of the EE/CA investigation was on the 5 ppm (or mg/kg) boundary which was derived from the 90% mass removal breakpoint in the DDx mass-to-sediment volume relationship at the Arkema site. With the expanded and more robust data set, including an additional 321 DDx data points from the EE/CA investigation, a reanalysis of the mass-to-volume relationship was conducted by plotting the DDx mass and associated sediment volume results from the EVS model. The

[11] At the request of EPA, the DDx data in the EVS model did not include EPA's split sample data from the 2009 EE/CA characterization investigation. These data were rejected by EPA during their data validation process. LSS notes that EPA DDx data were variable but in some cases were up to two orders of magnitude lower than LSS' data presented herein.

"breakpoint" or change in slope in the mass-to-volume relationship was then reevaluated based on this expanded and more robust EVS model.

Figure 4-1 presents the graph of the DDx mass versus the in-place dredge volume based on the expanded sediment data set. Based on this data set, the mass-to-volume relationship has changed and the revised DDx breakpoint now occurs between 75 mg/kg and 100 mg/kg, which represents approximately 90% of the DDx mass.

The horizontal extent of the 5 mg/kg DDx contours for the nominal plume using 15 anisotropy[12] is presented in Figure 4-2. The 5 mg/kg DDx boundary covers the area between Docks 1 and 2 with a small strip extending upstream of Dock 1 and some small discontinuous areas downstream of Dock 2 (Figure 4-2). The 5 mg/kg DDx boundary is similar to the 10 mg/kg DDx boundary, except for the area downstream of Dock 2. The 5 mg/kg DDx boundary downstream of Dock 2 is larger than the 10 mg/kg DDx boundary, especially immediately downstream of Dock 2 and in the discontinuous areas downstream of Dock 2.

Cross sections showing the lower vertical extent of the 75 and 10 mg/kg DDx contours are presented in Figure 4-3a. Cross sections showing the lower vertical extent of the 5 and 0.04 mg/kg DDx contours are presented in Figure 4-3b. Figure 4-3c presents a cross section that overlays the lower vertical extent of the 75, 10, 5, and 0.04[13] mg/kg contours. The highest DDx concentrations in site sediment are between Docks 1 and 2 at a depth of approximately 10 ft bml. The 0.04 mg/kg vertical contour extends downward to within 5–10 ft of basalt bedrock, from the downstream portion of Dock 1 to the northern portion of the preliminary RAA boundary. The 0.04 mg/kg DDx vertical boundary is at a shallower depth upstream of Dock 1 (Figure 4-3c).

Figure 4-3c clearly shows that the discontinuous DDx sediment areas downstream of Dock 2 have a limited vertical extent and are not contiguous. In addition, EVS model calculations show that DDx in sediment downstream of Dock 2 represents less than 2% of the DDx mass within the preliminary RAA. Note that as a result of the sample spacing downstream of Dock 2, there is higher variability in the EVS model in this area and, therefore, there is some uncertainty as to whether these discrete "islands" downstream of Dock 2 could be laterally contiguous.

The current draft Portland Harbor sediment PRGs for sum DDD, DDE, DDT, and DDx are 28 μg/kg, 31.3 μg/kg, 62.9 μg/kg, and 218 μg/kg, respectively. These SLVs along with other relevant and appropriate levels (e.g., remedial action levels [RALs]) will be used in the EE/CA to evaluate the vertical distribution of DDx concentrations with respect to the removal action alternatives evaluated.

[12] Anisotropy is the horizontal to vertical correlation ratio used in EVS. The default anisotropy value in EVS is 10.
[13] The 0.04 mg/kg DDx value is 1,000 times the current DEQ (2007) human health subsistence bioaccumulative SLV.

Based on the current data, the RAA boundary at the site is based on the 5 mg/kg DDx contour, in accordance with the 2011 Opalski Decision, and is presented in Section 4.4.

4.2 PCDD/FS

EVS was used to create a model of total PCDD/Fs in sediment data within the preliminary RAA boundary at the site. The model incorporated EE/CA investigation and historical total PCDD/F sediment data (Appendix I). The EVS PCDD/F model contains more than 100 total PCDD/F sediment sample results in the preliminary RAA area.

Figure 4-4 presents a graph of the total PCDD/F mass versus the in-place dredge volume based on the EE/CA investigation and historical data set. The mass-to-volume relationship was not previously conducted for PCDD/Fs at the site; however, consistent with the methodology used for DDx, a mass-to-volume relationship was developed by plotting the PCDD/F mass and associated sediment volume results from the EVS model. The breakpoint was estimated from the plot on Figure 4-4. The mass-to-volume relationship, based on a total PCDD/F breakpoint of 90% of the PCDD/F mass, is approximately 36,000 pg/g.

Figure 4-5 presents the horizontal extent of the 36,000 pg/g PCDD/F contour and the vertical extent of total PCDD/Fs in sediments within the preliminary RAA boundary. The highest total PCDD/F concentrations are present in the area between Docks 1 and 2, similar to that of DDx. The vertical distribution of total PCDD/Fs differs from the vertical distribution of DDx. Based on the EVS model analysis, the highest concentrations of PCDD/Fs extend to the sediment surface, as opposed to DDx, which is found at approximately 10 ft bml. One potential factor that may bias this analysis for total PCDD/Fs is that the PCDD/F distribution between Docks 1 and 2 is based on the waste characterization samples, which were composites of larger sample intervals from boreholes between the docks (i.e., samples representing 6–12 ft sediment sample intervals). Concentrations of total PCDD/Fs immediately upstream and downstream of Docks 1 and 2 are generally within the range of 100 to 1,000 pg/g (Figure 4-5).

Figure 4-6 presents the PCDD/F TEQ data for all sediment samples collected within the preliminary RAA boundary. Figure 4-7 presents pie charts showing the fraction of PCDD and PCDF homologues in each sediment sample within the preliminary boundary investigation area, with the proportional PCDD homologue sum in red, and the proportional PCDF homologue sum in blue.

Per the 2011 Opalski Decision, the Portland Harbor sediment PRG for 2,3,4,7,8-PCDF and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of 2,3,4,7,8-PCDF concentrations with respect to the removal action alternatives evaluated.

4.3 OTHER COIS

Sediment data for other chemicals analyzed during the 2009 EE/CA investigation are summarized in Section 3 of this report. EPA has directed additional chemicals as COIs that need to be evaluated further in the EE/CA. These additional COIs consist of hexachlorobenzene, PCBs, total chlordanes, tributyltin, and lindane (gamma-hexachlorocyclohexane) (Sheldrake 2011b). Some of these chemicals (e.g., chlordane, gamma-hexachlorocyclohexane, and PCBs) have also been the subject of additional correspondence between EPA and LSS (Slater 2010b, 2010c; Sheldrake 2010c, 2010d; Appendix A).

While there are sporadic detections of these other COIs in sediment samples at the Arkema site, these detections are consistent with the deposition of upstream urban background of these COIs. The detections of these other COIs at the Arkema site are generally outweighed by the majority of sediment samples that do not have other COI detections. These findings are consistent with the conceptual site model that shows there are no sources of these other COIs at the Arkema site because they were never manufactured, handled, or stored at the facility.

Each of these COIs will be considered further in the EE/CA when evaluating the vertical extent of the RAA boundary. Provided below is a summary of the available data for each of these COIs within the horizontal RAA boundary and the SLVs to be used for comparison in the EE/CA based on the 2011 Opalski Decision.

4.3.1 Total Chlordanes

Approximately 170 sediment samples within the preliminary RAA boundary have been analyzed for total chlordanes. Total chlordanes were not detected in 66% of these samples. Detection limits for undetected samples range from 0.000042 to 10 mg/kg. Figure 4-8 presents the total chlordanes data for all sediment samples collected within the original preliminary RAA boundary.

The draft Portland Harbor sediment PRG for total chlordanes as well as other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of total chlordane concentrations with respect to the removal action alternatives evaluated.

4.3.2 gamma-Hexachlorocyclohexane (Lindane)

Approximately 170 sediment samples within the preliminary RAA boundary have been analyzed for gamma-hexachlorocyclohexane, also referred to as lindane. gamma-Hexachlorocyclohexane was not detected in over 90% of these samples. Detection limits for undetected samples range from 0.000077 to 9.9 mg/kg. Figure 4-9 presents the gamma-hexachlorocyclohexane data for all sediment samples collected within the original preliminary RAA boundary.

The draft Portland Harbor sediment PRG for gamma-hexachlorocyclohexane as well as other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of gamma-hexachlorocyclohexane concentrations with respect to the removal action alternatives evaluated.

4.3.3 Hexachlorobenzene

Hexachlorobenzene has been analyzed in 117 sediment samples within the preliminary RAA boundary. Hexachlorobenzene was not detected in 44% of these samples. Detection limits for undetected samples range from 0.00015 to 0.32 mg/kg. Figure 4-10 presents the hexachlorobenzene data for all sediment samples collected within the original preliminary RAA boundary.

The draft Portland Harbor sediment PRG for hexachlorobenzene, if available, as well as other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of hexachlorobenzene concentrations with respect to the removal action alternatives evaluated.

4.3.4 PCBs

PCBs have been analyzed in 94 sediment samples within the preliminary RAA boundary. PCBs were not detected in 66% of these samples. Detection limits for undetected samples range from 0.0012 to 150 mg/kg. Figure 4-11presents the total PCB data for all sediment samples collected within the original preliminary RAA boundary.

The draft Portland Harbor sediment PRG for total PCBs as well as other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of total PCB concentrations with respect to the removal action alternatives evaluated.

4.3.5 Tributyltin

Tributyltin has been analyzed in 23 sediment samples within the preliminary RAA boundary. Tributyltin was not detected in 91% of these samples. Detection limits for undetected samples range from 0.013 to 0.020 mg/kg. Figure 4-12 presents the tributyltin data for all sediment samples collected within the original preliminary RAA boundary.

The draft Portland Harbor sediment PRG for tributyltin as well as other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of tributyltin concentrations with respect to the removal action alternatives evaluated.

4.4 EPA DIRECTED HORIZONTAL RAA BOUNDARY

Based on the analysis of the DDx data, the current horizontal RAA boundary, as directed by EPA, is the 5 mg/kg DDx contour in the EVS model (Figure 4-13). The horizontal RAA boundary presented on Figure 4-13 is consistent with the 2011 Opalski Decision (Opalski 2011; Appendix A). The horizontal RAA boundary will be used to evaluate EE/CA alternatives at the site. COIs outside of this horizontal RAA boundary will be addressed as part of the Portland Harbor Superfund Site remedy.

5 SUMMARY

The EE/CA characterization activities were conducted at the site from August 18 to October 30, 2009. Sediment samples were collected from 36 roto-sonic chemistry boreholes and 3 mud rotary geotechnical boreholes. The sediment samples were analyzed for a number of chemical and physical parameters in accordance with the Final EE/CA Work Plan. In addition to the sediment sampling activities, 14 CPT boreholes were advanced and a visual surface debris survey was conducted at the site.

Several rounds of chemical analyses were conducted on sediment samples in accordance with the Final EE/CA Work Plan and subsequent EPA/LSS agreements. Based on the results of the EE/CA characterization and historical sediment data collected at the site, DDx was utilized to delineate the EPA directed horizontal RAA boundary.

DDx sediment data from the EE/CA investigation were incorporated into the EVS model for the preliminary RAA at the site. The revised and updated EVS model contains more than 550 DDx sediment sample results in the preliminary RAA area. EVS was also used to create a model of total PCDD/Fs in sediment within the preliminary RAA boundary at the site. The model incorporated EE/CA investigation and historical total PCDD/F sediment data. The EVS PCDD/Fs model contains more than 100 total PCDD/F sediment sample results in the preliminary RAA area.

The RAA boundary to be evaluated in the EE/CA has been directed by EPA and is the 5 mg/kg DDx contour based on EVS modeling, consistent with the 2011 Opalski Decision (Opalski 2011; Appendix A) and the intent of the NTCRA. Also consistent with the 2011 Opalski Decision, the vertical extent of the RAA will be defined in the EE/CA by evaluating the vertical extent of DDx and other COIs within the horizontal RAA boundary (Figure 4-13). Per the 2008 Opalski Decision, the EE/CA will also evaluate various sediment remedial alternatives within the feasible limits of dredging and considering other engineering constraints. The remainder of the COIs outside of the RAA boundary will be addressed, if necessary, as part of the Portland Harbor Superfund Site remedy.

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Sheldrake, S. 2011b. Personal communication (letter to T. Slater, Legacy Site Services LLC, Exton, PA, dated May 20, 2011, regarding "Response to EPA's February 19, 2011 Review Comments on the Draft Removal Action Area Characterization Report, Arkema Inc. Portland Facility, AOC for Removal Action U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191" dated March 21, 2011). U.S. Environmental Protection Agency Region 10, Seattle, WA.

Sheldrake, S. 2011c. Personal communication (letter to D.D. Opalski, U.S. Environmental Protection Agency Region 10, Seattle, WA, dated July 8, 2011, regarding Dispute Resolution for Arkema Inc. Portland Facility, AOC for Removal Action U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191). U.S. Environmental Protection Agency Region 10, Seattle, WA.

Sheldrake, S. 2011d. Personal communication (letter to D.D. Opalski, U.S. Environmental Protection Agency Region 10, Seattle, WA, dated July 20, 2011, regarding EPA Reply to LSS' July 15, 2011 Response; Formal Dispute under U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191). U.S. Environmental Protection Agency Region 10, Seattle, WA.

Slater, J.T. 2010a. Personal communication (letter to S. Sheldrake, U.S. Environmental Protection Agency, Seattle, WA, dated March 11, 2010, regarding response to EPA's 7-step process for analysis of archived sediment samples). Legacy Site Services LLC, Exton, PA.

Slater, J.T. 2010b. Personal communication (letter to S. Sheldrake, U.S. Environmental Protection Agency, Seattle, WA, dated July 8, 2010, regarding the proposal for final round of archived sediment sample analysis, Arkema Inc. Portland Facility). Legacy Site Services LLC, Exton, PA.

Slater, J.T. 2010c. Personal communication (letter to S. Sheldrake, U.S. Environmental Protection Agency, Seattle, WA, dated August 30, 2010, regarding response to EPA letter dated July 29, 2010 regarding LSS' proposal for the final round of archived sediment sample analysis, Arkema Inc. Portland Facility. Legacy Site Services LLC, Exton, PA.

Slater, J.T. 2011a. Personal communication (letter to S. Sheldrake, U.S. Environmental Protection Agency, Seattle, WA, dated March 21, 2011, regarding Response to EPA's February 19, 2011 Review Comments on the Draft Removal Action Area Characterization Report, Arkema Inc. Portland Facility AOC for Removal Action U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191). Legacy Site Services LLC, Exton, PA.

Slater, J.T. 2011b. Personal communication (letter to S. Sheldrake, U.S. Environmental Protection Agency, Seattle, WA, dated June 3, 2011, regarding Dispute of EPA Directed Comments, Arkema Inc. Portland Facility Administrative Order on Consent (AOC) for Removal Action U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191). Legacy Site Services LLC, Exton, PA.

Slater, J.T. 2011c. Personal communication (letter to D.D. Opalski, U.S. Environmental Protection Agency Region 10, Seattle, WA, dated July 15, 2011, regarding Dispute of EPA Directed Comments, Arkema Inc. Portland Facility Administrative Order on Consent for Removal Action U.S. EPA Region 10 Docket No. CERCLA 10-2005-0191). Legacy Site Services LLC, Exton, PA.

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USEPA. 2006. An inventory of sources and environmental releases of dioxin-like compounds in the United States for the years 1987, 1995, and 2000. EPA/600/P-03/002F. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Washington, DC.

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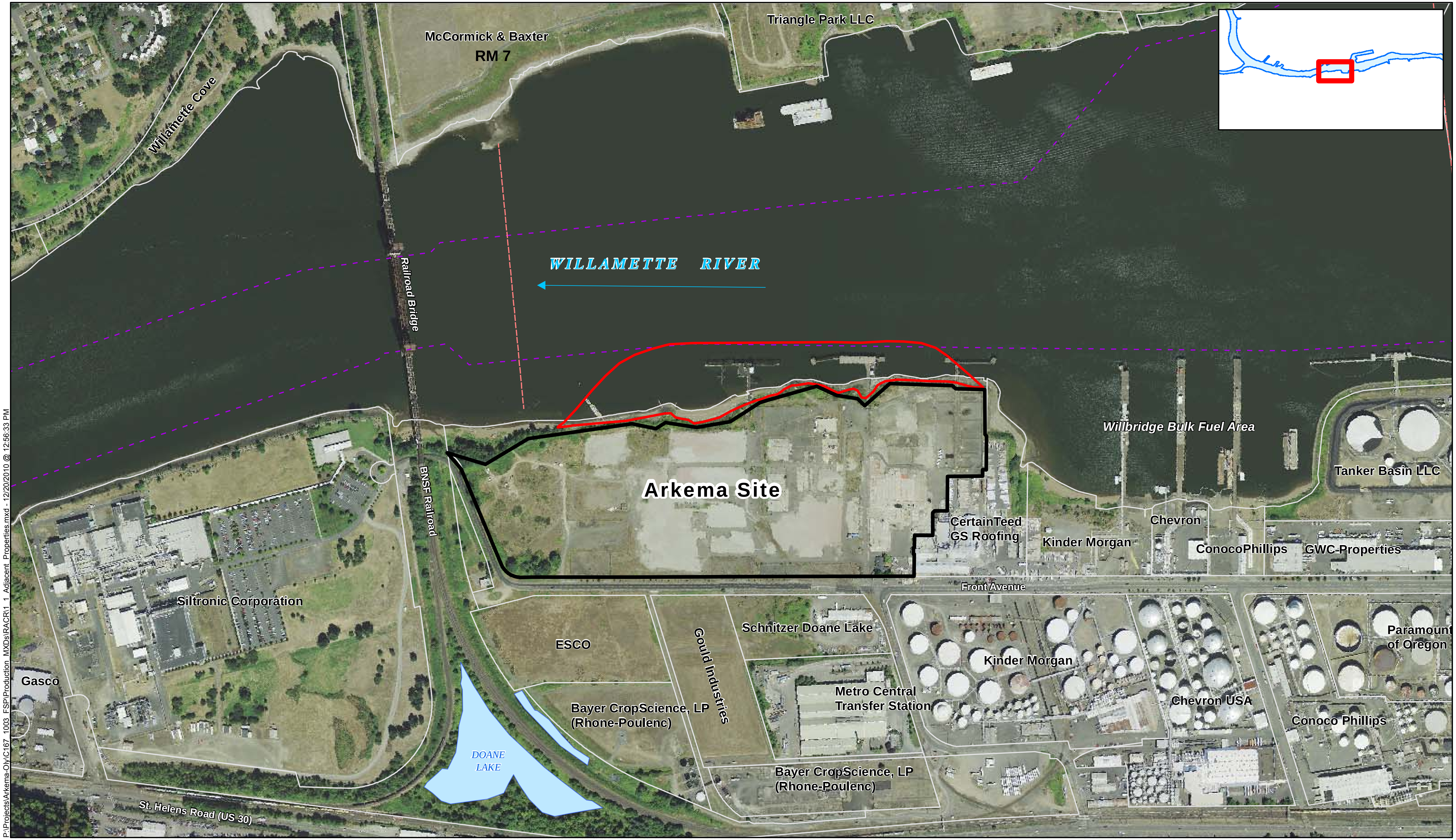
FIGURES

FIGURES



integral consulting inc.

FEATURE SOURCES:
Aerial: Metro, 2007
Property Boundaries: Metro RLIS

0 250 500 Feet

N

Map Features

River Miles

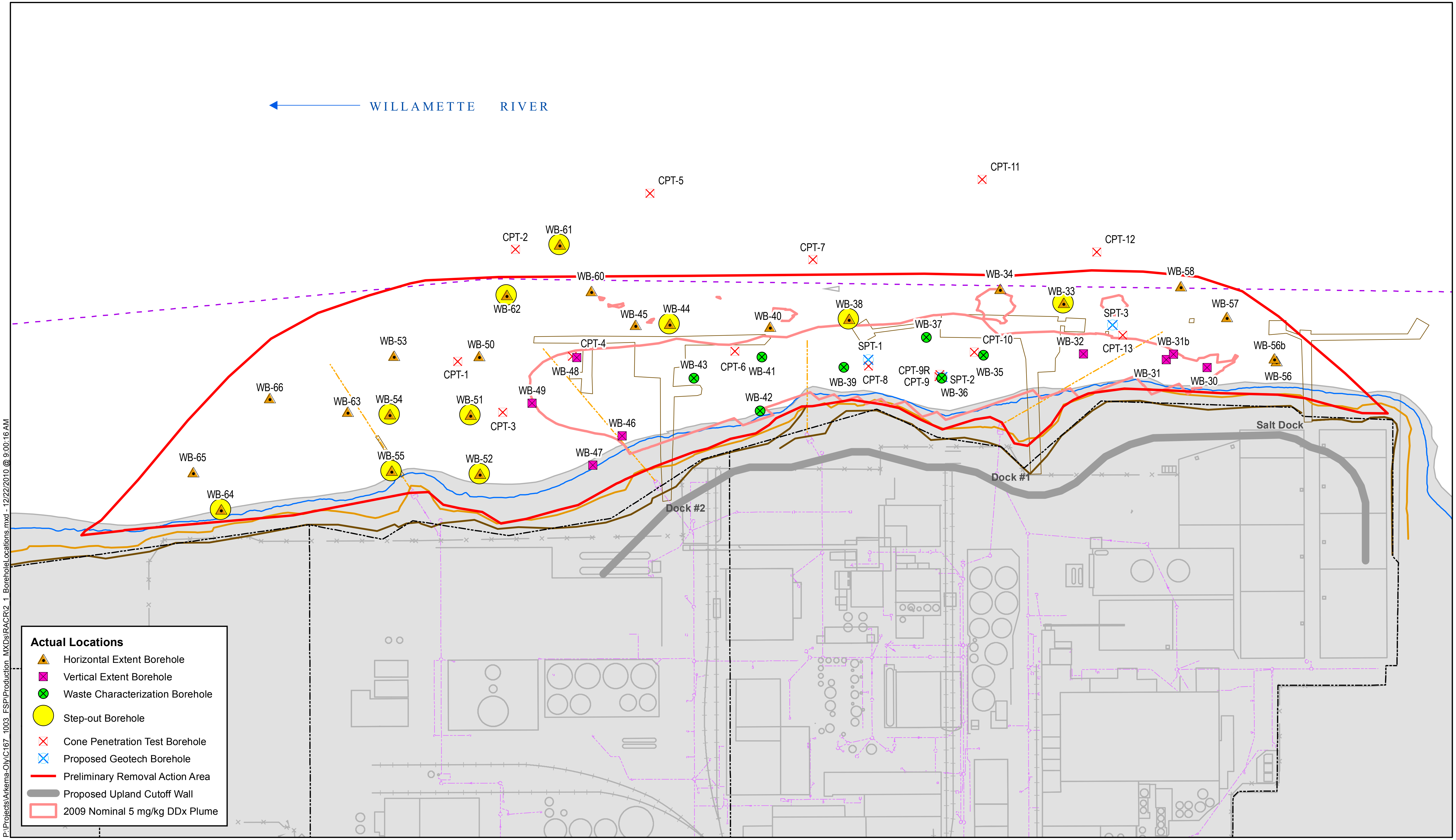
Navigation Channel

Preliminary Removal Action Area

Waterfront Taxlots

Doane Lake (Current)

Figure 1-1
Aerial Photograph and Adjacent Properties
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers
NOTE: All plumes use 15 anisotropy.

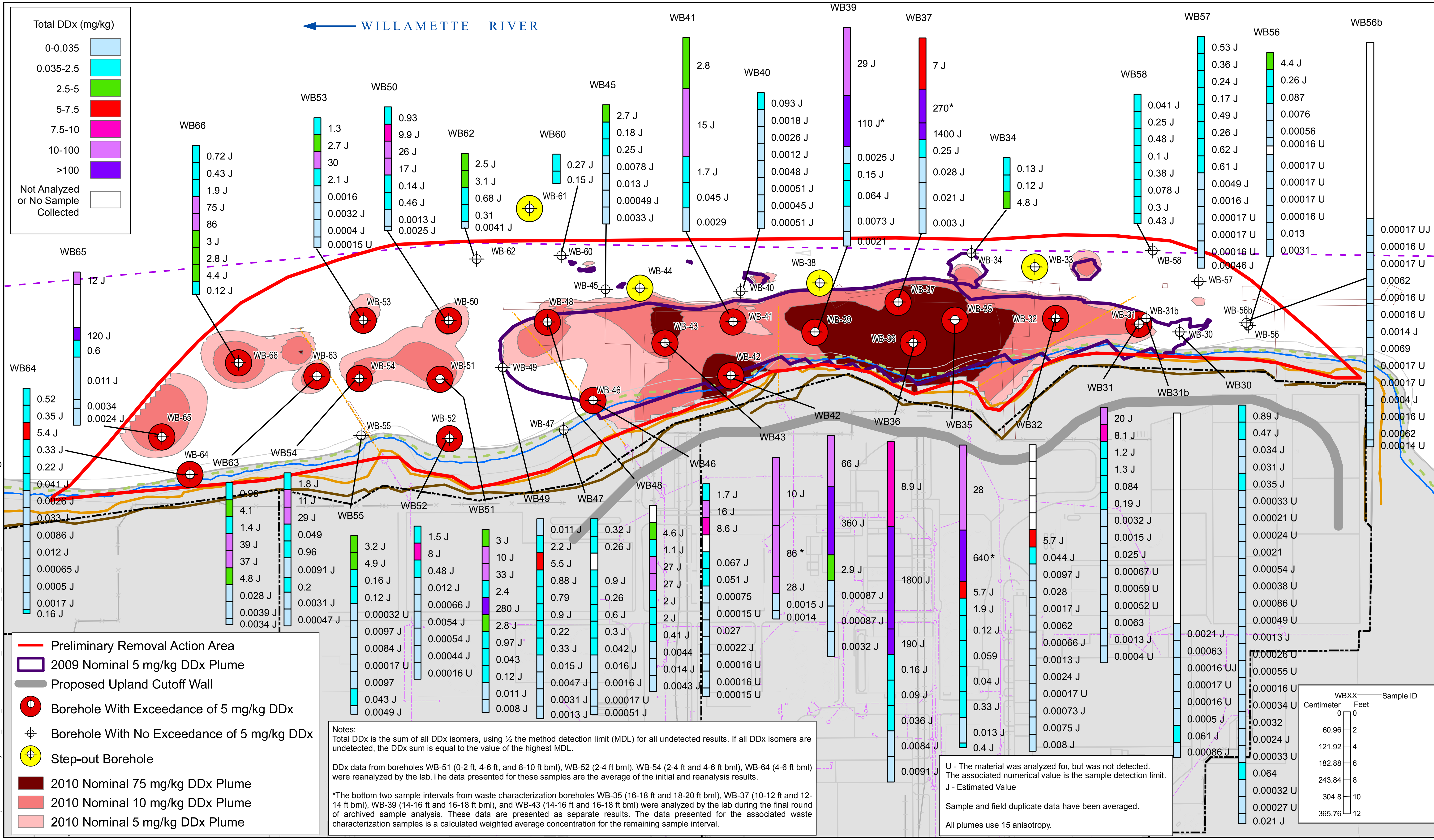
0 100 200 Feet

N

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- Existing Sewer Line
- Storm Drain
- River Edge +13 ft NAVD
- Ordinary High Water
- Top of Bank

Figure 2-1
2009 EE/CA Borehole Locations
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

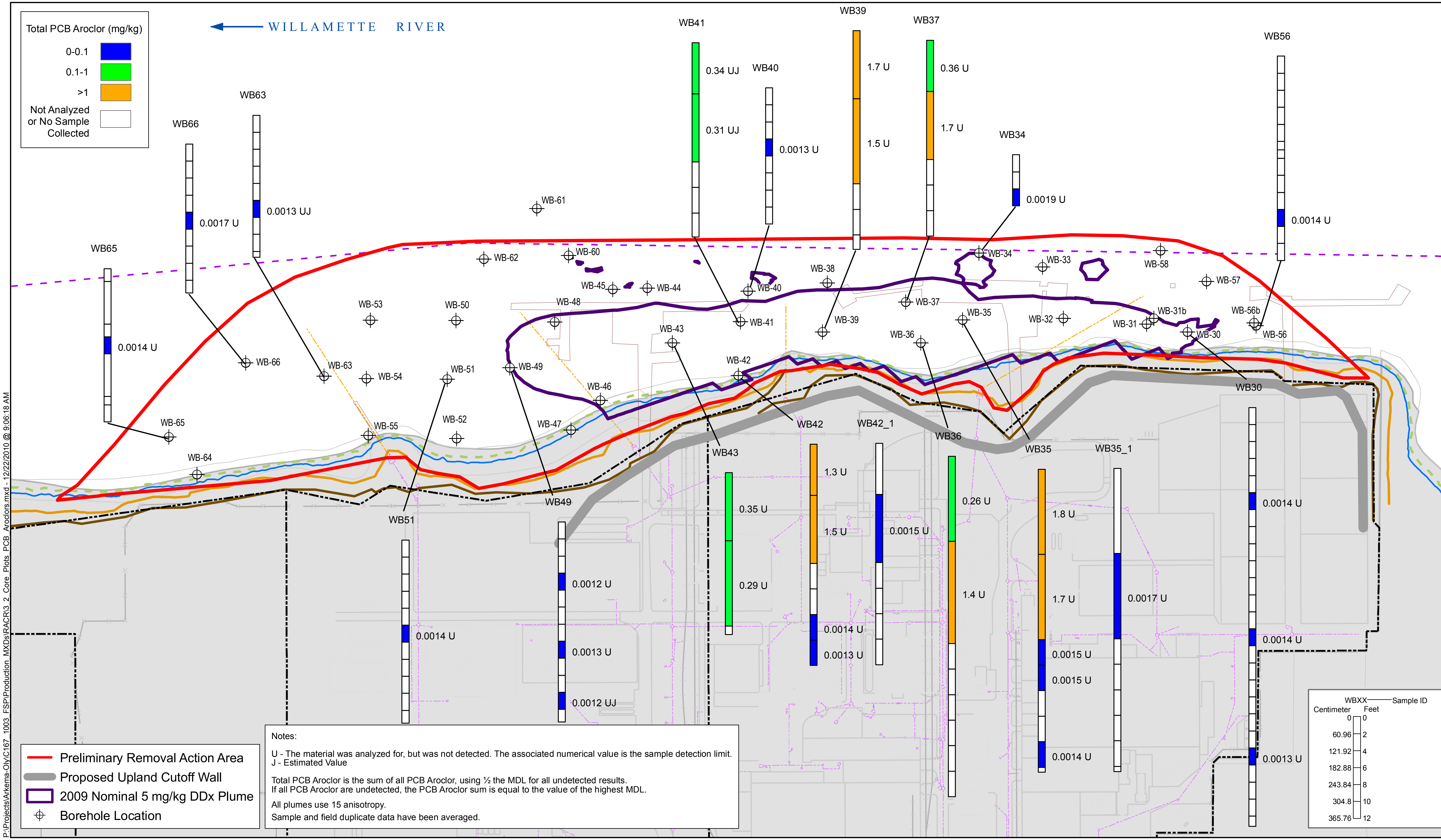
FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.

0 150 300 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- River Edge +13 ft NAVD
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

Figure 3-1
Core Plots of DDx Sediment Data (2009 EE/CA Boreholes)
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers.

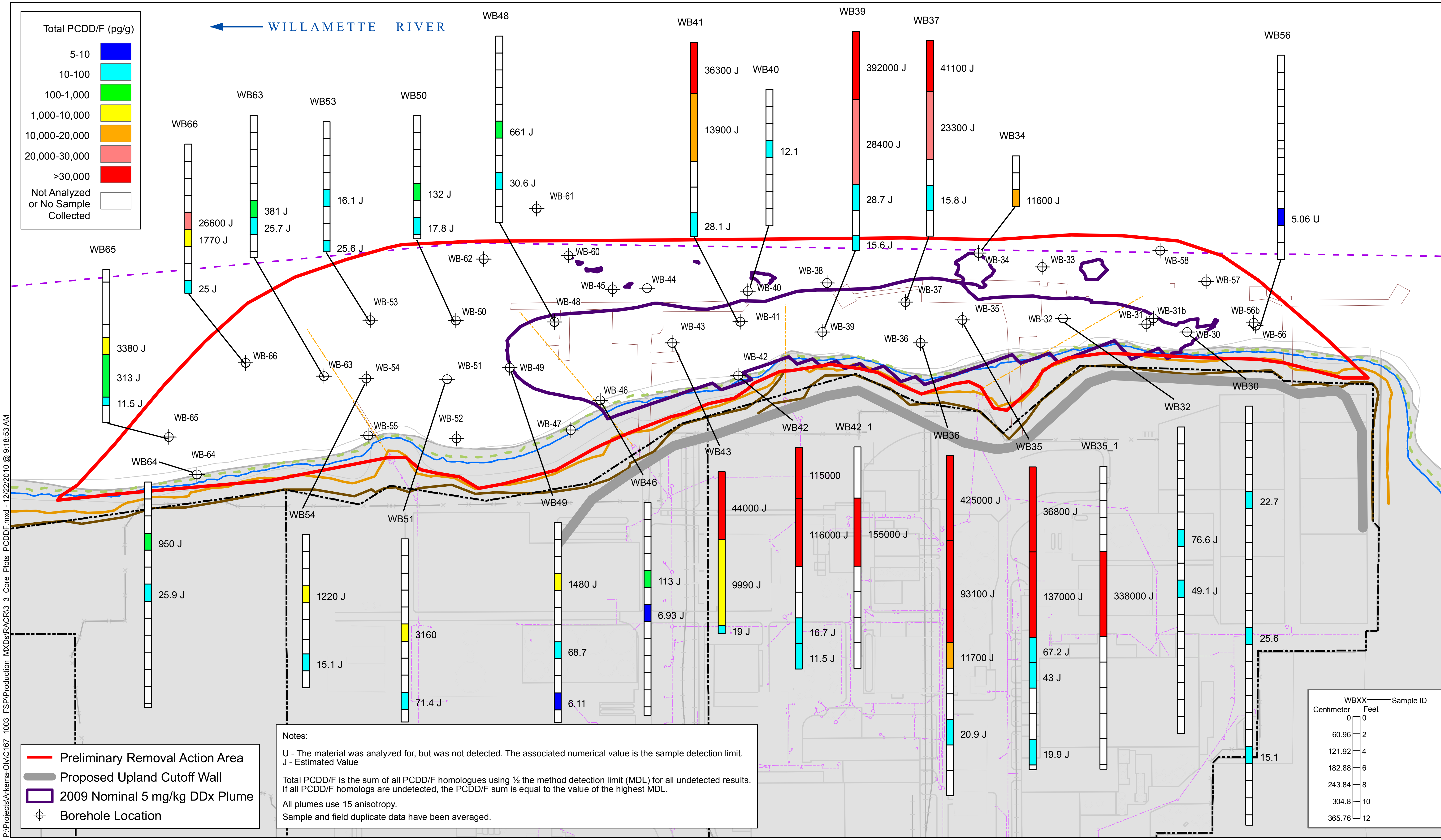
0 150 300 Feet

N

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- River Edge +13 ft NAVD
- Ordinary High Water
- Top of Bank

Figure 3-2
Core Plots of Total PCB Aroclor
Sediment Data (2009 EE/CA Boreholes)
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

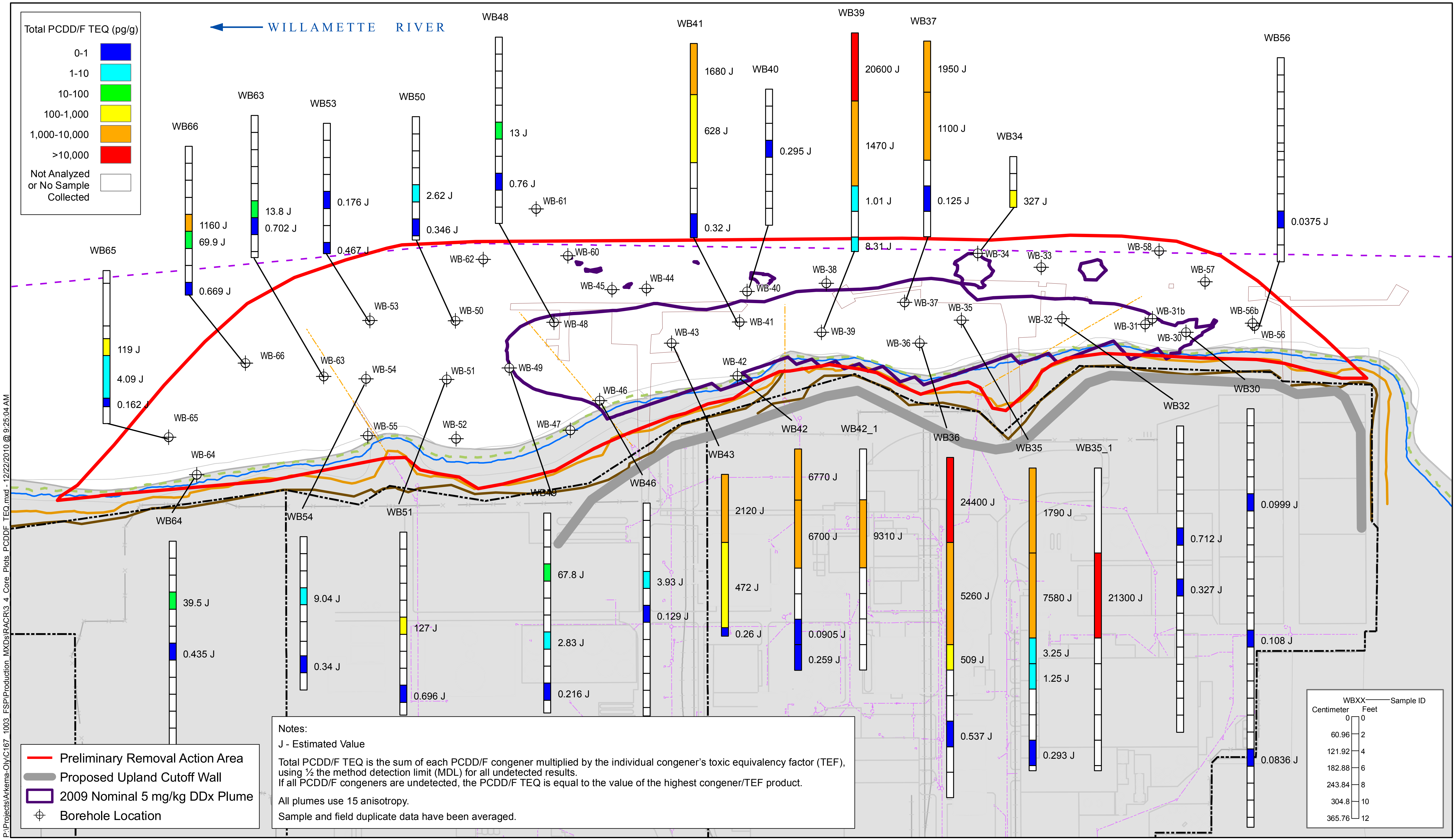
FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers.

0 150 300 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- River Edge +13 ft NAVD
- Ordinary High Water
- Top of Bank

Figure 3-3
Core Plots of Total PCDD/F
Sediment Data (2009 EE/CA Boreholes)
Arkema Early Action
Removal Action Area Characterization Report



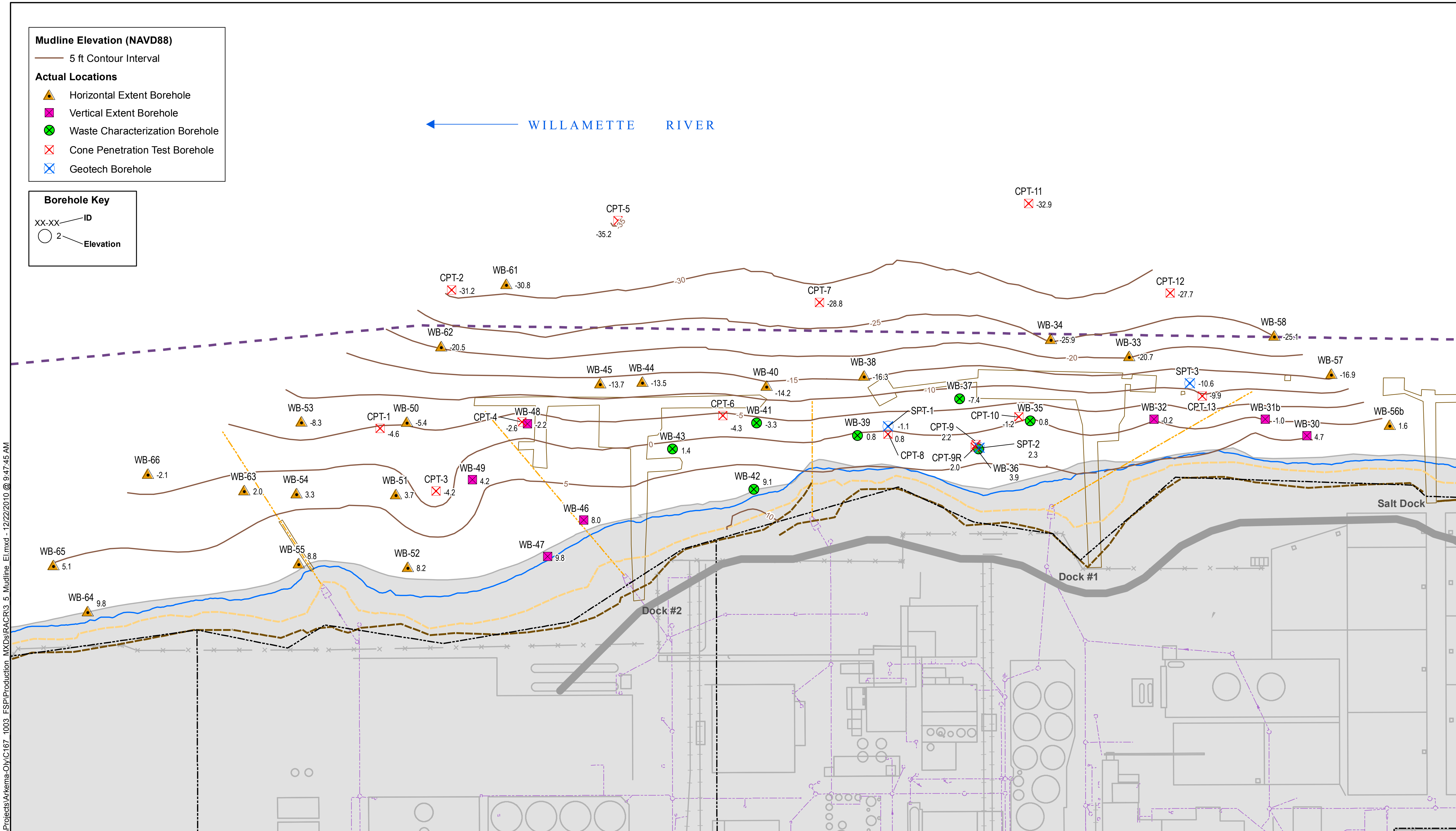
FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers.

0 150 300 Feet

Map Features

Property and Lot Boundary
Docks and Structures
Navigation Channel
12 ft Contour
Existing Sewer Line
Storm Drain
River Edge +13 ft NAVD
Ordinary High Water
Top of Bank

Figure 3-4
Core Plots of Total PCDD/F TEQ
Sediment Data (2009 EE/CA Boreholes)
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers
NOTE: All borehole elevations are feet (NAVD88).

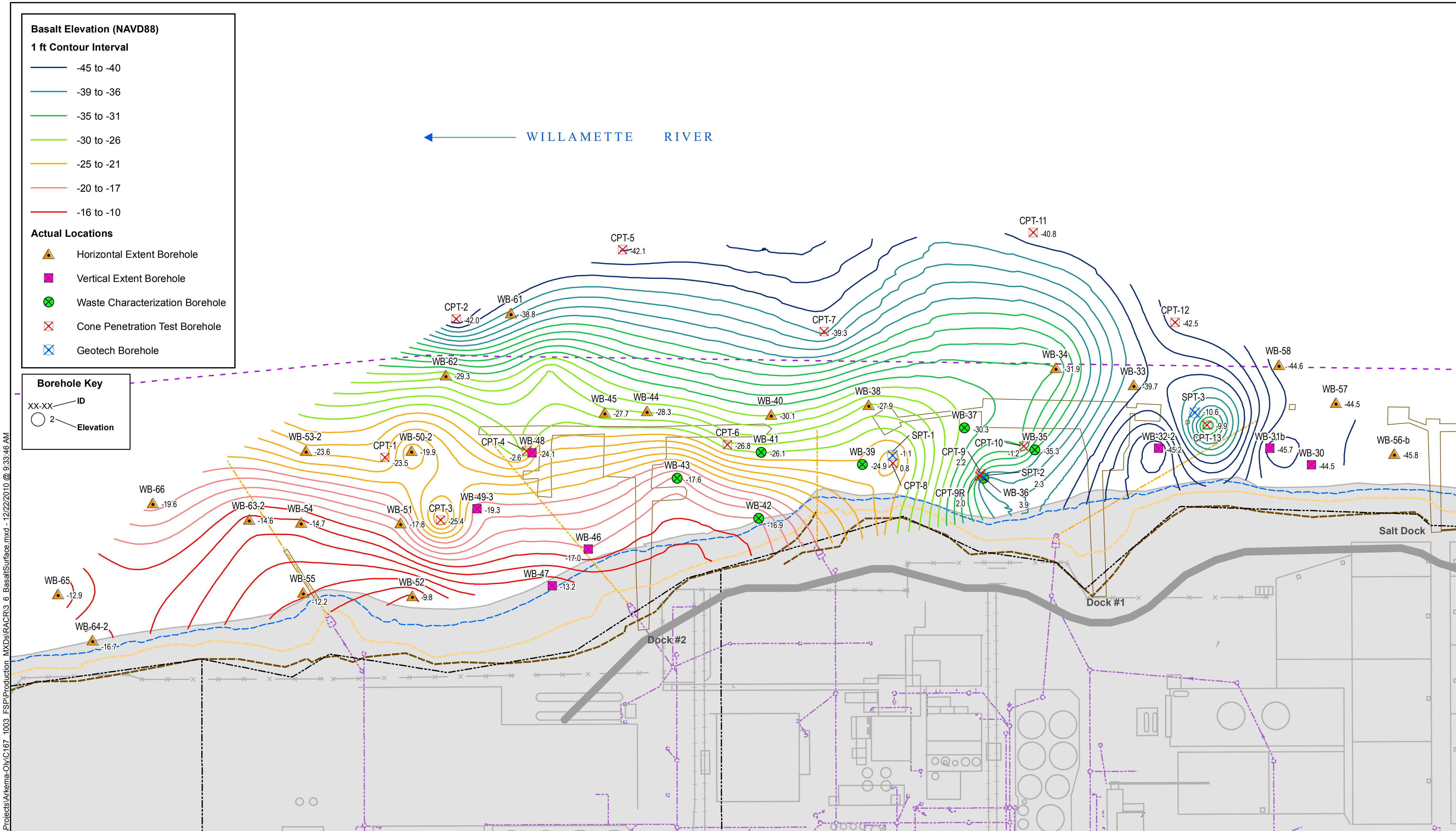
0 100 200 Feet

N

Map Features

- Property and Lot Boundary
- Proposed Upland Cutoff Wall
- Docks and Structures
- Navigation Channel
- Existing Sewer Line
- Storm Drain
- River Edge +13 ft NAVD
- Ordinary High Water
- Top of Bank

Figure 3-5
Mudline Elevation Map
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers.
NOTE: All borehole elevations are feet (NAVD88).

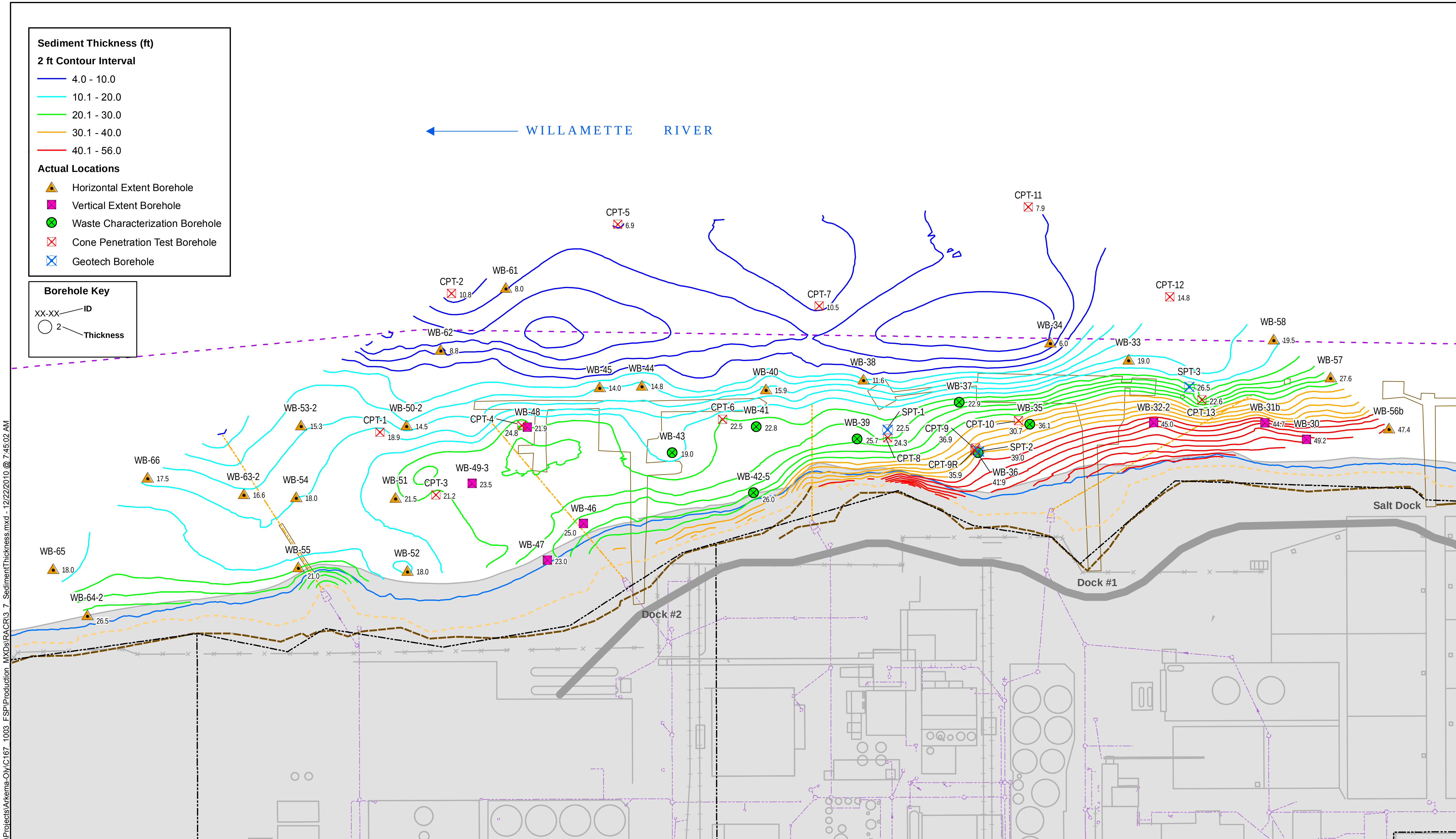
0 100 200 Feet

N

Map Features

Property and Lot Boundary
Proposed Upland Cutoff Wall
Docks and Structures
Navigation Channel
Existing Sewer Line
Storm Drain
River Edge +13 ft NAVD
Ordinary High Water
Top of Bank

Figure 3-6
Basalt Elevation Map
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers

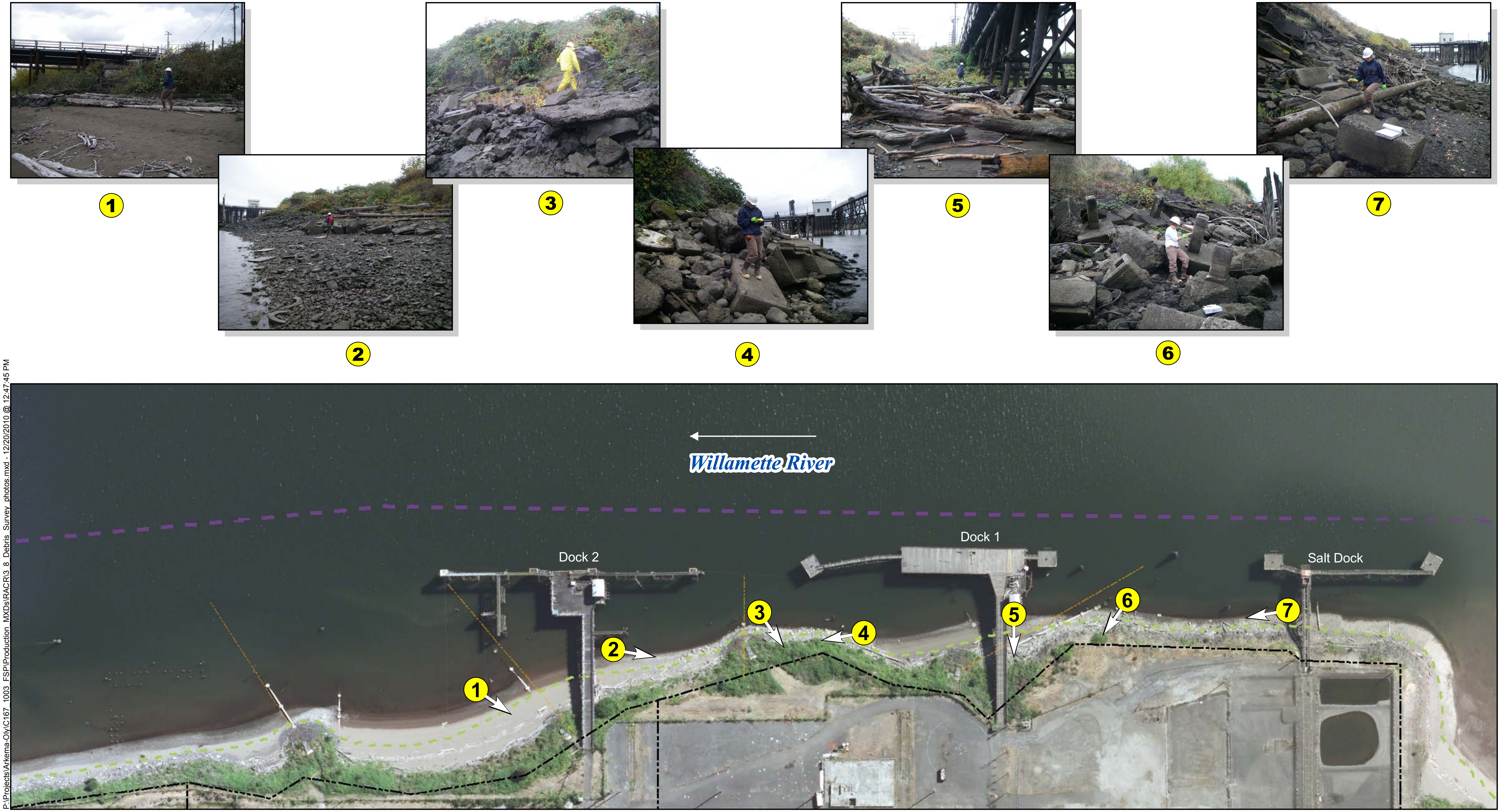
0 100 200 Feet

N

Map Features

Property and Lot Boundary
Proposed Upland Cutoff Wall
Docks and Structures
Navigation Channel
Existing Sewer Line
Storm Drain
River Edge +13 ft NAVD
Ordinary High Water
Top of Bank

Figure 3-7
Sediment Thickness Map
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Aerial: Metro, June-July 2009

0 75 150 Feet

N

1 Photo Location

Property and Lot Boundary

Storm Drain

12ft Contour

Navigation Channel

Figure 3-8
Visual Surface Debris Survey
Selected Photos with Locations
Arkema Early Action
Removal Action Area Characterization Report

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integral consulting inc.

FEATURE SOURCES:
Aerial: Metro, June-July 2009

0 25 50 Feet

N

Map Features

Property and Lot Boundary
Storm Drain
12ft Contour
Navigation Channel

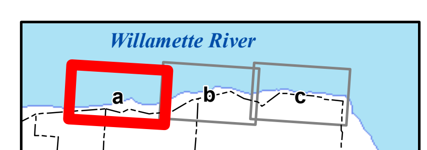

Figure 3-9a
Visual Surface Debris Survey
Northern Portion of Preliminary RAA Boundary
Arkema Early Action
Removal Action Area Characterization Report

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integral consulting inc.

FEATURE SOURCES:
Aerial: Metro, June-July 2009

0 25 50 Feet

N

Map Features

Property and Lot Boundary

Storm Drain

12ft Contour

Navigation Channel

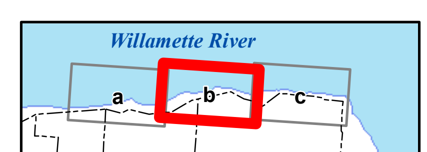
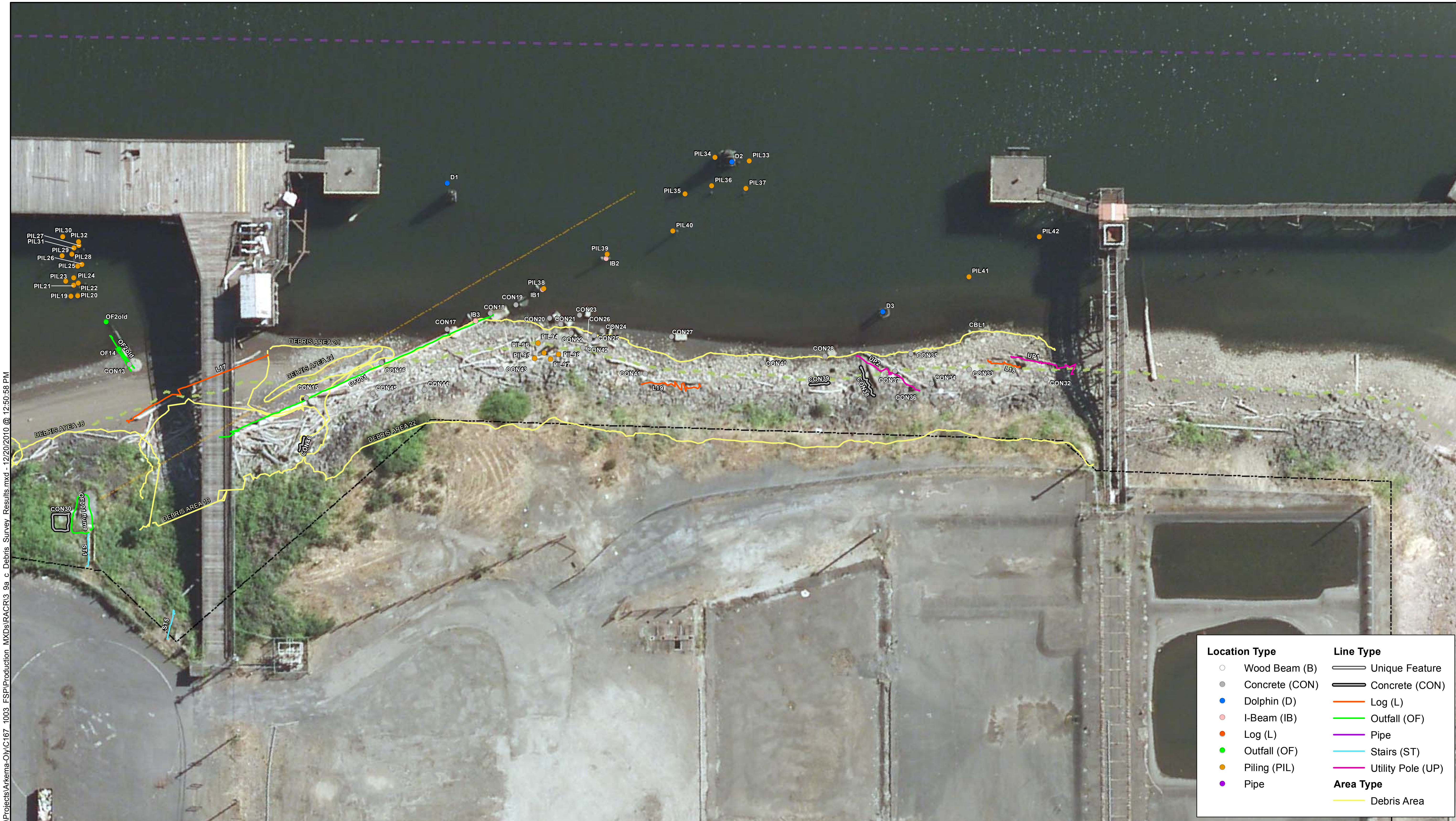


Figure 3-9b
Visual Surface Debris Survey
Central Portion of Preliminary RAA Boundary
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Aerial: Metro, June-July 2009

0 25 50 Feet

N

Map Features

- Property and Lot Boundary
- Storm Drain
- 12ft Contour
- Navigation Channel

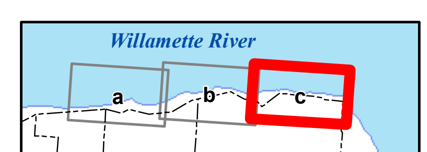

Figure 3-9c
Visual Surface Debris Survey
Southern Portion of Preliminary RAA Boundary
Arkema Early Action
Removal Action Area Characterization Report

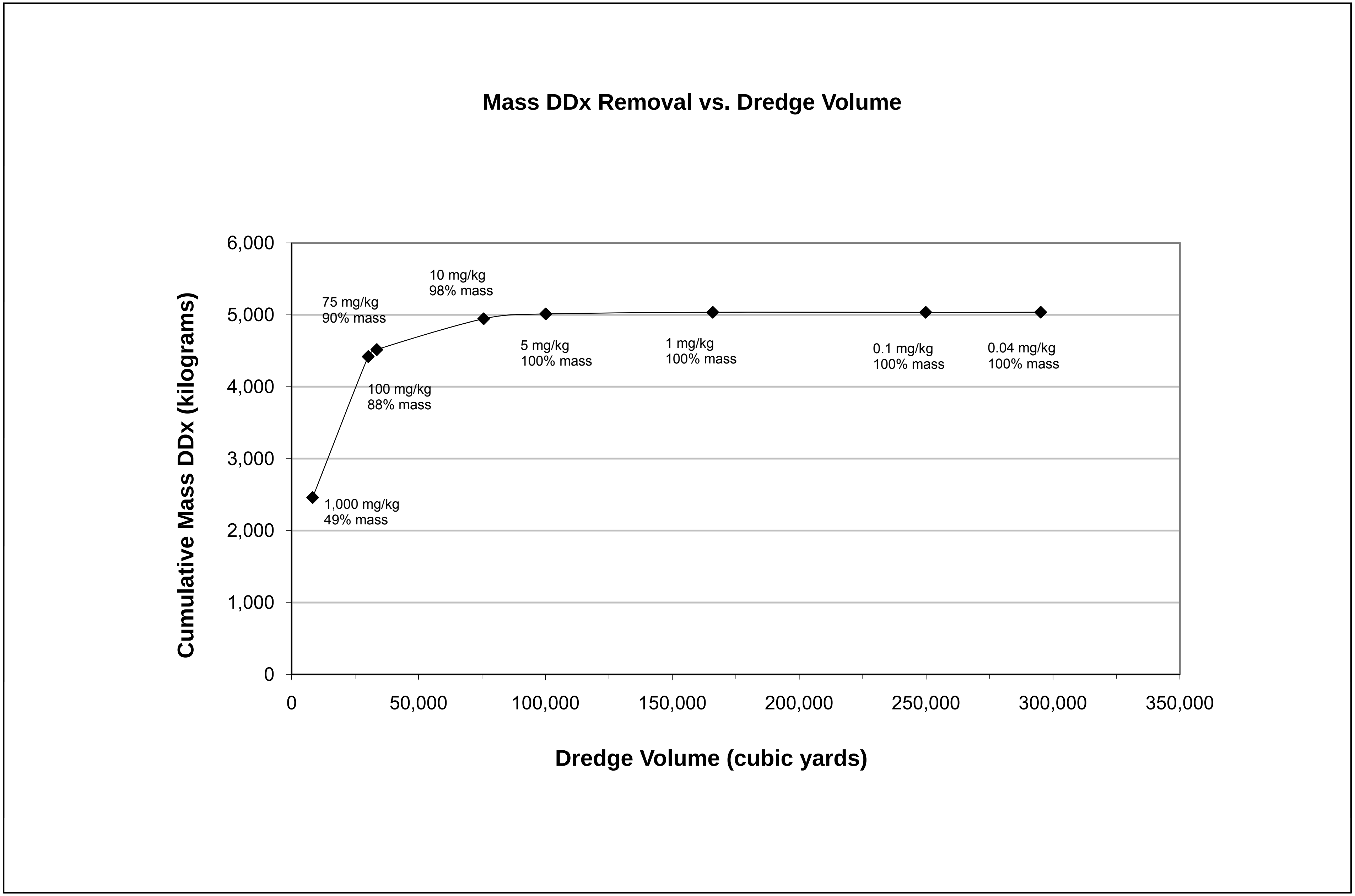

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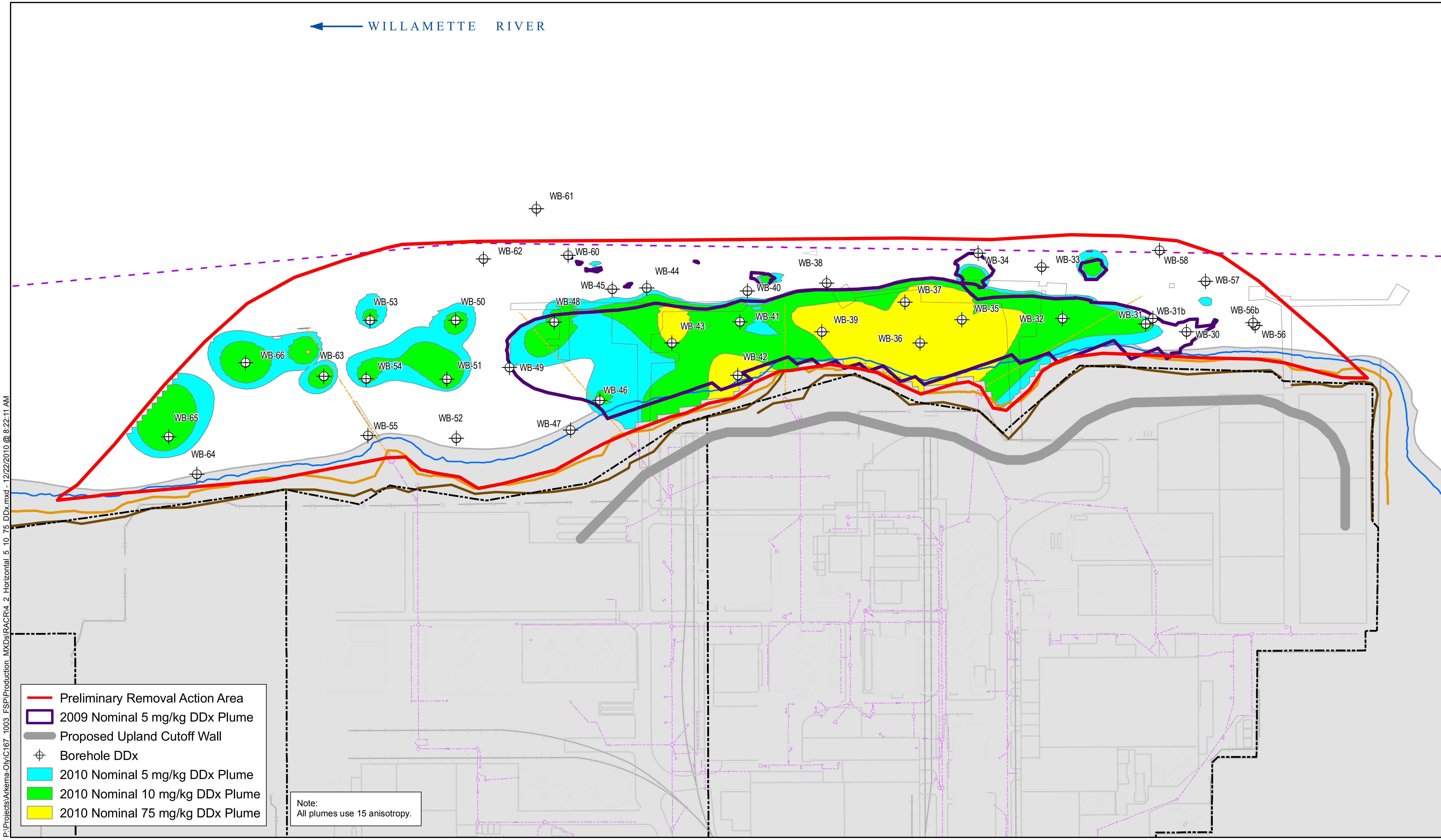
Figure 4-1
DDx Mass Removal Breakpoint Analysis Graph
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers

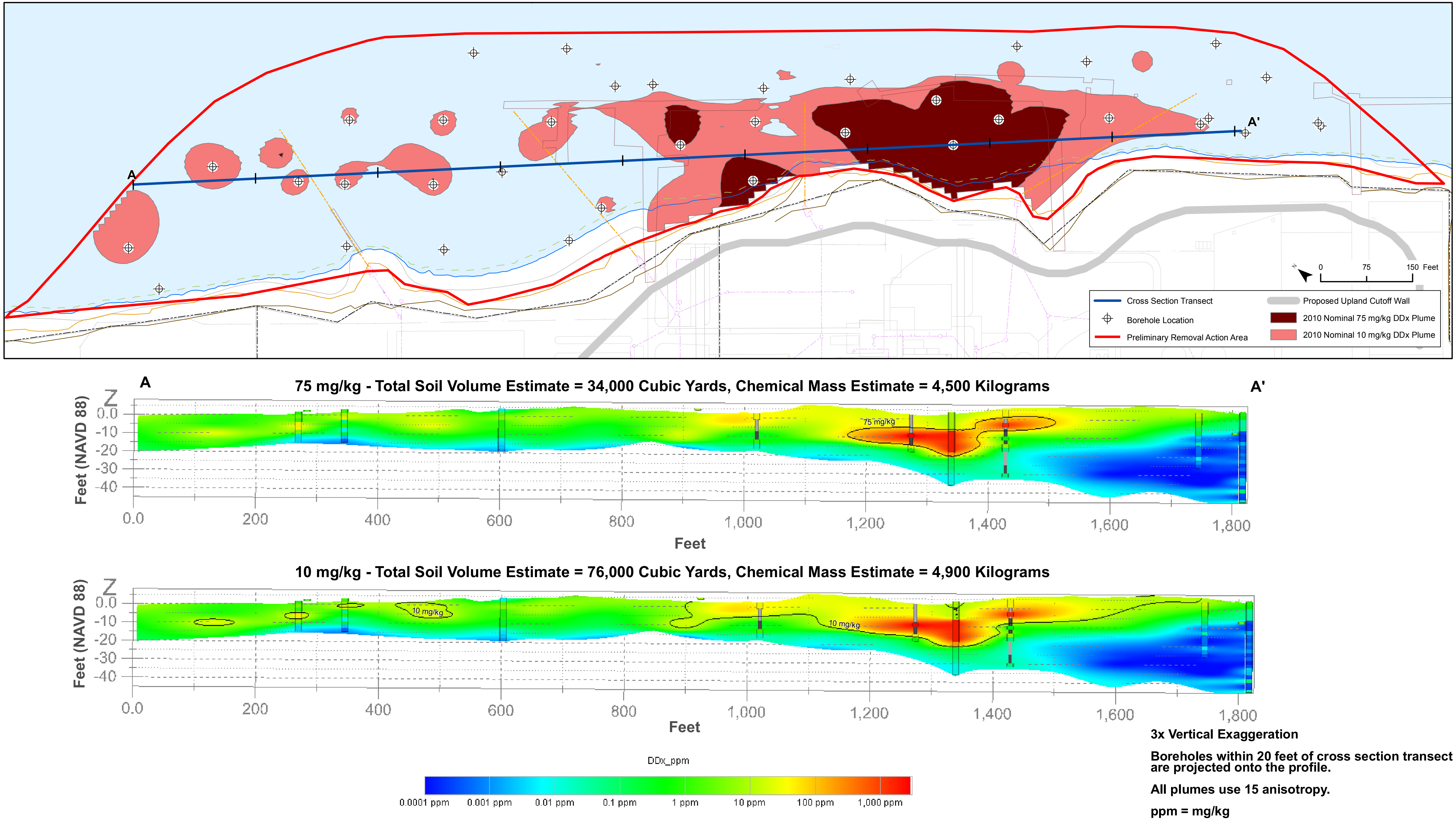
0 100 200 Feet

N

Map Features

Property and Lot Boundary
Navigation Channel
Storm Drain
Existing Sewer Line
Top of Bank
Ordinary High Water
Docks and Structures
River Edge +13 ft NAVD

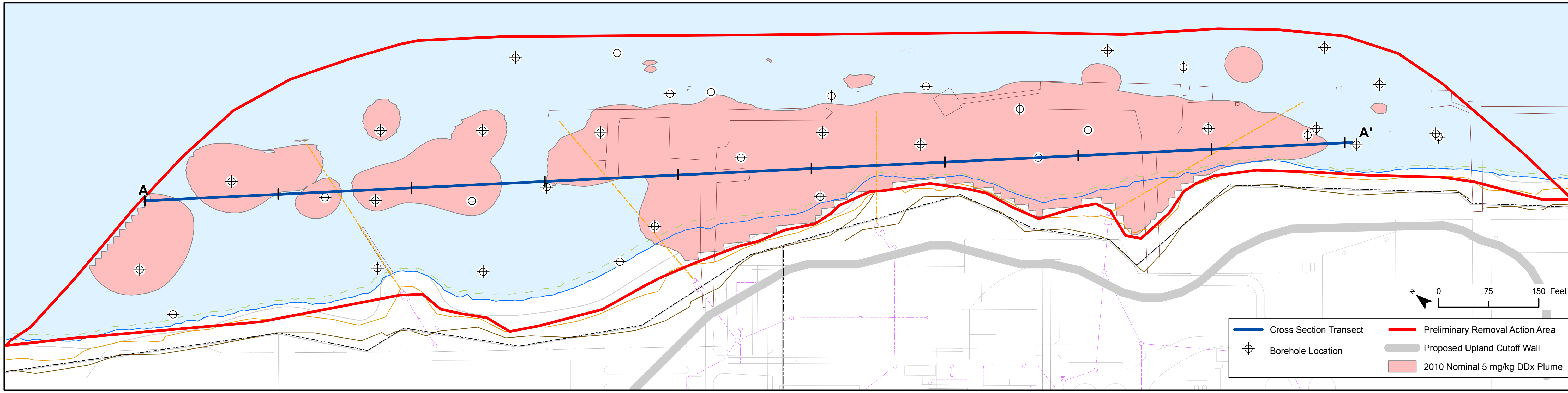
Figure 4-2
Horizontal Extent of the 5, 10, and 75 mg/kg DDx Sediment Boundaries
Arkema Early Action
Removal Action Area Characterization Report

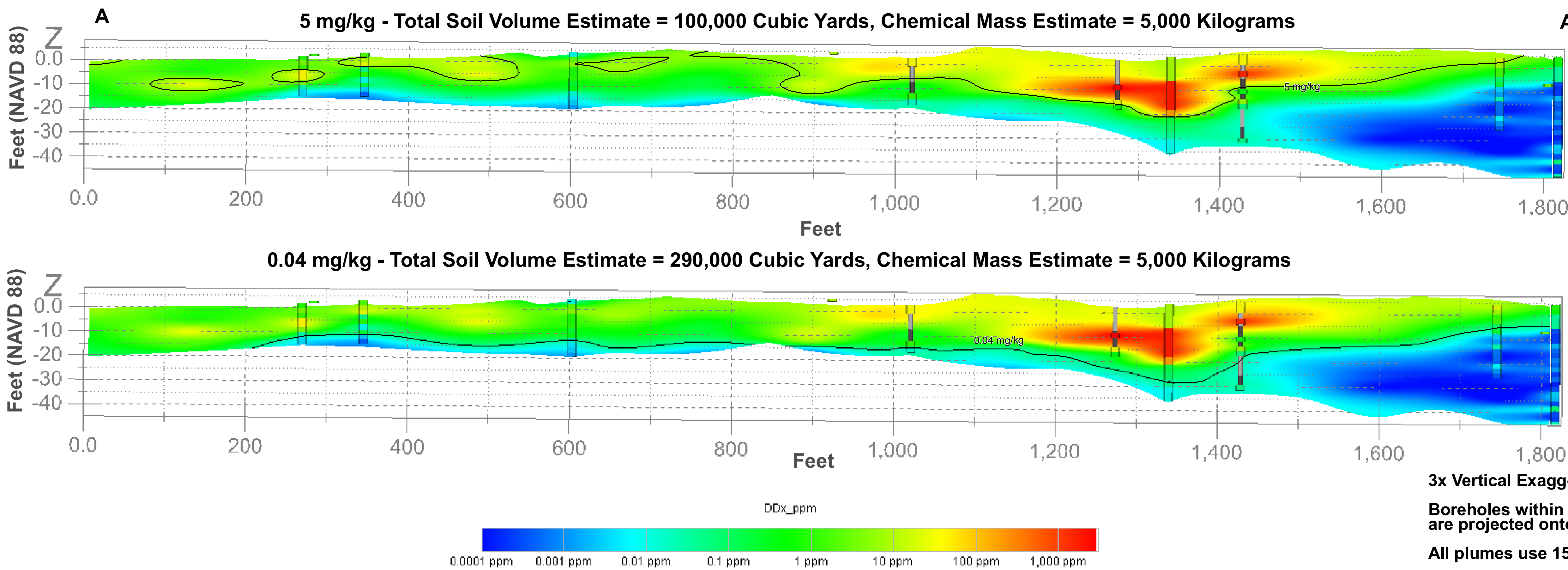


Map Features

- Property and Lot Boundary
- 12 ft Contour
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-3a
Cross Sections Showing the Extent
of the 75 and 10 mg/kg DDx Sediment Vertical Boundaries
Arkema Early Action
Removal Action Area Characterization Report





3x Vertical Exaggeration

Boreholes within 20 feet of cross section transect are projected onto the profile.

All plumes use 15 anisotropy.

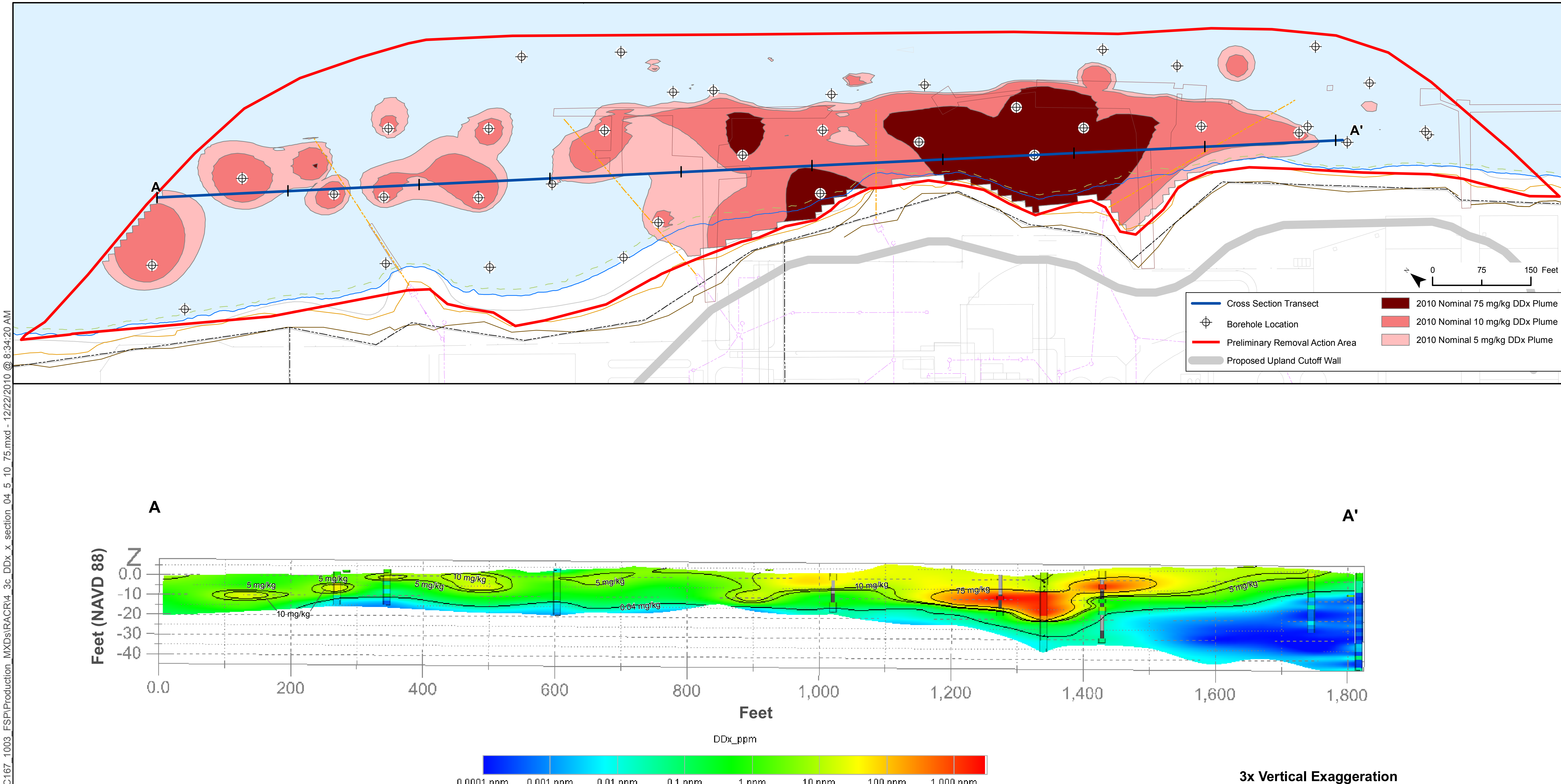
ppm = mg/kg

integral consulting inc.

Map Features

- Property and Lot Boundary
- 12 ft Contour
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-3b
Cross Sections Showing the Extent
of the 5 and 0.04 mg/kg DDx Sediment Vertical Boundaries
Arkema Early Action
Removal Action Area Characterization Report



3x Vertical Exaggeration

Boreholes within 20 feet of cross section transect are projected onto the profile.

All plumes use 15 anisotropy.

ppm = mg/kg

Map Features

- Property and Lot Boundary
- 12 ft Contour
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-3c
Summary of Cross Sections Showing the Extent of the 75, 10, 5, and 0.04 mg/kg DDx Sediment Vertical Boundaries
Arkema Early Action
Removal Action Area Characterization Report

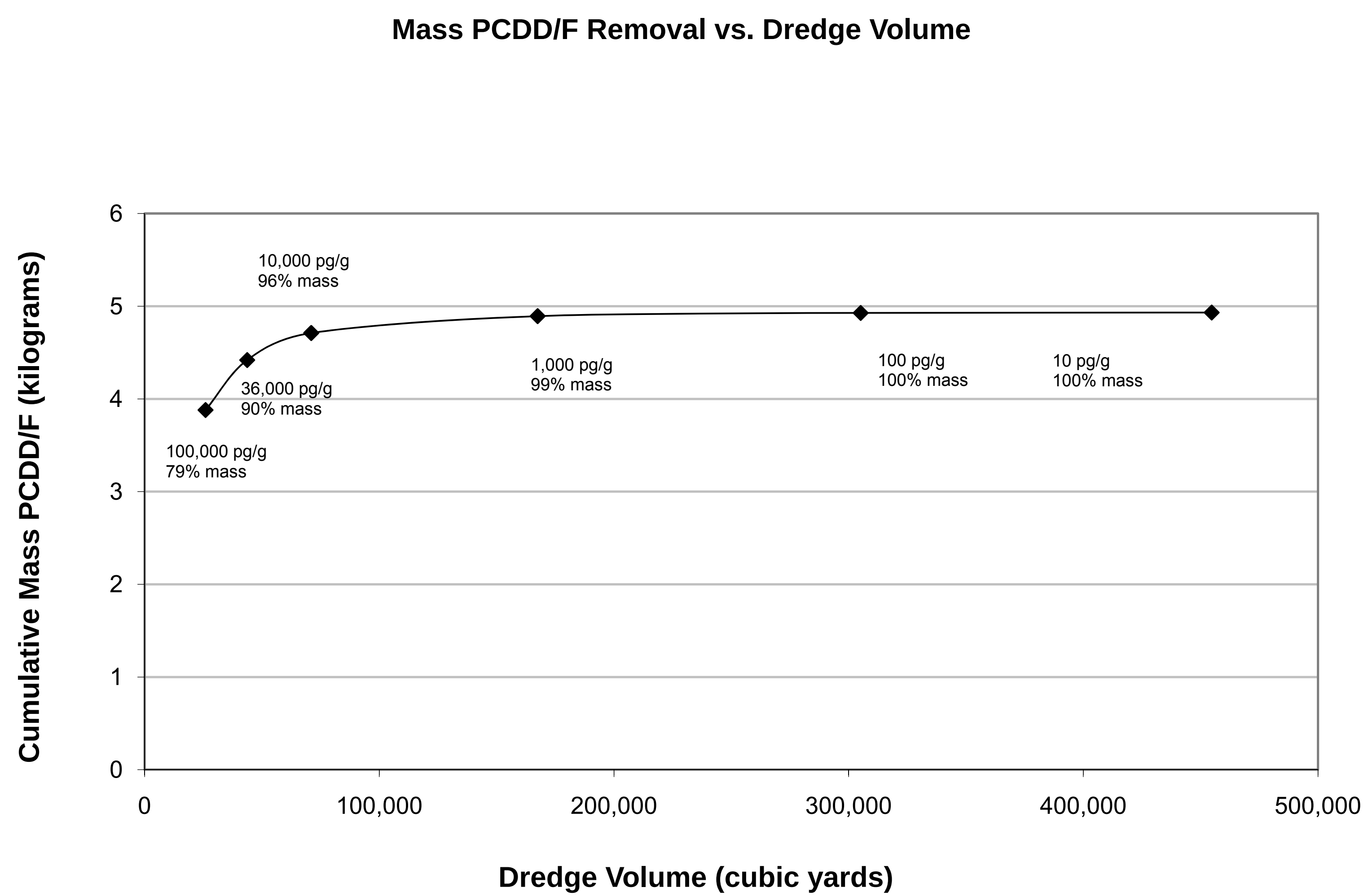
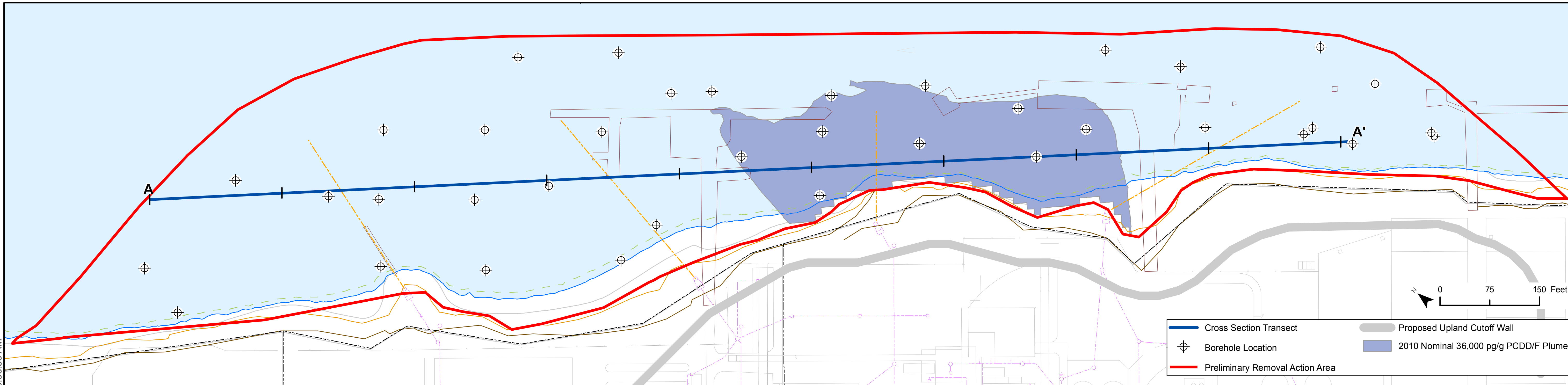
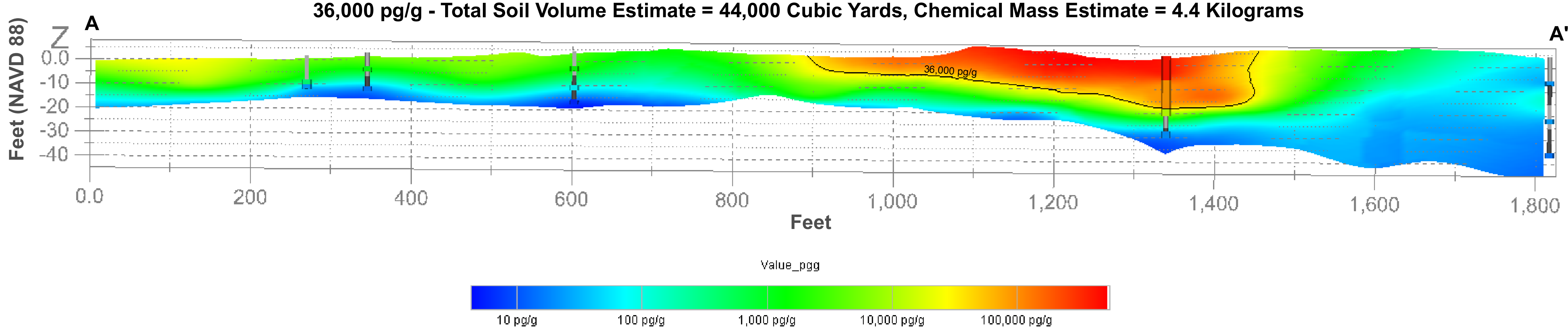


Figure 4-4
Total PCDD/F Mass Removal Breakpoint Analysis Graph
Arkema Early Action
Removal Action Area Characterization Report



36,000 pg/g - Total Soil Volume Estimate = 44,000 Cubic Yards, Chemical Mass Estimate = 4.4 Kilograms



3x Vertical Exaggeration

Boreholes within 20 feet of cross section transect are projected onto the profile.

All plumes use 15 anisotropy.

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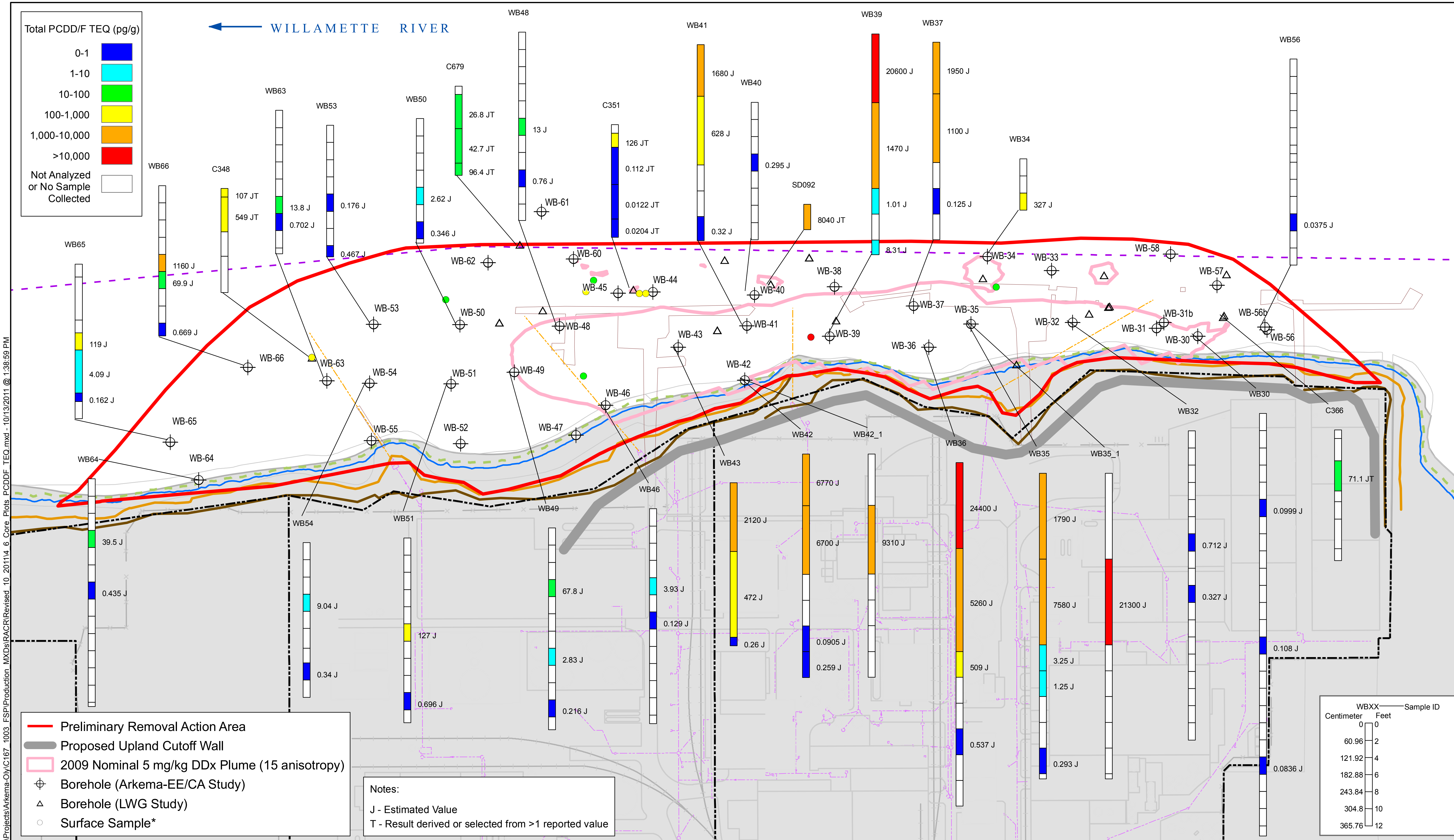
integral consulting inc.

Map Features

- Property and Lot Boundary
- 12 ft Contour
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-5
Horizontal and Vertical Distribution of Total PCDD/F in Sediments within the Preliminary RAA Boundary
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.
NOTE: Bottom of cores are generally placed at core sample station, if not possible a tag line indicates the sample location.

N

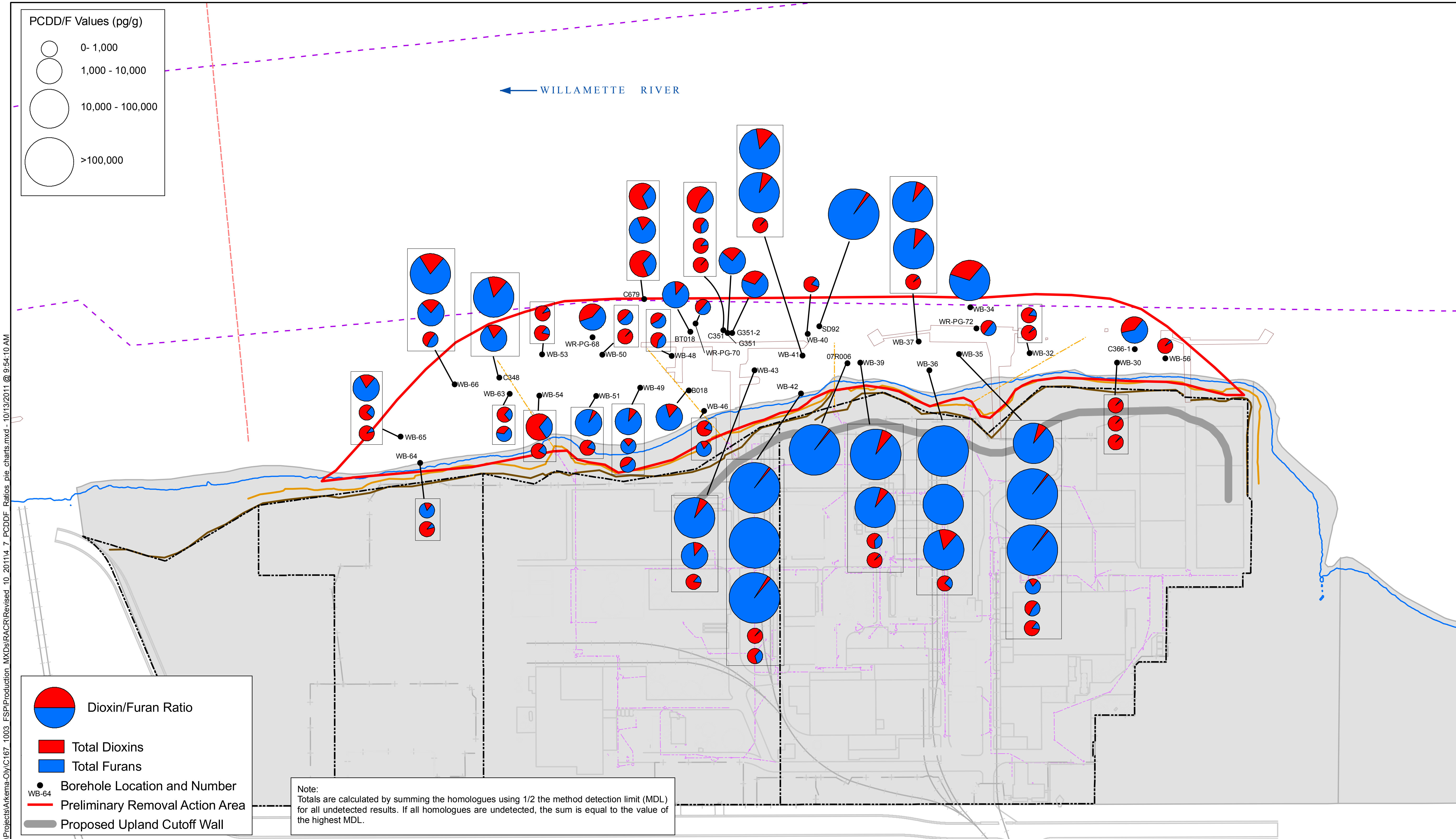
0 100 200 400 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

*Where Total PCDD/F TEQ is detected, symbol color represents Total PCDD/F TEQ concentration.

Figure 4-6
PCDD/F TEQ Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

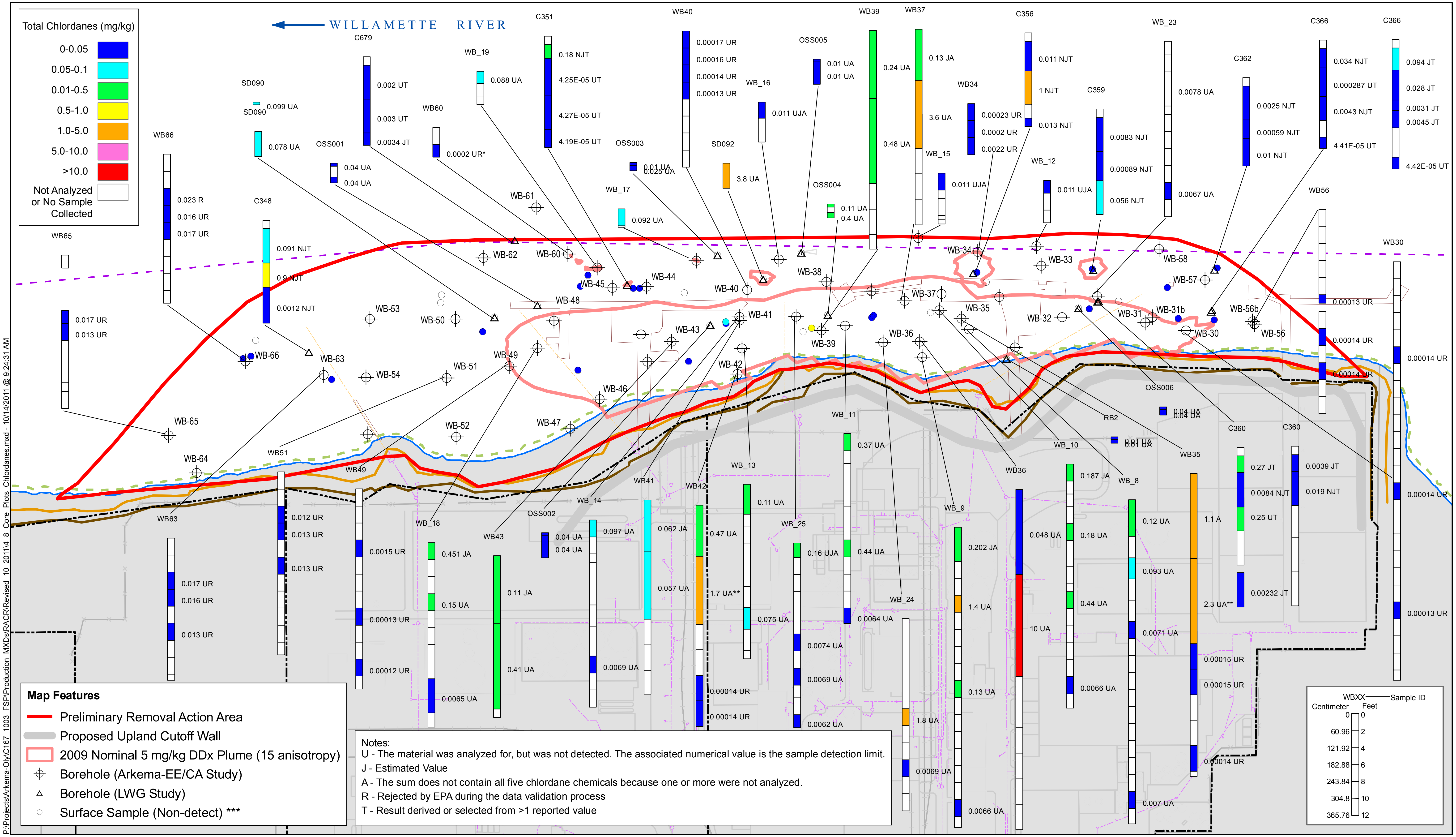
FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers

0 150 300 Feet

Map Features

- Property and Lot Boundary
- Navigation Channel
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-7
PCDD/PCDF Ratios in Sediment Samples
Arkema Early Action
Removal Action Area Characterization Report



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integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.
NOTE: Bottom of cores are generally placed at core sample station, if not possible a tag line indicates the sample location.

0 100 200 400 Feet

Map Features

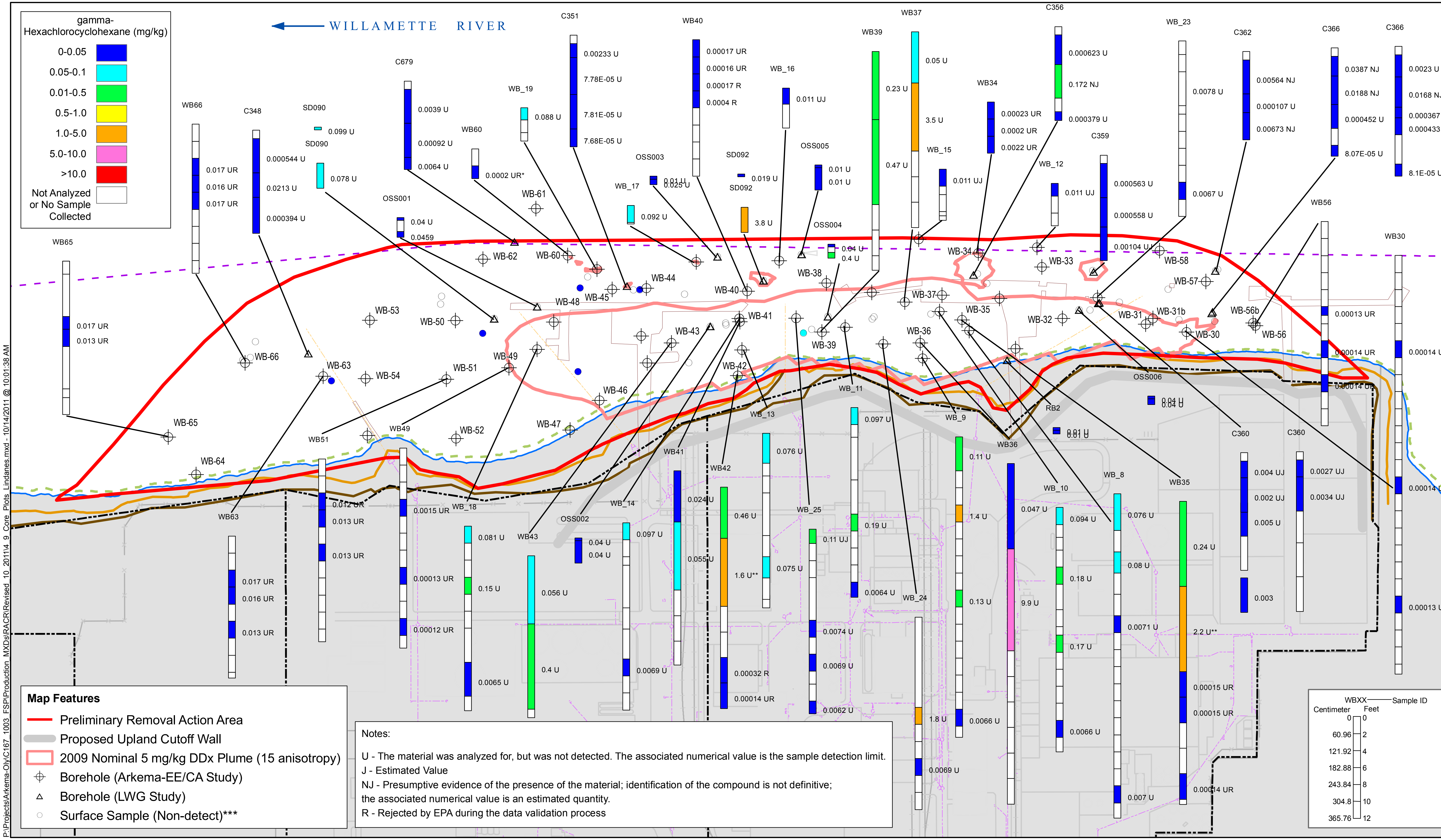
- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

*This sample identification was shown as ARK-WB-60-2-3-7 ft bml on EPA's split sampling table. According to the borehole log, the sediment sample was collected from 2-3.5 ft bml (basalt was encountered from 3.5-3.7 ft bml, but was not incorporated into the sample). The sample interval was therefore changed to 2-3.5 ft bml on the core plot.

**LSS and EPA both analyzed the sediment sample from this interval. The higher of the two values is shown.

***Where Total Chlordanes are detected, symbol color represents Total Chlordane concentration.

Figure 4-8
Total Chlordane Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.
NOTE: Bottom of cores are generally placed at core sample station, if not possible a tag line indicates the sample location.

0 100 200 400 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

*This sample identification was shown as ARK-WB-60-2-3-7 ft bml on EPA's split sampling table. According to the borehole log, the sediment sample was collected from 2-3.5 ft bml (basalt was encountered from 3.5-3.7 ft bml, but was not incorporated into the sample). The sample interval was therefore changed to 2-3.5 ft bml on the core plot.

**LSS and EPA both analyzed the sediment sample from this interval. The higher of the two values is shown.

***Where gamma-Hexachlorocyclohexane is detected, symbol color represents Lindane concentration.

Figure 4-9
gamma-Hexachlorocyclohexane Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report

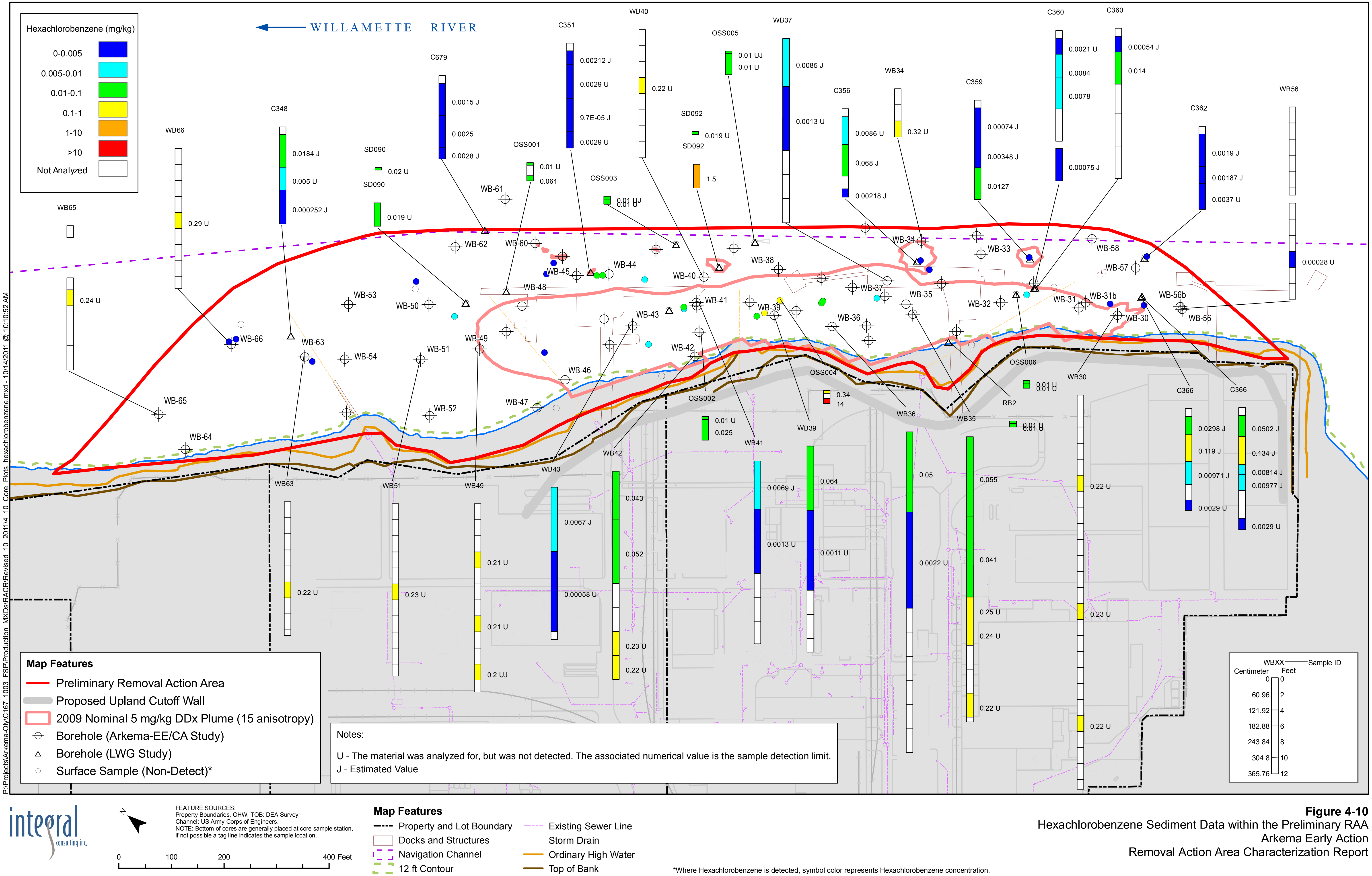
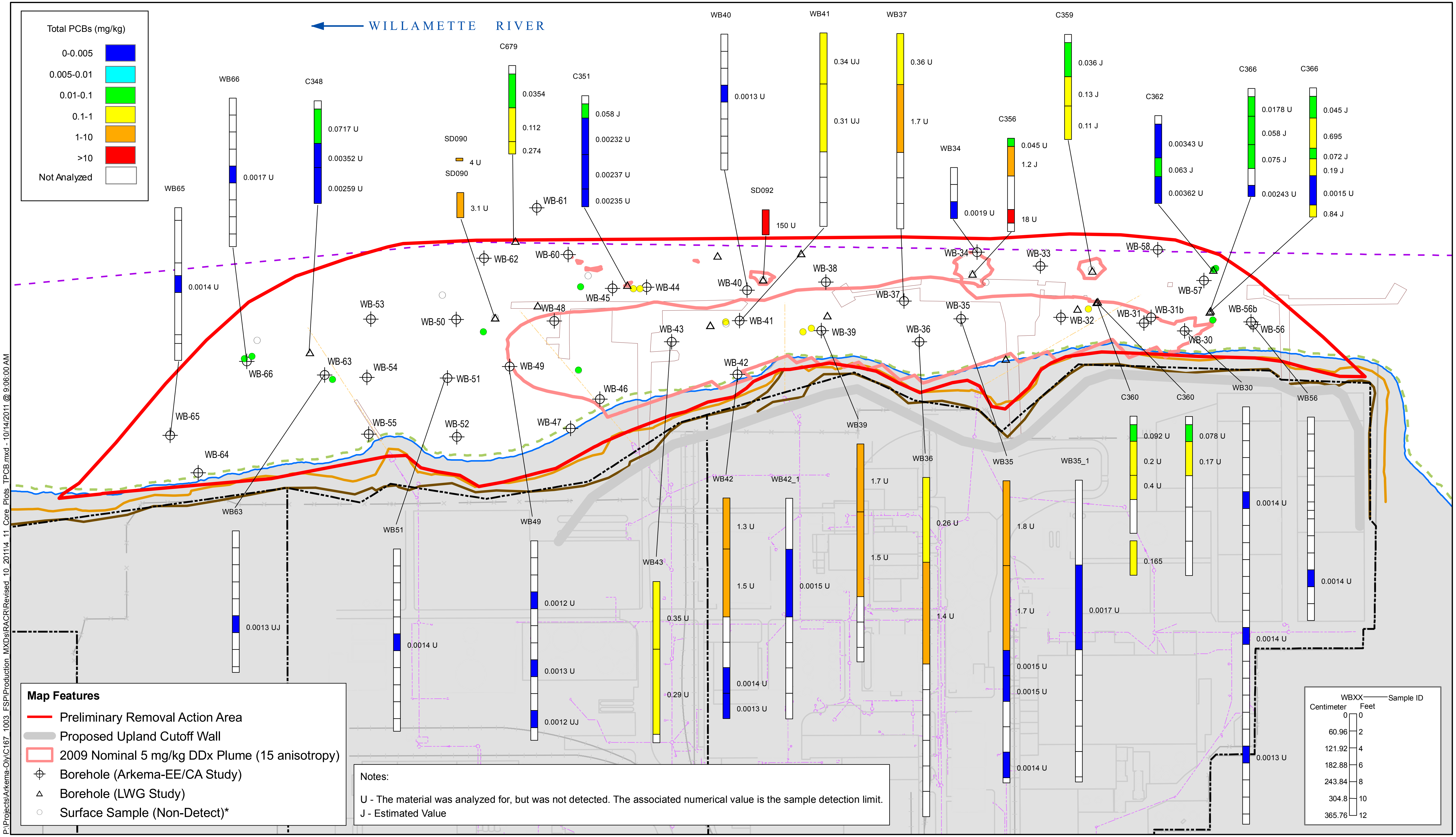


Figure 4-10
Hexachlorobenzene Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

N

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.
NOTE: Bottom of cores are generally placed at core sample station, if not possible a tag line indicates the sample location.

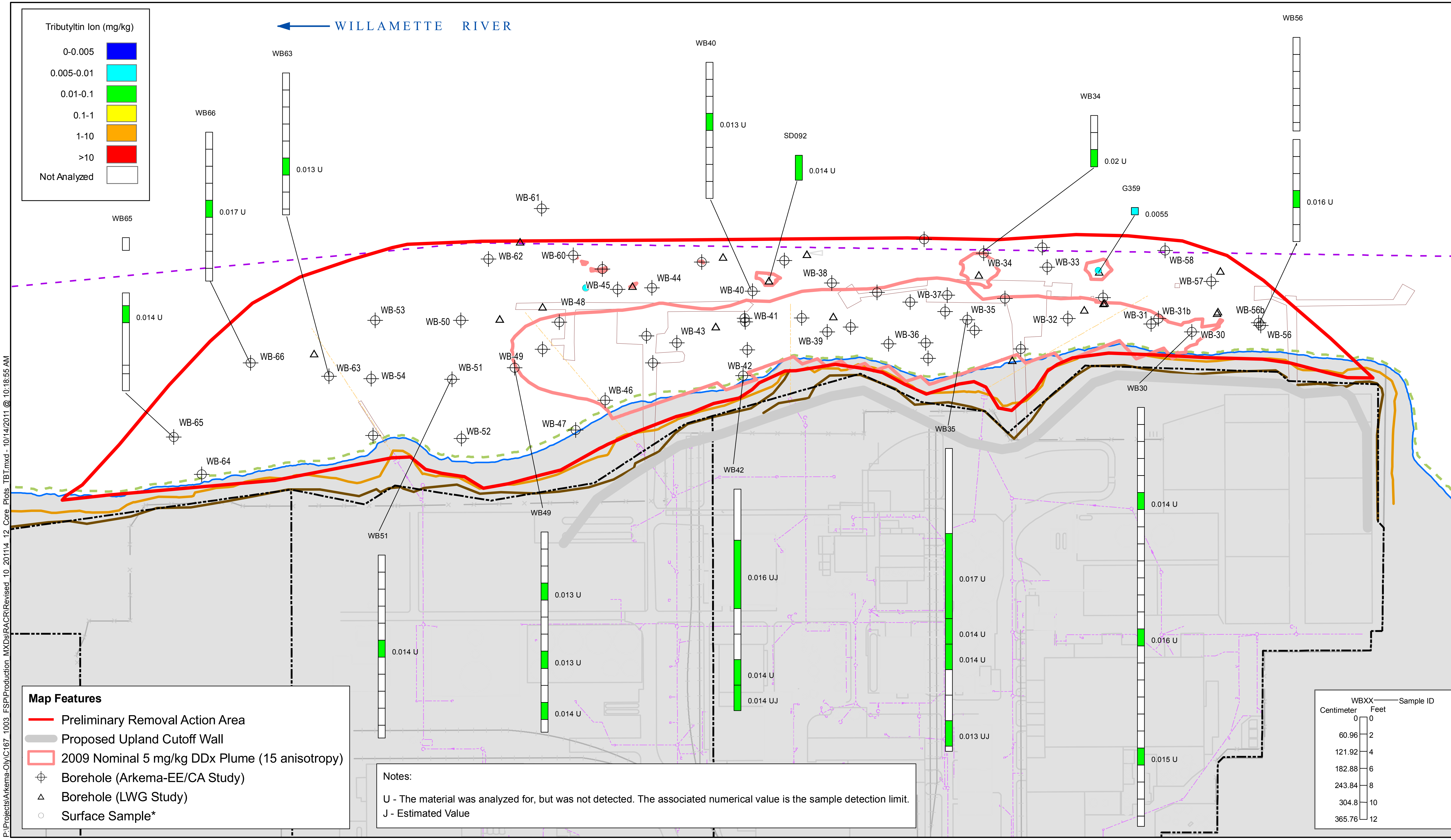
0 100 200 400 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

*Where Total PCBs are detected, symbol color represents Total PCBs concentration.

Figure 4-11
Total PCB Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Channel: US Army Corps of Engineers.
NOTE: Bottom of cores are generally placed at core sample station, if not possible a tag line indicates the sample location.

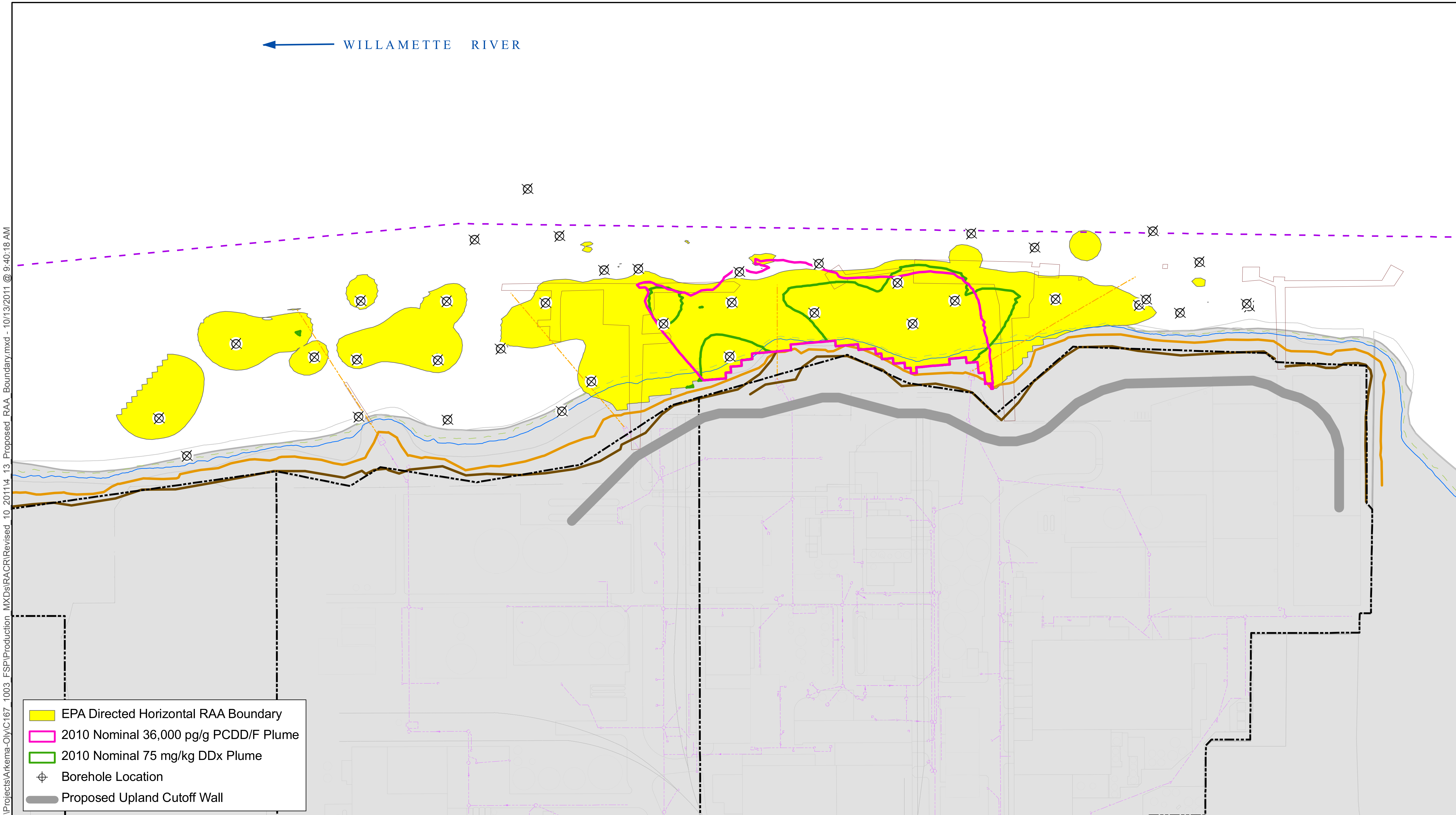
0 100 200 400 Feet

Map Features

- Property and Lot Boundary
- Docks and Structures
- Navigation Channel
- 12 ft Contour
- Existing Sewer Line
- Storm Drain
- Ordinary High Water
- Top of Bank

*Where Tributyltin Ions are detected, symbol color represents Tributyltin Ion concentration.

Figure 4-12
Tributyltin Sediment Data within the Preliminary RAA
Arkema Early Action
Removal Action Area Characterization Report



integral consulting inc.

FEATURE SOURCES:
Property Boundaries, OHW, TOB: DEA Survey
Navigation Channel: US Army Corps of Engineers

0 100 200 Feet

N

Map Features

- Property and Lot Boundary
- Navigation Channel
- 12 ft Contour
- Storm Drain
- Existing Sewer Line
- Top of Bank
- Ordinary High Water
- Docks and Structures
- River Edge +13 ft NAVD

Figure 4-13
EPA Directed Horizontal RAA Boundary
Arkema Early Action
Removal Action Area Characterization Report

TABLES

Table 2-1. Borehole Coordinates, Elevations, and Sediment Thickness

Borehole Number	Easting (X)[a,b]	Northing (Y)[a,b]	Approximate Mudline Elevation (ft NAVD88)	Approximate Basalt Surface Elevation (ft NAVD88)	Sediment Thickness (ft)
CPT-1	7627451.7	702990.8	-4.6	-23.5	18.9
CPT-2	7627672.7	703040.7	-31.2	-42.0	10.8
CPT-3	7627434.0	702870.1	-4.2	-25.4	21.2
CPT-4	7627591.4	702839.0	-2.6	-27.4	24.8
CPT-5	7627905.2	702920.4	-35.2	-42.1	6.9
CPT-6	7627786.1	702621.1	-4.3	-26.8	22.5
CPT-7	7628002.4	702619.6	-28.8	-39.3	10.5
CPT-8	7627919.7	702419.9	0.8	-23.5	24.3
CPT-9	7627990.6	702312.2	2.2	-34.7	36.9
CPT-9R	7627986.9	702311.0	2.0	-33.9	35.9
CPT-10	7628061.3	702290.3	-1.2	-31.9	30.7
CPT-11	7628308.1	702479.1	-32.9	-40.8	7.9
CPT-12	7628340.5	702237.4	-27.7	-42.5	14.8
CPT-13	7628255.8	702105.7	-9.9	-32.5	22.6
SPT-1	7627928.2	702427.3	-1.1	-23.6	22.5
SPT-2	7627989.6	702305.5	2.3	-36.7	39.0
SPT-3	7628258.0	702131.1	-10.6	-37.1	26.5
WB-30	7628309.1	701952.2	4.7	-44.5	49.2
WB-31	7628272.8	702017.4	4.3	--	--
WB-31b	7628288.8	702013.8	-1.0	-45.7	44.7
WB-32	7628184.7	702137.9	-0.2	-45.2	45.0
WB-33	7628231.4	702225.5	-20.7	-39.7	19.0
WB-34	7628177.5	702328.6	-25.9	-31.9	6.0
WB-35	7628067.1	702274.2	0.8	-35.3	36.1
WB-36	7627987.4	702305.0	3.9	-38.0	41.9
WB-37	7628025.7	702373.0	-7.4	-30.3	22.9
WB-38	7627961.7	702502.3	-16.3	-27.9	11.6
WB-39	7627889.5	702452.5	0.8	-24.9	25.7
WB-40	7627859.4	702601.7	-14.2	-30.1	15.9
WB-41	7627808.8	702576.7	-3.3	-26.1	22.8
WB-42	7627732.7	702517.7	9.1	-16.9	26.0
WB-43	7627701.3	702645.9	1.4	-17.6	19.0
WB-44	7627747.8	702743.5	-13.5	-28.3	14.8
WB-45	7627706.6	702789.0	-13.7	-27.7	14.0
WB-46	7627539.7	702678.4	8.0	-17.0	25.0
WB-47	7627465.2	702684.7	9.8	-13.2	23.0
WB-48	7627594.5	702831.3	-2.2	-24.1	21.9

Table 2-1. Borehole Coordinates, Elevations, and Sediment Thickness

Borehole Number	Easting (X)[a,b]	Northing (Y)[a,b]	Approximate Mudline Elevation (ft NAVD88)	Approximate Basalt Surface Elevation (ft NAVD88)	Sediment Thickness (ft)
WB-49	7627480.4	702840.2	4.2	-19.3	23.5
WB-50	7627483.3	702968.3	-5.4	-19.9	14.5
WB-51	7627392.5	702912.8	3.7	-17.8	21.5
WB-52	7627322.3	702831.6	8.2	-9.8	18.0
WB-53	7627385.0	703085.9	-8.3	-23.6	15.3
WB-54	7627300.4	703024.3	3.3	-14.7	18.0
WB-55	7627224.4	702956.5	8.8	-12.2	21.0
WB-56	7628397.0	701865.2	4.5	--	--
WB-56b	7628398.1	701871.3	1.6	-45.8	47.4
WB-57	7628400.4	701984.0	-16.9	-44.5	27.6
WB-58	7628389.7	702082.9	-25.1	-44.6	19.5
WB-60	7627702.1	702888.9	-24.4	-27.9	3.5
WB-61	7627729.7	702986.4	-30.8	-38.8	8.0
WB-62	7627599.4	703000.9	-20.5	-29.3	8.8
WB-63	7627255.1	703085.1	2.0	-14.6	16.6
WB-64	7626974.1	703146.4	9.8	-16.7	26.5
WB-65	7626993.3	703227.9	5.1	-12.9	18.0
WB-66	7627183.4	703207.9	-2.1	-19.6	17.5

Notes

-- = data not available
NAVD88 = North American Vertical Datum of 1988

[a] Differentially corrected data
[b] State plane coordinates, North American Datum of 1983, Oregon North, International feet

Table 2-2. Deviations from the Final EE/CA Work Plan

FCR Number	Date	Title	Description	Recommended Change
FCR-1	8/13/2009	Station Location Shifts of up to 20 ft	Station locations may need to be shifted to accommodate drilling barge width and a number of obstructions at the site including old pilings, concrete, and other debris.	All station locations may be shifted up to 20 ft from the coordinates listed in the May 15, 2009 Arkema EE/CA Field Sampling Plan. Shifts greater than 20 ft will require formal notification of EPA and/or CDM.
FCR-2	8/13/2009	Move Station WB-46 Approximately 60 ft to the West	Station WB-46 is located in an area that is inaccessible by the barge. Water depth and presence of Outfall 003 are additional hindrances to the barge.	Move station WB-46 approximately 60 ft west, so it is on the west side of Outfall 003.
FCR-3	9/11/2009	Use of a 3-inch Diameter Aluminum Vibracore Sampler	The drilling contractor is unable to run 6-inch diameter casing with the rotosonic rig until they drill several feet into sand, which has the bearing capacity to support the casing. The casing provides an open borehole for the sediment samples to be collected, which significantly reduces the slough in the sampler. The Vibracore sampler will also save time and increase production.	At boreholes where the sediment thickness is expected to be at least 10 ft, a 3-inch diameter aluminum Vibracore sampler may be used to collect sediment samples from mudline to 10 ft below mudline for chemical analysis. The Vibracore sampler will not be used in areas with shallow bedrock or where debris is present.
FCR-4	9/11/2009	Guidance on Sample Collection if Field Evidence of Contamination is Observed	A light sheen and some low-level PID hits have been observed in some sediment samples collected as part of the 2009 EE/CA sediment investigation. The field sampling plan does not provide specific guidance on when additional VOC sample jars will be collected based on field evidence of contamination.	If sample volume is sufficient, an additional 4 oz (VOC) jar will be collected to be archived at the laboratory for potential chemical analysis if a sheen or a PID measurement greater than 10 ppm is observed. The 4 oz jar will be archived at the analytical laboratory at 4°C.
FCR-5	9/21/2009	Abandon 15 ft of Casing at WB-56 and Move to WB-56b to Complete Borehole	During drilling at WB-56, the tide dropped and the end of the barge became beached on the relatively steep riverbank and moved about 6 inches. The drilling crew attempted to move both the barge and the drill rig several times to try to realign the casing and were unsuccessful. During the process of unthreading the uppermost section of casing, the bottom 15 ft of casing became unthreaded and separated. This section of casing is located approximately 10–25 ft bml; the remaining casing was removed, and the upper 10 ft of borehole was allowed to close naturally by sloughing.	Drilling and sampling at WB-56 was successfully completed to 24 ft bml. To complete this borehole to bedrock, the barge platform will need to be moved 10-12 ft east of WB-56 so the barge does not rest on the steep riverbank at low tide. At the new WB-56b location, the mudline elevation is approximately 3.3 ft lower than at WB-56. Therefore, samples will be collected at WB-56b beginning at 20.7 ft bml and will be analyzed in accordance with requirements for WB-56 in the FSP.
FCR-6	9/21/2009	Move Station WB-46 to the Riverbank Adjacent to Outfall 003	As noted in FCR-2, station WB-46 is inaccessible to the barge. FCR-2 proposed moving station WB-46 approximately 60 ft west, to the west side of Outfall 003, but the water depth is too shallow to accommodate the barge at this location.	Move station WB-46 approximately 50–60 ft from its original location toward the riverbank, parallel to Outfall 003, so it can be drilled from the riverbank.
FCR-7	9/22/2009	Abandon WB-31 and Move to WB-31b to Complete Borehole	The barge was positioned on borehole WB-31 parallel to Outfall 001, which is at an angle to the riverbank. As the tide dropped, the upstream corner of the barge became beached, causing a misalignment in the casing. The barge could not be moved a short distance to realign the casing because one corner of the barge was beached. The casing was removed and the borehole was grouted.	Drill borehole WB-31b approximately 5 ft toward the river from WB-30. The mudline elevation will be approximately 5 ft lower at the new borehole location, so the sample intervals will be adjusted to begin sampling at an elevation equivalent to 30 ft bml at WB-31. The samples from WB-31 and WB-31b will be analyzed in accordance with the requirements for WB-31 in the FSP.
FCR-8	9/23/2009	Preliminary Results for WB-56/56b; Abandon Installation of WB-59	The location of borehole WB-59 was inaccessible to the drill rig. Borehole WB-59 is a step-out borehole. According to Table 2-3 of the FSP, the sediment samples were only slated for analysis if there was an exceedance of 5 mg/kg DDx in any of the sediment samples from borehole WB-56/56b. None of the preliminary sediment sample results from borehole WB-56/56b exceeded 5 mg/kg, so no analyses of sediment samples from borehole WB-59 are necessary.	Remove borehole WB-59 from the drilling program.
FCR-9	9/28/2009	Move Location of WB-39 25 ft from Riverbank	Barge had difficulty being positioned at this station due to steep riverbank, a cutoff piling, and possibility for misalignment of the casing when the river drops due to tidal fluctuations.	Drill borehole WB-39 approximately 25 ft toward the river from the FSP coordinates.
FCR-10	9/30/2009	Move Location of WB-36 Approximately 25 ft from Riverbank	A combination of the shallow water depth and Dock 1 structure prevent the barge from being positioned at the FSP station coordinates for WB-36. The barge will need to be positioned in deeper water away from the shoreline to provide enough barge draft for drilling WB-36.	Drill borehole approximately 25 ft toward the river from the FSP coordinates.
FCR-11	10/12/2009	Flexibility for Changing Geotechnical Exploration Locations	The locations of the co-located CPTs and SPTs were originally selected to be immediately adjacent to existing borehole locations from the 2003 investigation (WB-9, WB-11, and WB-23). The new exploration locations ended up being too far apart from each other and too far from the selected 2003 locations.	Move the co-located explorations closer to the existing boring locations to increase the likelihood that the new explorations will encounter similar conditions as the 2003 borings. Explorations may be moved by up to 50 ft without further field change requests.

Notes:
bml = below mudline
CPT = cone penetration test
EE/CA = engineering evaluation and cost analysis
FCR = field change request
FSP = field sampling plan
PID = photo-ionization detector
ppm = parts per million
SPT = standard penetration test
VOC = volatile organic compound

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30
				Sample Date:	9/17/2009	9/17/2009	9/17/2009	9/17/2009	9/17/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	FD	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	0	2	4	6	8	10	12	12	14	16	18	20	22	24
				Lower Depth, ft:	2	4	6	8	10	12	14	14	16	18	20	22	24	26
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-30-0-2	ARK-WB-30-2-4	ARK-WB-30-4-6	ARK-WB-30-6-8	ARK-WB-30-8-10	ARK-WB-30-10-12	ARK-WB-30-12-14	ARK-WB-79-12-14	ARK-WB-30-14-16	ARK-WB-30-16-18	ARK-WB-30-18-20	ARK-WB-30-20-22	ARK-WB-30-22-24	ARK-WB-30-24-26
Conventionals																		
Total organic carbon	TOC	SW9060	percent		--	--	--	--	0.11 *J*	0.11 *J*	0.13 *J*	0.11 *J*	0.080 *J*	0.070 *J*	0.090 *J*	0.061 *U*	0.090 *J*	0.061 *U*
Total solids	TSO	E160.3	percent		73	74	78	77	75	73	71	71	70	70	69	73	70	72
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	20	39	50	--	18	14	21	10	40	12
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	10	1.3	0.50	--	1.2	12	2.3	5.6	1.2	2.1
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	2.9	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0.10	0 *U*	0 *U*
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	3.3	0.40	0.40	--	2.9	18	5.1	20	0.70	17
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	3.7	0.40	0.30	--	4.9	7.6	6.9	9.5	0.70	10
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	4.3	0.70	0.60	--	1.1	0.80	1.3	0.50	2.1	1.0
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	15	1.4	0.40	--	0.60	0.50	0.80	0.30	1.2	0.50
Silt	GS_SILT	D422	percent		--	--	--	--	41	57	48	--	71	46	63	53	54	58
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.89 *JT*	0.47 *JT*	0.034 *JT*	0.031 *JT*	0.035 *JT*	0.00033 *UT*	0.00021 *UT*	0.00034 *UT*	0.00024 *UT*	0.0021 *T*	0.00054 *JT*	0.00038 *UT*	0.00086 *UT*	0.00049 *UT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.070 *J*	0.041 *J*	0.0023 *J*	0.0026 *J*	0.0011 *J*	0.000074 *U*	0.000076 *U*	0.000077 *U*	0.000077 *U*	0.000078 *U*	0.00011 *J*	0.000076 *U*	0.000078 *U*	0.000075 *U*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.026 *J*	0.0061 *J*	0.00042 *J*	0.00010 *J*	0.00053 *U*	0.00010 *U*	0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00010 *U*	0.00011 *U*	0.00010 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.12 *J*	0.040 *J*	0.0034 *J*	0.0029 *J*	0.0015	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00016 *U*	0.00016 *U*	0.00015 *U*	0.00016 *U*	0.00015 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.20	0.12	0.0068	0.0073	0.0032	0.00016 *U*	0.00017 *U*	0.00017 *U*	0.00017 *U*	0.00017 *U*	0.00017 *U*	0.00016 *U*	0.00017 *U*	0.00016 *U*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.13	0.029 *J*	0.0022	0.0032	0.0012 *J*	0.000089 *U*	0.000091 *U*	0.000092 *U*	0.000093 *U*	0.000094 *U*	0.000094 *U*	0.000091 *U*	0.000094 *U*	0.000090 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.34	0.23	0.019	0.015	0.028	0.00033 *U*	0.00021 *U*	0.00034 *U*	0.00024 *U*	0.0018	0.00033 *U*	0.00038 *U*	0.00086 *U*	0.00049 *U*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-30	WB-31	WB-31
				Sample Date:	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/18/2009	9/21/2009	9/21/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	26	28	30	32	34	36	38	40	42	44	46	48	0	2
				Lower Depth, ft:	28	30	32	34	36	38	40	42	44	46	48	49.2	2	4
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-30-26-28	ARK-WB-30-28-30	ARK-WB-30-30-32	ARK-WB-30-32-34	ARK-WB-30-34-36	ARK-WB-30-36-38	ARK-WB-30-38-40	ARK-WB-30-40-42	ARK-WB-30-42-44	ARK-WB-30-44-46	ARK-WB-30-46-48	ARK-WB-30-48-49-2	ARK-WB-31-0-2	ARK-WB-31-2-4
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.070 *J*	0.061 *U*	0.070 *J*	0.061 *U*	0.061 *U*	0.061 *U*	0.16 *J*	0.77	0.76	0.62	0.43	0.57	--	--
Total solids	TSO	E160.3	percent		72	71	73	73	73	74	76	80	76	77	76	75	69	57
Grainsize																		
Clay	GS_CLAY	D422	percent		17	5.8	20	10	14	9.3	18	23	20	16	9.3	21	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	4.4	--	--
Sieve 140	GS_SIEVE140	D422	percent		3.4	5.8	4.7	13	7.2	12	1.8	0.60	0.60	1.5	16	5.5	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 20	GS_SIEVE020	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0.10	0.20	0 *U*	0 *U*	0 *U*	0 *U*	1.6	--	--
Sieve 200	GS_SIEVE200	D422	percent		8.6	29	10	20	14	32	4.1	5.0	2.1	8.4	32	4.5	--	--
Sieve 230	GS_SIEVE230	D422	percent		9.3	12	9.9	8.5	12	11	5.9	4.0	5.4	12	9.0	2.4	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	12	--	--
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	2.0	--	--
Sieve 40	GS_SIEVE040	D422	percent		0.60	0.10	3.1	0 *U*	0.10	0.30	2.3	0.40	0.10	0.10	0 *U*	2.2	--	--
Sieve 60	GS_SIEVE060	D422	percent		0.70	0.10	1.7	0.20	0.10	0.30	1.3	0.20	0.10	0.10	0.10	3.7	--	--
Silt	GS_SILT	D422	percent		60	47	50	48	52	36	66	67	72	63	33	41	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.0013 *JT*	0.00026 *UT*	0.00055 *UT*	0.00016 *UT*	0.00034 *UT*	0.0032 *T*	0.0024 *JT*	0.00033 *UT*	0.064 *T*	0.00032 *UT*	0.00027 *UT*	0.021 *JT*	20 *JT*	8.1 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.000096 *J*	0.000077 *U*	0.000075 *U*	0.000074 *U*	0.000075 *U*	0.00031	0.00022 *J*	0.000068 *U*	0.0071	0.000071 *U*	0.000072 *U*	0.0021	0.43 *J*	0.36 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00011 *U*	0.00011 *U*	0.00010 *U*	0.00010 *U*	0.00010 *U*	0.00010 *U*	0.000099 *U*	0.000095 *U*	0.0019	0.000098 *U*	0.000099 *U*	0.00042 *J*	0.078 *J*	0.068 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00028	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00035	0.00027	0.00014 *U*	0.0078	0.00014 *U*	0.00014 *U*	0.0024	0.53 *J*	0.69 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00026 *J*	0.00017 *U*	0.00016 *U*	0.00016 *U*	0.00016 *U*	0.00071	0.00052	0.00015 *U*	0.016	0.00016 *U*	0.00016 *U*	0.0045	2.0	1.3
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.00012 *J*	0.000093 *U*	0.000090 *U*	0.000088 *U*	0.000090 *U*	0.00055	0.00025 *J*	0.000082 *U*	0.011	0.000086 *U*	0.000086 *U*	0.0027	0.33	0.24
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.0010 *U*	0.00026 *U*	0.00055 *U*	0.00012 *U*	0.00034 *U*	0.0012	0.0011	0.00033 *U*	0.020	0.00032 *U*	0.00027 *U*	0.0092	17	5.4

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

Constituent	CAS ID	Method	Units															
				Borehole Number:	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31	WB-31b
				Sample Date:	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/21/2009	9/22/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	4	6	8	10	12	14	16	18	20	22	24	26	28	24.7
				Lower Depth, ft:	6	8	10	12	14	16	18	20	22	24	26	28	30	26.7
				Sample ID:	ARK-WB-31-4-6	ARK-WB-31-6-8	ARK-WB-31-8-10	ARK-WB-31-10-12	ARK-WB-31-12-14	ARK-WB-31-14-16	ARK-WB-31-16-18	ARK-WB-31-18-20	ARK-WB-31-20-22	ARK-WB-31-22-24	ARK-WB-31-24-26	ARK-WB-31-26-28	ARK-WB-31-28-30	ARK-WB-31b-24-7-26-7
Conventionals																		
Total organic carbon	TOC	SW9060	percent		--	--	0.26	0.19 *J*	0.080 *J*	0.070 *J*	0.061 *U*	0.070 *J*	0.061 *U*	0.061 *U*	0.090 *J*	0.061 *U*	0.070 *J*	0.061 *U*
Total solids	TSO	E160.3	percent		73	83	73	76	69	70	70	69	69	70	72	72	70	77
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	3.0	13	23	11	19	17	20	16	5.4	--	20	2.7
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		--	--	0 *U*	0.10	0 *U*	0 *U*	0 *U*	0.30	0 *U*	0 *U*	0.10	--	0 *U*	0.10
Sieve 140	GS_SIEVE140	D422	percent		--	--	24	24	1.2	8.0	2.9	4.3	2.0	2.1	7.7	--	1.9	16
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		--	--	0.50	0.50	0 *U*	0 *U*	0.10	0.10	0 *U*	0 *U*	0 *U*	--	0.20	0.10
Sieve 200	GS_SIEVE200	D422	percent		--	--	0.69	1.6	2.7	13	3.4	14	2.0	13	20	--	3.3	28
Sieve 230	GS_SIEVE230	D422	percent		--	--	0.23	0.50	2.8	5.9	4.3	6.1	3.8	8.2	16	--	2.0	9.8
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0.40	0 *U*	0 *U*	1.4	--	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		--	--	12	7.5	0.90	1.5	1.5	1.7	1.8	0.80	0.10	--	2.0	0.70
Sieve 60	GS_SIEVE060	D422	percent		--	--	58	32	1.1	1.3	2.2	0.80	1.3	0.50	0.20	--	1.4	0.80
Silt	GS_SILT	D422	percent		--	--	1.7	21	68	59	67	55	69	60	49	--	69	42
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		1.2 *JT*	1.3 *JT*	0.084 *T*	0.19 *JT*	0.0032 *JT*	0.0015 *JT*	0.025 *JT*	0.00067 *UT*	0.00059 *UT*	0.00052 *UT*	0.0063 *T*	0.0013 *JT*	0.00040 *UT*	0.0021 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.041 *J*	0.061 *J*	0.0075	0.023	0.00038	0.00017 *J*	0.0022	0.000078 *U*	0.000077 *U*	0.000078 *U*	0.00064	0.00018 *J*	0.000075 *U*	0.000070 *UJ*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.0081 *J*	0.011 *J*	0.0017	0.0026 *J*	0.00011 *U*	0.00011 *U*	0.00048 *J*	0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00010 *U*	0.00011 *U*	0.00010 *U*	0.000097 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.037 *J*	0.13 *J*	0.028	0.018	0.00031	0.00031	0.0028	0.00016 *U*	0.00015 *U*	0.00016 *U*	0.00085	0.00016 *U*	0.00015 *U*	0.00014 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.18	0.21	0.017	0.040	0.00081	0.00042	0.0049	0.00017 *U*	0.00017 *U*	0.00017 *U*	0.00095	0.00042	0.00016 *U*	0.00026 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.037	0.043	0.0066	0.0079	0.00021 *J*	0.000094 *U*	0.0047	0.000094 *U*	0.000092 *U*	0.000093 *U*	0.00052	0.00013 *J*	0.000090 *U*	0.000084 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.94	0.89	0.023	0.097	0.0014	0.00094 *U*	0.0096	0.00067 *U*	0.00059 *U*	0.00052 *U*	0.0033	0.00083 *U*	0.00040 *U*	0.0016 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-31b	WB-31b	WB-31b	WB-31b	WB-31b	WB-31b	WB-31b	WB-32	WB-32	WB-32	WB-32	WB-32	WB-32	WB-32
				Sample Date:	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/23/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	26.7	28.7	30.7	32.7	34.7	36.7	38.7	10	12	12	14	16	18	20
				Lower Depth, ft:	28.7	30.7	32.7	34.7	36.7	38.7	40.5	12	14	14	16	18	20	22
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-31b-26-7-28-7	ARK-WB-31b-28-7-30-7	ARK-WB-31b-30-7-32-7	ARK-WB-31b-32-7-34-7	ARK-WB-31b-34-7-36-7	ARK-WB-31b-36-7-38-7	ARK-WB-31b-38-7-40-5	ARK-WB-32-10-12	ARK-WB-32-12-14	ARK-WB-80-12-14	ARK-WB-32-14-16	ARK-WB-32-16-18	ARK-WB-32-18-20	ARK-WB-32-20-22
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.061 *U*	0.070 *J*	0.080 *J*	0.10 *J*	0.13 *J*	0.13 *J*	0.061 *U*	1.6	0.061 *U*	0.070 *J*	0.061 *U*	0.061 *U*	0.061 *U*	0.090 *J*
Total solids	TSO	E160.3	percent		73	72	71	72	74	79	73	68	76	76	75	71	69	68
Grainsize																		
Clay	GS_CLAY	D422	percent		16	10	17	11	6.6	6.9	16	11	0.79	--	3.7	10	15	20
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0.40	0.10	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		9.6	1.3	0.90	0.40	3.8	8.0	4.2	19	24	--	15	9.1	1.1	1.9
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0.10	1.9	0.20	0.20	0.40	--	0.10	0.10	0 *U*	0.10
Sieve 200	GS_SIEVE200	D422	percent		17	9.4	3.0	4.5	8.4	13	20	8.1	14	--	17	15	5.9	2.5
Sieve 230	GS_SIEVE230	D422	percent		12	6.3	7.1	4.5	8.9	6.0	18	3.0	7.4	--	12	8.0	5.5	2.0
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		0.70	0.80	0.80	0.30	0.70	16	0.60	5.6	6.0	--	1.7	0.80	1.3	1.3
Sieve 60	GS_SIEVE060	D422	percent		0.80	0.40	0.50	0.10	0.40	19	0.50	17	20	--	4.5	4.2	0.60	2.9
Silt	GS_SILT	D422	percent		43	72	71	79	71	30	40	35	28	--	46	52	70	69
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00063 *T*	0.00016 *UJT*	0.00017 *UT*	0.00016 *UT*	0.00050 *JT*	0.061 *JT*	0.00086 *JT*	5.7 *JT*	0.051 *JT*	0.035 *JT*	0.0097 *JT*	0.028 *T*	0.0017 *JT*	0.0062 *T*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.000075 *U*	0.000073 *UJ*	0.000077 *U*	0.000074 *U*	0.000073 *U*	0.0081	0.00012 *J*	0.60	0.0041	0.0037	0.0013 *J*	0.0036	0.00015 *J*	0.00088
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00010 *U*	0.00010 *UJ*	0.00011 *U*	0.00010 *U*	0.00010 *U*	0.00080 *J*	0.00010 *U*	0.035 *U*	0.00099 *U*	0.00020 *U*	0.000099 *U*	0.00021 *U*	0.00011 *U*	0.00012 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00015 *U*	0.00015 *UJ*	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.010	0.00015 *U*	0.61	0.0047	0.0048	0.0017	0.0041	0.00033	0.00093
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00016 *U*	0.00016 *UJ*	0.00017 *U*	0.00016 *U*	0.00016 *U*	0.014	0.00018 *J*	0.92	0.0061	0.0058	0.0018	0.0057	0.00023 *J*	0.0015
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000090 *U*	0.000088 *UJ*	0.000093 *U*	0.000089 *U*	0.000087 *U*	0.0056	0.000088 *U*	0.063 *J*	0.0011 *J*	0.00061	0.00019 *J*	0.00061	0.000092 *U*	0.00059
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00034	0.00012 *UJ*	0.00013 *U*	0.00012 *U*	0.00021 *J*	0.022	0.00039	3.5	0.035 *J*	0.020 *J*	0.0047 *J*	0.014	0.00087	0.0022

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-32	WB-32	WB-32	WB-32	WB-32	WB-32	WB-32	WB-34	WB-34	WB-34	WB-35	WB-35	WB-35	WB-35
				Sample Date:	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/4/2009	9/4/2009	9/4/2009	9/30/2009	9/30/2009	9/30/2009	9/30/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	FD
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	22	24	26	28	30	32	34	0	2	4	16	18	20	20
				Lower Depth, ft:	24	26	28	30	32	34	36	2	4	6	18	20	23	23
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-32-22-24	ARK-WB-32-24-26	ARK-WB-32-26-28	ARK-WB-32-28-30	ARK-WB-32-30-32	ARK-WB-32-32-34	ARK-WB-32-34-36	ARK-WB-34-0-2	ARK-WB-34-2-4	ARK-WB-34-4-6	ARK-WB-35-16-18	ARK-WB-35-18-20	ARK-WB-35-20-23	ARK-WB-84-20-23
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.10 *J*	0.10 *J*	0.080 *J*	0.061 *U*	0.061 *U*	0.070 *J*	0.070 *J*	2.2 *J*	2.2	2.1	--	--	0.070 *J*	0.070 *J*
Total solids	TSO	E160.3	percent		69	69	64	70	72	73	74	44	49	50	63	69	70	69
Grainsize																		
Clay	GS_CLAY	D422	percent		16	12	9.1	14	26	17	12	22	26	31	--	--	8.0 *J*	14 *J*
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	1.2	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		0.90	4.5	6.8	0.60	1.0	6.5	2.7	2.7	3.6	3.8	--	--	1.5	1.6
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.10	0 *U*	0 *U*	0 *U*	0.20	1.4	1.2	0.10	0 *U*	0.10	--	--	0.10	0.10
Sieve 200	GS_SIEVE200	D422	percent		4.0	5.2	21	7.6	2.6	8.0	3.9	3.8	4.4	6.0	--	--	7.5	13
Sieve 230	GS_SIEVE230	D422	percent		5.0	7.0	20	8.8	1.9	4.1	6.0	2.7	4.2	3.5	--	--	12	7.7
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		0.20	0.20	0.60	0.10	0.50	2.0	2.7	0.50	0.20	0.50	--	--	0.20	0.20
Sieve 60	GS_SIEVE060	D422	percent		0.20	0.70	1.7	0.20	0.60	1.7	2.1	0.70	0.70	0.80	--	--	0.30	0.30
Silt	GS_SILT	D422	percent		73	70	41	69	67	59	68	67	61	54	--	--	71	64
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00066 *JT*	0.0013 *JT*	0.0024 *JT*	0.00017 *UT*	0.00073 *JT*	0.0075 *JT*	0.0080 *JT*	0.13 *JT*	0.12 *JT*	4.8 *JT*	5.7 *JT*	1.9 *JT*	0.12 *JT*	0.11 *T*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.000085 *J*	0.00010 *J*	0.00043	0.000076 *U*	0.00012 *J*	0.00053	0.0013	0.0082 *J*	0.011	0.54	1.3 *J*	0.43 *J*	0.034	0.030
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00011 *U*	0.00012 *J*	0.00012 *U*	0.00010 *U*	0.00011 *U*	0.00011 *U*	0.00022 *J*	0.0035 *J*	0.0050 *J*	0.068 *J*	0.026 *J*	0.0090 *J*	0.0011 *U*	0.0022 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00016 *U*	0.00016 *U*	0.00031 *J*	0.00015 *U*	0.00016 *U*	0.00059	0.00057	0.0014 *J*	0.0032	0.19	0.069 *J*	0.025 *J*	0.0021 *J*	0.0032 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00017 *U*	0.00020 *J*	0.00071	0.00017 *U*	0.00020 *J*	0.00089	0.0034	0.020 *J*	0.043	1.2	2.8	0.98	0.060	0.051
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000093 *U*	0.000098 *U*	0.00014 *J*	0.000091 *U*	0.000095 *U*	0.00014 *J*	0.00077	0.0078 *J*	0.0094	0.077	0.11 *J*	0.034 *J*	0.0037	0.0019 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00031	0.00073	0.00079	0.00013 *U*	0.00023 *J*	0.0053	0.0017	0.089 *J*	0.046	2.7	1.4 *J*	0.40	0.022 *J*	0.022

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

Constituent	CAS ID	Method	Units														
				Borehole Number:	WB-35	WB-35	WB-35	WB-35	WB-35	WB-36	WB-36	WB-36	WB-36	WB-36	WB-36	WB-36	WB-37	WB-37
				Sample Date:	9/30/2009	9/30/2009	9/30/2009	9/30/2009	9/30/2009	10/1/2009	10/1/2009	10/1/2009	10/1/2009	10/1/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	FD	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	23	26	29	32	35	22	25	28	28	31	34	37	10	12
				Lower Depth, ft:	26	29	32	35	35.6	25	28	31	31	34	37	40	12	14
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-35-23-26	ARK-WB-35-26-29	ARK-WB-35-29-32	ARK-WB-35-32-35	ARK-WB-35-35-35-6	ARK-WB-36-22-25	ARK-WB-36-25-28	ARK-WB-36-28-31	ARK-WB-85-28-31	ARK-WB-36-31-34	ARK-WB-36-34-37	ARK-WB-36-37-40	ARK-WB-37-10-12	ARK-WB-37-12-14
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.090 *J*	0.070 *J*	0.070 *J*	0.061 *U*	0.070 *J*	2.3 *J*	1.0 *J*	0.60 *J*	0.51 *J*	0.44 *J*	0.51 *J*	0.23 *J*	--	--
Total solids	TSO	E160.3	percent		69	71	75	73	77	67	71	75	75	74	74	77	57	60
Grainsize																		
Clay	GS_CLAY	D422	percent		22	16	5.0	11	8.9	22	5.2	4.2	--	4.2	1.8	3.1	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	1.1	0 *U*	0.20	0.10	--	0 *U*	0 *U*	0.30	--	--
Sieve 140	GS_SIEVE140	D422	percent		1.5	14	40	8.7	16	7.0	18	32	--	33	28	23	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 20	GS_SIEVE020	D422	percent		0.10	0.10	0.10	0.10	1.1	1.0	0.60	0.30	--	0.20	0.20	0.40	--	--
Sieve 200	GS_SIEVE200	D422	percent		0.90	18	22	14	12	3.0	4.5	4.2	--	4.6	3.8	12	--	--
Sieve 230	GS_SIEVE230	D422	percent		1.6	6.3	9.1	6.0	9.0	2.3	2.1	2.5	--	1.4	1.6	4.7	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	2.3	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	1.3	1.0	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	--
Sieve 40	GS_SIEVE040	D422	percent		1.5	0.30	0.70	0.40	3.4	12	9.6	6.2	--	5.3	8.3	4.8	--	--
Sieve 60	GS_SIEVE060	D422	percent		1.2	0.60	1.5	1.2	6.9	18	29	33	--	39	42	22	--	--
Silt	GS_SILT	D422	percent		71	44	22	59	38	34	31	17	--	12	13	30	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.059 *T*	0.040 *JT*	0.33 *JT*	0.013 *JT*	0.40 *JT*	190 *JT*	0.16 *JT*	0.075 *JT*	0.10 *JT*	0.036 *JT*	0.0084 *JT*	0.0091 *JT*	1400 *JT*	0.25 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.010	0.011	0.069	0.0023	0.084	18	0.020	0.0090	0.013	0.0058 *J*	0.0012 *J*	0.0018 *J*	420 *J*	0.090 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00021 *U*	0.00021 *U*	0.0032 *J*	0.00010 *U*	0.0043 *J*	2.3 *U*	0.0010 *U*	0.00098 *U*	0.0010 *U*	0.00050 *UJ*	0.00010 *U*	0.000098 *U*	3.7 *J*	0.0034 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.016	0.0012	0.0059	0.00040	0.0077	41	0.025	0.015	0.019	0.0094	0.0014	0.0026	26 *J*	0.0058 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.019	0.020	0.13	0.0081	0.19	21	0.021	0.0087 *J*	0.014 *J*	0.0049 *J*	0.0010 *J*	0.0011	810	0.12
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.0011	0.0011	0.0069	0.00021 *J*	0.0080	2.4 *J*	0.0018 *J*	0.0013 *J*	0.0013 *J*	0.00056 *J*	0.00031	0.00028	7.9	0.0066 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.013	0.0068 *J*	0.11	0.0019	0.11	110	0.089	0.041	0.056	0.015 *J*	0.0044 *J*	0.0033	170	0.021 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-37	WB-37	WB-37	WB-37	WB-39	WB-39	WB-39	WB-39	WB-39	WB-40	WB-40	WB-40	WB-40	WB-40
				Sample Date:	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/29/2009	9/3/2009	9/3/2009	9/3/2009	9/3/2009	9/3/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	FD	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	14	14	17	20	14	16	18	21	24	0	2	4	6	8
				Lower Depth, ft:	17	17	20	23	16	18	21	24	25.7	2	4	6	8	10
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-37-14-17	ARK-WB-83-14-17	ARK-WB-37-17-20	ARK-WB-37-20-23	ARK-WB-39-14-16	ARK-WB-39-16-18	ARK-WB-39-18-21	ARK-WB-39-21-24	ARK-WB-39-24-25-7	ARK-WB-40-0-2	ARK-WB-40-2-4	ARK-WB-40-4-6	ARK-WB-40-6-8	ARK-WB-40-8-10
Conventionals																		
Total organic carbon	TOC	SW9060	percent		3.8	3.6	0.18 *J*	0.061 *U*	--	--	0.24	0.78	0.061 *U*	2.9 *J*	1.1 *J*	0.54 *J*	0.44 *J*	0.50 *J*
Total solids	TSO	E160.3	percent		58	57	79	73	67	75	76	73	72	49	55	68	75	78
Grainsize																		
Clay	GS_CLAY	D422	percent		30	--	4.4	4.7	--	--	2.8	5.3	4.6	11	11	2.8	2.4	2.2
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	--	0 *U*	0 *U*	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	--	0 *U*	0 *U*	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0.50	--	0 *U*	0.30	--	--	0.10	0.30	0 *U*	1.7	0.20	0.10	0 *U*	0.70
Sieve 140	GS_SIEVE140	D422	percent		3.3	--	26	5.0	--	--	27	25	2.6	23	21	37	40	20
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	--	0 *U*	0 *U*	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.30	--	0.60	0.30	--	--	0.70	0.70	0.10	0.20	0.10	0.10	0.10	1.4
Sieve 200	GS_SIEVE200	D422	percent		3.7	--	2.5	15	--	--	2.3	4.1	18	6.4	4.4	7.3	4.3	0.90
Sieve 230	GS_SIEVE230	D422	percent		1.9	--	1.0	8.5	--	--	1.0	1.2	11	4.1	3.0	2.5	1.2	0.30
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	--	0 *U*	0 *U*	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	--	0 *U*	0 *U*	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0.70	--	0 *U*	0 *U*	--	--	1.8	0.30	0 *U*	0.50	0 *U*	0 *U*	0 *U*	0.40
Sieve 4	GS_SIEVE004	D422	percent		0.60	--	0 *U*	1.0	--	--	0.20	0.10	0 *U*	0.90	0 *U*	0.10	0 *U*	0.40
Sieve 40	GS_SIEVE040	D422	percent		0.90	--	14	0.40	--	--	8.9	9.5	0.20	3.6	1.7	4.5	4.7	18
Sieve 60	GS_SIEVE060	D422	percent		1.2	--	41	1.3	--	--	47	36	0.50	20	15	35	37	48
Silt	GS_SILT	D422	percent		57	--	11	63	--	--	8.2	17	63	28	44	11	9.8	8.1
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.032 *JT*	0.022 *JT*	0.021 *JT*	0.0030 *JT*	0.0025 *JT*	0.15 *JT*	0.064 *JT*	0.0073 *JT*	0.0021 *T*	0.093 *JT*	0.0018 *JT*	0.0026 *JT*	0.0012 *JT*	0.0048 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.0076 *J*	0.0081 *J*	0.011	0.00061	0.00064 *J*	0.037 *J*	0.019	0.0021 *J*	0.00060	0.022 *J*	0.00031 *J*	0.00035 *J*	0.000074 *U*	0.000070 *U*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00063 *U*	0.00013 *U*	0.00048 *U*	0.00010 *U*	0.00013 *J*	0.0010 *J*	0.0022	0.0011 *J*	0.00010 *U*	0.0024 *J*	0.00014 *U*	0.00011 *U*	0.00010 *U*	0.000096 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00091 *U*	0.0021 *J*	0.00069 *U*	0.00033	0.00016 *UJ*	0.0030 *J*	0.0015	0.00046	0.00027	0.0015 *J*	0.00020 *U*	0.00016 *U*	0.00015 *U*	0.00014 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.022 *J*	0.0086 *J*	0.0077	0.00087	0.0013	0.077	0.031	0.0020	0.00030 *U*	0.040 *J*	0.00040	0.00045	0.00037	0.00090 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.00055 *U*	0.00041 *J*	0.00042 *U*	0.000089 *U*	0.000098 *U*	0.0032 *J*	0.0035 *J*	0.00041	0.000087 *U*	0.0034 *J*	0.00086 *J*	0.0013 *J*	0.000088 *U*	0.0037 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.0011 *J*	0.0030 *J*	0.0018 *J*	0.0011 *J*	0.00035	0.026	0.0067	0.0012	0.00095	0.024 *J*	0.00017 *U*	0.00038 *J*	0.00060 *J*	0.00012 *U*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

			Borehole Number:	WB-40	WB-40	WB-40	WB-40	WB-41	WB-41	WB-41	WB-41	WB-42	WB-42	WB-42	WB-42	WB-43	WB-43
			Sample Date:	9/3/2009	9/3/2009	9/3/2009	9/3/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/25/2009	9/25/2009	9/25/2009	9/25/2009	9/24/2009	9/24/2009
			Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
			Sample Type:	N	N	FD	N	N	FD	N	N	N	N	N	N	N	N
			Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
			Upper Depth, ft:	10	12	12	14	14	14	17	20	14	17	20	23	14	16
			Lower Depth, ft:	12	14	14	16	17	17	20	22.8	17	20	23	26	16	18
Constituent	**CAS ID**	**Method**	**Units Sample ID:**	ARK-WB-40-10-12	ARK-WB-40-12-14	ARK-WB-72-12-14	ARK-WB-40-14-16	ARK-WB-41-14-17	ARK-WB-81-14-17	ARK-WB-41-17-20	ARK-WB-41-20-22-8	ARK-WB-42-14-17	ARK-WB-42-17-20	ARK-WB-42-20-23	ARK-WB-42-23-26	ARK-WB-43-14-16	ARK-WB-43-16-18
Conventionals																	
Total organic carbon	TOC	SW9060	percent	0.32 *J*	0.20 *J*	0.32 *J*	0.070 *J*	0.52	0.48	0.52	0.25	0.13 *J*	0.12 *J*	0.070 *J*	0.080 *J*	--	--
Total solids	TSO	E160.3	percent	75	79	78	68	75	75	74	74	76	71	70	71	71	75
Grainsize																	
Clay	GS_CLAY	D422	percent	4.0	2.5	3.5	6.4	8.4	5.4	3.6	7.8	0.80	7.6	23	17	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 10	GS_SIEVE010	D422	percent	0.20	0.30	0 *U*	0 *U*	0.10	0.10	0.10	0.10	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 140	GS_SIEVE140	D422	percent	22	21	22	4.7	28	27	26	17	26	7.8	1.2	7.1	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 20	GS_SIEVE020	D422	percent	0.30	0.40	0.40	0.20	0.30	0.40	0.30	1.2	0.30	0 *U*	1.1	0.20	--	--
Sieve 200	GS_SIEVE200	D422	percent	2.1	4.0	3.4	18	2.4	2.4	1.9	6.7	1.0	18	0.70	6.7	--	--
Sieve 230	GS_SIEVE230	D422	percent	0.60	1.3	1.9	10	1.0	1.0	0.87	3.4	0.25	16	0.50	4.9	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0.40	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--
Sieve 4	GS_SIEVE004	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0.10	0 *U*	0.20	0 *U*	0 *U*	0 *U*	0.80	--	--
Sieve 40	GS_SIEVE040	D422	percent	12	12	12	0.80	12	12	11	8.5	10	0.20	1.6	0.50	--	--
Sieve 60	GS_SIEVE060	D422	percent	51	45	46	1.9	46	45	54	26	58	0.60	1.2	0.80	--	--
Silt	GS_SILT	D422	percent	4.0	14	11	58	1.2 *J*	6.9 *J*	1.7	29	3.4	50	70	62	--	--
Pesticides																	
Total DDx	E966176eeca	SW8081A	mg/kg	0.00051 *JT*	0.00015 *UT*	0.00045 *JT*	0.00051 *JT*	1.4 *JT*	2.1 *JT*	0.045 *JT*	0.0029 *T*	2.9 *JT*	0.00087 *JT*	0.00087 *JT*	0.0032 *JT*	28 *JT*	0.0015 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg	0.000073 *U*	0.000069 *U*	0.000070 *U*	0.000081 *U*	0.22	0.24	0.0083 *J*	0.00084	0.44	0.00022 *J*	0.00015 *J*	0.00041 *J*	0.40 *J*	0.00032 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg	0.00010 *U*	0.000095 *U*	0.000097 *U*	0.00011 *U*	0.012 *J*	0.021 *U*	0.00052 *U*	0.00010 *U*	0.020 *U*	0.00011 *U*	0.00011 *U*	0.00011 *UJ*	0.068 *J*	0.00010 *UJ*
2,4'-DDT	789-02-6	SW8081A	mg/kg	0.00015 *U*	0.00014 *U*	0.00014 *U*	0.00016 *U*	0.097 *J*	0.28 *J*	0.0017 *J*	0.00015 *U*	0.13	0.00015 *U*	0.00015 *U*	0.00017 *J*	3.9 *J*	0.00015 *UJ*
4,4'-DDD	72-54-8	SW8081A	mg/kg	0.00016 *U*	0.00015 *U*	0.00015 *U*	0.00018 *U*	0.41	0.44	0.013 *J*	0.00078	0.77	0.00028 *J*	0.00026 *J*	0.00079 *J*	1.9	0.00033 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg	0.000088 *U*	0.000083 *U*	0.00016 *J*	0.000097 *U*	0.019 *J*	0.028 *J*	0.0023 *J*	0.00044	0.025 *J*	0.000092 *U*	0.000092 *U*	0.000091 *UJ*	0.15	0.000087 *UJ*
4,4'-DDT	50-29-3	SW8081A	mg/kg	0.00022 *J*	0.00012 *U*	0.00012 *U*	0.00020 *J*	0.60 *J*	1.1 *J*	0.019 *J*	0.00070	1.5	0.00019 *J*	0.00028	0.0017 *J*	22	0.00069 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-43	WB-45	WB-45	WB-45	WB-45	WB-45	WB-45	WB-45	WB-46	WB-46	WB-46	WB-46	WB-46	WB-46
				Sample Date:	9/24/2009	9/1/2009	9/1/2009	9/1/2009	9/1/2009	9/1/2009	9/1/2009	9/1/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	18	0	2	4	6	8	10	12	0	2	4	8	10	12
				Lower Depth, ft:	19	2	4	6	8	10	12	14	2	4	6	10	12	14
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-43-18-19	ARK-WB-45-0-2	ARK-WB-45-2-4	ARK-WB-45-4-6	ARK-WB-45-6-8	ARK-WB-45-8-10	ARK-WB-45-10-12	ARK-WB-45-12-14	ARK-WB-46-0-2	ARK-WB-46-2-4	ARK-WB-46-4-6	ARK-WB-46-8-10	ARK-WB-46-10-12	ARK-WB-46-12-14
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.12 *J*	3.4 *J*	2.5 *J*	1.2 *J*	0.26 *J*	0.42 *J*	0.061 *UJ*	0.061 *UJ*	--	--	--	--	2.2	0.080 *J*
Total solids	TSO	E160.3	percent		77	50	57	68	76	72	72	74	81	75	65	91	71	81
Grainsize																		
Clay	GS_CLAY	D422	percent		1.2	32	27	11	4.0	3.2	7.9	5.0	--	--	--	--	22	2.5
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	1.0	1.1	0 *U*	0.10	0.30	0.30	0.20	--	--	--	--	4.2	0.40
Sieve 140	GS_SIEVE140	D422	percent		49	7.1	19	40	34	38	37	57	--	--	--	--	4.7	41
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.20	0.20	0.20	0.10	0.40	0.60	0.40	0.10	--	--	--	--	1.3	0.30
Sieve 200	GS_SIEVE200	D422	percent		9.9	5.3	9.1	8.3	4.1	6.1	5.5	11	--	--	--	--	7.1	2.1
Sieve 230	GS_SIEVE230	D422	percent		3.7	3.6	3.4	3.9	0.98	2.2	1.2	4.8	--	--	--	--	1.7	0.91
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	0 *U*	1.2
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0.50	1.4	0 *U*	0 *U*	0.80	0 *U*	0 *U*	--	--	--	--	9.3	2.9
Sieve 40	GS_SIEVE040	D422	percent		2.9	1.0	1.4	2.6	7.0	7.4	3.9	0.50	--	--	--	--	1.3	2.1
Sieve 60	GS_SIEVE060	D422	percent		18	2.6	6.3	23	45	36	19	4.0	--	--	--	--	5.1	39
Silt	GS_SILT	D422	percent		14	47	31	11	4.8	5.0	24	18	--	--	--	--	43	7.3
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.0014 *T*	2.7 *JT*	0.18 *JT*	0.25 *JT*	0.0078 *JT*	0.013 *JT*	0.00049 *JT*	0.0033 *JT*	1.7 *JT*	16 *JT*	8.6 *JT*	0.067 *JT*	0.051 *JT*	0.00075 *T*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.00040	0.21	0.023 *J*	0.0036 *J*	0.0013	0.0019	0.000076 *UJ*	0.00028 *J*	0.052 *J*	1.3 *J*	0.74 *J*	0.0019 *J*	0.0043	0.000070 *U*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.000099 *U*	0.13 *J*	0.013 *J*	0.0028 *J*	0.0012 *J*	0.0014 *J*	0.00010 *UJ*	0.00010 *UJ*	0.018 *J*	0.17 *J*	0.11 *J*	0.00085 *U*	0.0035 *J*	0.000097 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00014 *U*	0.24	0.0026 *J*	0.0081 *UJ*	0.00015 *U*	0.00017 *J*	0.00015 *UJ*	0.00015 *UJ*	0.25 *J*	1.1 *J*	0.30 *J*	0.014	0.016	0.00014 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00078	0.48	0.069	0.013 *J*	0.0029	0.0048	0.00017 *UJ*	0.00063 *J*	0.070	1.2	2.2	0.0026	0.0038	0.00015 *U*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000086 *U*	0.19 *J*	0.019 *J*	0.0040 *J*	0.0013 *J*	0.0019 *J*	0.000091 *UJ*	0.000089 *UJ*	0.049	0.39	0.28	0.0016 *J*	0.0038	0.000084 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00012 *U*	1.4	0.051	0.22	0.00098	0.0029	0.00020 *J*	0.0022 *J*	1.3	12	5.0	0.046	0.020	0.00048

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-46	WB-46	WB-46	WB-46	WB-46	WB-46	WB-47	WB-47	WB-47	WB-47	WB-47	WB-47	WB-47	WB-47
				Sample Date:	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/23/2009	9/8/2009	9/8/2009	9/8/2009	9/8/2009	9/8/2009	9/8/2009	9/8/2009	9/8/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	14	16	18	20	22	24	0	2	6	8	10	12	14	16
				Lower Depth, ft:	16	18	20	22	24	25	2	4	8	10	12	14	16	18
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-46-14-16	ARK-WB-46-16-18	ARK-WB-46-18-20	ARK-WB-46-20-22	ARK-WB-46-22-24	ARK-WB-46-24-25	ARK-WB-47-0-2	ARK-WB-47-2-4	ARK-WB-47-6-8	ARK-WB-47-8-10	ARK-WB-47-10-12	ARK-WB-47-12-14	ARK-WB-47-14-16	ARK-WB-47-16-18
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.080 *J*	0.12 *J*	0.11 *J*	0.070 *J*	0.061 *U*	0.061 *U*	0.061 *U*	0.061 *U*	0.080 *J*	0.061 *U*	0.061 *U*	0.13 *J*	0.62	0.20
Total solids	TSO	E160.3	percent		80	78	79	76	74	75	95	95	74	82	78	84	71	78
Grainsize																		
Clay	GS_CLAY	D422	percent		1.8	0.28	1.5	7.4	15	7.1	0.31	1.7	3.4	4.5	--	0.39	13	4.2
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		4.8	1.0	0.10	0 *U*	0 *U*	0 *U*	2.7	0.70	0.90	0.80	--	1.6	0.70	0.30
Sieve 140	GS_SIEVE140	D422	percent		44	29	34	22	4.8	2.9	5.3	8.6	4.6	14	--	11	13	33
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		1.4	0.50	0.10	0.50	0.30	0 *U*	2.7	1.9	3.9	2.3	--	3.5	1.8	0.80
Sieve 200	GS_SIEVE200	D422	percent		1.9	0.84	1.3	8.4	8.7	10	0.25	0.81	0.17	1.2	--	0.77	1.4	1.5
Sieve 230	GS_SIEVE230	D422	percent		0.77	0.18	0.29	6.0	6.7	15	0.070	0.42	0.14	0.47	--	0.21	1.2	0.40
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	17	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		2.7	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	4.7	7.7	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0.90	1.1	0 *U*	0 *U*	0 *U*	0 *U*	3.9	1.3	0.30	0 *U*	--	0.80	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		1.9	7.2	6.1	2.7	1.0	0.50	29	26	37	28	--	30	14	7.2
Sieve 60	GS_SIEVE060	D422	percent		36	54	53	16	1.6	2.7	32	46	49	46	--	45	23	51
Silt	GS_SILT	D422	percent		3.2	6.2	4.0	37	62	61	1.6	5.1	1.2	3.2	--	6.0	31	1.5
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00015 *UT*	0.027 *T*	0.0022 *JT*	0.00016 *UT*	0.00016 *UT*	0.00015 *UT*	0.32 *JT*	0.26 *JT*	0.90 *JT*	0.26 *T*	0.60 *JT*	0.30 *JT*	0.042 *JT*	0.016 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.000069 *U*	0.0012	0.00013 *J*	0.000072 *U*	0.000073 *U*	0.000071 *U*	0.0083 *J*	0.0067 *J*	0.019 *J*	0.0033 *U*	0.018 *J*	0.0032 *U*	0.0016 *J*	0.0014
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.000095 *U*	0.00070	0.00010 *U*	0.00010 *U*	0.00010 *U*	0.000098 *U*	0.0040 *U*	0.0039 *U*	0.0020 *U*	0.0045 *U*	0.016 *J*	0.0044 *U*	0.00054 *U*	0.00049 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00014 *U*	0.0071	0.00060	0.00014 *U*	0.00015 *U*	0.00014 *U*	0.071	0.042	0.086	0.040	0.11	0.039	0.0047	0.0023
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00015 *U*	0.0018	0.00023 *J*	0.00016 *U*	0.00016 *U*	0.00015 *U*	0.011 *J*	0.0085 *J*	0.029	0.012	0.026	0.011 *J*	0.0036 *J*	0.0011 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000083 *U*	0.0028	0.00020 *J*	0.000087 *U*	0.000088 *U*	0.000085 *U*	0.043	0.040	0.013 *J*	0.018	0.022 *J*	0.022	0.0022	0.0018
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00012 *U*	0.013	0.00095	0.00012 *U*	0.00012 *U*	0.00012 *U*	0.18	0.16	0.75	0.19	0.41	0.22	0.030 *J*	0.0088

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

			Borehole Number:	WB-47	WB-47	WB-47	WB-47	WB-48	WB-48	WB-48	WB-48	WB-48	WB-48	WB-48	WB-48	WB-48	WB-48
			Sample Date:	9/8/2009	9/8/2009	9/8/2009	9/8/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009	9/10/2009
			Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
			Sample Type:	N	FD	N	N	N	N	N	N	N	N	N	FD	N	N
			Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
			Upper Depth, ft:	18	18	20	22	2	4	6	8	10	12	14	14	16	18
			Lower Depth, ft:	20	20	22	23	4	6	8	10	12	14	16	16	18	20
Constituent	**CAS ID**	**Method**	**Units Sample ID:**	ARK-WB-47-18-20	ARK-WB-73-18-20	ARK-WB-47-20-22	ARK-WB-47-22-23	ARK-WB-48-2-4	ARK-WB-48-4-6	ARK-WB-48-6-8	ARK-WB-48-8-10	ARK-WB-48-10-12	ARK-WB-48-12-14	ARK-WB-48-14-16	ARK-WB-75-14-16	ARK-WB-48-16-18	ARK-WB-48-18-20
Conventionals																	
Total organic carbon	TOC	SW9060	percent	0.090 *J*	0.12 *J*	0.070 *J*	0.061 *U*	2.6	3.4	2.6	2.1	2.7	2.2	0.26	0.20	0.070 *J*	0.061 *U*
Total solids	TSO	E160.3	percent	80	78	73	72	53	54	59	60	60	58	72	77	80	74
Grainsize																	
Clay	GS_CLAY	D422	percent	3.9	--	11	--	27	32	27	--	9.6	4.6	6.3	--	3.6	14
Sieve 1 inch	GS_SIEVE1	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent	0.10	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	1.9	1.4	0.10	--	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent	40	--	12	--	3.3	2.2	5.6	--	45	36	32	--	27	14
Sieve 2 inch	GS_SIEVE2	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent	0.10	--	0.20	--	0.10	0.10	0.10	--	0.30	0.40	0.50	--	0.90	0.20
Sieve 200	GS_SIEVE200	D422	percent	1.3	--	3.0	--	3.4	4.2	4.9	--	12	6.0	2.8	--	2.5	11
Sieve 230	GS_SIEVE230	D422	percent	0.51	--	1.8	--	3.3	2.2	3.9	--	2.8	2.5	0.79	--	1.0	7.6
Sieve 3 inch	GS_SIEVE3	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	0.50	1.5	0 *U*	--	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent	0 *U*	--	0 *U*	--	0 *U*	0 *U*	0 *U*	--	1.9	1.5	0 *U*	--	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent	2.5	--	2.0	--	0.40	0.20	0.30	--	2.0	8.8	12	--	16	2.0
Sieve 60	GS_SIEVE060	D422	percent	48	--	16	--	1.3	0.40	0.80	--	15	34	47	--	43	5.0
Silt	GS_SILT	D422	percent	3.7	--	54	--	61	59	57	--	9.2	2.6	-1.9 *U*	--	6.4	46
Pesticides																	
Total DDx	E966176eeca	SW8081A	mg/kg	0.0020 *JT*	0.0011 *JT*	0.00017 *UT*	0.00051 *JT*	4.6 *JT*	1.1 *JT*	27 *JT*	27 *JT*	2.0 *JT*	2.0 *JT*	0.41 *JT*	0.52 *JT*	0.0044 *T*	0.014 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg	0.000068 *U*	0.000071 *U*	0.000076 *U*	0.000078 *U*	0.18 *J*	0.12	4.8	4.5 *J*	0.49 *J*	0.39 *J*	0.094 *J*	0.11 *J*	0.0010	0.0029
2,4'-DDE	3424-82-6	SW8081A	mg/kg	0.000093 *U*	0.000098 *U*	0.00010 *U*	0.00011 *U*	0.16 *J*	0.053 *J*	0.47 *J*	0.68 *J*	0.040 *J*	0.035	0.0095 *J*	0.011 *J*	0.000096 *U*	0.00010 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg	0.00048	0.00021 *J*	0.00015 *U*	0.00016 *U*	0.047 *J*	0.012 *J*	0.21	1.3	0.022 *J*	0.018	0.0043	0.0048	0.00014 *U*	0.00035
4,4'-DDD	72-54-8	SW8081A	mg/kg	0.00015 *U*	0.00016 *U*	0.00017 *U*	0.00017 *U*	0.55	0.38	14	7.2	1.2	1.0	0.22	0.27	0.0021	0.0068
4,4'-DDE	72-55-9	SW8081A	mg/kg	0.00018 *J*	0.000085 *U*	0.000091 *U*	0.000093 *U*	0.16	0.17	1.1 *J*	1.3 *J*	0.084 *J*	0.077 *J*	0.021 *J*	0.025 *J*	0.00029	0.00074 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg	0.0012	0.00069	0.00013 *U*	0.00020 *J*	3.5	0.41	6.0	12	0.16	0.46	0.065	0.095	0.00085	0.0030

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-48	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49	WB-49
				Sample Date:	9/10/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	FD	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	20	0	2	4	6	8	10	12	14	16	16	18	20	22
				Lower Depth, ft:	21.9	2	4	6	8	10	12	14	16	18	18	20	22	23.5
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-48-20-21-9	ARK-WB-49-0-2	ARK-WB-49-2-4	ARK-WB-49-4-6	ARK-WB-49-6-8	ARK-WB-49-8-10	ARK-WB-49-10-12	ARK-WB-49-12-14	ARK-WB-49-14-16	ARK-WB-49-16-18	ARK-WB-74-16-18	ARK-WB-49-18-20	ARK-WB-49-20-22	ARK-WB-49-22-23-5
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.061 *U*	--	--	--	0.24	0.12 *J*	0.19 *J*	0.13 *J*	0.080 *J*	1.6	1.4	0.17 *J*	0.10 *J*	0.11 *J*
Total solids	TSO	E160.3	percent		69	54	51	71	78	82	74	74	73	62	63	78	76	82
Grainsize																		
Clay	GS_CLAY	D422	percent		8.6	--	--	--	2.1	1.4	1.4	4.5	2.2	11	--	2.4	3.7	6.5
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0.20	--	--	--	0 *U*	0 *U*	0.20	0 *U*	0 *U*	0 *U*	--	1.4	1.5	3.0
Sieve 140	GS_SIEVE140	D422	percent		8.3	--	--	--	10	15	12	14	9.5	12	--	19	19	15
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.90	--	--	--	0.70	0.50	1.5	1.7	1.1	1.6	--	4.1	3.6	2.4
Sieve 200	GS_SIEVE200	D422	percent		11	--	--	--	1.3	1.2	0.93	0.88	0.44	1.1	--	0.73	0.85	1.4
Sieve 230	GS_SIEVE230	D422	percent		16	--	--	--	0.64	0.64	0.29	0.39	0.19	0.60	--	0.33	0.34	0.50
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	8.7
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0.40
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0.60	0.30	3.0
Sieve 40	GS_SIEVE040	D422	percent		3.7	--	--	--	27	20	34	30	30	31	--	23	23	14
Sieve 60	GS_SIEVE060	D422	percent		10	--	--	--	55	56	50	49	57	40	--	44	48	34
Silt	GS_SILT	D422	percent		41	--	--	--	3.1	5.3	-0.61 *U*	-0.86 *U*	-1 *U*	1.8	--	4.8	-0.4 *U*	11
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.0043 *JT*	0.011 *JT*	2.2 *JT*	5.5 *JT*	0.88 *JT*	0.79 *T*	0.90 *JT*	0.22 *T*	0.11 *JT*	0.018 *JT*	0.0087 *JT*	0.0047 *JT*	0.0031 *JT*	0.0013 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.00082	0.0022 *J*	0.11 *J*	0.27 *J*	0.082	0.027	0.077	0.023	0.0023 *J*	0.0024 *J*	0.0014 *J*	0.00045	0.00022 *J*	0.00029
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00011 *U*	0.00014 *J*	0.0073 *J*	0.039 *J*	0.0098 *U*	0.0091 *U*	0.010 *U*	0.0020 *U*	0.0021 *U*	0.00077 *J*	0.00098	0.000097 *U*	0.00010 *U*	0.000092 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00019 *J*	0.00020 *UJ*	0.073 *J*	0.13 *J*	0.049	0.21	0.050	0.038	0.0030 *U*	0.00055	0.00017 *U*	0.00014 *U*	0.00014 *U*	0.00013 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.0016 *J*	0.0059	0.46	1.1	0.22	0.083	0.27	0.062	0.0092	0.0039	0.0039	0.0013	0.00075	0.00042
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000095 *U*	0.00035 *J*	0.13	0.15	0.021 *J*	0.0079 *U*	0.013 *J*	0.0069	0.0018 *U*	0.0016 *J*	0.00010 *UJ*	0.00023 *J*	0.00011 *J*	0.000094 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.0016 *J*	0.0020 *J*	1.4	3.8	0.50	0.46	0.48	0.091	0.10	0.0090 *J*	0.0023 *J*	0.0026	0.0019	0.00067 *U*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-50	WB-50	WB-50	WB-50	WB-50	WB-50	WB-50	WB-50	WB-50	WB-51	WB-51	WB-51	WB-51	WB-51
				Sample Date:	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	FD	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	re-analysis	normal	re-analysis
				Upper Depth, ft:	0	2	4	6	8	8	10	12	14	0	2	2	4	4
				Lower Depth, ft:	2	4	6	8	10	10	12	14	14.5	2	4	4	6	6
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-50-0-2	ARK-WB-50-2-4	ARK-WB-50-4-6	ARK-WB-50-6-8	ARK-WB-50-8-10	ARK-WB-71-8-10	ARK-WB-50-10-12	ARK-WB-50-12-14	ARK-WB-50-14-14-5	ARK-WB-51-0-2	ARK-WB-51-2-4	ARK-WB-51-2-4	ARK-WB-51-4-6	ARK-WB-51-4-6
Conventionals																		
Total organic carbon	TOC	SW9060	percent		2.1	2.2	2.9	4.1	2.1 *J*	1.2 *J*	0.52	0.13 *J*	0.061 *U*	1.5 *J*	1.6 *J*	--	1.4 *J*	--
Total solids	TSO	E160.3	percent		51	54	55	56	64	68	68	75	82	56 *J*	52 *J*	--	63 *J*	--
Grainsize																		
Clay	GS_CLAY	D422	percent		16	24	26	20	11	10	6.9	7.0	--	--	--	--	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 10	GS_SIEVE010	D422	percent		0.40	0.70	0.10	0.60	0.50	0.20	0.50	0 *U*	--	--	--	--	--	--
Sieve 140	GS_SIEVE140	D422	percent		6.8	7.9	8.8	8.3	23	24	17	11	--	--	--	--	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 20	GS_SIEVE020	D422	percent		0.20	0.20	0.20	0.20	0.20	0.10	1.8	0.20	--	--	--	--	--	--
Sieve 200	GS_SIEVE200	D422	percent		9.2	7.8	7.0	7.4	7.8	6.3	3.4	7.2	--	--	--	--	--	--
Sieve 230	GS_SIEVE230	D422	percent		4.1	5.8	2.6	5.4	2.7	3.4	1.1	11	--	--	--	--	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	1.6	0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	0 *U*	0 *U*	0.50	1.6	0.70	0.50	0 *U*	--	--	--	--	--	--
Sieve 40	GS_SIEVE040	D422	percent		0.60	0.60	2.9	0.60	6.7	5.8	21	6.2	--	--	--	--	--	--
Sieve 60	GS_SIEVE060	D422	percent		1.5	2.0	7.5	1.7	29	28	37	16	--	--	--	--	--	--
Silt	GS_SILT	D422	percent		61	51	45	54	18	22	11	42	--	--	--	--	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.93 *T*	9.9 *JT*	26 *JT*	17 *JT*	0.18 *JT*	0.10 *JT*	0.46 *JT*	0.0013 *JT*	0.0025 *JT*	3.0 *JT*	9.4 *JT*	10.7 *JT*	31 *JT*	35 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.091	1.5	3.0	3.4	0.028	0.023	0.010 *J*	0.00031	0.00053	0.16 *J*	2.4 *J*	2.6 *J*	4.6	6.4
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.048	0.25	0.25 *U*	0.44	0.0036	0.0028	0.0055 *U*	0.00010 *U*	0.000092 *U*	0.059 *J*	1.2 *J*	1.6 *J*	0.53	0.63
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.041	0.10 *U*	0.55 *J*	0.22 *J*	0.0017 *U*	0.00081 *U*	0.0080 *U*	0.00015 *U*	0.00014 *J*	0.055	0.92 *J*	1.4 *J*	0.38 *J*	0.58 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.19	4.7	6.1	8.8	0.061	0.047	0.033	0.00060	0.00097	0.35	1.9	2.1 *J*	15	19 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.049	0.59 *J*	0.22 *U*	1.0 *J*	0.0070	0.0055 *J*	0.0048 *U*	0.000088 *U*	0.00013 *J*	0.062	0.16 *J*	0.17 *J*	0.70 *J*	0.92 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.51	2.8	16	2.9	0.082 *J*	0.025 *J*	0.41	0.00018 *J*	0.00071	2.3	2.8	2.8 *J*	9.8	7.9 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-51	WB-51	WB-51	WB-51	WB-51	WB-51	WB-51	WB-51	WB-51	WB-52	WB-52	WB-52	WB-52	WB-52
				Sample Date:	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	8/28/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	re-analysis	normal	normal	normal	normal	normal	normal	normal	normal	re-analysis	normal	normal
				Upper Depth, ft:	6	8	8	10	12	14	16	18	20	0	2	2	4	6
				Lower Depth, ft:	8	10	10	12	14	16	18	20	21.5	2	4	4	6	8
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-51-6-8	ARK-WB-51-8-10	ARK-WB-51-8-10	ARK-WB-51-10-12	ARK-WB-51-12-14	ARK-WB-51-14-16	ARK-WB-51-16-18	ARK-WB-51-18-20	ARK-WB-51-20-21-5	ARK-WB-52-0-2	ARK-WB-52-2-4	ARK-WB-52-2-4	ARK-WB-52-4-6	ARK-WB-52-6-8
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.32 *J*	1.9 *J*	--	0.44 *J*	1.6 *J*	0.28 *J*	0.33 *J*	0.12 *J*	0.061 *UJ*	0.20 *J*	0.46 *J*	--	0.13 *J*	0.53 *J*
Total solids	TSO	E160.3	percent		75 *J*	67 *J*	--	75 *J*	74 *J*	77 *J*	80 *J*	77 *J*	78 *J*	77 *J*	74 *J*	--	78 *J*	76 *J*
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silt	GS_SILT	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		2.4 *T*	290 *T*	270 *JT*	2.8 *JT*	0.97 *JT*	0.043 *T*	0.12 *JT*	0.011 *JT*	0.0080 *JT*	1.5 *JT*	10 *T*	5.6 *J*	0.48 *JT*	0.012 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.29	32	31	0.41	0.18 *J*	0.0043	0.011	0.0018 *J*	0.0014	0.16	1.3	0.52 *J*	0.010 *J*	0.0013
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.018	1.6	1.3	0.078 *J*	0.024	0.00045	0.0016 *J*	0.00029 *J*	0.000096 *U*	0.15 *J*	0.22	0.061	0.0018 *UJ*	0.0014 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.13	12	11	0.090	0.052	0.0010	0.014	0.00047	0.00038	0.16 *J*	0.51	0.41	0.092 *J*	0.0013
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.83	75	71	1.1	0.41	0.012	0.026	0.0047 *J*	0.0032	0.10 *J*	2.4	1.3	0.024 *J*	0.0019
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.022	2.0	2.0	0.030	0.019 *J*	0.00040	0.00083 *J*	0.00020 *J*	0.00014 *J*	0.055 *J*	0.33	0.15	0.0025 *J*	0.00065
4,4'-DDT	50-29-3	SW8081A	mg/kg		1.1	170	150 *J*	1.1	0.28	0.025	0.062	0.0040	0.0028	0.90	5.4	3.1 *J*	0.35 *J*	0.0053

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-52	WB-52	WB-52	WB-52	WB-52	WB-53	WB-53	WB-53	WB-53	WB-53	WB-53	WB-53	WB-53	WB-54
				Sample Date:	9/9/2009	9/9/2009	9/9/2009	9/9/2009	9/9/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/21/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	8	10	12	14	16	0	2	4	6	8	10	12	14	0
				Lower Depth, ft:	10	12	14	16	18	2	4	6	8	10	12	14	15.3	2
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-52-8-10	ARK-WB-52-10-12	ARK-WB-52-12-14	ARK-WB-52-14-16	ARK-WB-52-16-18	ARK-WB-53-0-2	ARK-WB-53-2-4	ARK-WB-53-4-6	ARK-WB-53-6-8	ARK-WB-53-8-10	ARK-WB-53-10-12	ARK-WB-53-12-14	ARK-WB-53-14-15-3	ARK-WB-54-0-2
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.82 *J*	0.76 *J*	0.18 *J*	0.59 *J*	0.18 *J*	4.6	2.2	2.7	0.81	0.33	0.54	0.080 *J*	0.061 *U*	1.6 *J*
Total solids	TSO	E160.3	percent		66 *J*	73 *J*	76 *J*	73 *J*	77 *J*	51	55	56	69	75	73	80	78	56 *J*
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	--	16	21	28	7.8	3.5	6.5	4.9	2.9	--
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	--	1.0	0.50	0.50	0.10	0.20	0.30	0 *U*	0 *U*	--
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	--	9.1	10	10	33	24	36	22	23	--
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	--	0.40	0.30	0.10	0.40	0.60	0.50	0.20	0.10	--
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	--	11	7.8	8.5	6.5	1.2	3.3	2.4	6.0	--
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	--	5.0	5.6	3.3	2.5	0.30	1.2	0.50	8.3	--
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	--	5.8	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	--	0.80	0.50	0.20	0.10	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	--	0.70	0.80	1.3	3.6	13	9.8	6.8	15	--
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	--	1.9	1.8	3.9	13	48	39	24	34	--
Silt	GS_SILT	D422	percent		--	--	--	--	--	49	52	44	33	9.0	3.4	39	11	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00066 *JT*	0.0054 *JT*	0.00054 *JT*	0.00044 *JT*	0.00016 *UT*	1.3 *T*	2.7 *JT*	30 *T*	2.1 *JT*	0.0016 *T*	0.0032 *JT*	0.00040 *JT*	0.00015 *UT*	1.8 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.00031 *J*	0.0016 *J*	0.00024 *J*	0.000076 *U*	0.000072 *U*	0.14	0.48	4.3	0.22	0.00033	0.00074	0.00011 *J*	0.000068 *U*	0.14 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00011 *UJ*	0.0011 *J*	0.00010 *U*	0.00011 *U*	0.00010 *U*	0.091	0.064 *J*	0.24 *U*	0.019 *J*	0.000099 *U*	0.00010 *U*	0.000094 *U*	0.000095 *U*	0.083 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00017 *UJ*	0.00058	0.00014 *U*	0.00015 *U*	0.00014 *U*	0.042	0.029	0.74	0.054	0.00014 *U*	0.00019 *J*	0.00014 *U*	0.00014 *U*	0.024
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00018 *UJ*	0.00089	0.00016 *U*	0.00017 *U*	0.00016 *U*	0.23	1.8	6.5	0.44	0.00049	0.00092	0.00015 *U*	0.00015 *U*	0.26
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.00010 *UJ*	0.00047	0.000087 *U*	0.000091 *U*	0.000087 *U*	0.048	0.16 *J*	0.21 *U*	0.034 *J*	0.000086 *U*	0.00035	0.000081 *U*	0.000082 *U*	0.089
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00014 *UJ*	0.00076	0.00012 *U*	0.00014 *J*	0.00012 *U*	0.75	0.21	18	1.3 *J*	0.00058	0.00091	0.00011 *U*	0.00011 *U*	1.2

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-54	WB-54	WB-54	WB-54	WB-54	WB-54	WB-54	WB-54	WB-54	WB-54	WB-55	WB-55	WB-55	WB-55
				Sample Date:	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/24/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	re-analysis	normal	re-analysis	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	2	2	4	4	6	8	10	12.3	14	16	0	2	4	6
				Lower Depth, ft:	4	4	6	6	8	10	12.3	14	16	18	2	4	6	8
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-54-2-4	ARK-WB-54-2-4	ARK-WB-54-4-6	ARK-WB-54-4-6	ARK-WB-54-6-8	ARK-WB-54-8-10	ARK-WB-54-10-12-3	ARK-WB-54-12-3-14	ARK-WB-54-14-16	ARK-WB-54-16-18	ARK-WB-55-0-2	ARK-WB-55-2-4	ARK-WB-55-4-6	ARK-WB-55-6-8
Conventionals																		
Total organic carbon	TOC	SW9060	percent		1.5 *J*	--	1.8 *J*	--	0.64 *J*	0.60 *J*	0.69 *J*	0.63 *J*	0.080 *J*	0.080 *J*	0.061 *UJ*	0.10 *J*	0.061 *UJ*	1.4 *J*
Total solids	TSO	E160.3	percent		54 *J*	--	63 *J*	--	77 *J*	74 *J*	74 *J*	76 *J*	76 *J*	78 *J*	75 *J*	73 *J*	73 *J*	68 *J*
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silt	GS_SILT	D422	percent		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		9.0 *JT*	13 *JT*	33 *JT*	25 *JT*	0.049 *T*	0.96 *T*	0.0091 *JT*	0.20 *T*	0.0031 *JT*	0.00047 *JT*	3.2 *JT*	4.9 *JT*	0.16 *JT*	0.12 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		2.1 *J*	3.5 *J*	6.2	4.0 *J*	0.0090	0.13	0.0016	0.040	0.00048 *U*	0.00017 *U*	0.16 *J*	0.85	0.010	0.023
2,4'-DDE	3424-82-6	SW8081A	mg/kg		1.3 *J*	2.1 *J*	0.95 *J*	0.56 *J*	0.0025	0.0082	0.0016 *J*	0.0024	0.00010 *U*	0.000096 *U*	0.11	0.33	0.010	0.011 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		1.2 *J*	1.8 *J*	0.49	0.56 *J*	0.0017	0.024	0.00015 *U*	0.0014	0.00015 *J*	0.00014 *U*	0.25	0.62 *J*	0.0092 *J*	0.0077 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg		3.3	2.7 *J*	18	11 *J*	0.022	0.29	0.0033	0.077	0.00081	0.00017 *J*	0.067	0.17	0.0041	0.0075
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.58	0.52 *J*	0.98	0.57	0.0020	0.012	0.00022 *J*	0.0043	0.000088 *U*	0.000083 *U*	0.49	1.4	0.028	0.024 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.53	2.3 *J*	5.9	8.4 *J*	0.012	0.50	0.0023	0.072	0.0018	0.00012 *U*	2.1	1.5	0.097	0.048 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-55	WB-55	WB-55	WB-55	WB-55	WB-55	WB-55	WB-56	WB-56	WB-56	WB-56	WB-56	WB-56	WB-56
				Sample Date:	8/26/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	8	10	12	14	16	18	20	0	2	4	6	8	10	12
				Lower Depth, ft:	10	12	14	16	18	20	21	2	4	6	8	10	11	14
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-55-8-10	ARK-WB-55-10-12	ARK-WB-55-12-14	ARK-WB-55-14-16	ARK-WB-55-16-18	ARK-WB-55-18-20	ARK-WB-55-20-21	ARK-WB-56-0-2	ARK-WB-56-2-4	ARK-WB-56-4-6	ARK-WB-56-6-8	ARK-WB-56-8-10	ARK-WB-56-10-11	ARK-WB-56-12-14
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.92 *J*	0.93 *J*	0.18 *J*	0.29 *J*	0.74 *J*	0.18 *J*	0.19 *J*	--	1.1	0.18 *J*	0.56	0.19 *J*	0.090 *J*	0.080 *J*
Total solids	TSO	E160.3	percent		64 *J*	70 *J*	75 *J*	71 *J*	75 *J*	75 *J*	78 *J*	76	73	76	78	77	73	72
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	--	--	--	--	2.3	3.8	6.2	9.0	19	29
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	--	--	--	--	2.3	0.50	0.40	0.30	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	--	--	--	--	24	14	15	21	1.6	1.5
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	--	--	--	--	1.8	0.40	0.30	1.2	0.10	0.10
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	--	--	--	--	3.7	1.3	1.0	4.5	3.4	0.80
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	--	--	--	--	1.8	0.50	0.70	2.4	4.7	0.50
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	--	--	--	--	1.8	12	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	--	--	--	--	4.1	1.9	0.60	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	--	--	--	--	11	12	10	4.7	1.3	1.1
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	--	--	--	--	40	38	35	31	1.0	1.2
Silt	GS_SILT	D422	percent		--	--	--	--	--	--	--	--	8.1	16	31	26	69	66
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00032 *UT*	0.0097 *JT*	0.0084 *JT*	0.00017 *UT*	0.0097 *T*	0.043 *JT*	0.0049 *JT*	4.4 *JT*	0.26 *JT*	0.087 *T*	0.0076 *T*	0.00056 *T*	0.00016 *UT*	0.00017 *UT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.00032 *U*	0.00099	0.0011 *J*	0.000078 *U*	0.00053 *U*	0.0073 *J*	0.00082	0.14	0.028	0.0037	0.00081	0.000073 *U*	0.000073 *U*	0.000077 *U*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00012 *U*	0.0011 *J*	0.00092	0.00011 *U*	0.00033	0.0022	0.00030	0.053	0.0097 *J*	0.0010 *U*	0.000096 *U*	0.00010 *U*	0.00010 *U*	0.00011 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00017 *U*	0.00066	0.00053	0.00016 *U*	0.00097	0.0045 *J*	0.00049	0.55 *J*	0.012 *J*	0.0031	0.0012	0.00015 *U*	0.00015 *U*	0.00015 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00019 *U*	0.00034	0.00030	0.00017 *U*	0.0012	0.0012	0.00020 *J*	0.35	0.059	0.0076	0.0015	0.00016 *U*	0.00016 *U*	0.00017 *U*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.00010 *U*	0.0045	0.0029	0.000093 *U*	0.00057	0.0070	0.0012	0.38	0.014 *J*	0.0041	0.00095	0.000088 *U*	0.000087 *U*	0.000092 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00016 *U*	0.0021	0.0026	0.00013 *U*	0.0064	0.021	0.0019	2.9	0.14	0.068	0.0031	0.00027	0.00012 *U*	0.00013 *U*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-56	WB-56	WB-56	WB-56	WB-56	WB-56	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b
				Sample Date:	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	FD	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	14	14	16	18	20	22	20.7	22.7	24.7	26.7	28.7	30.7	32.7	34.7
				Lower Depth, ft:	16	16	18	20	22	24	22.7	24.7	26.7	28.7	30.7	32.7	34.7	36.7
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-56-14-16	ARK-WB-78-14-16	ARK-WB-56-16-18	ARK-WB-56-18-20	ARK-WB-56-20-22	ARK-WB-56-22-24	ARK-WB-56b-20-7-22-7	ARK-WB-56b-22-7-24-7	ARK-WB-56b-24-7-26-7	ARK-WB-56b-26-7-28-7	ARK-WB-56b-28-7-30-7	ARK-WB-56b-30-7-32-7	ARK-WB-56b-32-7-34-7	ARK-WB-56b-34-7-36-7
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.080 *J*	0.090 *J*	0.070 *J*	0.061 *U*	0.061 *U*	0.070 *J*	0.10 *J*	0.061 *U*	0.061 *U*	0.10 *J*	0.061 *U*	0.061 *U*	0.070 *J*	0.10 *J*
Total solids	TSO	E160.3	percent		69	70	71	72	72	69	72	75	71	72	72	72	75	74
Grainsize																		
Clay	GS_CLAY	D422	percent		26	--	24	13	7.9	22	14	10	14	9.6	54	16	9.3	14
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		0.90	--	2.4	7.4	5.0	1.2	2.0	8.6	6.1	6.8	3.8	9.1	11	5.0
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0 *U*	--	0.10	0.10	0.10	0.10	0.30	0.10	0.40	0.10	0.10	0 *U*	0 *U*	0.30
Sieve 200	GS_SIEVE200	D422	percent		0.50	--	6.8	13	13	1.1	13	16	22	22	8.1	17	28	6.9
Sieve 230	GS_SIEVE230	D422	percent		0.80	--	4.4	11	5.2	0.50	9.7	13	9.1	17	4.3	12	9.6	8.6
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		1.1	--	1.1	0.20	1.4	0.30	0.70	0.30	1.2	0.50	0.20	0.20	0.10	4.5
Sieve 60	GS_SIEVE060	D422	percent		0.80	--	0.70	0.20	1.0	0.40	0.50	0.20	0.60	1.5	0.10	0.10	0.10	3.9
Silt	GS_SILT	D422	percent		70	--	61	54	66	74	59	51	46	42	29	46	42	57
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.00017 *UT*	0.00017 *UT*	0.00017 *UT*	0.00016 *UT*	0.013 *T*	0.0031 *T*	0.00017 *UJT*	0.00016 *UT*	0.00017 *UT*	0.0062 *T*	0.00016 *UT*	0.00016 *UT*	0.0014 *JT*	0.0069 *T*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.000079 *U*	0.000077 *U*	0.000078 *U*	0.000074 *U*	0.00052	0.00033	0.000076 *UJ*	0.000074 *U*	0.000078 *U*	0.00037	0.000074 *U*	0.000074 *U*	0.000085 *J*	0.00058
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00010 *U*	0.00011 *U*	0.00011 *U*	0.00010 *UJ*	0.00010 *U*	0.00011 *U*	0.00010 *U*	0.00010 *U*	0.00010 *U*	0.00010 *UJ*	0.00010 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00016 *U*	0.00015 *U*	0.00016 *U*	0.00015 *U*	0.0023	0.00046	0.00015 *UJ*	0.00015 *U*	0.00016 *U*	0.0011	0.00015 *U*	0.00015 *U*	0.00015 *UJ*	0.0015
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.00017 *U*	0.00017 *U*	0.00017 *U*	0.00016 *U*	0.0012	0.00073	0.00017 *UJ*	0.00016 *U*	0.00017 *U*	0.00092	0.00016 *U*	0.00016 *U*	0.00020 *J*	0.0011
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.000095 *U*	0.000092 *U*	0.000094 *U*	0.000089 *U*	0.0014	0.00039	0.000091 *UJ*	0.000089 *U*	0.000094 *U*	0.00082	0.000088 *U*	0.000089 *U*	0.00022 *J*	0.00086
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.00013 *U*	0.00013 *U*	0.00013 *U*	0.00012 *U*	0.0079	0.0011	0.00013 *UJ*	0.00012 *U*	0.00013 *U*	0.0029	0.00012 *U*	0.00012 *U*	0.00077 *J*	0.0028

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

			Borehole Number:	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b	WB-56b
			Sample Date:	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009
			Matrix:	SE	SE	SE	SE	SE	SE
			Sample Type:	N	N	N	N	N	N
			Tets Type:	normal	normal	normal	normal	normal	normal
			Upper Depth, ft:	36.7	38.7	40.7	42.7	44.7	46.7
			Lower Depth, ft:	38.7	40.7	42.7	44.7	46.7	47.5
Constituent	**CAS ID**	**Method**	**Units** Sample ID:	ARK-WB-56b-36-7-38-7	ARK-WB-56b-38-7-40-7	ARK-WB-56b-40-7-42-7	ARK-WB-56b-42-7-44-7	ARK-WB-56b-44-7-46-7	ARK-WB-56b-46-7-47-5
Conventionals									
Total organic carbon	TOC	SW9060	percent	0.38	0.66	0.65	0.42	0.50	--
Total solids	TSO	E160.3	percent	70	73	74	77	72	81
Grainsize									
Clay	GS_CLAY	D422	percent	21	18	21	12	13	--
Sieve 1 inch	GS_SIEVE1	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 10	GS_SIEVE010	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 140	GS_SIEVE140	D422	percent	0.80	0.20	0.30	13	8.3	--
Sieve 2 inch	GS_SIEVE2	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 20	GS_SIEVE020	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 200	GS_SIEVE200	D422	percent	0.90	1.9	2.1	22	21	--
Sieve 230	GS_SIEVE230	D422	percent	0.70	5.8	2.7	14	8.1	--
Sieve 3 inch	GS_SIEVE3	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 4	GS_SIEVE004	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--
Sieve 40	GS_SIEVE040	D422	percent	1.5	0 *U*	0.20	0 *U*	0.20	--
Sieve 60	GS_SIEVE060	D422	percent	0.70	0 *U*	0.10	0.10	0.20	--
Silt	GS_SILT	D422	percent	75	74	74	39	50	--
Pesticides									
Total DDx	E966176eeca	SW8081A	mg/kg	0.00017 *UT*	0.00017 *UT*	0.00040 *JT*	0.00016 *UT*	0.00062 *T*	0.00014 *UT*
2,4'-DDD	53-19-0	SW8081A	mg/kg	0.000076 *U*	0.000078 *U*	0.000087 *J*	0.000073 *U*	0.000077 *U*	0.000065 *U*
2,4'-DDE	3424-82-6	SW8081A	mg/kg	0.00010 *U*	0.00011 *U*	0.00010 *U*	0.00010 *U*	0.00011 *U*	0.000090 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg	0.00015 *U*	0.00016 *U*	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00013 *U*
4,4'-DDD	72-54-8	SW8081A	mg/kg	0.00017 *U*	0.00017 *U*	0.00016 *U*	0.00016 *U*	0.00017 *U*	0.00014 *U*
4,4'-DDE	72-55-9	SW8081A	mg/kg	0.000091 *U*	0.000093 *U*	0.000091 *U*	0.000088 *U*	0.000092 *U*	0.000078 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg	0.00013 *U*	0.00013 *U*	0.00013 *U*	0.00012 *U*	0.00032	0.00011 *U*

			Borehole Number:	WB-57	WB-57	WB-57	WB-57	WB-57	WB-57	WB-57	WB-57
			Sample Date:	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009
			Matrix:	SE	SE	SE	SE	SE	SE	SE	SE
			Sample Type:	N	N	N	N	N	N	N	N
			Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal
			Upper Depth, ft:	0	2	4	6	8	10	12	14
			Lower Depth, ft:	2	4	6	8	10	12	14	16
Constituent	**CAS ID**	**Method**	**Units** Sample ID:	ARK-WB-57-0-2	ARK-WB-57-2-4	ARK-WB-57-4-6	ARK-WB-57-6-8	ARK-WB-57-8-10	ARK-WB-57-10-12	ARK-WB-57-12-14	ARK-WB-57-14-16
Conventionals											
Total organic carbon	TOC	SW9060	percent	2.4 *J*	2.5	2.4	2.1	2.5	2.2	2.1	1.1
Total solids	TSO	E160.3	percent	48	52	56	58	59	61	61	72
Grainsize											
Clay	GS_CLAY	D422	percent	31	41	37	34	34	32	30	13
Sieve 1 inch	GS_SIEVE1	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent	0 *U*	0.30	0 *U*	0 *U*	0 *U*	0 *U*	0.30	0.20
Sieve 140	GS_SIEVE140	D422	percent	3.1	5.1	4.0	3.2	5.7	7.0	7.9	12
Sieve 2 inch	GS_SIEVE2	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent	0 *U*	0.10	0 *U*	0 *U*	0.10	0.10	0.30	0.30
Sieve 200	GS_SIEVE200	D422	percent	4.3	3.1	3.9	4.1	3.2	3.1	3.0	1.7
Sieve 230	GS_SIEVE230	D422	percent	3.3	2.4	2.2	3.8	1.7	2.3	1.4	1.2
Sieve 3 inch	GS_SIEVE3	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0.10	0.40
Sieve 40	GS_SIEVE040	D422	percent	0.40	0.70	0.60	0.20	2.0	2.4	4.2	14
Sieve 60	GS_SIEVE060	D422	percent	0.80	1.7	1.8	0.50	6.0	6.9	8.5	36
Silt	GS_SILT	D422	percent	57	46	50	54	47	46	45	21
Pesticides											
Total DDx	E966176eeca	SW8081A	mg/kg	0.53 *JT*	0.36 *JT*	0.24 *JT*	0.17 *JT*	0.49 *JT*	0.26 *JT*	0.62 *JT*	0.61 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg	0.023	0.075	0.037	0.021 *J*	0.062	0.029 *J*	0.064	0.081
2,4'-DDE	3424-82-6	SW8081A	mg/kg	0.0078 *U*	0.017 *J*	0.013 *J*	0.023 *J*	0.036 *J*	0.016 *J*	0.0061 *U*	0.0052 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg	0.018 *J*	0.011 *J*	0.0066	0.023 *J*	0.022	0.012 *J*	0.016 *J*	0.011 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg	0.047	0.14	0.097 *J*	0.047 *J*	0.11	0.062 *J*	0.12	0.15
4,4'-DDE	72-55-9	SW8081A	mg/kg	0.024	0.021 *J*	0.023 *J*	0.012 *J*	0.018	0.013 *J*	0.039	0.014
4,4'-DDT	50-29-3	SW8081A	mg/kg	0.41	0.091	0.062 *J*	0.041 *J*	0.24 *J*	0.13 *J*	0.38	0.35

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

Constituent	CAS ID	Method	Units														
			Borehole Number:	WB-57	WB-57	WB-57	WB-57	WB-57	WB-57	WB-57	WB-58	WB-58	WB-58	WB-58	WB-58	WB-58	WB-58
			Sample Date:	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/14/2009	9/11/2009	9/11/2009	9/11/2009	9/11/2009	9/11/2009	9/11/2009	9/11/2009
			Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
			Sample Type:	N	FD	N	N	N	N	N	N	N	FD	N	N	N	N
			Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
			Upper Depth, ft:	16	16	18	20	22	24	26	0	2	2	4	6	8	10
			Lower Depth, ft:	18	18	20	22	24	26	27.2	2	4	4	6	8	10	12
			Sample ID:	ARK-WB-57-16-18	ARK-WB-77-16-18	ARK-WB-57-18-20	ARK-WB-57-20-22	ARK-WB-57-22-24	ARK-WB-57-24-26	ARK-WB-57-26-27-2	ARK-WB-58-0-2	ARK-WB-58-2-4	ARK-WB-76-2-4	ARK-WB-58-4-6	ARK-WB-58-6-8	ARK-WB-58-8-10	ARK-WB-58-10-12
Conventionals																	
Total organic carbon	TOC	SW9060	percent		0.39	0.35	0.11 *J*	0.11 *J*	0.090 *J*	0.080 *J*	0.17 *J*	2.6 *J*	1.9	1.9	2.7	2.3	2.2	2.0
Total solids	TSO	E160.3	percent		73	72	74	74	73	74	73	45	53	53	51	55	55	57
Grainsize																	
Clay	GS_CLAY	D422	percent		10	--	16	17	14	9.1	11	18	29	--	31	34	31	38
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0 *U*	--	0 *U*	0 *U*	0.20	0 *U*	9.3	0 *U*	0 *U*	--	0 *U*	0.10	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		15	--	3.6	0.50	1.9	17	15	2.3	4.8	--	3.7	4.5	2.5	4.2
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.10	--	1.4	0 *U*	0.20	0.20	3.6	0.10	0 *U*	--	0 *U*	0.10	0 *U*	0 *U*
Sieve 200	GS_SIEVE200	D422	percent		9.6	--	6.9	1.8	13	24	6.3	4.2	4.7	--	3.3	4.2	3.4	4.3
Sieve 230	GS_SIEVE230	D422	percent		8.8	--	6.7	5.8	11	14	2.5	2.7	4.2	--	1.7	3.5	1.9	3.1
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	13	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*	16	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		1.3	--	3.6	0.50	0.40	1.7	3.6	0.50	0.40	--	0.60	0.30	0.30	0.20
Sieve 60	GS_SIEVE060	D422	percent		7.6	--	5.0	0.70	0.60	1.4	6.7	0.60	0.80	--	1.1	1.0	0.90	0.50
Silt	GS_SILT	D422	percent		47	--	56	74	59	33	13	72	56	--	58	52	60	50
Pesticides																	
Total DDx	E966176eeca	SW8081A	mg/kg		0.0060 *JT*	0.0031 *JT*	0.0016 *JT*	0.00017 *UT*	0.00017 *UT*	0.00016 *UT*	0.00046 *JT*	0.041 *JT*	0.27 *JT*	0.22 *JT*	0.48 *JT*	0.10 *JT*	0.38 *JT*	0.078 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.00095	0.00079	0.00026 *J*	0.000076 *U*	0.000076 *U*	0.000072 *U*	0.000076 *U*	0.0048 *J*	0.042	0.043	0.046	0.0083 *J*	0.031	0.011 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00010 *U*	0.00011 *U*	0.00010 *U*	0.00011 *U*	0.00010 *U*	0.00010 *U*	0.00011 *U*	0.0016 *J*	0.0073 *J*	0.0048	0.012 *J*	0.0060 *J*	0.015 *J*	0.0093 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00051	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00015 *U*	0.00014 *U*	0.00015 *U*	0.0027 *J*	0.0089 *J*	0.020 *J*	0.014	0.012 *J*	0.077	0.0078 *J*
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.0017	0.0012	0.00053	0.00017 *U*	0.00017 *U*	0.00016 *U*	0.00017 *U*	0.014 *J*	0.083 *J*	0.083 *J*	0.095 *J*	0.024 *J*	0.051	0.021 *J*
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.00035	0.00029	0.000089 *U*	0.000092 *U*	0.000091 *U*	0.000086 *U*	0.000092 *U*	0.0054 *J*	0.022	0.017	0.053 *J*	0.020 *J*	0.028 *J*	0.0076 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.0024 *J*	0.00073 *J*	0.00067	0.00013 *U*	0.00013 *U*	0.00012 *U*	0.00016 *J*	0.012 *J*	0.11 *J*	0.055 *J*	0.26 *J*	0.030 *J*	0.18 *J*	0.021 *J*

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-58	WB-58	WB-60	WB-60	WB-62	WB-62	WB-62	WB-62	WB-62	WB-63	WB-63	WB-63	WB-63	WB-63
				Sample Date:	9/11/2009	9/11/2009	9/1/2009	9/1/2009	8/31/2009	8/31/2009	8/31/2009	8/31/2009	8/31/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	12	14	0	2	0	2	4	6	8	0	2	4	6	8
				Lower Depth, ft:	14	15.2	2	3.5	2	4	6	8	8.8	2	4	6	8	10
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-58-12-14	ARK-WB-58-14-15-2	ARK-WB-60-0-2	ARK-WB-60-2-3-5	ARK-WB-62-0-2	ARK-WB-62-2-4	ARK-WB-62-4-6	ARK-WB-62-6-8	ARK-WB-62-8-8-8	ARK-WB-63-0-2	ARK-WB-63-2-4	ARK-WB-63-4-6	ARK-WB-63-6-8	ARK-WB-63-8-10
Conventionals																		
Total organic carbon	TOC	SW9060	percent		1.5	2.1	2.2 *J*	1.9 *J*	2.8 *J*	1.5 *J*	0.44 *J*	0.26 *J*	0.061 *UJ*	2.0	1.7	2.2	2.1	1.2
Total solids	TSO	E160.3	percent		63	59	43	51	59 *J*	68 *J*	74 *J*	76 *J*	82 *J*	55	54	53	60	70
Grainsize																		
Clay	GS_CLAY	D422	percent		26	31	34	17	--	--	--	--	--	16	21	25	30	7.2
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0.30	1.7	0 *U*	1.9	--	--	--	--	--	0 *U*	0.10	0 *U*	0 *U*	0.40
Sieve 140	GS_SIEVE140	D422	percent		8.0	6.8	3.4	7.4	--	--	--	--	--	16	12	2.2	9.4	16
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.40	1.4	0.10	0.80	--	--	--	--	--	0.10	0.50	0.60	0.50	0.90
Sieve 200	GS_SIEVE200	D422	percent		8.2	3.5	7.5	5.6	--	--	--	--	--	14	14	3.4	13	4.9
Sieve 230	GS_SIEVE230	D422	percent		5.2	2.8	4.5	4.7	--	--	--	--	--	10	7.0	3.6	6.7	1.6
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	6.2	--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	2.3
Sieve 4	GS_SIEVE004	D422	percent		1.7	0.40	0 *U*	3.2	--	--	--	--	--	0 *U*	0.30	0 *U*	0 *U*	0.20
Sieve 40	GS_SIEVE040	D422	percent		2.0	4.7	0.50	1.5	--	--	--	--	--	0.60	0.50	0.20	5.0	16
Sieve 60	GS_SIEVE060	D422	percent		4.0	5.1	0.70	3.6	--	--	--	--	--	1.2	1.0	0.40	8.2	32
Silt	GS_SILT	D422	percent		45	43	49	48	--	--	--	--	--	42	44	64	27	18
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.30 *JT*	0.43 *JT*	0.27 *JT*	0.15 *JT*	2.5 *JT*	3.1 *JT*	0.68 *JT*	0.31 *T*	0.0041 *JT*	0.96 *T*	4.1 *T*	1.4 *JT*	39 *JT*	37 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.047	0.089	0.016 *J*	0.026	0.41	0.52	0.11	0.038	0.00086	0.14	0.56	0.32 *J*	8.4	3.8
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.011 *J*	0.012 *J*	0.0028 *J*	0.0049	0.14	0.092	0.025	0.0071	0.00017 *J*	0.034	0.21	0.20 *J*	0.62 *J*	0.18 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.012 *J*	0.020 *J*	0.0082 *J*	0.0023 *J*	0.013	0.022	0.0041 *J*	0.0066	0.00013 *U*	0.040	0.16	0.14 *J*	0.47 *J*	9.9
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.092 *J*	0.17 *J*	0.034 *J*	0.053	1.2	1.3	0.30	0.089	0.0018	0.24	1.0	0.29	23	7.1
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.015 *J*	0.017 *J*	0.0055 *J*	0.0058 *J*	0.37 *J*	0.20 *J*	0.056 *J*	0.014	0.00034	0.10	0.75	0.067	0.89	0.24 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.12 *J*	0.12 *J*	0.20 *J*	0.057	0.32	0.97	0.18	0.16	0.00090	0.41	1.4	0.39	5.8	16

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-63	WB-63	WB-63	WB-63	WB-64	WB-64	WB-64	WB-64	WB-64	WB-64	WB-64	WB-64	WB-64	WB-64
				Sample Date:	8/20/2009	8/20/2009	8/20/2009	8/20/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	re-analysis	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	10	12	14	16	0	2	4	4	6	8	10	12	14	16
				Lower Depth, ft:	12	14	16	16.7	2	4	6	6	8	10	12	14	16	18
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-63-10-12	ARK-WB-63-12-14	ARK-WB-63-14-16	ARK-WB-63-16-16-7	ARK-WB-64-0-2	ARK-WB-64-2-4	ARK-WB-64-4-6	ARK-WB-64-4-6	ARK-WB-64-6-8	ARK-WB-64-8-10	ARK-WB-64-10-12	ARK-WB-64-12-14	ARK-WB-64-14-16	ARK-WB-64-16-18
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.51	0.16 *U*	0.15 *U*	0.11 *U*	0.58 *J*	0.19 *J*	0.14 *J*	--	0.15 *J*	0.13 *J*	0.81 *J*	1.2 *J*	0.20 *J*	0.16 *J*
Total solids	TSO	E160.3	percent		77	77	75	75	83 *J*	73 *J*	79 *J*	--	81 *J*	78 *J*	73 *J*	67 *J*	76 *J*	77 *J*
Grainsize																		
Clay	GS_CLAY	D422	percent		5.0	2.7	3.5	2.1	--	--	--	--	--	--	--	--	--	--
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 10	GS_SIEVE010	D422	percent		0.10	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 140	GS_SIEVE140	D422	percent		32	31	38	32	--	--	--	--	--	--	--	--	--	--
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 20	GS_SIEVE020	D422	percent		0.40	0.10	0.10	0.10	--	--	--	--	--	--	--	--	--	--
Sieve 200	GS_SIEVE200	D422	percent		1.8	1.4	0.93	1.2	--	--	--	--	--	--	--	--	--	--
Sieve 230	GS_SIEVE230	D422	percent		0.80	0.37	0.35	0.29	--	--	--	--	--	--	--	--	--	--
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 4	GS_SIEVE004	D422	percent		0.70	0 *U*	0 *U*	0 *U*	--	--	--	--	--	--	--	--	--	--
Sieve 40	GS_SIEVE040	D422	percent		7.2	6.2	3.8	4.9	--	--	--	--	--	--	--	--	--	--
Sieve 60	GS_SIEVE060	D422	percent		44	54	50	55	--	--	--	--	--	--	--	--	--	--
Silt	GS_SILT	D422	percent		8.0	3.3	2.4	4.4	--	--	--	--	--	--	--	--	--	--
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		4.8 *JT*	0.028 *JT*	0.0039 *JT*	0.0034 *JT*	0.52 *T*	0.35 *JT*	6.1 *JT*	4.6 *JT*	0.33 *JT*	0.22 *JT*	0.041 *JT*	0.0026 *JT*	0.033 *JT*	0.0086 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.56	0.0046	0.00086 *J*	0.00074	0.054	0.065	1.5	0.89	0.066	0.037	0.011	0.00061	0.0097	0.0020
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.030 *U*	0.00025 *J*	0.000099 *U*	0.00010 *U*	0.027	0.018 *J*	0.24 *J*	1.1 *J*	0.0089 *J*	0.0041 *J*	0.0037 *J*	0.00089 *J*	0.0022 *J*	0.00050 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.49	0.0018	0.00019 *J*	0.00016 *J*	0.062	0.0020 *J*	0.13	0.11	0.013	0.018	0.0022	0.00017 *U*	0.0024	0.00050
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.96	0.0084	0.0018 *J*	0.0014	0.032	0.011	0.52	0.39	0.027	0.019	0.0023	0.00031	0.0024	0.00075
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.044 *J*	0.00024 *J*	0.000086 *U*	0.000087 *U*	0.19	0.17	1.1	0.53	0.055	0.023	0.013	0.00026 *J*	0.011	0.0033
4,4'-DDT	50-29-3	SW8081A	mg/kg		2.7	0.013	0.00095 *J*	0.00098	0.15	0.082	2.6	1.6 *J*	0.16	0.12	0.0087	0.00047	0.0054	0.0015

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-64	WB-64	WB-64	WB-64	WB-64	WB-65	WB-65	WB-65	WB-65	WB-65	WB-65	WB-66	WB-66	WB-66
				Sample Date:	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/25/2009	8/18/2009	8/18/2009	8/18/2009	8/18/2009	8/18/2009	8/18/2009	8/19/2009	8/19/2009	8/19/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N	N	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	18	20	22	24	26	0	6.5	8	10	15	16	0	2	4
				Lower Depth, ft:	20	22	24	26	26.5	1.5	8	10	15	16	18	2	4	6
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-64-18-20	ARK-WB-64-20-22	ARK-WB-64-22-24	ARK-WB-64-24-26	ARK-WB-64-26-26-5	ARK-WB-65-0-1-5	ARK-WB-65-6-5-8	ARK-WB-65-8-10	ARK-WB-65-10-15	ARK-WB-65-15-16	ARK-WB-65-16-18	ARK-WB-66-0-2	ARK-WB-66-2-4	ARK-WB-66-4-6
Conventionals																		
Total organic carbon	TOC	SW9060	percent		0.17 *J*	0.061 *UJ*	0.090 *J*	0.061 *UJ*	0.19 *J*	2.4	2.1	1.0	1.4	0.20	0.12 *J*	2.1	2.4 *J*	2.2
Total solids	TSO	E160.3	percent		79 *J*	74 *J*	71 *J*	77 *J*	83 *J*	60	58	67	69	73	76	51	49	55
Grainsize																		
Clay	GS_CLAY	D422	percent		--	--	--	--	--	6.3	17	6.5	7.0	4.3	4.5	18	23	24
Sieve 1 inch	GS_SIEVE1	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		--	--	--	--	--	0.50	1.0	0.10	0.80	0 *U*	0.10	0 *U*	0 *U*	0.10
Sieve 140	GS_SIEVE140	D422	percent		--	--	--	--	--	15	8.6	9.0	26	66	65	4.7	1.4	4.0
Sieve 2 inch	GS_SIEVE2	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		--	--	--	--	--	0.20	0.30	0.10	0.60	0.10	0 *U*	0.10	0 *U*	0.20
Sieve 200	GS_SIEVE200	D422	percent		--	--	--	--	--	8.1	8.4	1.8	5.2	2.8	4.3	10	2.5	7.1
Sieve 230	GS_SIEVE230	D422	percent		--	--	--	--	--	5.6	4.6	2.8	1.6	0.70	1.0	6.7	3.0	3.8
Sieve 3 inch	GS_SIEVE3	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		--	--	--	--	--	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		--	--	--	--	--	0.40	0 *U*	1.3	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		--	--	--	--	--	0.40	0 *U*	0.20	1.6	0.20	0 *U*	0 *U*	0 *U*	0.40
Sieve 40	GS_SIEVE040	D422	percent		--	--	--	--	--	1.2	0.70	1.8	4.1	0.70	0.30	0.40	0.20	0.30
Sieve 60	GS_SIEVE060	D422	percent		--	--	--	--	--	5.1	2.6	20	18	24	17	0.60	0.30	0.70
Silt	GS_SILT	D422	percent		--	--	--	--	--	58	56	56	35	1.1	8.2	59	69	59
Pesticides																		
Total DDx	E966176eeca	SW8081A	mg/kg		0.012 *JT*	0.00065 *JT*	0.00050 *JT*	0.0017 *JT*	0.16 *JT*	12 *JT*	120 *JT*	0.60 *T*	0.011 *JT*	0.0034 *T*	0.0024 *JT*	0.72 *JT*	0.43 *JT*	1.9 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		0.0032	0.00021 *J*	0.000077 *U*	0.00020 *J*	0.032	3.0	1.7 *J*	0.13	0.0030 *J*	0.00078	0.00063 *J*	0.031	0.041 *J*	0.48 *J*
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.00056 *J*	0.00010 *U*	0.00011 *U*	0.00012 *J*	0.0078 *J*	0.21	1.3 *U*	0.017	0.00026 *J*	0.00010 *U*	0.00010 *UJ*	0.0074 *U*	0.021 *J*	0.38 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		0.00098	0.00014 *U*	0.00015 *U*	0.00031	0.018	0.17 *J*	14	0.0049 *U*	0.00016 *U*	0.00015 *U*	0.00015 *UJ*	0.015 *J*	0.0045 *UJ*	0.17
4,4'-DDD	72-54-8	SW8081A	mg/kg		0.0013	0.00016 *U*	0.00017 *U*	0.00015 *U*	0.016	6.3	5.0	0.31	0.0061 *J*	0.0018	0.00069 *J*	0.092	0.14 *J*	0.29
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.0034	0.00010 *J*	0.000093 *U*	0.00045	0.043	0.38	1.2 *U*	0.032	0.00044	0.000091 *U*	0.000088 *UJ*	0.022	0.051 *J*	0.094
4,4'-DDT	50-29-3	SW8081A	mg/kg		0.0022	0.00014 *J*	0.00020 *J*	0.00054	0.043	2.2	100	0.11	0.0015 *J*	0.00065	0.00092 *J*	0.56	0.17 *J*	0.52

Table 3-1. Sediment Chemistry Data - DDx and Conventional Analytes

				Borehole Number:	WB-66	WB-66	WB-66	WB-66	WB-66	WB-66	WB-66
				Sample Date:	8/19/2009	8/19/2009	8/19/2009	8/19/2009	8/19/2009	8/19/2009	8/19/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	FD	N	N
				Tets Type:	normal	normal	normal	normal	normal	normal	normal
				Upper Depth, ft:	6	8	10	12	12	14	16
				Lower Depth, ft:	8	10	12	14	14	16	17.5
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-66-6-8	ARK-WB-66-8-10	ARK-WB-66-10-12	ARK-WB-66-12-14	ARK-WB-70-12-14	ARK-WB-66-14-16	ARK-WB-66-16-17-5
Conventionals											
Total organic carbon	TOC	SW9060	percent		2.8	2.9	5.9	0.60	0.90	0.61	0.12 *U*
Total solids	TSO	E160.3	percent		59	57	56	71	69	71	79
Grainsize											
Clay	GS_CLAY	D422	percent		23	23	7.6	8.7	8.6	5.1	5.3
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0.80	0.50	3.8	0.70	0.20	0.20	0.20
Sieve 140	GS_SIEVE140	D422	percent		8.0	6.8	21	28	30	35	34
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		0.20	0.10	0.30	0.70	0.90	0.50	0.70
Sieve 200	GS_SIEVE200	D422	percent		8.6	7.9	4.0	2.3	2.1	2.5	1.5
Sieve 230	GS_SIEVE230	D422	percent		5.8	3.1	2.4	0.90	1.0	0.80	0.67
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	2.7	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		2.0	1.2	4.6	0.10	0.70	0.50	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		2.1	1.7	2.2	9.5	9.6	6.9	8.5
Sieve 60	GS_SIEVE060	D422	percent		4.2	2.8	14	42	43	43	48
Silt	GS_SILT	D422	percent		46	53	37	6.9	4.7	6.1	0.67
Pesticides											
Total DDx	E966176eeca	SW8081A	mg/kg		75 *JT*	86 *T*	3.0 *JT*	3.4 *JT*	2.2 *JT*	4.4 *JT*	0.12 *JT*
2,4'-DDD	53-19-0	SW8081A	mg/kg		8.0	19	0.53	0.52	0.47	0.29	0.022
2,4'-DDE	3424-82-6	SW8081A	mg/kg		0.51 *U*	1.3	0.035 *J*	0.054	0.040 *J*	0.043 *U*	0.0012 *J*
2,4'-DDT	789-02-6	SW8081A	mg/kg		7.2	3.3	0.32	0.25 *J*	0.057 *J*	0.071 *J*	0.0055
4,4'-DDD	72-54-8	SW8081A	mg/kg		17	34	1.0	1.1	0.99	0.61	0.069
4,4'-DDE	72-55-9	SW8081A	mg/kg		1.1 *J*	2.4	0.063 *J*	0.081	0.076	0.037 *U*	0.0023 *J*
4,4'-DDT	50-29-3	SW8081A	mg/kg		41	26	1.1	1.4 *J*	0.60 *J*	3.4	0.023

Notes:

Grain size was not analyzed on field replicate samples.
Grain size and/or total organic carbon were not analyzed on selected samples with insufficient recovery to perform the analyses.
Total DDx is the sum of all DDx isomers, using half the method detection limit (MDL) for all undetected results. If all DDx isomers are undetected, the DDx sum is equal to the value of the highest MDL.

-- = not analyzed
FD = field duplicate sample
N = natural investigative sample
SE = sediment

Qualifiers:
J = The associated numerical value is an estimated quantity.
T = The associated value represents a total.
U = The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.
UJ = The laboratory reporting and/or method detection limits for this analyte have been elevated during validation. Undetected results are flagged *UJ* to indicate that the sample reporting limits have been adjusted.

Table 3-2. Sediment Chemistry Data - Dioxin and Furan Analytes

				Borehole Number:	WB-32	WB-32	WB-36	WB-36	WB-37	WB-39	WB-39	WB-41	WB-43	WB-46	WB-46
				Sample Date:	9/22/2009	9/22/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/29/2009	9/28/2009	9/24/2009	9/23/2009	9/23/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N
				Upper Depth, ft:	12	18	22	31	17	18	24	20	18	8	12
				Lower Depth, ft:	14	20	25	34	20	21	25.7	22.8	19	10	14
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-32-12-14	ARK-WB-32-18-20	ARK-WB-36-22-25	ARK-WB-36-31-34	ARK-WB-37-17-20	ARK-WB-39-18-21	ARK-WB-39-24-25-7	ARK-WB-41-20-22-8	ARK-WB-43-18-19	ARK-WB-46-8-10	ARK-WB-46-12-14
Conventionals															
Moisture	MOISTURE	D2216	percent		25.3	23.6	32.8	25.6	23.6	22.0	26.2	23.3	25.5	11.3	20.8
Dioxin Furan Homolog															
Total PCDD/F	TOTPCDD_Feeca	E1613	mg/kg		0.000077 *JT*	0.000049 *JT*	0.012 *JT*	0.000021 *JT*	0.000016 *JT*	0.000029 *JT*	0.000016 *JT*	0.000028 *JT*	0.000019 *JT*	0.00011 *JT*	0.0000069 *JT*
Heptachlorodibenzofuran homologs	38998-75-3	E1613	mg/kg		0.0000035 *J*	0.00000068 *J*	0.0011	0.00000070 *J*	0.00000045 *J*	0.0000029 *J*	0.00000018 *U*	0.00000019 *U*	0.00000082 *J*	0.000011 *J*	0.00000061 *J*
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	E1613	mg/kg		0.000011 *J*	0.000010 *J*	0.00024	0.0000031 *J*	0.0000036 *J*	0.0000036 *J*	0.0000037 *J*	0.0000067 *J*	0.0000032 *J*	0.0000051 *J*	0.0000019 *J*
Hexachlorodibenzofuran homologs	55684-94-1	E1613	mg/kg		0.0000031 *J*	0.00000064 *J*	0.0027 *J*	0.00000094 *J*	0.00000013 *U*	0.0000033 *J*	0.00000012 *J*	0.00000023 *J*	0.00000077 *J*	0.000018 *J*	0.000000045 *U*
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	E1613	mg/kg		0.0000032 *J*	0.0000046 *J*	0.000069 *J*	0.0000014 *J*	0.00000042	0.0000012 *J*	0.0000021 *J*	0.0000046 *J*	0.0000015 *J*	0.0000013	0.00000034
Octachlorodibenzofuran	39001-02-0	E1613	mg/kg		0.0000019 *J*	0.00000062 *J*	0.00053	0.00000061 *J*	0.000000053 *U*	0.0000025 *J*	0.00000020 *U*	0.00000017 *U*	0.00000078 *J*	0.000013	0.0000012 *U*
Octachlorodibenzo-p-dioxin	3268-87-9	E1613	mg/kg		0.000050	0.000032	0.0014	0.000011 *J*	0.000011 *J*	0.000012 *J*	0.0000086 *J*	0.000016	0.000011 *J*	0.000013	0.0000066 *U*
Pentachlorodibenzofuran homologs	30402-15-4	E1613	mg/kg		0.0000015 *J*	0.00000010 *J*	0.0032	0.0000017 *J*	0.000000069 *U*	0.00000062 *U*	0.000000099 *U*	0.00000011 *U*	0.00000022 *J*	0.000021 *J*	0.000000080 *U*
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	E1613	mg/kg		0.00000034 *U*	0.00000013 *U*	0.000023 *J*	0.00000025 *U*	0.000000086 *U*	0.00000049 *U*	0.00000026	0.00000014 *U*	0.00000013 *U*	0.00000029	0.00000011 *U*
Tetrachlorodibenzofuran homologs	30402-14-3	E1613	mg/kg		0.0000020 *J*	0.000000076 *U*	0.0024 *J*	0.0000011 *J*	0.00000012 *J*	0.0000019 *J*	0.00000017 *J*	0.00000012 *J*	0.00000043 *J*	0.000030 *J*	0.000000066 *U*
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	E1613	mg/kg		0.00000052 *U*	0.00000032	0.0000058 *J*	0.00000022	0.000000061 *U*	0.00000071	0.00000038	0.00000018	0.00000023	0.00000040	0.000000061 *U*
Dioxins Furans															
TEQ PCDD/F	TEQ_Dfeeca	E1613	mg/kg		0.00000071 *JT*	0.00000033 *JT*	0.00051 *JT*	0.00000054 *JT*	0.00000013 *JT*	0.0000010 *JT*	0.0000083 *JT*	0.00000032 *JT*	0.00000026 *JT*	0.0000039 *JT*	0.00000013 *JT*
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	E1613	mg/kg		0.0000018 *J*	0.00000036 *J*	0.00058	0.00000041 *U*	0.00000027 *J*	0.0000017 *U*	0.00000014 *U*	0.00000019 *U*	0.00000047 *U*	0.0000055 *J*	0.00000026 *J*
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	E1613	mg/kg		0.0000041 *J*	0.0000039 *J*	0.00011	0.0000013 *U*	0.0000014 *U*	0.0000016 *J*	0.0000016 *U*	0.0000029 *J*	0.0000013 *U*	0.0000026 *J*	0.00000077 *U*
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	E1613	mg/kg		0.00000022 *U*	0.00000015 *J*	0.00018	0.00000021 *U*	0.000000047 *U*	0.00000077 *J*	0.00000018 *U*	0.00000010 *U*	0.00000014 *J*	0.0000019 *J*	0.00000016 *U*
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	E1613	mg/kg		0.00000095 *J*	0.00000022 *J*	0.0017	0.00000068 *J*	0.00000013 *U*	0.0000020 *J*	0.00000012 *J*	0.00000015 *J*	0.00000032 *J*	0.0000069 *J*	0.000000041 *U*
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	E1613	mg/kg		0.00000018 *U*	0.00000024 *J*	0.0000018 *J*	0.00000020 *U*	0.000000081 *U*	0.00000028 *U*	0.00000017 *U*	0.00000033 *J*	0.00000017 *U*	0.00000012 *U*	0.000000024 *U*
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	E1613	mg/kg		0.00000026 *U*	0.00000012 *U*	0.00032 *J*	0.00000025 *J*	0.000000057 *U*	0.00000063 *J*	0.000000059 *U*	0.000000078 *J*	0.00000018 *J*	0.0000027 *J*	0.000000044 *U*
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	E1613	mg/kg		0.00000014 *U*	0.00000028 *J*	0.0000097	0.00000017 *U*	0.000000072 *U*	0.00000026 *U*	0.00016 *U*	0.00000027 *J*	0.00000014 *U*	0.00000019 *U*	0.000000094 *U*
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	E1613	mg/kg		0.000000055 *U*	0.00000012 *U*	0.000022	0.00000020 *U*	0.000000036 *U*	0.00000021 *U*	0.000000066 *U*	0.000000075 *U*	0.000000081 *U*	0.00000028 *J*	0.000000045 *U*
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	E1613	mg/kg		0.00000055 *J*	0.00000052 *J*	0.0000022 *J*	0.00000027 *J*	0.00000011 *U*	0.00000059 *J*	0.00000034 *J*	0.00000059 *J*	0.00000031 *J*	0.00000010 *U*	0.000000092 *U*
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	E1613	mg/kg		0.00000075 *J*	0.000000068 *U*	0.0012	0.00000064 *J*	0.000000062 *U*	0.00000058 *U*	0.000000083 *U*	0.00000011 *U*	0.00000022 *J*	0.0000063 *J*	0.000000065 *U*
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	E1613	mg/kg		0.00000034 *U*	0.00000013 *U*	0.0000022 *J*	0.00000025 *U*	0.000000086 *U*	0.00000049 *U*	0.00000019 *U*	0.00000014 *U*	0.00000013 *U*	0.00000013 *U*	0.00000011 *U*
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	E1613	mg/kg		0.00000013 *U*	0.00000012 *U*	0.000064	0.00000018 *U*	0.000000032 *U*	0.00000044 *J*	0.000000059 *U*	0.000000056 *U*	0.00000011 *J*	0.00000073 *J*	0.000000040 *U*
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	E1613	mg/kg		0.00000027 *J*	0.00000010 *J*	0.00055	0.00000034 *J*	0.000000069 *U*	0.00000062 *U*	0.000000099 *U*	0.000000087 *U*	0.000000092 *U*	0.0000042 *J*	0.000000080 *U*
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	E1613	mg/kg		0.0000011 *J*	0.000000075 *U*	0.00084 *J*	0.00000070 *J*	0.00000012 *J*	0.0000012 *J*	0.00000017 *J*	0.00000012 *J*	0.00000020 *J*	0.000012 *J*	0.000000066 *U*
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	E1613	mg/kg		0.00000013 *U*	0.000000058 *U*	0.00000057 *J*	0.00000010 *U*	0.000000039 *U*	0.00000021 *U*	0.00000011 *J*	0.000000080 *U*	0.000000059 *U*	0.000000059 *U*	0.000000061 *U*

Table 3-2. Sediment Chemistry Data - Dioxin and Furan Analytes

				Borehole Number:	WB-48	WB-48	WB-50	WB-50	WB-51	WB-53	WB-53	WB-54	WB-54	WB-63	WB-64
				Sample Date:	9/10/2009	9/10/2009	8/27/2009	8/27/2009	8/28/2009	8/24/2009	8/24/2009	8/21/2009	8/24/2009	8/20/2009	8/25/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	N
				Upper Depth, ft:	10	16	8	12	18	8	14	6	14	12	6
				Lower Depth, ft:	12	18	10	14	20	10	15.3	8	16	14	8
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-48-10-12	ARK-WB-48-16-18	ARK-WB-50-8-10	ARK-WB-50-12-14	ARK-WB-51-18-20	ARK-WB-53-8-10	ARK-WB-53-14-15-3	ARK-WB-54-6-8	ARK-WB-54-14-16	ARK-WB-63-12-14	ARK-WB-64-6-8
Conventionals															
Moisture	MOISTURE	D2216	percent		34.8	19.0	29.4	23.5	23.6	29.3	26.2	23.8	25.6	22.4	18.7
Dioxin Furan Homolog															
Total PCDD/F	TOTPCDD_Feeca	E1613	mg/kg		0.00066 *JT*	0.000031 *JT*	0.00013 *JT*	0.000018 *JT*	0.000071 *JT*	0.000016 *JT*	0.000026 *JT*	0.0012 *JT*	0.000015 *JT*	0.000026 *JT*	0.00095 *JT*
Heptachlorodibenzofuran homologs	38998-75-3	E1613	mg/kg		0.000077	0.0000018 *J*	0.000016 *J*	0.00000021 *U*	0.0000024 *J*	0.00000064 *J*	0.0000011 *J*	0.00013	0.00000075 *J*	0.00000092 *J*	0.000077
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	E1613	mg/kg		0.000042	0.0000029 *J*	0.000010 *J*	0.0000040 *J*	0.0000069 *J*	0.0000028 *J*	0.0000047 *J*	0.00011	0.0000023 *J*	0.0000034 *J*	0.000027
Hexachlorodibenzofuran homologs	55684-94-1	E1613	mg/kg		0.00010 *J*	0.0000030 *J*	0.000017 *J*	0.00000012 *U*	0.0000035 *J*	0.00000045 *U*	0.0000013 *J*	0.000080 *J*	0.0000016 *J*	0.0000016 *J*	0.00023 *J*
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	E1613	mg/kg		0.000012 *J*	0.00000090 *J*	0.0000032 *J*	0.0000010	0.0000018 *J*	0.0000018 *J*	0.0000024 *J*	0.000021 *J*	0.0000011 *J*	0.00000089	0.0000073 *J*
Octachlorodibenzofuran	39001-02-0	E1613	mg/kg		0.000045	0.0000011 *J*	0.000010 *J*	0.00000041 *U*	0.0000037 *J*	0.00000047 *U*	0.0000013 *J*	0.000074	0.00000047 *J*	0.00000072 *J*	0.000046
Octachlorodibenzo-p-dioxin	3268-87-9	E1613	mg/kg		0.00023	0.000014	0.000048	0.000012 *J*	0.000049	0.000010 *J*	0.000014	0.00072	0.0000084 *J*	0.000014	0.00012
Pentachlorodibenzofuran homologs	30402-15-4	E1613	mg/kg		0.000088	0.0000040 *J*	0.000013 *J*	0.00000024 *U*	0.0000025 *J*	0.00000020	0.00000022 *U*	0.000053	0.00000039 *J*	0.0000020 *J*	0.00027
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	E1613	mg/kg		0.0000021	0.00000016 *U*	0.00000044 *U*	0.00000034 *U*	0.00000017 *U*	0.00000012 *U*	0.00000033 *U*	0.0000015	0.000000095 *U*	0.00000030 *U*	0.0000017
Tetrachlorodibenzofuran homologs	30402-14-3	E1613	mg/kg		0.000063	0.0000028 *J*	0.000014	0.00000018 *U*	0.0000015 *J*	0.00000013 *U*	0.00000045 *J*	0.000025	0.00000010 *U*	0.0000019 *J*	0.00017
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	E1613	mg/kg		0.0000015	0.000000077 *U*	0.00000037 *U*	0.00000010 *U*	0.000000080 *U*	0.000000089 *U*	0.00000020 *U*	0.00000084 *J*	0.000000059 *U*	0.00000020 *U*	0.0000013
Dioxins Furans															
TEQ PCDD/F	TEQ_Dfeeca	E1613	mg/kg		0.000013 *JT*	0.00000076 *JT*	0.0000026 *JT*	0.00000035 *JT*	0.00000070 *JT*	0.00000018 *JT*	0.00000047 *JT*	0.0000090 *JT*	0.00000034 *JT*	0.00000070 *JT*	0.000040 *JT*
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	E1613	mg/kg		0.000037	0.00000097 *U*	0.0000072	0.00000021 *U*	0.0000012 *U*	0.00000039 *J*	0.00000074 *J*	0.000065	0.00000046 *J*	0.00000048 *U*	0.000043
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	E1613	mg/kg		0.000016	0.0000012 *U*	0.0000045 *J*	0.0000014 *J*	0.0000020 *J*	0.0000013 *J*	0.0000021 *J*	0.000039	0.0000011 *J*	0.0000013 *U*	0.000013
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	E1613	mg/kg		0.0000080	0.00000030 *J*	0.0000021 *J*	0.00000020 *U*	0.00000065 *J*	0.00000011 *U*	0.00000028 *U*	0.0000070	0.00000023 *J*	0.00000019 *J*	0.000016
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	E1613	mg/kg		0.000043	0.0000015 *J*	0.0000082	0.00000011 *U*	0.0000014 *J*	0.00000018 *U*	0.00000036 *U*	0.000023	0.00000087 *J*	0.0000012 *J*	0.00010 *J*
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	E1613	mg/kg		0.00000033 *J*	0.00000019 *U*	0.00000020 *U*	0.00000026 *U*	0.00000022 *U*	0.000000086 *J*	0.00000017 *U*	0.00000038 *J*	0.00000019 *J*	0.00000026 *U*	0.00000036 *J*
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	E1613	mg/kg		0.000012	0.00000046 *J*	0.0000021 *J*	0.00000010 *U*	0.00000056 *J*	0.00000015 *U*	0.00000036 *U*	0.0000088	0.00000036 *U*	0.00000028 *J*	0.000033
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	E1613	mg/kg		0.0000013 *J*	0.00000015 *U*	0.00000050 *J*	0.00000022 *U*	0.00000019 *U*	0.000000070 *J*	0.00000027 *U*	0.0000023 *J*	0.00000023 *J*	0.00000021 *U*	0.00000069 *J*
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	E1613	mg/kg		0.00000079 *U*	0.000000085 *U*	0.00000034 *U*	0.00000011 *U*	0.000000096 *U*	0.000000060 *U*	0.00000014 *U*	0.00000042 *J*	0.000000097 *U*	0.000000081 *U*	0.0000017 *J*
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	E1613	mg/kg		0.00000071 *J*	0.00000016 *J*	0.00000034 *J*	0.00000028 *U*	0.00000027 *J*	0.00000012 *U*	0.00000038 *J*	0.00000079 *J*	0.00000028 *J*	0.00000022 *U*	0.00000041 *J*
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	E1613	mg/kg		0.000029	0.0000012 *J*	0.0000048 *J*	0.00000020 *U*	0.0000010 *J*	0.000000078 *U*	0.00000018 *U*	0.000017	0.00000025 *J*	0.00000069 *J*	0.00010
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	E1613	mg/kg		0.00000037 *U*	0.00000016 *U*	0.00000042 *U*	0.00000034 *U*	0.00000017 *U*	0.00000012 *U*	0.00000033 *U*	0.00000015 *U*	0.000000095 *U*	0.00000030 *U*	0.00000025 *U*
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	E1613	mg/kg		0.0000019 *J*	0.000000084 *J*	0.00000037 *J*	0.000000095 *U*	0.00000014 *J*	0.000000061 *U*	0.00000014 *U*	0.0000018 *J*	0.00000016 *U*	0.000000072 *U*	0.0000071
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	E1613	mg/kg		0.000011	0.00000087 *J*	0.0000017 *J*	0.00000024 *U*	0.00000050 *J*	0.000000072 *U*	0.00000020 *U*	0.0000071	0.00000014 *J*	0.00000043 *J*	0.000050
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	E1613	mg/kg		0.000019	0.00000084 *J*	0.0000035	0.00000018 *U*	0.00000080 *J*	0.00000013 *U*	0.00000045 *J*	0.000011	0.00000010 *U*	0.00000097 *J*	0.000062
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	E1613	mg/kg		0.00000017 *U*	0.000000077 *U*	0.00000014 *U*	0.00000010 *U*	0.000000080 *U*	0.000000066 *U*	0.00000016 *U*	0.00000013 *J*	0.000000059 *U*	0.00000020 *U*	0.00000011 *U*

Table 3-2. Sediment Chemistry Data - Dioxin and Furan Analytes

				Borehole Number:	WB-64	WB-65	WB-65	WB-66	WB-66
				Sample Date:	8/25/2009	8/18/2009	8/18/2009	8/19/2009	8/19/2009
				Matrix:	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N
				Upper Depth, ft:	12	10	15	10	16
				Lower Depth, ft:	14	15	16	12	17.5
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-64-12-14	ARK-WB-65-10-15	ARK-WB-65-15-16	ARK-WB-66-10-12	ARK-WB-66-16-17-5
Conventionals									
Moisture	MOISTURE	D2216	percent		34.1	31.2	29.6	39.7	21.6
Dioxin Furan Homolog									
Total PCDD/F	TOTPCDD_Feeca	E1613	mg/kg	Dioxin_Furan_Homolog	0.000026 *JT*	0.00031 *JT*	0.000012 *JT*	0.0018 *JT*	0.000025 *JT*
Heptachlorodibenzofuran homologs	38998-75-3	E1613	mg/kg		0.00000027 *U*	0.0000017 *J*	0.00000029 *J*	0.00022	0.0000019 *J*
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	E1613	mg/kg		0.0000043 *J*	0.0000094 *J*	0.0000020 *J*	0.000055 *J*	0.0000025 *J*
Hexachlorodibenzofuran homologs	55684-94-1	E1613	mg/kg		0.00000044 *J*	0.0000074 *J*	0.00000029 *J*	0.00053 *J*	0.0000034 *J*
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	E1613	mg/kg		0.0000040 *J*	0.000036 *J*	0.00000079 *J*	0.000012 *J*	0.00000084 *J*
Octachlorodibenzofuran	39001-02-0	E1613	mg/kg		0.00000027 *J*	0.0000011 *J*	0.00000027 *J*	0.00015	0.0000015 *J*
Octachlorodibenzo-p-dioxin	3268-87-9	E1613	mg/kg		0.000014 *J*	0.000022	0.0000075 *J*	0.00034	0.000010 *J*
Pentachlorodibenzofuran homologs	30402-15-4	E1613	mg/kg		0.00000061 *J*	0.000022 *J*	0.000000078 *J*	0.00035	0.0000025 *J*
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	E1613	mg/kg		0.00000028 *U*	0.000093 *J*	0.000000074 *U*	0.00000040 *U*	0.000000071 *U*
Tetrachlorodibenzofuran homologs	30402-14-3	E1613	mg/kg		0.0000012 *J*	0.000046	0.00000023 *J*	0.00011	0.0000023 *J*
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	E1613	mg/kg		0.00000083	0.000074	0.000000055 *U*	0.00000079	0.000000046 *U*
Dioxins Furans									
TEQ PCDD/F	TEQ_Dfeeca	E1613	mg/kg	Dioxins_Furans	0.00000044 *JT*	0.0000041 *JT*	0.00000016 *JT*	0.000070 *JT*	0.00000067 *JT*
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	E1613	mg/kg		0.00000027 *U*	0.00000089 *J*	0.00000019 *U*	0.00011	0.0000010 *J*
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	E1613	mg/kg		0.0000017 *U*	0.0000050 *J*	0.00000084 *J*	0.000023 *J*	0.00000098 *J*
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	E1613	mg/kg		0.00000019 *U*	0.00000031 *J*	0.000000048 *U*	0.000044	0.00000041 *J*
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	E1613	mg/kg		0.00000022 *J*	0.0000021 *J*	0.00000025 *J*	0.00030	0.0000018 *J*
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	E1613	mg/kg		0.00000023 *U*	0.0000013 *J*	0.00000010 *J*	0.00000049 *J*	0.000000054 *J*
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	E1613	mg/kg		0.00000023 *J*	0.0000010 *J*	0.000000047 *J*	0.000086	0.00000054 *J*
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	E1613	mg/kg		0.00000022 *J*	0.0000033 *J*	0.000000035 *U*	0.0000017 *J*	0.00000010 *J*
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	E1613	mg/kg		0.00000010 *U*	0.000000074 *J*	0.000000041 *U*	0.0000068 *J*	0.000000037 *U*
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	E1613	mg/kg		0.00000036 *J*	0.0000023 *J*	0.00000013 *J*	0.0000013 *J*	0.00000013 *J*
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	E1613	mg/kg		0.00000018 *J*	0.0000016 *J*	0.000000078 *J*	0.00015	0.0000011 *J*
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	E1613	mg/kg		0.00000028 *U*	0.0000020 *J*	0.000000074 *U*	0.00000039 *U*	0.000000071 *U*
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	E1613	mg/kg		0.000000095 *U*	0.00000039 *J*	0.000000034 *U*	0.000012 *J*	0.00000011 *J*
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	E1613	mg/kg		0.00000018 *J*	0.0000023 *J*	0.000000050 *U*	0.000058	0.00000055 *J*
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	E1613	mg/kg		0.00000052 *J*	0.0000018	0.00000018 *J*	0.000050	0.0000011 *J*
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	E1613	mg/kg		0.000000088 *U*	0.00000011 *U*	0.000000055 *U*	0.00000021 *U*	0.000000046 *U*

Notes:

Total PCDD/F is the sum of all PCDD/F homologs using half the method detection limit (MDL) for all undetected results. If all PCDD/F homologs are undetected, the PCDD/F sum is equal to the value of the highest MDL.

TEQ Dioxins/Furans is the sum of each PCDD/F congener multiplied by the individual congener's toxic equivalency factor (TEF), using half the method detection limit (MDL) for all undetected results. If all PCDD/F congeners are undetected, the PCDD/F TEQ is equal to the value of the highest congener/TEF product.

N = natural investigative sample
SE = sediment
TEQ = toxic equivalent

Qualifiers:
J = The associated numerical value is an estimated quantity.
T = The associated value represents a total.
U = The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.

Table 3-3. Sediment Chemistry Data - Additional Analytes

				Borehole Number:	WB-33	WB-38	WB-48
				Sample Date:	9/4/2009	9/3/2009	9/10/2009
				Matrix:	SE	SE	SE
				Sample Type:	N	N	N
				Upper Depth, ft:	12	2	10
				Lower Depth, ft:	14	4	12
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-33-12-14	ARK-WB-38-2-4	ARK-WB-48-10-12
Conventionals							
Total solids	TSO	E160.3	percent		61	51	60
PAHs							
Naphthalene	91-20-3	SW8260B	mg/kg		0.028	0.052 *J*	0.038 *J*
SVOCs							
1,4-Dichlorobenzene	106-46-7	SW8260B	mg/kg		0.022	0.047 *J*	0.0057 *J*
VOCs							
1,1,1,2-Tetrachloroethane	630-20-6	SW8260B	mg/kg		0.00013 *U*	0.00017 *UJ*	0.00012 *R*
1,1,1-Trichloroethane	71-55-6	SW8260B	mg/kg		0.00059 *U*	0.00073 *UJ*	0.00053 *U*
1,1,2,2-Tetrachloroethane	79-34-5	SW8260B	mg/kg		0.0063	0.00017 *UJ*	0.00012 *U*
1,1,2-Trichloroethane	79-00-5	SW8260B	mg/kg		0.00015 *U*	0.00019 *UJ*	0.00014 *U*
1,1-Dichloroethane	75-34-3	SW8260B	mg/kg		0.00082 *J*	0.0027 *J*	0.00054 *U*
1,1-Dichloroethene	75-35-4	SW8260B	mg/kg		0.00021 *U*	0.00027 *UJ*	0.00019 *U*
1,2,3-Trichloropropane	96-18-4	SW8260B	mg/kg		0.00055 *U*	0.00069 *UJ*	0.00049 *U*
1,2-Dichloroethane	107-06-2	SW8260B	mg/kg		0.0012 *J*	0.00037 *J*	0.00022 *U*
1,2-Dichloropropane	78-87-5	SW8260B	mg/kg		0.00026 *U*	0.00033 *UJ*	0.00024 *U*
1,4-Dichloro-trans-2-butene	110-57-6	SW8260B	mg/kg		0.17 *J*	0.0087 *J*	0.00084 *U*
2-Butanone	78-93-3	SW8260B	mg/kg		0.25 *J*	0.19 *J*	0.037 *J*
2-Chloroethyl vinyl ether	110-75-8	SW8260B	mg/kg		0.0021 *U*	0.0026 *UJ*	0.0019 *R*
4-Methyl-2-pentanone	108-10-1	SW8260B	mg/kg		0.0057 *J*	0.00082 *UJ*	0.00059 *U*
Acetone	67-64-1	SW8260B	mg/kg		0.77	0.91 *J*	0.24 *J*
Acrolein	107-02-8	SW8260B	mg/kg		0.0020 *UJ*	0.0024 *UJ*	0.0018 *R*
Acrylonitrile	107-13-1	SW8260B	mg/kg		0.0018 *U*	0.0023 *UJ*	0.0016 *U*
Benzene	71-43-2	SW8260B	mg/kg		0.0043	0.0088 *J*	0.0085 *J*
Bromochloromethane	74-97-5	SW8260B	mg/kg		0.00038 *U*	0.00048 *UJ*	0.00034 *U*
Bromodichloromethane	75-27-4	SW8260B	mg/kg		0.00011 *U*	0.00014 *UJ*	0.00010 *UJ*
Bromoform	75-25-2	SW8260B	mg/kg		0.00011 *U*	0.00014 *UJ*	0.000099 *U*
Bromomethane	74-83-9	SW8260B	mg/kg		0.00059 *U*	0.00074 *UJ*	0.00053 *U*
Carbon disulfide	75-15-0	SW8260B	mg/kg		0.0026	0.020 *J*	0.0027 *J*
Carbon tetrachloride	56-23-5	SW8260B	mg/kg		0.00057 *U*	0.00071 *UJ*	0.00051 *UJ*
Chlorobenzene	108-90-7	SW8260B	mg/kg		13 *J*	130 *J*	140 *J*
Chlorodibromomethane	124-48-1	SW8260B	mg/kg		0.00028 *J*	0.00026 *UJ*	0.00019 *UJ*
Chloroethane	75-00-3	SW8260B	mg/kg		0.00041 *U*	0.00051 *UJ*	0.00037 *U*
Chloroform	67-66-3	SW8260B	mg/kg		0.26	0.00028 *UJ*	0.00020 *U*
Chloromethane	74-87-3	SW8260B	mg/kg		0.00027 *U*	0.00034 *UJ*	0.00024 *U*
cis-1,3-Dichloropropene	10061-01-5	SW8260B	mg/kg		0.00018 *U*	0.00022 *UJ*	0.00016 *UJ*
Dibromomethane	74-95-3	SW8260B	mg/kg		0.00055 *J*	0.00020 *UJ*	0.00014 *U*
Dichlorodifluoromethane	75-71-8	SW8260B	mg/kg		0.00029 *U*	0.00037 *UJ*	0.00026 *U*
Ethylbenzene	100-41-4	SW8260B	mg/kg		0.0052	0.00028 *UJ*	0.0014 *J*
Isopropylbenzene	98-82-8	SW8260B	mg/kg		0.0021	0.0020 *J*	0.0012 *J*
m,p-Xylene	179601-23-1	SW8260B	mg/kg		0.011	0.0072 *J*	0.0017 *J*
Methyl iodide	74-88-4	SW8260B	mg/kg		0.00066 *U*	0.00083 *UJ*	0.00060 *U*
Methyl n-butyl ketone	591-78-6	SW8260B	mg/kg		0.0047 *J*	0.0036 *UJ*	0.0026 *U*
Methyl tert-butyl ether	1634-04-4	SW8260B	mg/kg		0.00036 *U*	0.00045 *UJ*	0.00032 *U*
Methylene chloride	75-09-2	SW8260B	mg/kg		0.085	0.026 *J*	0.055 *J*
o-Xylene	95-47-6	SW8260B	mg/kg		0.0039	0.0032 *J*	0.0023 *J*
Styrene	100-42-5	SW8260B	mg/kg		0.00048 *U*	0.00060 *UJ*	0.00043 *U*
Tetrachloroethene	127-18-4	SW8260B	mg/kg		0.023	0.00038 *J*	0.00014 *U*
Toluene	108-88-3	SW8260B	mg/kg		0.19	0.0057 *J*	0.0021 *J*
trans-1,2-Dichloroethene	156-60-5	SW8260B	mg/kg		0.00044 *U*	0.00055 *UJ*	0.00039 *U*
trans-1,3-Dichloropropene	10061-02-6	SW8260B	mg/kg		0.00027 *U*	0.00034 *UJ*	0.00024 *UJ*
Trichloroethene	79-01-6	SW8260B	mg/kg		0.0016	0.00097 *J*	0.00024 *U*
Trichlorofluoromethane	75-69-4	SW8260B	mg/kg		0.00030 *U*	0.00037 *UJ*	0.00027 *U*
Vinyl acetate	108-05-4	SW8260B	mg/kg		0.0029 *U*	0.0036 *UJ*	0.0026 *R*
Vinyl chloride	75-01-4	SW8260B	mg/kg		0.00023 *U*	0.00028 *UJ*	0.00020 *U*

Notes:
PAH = polycyclic aromatic hydrocarbon
N = natural investigative sample
SE = sediment
SVOC = semivolatile organic compound
VOC = volatile organic compound

Qualifiers:
J = The associated numerical value is an estimated quantity.
R = The associated numerical value has been rejected upon validation.
U = The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.
UJ = The laboratory reporting and/or method detection limits for this analyte have been elevated during validation. Undetected results are flagged UJ to indicate that the sample reporting limits have been adjusted.

Table 3-4. Sediment Chemistry Data - Expanded Analyte List
Results for Waste Characterization Samples

				Borehole Number:	WB-35	WB-35	WB-36	WB-36	WB-37	WB-37	WB-39	WB-39	WB-41	WB-41	WB-41	WB-42	WB-42	WB-43	WB-43
				Sample Date:	9/30/2009	9/30/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/28/2009	9/29/2009	9/28/2009	9/28/2009	9/28/2009	9/25/2009	9/25/2009	9/24/2009	9/24/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
				Upper Depth, ft:	0	10	0	10	0	6	0	8	0	6	6	0	6	0	8
				Lower Depth, ft:	10	20	10	22	6	14	8	18	6	14	14	6	14	8	18
Constituent	CAS ID	Method	Units	Sample ID:	ARK-WB-35-0-10	ARK-WB-35-10-20	ARK-WB-36-0-10	ARK-WB-36-10-22	ARK-WB-37-0-6	ARK-WB-37-6-14	ARK-WB-39-0-8	ARK-WB-39-8-18	ARK-WB-41-0-6	ARK-WB-41-6-14	ARK-WB-82-6-14	ARK-WB-42-0-6	ARK-WB-42-6-14	ARK-WB-43-0-8	ARK-WB-43-8-18
Aroclors																			
Total PCB Aroclors	12767-79-2eeca	SW8082	mg/kg		1.8 *UT*	1.7 *UT*	0.26 *UT*	1.4 *UT*	0.36 *UT*	1.7 *UT*	1.7 *UT*	1.5 *UT*	0.34 *UJT*	0.32 *UJT*	0.31 *UJT*	1.3 *UT*	1.5 *UT*	0.35 *UT*	0.29 *UT*
Aroclor 1016	12674-11-2	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1221	11104-28-2	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1232	11141-16-5	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1242	53469-21-9	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1248	12672-29-6	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1254	11097-69-1	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1260	11096-82-5	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1262	37324-23-5	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Aroclor 1268	11100-14-4	SW8082	mg/kg		1.8 *U*	1.7 *U*	0.26 *U*	1.4 *U*	0.36 *U*	1.7 *U*	1.7 *U*	1.5 *U*	0.34 *UJ*	0.32 *UJ*	0.31 *UJ*	1.3 *U*	1.5 *U*	0.35 *U*	0.29 *U*
Conventionals																			
Moisture	MOISTURE	D2216	percent		45.0	40.7	28.8	31.7	49.6	43.8	35.3	36.5	38.6	39.1	36.2	16.1	31.5	--	33.7
Total organic carbon	TOC	SW9060	percent		2.9	2.6	0.89 *J*	1.8 *J*	2.6	3.1	3.2	2.2	2.1	2.4	2.6	1.1	2.1	1.8	1.4
Total solids	TSO	E160.3	percent		54	60	70	68	51	56	57	68	55	59	59	77	63	57	65
Dioxin Furan Homolog																			
Total PCDD/F	TOTPCDD_Feeca	E1613	mg/kg		0.037 *JT*	0.14 *JT*	0.43 *JT*	0.093 *JT*	0.041 *JT*	0.023 *JT*	0.39 *JT*	0.028 *JT*	0.036 *JT*	0.010 *JT*	0.017 *JT*	0.12 *T*	0.12 *JT*	0.044 *JT*	0.010 *JT*
Heptachlorodibenzofuran homologs	38998-75-3	E1613	mg/kg		0.0046	0.0088	0.036	0.0098	0.0033	0.0023	0.044	0.0031	0.0041	0.00093 *J*	0.0019 *J*	0.013	0.012	0.0052	0.0010 *J*
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	E1613	mg/kg		0.00052	0.00029	0.00019 *J*	0.000065 *J*	0.00040	0.00030	0.0031	0.00027	0.00044 *J*	0.00020	0.00033	0.00020	0.00032	0.00052	0.00018
Hexachlorodibenzofuran homologs	55684-94-1	E1613	mg/kg		0.010	0.033 *J*	0.12	0.029	0.0088	0.0051	0.12	0.0084	0.0096 *J*	0.0017 *J*	0.0057 *J*	0.039	0.038	0.012	0.0025
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	E1613	mg/kg		0.000069 *J*	0.000044	0.000013	0.000021 *J*	0.000046 *J*	0.000049 *J*	0.00071 *J*	0.000044 *J*	0.000069 *J*	0.000031 *J*	0.000046 *J*	0.000035	0.000064 *J*	0.000085 *J*	0.000032 *J*
Octachlorodibenzofuran	39001-02-0	E1613	mg/kg		0.0035	0.0062	0.018	0.0040	0.0028	0.0016	0.023	0.0020	0.0024	0.00057 *J*	0.0010 *J*	0.0055	0.0054	0.0037	0.00057 *J*
Octachlorodibenzo-p-dioxin	3268-87-9	E1613	mg/kg		0.0020	0.0014	0.00074	0.00025	0.0028	0.0019	0.023	0.0016	0.0025	0.0012	0.0019	0.00077	0.0011	0.0024	0.0010 *J*
Pentachlorodibenzofuran homologs	30402-15-4	E1613	mg/kg		0.0098	0.048 *J*	0.14	0.032	0.012	0.0067	0.098	0.0080	0.0084	0.0024 *J*	0.0040 *J*	0.034	0.034	0.012	0.0029 *J*
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	E1613	mg/kg		0.0000070 *U*	0.0000057 *U*	0.000013 *U*	0.0000033	0.0000040 *U*	0.0000091 *J*	0.000032 *J*	0.0000049	0.0000053 *J*	0.0000052 *J*	0.0000062 *J*	0.0000030	0.0000078 *J*	0.0000059	0.0000033
Tetrachlorodibenzofuran homologs	30402-14-3	E1613	mg/kg		0.0063	0.039 *J*	0.11	0.018	0.011	0.0053	0.080	0.0050	0.0088	0.0033	0.0025	0.022	0.025	0.0081	0.0018
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	E1613	mg/kg		0.0000029 *U*	0.0000065 *J*	0.0000085 *U*	0.0000073 *J*	0.0000021 *U*	0.0000089 *J*	0.000033	0.0000026	0.0000065 *J*	0.0000040 *J*	0.0000064 *J*	0.000012	0.000022	0.0000061	0.0000036
Dioxins Furans																			
TEQ PCDD/F	TEQ_Dfeeca	E1613	mg/kg		0.0018 *JT*	0.0076 *JT*	0.024 *JT*	0.0053 *JT*	0.0020 *JT*	0.0011 *JT*	0.021 *JT*	0.0015 *JT*	0.0017 *JT*	0.00041 *JT*	0.00083 *JT*	0.0068 *JT*	0.0067 *JT*	0.0021 *JT*	0.00047 *JT*
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	E1613	mg/kg		0.0022	0.0043	0.020	0.0058	0.0016	0.0012	0.026	0.0015	0.0023	0.00041 *J*	0.00093 *J*	0.0080	0.0071	0.0026	0.00049 *J*
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	E1613	mg/kg		0.00026	0.00013	0.000099 *J*	0.000032 *J*	0.00017	0.00013	0.0015	0.00012	0.00019 *J*	0.000094	0.00015	0.000097	0.00017	0.00020	0.000075
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	E1613	mg/kg		0.0012	0.0022	0.0082	0.0021	0.00076	0.00047	0.0090	0.00072	0.00085	0.00017 *J*	0.00042 *J*	0.0026	0.0027	0.0012	0.00021 *J*
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	E1613	mg/kg		0.0066	0.020 *J*	0.081	0.017	0.0052	0.0031	0.084	0.0055	0.0063	0.0010 *J*	0.0037 *J*	0.029	0.026	0.0079	0.0016
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	E1613	mg/kg		0.0000052 *U*	0.0000043 *U*	0.0000080 *U*	0.0000016 *U*	0.0000036 *U*	0.0000020 *J*	0.0000067 *J*	0.0000018 *J*	0.0000028 *J*	0.0000011 *J*	0.0000014 *J*	0.0000021 *J*	0.0000031 *J*	0.0000026 *J*	0.0000011 *J*
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	E1613	mg/kg		0.0015	0.0047	0.020	0.0057	0.0015	0.00074	0.020	0.0013	0.0016	0.00029 *J*	0.0010 *J*	0.0056	0.0055	0.0021	0.00041
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	E1613	mg/kg		0.000011 *J*	0.0000082 *J*	0.0000089 *U*	0.0000029 *J*	0.0000073 *J*	0.0000070 *J*	0.000076	0.0000059 *J*	0.0000083	0.0000053 *J*	0.0000079	0.0000046 *J*	0.000010 *J*	0.000012	0.0000049 *J*
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	E1613	mg/kg		0.00016	0.00041	0.0014	0.00032	0.00016	0.00017	0.00074	0.00013	0.000061 *J*	0.000032	0.000038 *J*	0.00032	0.00030	0.00012	0.000019 *J*
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	E1613	mg/kg		0.0000085 *J*	0.0000039 *U*	0.0000076 *U*	0.0000021 *J*	0.0000032 *U*	0.0000023 *J*	0.000019 *J*	0.0000029 *J*	0.0000045 *J*	0.0000020 *J*	0.0000032 *J*	0.0000026 *J*	0.0000037 *J*	0.0000064 *J*	0.0000014 *J*
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	E1613	mg/kg		0.0044	0.019 *J*	0.050	0.014	0.0049	0.0027	0.045	0.0035	0.0036	0.00090 *J*	0.0019 *J*	0.015	0.014	0.0053	0.0011
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	E1613	mg/kg		0.0000070 *U*	0.0000057 *U*	0.000013 *U*	0.0000023 *U*	0.0000040 *U*	0.0000018 *J*	0.0000058 *J*	0.0000016 *U*	0.0000011 *J*	0.00000067 *J*	0.00000098 *J*	0.00000056 *U*	0.0000011 *J*	0.0000024 *U*	0.00000094 *U*
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	E1613	mg/kg		0.00021	0.00081	0.0028	0.00072	0.00020	0.000091	0.0018	0.00015	0.00019	0.000041	0.00011	0.0011	0.00089	0.00024	0.000085
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	E1613	mg/kg		0.0017	0.0088	0.028	0.0055	0.0020	0.0012	0.017	0.0014	0.0014	0.00044	0.00060	0.0060	0.0068	0.0019	0.00054 *J*
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	E1613	mg/kg		0.0026	0.017 *J*	0.037	0.0073	0.0047	0.0023	0.031	0.0021	0.0030	0.0011	0.00089	0.0081	0.0086	0.0031	0.00056
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	E1613	mg/kg		0.0000029 *U*	0.0000034 *J*	0.0000085 *U*	0.0000027 *J*	0.0000021 *U*	0.0000014 *J*	0.0000058	0.00000095 *U*	0.0000011 *J*	0.00000034 *J*	0.00000072 *J*	0.0000011 *J*	0.0000017	0.0000017	0.00000065 *U*
Grainsize																			
Clay	GS_CLAY	D422	percent		17	22	10	14	28	35	16	18	22	24	--	5.1	14	21	11
Sieve 1 inch	GS_SIEVE1	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 1.5 inch	GS_SIEVE1.5	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 10	GS_SIEVE010	D422	percent		0.50	0.20	0 *U*	0.10	0 *U*	0 *U*	4.2	0.80	0 *U*	0.20	--	8.7	0.40	0 *U*	0 *U*
Sieve 140	GS_SIEVE140	D422	percent		14	9.7	12	11	5.5	3.4	5.6	18	6.7	10	--	12	18	4.7	14
Sieve 2 inch	GS_SIEVE2	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 20	GS_SIEVE020	D422	percent		2.4	1.6	2.0	0.90	0.50	0.60	2.6	0.20	0.20	0.10	--	4.3	0.50	0.30	0.40
Sieve 200	GS_SIEVE200	D422	percent		7.9	7.1	6.0	2.4	5.3	3.6	6.3	5.2	8.9	7.8	--	4.7	6.0	7.9	3.3
Sieve 230	GS_SIEVE230	D422	percent		3.3	3.0	3.2	1.5	4.0	2.9	3.5	3.1	3.6	3.5	--	7.9	4.1	4.3	1.2
Sieve 3 inch	GS_SIEVE3	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/4 inch	GS_SIEVE3/4	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	0 *U*	0 *U*	0 *U*	0 *U*
Sieve 3/8 inch	GS_SIEVE3/8	D422	percent		0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	--	10	0 *U*	0 *U*	0 *U*
Sieve 4	GS_SIEVE004	D422	percent		0.10	0 *U*	0 *U*	0 *U*	0 *U*	0 *U*	4.7	0.20	0 *U*	0.20	--	5.8	0 *U*	0 *U*	0 *U*
Sieve 40	GS_SIEVE040	D422	percent		1.2	4.4	13	17	0.50	0.30	2.2	1.3	0.30	0.80	--	9.0	4.8	0.40	7.9
Sieve 60	GS_SIEVE060	D422	percent		6.2	9.7	21	29	0.90	0.60	3.0	9.3	0.80	2.4	--	15	19	1.0	25
Silt	GS_SILT	D422	percent		48	42	33	25	56	54	52	44	57	51	--	17	33	60	38
Asbestos																			
Asbestos	1332-21-4	EPA/600R-93/116	percent		0.40	0.10	0.30	0.10	0.10 *U*	0.40	0.40	0.10 *U*	0.10 *U*	0.10 *U*	--	0.10	0.10 *U*	0.30	0.10 *U*

Table 3-4. Sediment Chemistry Data - Expanded Analyte List
Results for Waste Characterization Samples

				Borehole Number:	WB-35	WB-35	WB-36	WB-36	WB-37	WB-37	WB-39	WB-39	WB-41	WB-41	WB-41	WB-42	WB-42	WB-43	WB-43
				Sample Date:	9/30/2009	9/30/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/28/2009	9/29/2009	9/28/2009	9/28/2009	9/28/2009	9/25/2009	9/25/2009	9/24/2009	9/24/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
				Upper Depth, ft:	0	10	0	10	0	6	0	8	0	6	6	0	6	0	8
				Lower Depth, ft:	10	20	10	22	6	14	8	18	6	14	14	6	14	8	18
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-35-0-10	ARK-WB-35-10-20	ARK-WB-36-0-10	ARK-WB-36-10-22	ARK-WB-37-0-6	ARK-WB-37-6-14	ARK-WB-39-0-8	ARK-WB-39-8-18	ARK-WB-41-0-6	ARK-WB-41-6-14	ARK-WB-82-6-14	ARK-WB-42-0-6	ARK-WB-42-6-14	ARK-WB-43-0-8	ARK-WB-43-8-18
PAHs																			
1-Methylnaphthalene	90-12-0	SW8270	mg/kg		0.33	0.54	0.039	0.051 *J*	0.054	0.046	0.032	0.045	0.0020 *J*	0.032	0.045	0.095	0.18	0.018	0.015
2-Methylnaphthalene	91-57-6	SW8270	mg/kg		0.56	1.0	0.031	0.073 *J*	0.054	0.061	0.037	0.053	0.0013 *U*	0.0047 *U*	0.0070	0.16	0.35	0.0038	0.0020 *U*
Acenaphthene	83-32-9	SW8270	mg/kg		0.082	0.21	0.019	0.017 *J*	0.027	0.018	0.027	0.029	0.0051	0.046	0.064	0.036	0.12	0.041	0.022
Acenaphthylene	208-96-8	SW8270	mg/kg		0.0092	0.017	0.0027 *J*	0.00093 *U*	0.0030 *J*	0.00057 *U*	0.0046 *J*	0.0076	0.0020 *J*	0.010	0.011	0.0022 *J*	0.0069 *J*	0.0046	0.0066
Anthracene	120-12-7	SW8270	mg/kg		0.064	0.26	0.036	0.098 *J*	0.047	0.013	0.12	0.024	0.010	0.040	0.042	0.024	0.035	0.040	0.015
Benzo(a)anthracene	56-55-3	SW8270	mg/kg		0.23	0.49	0.39	0.14 *J*	0.47	0.033	1.3	0.082	0.091	0.098	0.14	0.40	0.13	0.19	0.071
Benzo(a)pyrene	50-32-8	SW8270	mg/kg		0.12	0.23	0.25	0.064 *J*	0.34	0.025	0.85	0.086	0.097	0.14	0.19	0.24	0.096	0.17	0.074
Benzo(b)fluoranthene	205-99-2	SW8270	mg/kg		0.24	0.53	0.55	0.26 *J*	0.51	0.0015 *U*	2.2	0.10	0.19	0.16	0.21	0.49	0.16	0.32 *J*	0.078
Benzo(g,h,i)perylene	191-24-2	SW8270	mg/kg		0.052	0.10	0.091	0.056 *J*	0.11	0.028	0.34	0.048	0.052	0.12	0.14	0.091	0.044	0.087	0.056
Benzo(k)fluoranthene	207-08-9	SW8270	mg/kg		0.093	0.20	0.22	0.074 *J*	0.29	0.00046 *U*	0.82	0.040	0.069	0.072	0.079	0.26	0.059	0.12	0.042
Chrysene	218-01-9	SW8270	mg/kg		0.33	0.64	0.44	0.25 *J*	0.64	0.054	1.7	0.11	0.13	0.14	0.20	0.53	0.19	0.33 *J*	0.092
Dibenzo(a,h)anthracene	53-70-3	SW8270	mg/kg		0.022	0.037	0.051	0.020 *J*	0.055	0.0070 *J*	0.20	0.012	0.021	0.024	0.028	0.016 *J*	0.019 *J*	0.037	0.012
Fluoranthene	206-44-0	SW8270	mg/kg		0.52	1.2	0.99	0.40 *J*	0.44	0.10	1.9	0.18	0.11	0.28	0.32	0.41	0.27	0.33 *J*	0.14
Fluorene	86-73-7	SW8270	mg/kg		0.11	0.17	0.043	0.024 *J*	0.025	0.017	0.050	0.023	0.0050	0.036	0.046	0.018	0.058	0.046	0.014
Indeno(1,2,3-cd)pyrene	193-39-5	SW8270	mg/kg		0.057	0.11	0.12	0.064 *J*	0.14	0.021	0.52	0.044	0.063	0.10	0.12	0.11	0.051	0.10	0.046
Naphthalene	91-20-3	SW8260B	mg/kg		0.048 *J*	0.028 *J*	0.039	0.030	0.31 *J*	0.047 *J*	0.015 *J*	0.098 *J*	0.00044 *U*	0.0057 *J*	0.021 *J*	0.078 *J*	5.1	0.00074 *J*	0.0012 *J*
Naphthalene	91-20-3	SW8270	mg/kg		0.22	1.1	0.13	0.16 *J*	0.24	0.16	0.013 *J*	0.073	0.0023 *J*	0.016	0.025	0.32	0.87	0.00039 *U*	0.00034 *U*
Phenanthrene	85-01-8	SW8270	mg/kg		0.49	1.2	0.46	0.31 *J*	0.16	0.11	0.58	0.18	0.038	0.26	0.34	0.17	0.30	0.22 *J*	0.095
Pyrene	129-00-0	SW8270	mg/kg		0.48	1.1	0.76	0.37 *J*	0.35	0.13	1.6	0.21	0.10	0.34	0.39	0.34	0.27	0.28 *J*	0.17
Pesticides																			
Total DDx	E966176eeca	SW8081A	mg/kg		28 *T*	390 *T*	8.9 *JT*	1800 *JT*	7.0 *JT*	500 *T*	29 *JT*	64 *JT*	2.8 *T*	16 *JT*	14 *JT*	66 *JT*	360 *JT*	10 *JT*	58 *T*
2,4'-DDD	53-19-0	SW8081A	mg/kg		2.0	66	0.67	130	0.72	170	1.5	18	0.26	3.3 *J*	3.1 *J*	5.4	61	0.81	6.1
2,4'-DDE	3424-82-6	SW8081A	mg/kg		1.8	2.6 *U*	0.054 *U*	11 *U*	0.44 *J*	4.0 *U*	0.27 *U*	0.54 *U*	0.14	0.43 *J*	0.39 *J*	0.53 *U*	1.9 *U*	0.12 *J*	0.46 *U*
2,4'-DDT	789-02-6	SW8081A	mg/kg		2.5	17	1.6 *J*	290 *J*	0.084 *U*	5.8 *U*	7.0	1.2 *J*	0.077	0.48 *J*	0.17 *J*	5.2	15	0.69	10
4,4'-DDD	72-54-8	SW8081A	mg/kg		5.7	140	1.0 *J*	160 *J*	1.7	260	2.3	33	0.74	6.6 *J*	6.2 *J*	12	130	2.9	15
4,4'-DDE	72-55-9	SW8081A	mg/kg		0.96	2.2 *U*	0.14	16 *J*	0.31	3.5 *U*	0.64 *J*	2.3	0.097	0.81 *J*	0.77 *J*	1.2 *J*	3.3 *J*	0.27	0.40 *U*
4,4'-DDT	50-29-3	SW8081A	mg/kg		15	160	5.5 *J*	1200 *J*	3.8	60	17	9.6	1.5	4.1	2.9	42	150	5.6	26
Aldrin	309-00-2	SW8081A	mg/kg		0.34 *U*	3.1 *U*	0.065 *U*	14 *U*	0.069 *U*	4.8 *U*	0.32 *U*	0.65 *U*	0.033 *U*	0.076 *U*	0.076 *U*	0.63 *U*	2.3 *U*	0.077 *U*	0.55 *U*
Total Endosulfan	ͻTENDOSLFNee	SW8081A	mg/kg		0.44 *UT*	4.0 *UT*	0.086 *UT*	18 *UT*	0.092 *UT*	6.4 *UT*	0.73 *JT*	0.85 *UT*	0.076 *JT*	0.10 *UT*	0.10 *UT*	1.3 *JT*	4.6 *JT*	0.10 *UT*	0.72 *UT*
alpha-Endosulfan	959-98-8	SW8081A	mg/kg		0.27 *UJ*	2.5 *UJ*	0.052 *UJ*	11 *UJ*	0.056 *UJ*	3.9 *UJ*	0.26 *UJ*	0.52 *UJ*	0.026 *UJ*	0.061 *UJ*	0.061 *UJ*	0.51 *UJ*	1.8 *UJ*	0.062 *U*	0.44 *U*
alpha-Hexachlorocyclohexane	319-84-6	SW8081A	mg/kg		0.22 *U*	2.0 *U*	0.041 *U*	8.7 *U*	0.044 *U*	3.1 *U*	0.20 *U*	0.41 *U*	0.021 *U*	0.048 *U*	0.048 *U*	0.40 *U*	1.4 *U*	0.049 *U*	0.35 *U*
beta-Endosulfan	33213-65-9	SW8081A	mg/kg		0.44 *U*	4.0 *U*	0.086 *U*	18 *U*	0.092 *U*	6.4 *U*	0.42 *U*	0.85 *U*	0.043 *U*	0.10 *U*	0.10 *U*	0.83 *U*	3.0 *U*	0.10 *U*	0.72 *U*
beta-Hexachlorocyclohexane	319-85-7	SW8081A	mg/kg		1.0	2.9 *U*	0.061 *U*	13 *U*	0.066 *U*	4.6 *U*	0.30 *U*	0.61 *U*	0.031 *U*	0.071 *U*	0.072 *U*	0.60 *U*	2.1 *U*	0.075 *J*	0.52 *U*
Total Chlordanes	'OTCHLDANEeec	SW8081A	mg/kg		1.1 *A*	2.3 *UA*	0.048 *UA*	10 *UA*	0.13 *JA*	3.6 *UA*	0.24 *UA*	0.48 *UA*	0.062 *JA*	0.057 *UA*	0.057 *UA*	0.47 *UA*	1.7 *UA*	0.11 *JA*	0.41 *UA*
cis-Chlordane	5103-71-9	SW8081A	mg/kg		0.25 *U*	2.3 *U*	0.048 *U*	10 *U*	0.052 *U*	3.6 *U*	0.24 *U*	0.48 *U*	0.025 *U*	0.057 *U*	0.057 *U*	0.47 *U*	1.7 *U*	0.058 *U*	0.41 *U*
delta-Hexachlorocyclohexane	319-86-8	SW8081A	mg/kg		0.33 *U*	3.0 *U*	0.063 *U*	13 *U*	0.068 *U*	4.7 *U*	0.31 *U*	0.63 *U*	0.032 *U*	0.074 *U*	0.074 *U*	0.62 *U*	2.2 *U*	0.076 *U*	0.54 *U*
Dieldrin	60-57-1	SW8081A	mg/kg		0.30 *U*	2.7 *U*	0.058 *U*	12 *U*	0.062 *U*	4.3 *U*	0.29 *U*	0.57 *U*	0.029 *U*	0.067 *U*	0.068 *U*	0.56 *U*	2.0 *U*	0.069 *U*	0.49 *U*
Endosulfan sulfate	1031-07-8	SW8081A	mg/kg		0.25 *U*	2.3 *U*	0.048 *U*	10 *U*	0.052 *U*	3.6 *U*	0.39 *J*	0.48 *U*	0.041 *J*	0.057 *U*	0.057 *U*	0.66 *J*	2.2 *J*	0.058 *U*	0.41 *U*
Endrin aldehyde	7421-93-4	SW8081A	mg/kg		0.18 *UJ*	1.6 *UJ*	0.035 *UJ*	7.4 *U*	0.037 *UJ*	2.6 *UJ*	0.17 *UJ*	0.35 *UJ*	0.018 *UJ*	0.041 *U*	0.041 *U*	0.34 *U*	1.2 *U*	0.042 *UJ*	0.29 *UJ*
Endrin ketone	53494-70-5	SW8081A	mg/kg		0.31 *U*	2.8 *U*	0.060 *U*	13 *U*	0.064 *U*	4.5 *U*	0.30 *U*	0.60 *U*	0.031 *J*	0.070 *U*	0.070 *U*	0.58 *U*	2.1 *U*	0.071 *U*	0.51 *U*
Endrin	72-20-8	SW8081A	mg/kg		0.41 *U*	3.7 *U*	0.078 *U*	17 *U*	0.084 *U*	5.8 *U*	0.39 *U*	0.78 *U*	0.040 *U*	0.091 *U*	0.092 *U*	0.76 *U*	2.7 *U*	0.093 *U*	0.66 *U*
gamma-Hexachlorocyclohexane	58-89-9	SW8081A	mg/kg		0.24 *U*	2.2 *U*	0.047 *U*	9.9 *U*	0.050 *U*	3.5 *U*	0.23 *U*	0.47 *U*	0.024 *U*	0.055 *U*	0.055 *U*	0.46 *U*	1.6 *U*	0.056 *U*	0.40 *U*
Heptachlor epoxide	1024-57-3	SW8081A	mg/kg		0.61 *J*	2.3 *U*	0.048 *U*	10 *U*	0.060 *J*	3.6 *U*	0.24 *U*	0.48 *U*	0.024 *U*	0.056 *U*	0.056 *U*	0.47 *U*	1.7 *U*	0.057 *U*	0.40 *U*
Heptachlor	76-44-8	SW8081A	mg/kg		0.34 *U*	3.1 *U*	0.066 *U*	14 *U*	0.070 *U*	4.9 *U*	0.32 *U*	0.65 *U*	0.033 *U*	0.076 *U*	0.077 *U*	0.64 *U*	2.3 *U*	0.078 *U*	0.55 *U*
Methoxychlor	72-43-5	SW8081A	mg/kg		3.0 *J*	6.1 *U*	0.13 *U*	27 *U*	0.14 *U*	9.5 *U*	0.63 *U*	1.3 *U*	0.065 *U*	0.15 *U*	0.15 *U*	1.3 *U*	4.5 *U*	0.15 *U*	1.1 *U*
Toxaphene Peak 1	STL00100	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
Toxaphene Peak 2	STL00109	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
Toxaphene Peak 3	STL00220	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
Toxaphene Peak 4	STL00083	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
Toxaphene Peak 5	STL00051	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
Toxaphene	8001-35-2	SW8081A	mg/kg		19 *U*	170 *U*	3.6 *U*	750 *U*	3.8 *U*	270 *U*	18 *U*	35 *U*	1.8 *U*	4.2 *U*	4.2 *U*	35 *U*	120 *U*	4.2 *U*	30 *U*
trans-Chlordane	5103-74-2	SW8081A	mg/kg		1.0	2.2 *U*	0.046 *U*	9.8 *U*	0.10 *J*	3.4 *U*	0.23 *U*	0.46 *U*	0.049 *J*	0.054 *U*	0.054 *U*	0.45 *U*	1.6 *U*	0.079 *J*	0.39 *U*

Table 3-4. Sediment Chemistry Data - Expanded Analyte List
Results for Waste Characterization Samples

Constituent	CAS ID	Method	Units	Borehole Number:	WB-35	WB-35	WB-36	WB-36	WB-37	WB-37	WB-39	WB-39	WB-41	WB-41	WB-41	WB-42	WB-42	WB-43	WB-43
				Sample Date:	9/30/2009	9/30/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/28/2009	9/29/2009	9/28/2009	9/28/2009	9/28/2009	9/25/2009	9/25/2009	9/24/2009	9/24/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
				Upper Depth, ft:	0	10	0	10	0	6	0	8	0	6	6	0	6	0	8
				Lower Depth, ft:	10	20	10	22	6	14	8	18	6	14	14	6	14	8	18
				Sample ID:	ARK-WB-35-0-10	ARK-WB-35-10-20	ARK-WB-36-0-10	ARK-WB-36-10-22	ARK-WB-37-0-6	ARK-WB-37-6-14	ARK-WB-39-0-8	ARK-WB-39-8-18	ARK-WB-41-0-6	ARK-WB-41-6-14	ARK-WB-82-6-14	ARK-WB-42-0-6	ARK-WB-42-6-14	ARK-WB-43-0-8	ARK-WB-43-8-18
Phenols																			
2,3,4,6-Tetrachlorophenol	58-90-2	SW8270	mg/kg		0.0028 *U*	0.0050 *U*	0.047 *J*	0.085	0.0029 *U*	0.0027 *U*	0.0067 *U*	0.0022 *U*	0.0014 *U*	0.0025 *U*	0.0025 *U*	0.0049 *U*	0.0048 *U*	0.0013 *U*	0.0012 *U*
2,3,5,6-Tetrachlorophenol	935-95-5	SW8270	mg/kg		0.0020 *U*	0.0036 *U*	0.0038 *U*	0.0031 *U*	0.0021 *U*	0.0019 *U*	0.0047 *U*	0.0016 *U*	0.00099 *U*	0.0018 *U*	0.0018 *U*	0.0035 *U*	0.0034 *U*	0.00095 *U*	0.00082 *U*
2,4,5-Trichlorophenol	95-95-4	SW8270	mg/kg		0.010 *J*	0.0028 *U*	0.015 *J*	0.020 *J*	0.0017 *U*	0.0015 *U*	0.0038 *U*	0.0013 *U*	0.00078 *U*	0.0014 *U*	0.0014 *U*	0.0028 *U*	0.0027 *U*	0.00075 *U*	0.00066 *U*
2,4,6-Trichlorophenol	88-06-2	SW8270	mg/kg		0.0064 *J*	0.0026 *U*	0.0028 *U*	0.026 *J*	0.0016 *U*	0.0014 *U*	0.0035 *U*	0.0012 *U*	0.00073 *U*	0.0013 *U*	0.0013 *U*	0.0026 *U*	0.0025 *U*	0.00070 *U*	0.00061 *U*
2,4-Dichlorophenol	120-83-2	SW8270	mg/kg		0.0011 *U*	0.0020 *U*	0.0081 *J*	0.0017 *U*	0.0012 *U*	0.0011 *U*	0.0026 *U*	0.00088 *U*	0.00055 *U*	0.0010 *U*	0.0010 *U*	0.0019 *U*	0.0019 *U*	0.00053 *U*	0.00046 *U*
2,4-Dimethylphenol	105-67-9	SW8270	mg/kg		0.023 *J*	0.0014 *U*	0.0015 *U*	0.0012 *U*	0.00082 *U*	0.00074 *U*	0.0018 *U*	0.00061 *U*	0.00038 *U*	0.00070 *U*	0.00070 *U*	0.0014 *U*	0.0013 *U*	0.00037 *UJ*	0.00032 *U*
2,4-Dinitrophenol	51-28-5	SW8270	mg/kg		0.0052 *U*	0.0092 *U*	0.0099 *U*	0.0082 *U*	0.0054 *U*	0.0050 *U*	0.012 *U*	0.0041 *U*	0.0026 *U*	0.0047 *U*	0.0047 *U*	0.0090 *U*	0.0089 *U*	0.0025 *U*	0.0021 *U*
2-Chlorophenol	95-57-8	SW8270	mg/kg		0.0040 *J*	0.11	0.058 *J*	0.19	0.13	0.18	0.0065 *U*	0.21	0.0014 *U*	0.011 *J*	0.015 *J*	0.050 *J*	0.31	0.0013 *U*	0.012 *J*
2-Methylphenol	95-48-7	SW8270	mg/kg		0.0026 *U*	0.0047 *U*	0.0050 *U*	0.0041 *U*	0.0028 *U*	0.0025 *U*	0.0062 *U*	0.0021 *U*	0.0013 *U*	0.0024 *U*	0.0024 *U*	0.0046 *U*	0.0045 *U*	0.0012 *U*	0.0011 *U*
2-Nitrophenol	88-75-5	SW8270	mg/kg		0.0016 *U*	0.0028 *U*	0.0030 *U*	0.0025 *U*	0.0017 *U*	0.0015 *U*	0.0038 *U*	0.0013 *U*	0.00078 *U*	0.0014 *U*	0.0014 *U*	0.0028 *U*	0.0027 *U*	0.00075 *U*	0.00066 *U*
3 & 4 Methylphenol	15831-10-4	SW8270	mg/kg		0.095	0.010 *J*	0.016 *J*	0.20	0.19	0.15	0.0068 *J*	0.067	0.018 *J*	0.014 *J*	0.010 *J*	0.0036 *U*	0.070 *J*	0.095	0.0074 *J*
4,6-Dinitro-2-methylphenol	534-52-1	SW8270	mg/kg		0.0066 *U*	0.012 *U*	0.013 *U*	0.010 *U*	0.0070 *U*	0.0064 *U*	0.016 *U*	0.0053 *U*	0.0033 *U*	0.0060 *U*	0.0060 *U*	0.012 *U*	0.011 *U*	0.0032 *U*	0.0027 *U*
4-Chloro-3-methylphenol	59-50-7	SW8270	mg/kg		0.0026 *U*	0.0047 *U*	0.0050 *U*	0.0041 *U*	0.0028 *U*	0.0025 *U*	0.0062 *U*	0.0021 *U*	0.0013 *U*	0.0024 *U*	0.0024 *U*	0.0046 *U*	0.0045 *U*	0.0012 *U*	0.0011 *U*
4-Nitrophenol	100-02-7	SW8270	mg/kg		0.063 *U*	0.11 *U*	0.12 *U*	0.099 *U*	0.066 *U*	0.060 *U*	0.15 *U*	0.050 *U*	0.031 *U*	0.057 *U*	0.057 *U*	0.11 *U*	0.11 *U*	0.030 *R*	0.026 *U*
Pentachlorophenol	87-86-5	SW8270	mg/kg		0.039	0.0079 *U*	0.10	0.10	0.0047 *U*	0.0043 *U*	0.089	0.0035 *U*	0.021	0.0040 *U*	0.0040 *U*	0.097	0.049 *J*	0.016 *J*	0.0018 *U*
Phenol	108-95-2	SW8270	mg/kg		0.066 *U*	0.031 *U*	0.023 *U*	0.0043 *U*	0.047 *U*	0.031 *U*	0.023 *U*	0.019 *U*	0.0098 *U*	0.0025 *U*	0.016 *U*	0.0048 *U*	0.032 *U*	0.012 *U*	0.0096 *U*
Phthalates																			
Bis(2-ethylhexyl) phthalate	117-81-7	SW8270	mg/kg		0.32 *J*	0.23 *U*	0.13 *U*	0.075 *U*	0.081 *U*	0.042 *U*	0.15 *U*	0.029 *U*	0.065 *U*	0.065 *U*	0.038 *U*	0.073 *U*	0.056 *U*	0.12 *J*	0.030 *U*
Butylbenzyl phthalate	85-68-7	SW8270	mg/kg		0.019 *U*	0.020 *U*	0.022 *U*	0.018 *U*	0.018 *U*	0.015 *U*	0.028 *U*	0.019 *U*	0.057 *U*	0.043 *U*	0.016 *U*	0.022 *U*	0.020 *U*	0.046 *U*	0.045 *U*
Dibutyl phthalate	84-74-2	SW8270	mg/kg		0.026 *U*	0.042 *U*	0.043 *U*	0.027 *U*	0.027 *U*	0.023 *U*	0.030 *U*	0.027 *U*	0.057 *U*	0.054 *U*	0.022 *U*	0.024 *U*	0.021 *U*	0.061 *U*	0.047 *U*
Diethyl phthalate	84-66-2	SW8270	mg/kg		0.0055 *U*	0.0099 *U*	0.011 *U*	0.0087 *U*	0.0058 *U*	0.0053 *U*	0.013 *U*	0.0044 *U*	0.030 *U*	0.021 *U*	0.0050 *U*	0.0097 *U*	0.0095 *U*	0.025 *U*	0.027 *U*
Dimethyl phthalate	131-11-3	SW8270	mg/kg		0.0015 *U*	0.0028 *U*	0.0030 *U*	0.0024 *U*	0.0016 *U*	0.0015 *U*	0.0075 *J*	0.0012 *U*	0.0041 *J*	0.0014 *U*	0.0014 *U*	0.0027 *U*	0.0027 *U*	0.0043 *J*	0.00064 *U*
Di-n-octyl phthalate	117-84-0	SW8270	mg/kg		0.0056 *J*	0.00086 *U*	0.00092 *U*	0.014 *J*	0.00050 *U*	0.00046 *U*	0.0011 *U*	0.00038 *U*	0.00024 *U*	0.0099 *J*	0.00043 *U*	0.00084 *U*	0.016 *J*	0.00023 *U*	0.00020 *U*
SVOCs																			
1,2,4-Trichlorobenzene	120-82-1	SW8270	mg/kg		0.019	0.014 *J*	0.015 *J*	0.022 *J*	0.0047 *U*	0.0043 *U*	0.025 *J*	0.0035 *U*	0.0022 *U*	0.0040 *U*	0.0040 *U*	0.0077 *U*	0.0076 *U*	0.0021 *U*	0.0018 *U*
1,2-Dichlorobenzene	95-50-1	SW8270	mg/kg		0.0024 *U*	0.0042 *U*	0.0045 *U*	0.58 *J*	0.0025 *U*	0.040	0.0056 *U*	0.0019 *U*	0.0012 *U*	0.0021 *U*	0.0021 *U*	0.0041 *U*	0.066	0.0011 *U*	0.00098 *U*
1,3-Dichlorobenzene	541-73-1	SW8270	mg/kg		0.0027 *U*	0.015 *J*	0.0051 *U*	0.016 *J*	0.0030 *J*	0.0060 *J*	0.0094 *J*	0.0021 *U*	0.0014 *J*	0.0024 *U*	0.0024 *U*	0.0046 *U*	0.0046 *U*	0.0013 *U*	0.0011 *U*
1,4-Dichlorobenzene	106-46-7	SW8260B	mg/kg		0.0066 *J*	0.29 *J*	0.065	0.026	0.053 *J*	0.14 *J*	0.0029 *J*	0.22 *J*	0.00073 *U*	0.00084 *J*	0.0083 *J*	0.042 *J*	1.2	0.0010 *J*	0.0038 *J*
1,4-Dichlorobenzene	106-46-7	SW8270	mg/kg		0.0012 *U*	0.27	0.14	1.6 *J*	0.021	0.16	0.0028 *U*	0.051	0.00058 *U*	0.0011 *U*	0.0011 *U*	0.028 *J*	0.16	0.00056 *U*	0.00049 *U*
2,4-Dinitrotoluene	121-14-2	SW8270	mg/kg		0.00092 *U*	0.0016 *U*	0.0018 *U*	0.0015 *U*	0.00097 *U*	0.00089 *U*	0.0022 *U*	0.00073 *U*	0.00046 *U*	0.00083 *U*	0.00083 *U*	0.0016 *U*	0.0016 *U*	0.00044 *U*	0.00038 *U*
2,6-Dinitrotoluene	606-20-2	SW8270	mg/kg		0.039 *U*	0.0027 *U*	0.036 *U*	0.0024 *U*	0.0016 *U*	0.0015 *U*	0.0036 *U*	0.0012 *U*	0.035 *U*	0.050 *U*	0.037 *U*	0.037 *U*	0.0026 *U*	0.034 *U*	0.026 *U*
2-Chloronaphthalene	91-58-7	SW8270	mg/kg		0.00066 *U*	0.0012 *U*	0.011 *J*	0.0010 *U*	0.00070 *U*	0.00064 *U*	0.0016 *U*	0.00053 *U*	0.00033 *U*	0.00060 *U*	0.00060 *U*	0.0012 *U*	0.0011 *U*	0.00032 *U*	0.00027 *U*
2-Nitroaniline	88-74-4	SW8270	mg/kg		0.0015 *U*	0.0028 *U*	0.0030 *U*	0.0024 *U*	0.0016 *U*	0.0015 *U*	0.0037 *U*	0.0012 *U*	0.00077 *U*	0.0014 *U*	0.0014 *U*	0.0027 *U*	0.0027 *U*	0.00074 *U*	0.00064 *U*
3,3'-Dichlorobenzidine	91-94-1	SW8270	mg/kg		0.0029 *U*	0.0052 *U*	0.0056 *U*	0.0046 *U*	0.0031 *U*	0.0028 *U*	0.0069 *U*	0.0023 *U*	0.0014 *U*	0.0026 *U*	0.0026 *U*	0.0051 *U*	0.0050 *U*	0.0014 *UJ*	0.0012 *U*
3-Nitroaniline	99-09-2	SW8270	mg/kg		0.0021 *U*	0.0038 *U*	0.0041 *U*	0.0034 *U*	0.0023 *U*	0.0021 *U*	0.021 *J*	0.0017 *U*	0.0011 *U*	0.0048 *J*	0.0019 *U*	0.0037 *U*	0.0037 *U*	0.0010 *UJ*	0.00089 *U*
4-Bromophenyl phenyl ether	101-55-3	SW8270	mg/kg		0.0012 *U*	0.0022 *U*	0.0023 *U*	0.0019 *U*	0.0013 *U*	0.0012 *U*	0.0029 *U*	0.00097 *U*	0.00060 *U*	0.0011 *U*	0.0011 *U*	0.0021 *U*	0.0021 *U*	0.00058 *U*	0.00050 *U*
4-Chloroaniline	106-47-8	SW8270	mg/kg		0.0041 *U*	0.0073 *U*	0.0078 *U*	0.0064 *U*	0.0043 *U*	0.0039 *U*	0.0097 *U*	0.0032 *U*	0.0020 *U*	0.0037 *U*	0.0037 *U*	0.0071 *U*	0.0070 *U*	0.0019 *UJ*	0.0017 *U*
4-Chlorophenyl phenyl ether	7005-72-3	SW8270	mg/kg		0.0021 *U*	0.0038 *U*	0.0040 *U*	0.0033 *U*	0.0022 *U*	0.0020 *U*	0.0050 *U*	0.0017 *U*	0.0010 *U*	0.0019 *U*	0.0019 *U*	0.0037 *U*	0.0036 *U*	0.0010 *U*	0.00087 *U*
4-Nitroaniline	100-01-6	SW8270	mg/kg		0.0052 *U*	0.0092 *U*	0.0099 *U*	0.0082 *U*	0.0054 *U*	0.0050 *U*	0.012 *U*	0.0041 *U*	0.0026 *U*	0.0047 *U*	0.0047 *U*	0.0090 *U*	0.0089 *U*	0.0025 *U*	0.0021 *U*
Aniline	62-53-3	SW8270	mg/kg		0.016 *UJ*	0.028 *UJ*	0.030 *UJ*	0.025 *UJ*	0.017 *UJ*	0.015 *UJ*	0.038 *UJ*	0.013 *UJ*	0.0078 *UJ*	0.014 *UJ*	0.014 *UJ*	0.028 *UJ*	0.027 *UJ*	0.0075 *UJ*	0.0066 *UJ*
Azobenzene	103-33-3	SW8270	mg/kg		0.0011 *U*	0.0020 *U*	0.0021 *UJ*	0.0017 *U*	0.012 *U*	0.0011 *U*	0.0026 *U*	0.00088 *U*	0.00055 *U*	0.0010 *U*	0.0010 *U*	0.0019 *U*	0.0019 *U*	0.00053 *U*	0.00046 *U*
Benzoic acid	65-85-0	SW8270	mg/kg		0.24 *U*	0.43 *U*	0.46 *U*	0.38 *U*	0.25 *U*	0.23 *U*	0.57 *U*	0.19 *U*	0.12 *U*	0.22 *U*	0.22 *U*	0.83 *U*	0.41 *U*	0.11 *U*	0.099 *U*
Benzyl alcohol	100-51-6	SW8270	mg/kg		0.0035 *U*	0.0063 *U*	0.0098 *U*	0.0056 *U*	0.0037 *U*	0.0034 *U*	0.0084 *U*	0.0028 *U*	0.0094 *U*	0.0095 *U*	0.0093 *U*	0.0062 *U*	0.0061 *U*	0.011 *U*	0.0015 *U*
Bis(2-chloro-1-methylethyl) ether	108-60-1	SW8270	mg/kg		0.0025 *U*	0.0044 *U*	0.0047 *U*	0.0039 *U*	0.0026 *U*	0.0024 *U*	0.0059 *U*	0.0020 *U*	0.0032 *J*	0.0040 *J*	0.0022 *U*	0.0043 *U*	0.0043 *U*	0.0012 *U*	0.0010 *U*
Bis(2-chloroethoxy) methane	111-91-1	SW8270	mg/kg		0.0011 *U*	0.0020 *U*	0.0021 *U*	0.0017 *U*	0.0012 *U*	0.0011 *U*	0.0026 *U*	0.00088 *U*	0.00055 *U*	0.0010 *U*	0.0010 *U*	0.0019 *U*	0.0019 *U*	0.00053 *U*	0.00046 *U*
Bis(2-chloroethyl) ether	111-44-4	SW8270	mg/kg		0.0037 *U*	0.0065 *U*	0.0070 *U*	0.0058 *U*	0.0038 *U*	0.0035 *U*	0.0087 *U*	0.0029 *U*	0.0018 *U*	0.0033 *U*	0.0033 *U*	0.0064 *U*	0.0063 *U*	0.0017 *U*	0.0015 *U*
Carbazole	86-74-8	SW8270	mg/kg		0.022 *J*	0.044 *J*	0.025 *J*	0.0051 *J*	0.012 *J*	0.0037 *J*	0.027 *J*	0.0013 *U*	0.0029 *J*	0.0014 *U*	0.0014 *U*	0.048 *J*	0.046 *J*	0.0068 *J*	0.00066 *U*
Dibenzofuran	132-64-9	SW8270	mg/kg		0.055	0.14	0.023 *J*	0.013 *J*	0.0078 *J*	0.00053 *U*	0.022 *J*	0.0070 *J*	0.0020 *J*	0.0055 *J*	0.0086 *J*	0.013 *J*	0.062 *J*	0.010 *J*	0.0039 *J*
Hexachlorobenzene	118-74-1	SW8270	mg/kg		0.055	0.041	0.050	0.0022 *U*	0.0085 *J*	0.0013 *U*	0.064	0.0011 *U*	0.0069 *J*	0.0013 *U*	0.0013 *U*	0.043	0.052	0.0067 *J*	0.00058 *U*
Hexachlorobutadiene	87-68-3	SW8270	mg/kg		0.17	0.029 *J*	0.073	0.018 *J*	0.0084 *J*	0.0032 *U*	0.071	0.0027 *U*	0.0071 *J*	0.0030 *U*	0.0030 *U*	1.9	0.088	0.011	0.0014 *U*
Hexachlorocyclopentadiene	77-47-4	SW8270	mg/kg		0.00096 *U*	0.0017 *U*	0.0018 *U*	0.0015 *U*	0.0010 *U*	0.00092 *U*	0.0023 *U*	0.00076 *U*	0.00047 *U*	0.00087 *U*	0.00086 *U*	0.0017 *U*	0.0017 *U*	0.00046 *U*	0.00040 *U*
Hexachloroethane	67-72-1	SW8270	mg/kg		0.23	0.10	0.29	0.0064 *U*	0.090	0.0039 *U*	0.62	0.013 *J*	0.058	0.013 *J*	0.012 *J*	0.22	0.075	0.075 *U*	0.0084 *J*
Isophorone	78-59-1	SW8270	mg/kg		0.0015 *U*	0.018 *U*	0.0029 *U*	0.0024 *U*	0.0073 *U*	0.0015 *U*	0.0036 *U*	0.0012 *U*	0.00075 *U*	0.0014 *U*	0.012 *U*	0.0026 *U*	0.010 *U*	0.0055 *U*	0.010 *J*
Nitrobenzene	98-95-3	SW8270	mg/kg		0.011 *U*	0.019 *U*	0.020 *U*	0.017 *U*	0.011 *U*	0.010 *U*	0.025 *U*	0.0085 *U*	0.0053 *U*	0.0097 *U*	0.0096 *U*	0.019 *U*	0.018 *U*	0.0051 *U*	0.0044 *U*
N-Nitrosodimethylamine	62-75-9	SW8270	mg/kg		0.18 *U*	0.32 *U*	0.34 *U*	0.28 *U*	0.19 *U*	0.17 *U*	0.42 *U*	0.14 *U*	0.088 *U*	0.16 *U*	0.16 *U*	0.31 *U*	0.31 *U*	0.084 *U*	0.073 *U*
N-Nitrosodiphenylamine	86-30-6	SW8270	mg/kg		0.15	0.23	0.029 *J*	0.11 *J*	0.053	0.062	0.0019 *U*	0.054	0.00040 *U*	0.080	0.095	0.038	0.099	0.032	0.080
N-Nitrosodipropylamine	621-64-7	SW8270	mg/kg		0.0036 *U*	0.0064 *U*	0.0068 *U*	0.0057 *U*	0.0038 *U*	0.0034 *U*	0.0085 *U*	0.0028 *U*	0.0018 *U*	0.0032 *U*	0.0032 *U*	0.0063 *U*	0.0062 *U*	0.0017 *U*	0.013 *J*

Table 3-4. Sediment Chemistry Data - Expanded Analyte List
Results for Waste Characterization Samples

				Borehole Number:	WB-35	WB-35	WB-36	WB-36	WB-37	WB-37	WB-39	WB-39	WB-41	WB-41	WB-41	WB-42	WB-42	WB-43	WB-43
				Sample Date:	9/30/2009	9/30/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/28/2009	9/29/2009	9/28/2009	9/28/2009	9/28/2009	9/25/2009	9/25/2009	9/24/2009	9/24/2009
				Matrix:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
				Sample Type:	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	N
				Upper Depth, ft:	0	10	0	10	0	6	0	8	0	6	6	0	6	0	8
				Lower Depth, ft:	10	20	10	22	6	14	8	18	6	14	14	6	14	8	18
Constituent	**CAS ID**	**Method**	**Units**	**Sample ID:**	ARK-WB-35-0-10	ARK-WB-35-10-20	ARK-WB-36-0-10	ARK-WB-36-10-22	ARK-WB-37-0-6	ARK-WB-37-6-14	ARK-WB-39-0-8	ARK-WB-39-8-18	ARK-WB-41-0-6	ARK-WB-41-6-14	ARK-WB-82-6-14	ARK-WB-42-0-6	ARK-WB-42-6-14	ARK-WB-43-0-8	ARK-WB-43-8-18
VOCs																			
1,1,1,2-Tetrachloroethane	630-20-6	SW8260B	mg/kg		0.00018 *U*	0.00015 *U*	0.00014 *U*	0.00014 *U*	0.00017 *U*	0.00015 *UJ*	0.00015 *U*	0.00014 *U*	0.00016 *U*	0.00015 *UJ*	0.00015 *U*	0.00011 *UJ*	0.00014 *UJ*	0.00016 *U*	0.00014 *U*
1,1,1-Trichloroethane	71-55-6	SW8260B	mg/kg		0.00078 *U*	0.00068 *U*	0.00060 *U*	0.00062 *U*	0.00075 *U*	0.00068 *UJ*	0.00068 *U*	0.00060 *U*	0.00070 *U*	0.00065 *UJ*	0.00065 *U*	0.00050 *UJ*	0.00063 *J*	0.00069 *U*	0.00061 *U*
1,1,2,2-Tetrachloroethane	79-34-5	SW8260B	mg/kg		0.00018 *U*	0.00016 *UJ*	0.00014 *U*	0.00014 *U*	0.00017 *U*	0.00016 *UJ*	0.00015 *U*	0.00014 *U*	0.00016 *U*	0.00015 *UJ*	0.00015 *U*	0.018 *J*	0.00014 *UJ*	0.00016 *U*	0.00014 *U*
1,1,2-Trichloroethane	79-00-5	SW8260B	mg/kg		0.00020 *U*	0.00018 *U*	0.00016 *U*	0.00016 *U*	0.00020 *U*	0.00018 *UJ*	0.00018 *U*	0.00016 *U*	0.00018 *U*	0.00017 *UJ*	0.00017 *U*	0.00055 *J*	0.0019 *J*	0.00018 *U*	0.00016 *U*
1,1-Dichloroethane	75-34-3	SW8260B	mg/kg		0.0014 *J*	0.00070 *U*	0.0012 *J*	0.0037	0.00076 *U*	0.00070 *UJ*	0.00069 *U*	0.00061 *U*	0.00072 *U*	0.00066 *UJ*	0.00066 *U*	0.00089 *J*	0.00063 *UJ*	0.00071 *U*	0.00062 *U*
1,1-Dichloroethene	75-35-4	SW8260B	mg/kg		0.00031 *J*	0.00025 *U*	0.00022 *U*	0.00022 *U*	0.00027 *U*	0.00025 *UJ*	0.00024 *U*	0.00022 *U*	0.00025 *U*	0.00023 *UJ*	0.00061 *J*	0.0037 *J*	0.0023 *J*	0.00025 *U*	0.00022 *U*
1,2,3-Trichloropropane	96-18-4	SW8260B	mg/kg		0.00073 *U*	0.00064 *U*	0.00056 *U*	0.00058 *U*	0.00070 *U*	0.00064 *UJ*	0.00063 *U*	0.00056 *U*	0.00066 *U*	0.00061 *UJ*	0.00061 *U*	0.00047 *UJ*	0.00057 *UJ*	0.00065 *U*	0.00057 *U*
1,2-Dichloroethane	107-06-2	SW8260B	mg/kg		0.00032 *U*	0.00028 *U*	0.0012 *J*	0.012	0.00031 *U*	0.00028 *UJ*	0.00028 *U*	0.00025 *U*	0.00029 *U*	0.00027 *UJ*	0.00027 *U*	0.00073 *J*	0.00026 *UJ*	0.00029 *U*	0.00025 *U*
1,2-Dichloropropane	78-87-5	SW8260B	mg/kg		0.00035 *U*	0.00030 *U*	0.00027 *U*	0.00027 *U*	0.00033 *U*	0.00030 *UJ*	0.00030 *U*	0.00027 *U*	0.00031 *U*	0.00029 *UJ*	0.00029 *U*	0.00031 *J*	0.00027 *UJ*	0.00031 *U*	0.00027 *U*
1,4-Dichloro-trans-2-butene	110-57-6	SW8260B	mg/kg		0.0012 *U*	0.0011 *U*	0.00096 *U*	0.00099 *U*	0.0012 *U*	0.0011 *UJ*	0.0011 *U*	0.00096 *U*	0.0011 *U*	0.0010 *UJ*	0.091 *J*	0.00080 *UJ*	0.00098 *UJ*	0.0011 *U*	0.00097 *U*
2-Butanone	78-93-3	SW8260B	mg/kg		0.015 *J*	0.0052 *J*	0.010 *J*	0.038 *J*	0.023 *J*	0.033 *J*	0.012 *J*	0.028 *J*	0.012 *J*	0.019 *J*	0.029 *J*	0.0059 *J*	0.017 *J*	0.0052 *J*	0.0093 *J*
2-Chloroethyl vinyl ether	110-75-8	SW8260B	mg/kg		0.0028 *UJ*	0.0024 *UJ*	0.0021 *UJ*	0.0022 *UJ*	0.0027 *UJ*	0.0024 *UJ*	0.0024 *UJ*	0.0021 *UJ*	0.0025 *UJ*	0.0023 *UJ*	0.0023 *UJ*	0.0018 *UJ*	0.0022 *UJ*	0.0025 *UJ*	0.0022 *UJ*
4-Methyl-2-pentanone	108-10-1	SW8260B	mg/kg		0.00087 *U*	0.00076 *UJ*	0.00067 *U*	0.00069 *U*	0.00083 *U*	0.00076 *UJ*	0.00076 *U*	0.00067 *U*	0.00079 *U*	0.00072 *UJ*	0.00072 *U*	0.00056 *UJ*	0.00068 *UJ*	0.0014 *J*	0.00068 *U*
Acetone	67-64-1	SW8260B	mg/kg		0.062 *J*	0.021 *J*	0.040	0.16	0.090 *J*	0.14 *J*	0.062 *J*	0.13 *J*	0.059 *J*	0.097 *J*	0.17 *J*	0.025 *J*	0.072 *J*	0.021 *J*	0.040 *J*
Acrolein	107-02-8	SW8260B	mg/kg		0.0026 *R*	0.0023 *R*	0.0020 *R*	0.0021 *R*	0.0025 *UJ*	0.0023 *UJ*	0.0023 *UJ*	0.0020 *R*	0.0023 *UJ*	0.0022 *UJ*	0.0022 *UJ*	0.0017 *UJ*	0.0020 *UJ*	0.0023 *UJ*	0.0020 *UJ*
Acrylonitrile	107-13-1	SW8260B	mg/kg		0.0024 *U*	0.0021 *U*	0.0019 *U*	0.0019 *U*	0.0023 *U*	0.0021 *UJ*	0.0021 *U*	0.0019 *U*	0.0022 *U*	0.0020 *UJ*	0.0020 *U*	0.0016 *UJ*	0.0019 *UJ*	0.0022 *U*	0.0019 *U*
Benzene	71-43-2	SW8260B	mg/kg		0.012 *J*	0.010 *J*	0.0023	0.014	0.19 *J*	0.29 *J*	0.014 *J*	0.012 *J*	0.00023 *J*	0.00087 *J*	0.0017 *J*	0.00026 *J*	0.0029 *J*	0.00024 *J*	0.0016 *J*
Bromochloromethane	74-97-5	SW8260B	mg/kg		0.00050 *U*	0.00044 *U*	0.00039 *U*	0.00040 *U*	0.00048 *U*	0.00044 *UJ*	0.00044 *U*	0.00039 *U*	0.00046 *U*	0.00042 *UJ*	0.00042 *U*	0.00032 *UJ*	0.00040 *UJ*	0.00045 *U*	0.00040 *U*
Bromodichloromethane	75-27-4	SW8260B	mg/kg		0.00015 *U*	0.00013 *U*	0.00012 *U*	0.00012 *U*	0.00014 *U*	0.00013 *UJ*	0.00013 *U*	0.00012 *U*	0.00014 *U*	0.00012 *UJ*	0.00012 *U*	0.000096 *UJ*	0.00012 *UJ*	0.00013 *U*	0.00012 *U*
Bromoform	75-25-2	SW8260B	mg/kg		0.00015 *U*	0.00013 *U*	0.00011 *U*	0.00012 *U*	0.00014 *U*	0.00013 *UJ*	0.00013 *U*	0.00011 *U*	0.00013 *U*	0.00012 *UJ*	0.00012 *U*	0.000093 *UJ*	0.00011 *UJ*	0.00013 *U*	0.00011 *U*
Bromomethane	74-83-9	SW8260B	mg/kg		0.00078 *U*	0.00068 *U*	0.00060 *U*	0.00062 *U*	0.00075 *U*	0.00068 *UJ*	0.00068 *U*	0.00060 *U*	0.00070 *U*	0.00065 *UJ*	0.00065 *U*	0.00050 *UJ*	0.00061 *UJ*	0.00070 *U*	0.00061 *U*
Carbon disulfide	75-15-0	SW8260B	mg/kg		0.0042 *J*	0.0010 *J*	0.0013 *J*	0.019 *J*	0.0010 *J*	0.00057 *J*	0.0052 *J*	0.0033 *J*	0.00065 *J*	0.00039 *J*	0.0013 *J*	0.0058 *J*	0.026 *J*	0.00023 *J*	0.00039 *J*
Carbon tetrachloride	56-23-5	SW8260B	mg/kg		0.00075 *U*	0.00066 *U*	0.00058 *U*	0.00060 *U*	0.00072 *U*	0.00066 *UJ*	0.00066 *U*	0.00058 *U*	0.00068 *U*	0.00063 *UJ*	0.00063 *U*	0.00048 *UJ*	0.00059 *UJ*	0.00067 *U*	0.00059 *U*
Chlorobenzene	108-90-7	SW8260B	mg/kg		1.1 *J*	140 *J*	97 *J*	160 *J*	120 *J*	310 *J*	3.2	340 *J*	0.013 *J*	13 *J*	12 *J*	32 *J*	260 *J*	0.030 *J*	2.8 *J*
Chlorodibromomethane	124-48-1	SW8260B	mg/kg		0.00028 *U*	0.00024 *U*	0.00021 *U*	0.00022 *U*	0.00027 *U*	0.00024 *UJ*	0.00024 *U*	0.00021 *U*	0.00025 *U*	0.00023 *UJ*	0.00023 *U*	0.00018 *UJ*	0.00022 *UJ*	0.00025 *U*	0.00022 *U*
Chloroethane	75-00-3	SW8260B	mg/kg		0.00054 *R*	0.00048 *R*	0.0092 *J*	0.022 *J*	0.00052 *R*	0.00048 *R*	0.00047 *R*	0.00042 *R*	0.00049 *R*	0.00045 *R*	0.00045 *R*	0.00035 *UJ*	0.0019 *J*	0.00048 *R*	0.00043 *R*
Chloroform	67-66-3	SW8260B	mg/kg		0.079 *J*	0.00059 *J*	0.038	0.26	0.0017 *J*	0.00026 *UJ*	0.0014 *J*	0.00068 *J*	0.00027 *U*	0.00025 *UJ*	0.00025 *U*	0.45	0.23 *J*	0.00032 *J*	0.00023 *U*
Chloromethane	74-87-3	SW8260B	mg/kg		0.00036 *U*	0.00031 *U*	0.00027 *U*	0.00028 *U*	0.00034 *U*	0.00031 *UJ*	0.00031 *U*	0.00027 *U*	0.00032 *U*	0.00030 *UJ*	0.00030 *U*	0.00023 *UJ*	0.00028 *UJ*	0.00032 *U*	0.00028 *U*
cis-1,3-Dichloropropene	10061-01-5	SW8260B	mg/kg		0.00024 *U*	0.00021 *U*	0.00018 *U*	0.00019 *U*	0.00023 *U*	0.00021 *UJ*	0.00021 *U*	0.00018 *U*	0.00021 *U*	0.00020 *UJ*	0.00020 *U*	0.00015 *UJ*	0.00019 *UJ*	0.00021 *U*	0.00019 *U*
Dibromomethane	74-95-3	SW8260B	mg/kg		0.00021 *U*	0.00019 *U*	0.00016 *U*	0.00017 *U*	0.00020 *U*	0.00019 *UJ*	0.00018 *U*	0.00016 *U*	0.00019 *U*	0.00018 *UJ*	0.00018 *U*	0.00014 *UJ*	0.00017 *UJ*	0.00019 *U*	0.00017 *U*
Dichlorodifluoromethane	75-71-8	SW8260B	mg/kg		0.00039 *U*	0.00034 *U*	0.00030 *U*	0.00031 *U*	0.00037 *U*	0.00034 *UJ*	0.00034 *U*	0.00030 *U*	0.00035 *U*	0.00032 *UJ*	0.00032 *U*	0.00025 *UJ*	0.00031 *UJ*	0.00035 *U*	0.00030 *U*
Ethylbenzene	100-41-4	SW8260B	mg/kg		0.044 *J*	0.00049 *J*	0.0011 *J*	0.0011 *J*	0.0023 *J*	0.00026 *UJ*	0.0045 *J*	0.00023 *U*	0.00055 *J*	0.00025 *UJ*	0.0019 *J*	0.00029 *J*	0.00024 *UJ*	0.00092 *J*	0.0016 *J*
Isopropylbenzene	98-82-8	SW8260B	mg/kg		0.00095 *J*	0.0010 *J*	0.00023 *U*	0.00095 *J*	0.0021 *J*	0.00074 *J*	0.0022 *J*	0.0020 *J*	0.0012 *J*	0.00025 *UJ*	0.0015 *J*	0.00027 *J*	0.0013 *J*	0.0018 *J*	0.00079 *J*
m,p-Xylene	179601-23-1	SW8260B	mg/kg		0.022 *J*	0.0068 *J*	0.0066	0.0061	0.019 *J*	0.0077 *J*	0.018 *J*	0.010 *J*	0.0022 *J*	0.00027 *UJ*	0.0015 *J*	0.0018 *J*	0.0078 *J*	0.0041 *J*	0.0014 *J*
Methyl iodide	74-88-4	SW8260B	mg/kg		0.00088 *UJ*	0.00077 *U*	0.00067 *UJ*	0.00069 *UJ*	0.00084 *U*	0.00077 *UJ*	0.00076 *U*	0.00067 *UJ*	0.00079 *U*	0.00073 *UJ*	0.00073 *U*	0.00056 *UJ*	0.00069 *UJ*	0.00078 *UJ*	0.00069 *UJ*
Methyl n-butyl ketone	591-78-6	SW8260B	mg/kg		0.0038 *U*	0.0034 *UJ*	0.0029 *U*	0.0030 *U*	0.0037 *U*	0.0034 *UJ*	0.0033 *U*	0.0029 *U*	0.0035 *U*	0.0032 *UJ*	0.0032 *U*	0.0025 *UJ*	0.0030 *UJ*	0.0034 *U*	0.0030 *U*
Methyl tert-butyl ether	1634-04-4	SW8260B	mg/kg		0.00048 *U*	0.00042 *UJ*	0.00037 *U*	0.00038 *U*	0.00046 *U*	0.00042 *UJ*	0.00042 *U*	0.00037 *U*	0.00043 *U*	0.00040 *UJ*	0.00040 *U*	0.00031 *UJ*	0.00038 *UJ*	0.00043 *UJ*	0.00037 *UJ*
Methylene chloride	75-09-2	SW8260B	mg/kg		0.0069 *U*	0.00034 *UJ*	0.0079 *U*	0.020 *U*	0.00038 *UJ*	0.00034 *UJ*	0.00034 *UJ*	0.00030 *UJ*	0.00035 *UJ*	0.00033 *UJ*	0.00033 *UJ*	0.042 *J*	0.00034 *J*	0.00035 *UJ*	0.0023 *J*
o-Xylene	95-47-6	SW8260B	mg/kg		0.011 *J*	0.0036 *J*	0.0013 *J*	0.0020	0.0087 *J*	0.0030 *J*	0.0092 *J*	0.0061 *J*	0.0015 *J*	0.00023 *J*	0.0014 *J*	0.00062 *J*	0.0026 *J*	0.0027 *J*	0.0013 *J*
Styrene	100-42-5	SW8260B	mg/kg		0.00064 *U*	0.00056 *U*	0.00049 *U*	0.00051 *U*	0.00061 *U*	0.00056 *UJ*	0.00055 *U*	0.00049 *U*	0.00058 *U*	0.00053 *UJ*	0.00053 *U*	0.00041 *UJ*	0.00050 *UJ*	0.00057 *U*	0.00050 *U*
Tetrachloroethene	127-18-4	SW8260B	mg/kg		0.0072 *J*	0.00018 *U*	0.00066 *J*	0.0085	0.0024 *J*	0.0020 *J*	0.0020 *J*	0.030 *J*	0.00027 *J*	0.0073 *J*	0.045 *J*	2.7	6.8 *J*	0.00032 *J*	0.00016 *U*
Toluene	108-88-3	SW8260B	mg/kg		0.079 *J*	0.021 *J*	0.0061	0.19	0.0056 *J*	0.023 *J*	0.026 *J*	0.17 *J*	0.00096 *J*	0.0018 *J*	0.0050 *J*	0.0023 *J*	0.039 *J*	0.0011 *J*	0.00099 *J*
trans-1,2-Dichloroethene	156-60-5	SW8260B	mg/kg		0.0073 *J*	0.00051 *U*	0.00045 *U*	0.00046 *U*	0.00056 *U*	0.00051 *UJ*	0.0013 *J*	0.00045 *U*	0.00053 *U*	0.00048 *UJ*	0.00048 *U*	0.0081 *J*	0.00072 *J*	0.00052 *U*	0.00046 *U*
trans-1,3-Dichloropropene	10061-02-6	SW8260B	mg/kg		0.00036 *U*	0.00032 *U*	0.00028 *U*	0.00029 *U*	0.00035 *U*	0.00032 *UJ*	0.00031 *U*	0.00028 *U*	0.00033 *U*	0.00030 *UJ*	0.00030 *U*	0.00023 *UJ*	0.00028 *UJ*	0.00032 *U*	0.00028 *U*
Trichloroethene	79-01-6	SW8260B	mg/kg		0.022 *J*	0.00037 *J*	0.0032	0.0091	0.00044 *J*	0.0010 *J*	0.0017 *J*	0.0020 *J*	0.00032 *U*	0.20 *J*	0.64 *J*	1.1	0.96	0.00032 *U*	0.0062 *J*
Trichlorofluoromethane	75-69-4	SW8260B	mg/kg		0.00039 *U*	0.00035 *U*	0.00030 *U*	0.00031 *U*	0.00038 *U*	0.00035 *UJ*	0.00034 *U*	0.00030 *U*	0.00036 *U*	0.00033 *UJ*	0.00033 *U*	0.00025 *UJ*	0.00031 *UJ*	0.00035 *U*	0.00031 *U*
Vinyl acetate	108-05-4	SW8260B	mg/kg		0.0039 *UJ*	0.0034 *UJ*	0.0030 *UJ*	0.0031 *UJ*	0.0037 *UJ*	0.0034 *UJ*	0.0034 *UJ*	0.0030 *UJ*	0.0035 *UJ*	0.0032 *UJ*	0.0032 *UJ*	0.0025 *UJ*	0.0030 *UJ*	0.0034 *U*	0.0030 *U*
Vinyl chloride	75-01-4	SW8260B	mg/kg		0.0014 *J*	0.00026 *U*	0.0014 *J*	0.00024 *U*	0.00029 *U*	0.00026 *UJ*	0.00026 *U*	0.00023 *U*	0.00027 *U*	0.00025 *UJ*	0.00025 *U*	0.051 *J*	0.00026 *J*	0.00027 *U*	0.00023 *U*

Notes:

Grain size and asbestos were not analyzed on field replicate samples.

Total DDx is the sum of all DDx isomers, using half the method detection limit (MDL) for all undetected results. If all DDx isomers are undetected, the DDx sum is equal to the value of the highest MDL.

TEQ Dioxins/Furans is the sum of each PCDD/F congener multiplied by the individual congener's toxic equivalency factor (TEF), using half the method detection limit (MDL) for all undetected results. If all PCDD/F congeners are undetected, the PCDD/F TEQ is equal to the value of the highest congener/TEF product.

-- = not reported
FD = field duplicate sample
N = natural investigative sample
PAH = polycyclic aromatic hydrocarbon
SE = sediment
SVOC = semivolatile organic compound
VOC = volatile organic compound
WL = sediment leachate

Qualifiers:
J = The associated numerical value is an estimated quantity.
R = The associated numerical value has been rejected upon validation.
T = The associated value represents a total.
U = The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.
UJ = The laboratory reporting and/or method detection limits for this analyte have been elevated during validation.
Undetected results are flagged UJ to indicate that the sample reporting limits have been adjusted.

Table 3-5. Sediment Chemistry Data - TCLP Results for Waste Characterization Samples

Constituent	CAS ID	Method	Units											
			Borehole Number:	WB-35	WB-35	WB-36	WB-36	WB-37	WB-37	WB-39	WB-39	WB-41	WB-41	WB-41
			Sample Date:	9/30/2009	9/30/2009	10/1/2009	10/1/2009	9/29/2009	9/29/2009	9/28/2009	9/29/2009	9/28/2009	9/28/2009	9/28/2009
			Matrix:	WL	WL	WL	WL	WL	WL	WL	WL	WL	WL	WL
			Sample Type:	N	N	N	N	N	N	N	N	N	N	FD
			Upper Depth, ft:	0	10	0	10	0	6	0	8	0	6	6
			Lower Depth, ft:	10	20	10	22	6	14	8	18	6	14	14
			Sample ID:	ARK-WB-35-0-10	ARK-WB-35-10-20	ARK-WB-36-0-10	ARK-WB-36-10-22	ARK-WB-37-0-6	ARK-WB-37-6-14	ARK-WB-39-0-8	ARK-WB-39-8-18	ARK-WB-41-0-6	ARK-WB-41-6-14	ARK-WB-82-6-14
Herbicides														
2,4-D	94-75-7	SW8151	mg/L	0.00019 *U*	0.00019 *U*	0.00019 *U*	0.00019 *UJ*	0.00019 *UJ*	0.00019 *UJ*	0.00019 *U*	0.00019 *UJ*	0.00019 *U*	0.00019 *U*	0.00019 *U*
Silvex	93-72-1	SW8151	mg/L	0.00049 *U*	0.00049 *U*	0.00049 *U*	0.00049 *UJ*	0.00049 *UJ*	0.00049 *UJ*	0.00049 *U*	0.00049 *UJ*	0.00049 *U*	0.00049 *U*	0.00049 *U*
Metals														
Arsenic	7440-38-2	SW6010	mg/L	0.016 *U*	0.023 *U*	0.012 *U*	0.020 *U*	0.022 *U*	0.024 *U*	0.026 *J*	0.014 *U*	0.0068 *J*	0.052 *J*	0.026 *J*
Barium	7440-39-3	SW6010	mg/L	2.6	5.1	0.54	0.32	4.1 *J*	2.2 *J*	2.9	1.1 *J*	0.89	0.91	0.93
Cadmium	7440-43-9	SW6010	mg/L	0.0027 *J*	0.0025 *J*	0.0015 *U*	0.0015 *U*	0.0015 *UJ*	0.0019 *J*	0.0045 *J*	0.0015 *UJ*	0.0015 *U*	0.0020 *J*	0.0019 *J*
Chromium	7440-47-3	SW6010	mg/L	0.025 *J*	0.028	0.0054 *J*	0.0033 *U*	0.0033 *UJ*	0.0033 *UJ*	0.054	0.0045 *J*	0.0040 *J*	0.0085 *J*	0.0074 *J*
Lead	7439-92-1	SW6010	mg/L	0.058	0.069	0.13	0.0056 *U*	0.012 *U*	0.0090 *U*	11	0.0070 *U*	0.014 *J*	0.011 *J*	0.010 *J*
Mercury	7439-97-6	SW7470	mg/L	0.00041 *U*	0.00041 *U*	0.00041 *U*	0.00041 *U*	0.00041 *UJ*	0.00041 *UJ*	0.00048 *J*	0.00041 *UJ*	0.00041 *U*	0.00041 *U*	0.00081 *J*
Selenium	7782-49-2	SW6010	mg/L	0.0078 *J*	0.0028 *J*	0.0066 *J*	0.0083 *J*	0.011 *U*	0.010 *U*	0.025 *U*	0.016 *U*	0.011 *U*	0.010 *U*	0.0070 *U*
Silver	7440-22-4	SW6010	mg/L	0.00085 *U*	0.00085 *U*	0.00085 *U*	0.00085 *U*	0.00085 *UJ*	0.00085 *UJ*	0.00085 *U*	0.00085 *UJ*	0.0011 *U*	0.0025 *U*	0.00085 *U*
Pesticides														
Chlordane (technical)	12789-03-6	SW8081A	mg/L	0.0017 *U*	0.0017 *U*	0.0017 *U*	0.0017 *U*	0.0017 *UJ*	0.0017 *UJ*	0.0017 *U*	0.0017 *UJ*	0.0017 *U*	0.0017 *U*	0.0017 *U*
Endrin	72-20-8	SW8081A	mg/L	0.00029 *U*	0.00029 *U*	0.00029 *U*	0.00029 *U*	0.00029 *UJ*	0.00029 *UJ*	0.00029 *U*	0.00029 *UJ*	0.00029 *U*	0.00029 *U*	0.00029 *U*
gamma-Hexachlorocyclohexa	58-89-9	SW8081A	mg/L	0.00011 *U*	0.00011 *U*	0.00011 *U*	0.00015 *J*	0.00011 *UJ*	0.00011 *UJ*	0.00011 *U*	0.00011 *UJ*	0.00011 *U*	0.00011 *U*	0.00011 *U*
Heptachlor epoxide	1024-57-3	SW8081A	mg/L	0.00014 *U*	0.00014 *U*	0.00014 *U*	0.00014 *U*	0.00014 *UJ*	0.00014 *UJ*	0.00014 *U*	0.00014 *UJ*	0.00014 *U*	0.00014 *U*	0.00014 *U*
Heptachlor	76-44-8	SW8081A	mg/L	0.00029 *U*	0.00029 *U*	0.00029 *U*	0.00029 *U*	0.00029 *UJ*	0.00029 *UJ*	0.00029 *U*	0.00029 *UJ*	0.00029 *U*	0.00029 *U*	0.00029 *U*
Methoxychlor	72-43-5	SW8081A	mg/L	0.0013 *U*	0.0013 *U*	0.0013 *U*	0.0013 *U*	0.0013 *UJ*	0.0013 *UJ*	0.0013 *U*	0.0013 *UJ*	0.0013 *U*	0.0013 *U*	0.0013 *U*
Toxaphene	8001-35-2	SW8081A	mg/L	0.0092 *U*	0.0092 *U*	0.0092 *U*	0.0092 *U*	0.0092 *UJ*	0.0092 *UJ*	0.0092 *U*	0.0092 *UJ*	0.0092 *U*	0.0092 *U*	0.0092 *U*
Phenols														
2,4,5-Trichlorophenol	95-95-4	SW8270-TCLP	mg/L	0.00098 *U*	0.00098 *U*	0.00098 *U*	0.00098 *U*	0.00098 *UJ*	0.00098 *UJ*	0.00098 *U*	0.00098 *UJ*	0.00098 *U*	0.00098 *U*	0.00098 *U*
2,4,6-Trichlorophenol	88-06-2	SW8270-TCLP	mg/L	0.0014 *U*	0.0014 *U*	0.0014 *U*	0.0014 *U*	0.0014 *UJ*	0.0014 *UJ*	0.0014 *U*	0.0014 *UJ*	0.0014 *U*	0.0014 *U*	0.0014 *U*
2-Methylphenol	95-48-7	SW8270-TCLP	mg/L	0.0014 *U*	0.0014 *U*	0.0014 *U*	0.0014 *U*	0.0014 *UJ*	0.0014 *UJ*	0.0014 *U*	0.0014 *UJ*	0.0014 *U*	0.0014 *U*	0.0014 *U*
3 & 4 Methylphenol	15831-10-4	SW8270-TCLP	mg/L	0.0010 *U*	0.0010 *U*	0.0010 *U*	0.0010 *U*	0.0010 *UJ*	0.0010 *UJ*	0.0010 *U*	0.0010 *UJ*	0.0010 *U*	0.0010 *U*	0.0010 *U*
Pentachlorophenol	87-86-5	SW8270-TCLP	mg/L	0.0011 *U*	0.0011 *U*	0.0011 *U*	0.0011 *U*	0.0011 *UJ*	0.0011 *UJ*	0.0011 *U*	0.0011 *UJ*	0.0011 *U*	0.0011 *U*	0.0011 *U*
SVOCs														
1,4-Dichlorobenzene	106-46-7	SW8270-TCLP	mg/L	0.00063 *U*	0.011 *J*	0.0031 *J*	0.036	0.00063 *UJ*	0.0050 *J*	0.00063 *U*	0.00063 *UJ*	0.00063 *U*	0.00063 *U*	0.00063 *U*
2,4-Dinitrotoluene	121-14-2	SW8270-TCLP	mg/L	0.00094 *U*	0.00094 *U*	0.00094 *U*	0.00094 *U*	0.00094 *UJ*	0.00094 *UJ*	0.00094 *U*	0.00094 *UJ*	0.00094 *U*	0.00094 *U*	0.00094 *U*
Hexachlorobenzene	118-74-1	SW8270-TCLP	mg/L	0.00079 *U*	0.00079 *U*	0.00079 *U*	0.00079 *U*	0.00079 *UJ*	0.00079 *UJ*	0.00079 *U*	0.00079 *UJ*	0.00079 *U*	0.00079 *U*	0.00079 *U*
Hexachlorobutadiene	87-68-3	SW8270-TCLP	mg/L	0.0019 *U*	0.0019 *U*	0.0019 *U*	0.0019 *U*	0.0019 *UJ*	0.0019 *UJ*	0.0019 *U*	0.0019 *UJ*	0.0019 *U*	0.0019 *U*	0.0019 *U*
Hexachloroethane	67-72-1	SW8270-TCLP	mg/L	0.0016 *U*	0.0016 *U*	0.0016 *U*	0.0016 *U*	0.0016 *UJ*	0.0016 *UJ*	0.0016 *U*	0.0016 *UJ*	0.0016 *U*	0.0016 *U*	0.0016 *U*
Nitrobenzene	98-95-3	SW8270-TCLP	mg/L	0.0028 *U*	0.0028 *U*	0.0028 *U*	0.0028 *U*	0.0028 *UJ*	0.0028 *UJ*	0.0028 *U*	0.0028 *UJ*	0.0028 *U*	0.0028 *U*	0.0028 *U*
Pyridine	110-86-1	SW8270-TCLP	mg/L	0.012 *U*	0.012 *U*	0.012 *U*	0.012 *U*	0.012 *UJ*	0.012 *UJ*	0.012 *U*	0.012 *UJ*	0.012 *U*	0.012 *U*	0.012 *U*
VOCs														
1,1-Dichloroethene	75-35-4	SW8260B	mg/L	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*
1,2-Dichloroethane	107-06-2	SW8260B	mg/L	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*
2-Butanone	78-93-3	SW8260B	mg/L	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*
Benzene	71-43-2	SW8260B	mg/L	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.60	0.16	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*
Carbon tetrachloride	56-23-5	SW8260B	mg/L	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*
Chlorobenzene	108-90-7	SW8260B	mg/L	0.033 *J*	6.8	1.1	7.2	7.1	13 *J*	0.25	22 *J*	0.014 *J*	1.2	0.93
Chloroform	67-66-3	SW8260B	mg/L	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*
Tetrachloroethene	127-18-4	SW8260B	mg/L	0.0063 *UJ*	0.0063 *UJ*	0.0063 *UJ*	0.0063 *UJ*	0.0063 *U*	0.0063 *U*	0.0063 *U*	0.0063 *U*	0.0063 *U*	0.0063 *U*	0.0063 *U*
Trichloroethene	79-01-6	SW8260B	mg/L	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.0056 *U*	0.046 *J*	0.034 *J*
Vinyl chloride	75-01-4	SW8260B	mg/L	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*

Table 3-5. Sediment Chemistry Data - TCLP Results for Waste Characterization Samples

			Borehole Number:	WB-42	WB-42	WB-43	WB-43
			Sample Date:	9/25/2009	9/25/2009	9/24/2009	9/24/2009
			Matrix:	WL	WL	WL	WL
			Sample Type:	N	N	N	N
			Upper Depth, ft:	0	6	0	8
			Lower Depth, ft:	6	14	8	18
			Sample ID	ARK-WB-42-0-6	ARK-WB-42-6-14	ARK-WB-43-0-8	ARK-WB-43-8-18
Herbicides							
2,4-D	94-75-7	SW8151	mg/L	0.00019 *UJ*	0.00019 *UJ*	0.00019 *U*	0.00019 *U*
Silvex	93-72-1	SW8151	mg/L	0.00049 *UJ*	0.00049 *UJ*	0.00049 *U*	0.00049 *U*
Metals							
Arsenic	7440-38-2	SW6010	mg/L	0.0075 *U*	0.024 *U*	0.0047 *U*	0.0047 *U*
Barium	7440-39-3	SW6010	mg/L	0.65 *J*	0.21 *J*	0.74	0.72
Cadmium	7440-43-9	SW6010	mg/L	0.0019 *J*	0.0015 *UJ*	0.0015 *U*	0.0015 *U*
Chromium	7440-47-3	SW6010	mg/L	0.0033 *UJ*	0.0038 *J*	0.0038 *J*	0.0048 *J*
Lead	7439-92-1	SW6010	mg/L	1.2 *J*	0.040 *J*	0.0017 *U*	0.0017 *U*
Mercury	7439-97-6	SW7470	mg/L	0.00041 *UJ*	0.00041 *UJ*	0.00045 *J*	0.00041 *U*
Selenium	7782-49-2	SW6010	mg/L	0.0037 *U*	0.0097 *U*	0.012 *U*	0.0080 *U*
Silver	7440-22-4	SW6010	mg/L	0.00085 *UJ*	0.00085 *UJ*	0.00085 *U*	0.00085 *U*
Pesticides							
Chlordane (technical)	12789-03-6	SW8081A	mg/L	0.0017 *UJ*	0.0017 *UJ*	0.0017 *UJ*	0.0017 *UJ*
Endrin	72-20-8	SW8081A	mg/L	0.00029 *UJ*	0.00029 *UJ*	0.00029 *U*	0.00029 *U*
gamma-Hexachlorocyclohex	58-89-9	SW8081A	mg/L	0.00035 *J*	0.00019 *J*	0.00011 *U*	0.00011 *U*
Heptachlor epoxide	1024-57-3	SW8081A	mg/L	0.00014 *UJ*	0.00014 *UJ*	0.00014 *U*	0.00014 *U*
Heptachlor	76-44-8	SW8081A	mg/L	0.00029 *UJ*	0.00029 *UJ*	0.00029 *U*	0.00029 *U*
Methoxychlor	72-43-5	SW8081A	mg/L	0.0013 *UJ*	0.0013 *UJ*	0.0013 *U*	0.0013 *U*
Toxaphene	8001-35-2	SW8081A	mg/L	0.0092 *UJ*	0.0092 *UJ*	0.0092 *UJ*	0.0092 *UJ*
Phenols							
2,4,5-Trichlorophenol	95-95-4	SW8270-TCLP	mg/L	0.00098 *UJ*	0.00098 *UJ*	0.00098 *U*	0.00098 *U*
2,4,6-Trichlorophenol	88-06-2	SW8270-TCLP	mg/L	0.0014 *UJ*	0.0014 *UJ*	0.0014 *U*	0.0014 *U*
2-Methylphenol	95-48-7	SW8270-TCLP	mg/L	0.0014 *UJ*	0.0014 *UJ*	0.0014 *U*	0.0014 *U*
3 & 4 Methylphenol	15831-10-4	SW8270-TCLP	mg/L	0.0010 *UJ*	0.0010 *UJ*	0.0010 *U*	0.0010 *U*
Pentachlorophenol	87-86-5	SW8270-TCLP	mg/L	0.0011 *UJ*	0.0011 *UJ*	0.0011 *U*	0.0011 *U*
SVOCs							
1,4-Dichlorobenzene	106-46-7	SW8270-TCLP	mg/L	0.00063 *UJ*	0.0042 *J*	0.00063 *U*	0.00063 *U*
2,4-Dinitrotoluene	121-14-2	SW8270-TCLP	mg/L	0.00094 *UJ*	0.00094 *UJ*	0.00094 *U*	0.00094 *U*
Hexachlorobenzene	118-74-1	SW8270-TCLP	mg/L	0.00079 *UJ*	0.00079 *UJ*	0.00079 *U*	0.00079 *U*
Hexachlorobutadiene	87-68-3	SW8270-TCLP	mg/L	0.0037 *J*	0.0019 *UJ*	0.0019 *U*	0.0019 *U*
Hexachloroethane	67-72-1	SW8270-TCLP	mg/L	0.0016 *UJ*	0.0016 *UJ*	0.0016 *U*	0.0016 *U*
Nitrobenzene	98-95-3	SW8270-TCLP	mg/L	0.0028 *UJ*	0.0028 *UJ*	0.0028 *U*	0.0028 *U*
Pyridine	110-86-1	SW8270-TCLP	mg/L	0.012 *UJ*	0.012 *UJ*	0.012 *U*	0.012 *U*
VOCs							
1,1-Dichloroethene	75-35-4	SW8260B	mg/L	0.0066 *U*	0.0066 *U*	0.0066 *U*	0.0066 *U*
1,2-Dichloroethane	107-06-2	SW8260B	mg/L	0.0076 *U*	0.0076 *U*	0.0076 *U*	0.0076 *U*
2-Butanone	78-93-3	SW8260B	mg/L	0.042 *R*	0.042 *R*	0.042 *R*	0.042 *R*
Benzene	71-43-2	SW8260B	mg/L	0.0057 *U*	0.0057 *U*	0.0057 *U*	0.0057 *U*
Carbon tetrachloride	56-23-5	SW8260B	mg/L	0.010 *U*	0.010 *U*	0.010 *U*	0.010 *U*
Chlorobenzene	108-90-7	SW8260B	mg/L	3.3	8.9	0.0086 *U*	0.0086 *U*
Chloroform	67-66-3	SW8260B	mg/L	0.059 *J*	0.017 *J*	0.0057 *U*	0.0057 *U*
Tetrachloroethene	127-18-4	SW8260B	mg/L	0.28	0.75	0.0063 *U*	0.0063 *U*
Trichloroethene	79-01-6	SW8260B	mg/L	0.19	0.060 *J*	0.0056 *U*	0.0056 *U*
Vinyl chloride	75-01-4	SW8260B	mg/L	0.0091 *U*	0.0091 *U*	0.0091 *U*	0.0091 *U*

Notes:

FD = Field duplicate sample
N = natural investigative sample
PAH = polycyclic aromatic hydrocarbon
SE = sediment
SVOC = semivolatile organic compound
VOC = volatile organic compound
WL = sediment leachate

Qualifiers:

J = The associated numerical value is an estimated quantity.
R = The associated numerical value has been rejected upon validation.
U = The material was analyzed for, but was not detected. The associated numerical value is the sample detection limit.
UJ = The laboratory reporting and/or method detection limits for this analyte have been elevated during validation. Undetected results are flagged UJ to indicate that the sample reporting limits have been adjusted.

Table 3-6a. Statistical Summary – Chemistry Sediment Sample Results

Analyte	CAS ID	Units	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Median Detected Value[a]	Minimum Detection Limit	Maximum Detection Limit	Samples with Maximum Detected Value	Samples with Minimum Detected Value	Number of Samples	% samples detected	% samples undetected
Aroclors													
Aroclor 1016	12674-11-2	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1221	11104-28-2	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1232	11141-16-5	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1242	53469-21-9	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1248	12672-29-6	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1254	11097-69-1	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1260	11096-82-5	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1262	37324-23-5	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Aroclor 1268	11100-14-4	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Total PCB Aroclors	12767-79-2eeca	µg/kg	--	--	--	--	1.2	1,800	NA	NA	34	0	100
Butyltins													
Butyltin ion	78763-54-9	µg/kg	--	--	--	--	13	20	NA	NA	20	0	100
Dibutyltin ion	14488-53-0	µg/kg	--	--	--	--	13	20	NA	NA	20	0	100
Tetrabutyltin	1461-25-2	µg/kg	--	--	--	--	13	20	NA	NA	20	0	100
Tributyltin ion	36643-28-4	µg/kg	--	--	--	--	13	20	NA	NA	20	0	100
Conventionals													
Total organic carbon	TOC	percent	0.07	5.9	0.95	0.48 JV	0.061	0.16	ARK-WB-66-10-12	ARK-WB-30-16-18; ARK-WB-30-26-28; ARK-WB-30-30-32; ARK-WB-31-14-16; ARK-WB-31-18-20; ARK-WB-31-28-30; ARK-WB-31b-28.7-30.7; ARK-WB-32-12-14; ARK-WB-32-32-34; ARK-WB-32-34-36; ARK-WB-35-20-23; ARK-WB-35-26-29; ARK-WB-35-29-32; ARK-WB-35-35-35.6; ARK-WB-40-14-16; ARK-WB-42-20-23; ARK-WB-46-20-22; ARK-WB-47-20-22; ARK-WB-48-16-18; ARK-WB-56-16-18; ARK-WB-56-22-24; ARK-WB-56b-32.7-34.7	296	83.1	16.9
Dioxin_Furan_Homolog													
Heptachlorodibenzofuran homologs	38998-75-3	pg/g	0.13	44,000	3,880	77	0.0963	1.17	ARK-WB-39-0-8	ARK-WB-30-40-42_EPAsplit	61	83.6	16.4
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	pg/g	1.33	3,100	171	9.4 J	0.966	1.44	ARK-WB-39-0-8	ARK-WB-40-6-8_EPAsplit	61	96.7	3.3
Hexachlorodibenzofuran homologs	55684-94-1	pg/g	0.0735	120,000	11,800	70.6 JV	0.0394	1.54	ARK-WB-36-0-10; ARK-WB-39-0-8	ARK-WB-30-40-42_EPAsplit	61	85.2	14.8
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	pg/g	0.34	710	36.4	4.6 J	0.366	4.82	ARK-WB-39-0-8	ARK-WB-46-12-14	61	86.9	13.1
Octachlorodibenzofuran	39001-02-0	pg/g	0.27	23,000	2,510	112 V	0.053	1.2	ARK-WB-39-0-8	ARK-WB-64-12-14; ARK-WB-65-15-16	61	75.4	24.6
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	4.71	23,000	1,040	40 V	3.68	6.6	ARK-WB-39-0-8	ARK-WB-40-6-8_EPAsplit	61	95.1	4.9
Pentachlorodibenzofuran homologs	30402-15-4	pg/g	0.0517	140,000	12,700	90.6 JV	0.0104	1.81	ARK-WB-36-0-10	ARK-WB-30-40-42_EPAsplit	61	82	18
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	pg/g	0.148	93	11.7	4.9	0.0605	13	ARK-WB-65-10-15	ARK-WB-35-20-23_EPAsplit	61	44.3	55.7
Tetrachlorodibenzofuran homologs	30402-14-3	pg/g	0.12	110,000	9,090	86.5	0.066	2.01	ARK-WB-36-0-10	ARK-WB-37-17-20; ARK-WB-41-20-22.8	61	78.7	21.3
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	pg/g	0.0287	86.3	11	2.95 J	0.046	8.5	ARK-WB-63-10-12_EPAsplit	ARK-WB-49-20-22_EPAsplit	61	60.7	39.3
Total PCDD/F	TOTPCDD_Feeca	pg/g	6.11	425,000	34,500	94.8 JV	5.06	5.06	ARK-WB-36-0-10	ARK-WB-49-20-22_EPAsplit	61	98.4	1.6
Dioxins_Furans													
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.0636	26,000	2,490	106 V	0.0273	1.7	ARK-WB-39-0-8	ARK-WB-30-26-28_EPAsplit	61	72.1	27.9
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	0.62	1,500	104	16	0.387	1.72	ARK-WB-39-0-8	ARK-WB-40-6-8_EPAsplit	61	73.8	26.2
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.0817	9,000	1,020	42.6 V	0.0237	0.28	ARK-WB-39-0-8	ARK-WB-35-32-35_EPAsplit	61	72.1	27.9
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.0846	84,000	7,730	30.2 V	0.00896	0.36	ARK-WB-39-0-8	ARK-WB-30-26-28_EPAsplit	61	85.2	14.8
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.0218	9.96	1.76	1.2 JV	0.0179	8	ARK-WB-35-10-20_EPAsplit	ARK-WB-49-14-16_EPAsplit	61	45.9	54.1
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.0113	20,000	1990	10.4 V	0.0102	0.36	ARK-WB-36-0-10; ARK-WB-39-0-8	ARK-WB-30-40-42_EPAsplit	61	82	18
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	0.0259	76	6.01	2.17 JV	0.035	160	ARK-WB-39-0-8	ARK-WB-56-18-20_EPAsplit	61	65.6	34.4
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.0669	9,480	524	50.4	0.00943	0.79	ARK-WB-35-10-20_EPAsplit	ARK-WB-49-20-22_EPAsplit	61	57.4	42.6
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.0367	19	1.92	0.535 JV	0.049	7.6	ARK-WB-39-0-8	ARK-WB-49-20-22_EPAsplit	61	75.4	24.6
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.0343	50,000	5,180	32.3	0.0127	0.58	ARK-WB-36-0-10	ARK-WB-42-20-23_EPAsplit	61	80.3	19.7
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	0.0173	8.9	1.72	0.965 JV	0.0127	13	ARK-WB-35-10-20_EPAsplit	ARK-WB-49-20-22_EPAsplit	61	32.8	67.2
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.0491	5,580	416	21.6 V	0.00825	0.18	ARK-WB-35-10-20_EPAsplit	ARK-WB-42-23-26_EPAsplit	61	68.9	31.1
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.0142	28,000	2,450	18.3	0.0104	0.62	ARK-WB-36-0-10	ARK-WB-30-40-42_EPAsplit	61	80.3	19.7
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.119	37,000	3,310	18.6 JV	0.066	0.424	ARK-WB-36-0-10	ARK-WB-40-6-8_EPAsplit	61	82	18
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	0.0217	5.8	1.5	1.1 JV	0.0124	8.5	ARK-WB-39-0-8	ARK-WB-35-23-26_EPAsplit	61	32.8	67.2
TEQ PCDD/F	TEQ_Dfeeca	pg/g	0.0375	24,400	1,900	3.25 JT	--	--	ARK-WB-36-0-10	ARK-WB-56-18-20_EPAsplit	61	100	0
Others													
Asbestos	1332-21-4	percent	0.1	0.4	0.26	0.3 V	0.1	0.1	ARK-WB-35-0-10; ARK-WB-37-6-14; ARK-WB-39-0-8	ARK-WB-35-10-20; ARK-WB-36-10-22; ARK-WB-42-0-6	14	57.1	42.9
PAHs													
1-Methylnaphthalene	90-12-0	µg/kg	2	540	110	46 V	--	--	ARK-WB-35-10-20	ARK-WB-41-0-6	14	100	0
2-Methylnaphthalene	91-57-6	µg/kg	1.4	1,100	190	45 V	1.3	3.1	ARK-WB-35-10-20_EPAsplit	ARK-WB-63-10-12_EPAsplit	34	58.8	41.2
Acenaphthene	83-32-9	µg/kg	2.1	310	64	27	2.5	3.8	ARK-WB-35-10-20_EPAsplit	ARK-WB-63-10-12_EPAsplit	34	61.8	38.2

Table 3-6a. Statistical Summary – Chemistry Sediment Sample Results

Analyte	CAS ID	Units	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Median Detected Value[a]		Minimum Detection Limit	Maximum Detection Limit	Samples with Maximum Detected Value	Samples with Minimum Detected Value	Number of Samples	% samples detected	% samples undetected
Acenaphthylene	208-96-8	µg/kg	2	63	12	6.7		0.57	3.8	ARK-WB-35-10-20_EPAsplit	ARK-WB-41-0-6	34	55.9	44.1
Anthracene	120-12-7	µg/kg	7.4	420	70	36		2.5	3.8	ARK-WB-35-10-20_EPAsplit	ARK-WB-63-10-12_EPAsplit	34	61.8	38.2
Benzo(a)anthracene	56-55-3	µg/kg	3.4	1,300	200	110	*J*	2.7	2.8	ARK-WB-39-0-8	ARK-WB-35-23-26_EPAsplit	34	79.4	20.6
Benzo(a)pyrene	50-32-8	µg/kg	2.4	850	160	97		2.5	2.9	ARK-WB-39-0-8	ARK-WB-49-20-22_EPAsplit	34	73.5	26.5
Benzo(b)fluoranthene	205-99-2	µg/kg	3.6	2,200	290	180	*V*	1.5	2.8	ARK-WB-39-0-8	ARK-WB-35-23-26_EPAsplit	34	70.6	29.4
Benzo(g,h,i)perylene	191-24-2	µg/kg	2.2	340	74	52		2.7	2.8	ARK-WB-39-0-8	ARK-WB-49-14-16_EPAsplit	34	85.3	14.7
Benzo(k)fluoranthene	207-08-9	µg/kg	2.6	820	140	84	*JV*	0.46	2.8	ARK-WB-39-0-8	ARK-WB-35-23-26_EPAsplit	34	70.6	29.4
Chrysene	218-01-9	µg/kg	3.6	1,700	260	130	*V*	2.7	2.8	ARK-WB-39-0-8	ARK-WB-35-32-35_EPAsplit	34	82.4	17.6
Dibenzo(a,h)anthracene	53-70-3	µg/kg	2	200	31	17	*J*	2.7	2.8	ARK-WB-39-0-8	ARK-WB-49-20-22_EPAsplit	34	85.3	14.7
Fluoranthene	206-44-0	µg/kg	4.2	1,900	420	270		2.5	2.9	ARK-WB-39-0-8	ARK-WB-35-20-23_EPAsplit	34	73.5	26.5
Fluorene	86-73-7	µg/kg	2.1	230	53	25		2.5	3.8	ARK-WB-35-10-20_EPAsplit	ARK-WB-63-10-12_EPAsplit	34	61.8	38.2
Indeno(1,2,3-cd)pyrene	193-39-5	µg/kg	2.2	520	84	57		2.6	2.8	ARK-WB-39-0-8	ARK-WB-49-6-8_EPAsplit	34	79.4	20.6
Naphthalene	91-20-3	µg/kg	0.74	5,100	400	52	*J*	2.5	3.1	ARK-WB-42-6-14	ARK-WB-43-0-8	37	67.6	32.4
Phenanthrene	85-01-8	µg/kg	4.1	1,700	340	180		2.5	3.1	ARK-WB-35-10-20_EPAsplit	ARK-WB-49-20-22_EPAsplit	34	67.6	32.4
Pyrene	129-00-0	µg/kg	5.4	1,600	370	270		2.5	2.9	ARK-WB-39-0-8	ARK-WB-35-20-23_EPAsplit	34	73.5	26.5
Pesticides														
2,4'-DDD	53-19-0	µg/kg	0.085	420,000	4,100	20		0.065	3.3	ARK-WB-37-10-12	ARK-WB-32-22-24; ARK-WB-56b-32.7-34.7	321	78.2	21.8
2,4'-DDE	3424-82-6	µg/kg	0.1	3,700	150	11	*J*	0.09	11,000	ARK-WB-37-10-12	ARK-WB-30-6-8	321	45.2	54.8
2,4'-DDT	789-02-6	µg/kg	0.14	290,000	2,300	14		0.13	5,800	ARK-WB-36-10-22	ARK-WB-50-14-14.5	321	65.7	34.3
4,4'-DDD	72-54-8	µg/kg	0.17	810,000	7,600	28	*V*	0.14	0.3	ARK-WB-37-10-12	ARK-WB-54-16-18	321	77.9	22.1
4,4'-DDE	72-55-9	µg/kg	0.094	16,000	270	13		0.078	3,500	ARK-WB-36-10-22	ARK-WB-49-22-23.5	321	68.2	31.8
4,4'-DDT	50-29-3	µg/kg	0.14	1,200,000	9,800	56	*JV*	0.11	1	ARK-WB-36-10-22	ARK-WB-52-14-16; ARK-WB-64-20-22	321	81	19
Aldrin	309-00-2	µg/kg	--	--	--	--		33	14,000	NA	NA	14	0	100
alpha-Endosulfan	959-98-8	µg/kg	--	--	--	--		26	11,000	NA	NA	14	0	100
alpha-Hexachlorocyclohexane	319-84-6	µg/kg	--	--	--	--		21	8,700	NA	NA	14	0	100
beta-Endosulfan	33213-65-9	µg/kg	--	--	--	--		43	18,000	NA	NA	14	0	100
beta-Hexachlorocyclohexane	319-85-7	µg/kg	75	1,000	540	540	*JV*	31	13,000	ARK-WB-35-0-10	ARK-WB-43-0-8	14	14.3	85.7
cis-Chlordane	5103-71-9	µg/kg	--	--	--	--		25	10,000	NA	NA	14	0	100
delta-Hexachlorocyclohexane	319-86-8	µg/kg	--	--	--	--		32	13,000	NA	NA	14	0	100
Dieldrin	60-57-1	µg/kg	--	--	--	--		29	12,000	NA	NA	14	0	100
Endosulfan sulfate	1031-07-8	µg/kg	41	2,200	820	530	*JV*	48	10,000	ARK-WB-42-6-14	ARK-WB-41-0-6	14	28.6	71.4
Endrin	72-20-8	µg/kg	--	--	--	--		40	17,000	NA	NA	14	0	100
Endrin aldehyde	7421-93-4	µg/kg	--	--	--	--		18	7,400	NA	NA	14	0	100
Endrin ketone	53494-70-5	µg/kg	31	31	31	31	*J*	60	13,000	ARK-WB-41-0-6	ARK-WB-41-0-6	14	7.1	92.9
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	--	--	--	--		24	9,900	NA	NA	14	0	100
Heptachlor	76-44-8	µg/kg	--	--	--	--		33	14,000	NA	NA	14	0	100
Heptachlor epoxide	1024-57-3	µg/kg	60	610	340	340	*JV*	24	10,000	ARK-WB-35-0-10	ARK-WB-37-0-6	14	14.3	85.7
Methoxychlor	72-43-5	µg/kg	3000	3,000	3,000	3,000	*J*	65	27,000	ARK-WB-35-0-10	ARK-WB-35-0-10	14	7.1	92.9
Total Chlordanes	TOTCHLDANEeeca	µg/kg	62	1,100	350	120	*JV*	48	10,000	ARK-WB-35-0-10	ARK-WB-41-0-6	14	28.6	71.4
Total DDD	E17075011eeca	µg/kg	0.17	1,200,000	11,000	43	*JT*	0.14	0.32	ARK-WB-37-10-12	ARK-WB-32-22-24; ARK-WB-56b-40.7-42.7	321	80.7	19.3
Total DDE	E17075029eeca	µg/kg	0.14	22,000	410	18	*JT*	0.09	4,000	ARK-WB-36-10-22	ARK-WB-49-22-23.5	321	68.8	31.2
Total DDT	E17075037eeca	µg/kg	0.21	1,500,000	12,000	63	*JV*	0.13	0.86	ARK-WB-36-10-22	ARK-WB-64-20-22	321	81.6	18.4
Total DDx	E966176eeca	µg/kg	0.4	1,800,000	22,000	120	*JV*	0.14	0.86	ARK-WB-36-10-22	ARK-WB-53-12-14; ARK-WB-56b-40.7-42.7	321	85.4	14.6
Total Endosulfan	TOTENDOSLFNeeca	µg/kg	76	4,600	1,700	1,000	*JV*	86	18,000	ARK-WB-42-6-14	ARK-WB-41-0-6	14	28.6	71.4
Toxaphene	8001-35-2	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
Toxaphene Peak 1	STL00100	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
Toxaphene Peak 2	STL00109	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
Toxaphene Peak 3	STL00220	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
Toxaphene Peak 4	STL00083	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
Toxaphene Peak 5	STL00051	µg/kg	--	--	--	--		1800	750,000	NA	NA	14	0	100
trans-Chlordane	5103-74-2	µg/kg	49	1000	310	90	*JV*	46	9,800	ARK-WB-35-0-10	ARK-WB-41-0-6	14	28.6	71.4
Phenols														
2,3,4,6-Tetrachlorophenol	58-90-2	µg/kg	47	85	66	66	*JV*	1.2	320	ARK-WB-36-10-22	ARK-WB-36-0-10	34	5.9	94.1
2,3,5,6-Tetrachlorophenol	935-95-5	µg/kg	--	--	--	--		0.82	320	NA	NA	34	0	100
2,4,5-Trichlorophenol	95-95-4	µg/kg	10	20	15	15	*J*	0.66	320	ARK-WB-36-10-22	ARK-WB-35-0-10	34	8.8	91.2
2,4,6-Trichlorophenol	88-06-2	µg/kg	6.4	26	16	16	*JV*	0.61	320	ARK-WB-36-10-22	ARK-WB-35-0-10	34	5.9	94.1
2,4-Dichlorophenol	120-83-2	µg/kg	8.1	8.1	8.1	8.1	*J*	0.46	320	ARK-WB-36-0-10	ARK-WB-36-0-10	34	2.9	97.1
2,4-Dimethylphenol	105-67-9	µg/kg	23	23	23	23	*J*	0.32	320	ARK-WB-35-0-10	ARK-WB-35-0-10	34	2.9	97.1
2,4-Dinitrophenol	51-28-5	µg/kg	--	--	--	--		2.1	320	NA	NA	34	0	100
2-Chlorophenol	95-57-8	µg/kg	4	310	110	110	*JV*	1.3	320	ARK-WB-42-6-14	ARK-WB-35-0-10	34	35.3	64.7

Table 3-6a. Statistical Summary – Chemistry Sediment Sample Results

Analyte	CAS ID	Units	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Median Detected Value[a]		Minimum Detection Limit	Maximum Detection Limit	Samples with Maximum Detected Value	Samples with Minimum Detected Value	Number of Samples	% samples detected	% samples undetected
2-Methylphenol	95-48-7	µg/kg	--	--	--	--		1.1	320	NA	NA	34	0	100
2-Nitrophenol	88-75-5	µg/kg	--	--	--	--		0.66	320	NA	NA	34	0	100
3 & 4 Methylphenol	15831-10-4	µg/kg	6.8	200	72	67		3.6	3.6	ARK-WB-36-10-22	ARK-WB-39-0-8	14	92.9	7.1
3-Methylphenol	108-39-4	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
4,6-Dinitro-2-methylphenol	534-52-1	µg/kg	--	--	--	--		2.7	320	NA	NA	34	0	100
4-Chloro-3-methylphenol	59-50-7	µg/kg	--	--	--	--		1.1	320	NA	NA	34	0	100
4-Methylphenol	106-44-5	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
4-Nitrophenol	100-02-7	µg/kg	--	--	--	--		26	320	NA	NA	33	0	100
Pentachlorophenol	87-86-5	µg/kg	2.4	100	43	35	*J*	1.8	230	ARK-WB-36-0-10; ARK-WB-36-10-22	ARK-WB-49-20-22_EPAsplit	34	38.2	61.8
Phenol	108-95-2	µg/kg	--	--	--	--		2.5	320	NA	NA	34	0	100
Phthalates														
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	35	320	120	100	*JV*	29	290	ARK-WB-35-0-10	ARK-WB-30-10-12_EPAsplit	34	23.5	76.5
Butylbenzyl phthalate	85-68-7	µg/kg	--	--	--	--		15	320	NA	NA	34	0	100
Dibutyl phthalate	84-74-2	µg/kg	--	--	--	--		21	320	NA	NA	34	0	100
Diethyl phthalate	84-66-2	µg/kg	--	--	--	--		4.4	320	NA	NA	34	0	100
Dimethyl phthalate	131-11-3	µg/kg	4.1	7.5	5.3	4.3	*J*	0.64	320	ARK-WB-39-0-8	ARK-WB-41-0-6	34	8.8	91.2
Di-n-octyl phthalate	117-84-0	µg/kg	5.6	16	11	12	*JV*	0.2	320	ARK-WB-42-6-14	ARK-WB-35-0-10	34	11.8	88.2
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	µg/kg	14	25	19	19		1.8	1,300	ARK-WB-39-0-8	ARK-WB-35-10-20	40	12.5	87.5
1,2-Dichlorobenzene	95-50-1	µg/kg	40	730	350	320	*JV*	0.98	2,800	ARK-WB-35-10-20_EPAsplit	ARK-WB-37-6-14	37	10.8	89.2
1,2-Diphenylhydrazine	122-66-7	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
1,3-Dichlorobenzene	541-73-1	µg/kg	1.4	16	8.5	7.7	*JV*	1.1	3,100	ARK-WB-36-10-22	ARK-WB-41-0-6	37	16.2	83.8
1,4-Dichlorobenzene	106-46-7	µg/kg	1	2,000	370	50	*JV*	0.58	1,300	ARK-WB-35-10-20_EPAsplit	ARK-WB-43-0-8	40	45	55
2,4-Dinitrotoluene	121-14-2	µg/kg	--	--	--	--		0.38	320	NA	NA	34	0	100
2,6-Dinitrotoluene	606-20-2	µg/kg	--	--	--	--		1.2	320	NA	NA	34	0	100
2-Chloronaphthalene	91-58-7	µg/kg	11	11	11	11	*J*	0.27	320	ARK-WB-36-0-10	ARK-WB-36-0-10	34	2.9	97.1
2-Nitroaniline	88-74-4	µg/kg	--	--	--	--		0.64	320	NA	NA	34	0	100
3,3'-Dichlorobenzidine	91-94-1	µg/kg	--	--	--	--		1.2	320	NA	NA	34	0	100
3-Nitroaniline	99-09-2	µg/kg	4.8	21	13	13	*JV*	0.89	320	ARK-WB-39-0-8	ARK-WB-41-6-14	34	5.9	94.1
4-Bromophenyl phenyl ether	101-55-3	µg/kg	--	--	--	--		0.5	320	NA	NA	34	0	100
4-Chloroaniline	106-47-8	µg/kg	--	--	--	--		1.7	320	NA	NA	34	0	100
4-Chlorophenyl phenyl ether	7005-72-3	µg/kg	--	--	--	--		0.87	320	NA	NA	34	0	100
4-Nitroaniline	100-01-6	µg/kg	--	--	--	--		2.1	320	NA	NA	34	0	100
Acetophenone	98-86-2	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
Aniline	62-53-3	µg/kg	--	--	--	--		6.6	320	NA	NA	34	0	100
Azobenzene	103-33-3	µg/kg	--	--	--	--		0.46	12	NA	NA	14	0	100
Benzaldehyde	100-52-7	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
Benzoic acid	65-85-0	µg/kg	--	--	--	--		99	830	NA	NA	34	0	100
Benzyl alcohol	100-51-6	µg/kg	--	--	--	--		1.5	320	NA	NA	34	0	100
Bis(2-chloro-1-methylethyl) ether	108-60-1	µg/kg	3.2	4	3.6	3.6	*JV*	1	320	ARK-WB-41-6-14	ARK-WB-41-0-6	34	5.9	94.1
Bis(2-chloroethoxy) methane	111-91-1	µg/kg	--	--	--	--		0.46	320	NA	NA	34	0	100
Bis(2-chloroethyl) ether	111-44-4	µg/kg	--	--	--	--		1.5	320	NA	NA	34	0	100
Caprolactam	105-60-2	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
Carbazole	86-74-8	µg/kg	2.9	48	22	22	*J*	0.66	320	ARK-WB-42-0-6	ARK-WB-41-0-6	34	32.4	67.6
Dibenzofuran	132-64-9	µg/kg	2	160	40	13	*J*	0.53	320	ARK-WB-35-10-20_EPAsplit	ARK-WB-41-0-6	34	44.1	55.9
Diphenyl	92-52-4	µg/kg	52	82	67	67	*JV*	200	320	ARK-WB-35-10-20_EPAsplit	ARK-WB-42-6-14_EPAsplit	20	10	90
Hexachlorobenzene	118-74-1	µg/kg	6.7	64	36	43		0.28	320	ARK-WB-39-0-8	ARK-WB-43-0-8	34	26.5	73.5
Hexachlorobutadiene	87-68-3	µg/kg	7.1	1,900	200	42	*JV*	1.4	320	ARK-WB-42-0-6	ARK-WB-41-0-6	34	35.3	64.7
Hexachlorocyclopentadiene	77-47-4	µg/kg	--	--	--	--		0.4	320	NA	NA	34	0	100
Hexachloroethane	67-72-1	µg/kg	8.4	620	150	88	*JV*	3.9	320	ARK-WB-39-0-8	ARK-WB-43-8-18	34	35.3	64.7
Isophorone	78-59-1	µg/kg	10	10	10	10	*J*	0.75	320	ARK-WB-43-8-18	ARK-WB-43-8-18	34	2.9	97.1
Nitrobenzene	98-95-3	µg/kg	--	--	--	--		4.4	320	NA	NA	34	0	100
N-Nitrosodimethylamine	62-75-9	µg/kg	--	--	--	--		73	420	NA	NA	34	0	100
N-Nitrosodiphenylamine	86-30-6	µg/kg	29	230	85	71	*V*	0.4	320	ARK-WB-35-10-20	ARK-WB-36-0-10	34	35.3	64.7
N-Nitrosodipropylamine	621-64-7	µg/kg	13	13	13	13	*J*	1.7	320	ARK-WB-43-8-18	ARK-WB-43-8-18	34	2.9	97.1
VOCs														
1,1,1,2-Tetrachloroethane	630-20-6	µg/kg	--	--	--	--		0.11	0.18	NA	NA	16	0	100
1,1,1-Trichloroethane	71-55-6	µg/kg	0.63	0.63	0.63	0.63	*J*	0.5	3,100	ARK-WB-42-6-14	ARK-WB-42-6-14	40	2.5	97.5
1,1,2,2-Tetrachloroethane	79-34-5	µg/kg	6.3	18	12	12	*JV*	0.12	3,100	ARK-WB-42-0-6	ARK-WB-33-12-14	39	5.1	94.9
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	µg/kg	--	--	--	--		6.3	3,100	NA	NA	23	0	100
1,1,2-Trichloroethane	79-00-5	µg/kg	0.55	1.9	1.2	1.2	*JV*	0.14	3,100	ARK-WB-42-6-14	ARK-WB-42-0-6	40	5	95
1,1-Dichloroethane	75-34-3	µg/kg	0.82	3.7	1.8	1.3	*JV*	0.54	3,100	ARK-WB-36-10-22	ARK-WB-33-12-14	40	15	85
1,1-Dichloroethene	75-35-4	µg/kg	0.31	3.7	1.7	1.5	*JV*	0.19	3,100	ARK-WB-42-0-6	ARK-WB-35-0-10	40	10	90

Table 3-6a. Statistical Summary – Chemistry Sediment Sample Results

Analyte	CAS ID	Units	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Median Detected Value[a]		Minimum Detection Limit	Maximum Detection Limit	Samples with Maximum Detected Value	Samples with Minimum Detected Value	Number of Samples	% samples detected	% samples undetected
1,2,3-Trichlorobenzene	87-61-6	µg/kg	--	--	--	--		6.3	3,100	NA	NA	23	0	100
1,2,3-Trichloropropane	96-18-4	µg/kg	--	--	--	--		0.47	0.73	NA	NA	17	0	100
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/kg	--	--	--	--		200	320	NA	NA	20	0	100
1,2-Dibromo-3-chloropropane	96-12-8	µg/kg	--	--	--	--		6.3	3,100	NA	NA	22	0	100
1,2-Dichloroethane	107-06-2	µg/kg	0.37	12	3.1	1.2	*J*	0.22	3,100	ARK-WB-36-10-22	ARK-WB-38-2-4	40	12.5	87.5
1,2-Dichloropropane	78-87-5	µg/kg	0.31	0.31	0.31	0.31	*J*	0.24	3,100	ARK-WB-42-0-6	ARK-WB-42-0-6	40	2.5	97.5
1,4-Dichloro-trans-2-butene	110-57-6	µg/kg	8.7	170	90	91	*JT*	0.8	1.2	ARK-WB-33-12-14	ARK-WB-38-2-4	17	17.6	82.4
1,4-Dioxane	123-91-1	µg/kg	--	--	--	--		130	140	NA	NA	4	0	100
2-Butanone	78-93-3	µg/kg	5.2	250	36	14	*JV*	13	6,200	ARK-WB-33-12-14	ARK-WB-35-10-20; ARK-WB-43-0-8	40	55	45
2-Chloroethyl vinyl ether	110-75-8	µg/kg	--	--	--	--		1.8	2.8	NA	NA	16	0	100
4-Methyl-2-pentanone	108-10-1	µg/kg	1.4	5.7	3.6	3.6	*JV*	0.56	6,200	ARK-WB-33-12-14	ARK-WB-43-0-8	40	5	95
Acetone	67-64-1	µg/kg	6.3	910	110	40		14	6,200	ARK-WB-38-2-4	ARK-WB-49-14-16_EPAsplit	40	72.5	27.5
Acrolein	107-02-8	µg/kg	--	--	--	--		1.7	2.5	NA	NA	11	0	100
Acrylonitrile	107-13-1	µg/kg	--	--	--	--		1.6	2.4	NA	NA	17	0	100
Benzene	71-43-2	µg/kg	0.23	290	34	8.5	*J*	6.3	3,100	ARK-WB-37-6-14	ARK-WB-41-0-6	40	42.5	57.5
Bromochloromethane	74-97-5	µg/kg	--	--	--	--		0.32	3,100	NA	NA	40	0	100
Bromodichloromethane	75-27-4	µg/kg	--	--	--	--		0.096	3,100	NA	NA	40	0	100
Bromoform	75-25-2	µg/kg	--	--	--	--		0.093	3,100	NA	NA	40	0	100
Bromomethane	74-83-9	µg/kg	--	--	--	--		0.5	3,100	NA	NA	40	0	100
Carbon disulfide	75-15-0	µg/kg	0.23	26	5.6	2.6		6.3	3,100	ARK-WB-42-6-14	ARK-WB-43-0-8	40	42.5	57.5
Carbon tetrachloride	56-23-5	µg/kg	--	--	--	--		0.48	3,100	NA	NA	40	0	100
Chlorobenzene	108-90-7	µg/kg	8.8	390,000	88,000	12,000	*JV*	6.3	7.8	ARK-WB-35-10-20_EPAsplit	ARK-WB-49-4-6_EPAsplit	40	75	25
Chlorodibromomethane	124-48-1	µg/kg	0.28	0.28	0.28	0.28	*J*	0.18	3,100	ARK-WB-33-12-14	ARK-WB-33-12-14	40	2.5	97.5
Chloroethane	75-00-3	µg/kg	1.9	1,600	410	16	*JV*	0.35	2,800	ARK-WB-35-10-20_EPAsplit	ARK-WB-42-6-14	30	13.3	86.7
Chloroform	67-66-3	µg/kg	0.32	2,300	240	71	*V*	0.2	2,800	ARK-WB-35-10-20_EPAsplit	ARK-WB-43-0-8	40	45	55
Chloromethane	74-87-3	µg/kg	--	--	--	--		0.23	3,100	NA	NA	40	0	100
cis-1,2-Dichloroethene	156-59-2	µg/kg	--	--	--	--		6.3	3,100	NA	NA	23	0	100
cis-1,3-Dichloropropene	10061-01-5	µg/kg	--	--	--	--		0.15	3,100	NA	NA	40	0	100
Cyclohexane	110-82-7	µg/kg	--	--	--	--		6.3	3,100	NA	NA	23	0	100
Dibromomethane	74-95-3	µg/kg	0.55	0.55	0.55	0.55	*J*	0.14	0.21	ARK-WB-33-12-14	ARK-WB-33-12-14	17	5.9	94.1
Dichlorodifluoromethane	75-71-8	µg/kg	--	--	--	--		0.25	3,100	NA	NA	40	0	100
Ethylbenzene	100-41-4	µg/kg	0.29	44	5	1.4	*J*	0.23	3,100	ARK-WB-35-0-10	ARK-WB-42-0-6	40	32.5	67.5
Ethylene dibromide	106-93-4	µg/kg	--	--	--	--		6.3	3,100	NA	NA	23	0	100
Isopropylbenzene	98-82-8	µg/kg	0.27	2.2	1.4	1.3	*JV*	0.23	3,100	ARK-WB-39-0-8	ARK-WB-42-0-6	40	40	60
m,p-Xylene	179601-23-1	µg/kg	1.4	22	7.9	6.8	*J*	6.3	3,100	ARK-WB-35-0-10	ARK-WB-43-8-18	40	42.5	57.5
Methyl acetate	79-20-9	µg/kg	140	530	340	340	*JV*	6.3	3,100	ARK-WB-40-0-2_EPAsplit	ARK-WB-44-2-4_EPAsplit	23	8.7	91.3
Methyl iodide	74-88-4	µg/kg	--	--	--	--		0.56	0.88	NA	NA	17	0	100
Methyl n-butyl ketone	591-78-6	µg/kg	4.7	4.7	4.7	4.7	*J*	2.5	6,200	ARK-WB-33-12-14	ARK-WB-33-12-14	40	2.5	97.5
Methyl tert-butyl ether	1634-04-4	µg/kg	--	--	--	--		0.31	3,100	NA	NA	40	0	100
Methylcyclohexane	108-87-2	µg/kg	3.9	3.9	3.9	3.9	*J*	6.3	3,100	ARK-WB-64-10-12_EPAsplit	ARK-WB-64-10-12_EPAsplit	23	4.3	95.7
Methylene chloride	75-09-2	µg/kg	0.34	85	35	37		0.3	3,100	ARK-WB-33-12-14	ARK-WB-42-6-14	40	17.5	82.5
Toluene	108-88-3	µg/kg	0.96	190	41	5.7	*J*	6.3	3,100	ARK-WB-33-12-14; ARK-WB-36-10-22	ARK-WB-41-0-6	40	47.5	52.5
trans-1,2-Dichloroethene	156-60-5	µg/kg	0.72	8.1	4.4	4.3	*JV*	0.39	3,100	ARK-WB-42-0-6	ARK-WB-42-6-14	40	10	90
trans-1,3-Dichloropropene	10061-02-6	µg/kg	--	--	--	--		0.23	3,100	NA	NA	40	0	100
Trichloroethene	79-01-6	µg/kg	0.37	1,100	200	6.2	*J*	0.24	3,100	ARK-WB-42-0-6	ARK-WB-35-10-20	40	42.5	57.5
Trichlorofluoromethane	75-69-4	µg/kg	--	--	--	--		0.25	3,100	NA	NA	40	0	100
Vinyl acetate	108-05-4	µg/kg	--	--	--	--		2.5	3.9	NA	NA	16	0	100
Vinyl chloride	75-01-4	µg/kg	0.26	51	14	1.4	*JV*	0.2	3,100	ARK-WB-42-0-6	ARK-WB-42-6-14	40	10	90

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Rejected data were not included in the statistical summary.

-- = not detected
EPA = U.S. Environmental Protection Agency
NA = not applicable
PAHs = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
SVOCs = semivolatile organic compound
TEQ = toxic equivalent
VOCs = volatile organic compound

Qualifiers:
J = The associated numerical value is an estimated quantity.
T = The associated value represents a total.
V = Median obtained through interpolation per footnote a.

[a] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, the average of two adjacent results ranking closest to the 0.50 percentile is the median. Such median value is always qualified with "V." It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified and with "J" if at least one of the results is "J" qualified.

Table 3-6b. Statistical Summary – TCLP Results

Analyte	CAS ID	Units	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Median Detected Value[a]		Minimum Detection Limit	Maximum Detection Limit	Samples with Maximum Detected Value	Samples with Minimum Detected Value	Number of Samples	% Samples Detected	% Samples Undetected
Herbicides														
2,4-D	94-75-7	µg/L	--	--	--	--		0.19	0.19	NA	NA	14	0	100
Silvex	93-72-1	µg/L	--	--	--	--		0.49	0.49	NA	NA	14	0	100
Metals														
Arsenic	7440-38-2	mg/L	0.0068	0.039	0.024	0.026	*J*	0.0047	0.024	ARK-WB-41-6-14	ARK-WB-41-0-6	14	21.4	78.6
Barium	7440-39-3	mg/L	0.21	5.1	1.6	0.91	*V*	--	--	ARK-WB-35-10-20	ARK-WB-42-6-14	14	100	0
Cadmium	7440-43-9	mg/L	0.0019	0.0045	0.0026	0.0023	*JV*	0.0015	0.0015	ARK-WB-39-0-8	ARK-WB-37-6-14; ARK-WB-42-0-6	14	42.9	57.1
Chromium	7440-47-3	mg/L	0.0038	0.054	0.014	0.0051	*JV*	0.0033	0.0033	ARK-WB-39-0-8	ARK-WB-42-6-14; ARK-WB-43-0-8	14	71.4	28.6
Lead	7439-92-1	mg/L	0.011	11	1.6	0.064	*V*	0.0017	0.012	ARK-WB-39-0-8	ARK-WB-41-6-14	14	57.1	42.9
Mercury	7439-97-6	mg/L	0.00045	0.00081	0.00058	0.00048	*J*	0.00041	0.00041	ARK-WB-41-6-14	ARK-WB-43-0-8	14	21.4	78.6
Selenium	7782-49-2	mg/L	0.0028	0.0083	0.0064	0.0072	*JV*	0.0037	0.025	ARK-WB-36-10-22	ARK-WB-35-10-20	14	28.6	71.4
Silver	7440-22-4	mg/L	--	--	--	--		0.00085	0.0011	NA	NA	14	0	100
Pesticides														
Chlordane (technical)	12789-03-6	mg/L	--	--	--	--		0.0017	0.0017	NA	NA	14	0	100
Endrin	72-20-8	mg/L	--	--	--	--		0.00029	0.00029	NA	NA	14	0	100
gamma-Hexachlorocyclohexane	58-89-9	mg/L	0.00015	0.00035	0.00023	0.00019	*J*	0.00011	0.00011	ARK-WB-42-0-6	ARK-WB-36-10-22	14	21.4	78.6
Heptachlor	76-44-8	mg/L	--	--	--	--		0.00029	0.00029	NA	NA	14	0	100
Heptachlor epoxide	1024-57-3	mg/L	--	--	--	--		0.00014	0.00014	NA	NA	14	0	100
Methoxychlor	72-43-5	mg/L	--	--	--	--		0.0013	0.0013	NA	NA	14	0	100
Toxaphene	8001-35-2	mg/L	--	--	--	--		0.0092	0.0092	NA	NA	14	0	100
Phenols														
2,4,5-Trichlorophenol	95-95-4	µg/L	--	--	--	--		0.98	0.98	NA	NA	14	0	100
2,4,6-Trichlorophenol	88-06-2	µg/L	--	--	--	--		1.4	1.4	NA	NA	14	0	100
2-Methylphenol	95-48-7	µg/L	--	--	--	--		1.4	1.4	NA	NA	14	0	100
3 & 4 Methylphenol	15831-10-4	µg/L	--	--	--	--		1	1	NA	NA	14	0	100
Pentachlorophenol	87-86-5	µg/L	--	--	--	--		1.1	1.1	NA	NA	14	0	100
SVOCs														
1,4-Dichlorobenzene	106-46-7	µg/L	3.1	36	12	5	*J*	0.63	0.63	ARK-WB-36-10-22	ARK-WB-36-0-10	14	35.7	64.3
2,4-Dinitrotoluene	121-14-2	µg/L	--	--	--	--		0.94	0.94	NA	NA	14	0	100
Hexachlorobenzene	118-74-1	µg/L	--	--	--	--		0.79	0.79	NA	NA	14	0	100
Hexachlorobutadiene	87-68-3	µg/L	3.7	3.7	3.7	3.7	*J*	1.9	1.9	ARK-WB-42-0-6	ARK-WB-42-0-6	14	7.1	92.9
Hexachloroethane	67-72-1	µg/L	--	--	--	--		1.6	1.6	NA	NA	14	0	100
Nitrobenzene	98-95-3	µg/L	--	--	--	--		2.8	2.8	NA	NA	14	0	100
Pyridine	110-86-1	µg/L	--	--	--	--		12	12	NA	NA	14	0	100
VOCs														
1,1-Dichloroethene	75-35-4	µg/L	--	--	--	--		6.6	6.6	NA	NA	14	0	100
1,2-Dichloroethane	107-06-2	µg/L	--	--	--	--		7.6	7.6	NA	NA	14	0	100
Benzene	71-43-2	µg/L	160	600	380	380	*V*	5.7	5.7	ARK-WB-37-0-6	ARK-WB-37-6-14	14	14.3	85.7
Carbon tetrachloride	56-23-5	µg/L	--	--	--	--		10	10	NA	NA	14	0	100
Chlorobenzene	108-90-7	µg/L	14	22,000	5,900	5,100	*V*	8.6	8.6	ARK-WB-39-8-18	ARK-WB-41-0-6	14	85.7	14.3
Chloroform	67-66-3	µg/L	17	59	38	38	*JV*	5.7	5.7	ARK-WB-42-0-6	ARK-WB-42-6-14	14	14.3	85.7
Tetrachloroethene	127-18-4	µg/L	280	750	520	520	*V*	6.3	6.3	ARK-WB-42-6-14	ARK-WB-42-0-6	14	14.3	85.7
Trichloroethene	79-01-6	µg/L	40	190	97	60	*J*	5.6	5.6	ARK-WB-42-0-6	ARK-WB-41-6-14	14	21.4	78.6
Vinyl chloride	75-01-4	µg/L	--	--	--	--		9.1	9.1	NA	NA	14	0	100

Notes:

Data summary performed with averaged normal and split data.
Rejected data were not included in the statistical summary.
-- = not detected
NA = not applicable
SVOCs = semivolatile organic compound
VOCs = volatile organic compound

Qualifiers:
J = The associated numerical value is an estimated quantity.
V = Median obtained through interpolation per footnote a.

[a] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median. Such median value is always qualified with *"V."* It is qualified with *"U"* if both results ranking immediately above and below the corresponding percentile are *"U"* qualified, and with *"J"* if at least one of the results is *"J"* qualified.

Table 3-7a. Data Screening Results – EPA Region 9 Industrial PRGs (Cancer Risk 10^{-6})

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	21,000	NA	NA	NA
Aroclor 1242	53469-21-9	µg/kg	34	0	100	740	NA	NA	NA
Aroclor 1248	12672-29-6	µg/kg	34	0	100	740	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	740	NA	NA	NA
Aroclor 1260	11096-82-5	µg/kg	34	0	100	740	NA	NA	NA
Total PCB Aroclors	12767-79-2eeca	µg/kg	34	0	100	740	NA	NA	NA
Dioxins_Furans									
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	µg/kg	61	32.8	67.2	0.018	0	0	0
TEQ PCDD/F	TEQ_Dfeeca	µg/kg	61	100	0	0.018	39.3	16.4	4.9
PAHs									
Benzo(a)anthracene	56-55-3	µg/kg	34	79.4	20.6	2,100	0	0	0
Benzo(a)pyrene	50-32-8	µg/kg	34	73.5	26.5	210	28	0	0
Benzo(b)fluoranthene	205-99-2	µg/kg	34	70.6	29.4	2,100	4.2	0	0
Benzo(k)fluoranthene	207-08-9	µg/kg	34	70.6	29.4	21,000	0	0	0
Chrysene	218-01-9	µg/kg	34	82.4	17.6	210,000	0	0	0
Dibenzo(a,h)anthracene	53-70-3	µg/kg	34	85.3	14.7	210	0	0	0
Indeno(1,2,3-cd)pyrene	193-39-5	µg/kg	34	79.4	20.6	2,100	0	0	0
Naphthalene	91-20-3	µg/kg	37	67.6	32.4	18,000	0	0	0
Pesticides									
4,4'-DDD	72-54-8	µg/kg	321	77.9	22.1	7,200	6.8	0.4	0
4,4'-DDE	72-55-9	µg/kg	321	68.2	31.8	5,100	0.9	0	0
4,4'-DDT	50-29-3	µg/kg	321	81	19	7,000	9.2	0.4	0
Aldrin	309-00-2	µg/kg	14	0	100	100	NA	NA	NA
alpha-Hexachlorocyclohexane	319-84-6	µg/kg	14	0	100	270	NA	NA	NA
beta-Hexachlorocyclohexane	319-85-7	µg/kg	14	14.3	85.7	960	50	0	0
Dieldrin	60-57-1	µg/kg	14	0	100	110	NA	NA	NA
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	14	0	100	2,100	NA	NA	NA
Heptachlor	76-44-8	µg/kg	14	0	100	380	NA	NA	NA
Heptachlor epoxide	1024-57-3	µg/kg	14	14.3	85.7	190	50	0	0
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	6,500	0	0	0
Total DDD	E17075011eeca	µg/kg	321	80.7	19.3	7,200	9.3	0.4	0
Total DDE	E17075029eeca	µg/kg	321	68.8	31.2	5,100	0.9	0	0
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	7,000	9.5	0.4	0
Toxaphene	8001-35-2	µg/kg	14	0	100	1,600	NA	NA	NA
Phenols									
2,4,6-Trichlorophenol	88-06-2	µg/kg	34	5.9	94.1	160,000	0	0	0
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	9,000	0	0	0

Table 3-7a. Data Screening Results – EPA Region 9 Industrial PRGs (Cancer Risk 10^{-6})

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Phthalates									
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	34	23.5	76.5	120,000	0	0	0
Butylbenzyl phthalate	85-68-7	µg/kg	34	0	100	910,000	NA	NA	NA
SVOCs									
1,2,4-Trichlorobenzene	120-82-1	µg/kg	40	12.5	87.5	99,000	0	0	0
1,4-Dichlorobenzene	106-46-7	µg/kg	40	45	55	12,000	0	0	0
2,4-Dinitrotoluene	121-14-2	µg/kg	34	0	100	5,500	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/kg	34	0	100	3,800	NA	NA	NA
4-Chloroaniline	106-47-8	µg/kg	34	0	100	8,600	NA	NA	NA
4-Nitroaniline	100-01-6	µg/kg	34	0	100	86,000	NA	NA	NA
Aniline	62-53-3	µg/kg	34	0	100	300,000	NA	NA	NA
Azobenzene	103-33-3	µg/kg	14	0	100	23,000	NA	NA	NA
Bis(2-chloro-1-methylethyl) ether	108-60-1	µg/kg	34	5.9	94.1	22,000	0	0	0
Bis(2-chloroethyl) ether	111-44-4	µg/kg	34	0	100	1,000	NA	NA	NA
Hexachlorobenzene	118-74-1	µg/kg	34	26.5	73.5	1,100	0	0	0
Hexachlorobutadiene	87-68-3	µg/kg	34	35.3	64.7	22,000	0	0	0
Hexachloroethane	67-72-1	µg/kg	34	35.3	64.7	120,000	0	0	0
Isophorone	78-59-1	µg/kg	34	2.9	97.1	1,800,000	0	0	0
Nitrobenzene	98-95-3	µg/kg	34	0	100	24,000	NA	NA	NA
N-Nitrosodimethylamine	62-75-9	µg/kg	34	0	100	34	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	µg/kg	34	35.3	64.7	350,000	0	0	0
N-Nitrosodipropylamine	621-64-7	µg/kg	34	2.9	97.1	250	0	0	0
VOCs									
1,1,1,2-Tetrachloroethane	630-20-6	µg/kg	16	0	100	9,300	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	µg/kg	39	5.1	94.9	2,800	0	0	0
1,1,2-Trichloroethane	79-00-5	µg/kg	40	5	95	5,300	0	0	0
1,1-Dichloroethane	75-34-3	µg/kg	40	15	85	17,000	0	0	0
1,2,3-Trichloropropane	96-18-4	µg/kg	17	0	100	95	NA	NA	NA
1,2-Dibromo-3-chloropropane	96-12-8	µg/kg	22	0	100	69	NA	NA	NA
1,2-Dichloroethane	107-06-2	µg/kg	40	12.5	87.5	2,200	0	0	0
1,2-Dichloropropane	78-87-5	µg/kg	40	2.5	97.5	4,500	0	0	0
1,4-Dichloro-trans-2-butene	110-57-6	µg/kg	17	17.6	82.4	35	66.7	0	0
Acrylonitrile	107-13-1	µg/kg	17	0	100	1,200	NA	NA	NA
Benzene	71-43-2	µg/kg	40	42.5	57.5	5,400	0	0	0
Bromodichloromethane	75-27-4	µg/kg	40	0	100	1,400	NA	NA	NA
Bromoform	75-25-2	µg/kg	40	0	100	220,000	NA	NA	NA
Carbon tetrachloride	56-23-5	µg/kg	40	0	100	3,000	NA	NA	NA
Chlorodibromomethane	124-48-1	µg/kg	40	2.5	97.5	3,300	0	0	0
Chloroform	67-66-3	µg/kg	40	45	55	1,500	5.6	0	0
Ethylbenzene	100-41-4	µg/kg	40	32.5	67.5	27,000	0	0	0

Table 3-7a. Data Screening Results – EPA Region 9 Industrial PRGs (Cancer Risk 10^{-6})

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Ethylene dibromide	106-93-4	µg/kg	23	0	100	170	NA	NA	NA
Methyl tert-butyl ether	1634-04-4	µg/kg	40	0	100	220,000	NA	NA	NA
Methylene chloride	75-09-2	µg/kg	40	17.5	82.5	53,000	0	0	0
Tetrachloroethene	127-18-4	µg/kg	40	45	55	2,600	16.7	0	0
Trichloroethene	79-01-6	µg/kg	40	42.5	57.5	14,000	0	0	0
Vinyl chloride	75-01-4	µg/kg	40	10	90	1,700	0	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.

EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.

Data screening was only performed on detected results.

EPA = U.S. Environmental Protection Agency
NA = not applicable
PAHs = polycyclic aromatic hydrocarbons
PRGs = preliminary remediation goals
SLV = screening level value
SVOC = semivolatile organic compound
TEQ = toxic equivalent
VOC = volatile organic compound

Table 3-7b. Data Screening Results – EPA Region 9 Industrial PRGs (Non-Cancer, HQ=0.1)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	3,700	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	1,100	NA	NA	NA
Butyltins									
Tributyltin ion	36643-28-4	µg/kg	20	0	100	18,000	NA	NA	NA
Dioxins_Furans									
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	µg/kg	61	32.8	67.2	0.85	0	0	0
TEQ PCDD/F	TEQ_Dfeeca	µg/kg	61	100	0	0.85	24.6	0	0
PAHs									
2-Methylnaphthalene	91-57-6	µg/kg	34	58.8	41.2	410,000	0	0	0
Acenaphthene	83-32-9	µg/kg	34	61.8	38.2	3,300,000	0	0	0
Anthracene	120-12-7	µg/kg	34	61.8	38.2	17,000,000	0	0	0
Fluoranthene	206-44-0	µg/kg	34	73.5	26.5	2,200,000	0	0	0
Fluorene	86-73-7	µg/kg	34	61.8	38.2	2,200,000	0	0	0
Naphthalene	91-20-3	µg/kg	37	67.6	32.4	62,000	0	0	0
Pyrene	129-00-0	µg/kg	34	73.5	26.5	1,700,000	0	0	0
Pesticides									
4,4'-DDT	50-29-3	µg/kg	321	81	19	43,000	3.1	0	0
Aldrin	309-00-2	µg/kg	14	0	100	1,800	NA	NA	NA
alpha-Hexachlorocyclohexane	319-84-6	µg/kg	14	0	100	490,000	NA	NA	NA
Dieldrin	60-57-1	µg/kg	14	0	100	3,100	NA	NA	NA
Endrin	72-20-8	µg/kg	14	0	100	18,000	NA	NA	NA
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	14	0	100	24,000	NA	NA	NA
Heptachlor	76-44-8	µg/kg	14	0	100	31,000	NA	NA	NA
Heptachlor epoxide	1024-57-3	µg/kg	14	14.3	85.7	800	0	0	0
Methoxychlor	72-43-5	µg/kg	14	7.1	92.9	310,000	0	0	0
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	40,000	0	0	0
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	43,000	3.8	0	0
Phenols									
2,3,4,6-Tetrachlorophenol	58-90-2	µg/kg	34	5.9	94.1	1,800,000	0	0	0
2,4,5-Trichlorophenol	95-95-4	µg/kg	34	8.8	91.2	6,200,000	0	0	0
2,4,6-Trichlorophenol	88-06-2	µg/kg	34	5.9	94.1	62,000	0	0	0
2,4-Dichlorophenol	120-83-2	µg/kg	34	2.9	97.1	180,000	0	0	0
2,4-Dimethylphenol	105-67-9	µg/kg	34	2.9	97.1	1,200,000	0	0	0
2,4-Dinitrophenol	51-28-5	µg/kg	34	0	100	120,000	NA	NA	NA
2-Chlorophenol	95-57-8	µg/kg	34	35.3	64.7	510,000	0	0	0
2-Methylphenol	95-48-7	µg/kg	34	0	100	3,100,000	NA	NA	NA
3 & 4 Methylphenol	15831-10-4	µg/kg	14	92.9	7.1	310,000	0	0	0
4,6-Dinitro-2-methylphenol	534-52-1	µg/kg	34	0	100	4,900	NA	NA	NA
4-Methylphenol	106-44-5	µg/kg	20	0	100	310,000	NA	NA	NA

Table 3-7b. Data Screening Results – EPA Region 9 Industrial PRGs (Non-Cancer, HQ=0.1)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	1,200,000	0	0	0
Phenol	108-95-2	µg/kg	34	0	100	18,000,000	NA	NA	NA
Phthalates									
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	34	23.5	76.5	1,200,000	0	0	0
Butylbenzyl phthalate	85-68-7	µg/kg	34	0	100	12,000,000	NA	NA	NA
Dibutyl phthalate	84-74-2	µg/kg	34	0	100	6,200,000	NA	NA	NA
SVOCs									
1,2,4-Trichlorobenzene	120-82-1	µg/kg	40	12.5	87.5	27,000	0	0	0
1,2-Dichlorobenzene	95-50-1	µg/kg	37	10.8	89.2	980,000	0	0	0
1,4-Dichlorobenzene	106-46-7	µg/kg	40	45	55	2,500,000	0	0	0
2,4-Dinitrotoluene	121-14-2	µg/kg	34	0	100	120,000	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	µg/kg	34	0	100	62,000	NA	NA	NA
2-Nitroaniline	88-74-4	µg/kg	34	0	100	600,000	NA	NA	NA
4-Chloroaniline	106-47-8	µg/kg	34	0	100	250,000	NA	NA	NA
4-Nitroaniline	100-01-6	µg/kg	34	0	100	250,000	NA	NA	NA
Aniline	62-53-3	µg/kg	34	0	100	430,000	NA	NA	NA
Benzoic acid	65-85-0	µg/kg	34	0	100	250,000,000	NA	NA	NA
Benzyl alcohol	100-51-6	µg/kg	34	0	100	6,200,000	NA	NA	NA
Bis(2-chloro-1-methylethyl) ether	108-60-1	µg/kg	34	5.9	94.1	4,100,000	0	0	0
Dibenzofuran	132-64-9	µg/kg	34	44.1	55.9	100,000	0	0	0
Hexachlorobenzene	118-74-1	µg/kg	34	26.5	73.5	49,000	0	0	0
Hexachlorobutadiene	87-68-3	µg/kg	34	35.3	64.7	62,000	0	0	0
Hexachlorocyclopentadiene	77-47-4	µg/kg	34	0	100	370,000	NA	NA	NA
Hexachloroethane	67-72-1	µg/kg	34	35.3	64.7	62,000	0	0	0
Isophorone	78-59-1	µg/kg	34	2.9	97.1	12,000,000	0	0	0
Nitrobenzene	98-95-3	µg/kg	34	0	100	120,000	NA	NA	NA
N-Nitrosodimethylamine	62-75-9	µg/kg	34	0	100	490	NA	NA	NA
VOCs									
1,1,1,2-Tetrachloroethane	630-20-6	µg/kg	16	0	100	3,100,000	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/kg	40	2.5	97.5	3,800,000	0	0	0
1,1,2,2-Tetrachloroethane	79-34-5	µg/kg	39	5.1	94.9	410,000	0	0	0
1,1,2-Trichloroethane	79-00-5	µg/kg	40	5	95	410,000	0	0	0
1,1-Dichloroethane	75-34-3	µg/kg	40	15	85	20,000,000	0	0	0
1,1-Dichloroethene	75-35-4	µg/kg	40	10	90	110,000	0	0	0
1,2,3-Trichloropropane	96-18-4	µg/kg	17	0	100	2,200	NA	NA	NA
1,2-Dibromo-3-chloropropane	96-12-8	µg/kg	22	0	100	2,600	NA	NA	NA
1,2-Dichloroethane	107-06-2	µg/kg	40	12.5	87.5	1,500,000	0	0	0
1,2-Dichloropropane	78-87-5	µg/kg	40	2.5	97.5	6,800	0	0	0
2-Butanone	78-93-3	µg/kg	40	55	45	20,000,000	0	0	0
4-Methyl-2-pentanone	108-10-1	µg/kg	40	5	95	5,300,000	0	0	0

Table 3-7b. Data Screening Results – EPA Region 9 Industrial PRGs (Non-Cancer, HQ=0.1)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Acetone	67-64-1	µg/kg	40	72.5	27.5	63,000,000	0	0	0
Acrolein	107-02-8	µg/kg	11	0	100	65	NA	NA	NA
Acrylonitrile	107-13-1	µg/kg	17	0	100	7,200	NA	NA	NA
Benzene	71-43-2	µg/kg	40	42.5	57.5	45,000	0	0	0
Bromodichloromethane	75-27-4	µg/kg	40	0	100	2,000,000	NA	NA	NA
Bromoform	75-25-2	µg/kg	40	0	100	1,200,000	NA	NA	NA
Bromomethane	74-83-9	µg/kg	40	0	100	3,200	NA	NA	NA
Carbon disulfide	75-15-0	µg/kg	40	42.5	57.5	370,000	0	0	0
Carbon tetrachloride	56-23-5	µg/kg	40	0	100	60,000	NA	NA	NA
Chlorobenzene	108-90-7	µg/kg	40	75	25	140,000	20	0	0
Chlorodibromomethane	124-48-1	µg/kg	40	2.5	97.5	1,200,000	0	0	0
Chloroethane	75-00-3	µg/kg	30	13.3	86.7	6,100,000	0	0	0
Chloroform	67-66-3	µg/kg	40	45	55	110,000	0	0	0
Chloromethane	74-87-3	µg/kg	40	0	100	50,000	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	µg/kg	23	0	100	1,000,000	NA	NA	NA
Dibromomethane	74-95-3	µg/kg	17	5.9	94.1	11,000	0	0	0
Dichlorodifluoromethane	75-71-8	µg/kg	40	0	100	78,000	NA	NA	NA
Ethylbenzene	100-41-4	µg/kg	40	32.5	67.5	2,100,000	0	0	0
Ethylene dibromide	106-93-4	µg/kg	23	0	100	35,000	NA	NA	NA
Isopropylbenzene	98-82-8	µg/kg	40	40	60	1,100,000	0	0	0
Methyl tert-butyl ether	1634-04-4	µg/kg	40	0	100	6,900,000	NA	NA	NA
Methylene chloride	75-09-2	µg/kg	40	17.5	82.5	920,000	0	0	0
Styrene	100-42-5	µg/kg	40	0	100	3,600,000	NA	NA	NA
Tetrachloroethene	127-18-4	µg/kg	40	45	55	230,000	0	0	0
Toluene	108-88-3	µg/kg	40	47.5	52.5	4,500,000	0	0	0
trans-1,2-Dichloroethene	156-60-5	µg/kg	40	10	90	69,000	0	0	0
Trichlorofluoromethane	75-69-4	µg/kg	40	0	100	340,000	NA	NA	NA
Vinyl acetate	108-05-4	µg/kg	16	0	100	410,000	NA	NA	NA
Vinyl chloride	75-01-4	µg/kg	40	10	90	39,000	0	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

EPA = U.S. Environmental Protection Agency
NA = not applicable
PAH = polycyclic aromatic hydrocarbon
PRG = preliminary remediation goal

SLV = screening level value
SVOC = semivolatile organic compound
TEQ = toxic equivalent
VOC = volatile organic compound

Table 3-7c. Data Screening Results – MacDonald PEC or other SQV (JSCS and Others)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	530	NA	NA	NA
Aroclor 1248	12672-29-6	µg/kg	34	0	100	1,500	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	300	NA	NA	NA
Aroclor 1260	11096-82-5	µg/kg	34	0	100	200	NA	NA	NA
Total PCB Aroclors	12767-79-2eeca	µg/kg	34	0	100	676	NA	NA	NA
Dioxins_Furans									
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	µg/kg	61	32.8	67.2	0.009	0	0	0
TEQ PCDD/F	TEQ_Dfeeca	µg/kg	61	100	0	0.009	44.3	24.6	6.6
PAHs									
2-Methylnaphthalene	91-57-6	µg/kg	34	58.8	41.2	200	25	0	0
Acenaphthene	83-32-9	µg/kg	34	61.8	38.2	300	4.8	0	0
Acenaphthylene	208-96-8	µg/kg	34	55.9	44.1	200	0	0	0
Anthracene	120-12-7	µg/kg	34	61.8	38.2	845	0	0	0
Benzo(a)anthracene	56-55-3	µg/kg	34	79.4	20.6	1,050	3.7	0	0
Benzo(a)pyrene	50-32-8	µg/kg	34	73.5	26.5	1,450	0	0	0
Benzo(g,h,i)perylene	191-24-2	µg/kg	34	85.3	14.7	300	3.4	0	0
Benzo(k)fluoranthene	207-08-9	µg/kg	34	70.6	29.4	13,000	0	0	0
Chrysene	218-01-9	µg/kg	34	82.4	17.6	1,290	3.6	0	0
Dibenzo(a,h)anthracene	53-70-3	µg/kg	34	85.3	14.7	1,300	0	0	0
Fluoranthene	206-44-0	µg/kg	34	73.5	26.5	2,230	0	0	0
Fluorene	86-73-7	µg/kg	34	61.8	38.2	536	0	0	0
Indeno(1,2,3-cd)pyrene	193-39-5	µg/kg	34	79.4	20.6	100	33.3	0	0
Naphthalene	91-20-3	µg/kg	37	67.6	32.4	561	16	0	0
Phenanthrene	85-01-8	µg/kg	34	67.6	32.4	1,170	8.7	0	0
Pyrene	129-00-0	µg/kg	34	73.5	26.5	1,520	4	0	0
Pesticides									
4,4'-DDD	72-54-8	µg/kg	321	77.9	22.1	28	50	11.2	3.2
4,4'-DDE	72-55-9	µg/kg	321	68.2	31.8	31.3	36.1	1.4	0
4,4'-DDT	50-29-3	µg/kg	321	81	19	62.9	48.8	9.2	2.7
Aldrin	309-00-2	µg/kg	14	0	100	40	NA	NA	NA
Dieldrin	60-57-1	µg/kg	14	0	100	61.8	NA	NA	NA
Endrin	72-20-8	µg/kg	14	0	100	207	NA	NA	NA
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	14	0	100	4.99	NA	NA	NA
Heptachlor	76-44-8	µg/kg	14	0	100	10	NA	NA	NA
Heptachlor epoxide	1024-57-3	µg/kg	14	14.3	85.7	16	100	0	0
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	17.6	100	0	0
Total DDD	E17075011eeca	µg/kg	321	80.7	19.3	28	53.7	12.4	3.9
Total DDE	E17075029eeca	µg/kg	321	68.8	31.2	31.3	43	2.7	0
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	62.9	50	10.3	3.1

Table 3-7c. Data Screening Results – MacDonald PEC or other SQV (JSCS and Others)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Phenols									
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	1,000	0	0	0
Phenol	108-95-2	µg/kg	34	0	100	50	NA	NA	NA
Phthalates									
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	34	23.5	76.5	800	0	0	0
Dibutyl phthalate	84-74-2	µg/kg	34	0	100	100	NA	NA	NA
Diethyl phthalate	84-66-2	µg/kg	34	0	100	600	NA	NA	NA
SVOCs									
1,2,4-Trichlorobenzene	120-82-1	µg/kg	40	12.5	87.5	9,200	0	0	0
1,2-Dichlorobenzene	95-50-1	µg/kg	37	10.8	89.2	1,700	0	0	0
1,3-Dichlorobenzene	541-73-1	µg/kg	37	16.2	83.8	300	0	0	0
1,4-Dichlorobenzene	106-46-7	µg/kg	40	45	55	300	22.2	0	0
Carbazole	86-74-8	µg/kg	34	32.4	67.6	1,600	0	0	0
Hexachlorobenzene	118-74-1	µg/kg	34	26.5	73.5	100	0	0	0
Hexachlorobutadiene	87-68-3	µg/kg	34	35.3	64.7	600	8.3	0	0
Hexachlorocyclopentadiene	77-47-4	µg/kg	34	0	100	400	NA	NA	NA
VOCs									
Tetrachloroethene	127-18-4	µg/kg	40	45	55	500	22.2	0	0
Trichloroethene	79-01-6	µg/kg	40	42.5	57.5	2,100	0	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

NA = not applicable
PAH = polycyclic aromatic hydrocarbon
PEC = probable effect concentration
JSCS = Joint Source Control Strategy
SLV = screening level value
SQV = sediment quality value
SVOC = semivolatile organic compound
TEQ = toxic equivalent
VOC = volatile organic compound

Table 3-7d. Data Screening Results – TEC (JSCS)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Total PCB Aroclors	12767-79-2eeca	µg/kg	34	0	100	59.8	NA	NA	NA
PAHs									
Anthracene	120-12-7	µg/kg	34	61.8	38.2	57.2	33.3	0	0
Benzo(a)anthracene	56-55-3	µg/kg	34	79.4	20.6	108	51.9	0	0
Benzo(a)pyrene	50-32-8	µg/kg	34	73.5	26.5	150	44	0	0
Benzo(g,h,i)perylene	191-24-2	µg/kg	34	85.3	14.7	195	10.3	0	0
Chrysene	218-01-9	µg/kg	34	82.4	17.6	166	42.9	0	0
Dibenzo(a,h)anthracene	53-70-3	µg/kg	34	85.3	14.7	33	31	0	0
Fluoranthene	206-44-0	µg/kg	34	73.5	26.5	423	28	0	0
Fluorene	86-73-7	µg/kg	34	61.8	38.2	77.4	23.8	0	0
Naphthalene	91-20-3	µg/kg	37	67.6	32.4	176	28	0	0
Phenanthrene	85-01-8	µg/kg	34	67.6	32.4	204	47.8	0	0
Pyrene	129-00-0	µg/kg	34	73.5	26.5	195	60	0	0
Pesticides									
4,4'-DDD	72-54-8	µg/kg	321	77.9	22.1	4.88	66.4	23.2	10
4,4'-DDE	72-55-9	µg/kg	321	68.2	31.8	3.16	66.2	13.2	1.4
4,4'-DDT	50-29-3	µg/kg	321	81	19	4.16	68.5	29.6	11.9
Dieldrin	60-57-1	µg/kg	14	0	100	1.9	NA	NA	NA
Endrin	72-20-8	µg/kg	14	0	100	2.22	NA	NA	NA
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	14	0	100	2.37	NA	NA	NA
Heptachlor epoxide	1024-57-3	µg/kg	14	14.3	85.7	2.47	100	50	0
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	3.24	100	25	0
Total DDD	E17075011eeca	µg/kg	321	80.7	19.3	4.88	68.3	27	10.4
Total DDE	E17075029eeca	µg/kg	321	68.8	31.2	3.16	68.3	17.2	2.7
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	4.16	70.2	32.4	11.8
Total DDx	E966176eeca	µg/kg	321	85.4	14.6	5.28	73.7	33.6	15.3

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

NA = not applicable
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
JSCS = Joint Source Control Strategy
SLV = screening level value

Table 3-7e. Data Screening Results – DEQ (2001) Bioaccumulative Sediment SLVs (JSCS)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	420	NA	NA	NA
Aroclor 1242	53469-21-9	µg/kg	34	0	100	2	NA	NA	NA
Aroclor 1248	12672-29-6	µg/kg	34	0	100	4	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	10	NA	NA	NA
Butyltins									
Tributyltin ion	36643-28-4	µg/kg	20	0	100	190	NA	NA	NA
Dioxins_Furans									
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	µg/kg	61	32.8	67.2	0.00085	60	0	0
TEQ PCDD/F	TEQ_Dfeeca	µg/kg	61	100	0	0.00085	57.4	34.4	24.6
PAHs									
Benzo(a)pyrene	50-32-8	µg/kg	34	73.5	26.5	100	48	0	0
Pesticides									
4,4'-DDD	72-54-8	µg/kg	321	77.9	22.1	0.3	94.8	49.6	27.2
4,4'-DDE	72-55-9	µg/kg	321	68.2	31.8	0.3	89	36.1	13.7
4,4'-DDT	50-29-3	µg/kg	321	81	19	0.3	94.6	53.1	34.2
Aldrin	309-00-2	µg/kg	14	0	100	40	NA	NA	NA
beta-Hexachlorocyclohexane	319-85-7	µg/kg	14	14.3	85.7	220	50	0	0
Dieldrin	60-57-1	µg/kg	14	0	100	4	NA	NA	NA
Endrin	72-20-8	µg/kg	14	0	100	4	NA	NA	NA
gamma-Hexachlorocyclohexane	58-89-9	µg/kg	14	0	100	1,160	NA	NA	NA
Heptachlor	76-44-8	µg/kg	14	0	100	24	NA	NA	NA
Methoxychlor	72-43-5	µg/kg	14	7.1	92.9	990	100	0	0
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	420	25	0	0
Total DDD	E17075011eeca	µg/kg	321	80.7	19.3	0.3	95.8	53.3	30.1
Total DDE	E17075029eeca	µg/kg	321	68.8	31.2	0.3	91	43.4	17.6
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	0.3	95.8	55	34.4
Toxaphene	8001-35-2	µg/kg	14	0	100	2,550	NA	NA	NA
Phenols									
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	370	0	0	0
Phthalates									
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	34	23.5	76.5	330	0	0	0
Dibutyl phthalate	84-74-2	µg/kg	34	0	100	60	NA	NA	NA
Diethyl phthalate	84-66-2	µg/kg	34	0	100	8,300,000	NA	NA	NA

Table 3-7e. Data Screening Results – DEQ (2001) Bioaccumulative Sediment SLVs (JSCS)

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
VOCs									
1,1,1-Trichloroethane	71-55-6	µg/kg	40	2.5	97.5	1,800,000	0	0	0
1,1-Dichloroethene	75-35-4	µg/kg	40	10	90	1,590	0	0	0
1,2-Dichloroethane	107-06-2	µg/kg	40	12.5	87.5	3,430	0	0	0
1,4-Dichloro-trans-2-butene	110-57-6	µg/kg	17	17.6	82.4	3,810	0	0	0
2-Butanone	78-93-3	µg/kg	40	55	45	1,100,000	0	0	0
4-Methyl-2-pentanone	108-10-1	µg/kg	40	5	95	3,810	0	0	0
Acetone	67-64-1	µg/kg	40	72.5	27.5	290	6.9	0	0
Benzene	71-43-2	µg/kg	40	42.5	57.5	3,920	0	0	0
Carbon tetrachloride	56-23-5	µg/kg	40	0	100	6,080	NA	NA	NA
Chloroform	67-66-3	µg/kg	40	45	55	3,660	0	0	0
Methylene chloride	75-09-2	µg/kg	40	17.5	82.5	930	0	0	0
Tetrachloroethene	127-18-4	µg/kg	40	45	55	280	27.8	0	0
Toluene	108-88-3	µg/kg	40	47.5	52.5	5,300	0	0	0
Trichloroethene	79-01-6	µg/kg	40	42.5	57.5	140	23.5	0	0
Vinyl chloride	75-01-4	µg/kg	40	10	90	30	25	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

DEQ = Oregon Department of Environmental Quality
JSCS = Joint Source Control Strategy
NA = not applicable
PAH = polycyclic aromatic hydrocarbon
SLV = screening level value
TEQ = toxic equivalent
VOC = volatile organic compound

Table 3-7f. Data Screening Results – DEQ (2007) Eco Bioaccumulative COI

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	1.8	NA	NA	NA
Aroclor 1242	53469-21-9	µg/kg	34	0	100	1.8	NA	NA	NA
Aroclor 1248	12672-29-6	µg/kg	34	0	100	1.8	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	1.8	NA	NA	NA
Aroclor 1260	11096-82-5	µg/kg	34	0	100	1.8	NA	NA	NA
Total PCB Aroclors	12767-79-2eeca	µg/kg	34	0	100	1.8	NA	NA	NA
Butyltins									
Tributyltin ion	36643-28-4	µg/kg	20	0	100	0.37	NA	NA	NA
PAHs									
Fluoranthene	206-44-0	µg/kg	34	73.5	26.5	37,000	0	0	0
Pyrene	129-00-0	µg/kg	34	73.5	26.5	1,900	0	0	0
Pesticides									
4,4'-DDT	50-29-3	µg/kg	321	81	19	0.095	100	63.5	45.4
Dieldrin	60-57-1	µg/kg	14	0	100	0.37	NA	NA	NA
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	0.47	100	100	25
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	0.095	100	64.5	46.6
Phenols									
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	170	0	0	0
SVOCs									
Hexachlorobenzene	118-74-1	µg/kg	34	26.5	73.5	61000	0	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

COI = constituent of interest
DEQ = Oregon Department of Environmental Quality
NA = not applicable
PCB = polychlorinated biphenyl
SLV = screening level value
SVOC = semivolatile organic compound

Table 3-7g. Data Screening Results – DEQ (2007) HH Subsistence Bioaccumulative COI

Analyte	CAS ID	Units	Number of Samples	Samples Detected (%)	Samples Undetected (%)	SLV Value	Detected Results Exceeding SLV (%)	Detected Results Exceeding 100xSLV (%)	Detected Results Exceeding 1000xSLV (%)
Aroclors									
Aroclor 1016	12674-11-2	µg/kg	34	0	100	0.048	NA	NA	NA
Aroclor 1242	53469-21-9	µg/kg	34	0	100	0.048	NA	NA	NA
Aroclor 1248	12672-29-6	µg/kg	34	0	100	0.048	NA	NA	NA
Aroclor 1254	11097-69-1	µg/kg	34	0	100	0.048	NA	NA	NA
Aroclor 1260	11096-82-5	µg/kg	34	0	100	0.048	NA	NA	NA
Total PCB Aroclors	12767-79-2eeca	µg/kg	34	0	100	0.048	NA	NA	NA
Butyltins									
Tributyltin ion	36643-28-4	µg/kg	20	0	100	10	NA	NA	NA
PAHs									
Fluoranthene	206-44-0	µg/kg	34	73.5	26.5	62000	0	0	0
Pyrene	129-00-0	µg/kg	34	73.5	26.5	47000	0	0	0
Pesticides									
4,4'-DDT	50-29-3	µg/kg	321	81	19	0.04	100	68.5	53.1
Dieldrin	60-57-1	µg/kg	14	0	100	0.001	NA	NA	NA
Total Chlordanes	TOTCHLDANEeeca	µg/kg	14	28.6	71.4	0.046	100	100	100
Total DDT	E17075037eeca	µg/kg	321	81.6	18.4	0.04	100	70.2	53.4
Phenols									
Pentachlorophenol	87-86-5	µg/kg	34	38.2	61.8	30	53.8	0	0
SVOCs									
Hexachlorobenzene	118-74-1	µg/kg	34	26.5	73.5	2.3	100	0	0

Notes:

Data summary was performed using LSS' averaged normal and field split data. EPA split sample results were treated as separate samples.
EPA's split sample results for pesticides were not included in the summary because the data were rejected during data validation.
Data screening was only performed on detected results.

COI = constituent of interest
DEQ = Oregon Department of Environmental Quality
HH = human health
NA = not applicable
PCB = polychlorinated biphenyl
SLV = screening level value
SVOC = semivolatile organic compound

Table 3-8. Summary of Geotechnical Laboratory Tests Performed on Sediment Samples

Boring ID	Sample ID	Sample Depth (ft)	Sample Type [a]	Approximate Recovery (in.)	Soil/Sediment Type	Moisture Content Determination	Grain Size Analysis	Atterberg Limits	Organic Content Determination	Specific Gravity	Sample Extrusion and Logging	TXUU	TXCU	Consolidation	Hydraulic Conductivity
						D 2216	D 422	D 4318	D 2974 (Method C)	D 854	--	D 2850	D 4767	D 2435 Test Method B	D 5084 Method C
SPT-1	ARK-SPT-1-4.0-5.5	4.0–5.5	SS	6	SILT	1									
	ARK-SPT-1-5.5-7.0	5.5–7.0	SS	9	SILT	1	1	1							
	ARK-SPT-1-7.0-8.5	7.0–8.5	SS	18	SILT	1									
	ARK-SPT-1-8.5-10.0	8.5–10.0	SS	18	SILT	1			1						
	ARK-SPT-1-10.0-11.5	10.0–11.5	SS	18	SILT	1									
	ARK-SPT-1-11.5-13.0	11.5–13.0	SS	18	SILT	1									
	ARK-SPT-1-13.0-15.0	13.0–15.0	ST	24	SILT		1	1		1	1		3	1	1
	ARK-SPT-1-15.0-17.0	15.0–17.0	ST	24	SILT		1	1			1	1			
	ARK-SPT-1-17.0-18.5	17.0–18.5	SS	18	SILT	1									
	ARK-SPT-1-18.5-20.5	18.5–20.5	ST	25	SILT		1	1			1	1		1	
	ARK-SPT-1-20.5-22.0	20.5–22.0	SS	12	SAND	1									
	ARK-SPT-1-22.0-22.5	22.0–22.5	SS	6	PULVERIZED BASALT										
SPT-2	ARK-SPT-2-2.0-3.5	2.0–3.5	SS	4	SILT	1									
	ARK-SPT-2-3.5-5.0	3.5–5.0	SS	12	SILT	1	1	1							
	ARK-SPT-2-5.0-6.0	5.0–6.0	SS	12	SILT	1									
	ARK-SPT-2-6.0-6.5	6.0–6.5	SS	6	SAND	1									
	ARK-SPT-2-6.5-7.0	6.5–7.0	SS	6	SAND	1									
	ARK-SPT-2-7.0-7.5	7.0–7.5	SS	6	SAND	1	1								
	ARK-SPT-2-8.0-9.5	8.0–9.5	SS	NR	NR										
	ARK-SPT-2-9.5-10.0	9.5–10.0	SS	6	CLAY	1									
	ARK-SPT-2-10.0-10.5	10.0–10.5	SS	6	SAND	1									
	ARK-SPT-2-11.0-12.5	11.0–12.5	SS	9	SAND	1									
	ARK-SPT-2-12.5-14.0	12.5–14.0	SS	12	SAND	1	1								
	ARK-SPT-2-14.0-15.0	14.0–15.0	SS	9	SAND	1									
	ARK-SPT-2-15.0-15.5	15.0–15.5	SS	6	SILT	1									
	ARK-SPT-2-15.5-17.5	15.5–17.5	ST	24	SAND?										
	ARK-SPT-2-17.5-19.0	17.5–19.0	SS	NR	NR										
	ARK-SPT-2-19.0-20.5	19.0–20.5	SS	15	SILT	1									
	ARK-SPT-2-20.5-22.5	20.5–22.5	ST	22	SILT		2	1	1	1	1		2		1
	ARK-SPT-2-22.5-24.5	22.5–24.5	SS	24	SILT/SAND?						1			1	
	ARK-SPT-2-24.5-26.0	24.5–26.0	SS	6	SAND	1									
	ARK-SPT-2-26.0-26.5	26.0–26.5	SS	6	SAND	1	1								
	ARK-SPT-2-26.5-27.5	26.5–27.5	SS	6	SAND	1									
	ARK-SPT-2-27.5-29.0	27.5–29.0	SS	NR	NR										
	ARK-SPT-2-30.0-30.25	30.0–30.25	SS	3	SILT	1									

Table 3-8. Summary of Geotechnical Laboratory Tests Performed on Sediment Samples

Boring ID	Sample ID	Sample Depth (ft)	Sample Type [a]	Approximate Recovery (in.)	Soil/Sediment Type	Moisture Content Determination D 2216	Grain Size Analysis D 422	Atterberg Limits D 4318	Organic Content Determination D 2974 (Method C)	Specific Gravity D 854	Sample Extrusion and Logging --	TXUU D 2850	TXCU D 4767	Consolidation D 2435 Test Method B	Hydraulic Conductivity D 5084 Method C
	ARK-SPT-2-30.25-31.5	30.25–31.5	SS	6	SAND	1									
	ARK-SPT-2-32.5-34.0	32.5–34.0	SS	12	SAND	1									
	ARK-SPT-2-35.0-36.0	35.0–36.0	SS	12	SAND	1									
	ARK-SPT-2-36.0-36.5	36.0–36.5	SS	6	GRAVEL										
	ARK-SPT-2-38.0-39.0	38.0–39.0	SS	4	GRAVEL	1	1	1	1						
SPT-3	ARK-SPT-3-5.0.-6.5	5.0.–6.5	SS	18	SILT	1									
	ARK-SPT-3-6.5-8.0	6.5–8.0	SS	18	SILT	1									
	ARK-SPT-3-8.0-9.5	8.0–9.5	ST	16	SILT		3	3		2	1	1	2	1	
	ARK-SPT-3-9.5-11.5	9.5–11.5	SS	22.5	SILT	1									
	ARK-SPT-3-11.5-13.0	11.5–13.0	SS	18	SILT		1	1			1		1		1
	ARK-SPT-3-13.0-15.0	13.0–15.0	SS	23	SILT										
	ARK-SPT-3-15.0-17.0	15.0–17.0	SS	6 (dist.)	SILT/SAND										
	ARK-SPT-3-17.0-19.0	17.0–19.0	SS	NR	NR										
	ARK-SPT-3-19.0-20.5	19.0–20.5	SS	3	SILT	1									
	ARK-SPT-3-20.5-22.0	20.5–22.0	SS	6	SAND	1	1								
	ARK-SPT-3-22.0-22.25	22.0–22.25	SS	3	SAND	1									
	ARK-SPT-3-22.25-23.5	22.25–23.5	ST	12	CLAY	1									
	ARK-SPT-3-23.5-25.0	23.5–25.0	ST	12	GRAVEL	1									
	ARK-SPT-3-25.0-26.5	25.0–26.5	ST	6	GRAVEL										
					Totals	37	16	11	3	4	7	3	8	4	3

Notes

-- = not applicable

dist. = disturbed

NR = not recovered

TXCU = consolidated, undrained triaxial compressive strength test

TXUU = unconsolidated, undrained triaxial compressive strength test

[a] Sample Type : SS = Split Spoon; ST = Shelby Tube

Table 3-9. Summary of Geotechnical Laboratory Tests Performed on Rock Core Samples

Boring ID	Sample ID	Sample Depth (ft)	Sample Type	Point Load Test	Unconfined Compressive Strength	Rock Type
				D 5731	D 7012	
SPT-1	ARK-SPT-1-30.0-31.5	30.0–31.5	Rock Core	1	1	BASALT
	ARK-SPT-1-34.0-36.0	34.0–36.0	Rock Core	1	1	BASALT
	ARK-SPT-1-37.0-39.0	37.0–39.0	Rock Core	1	1	BASALT

Table 3-10. Summary of Geotechnical Index Properties

Boring ID	Sample ID	Sample Depth (ft)	Sample Type	Fines Content (%)	Sand Content (%)	Gravel Content (%)	PL	LL	LL_{OD}	PI	Moisture Content (%)	Organic Content (%)	Specific Gravity	USCS Symbol	Soil/Sediment Type
				ASTM D2487			ASTM D4318				ASTM D2216	Method C	ASTM D854		
SPT-1	ARK-SPT-1-4.0-5.5	4.0–5.5	SS	--	--	--	--	--	--	--	101.0	--	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-5.5-7.0	5.5–7.0	SS	79.4	20.6	0	33	64	42	31	162.4	--	--	OH	ORGANIC SILT/SILT
	ARK-SPT-1-7.0-8.5	7.0–8.5	SS	--	--	--	--	--	--	--	202.8	--	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-8.5-10.0	8.5–10.0	SS	--	--	--	--	--	--	--	76.6	4.6	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-10.0-11.5	10.0–11.5	SS	--	--	--	--	--	--	--	92.3	--	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-11.5-13.0	11.5–13.0	SS	--	--	--	--	--	--	--	83.7	--	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-13.0-15.0	13.0–15.0	ST	94.9	5.1	0	38	76	53	38	--	--	2.604	OH	ORGANIC SILT/SILT
	ARK-SPT-1-15.0-17.0	15.0–17.0	ST	86.9	13.1	0	39	81	--	42	--	--	--	MH/OH	ORGANIC SILT/SILT
	ARK-SPT-1-17.0-18.5	17.0–18.5	SS	--	--	--	--	--	--	--	82.8	--	--	--	ORGANIC SILT/SILT
	ARK-SPT-1-18.5-20.5	18.5–20.5	ST	99.1	0.9	0	36	53	43	17	--	--	--	MH	ORGANIC SILT/SILT
	ARK-SPT-1-20.5-22.0	20.5–22.0	SS	--	--	--	--	--	--	--	39.5	--	--	--	SAND/ Silty SAND
SPT-2	ARK-SPT-2-2.0-3.5	2.0–3.5	SS	--	--	--	--	--	--	--	91.6	--	--	--	ORGANIC SILT
	ARK-SPT-2-3.5-5.0	3.5–5.0	SS	77.6	21.7	0.7	34	57	33	13	87.1	--	--	OL	ORGANIC SILT
	ARK-SPT-2-5.0-6.0	5.0–6.0	SS	--	--	--	--	--	--	--	59.4	--	--	--	ORGANIC SILT
	ARK-SPT-2-6.0-6.5	6.0–6.5	SS	--	--	--	--	--	--	--	39.6	--	--	--	Silty SAND
	ARK-SPT-2-6.5-7.0	6.5–7.0	SS	--	--	--	--	--	--	--	32.8	--	--	--	Silty SAND
	ARK-SPT-2-7.0-7.5	7.0–7.5	SS	38.9	61.1	0	--	--	--	--	41.5	--	--	--	Silty SAND
	ARK-SPT-2-9.5-10.0	9.5–10.0	SS	--	--	--	--	--	--	--	67.2	--	--	--	CLAY
	ARK-SPT-2-10.0-10.5	10.0–10.5	SS	--	--	--	--	--	--	--	52.3	--	--	--	SAND
	ARK-SPT-2-11.0-12.5	11.0–12.5	SS	--	--	--	--	--	--	--	47.5	--	--	--	SAND
	ARK-SPT-2-12.5-14.0	12.5–14.0	SS	10.8	89.2	0	--	--	--	--	55.4	--	--	--	SAND
	ARK-SPT-2-14.0-15.0	14.0–15.0	SS	--	--	--	--	--	--	--	56.6	--	--	--	SAND
	ARK-SPT-2-15.0-15.5	15.0–15.5	SS	--	--	--	--	--	--	--	77.1	--	--	--	SILT
	ARK-SPT-2-19.0-20.5	19.0–20.5	SS	--	--	--	--	--	--	--	74.3	--	--	--	ORGANIC SILT
	ARK-SPT-2-20.5-22.5	20.5–22.5	ST	66.6	33.4	0	32	73	41	41	--	6.2	--	OH	ORGANIC SILT
	ARK-SPT-2-20.5-22.5	20.5–22.5	ST	85.6	14.4	0	--	--	--	--	--	--	2.661	--	ORGANIC SILT
	ARK-SPT-2-24.5-26.0	24.5–26.0	SS	--	--	--	--	--	--	--	56.5	--	--	--	SAND
	ARK-SPT-2-26.0-26.5	26.0–26.5	SS	43.7	54.4	1.9	--	--	--	--	48.3	--	--	--	SAND
	ARK-SPT-2-26.5-27.5	26.5–27.5	SS	--	--	--	--	--	--	--	39.8	--	--	--	SAND
	ARK-SPT-2-30.0-30.25	30.0–30.25	SS	--	--	--	--	--	--	--	70.9	--	--	--	SAND
	ARK-SPT-2-30.25-31.5	30.25–31.5	SS	--	--	--	--	--	--	--	36.6	--	--	--	SAND
	ARK-SPT-2-32.5-34.0	32.5–34.0	SS	--	--	--	--	--	--	--	47.0	--	--	--	SAND
	ARK-SPT-2-35.0-36.0	35.0–36.0	SS	--	--	--	--	--	--	--	42.1	--	--	--	SAND
	ARK-SPT-3-5.0.-6.5	5.0.–6.5	SS	69.9	30.1	0	35	67	46	32	105.5	9.2	--	OH	ORGANIC SILT
	ARK-SPT-3-6.5-8.0	6.5–8.0	SS	--	--	--	--	--	--	--	78.2	--	--	--	ORGANIC SILT
	ARK-SPT-3-8.0-9.5	8.0–9.5	ST	--	--	--	--	--	--	--	198.5	--	--	--	ORGANIC SILT

Table 3-10. Summary of Geotechnical Index Properties

Boring ID	Sample ID	Sample Depth (ft)	Sample Type	Fines Content (%)	Sand Content (%)	Gravel Content (%)	PL	LL	LL_{OD}	PI	Moisture Content (%)	Organic Content (%)	Specific Gravity	USCS Symbol	Soil/Sediment Type
				ASTM D2487			ASTM D4318				ASTM D2216	Method C	ASTM D854		
SPT-3	ARK-SPT-3-9.5-11.5	9.5–10.0	SS	94.5	5.5	0	33	68	46	35	--	--	2.658	OH	ORGANIC SILT
	ARK-SPT-3-9.5-11.5	10–10.5	ST	87.9	12.1	0	36	63	--	27	--	--	--	MH/OH	ORGANIC SILT
	ARK-SPT-3-9.5-11.5	11.0–11.5	SS	88.8	11.2	0	38	63	--	25	--	--	2.7	MH/OH	ORGANIC SILT
	ARK-SPT-3-11.5-13.0	11.5–13.0	SS	--	--	--	--	--	--	--	97.3	--	--	--	ORGANIC SILT
	ARK-SPT-3-13.0-15.0	13.0–15.0	SS	95.7	4.3	0	--	--	--	--	--	--	--	MH/OH	ORGANIC SILT
	ARK-SPT-3-17.0-19.0	17.0–19.0	SS	--	--	--	--	--	--	--	--	--	--	--	SAND
	ARK-SPT-3-19.0-20.5	19.0–20.5	SS	--	--	--	--	--	--	--	114.5	--	--	--	SAND
	ARK-SPT-3-20.5-22.0	20.5–22.0	SS	28.9	71.1	0	34	69	--	35	55.3	--	--	SM	SAND
	ARK-SPT-3-22.0-22.25	22.0–22.25	SS	--	--	--	--	--	--	--	54.6	--	--	--	SAND
	ARK-SPT-3-22.25-23.5	22.25–23.5	ST	--	--	--	--	--	--	--	42.5	--	--	--	CLAY
	ARK-SPT-3-23.5-25.0	23.5–25.0	ST	--	--	--	--	--	--	--	14.6	--	--	--	GRAVEL

Notes

-- = not applicable

LL = Liquid Limit

LL_{OD} = Oven Dried Liquid Limit

PL = Plastic Limit

PI = Plasticity Index

SS = Split Spoon

ST = Shelby Tube

USCS = Unified Soil Classification System (MH = elastic silt, OH = organic silt of high plasticity, OL = organic silt of low plasticity, SM = silty sand)

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Piling 1	IMPG4888–9	SW	1.0 ft diameter	Approximately 20 ft tall piling on downstream side of Outfall 004. Piling is not weathered and appears to be treated.
Concrete 1	IMPG4891–3	SW	6.0 ft diameter, 1.8 ft thick	Concrete anchor on top of Outfall 004.
Outfall 004	IMPG4899	N–NE	3.0 ft diameter pipe, unknown length	Fiberglass pipe (Outfall 004).
Concrete 2	IMPG4896	NW	6.0 ft diameter, 1.8 ft thick at the outfall pipe	Concrete anchor on top of Outfall 004.
Concrete 3	IMPG4897	NW	6.0 ft diameter, 1.8 ft thick at the outfall pipe	Concrete anchor on top of Outfall 004.
Outfall Old 1	IMPG4901–2 IMPG4908–11	SW N–NE	3.0 ft diameter 2.5 ft diameter	3.0 ft diameter concrete pipe (from the bank to Concrete 4). 2.5 ft diameter steel pipe (from Concrete 4 to the river).
Concrete 4	IMPG4904	SW	4.5 ft square, 1.4–2.0 ft thick at outfall pipe	Concrete anchor on top of Outfall Old 1.
Concrete 5	IMPG4905	SW	5.0 ft diameter, 1 ft thick at outfall pipe	Concrete anchor on top of Outfall Old 1.
Concrete 6	IMPG4912	SW	5.0 ft diameter, 1 ft thick at outfall pipe	Concrete anchor on top of Outfall Old 1.
Piling 2	IMPG4913	W	1.1 ft diameter, 7 ft tall	Highly weathered piling.
Piling 3	IMPG4914	W	1.0 ft diameter, 5 ft tall	Highly weathered piling.
Piling 4	IMPG4915	NW	1.3 ft diameter, 7 ft tall	Highly weathered piling.
Log 2	IMPG4916, 18	W	1.5 ft diameter, 12–15 ft long	Log.
Log 3	IMPG4919 IMPG4921	Down W	1 ft diameter, 15 ft long	Log with roots.
Concrete 7	IMPG4922	W–SW	6.3 ft diameter, 1.7 ft thick at outfall pipe	Concrete anchor on Outfall 003.
Piling 5	IMPG4923	NW	0.9 ft diameter	Piling on downstream side of Outfall 003. Piling is not weathered and appears to be treated.
Log 4	IMPG4924	E	1–2 ft diameter, 20 ft long. Root cluster is 3–4 ft in diameter.	Log with large stump/root cluster.
Outfall 003	IMPG4526	E	3.0 ft diameter pipe, unknown length	Fiberglass pipe (Outfall 003).
Concrete 8	IMPG4928	E	5.7 ft diameter, 1.75 ft thick at outfall pipe	Concrete anchor on Outfall 003.
Concrete 9	IMPG4929	E	6.0 ft diameter, 1.75 ft thick at outfall pipe	Concrete anchor on Outfall 003.
Piling 6	IMPG4930	W	1.0 ft diameter, 20 ft tall	Piling on downstream side of Outfall 003. Piling is not weathered and appears to be treated.
Log 5	IMPG4932	S	1.8 ft diameter, unknown length	Log in the sediment at a 10–15 degree angle from vertical, sticking out of the water 3.5 ft.
Log 6	IMPG4933	S	0.5 ft diameter, unknown length	Log in the sediment at a ~60 degree angle from vertical, sticking out of the water 0.5 ft.
Pipe 1	IMPG4937	S	4 inch diameter pipe, unknown length	Insulated pipe with 90 degree bend and sticking out of the water approximately 0.5 ft. No satellite coverage was available, so GPS coordinates were not collected.
Log 7	IMPG4939	S	0.7 ft diameter, greater than 25 ft long	Log wedged on catwalk of Dock 2. Log is at a 45 degree angle from vertical.
Piling 7	IMPG4940	NW	1.1 ft diameter, extends 8 ft above river level	Piling downstream of Outfall 002, weathered.
Piling 8	IMPG4941	SW	1.0 ft diameter, extends 20 ft above river level	Piling just downstream of Outfall 002. Wood is not weathered and appears to be treated.
Outfall 002	IMPG4942	S	3.0 ft diameter pipe, unknown length	Fiberglass pipe (Outfall 002).
Concrete 10	IMPG4943	S	5.5 ft diameter, 1.25 ft thick at outfall pipe	Concrete anchor on Outfall 002.
Piling 9	IMPG4944	S	1.25 ft diameter at base, extends 20 ft above river level	Piling just upstream of Outfall 002. Highly weathered.
Piling 10	IMPG4945	SW	1.1 ft diameter, 3.9 ft above sediment/riprap	Weathered piling.
Piling 11	IMPG4946	S–SE	1.2 ft diameter, extends 10 ft above river level	Highly weathered piling.
Piling 12	IMPG4947	S–SE	1.0 ft diameter at base, extends 7.3 ft above	Highly weathered piling.
Piling 13	IMPG4948	S–SE	1.0 ft diameter, extends 10.5 ft above river level	Highly weathered piling, laying at a 60 degree angle from vertical.
Piling 14	IMPG4949	W	1.1 ft diameter, extends 7.3 ft above river level	Highly weathered piling.
Piling 15	IMPG4950	W	1.0 ft diameter, extends 4.3 ft above river level	Highly weathered piling.
Piling 16	IMPG4951	W	1.1 ft diameter, extends 7.6 ft above river level	Highly weathered piling.
Piling 17	IMPG4952	W	0.8 ft diameter, extends 4.7 feet above river	Highly weathered piling.
Piling 18	IMPG4954	E	1.0 ft diameter, extends 25 ft above river level	Piling adjacent to downstream side of Dock 2. No satellite coverage was available, so GPS coordinates were not collected.
Concrete 11	IMPG4958	NE	5.9 ft diameter, 1.7 ft thick at outfall pipe	Concrete anchor on top of Outfall 004.
Concrete 12	IMPG4963	N–NW	3.5 ft x 4.0 ft x 5.5 ft	Large piece of concrete with steel plate attached to it.

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Outfall Old 2	IMPG4965	S–SW	2.25 ft diameter steel pipe, unknown length	Inactive outfall immediately downstream of Dock 1. The pipe extended approximately 10 ft into the river from where the GPS line stopped (water was too deep to track it further).
Concrete 13	IMPG4968	S–SW	7 ft diameter, 1 ft thick at outfall pipe	Concrete anchor on top of Outfall Old 2.
Concrete 14	IMPG4969	S–SW	5.6 ft long and 4.0 ft wide	Concrete anchor on top of Outfall Old 2. Concrete is in two pieces (on either side of pipe), connected by two cables on top of the outfall pipe.
Piling 19	IMPG4970	N	1 ft diameter, extends 5.7 ft above river level	Highly weathered piling.
Piling 20	IMPG4971	N	1.1 ft diameter, extends 4.0 ft above river level	Highly weathered piling.
Piling 21	IMPG4972	NW	1.0 ft diameter, extends 9.4 ft above river level	Highly weathered piling.
Piling 22	IMPG4973	NW	0.75 ft diameter, extends 5.7 ft above river level	Highly weathered piling.
Piling 23	IMPG4975	Down	0.8 ft diameter, extends 1.9 ft above river level	Highly weathered piling.
Piling 24	IMPG4976	N	0.85 ft diameter, extends 14 ft above river level	Highly weathered piling.
Piling 25	IMPG4977	N	0.7 ft diameter, extends 7.2 ft above river level	Highly weathered piling.
Piling 26	IMPG4978	N	0.7 ft diameter, extends 11.2 ft above river level	Highly weathered piling.
Piling 27	IMPG4979	N	0.7 ft diameter, extends 11.0 ft above river level	Highly weathered piling.
Piling 28	IMPG4980	NE	0.9 ft diameter, extends approximately 16 ft above river level	Highly weathered piling.
Piling 29	IMPG4981	SW	0.75 ft diameter, extends 7.3 ft above river level	Highly weathered piling.
Piling 30	IMPG4982	SW	0.8 ft diameter, extends approximately 25 ft above river level	Highly weathered piling.
Piling 31	IMPG4983	SW	0.8 ft diameter, extends 12.4 ft above river level	Highly weathered piling.
Piling 32	IMPG4984	SW	0.65 ft diameter, extends 7.5 ft above river level	Highly weathered piling.
Outfall Old 2 End	IMPG4986	down	2.25 ft diameter steel pipe	Terminus of Outfall Old 2 pipe.
Log 8	IMPG4994	NE	1.3–2.2 ft diameter, 29 ft long	Log. No satellite coverage was available, so GPS coordinates were not collected.
Concrete 15	IMPG4998	SE	6.8 ft x 5.0 ft (oval), 1.3 ft above top of pipe, 2.7 ft thick at side of pipe	Concrete anchor on top of Outfall 001.
Concrete 16	IMPG4999	SE	Same as Concrete 15	Concrete anchor on top of Outfall 001.
Concrete 17	IMPG5000	SE	Same as Concrete 15	Concrete anchor on top of Outfall 001.
Outfall 001	IMPG5002	NW	3.0 ft diameter pipe, unknown length	Fiberglass pipe (Outfall 001).
Concrete 18	IMPG5004	SE	5 ft wide, 10 ft long, 2.4 ft thick at edge of pipe, 0.5 ft on top of pipe	Concrete block on top of outfall 001. The concrete block has two 1.5 inch diameter pipes sticking up at 0.7 and 0.8 ft from the concrete.
Concrete 19	IMPG5005	SE	Same as Concrete 15	Concrete anchor on top of Outfall 001.
Concrete 20	IMPG5006	SE	3.5 ft x 3.5 ft x 3.5 ft	Concrete block with 4 inch diameter steel pipe in one end of the block.
Concrete 21	IMPG5007	SE	2 ft x 4 ft x 2.8 ft base with concrete post 1 ft x 1 ft x 2 ft	Concrete support footing with rebar and post.
Concrete 22	IMPG5008	SE	4.5 x 1.5 ft x 2.1 ft base with concrete post 1 ft x 1 ft x 2 ft	Concrete support footing with rebar and post.
Concrete 23	IMPG5009	SE	5 ft x 2.5 ft x 2.5 ft box with 6 inch thick wall	Concrete box (hollow with 6 inch thick wall). Some rebar observed.
Concrete 24	IMPG5010	E–SE	4 ft x 2 ft x 1 ft wall support post with 5 ft x 1 ft x 3.2 ft footing	Concrete support footing with rebar and post.
Concrete 25	IMPG5011	E	3 ft x 2.3 ft x 1.2 ft	Concrete with 8 inch diameter steel pipe through it.
Concrete 26	IMPG5012	NE	4 ft x 2.6 ft x 1.5 ft base with concrete post 1 ft x 1 ft x 2 ft	Concrete support footing with rebar and post.
Concrete 27	IMPG5013	NE	6 ft x 4 ft x 1.5 ft thick	Concrete block with 24 inch diameter pipe insert on the bottom of the block. There is a 5 inch diameter schedule 80 steel pipe on the top of the block perpendicular to the 24 inch diameter pipe.
Concrete 28	IMPG5015	N	4 ft x 4 ft x 1 ft thick	Concrete block with rebar.
Dolphin 1	IMPG5019	NW	5 ft x 5 ft dolphin with (9) 1.0 ft diameter piles extending approximately 23 ft above river level	Dolphin consisting of 9 pilings bound together with 3/4 inch steel cable in two places. 1.0 ft x 0.7 ft cross–beams are present just above the lower cables. The pilings appear to be treated and are not weathered. GPS coordinates collected 5.0 ft due east of the dolphin (no satellite coverage was available at the dolphin).

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Dolphin 2	IMPG5020 IMPG5021–22 IMPG5034–5035	N–NE NW NE	8 ft x 8 ft dolphin with (16) 1.0 ft diameter piles extending approximately 25–30 ft above river level.	Dolphin consisting of 16 pilings bound with approximately 3/4 inch cable at the top and 1.2 ft x 1.2 ft highly weathered cross–beams 8.2 ft above the river level. Three pilings on east side of the dolphin are broken and hanging by the cable at the top of the dolphin. GPS coordinates were collected on the SW corner of the dolphin. Piles are treated and 13 of 16 are not weathered.
Piling 33	IMPG5023	NW	0.85 ft diameter, extends 4.3 ft above river level	Highly weathered piling.
Piling 34	IMPG5024	NE	1.0 ft diameter, extends 6.3 ft above river level	Highly weathered piling.
Piling 35	IMPG5025	NW	1.0 ft diameter, extends 4.6 ft above river level	Highly weathered piling.
Piling 36	IMPG5026	NW	1.0 ft diameter, extends 6.3 ft above river level	Highly weathered piling.
Piling 37	IMPG5027	S	1.0 ft diameter, extends 5.6 ft above river level	Highly weathered piling.
I–Beam 1	IMPG5028	NW	Two 0.9 ft x 1.0 ft steel I–beams extending 7.2 ft above mudline	Two steel I–beams on downstream side of Outfall 001. One I–beam is vertical and the other is at a 25–30 degree angle from vertical.
Piling 38	IMPG5029	NW	1.0 ft diameter, extending approximately 20 ft above river level	Piling on downstream side of Outfall 001. Located approximately 2.3 ft SE of "I–Beam 1". Piling is treated and is not weathered.
I–Beam 2	IMPG5030	SW	Two 0.9 ft x 1.0 ft steel I–beams, extending 3.4 ft above river level	Two steel I–beams on downstream side of Outfall 001. One I–beam is vertical and the other is at 25–30 degree angle from vertical.
Piling 39	IMPG5031	SW	1.0 ft diameter, extending approximately 20 ft above river level	Piling on downstream side of Outfall 001. Located 2.5 ft SE of "I–Beam 2". Piling is treated and is not weathered.
Piling 40	IMPG5032	NW	1.0 ft diameter, extending approximately 20 ft above river level	Piling on upstream (~3 ft out of alignment of pilings 38 and 39, approximately the diameter of the outfall pipe) side of Outfall 001. Piling is treated and is not weathered.
I–Beam 3	IMPG5033	SE	Two 0.9 x 1.0 ft steel I–beams, extending 7.0 ft from mudline, 4.8 ft wide at base	Two steel I–beams on downstream side of Outfall 001. One is vertical and the other is at a 25–30 degree angle from vertical.
Dolphin 3	IMPG5036–38 IMPG5040	NW NW	5 pilings, 1.0 ft diameter. Middle piling 5.0 ft above water, 3 pilings 14.2 ft above water, one piling sawed off below river level.	Dolphin consisting of 5 highly weathered pilings bound together with 1.25 inch diameter steel cable approximately 3 ft above river level and 0.5 or 0.75 inch steel cable near the top of the dolphin.
Piling 41	IMPG5042	NE	1.0 ft diameter, top of piling is at river level	Highly weathered piling.
Piling 42	IMPG5043	SE	1.3 ft diameter, extending 9.8 ft above river level	Highly weathered piling.
Piling 43	IMPG5044	SW	1.0 ft diameter, extending 5.2 ft above river level	Highly weathered piling.
Piling 44	IMPG5045	W	1.0 ft diameter, extending 8.1 ft above river level	Highly weathered piling.
Piling 45	IMPG5046	W	1.0 ft diameter, extending 5.7 ft above river level	Highly weathered piling.
Piling 46	IMPG5047	W–SW	1.0 ft diameter, extending 6.2 ft above river level	Highly weathered piling.
Piling 47	IMPG5048	W–SW	1.0 ft diameter, extending 6.2 ft above river level	Highly weathered piling.
Piling 48	IMPG5049	NE	1.0 ft diameter, extending 4.3 ft above river level	Highly weathered piling.
Piling 49	IMPG5050	W	1.0 ft diameter, extending 3.9 ft above river level	Highly weathered piling.
Piling 50	IMPG5051	E	1.0 ft diameter, extending 7.0 ft above river level	Highly weathered piling.
Piling 51	IMPG5052	N–NE	1.0 ft diameter, extending 7.9 ft above river level	Highly weathered piling.
Piling 52	IMPG5053	N–NW	1.0 ft diameter, extending 2.8 ft above river level	Highly weathered piling.
Piling 53	IMPG5054	N	1.0 ft diameter, extending 6.4 ft above river level	Highly weathered piling.
Piling 54	IMPG5055	SE	1.0 ft diameter, extending 2.7 ft above river level	Highly weathered piling.
Piling 55	IMPG5056	NE	1.0 ft diameter, extending 7.2 ft above river level	Highly weathered piling.
Piling 56	IMPG5057	S	1.2 ft diameter, extending 2.8 ft above river level	Highly weathered piling.
Piling 57	IMPG5058	N	1.0 ft diameter, extending 2.2 ft above river level	Highly weathered piling.
Piling 58	IMPG5059	N	1.0 ft diameter, extending 4.5 ft above river level	Highly weathered piling.
Piling 59	IMPG5060	S	1.0 ft diameter, extending 2.0 ft above river level	Highly weathered piling.
Piling 60	IMPG5061	S	1.0 ft diameter, extending 2.8 ft above river level	Highly weathered piling.
Piling 61	IMPG5062	N	1.0 ft diameter, extending 2.9 ft above river level	Highly weathered piling.
Piling 62	IMPG5063	N	1.0 ft diameter, extending 6.1 ft above river level	Highly weathered piling.

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Piling 63	IMPG5064	N	1.75 ft diameter, extending 7.8 ft above river level	Highly weathered piling.
Piling 64	IMPG5065	N	1.0 ft diameter, extending 2.2 ft above river level	Highly weathered piling.
Piling 65	IMPG5066	SW	1.0 ft diameter, extending 5.4 ft above river level	Highly weathered piling.
Piling 66	IMPG5067	SW	1.0 ft diameter, extending 2.1 ft above river level	Highly weathered piling.
Piling 67	IMPG5068	N	1.0 ft diameter, extending 5.5 ft above river level	Highly weathered piling.
Piling 68	IMPG5069	SW	0.9 ft diameter, extending 2.1 ft above river level	Highly weathered piling.
Piling 69	IMPG5070	SW	0.7 ft diameter, extending 6.0 ft above river level	Highly weathered piling.
Piling 70	IMPG5071	NE	1.0 ft diameter, extending 3.2 ft above river level	Highly weathered piling.
Piling 71	IMPG5072	E	1.0 ft diameter, extending 1.9 ft above river level	Highly weathered piling.
Piling 72	IMPG5073	E	1.0 ft diameter, extending 2.9 ft above river level	Highly weathered piling.
Piling 73	IMPG5074	W	1.0 ft diameter, extending 2.8 ft above river level	Highly weathered piling.
Piling 74	IMPG5075	SW	1.0 ft diameter, extending 2.8 ft above river level	Highly weathered piling.
Piling 75	IMPG5076	E	1.0 ft diameter, extending 10.8 ft above river	Highly weathered piling.
Piling 76	IMPG5077	E	1.0 ft diameter, extending 2.7 ft above river level	Highly weathered piling.
Piling 77	IMPG5078	NW	1.0 ft diameter, extending 4.2 ft above river level	Highly weathered piling.
Piling 78	IMPG5079	SW	1.0 ft diameter, extending 4.4 ft above river level	Highly weathered piling.
Piling 79	IMPG5081	NE	0.9 ft diameter, extending 9.5 ft above mudline	Highly weathered piling.
Piling 80	IMPG5082	NE	1.0 ft diameter, extending 6.0 ft above mudline	Highly weathered piling.
Piling 81	IMPG5083	NE	1.0 ft diameter, extending 3.5 ft above mudline	Highly weathered piling.
Log 10	IMPG5080	E	0.65 ft diameter, greater than 4.3 ft long	Log buried in the sediment.
Piling 82	IMPG5084	NE	1.3 ft diameter, extending 7.1 ft above mudline	Highly weathered piling.
Piling 83	IMPG5085	NE	1.1 ft diameter, extending 6.8 ft above mudline	Highly weathered piling.
Piling 84	IMPG5086	NE	1.1 ft diameter, extending 2.1 ft above mudline	Highly weathered piling.
Piling 85	IMPG5077	NE	1.1 ft diameter, extending 5.0 ft above mudline	Highly weathered piling.
Piling 86	IMPG5088	NE	1.1 ft diameter, extending 5.1 ft above mudline	Highly weathered piling.
Piling 87	IMPG5089	NE	1.1 ft diameter, extending 2.4 ft above mudline	Highly weathered piling.
Piling 88	IMPG5090	NE	1.1 ft diameter, extending 6.2 ft above mudline	Highly weathered piling.
Piling 89	IMPG5091	NE	1.0 ft diameter, extending 1.0 ft above mudline	Highly weathered piling.
Piling 90	IMPG5092	NE	0.9 ft diameter, extending 1.6 ft above mudline	Highly weathered piling.
Piling 91	IMPG5093	NE	1.0 ft diameter, extending 1.9 ft above mudline	Highly weathered piling.
Piling 92	IMPG5094	NE	0.9 ft diameter, extending 2.1 ft above mudline	Highly weathered piling.
Piling 93	IMPG5095	NE	0.9 ft diameter, extending 0.8 ft above mudline	Highly weathered piling.
Log 11	IMPG5096	NE	0.8 to 1.7 ft diameter, 34 ft exposed length	Log buried in sediment.
Log 12	IMPG5097	NE	0.5 ft diameter, 5.8 ft exposed length	Log buried in sediment.
Log 13	IMPG5098	NE	1.0 ft diameter, 4.4 ft exposed length	Log buried in sediment.
Log 14	IMPG5099	NE	1.4 ft diameter, 12 ft exposed length	Log buried in riverbank sediments.
Wood Beam 1	IMPG5100	NE	3.5 ft wide at base, 1.3 ft wide at top, 4.4 ft exposed length	Wood beam buried in riverbank sediments.
Debris Area 1	IMPG5101	NE	See description	Wood beam (7.0 ft long x 0.25 ft thick x 0.6 ft wide), metal debris (including shafts and possible transmission or gear assembly).
Log 1	IMPG5102	SE	3.1 ft diameter x 24.8 ft long	Log with inside area rotted away.
Outfall Old 1 Terminus	IMPG5103	NE	2.5 ft diameter steel pipe	Terminus of Outfall Old 1. Steel pipe is rusted and contains large holes.
Debris Area 2	IMPG5105–10	NE	See description	Concrete (0.9 x 0.8 x 0.7 ft), rubber debris (6.1 ft long x 0.6 ft wide), rubber hoses and pipes (15 ft long x 0.4 ft diameter), rusted metal debris, pieces of graphite anodes up to 1 ft long, brick debris, concrete pipe (0.5 ft diameter x 0.9 ft long), rocks ranging from gravel size to 0.4 ft diameter. Debris is scattered in and on the sandy beach.
Debris Area 3	IMPG5111–15	NE	See description	Steep pipe segments and pieces ranging from 0.6 ft to 2.8 ft diameter and to 8 ft long, concrete from 0.5 ft x 0.5 ft x 0.5 ft to 2.7 ft x 1.3 ft x 1.0 ft, 0.75 inch diameter steel cable, piece of concrete pipe, brick debris, rock ranging inside from gravel to 1.7 ft diameter, ceramic debris.
Pipe 1	IMPG5116	NE	1.7 ft wide, 3.0 ft long	Pipe fragment—fiberglass, broken.

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Pipe 2	IMPG5117	NE	2.6 ft wide, 4.5 ft long	Pipe fragment—fiberglass, broken.
Pipe 3	IMPG5118	NE	1.0 ft diameter, 8.0 ft long	Pipe segment—steel, rusted.
Log 15	IMPG5119	E	1.9 ft diameter, 7.5 ft long (exposed)	Log buried in the sediment.
Debris Area 4	IMPG5122–24 IMPG5125 IMPG5126–7 IMPG5128 IMPG5129–31	S–SW W S SW W	See description	– Rock (size range 0.1 ft diameter to 3.0 ft x 2.5 ft x 0.6 ft) black, dense. The Rock mass is centered on Outfall 004 and is partially cemented. – Basalt rocks (size range 0.1 ft diameter to 1.0 x 1.5 x 0.7 ft) – Concrete debris (size range 0.5 ft diameter to 4 ft x 4 ft x 4 ft) – Metal debris (small amount of metal bar and pipe) – Trace of ceramic debris
Debris Area 5	IMPG5132–35 (photos taken from north to south end of debris area)	SW	See description	– Concrete and logs make up the bulk of the debris in this area. – Logs (up to 1.5 ft diameter x 30 ft long) – Root cluster (stumps up to 3 ft diameter x 5.5 ft long) – Concrete debris (0.2 ft diameter to 3 ft x 3 ft x 1.5 ft) – Metal debris (small amount, includes a water heater) – Trace of brick and ceramic
Debris Area 6	IMPG5136–47 (photos taken from south to north end of debris area)	NW	See description	– Chlorine cell heads—concrete with rebar/metal bands (7 ft x 3.5 ft x 2 ft) – Rounded to subrounded rock (fine gravel to 1.5 ft diameter) – Concrete debris (0.2 ft diameter to 4.5 ft x 6.5 ft x 0.5 ft), some concrete with rebar – Few logs (up to 0.9 ft diameter x 16.5 ft long) – Asphalt debris
Outfall 004 Flume	IMPG5149	E	22 ft x 10.5 ft	Parshall flume on Outfall 004
Debris Area 7	IMPG5150–55 (photos taken from north to south end of debris area)	SW	See description	– Chlorine cell heads (7 ft x 3.5 ft x 1.5 ft)—concrete with rebar/steel bands – Concrete debris (2.5 ft x 1.5 x 1.0 ft to 6.5 ft diameter) – Logs (up to 1.5 ft diameter x 15 ft long) – Small amount of metal debris (steel bars)
Debris Area 8	IMPG5156–63 (photos taken from north to south end of debris area)	SW	See description	– Logs up to 2 ft diameter x 25 ft long (drift wood) – Branches up to 0.4 ft diameter x 20 ft long (drift wood) – Piece of dimensional wood 1.5 ft x 0.5 ft x 14 ft long
Debris Area 9	IMPG5165–71 (photos taken from north to south end of debris area)	SW	See description	– Logs up to 3 ft diameter x 30 ft long (drift wood) – Branches up to 0.5 ft diameter x 15 ft long (drift wood)
Outfall 003 Flume	IMPG5173	NE	22.5 ft x 10.6 ft	Parshall flume on Outfall 003
Debris Area 10	IMPG5174–79 (photos taken from north to south end of debris area)	SW	See description	– Rock up to 2.5 ft x 1 ft x 1 ft, some pieces appear to be cemented together – Treated pilings (2 connected together) 1.1 ft diameter x 14 ft long – Logs up to 1 ft diameter x 16 ft long (drift wood) – Branches up to 0.5 ft diameter x 15 ft long (drift wood) – Treated wood 0.4 ft x 0.4 ft x 4 ft long (1 piece)
Debris Area 11	IMPG5180 IMPG5181–88 (photos taken from north to south end of debris area)	W SW	See description	– Logs up to 4 ft diameter x 35 ft long (drift wood) – Branches up to 0.5 ft diameter x 15 ft long (drift wood) – Wood beam 0.9 ft x 0.9 ft x 6 ft long – Rocks up to 1.5 ft diameter – Concrete up to 2 ft x 2 ft x 1 ft – 0.75 inch steel cable (1 coil approximately 50 ft long)
Debris Area 12	IMPG5189–5197 (photos taken from north to south end of debris area)	SW	See description	– Small amounts of concrete, mostly in southern portion of debris area, up to 1.5 ft x 1.5 ft x 0.5 ft with rebar (average concrete size approximately 0.5 ft diameter) – Rocks from gravel size up to 1.2 ft x 1.0 ft x 0.5 ft (average rock size 0.25 ft diameter) – Some graphite anodes 0.1 ft x 0.1 ft x 1.1 ft long – Few fiberglass panels in southern portion of area up to 3.2 ft x 2.3 ft x 0.75 inches thick – Trace of brick debris – Few rebar reinforced concrete ring segments approximately 1.9 ft diameter x 0.2 ft x 0.3 ft thick

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Debris Area 13	IMPG5198–5204 (photos taken walking around debris area starting at the north end)	SW	See description	– Rebar reinforced concrete ranging from 0.4 ft diameter to 6 ft x 2 ft x 2 ft (average size 0.8 ft diameter) – One chlorine cell head (concrete with rebar, 7 ft x 3.5 ft x 2 ft) – Angular rock ranging from 0.1 ft diameter to 1.8 ft diameter (average 0.4 ft diameter) – Few rebar reinforced concrete ring segments approximately 1.9 ft diameter x 0.2 ft x 0.3 ft thick – Some logs up to 1.8 ft diameter x 30 ft long – Some small branches and pieces of dimensional wood – Pipe in northern portion of area 0.8 ft diameter x 12 ft long – Some tan bricks – Some asphalt debris in northern portion of area up to 1 ft x 0.7 ft x 0.25 ft – Few fiberglass panels
Outfall 002 Flume	IMPG5206	NE	22.4 ft X 10.3 ft	Parshall Flume on Outfall 002
Debris Area 14	IMPG5208–09 IMPG5210–13 IMPG5214–15 (photos taken walking around the debris area from north to south end of area)	SW S W	See description	– Black rock covers most of the debris area, some rebar sticking out of the Rock – Concrete ranging from 0.4 ft diameter to 6.5 ft x 6.5 ft x 1 ft (average 0.6 ft diameter) – Angular rocks ranging from 0.3 ft diameter to 2 ft x 2 ft x 1 ft (average 0.5 ft diameter) – Few logs up to 1.5 ft diameter x 10 ft long – Few pieces of dimensional wood 1 ft x 0.5 ft x 10 ft long
Debris Area 15	IMPG5216 IMPG5217 IMPG5218–20 IMPG5221 IMPG5222–23	W SW S SW W	See description	– 16 chlorine cell heads (7 ft x 3.5 ft x 2 ft) – Angular rock 0.1 ft diameter to 3 ft diameter (average 0.5 ft diameter) – Concrete (some pieces with rebar) ranging from 0.3 ft diameter to 4 ft x 2 ft x 1 ft (average 0.7 ft diameter) – Branches averaging 0.5 ft diameter x 5 ft long – Few crescent–shaped concrete segments (1.9 ft x 0.2 ft x 0.3 ft thick) – Trace of metal debris – Trace of rubber tubing – Few fiberglass panels – Trace of tan brick
Log 16	IMPG5224	NW	2.5 ft to 4 ft diameter x 90 ft long	Large log, rotted at 4 ft diameter end.
Pipe 4	IMPG5226	E	2 ft diameter x 6 ft long exposed	Steel pipe buried in the sediment.
Debris Area 16	IMPG5228–29 IMPG5230 IMPG5231–3	E S SE	0.8 x 0.4 x 0.2 ft	Tan bricks.
Debris Area 17	IMPG5234–42	SW	See description	– Logs ranging from 0.2 ft diameter x 2 ft long to 2 ft diameter x 30 ft long (average 0.5 ft diameter 4 ft long) – Dimensional wood ranging from 0.1 ft x 0.3 ft x 0.4 ft to 0.3 ft x 1 ft x 7 ft (average 0.3 ft x 0.5 ft x 3 ft) – Asphalt debris ranging from 0.2 ft diameter to 2 ft x 1 ft x 0.5 ft (average 1 ft x 1 ft x 0.5 ft) – Trace of metal and ceramic debris
Concrete 29	IMPG5244	W–SW	5 ft x 5 ft x 18 ft tall	Large concrete structure. The top of the structure was not visible, so it is not known if it is hollow or solid. Note: GPS coordinates collected 5 ft east of the eastern side.
Outfall 001 Flume	IMPG5245	E	21 ft x 11.5 ft	Outfall 001 Parshall Flume.
Concrete 30	IMPG5247	N	10 ft x 9 ft x 2 ft thick	Concrete slab north of Outfall 002 Flume.
Concrete 31	IMPG5248	SE	6.7 ft x 5.5 ft (oval) x 1.2 ft thick on top of outfall pipe	Concrete anchor on top of Outfall 001. There was no satellite coverage, so GPS coordinates were not collected.
Debris Area 18	IMPG5249–53 IMPG5254–55	SE E	See description	– Rock, generally cemented; size ranges from 0.3 ft diameter to 2 ft x 2 ft x 1 ft (average 0.5 ft diameter) – Logs ranging from 0.5 ft diameter x 5 ft long to 1 ft diameter x 20 ft long – Branches 0.1 ft diameter x 1 ft long to 0.4 ft diameter x 5 ft long – Trace of rebar
Log 17	IMPG5256	S	1.0 ft to 3.0 ft diameter x 72 ft long	Large log beneath and north of Dock 1.
Debris Area 19	IMPG5258–66 IMPG5267–68 IMPG5269 IMPG5270–71	SE E NE E	See description	– All wood debris in this area, except one piece of 0.75 inch diameter cable of unknown length (buried in sediment) – Possible pressure treated utility pole 1.2 ft diameter x 25.5 ft long – Dimensional wood ranging from 0.2 ft x 0.5 ft x 8 ft long to 1.1 ft x 0.3 ft x 19.6 ft long – Logs up to 2.1 ft diameter 15.5 ft long with 6 ft diameter root cluster – Numerous branches less than 0.2 ft diameter x 5–10 ft long – Numerous logs 0.5 ft diameter x 10–15 ft long

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Debris Area 20	IMPG5273–75 IMPG5276–77 IMPG5278	S E–NE NE	See description	– Rocks (angular) ranging from 0.1 ft diameter to 0.5 ft x 0.7 ft x 1.0 ft (average 0.3 ft diameter) – Asphalt 0.2 ft diameter to 0.5 ft x 1 ft x 2 ft (average 0.3 ft diameter) – Branches 0.1 ft diameter x 0.5 ft long to 0.3 ft diameter x 6 ft long (average size 0.1 ft diameter x 1 ft long) – Trace of brick, ceramic, graphite anodes, metal pipe, fiberglass panel piece, rebar – Concrete 0.3 ft diameter to 2 ft x 2.5 ft x 1 ft (average 0.8 ft diameter)
Debris Area 21	IMPG5280 IMPG5281 IMPG5282–3 IMPG5284–5	NE SE S SE	0.1 to 0.8 ft diameter (average size 0.2 ft diameter)	Cemented brown to black rock.
Debris Area 22	IMPG5286–5301 IMPG5302–5319 (photos taken while walking around the debris area starting at the river's edge at the Salt Dock)	S–SW W	See description	Utility poles (1 ft diameter up to 41 ft long), concrete (up to 21 ft long), logs, pilings, steel cable (1 inch diameter, approximately 100 ft long).
Utility Pole 1	IMPG5320	N	1.0 ft diameter x 35 ft long	Pressure–treated wood utility pole.
Concrete 32	IMPG5321	NW	5.1 ft x 1.4 ft x 1.6 ft	Large piece of concrete.
Log 18	IMPG5322	N	0.9 ft x 17 ft long with 4–5 ft diameter root cluster	Tree with large root cluster.
Concrete 33	IMPG5323	NW	4.7 ft x 4.7 ft x 0.5 ft thick	Concrete slab.
Cable 1	IMPG5324	NE	1 inch diameter x approximately 100 ft long	Steel cable coiled in an 8–10 ft diameter area.
Concrete 34	IMPG5325	NW	8 ft x 2.5 ft x 0.5 ft thick (base) 8 ft x 0.8 ft x 0.5	L–shaped piece of concrete.
Concrete 35	IMPG5327	NW	1.8 ft x 3.4 ft x 2.1 ft with hollowed center 1 ft x 2.4 ft x 1.6 ft deep	Concrete with hollowed center.
Utility Pole 2	IMPG5328	NW	1.0 ft diameter x 41 ft long	Pressure treated wood utility pole.
Concrete 36	IMPG5329	NW	Post: 5.8 ft long x 1.5 ft x 1.7 ft Base: 4.3 ft x 4.3 ft x 1.8 ft thick	Concrete footing and post. Some wood present in the footing.
Concrete 37	IMPG5330	NW	5 ft x 3.3 ft x 2.4 ft	Concrete with rebar.
Concrete 38	IMPG5331	W	3.3 ft wide x 0.9 ft thick x 21 ft long (base), 1 ft tall x 1 ft wide x 21 ft long (side)	L–shaped piece of concrete. Abundant rebar in concrete.
Concrete 39	IMPG5332	W	Base: 11.7 ft long x 4 ft x 0.9 ft Top: 10 ft long x 1.1 ft x 1.8 ft	Concrete foundation footing.
Concrete 40	IMPG5333	NW	4.5 ft x 4 ft x 4 ft	Concrete structure with (2) 0.65 ft diameter steel pipes going through the structure.
Concrete 41	IMPG5334	NW	6 ft x 2.9 ft x 2.2 ft with 0.7 ft diameter x 2.7 ft tall steel pipe	Concrete with 0.7 ft diameter x 2.7 ft long steel pipe sticking up vertically.
Log 19	IMPG5335	NW	1 ft diameter x 34 ft long	Log.
Concrete 42	IMPG5336	NW	Base: 4 ft x 4 ft x 1.1 ft Post: 1 ft x 1 ft x 3.2 ft	Concrete footing and post.
Piling 94	IMPG5337	W–NW	1 ft diameter, 11 ft tall	Highly weathered piling.
Piling 95	IMPG5338	W–SW	0.9 ft diameter, 11 ft tall	Highly weathered piling.
Piling 96	IMPG5339	W–NW	1.1 ft diameter, 9 ft tall	Highly weathered piling.
Piling 97	IMPG5340	W–NW	1.1 ft diameter, 11.5 ft tall	Highly weathered piling.
Piling 98	IMPG5341	NW	0.9 ft diameter, 5 ft tall	Highly weathered piling.
Concrete 43	IMPG5342	W	6.7 ft x 6.7 ft x 0.7 ft thick	Concrete slab with steel frame around the edges.
Concrete 44	IMPG5343	W	8 ft x 2.3 ft x 0.7 ft thick	Concrete slab with steel frame around the edges.
Concrete 45	IMPG5344	W	6 ft x 6 ft x 0.3 ft thick	Concrete slab with rebar.
Concrete 46	IMPG5345	NW	8.2 ft long x 2.3 ft wide x 2.4 ft tall with slot 8 ft long x 1.2 ft wide x 1.5 ft deep	Concrete structure with a lengthwise slot.

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Stairs 1	IMPG5316	W	3.4 ft wide x 18.7 ft long	Wooden stair case. Wood appears to be treated.
Concrete 47	IMPG5347	W	4.4 ft x 5 ft x 0.7 ft thick	Concrete slab.
Concrete 48	IMPG5348	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 49	IMPG5349	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 50	IMPG5350	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 51	IMPG5351	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar. Basalt boulder (3.0 ft x 2.2 ft x 2.5 ft) on the up–slope side of the cell head.
Concrete 52	IMPG5352	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 53	IMPG5353	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 54	IMPG5355	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 55	IMPG5355	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 56	IMPG5356	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 57	IMPG5357	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 58	IMPG5358	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 59	IMPG5359	N	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 60	IMPG5360	E–SE	3.0 ft x 3.2 ft x 3.4 ft	Concrete debris.
Concrete 61	IMPG5361	NW	7.4 ft x 5.6 ft x 0.6 ft thick	Concrete slab with rebar.
Concrete 62	IMPG5362	S	5 ft x 5 ft x 0.6 ft thick	Concrete slab with rebar and some red bricks embedded in the concrete.
Concrete 63	IMPG5363	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 64	IMPG5364	NE	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 65	IMPG5365	N–NE	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 66	IMPG5366	SE	11 ft x 9 ft x 0.4 ft thick	Concrete slab.
Concrete 67	IMPG5367	NE	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 68	IMPG5368	NW	7 ft x 5.8 ft x 0.5 ft–1.0 ft thick	Concrete with rock, rebar, metal debris.
Concrete 69	IMPG5369	NE	6.4 ft x 6.4 ft x 0.3–1 ft thick	Concrete slab.
Stairs 2	IMPG5370	SW	3.2 ft wide x 13.0 ft long	Wooden stair case adjacent to Outfall 002. Wood appears to be pressure treated.
Log 20	IMPG5371	SW	1.8 ft diameter x 22 ft long. Root mass approximately 6 ft diameter.	Weathered log.
Concrete 70	IMPG5372	W	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 71	IMPG5373	W	7 ft x 3.4 ft x 1 ft thick	Concrete slab with rebar.
Log 21	IMPG5374	NW	0.7 ft – 2 ft diameter x 61 ft long. Root mass 4 ft diameter	Weathered log.
Pipe 5	IMPG5375	NW	0.9 ft diameter x 12 ft long	Steel pipe.
Concrete 72	IMPG5376	NE	6.3 ft long x 2 ft wide x 2 ft tall, 0.5 ft thick	L–shaped concrete structure with rebar.
Concrete 73	IMPG5377	SE	4.9 ft x 2.9 ft x 0.4 ft thick	Concrete slab with rebar.
Log 22	IMPG5378	SW	1.1 ft diameter x 25 ft long	Weathered log.
Log 23	IMPG5379	SW	1.5 ft diameter x 19 ft long	Weathered log.
Concrete 74	IMPG5380	NW	3.5 ft long x 2 ft wide x 1.2 ft thick. Each step 0.6 ft x 1 ft deep.	Concrete stairs.
Concrete 75	IMPG5382	NW	3.4 ft x 3.7 ft x 0.4–0.8 ft thick	Concrete slab.
Log 24	IMPG5384	SW	1.3 ft diameter x 50 ft long	Weathered log.
Log 25	IMPG5383	NW	2 ft diameter x 39 ft long	Weathered log.
Piling 99	IMPG5385	E	0.8 ft diameter x 0.5 ft tall	Highly weathered piling.
Post 1	IMPG5386	W	0.5 ft x 0.5 ft x 9.0 ft tall	Treated wooden post.
Stairs 3	IMPG5387	SW	2.9 ft wide x 19.2 ft long	Wooden stair case adjacent to Outfall 003. Most of the wood appears to be treated.
Log 26	IMPG5388	SW	2.3 ft diameter x 16 ft long	Weathered log.
Wood Beam 3	IMPG5389	NW	1.5 ft x 0.7 ft x 14 ft long	Weathered beam.

Table 3-11. Visual Surface Debris Survey Observations

Debris ID	Photo No.[a]	Direction	Debris Size	Debris Description
Log 27	IMPG5390	NW	2.6 ft diameter x 12.9 ft long	Weathered log.
Log 28	IMPG5391	SW	2.5 ft diameter x 24.3 ft long	Highly weathered log.
Log 29	IMPG5392	W–NW	1.5 ft diameter x 20 ft long	Weathered log.
Log 30	IMPG5393	W–NW	1.3 ft diameter x 31 ft long	Highly weathered log.
Log 31	IMPG5394	W–NW	1.3 ft diameter x 29 ft long	Highly weathered log.
Concrete 76	IMPG5395	W–NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Log 32	IMPG5396	W–NW	1.6 ft diameter x 50.5 ft long	Weathered log.
Log 33	IMPG5397	NW	1.4 ft diameter x 18.5 ft long	Weathered log.
Concrete 77	IMPG5398	NW	7 ft x 3.2 ft x 1.8 ft x 0.3 ft thick	Chlorine cell head—concrete with rebar.
Concrete 78	IMPG5399	S–SE	4.8 ft x 5.9 ft x 1.6 ft thick with a 2.4 ft diameter x 11 ft long pipe through the concrete	Concrete with thick fiberglass pipe through it.
Stairs 4	IMPG5400	NW	3.0 ft wide x 19.4 ft long	Wooden staircase adjacent to Outfall 004. Some of the wood is treated.
Stairs 5	IMPG5401	SE	3.4 ft wide x 20 ft long	Wooden staircase adjacent to Dock 1. Some wood is treated.

Notes

[a] Photographs can be found in Appendix H.

APPENDIX A

DOCUMENTS RECORDING AGREEMENTS BETWEEN LSS AND EPA

(SEPARATE FILE)

APPENDIX B

FIELDWORK PHOTOGRAPHS

Chemistry Borehole Photograph IMGP3076

Chemistry Borehole Photograph IMGP3077

Chemistry Borehole Photograph IMGP3554

Chemistry Borehole Photograph IMGP3558

Chemistry Borehole Photograph IMGP3561

Chemistry Borehole Photograph IMGP3607

Chemistry Borehole Photograph IMGP3735

Chemistry Borehole Photograph IMGP3736

Chemistry Borehole Photograph IMGP3737

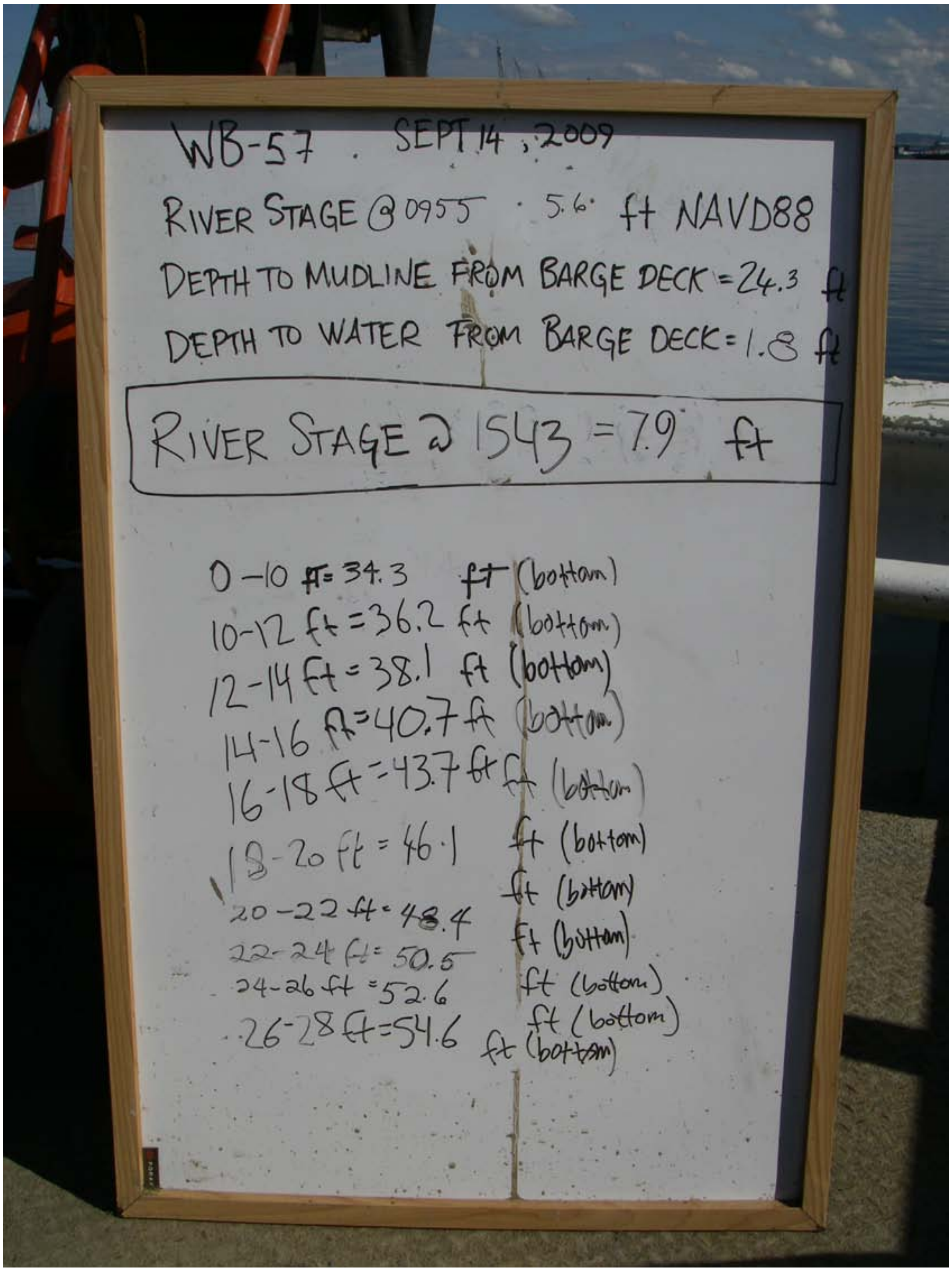
Chemistry Borehole Photograph IMGP3747

Chemistry Borehole Photograph IMGP3769

Chemistry Borehole Photograph IMGP3774

Chemistry Borehole Photograph IMGP4028

Chemistry Borehole Photograph IMGP4088



Chemistry Borehole Photograph IMGP4156

Chemistry Borehole Photograph IMGP4294

Chemistry Borehole Photograph IMGP4773

Chemistry Borehole Photograph IMGP4780

Chemistry Borehole Photograph IMGP4781

Chemistry Borehole Photograph IMGP4782

APPENDIX C

CHEMISTRY BOREHOLE AND GEOTECHNICAL EXPLORATION LOGS

CHEMISTRY BOREHOLE LOGS

integral consulting inc.

BORING NUMBER	WB-30
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		
ARK-WB-30-0-2	1430	90 (0–10)	1	NS			SW	Gravelly fine to medium SAND: v. dk. gray (10YR 3/1), 5-10% fine to 1/2" dia. gravel, no odor, no sheen. Gravel is angular to subrounded. 2-1/2" dia. piece of gravel at 1.3 ft bml.
							ML	Clayey SILT: v. dk. grayish-brown (10YR 3/2), 30% clay, no sheen, no odor.
ARK-WB-30-2-4	1440		0.5	NS	2		SP	Fine to medium SAND: v. dk. gray (10YR 3/1), few pieces of fine subrounded gravel, no sheen, no odor.
ARK-WB-30-4-6	1450		0.7	NS	4			As above with no gravel.
ARK-WB-30-6-8	1500		1.3	NS	6			As above.
								As above.
ARK-WB-30-8-10	1510		0.7	NS	8		ML	SILT: brown (10YR 4/3), micaceous, some orange mottling, slightly to moderately stiff, no sheen, no odor.
ARK-WB-30-10-12	0830	75 (10–12)	1	NS	10			As above with 15% clay, moderately stiff, decreased mica content.
ARK-WB-30-12-14	0845	90 (12–14)	0.5	NS	12			As above with 20-30% clay, slightly plastic.
ARK-WB-79-12-14	0855							
ARK-WB-30-14-16	0910	100 (14–18)	0.5	NS	14			As above with 10% clay, non-plastic, dark grayish brown (10YR 4/2).

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 17-Sep-09
End Time	1610 18-Sep-09

Sampling Equipment/Notes

3" dia. X12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–49.5); 4-7/8" dia. x 5 ft long solid core barrel (49.5–51.2 ft bml).

integral consulting inc.

BORING NUMBER	WB-30
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	
ARK-WB-30-16-18	0920	100	1.5	NS	16		As above with no clay, micaceous, mostly coarse silt.
ARK-WB-30-18-20	0930	90 (18–20)	1.8	NS	18		As above with 5-10% clay.
ARK-WB-30-20-22	0945	100 (20–22)	1.5	NS	20		As above with no clay, mostly coarse silt.
ARK-WB-30-20-24	1005	70 (22–24)	1.3	NS	22		As above with 20% clay, fine silt, moderately stiff.
ARK-WB-30-24-26	1020	95 (24–26)	1.0	NS	24		As above with no clay, mostly coarse silt.
							As above with 20% clay, fine silt, slightly stiff.
ARK-WB-30-26-28	1055	100 (26–28)	0.7	NS	26		As above with 5% clay.
ARK-WB-30-28-30	1110	100 (28–30)	3.8	NS	28		As above with no clay, mostly coarse silt, micaceous.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 17-Sep-09
End Time	1610 18-Sep-09

Sampling Equipment/Notes

3" dia. X12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–49.5); 4-7/8" dia. x 5 ft long solid core barrel (49.5–51.2 ft bml).

integral consulting inc.

BORING NUMBER	WB-30
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-30-30-32	1130	50 (30–32)	3.6	NS		ML	As above with 5% clay.
					32		
ARK-WB-30-32-34	1145	100 (32–34)	4.8	NS			As above with color very dark grayish brown (10YR 3/2), no clay, coarse silt.
					34		
ARK-WB-30-34-36	1210	100 (34–36)	0.9	NS			As above.
					36		
ARK-WB-30-36-38	1308	100 (36–38)	3.2	NS			As above.
					38		
ARK-WB-30-38-40	1325	70 (38–40)	1.0	NS			As above with fine silt, 10% clay, silt has a clumpy texture (clumps <1/4" diameter).
					40		
ARK-WB-30-40-42	1343	100 (40–42)	2.0	NS			As above without the clumpy texture.
					42		
ARK-WB-30-42-44	1405	75 (42–44)	0.6	NS			As above with no clay.
					44		
ARK-WB-30-44-46	1423	100 (44–46)	1.7	NS			As above with color very dark greenish gray (gley1 3/1).

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 17-Sep-09
End Time	1610 18-Sep-09

Sampling Equipment/Notes

3" diameter X12 ft. long alum. vibracore tube (0–10 ft bml); 4" diameter x 5 ft long split spoon (10–49.5); 4-7/8" diameter x 5 ft long solid core barrel (49.5–51.2 ft bml).

integral consulting inc.

BORING NUMBER	WB-30
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
							ML	As above.
					46			As above with coarse silt, micaceous.
ARK-WB-30-46-48	1500	85 (46–48)	1.0	NS				As above with color very dark grayish brown (10YR 3/2).
					48			As above.
ARK-WB-30-48-49.2	1520	80 (48–49.5)	0.8	NS				
							Gw	GRAVEL: very dark grayish brown (10YR 3/2), subrounded to rounded fine to 2" diameter gravel, no sheen, no odor. Silt (slough) was mixed in with gravel.
					50		Rx	BASALT: Orangish-black, poorly indurated, highly vesicular, no sheen, no odor. Basalt becomes less vesicular and more indurated with depth.
	1545	~80 (49.5–51.2)	--	NS				
						--		Borehole terminated at 51.2 ft bml.
					52			
					54			
					56			
					58			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 17-Sep-09
End Time	1610 18-Sep-09

Sampling Equipment/Notes

3" dia. X12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–49.5); 4-7/8" dia. x 5 ft long solid core barrel (49.5–51.2 ft bml).

integral consulting inc.

BORING NUMBER	WB-31
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-31-0-2	1000	90 (0–10)	0.3	NS		SM	Silty fine SAND: v. dk. grayish brown (10YR 3/2), 35% silt, no sheen, slight chemical odor.
						SP	Fine SAND: v. dk. grayish brown (10YR 3/2), trace of silt, slight chemical odor, no sheen.
ARK-WB-31-2-4	1005		0.7	LS	2	ML	Clayey SILT: v. dk. grayish brown (10YR 3/2), soft, 25% clay, v. lt. discontinuous sheen, slight chemical odor.
ARK-WB-31-4-6	1010		1.0	NS	4	SP	Fine SAND: v. dk. grayish brown (10YR 3/2), trace of silt, no sheen, chemical odor.
							Clayey SILT lamination ~0.05 thick at 5.2 ft bml.
ARK-WB-31-6-8	1015		1.0	NS	6		As above with slight chemical odor.
							As above with 20% angular to subrounded gravel 7.5-7.8 ft bml
							Removed 1.5" dia. subrounded piece of gravel at 7.8 ft bml.
ARK-WB-31-8-10	1020		1.2	NS	8		As above with fine-medium sand, slight chemical odor, no sheen.
ARK-WB-31-10-12	1120	75 (10–12)	2.0	NS	10		As above with no silt.
						ML	Clayey SILT: dark grayish brown (10YR 4/2), 25% clay, slightly stiff, no sheen, slight chemical odor.
ARK-WB-31-12-14	1130	100 (12–14)	1.6	NS	12		As above with color brown (10YR 4/3), 10-20% clay, no odor.
ARK-WB-31-14-16	1145	100 (14–16)	3.5	NS	14		As above with color dark grayish brown (10YR 4/2).
							As above with mostly coarse silt, no clay, micaceous.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0945 21-Sep-09
End Time	1602 21-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 10 ft bml.
Borehole terminated at 30 ft bml due to misaligned casing.

WB-31b was sampled ~5ft SE of WB-31 beginning at an elevation equivalent to 30 ft bml at WB-31.

3" dia.x12 ft long alum. vibracore tube (0-10 ft bml); 4" dia. x 5 ft long split spoon (10-30' bml).

integral consulting inc.

BORING NUMBER	WB-31
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above, no odor, no sheen.
ARK-WB-31-16-18	1200	85 (16–18)	1.8	NS	16		As above with 10-20% clay from 16.5 to 17.0 ft bml. As above with fine to coarse silt, no clay.
ARK-WB-31-18-20	1305	85 (18–20)	1.0	NS	18		As above, no odor.
ARK-WB-31-20-22	1315	40 (20–22)	2.8	NS	20		As above with 10-20% clay.
ARK-WB-31-22-24	1335	100 (22–24)	2.1	NS	22		As above with 20% angular to subrounded gravel 7.5-7.8 ft bml
ARK-WB-31-24-26	1350	85 (24–26)	2.0	NS	24		As above.
ARK-WB-31-26-28	1405	40 (26–28)	0.8	NS	26		As above with fine to coarse silt, silt has clumpy texture (abundant <1/4" dia. silt clumps).
ARK-WB-31-28-30	1420	85	1.0	NS	28		As above with 10% clay.
							Borehole terminated at 30 ft bml due to misaligned casing.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 17-Sep-09
End Time	1610 18-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 10 ft bml.
Borehole terminated at 30 ft bml due to misaligned casing.

WB-31b was sampled ~5ft SE of WB-31beginning at an elevation equivalent to 30 ft bml at WB-31.

3" dia.x12 ft long alum. vibracore tube (0-10 ft bml); 4" dia. x 5 ft long split spoon (10-30' bml).

integral consulting inc.

BORING NUMBER	WB-31b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
					16–24		Ran 6" dia. casing to 24.7 ft bml, which is at an equivalent elevation to 30 ft bml at WB-31. Sampling began at the 24.7-26.7 ft bml interval at WB-31b, which is at an equivalent elevation of the 30-32 ft bml sample of WB-31. WB-31b is located ~5 ft SE of WB-31.
AKR-WB-31b-24.7-26.7	0920	100 (24.7–26.7)	4.2	NS		ML	SILT: dk. grayish brown (10YR 4/2), micaceous, coarse, no sheen, no odor.
ARK-WB-31b-26.7-28.7	0930	95 (26.7–28.7)	4.1	NS	26		As above.
ARK-WB-31b-28.7-30.7	0950	75 (28.7–30.7)	4.3	NS	28		As above with fine to coarse silt, no sheen, no odor.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0855 22-Sep-09
End Time	1257 22-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon sampler (24.7–40.5 ft bml); 4-7/8" dia. X 5 ft long solid core barrel (40.5–50.7 ft bml)

integral consulting inc.

BORING NUMBER	WB-31b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above.
ARK-WB-31b-30.7-32.7	1010	100	5.2	NS			As above.
	(30.7–32.7)						
					32--		
ARK-WB-31b-32.7-34.7	1025	100	0.7	NS			As above.
	(32.7–34.7)						
					34--		
ARK-WB-31b-34.7-36.7	1040	100	1.4	NS			As above, silt has "clumpy" texture (clumps of silt <1/4" dia.).
	(34.7–36.7)						As above with coarse silt, color very dark grayish brown (10YR 3/2).
					36--		
ARK-WB-31b-36.7-38.7	1110	100	1.2	NS		SP	F-M SAND: very dark grayish brown (10YR 3/2), trace of coarse sand, micaceous, no sheen, no odor.
	(36.7–38.7)					ML	SILT: dark grayish brown (10YR 3/2), coarse, micaceous, no sheen, no odor.
					38--		
ARK-WB-31b-38.7-40.5	1130	100	4.3	NS			As above with color very dark grayish brown (10YR 3/2), no sheen, no odor.
	(38.7–40.5)						Four pieces of vesicular basalt observed 40.2-40.5 ft bml (mixed in with silt).
					40--		
--	1145	100	--	NS		GW	Sandy GRAVEL: very dark grayish brown (10YR 3/2), 25% medium to coarse sand, fine to 4" dia. gravel (subrounded to rounded), no odor, no sheen. Note: some silt sloughed into the sandy gravel.
	(40.5–41.9)						
--	1209	65	--	NS	42--		As above with color very dark gray (10YR 3/1), 25% coarse sand, no silt slough.
	(41.9–45.2)						
							As above with 35% medium to coarse sand.
					44--	Rx	BASALT: very poorly indurated, very weathered, red (2.5YR 4/6), crumbly, no sheen, no odor. Red color likely due to the basalt weathering to clay minerals.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0855 22-Sep-09
End Time	1257 22-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon sampler (24.7–40.5 ft bml); 4-7/8" dia. X 5 ft long solid core barrel (40.5–50.7 ft bml)

BORING NUMBER	WB-31b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
	1229	65	--	NS			Rx	As above (weathered basalt).
	(45.9-50.7)				46–			
								As above with some tan and orange clay minerals.
					48–			
					50–			As above, less weathered, increased induration, fewer clay minerals, some secondary mineralization lining a few vesicles.
						--		Borehole terminated at 50.7 ft bml.
					52–			
					54–			
					56–			
					58–			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0855 22-Sep-09
End Time	1257 22-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon sampler (24.7–40.5 ft bml); 4-7/8" dia. X 5 ft long solid core barrel (40.5–50.7 ft bml)

integral consulting inc.

BORING NUMBER WB-32
PROJECT Arkema EE/CA
LOCATION Portland, Oregon
PROJECT NUMBER C167.1103
LOGGED BY Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-32-0-2	1500	45 (0–2)	1.2	NS		ML	Sandy SILT: black (10YR 2/1), 25% fine sand, soft, trace of fibrous organics, no sheen, natural organic odor.
ARK-WB-32-2-4	1510	75 (2–4)	1.7	NS	2	SP	Fine SAND: black (10YR 2/1), 5% silt, no sheen, faint petroleum odor. 1" diameter and 3/8" diameter subrounded gravel at 3 ft bml.
						ML	Clayey SILT: very dark gray (10YR 3/1), 20% clay, soft, no odor, no sheen. Piece of wood debris ~2" long at 3.5 ft bml.
ARK-WB-32-4-6	1528	70 (4–6)	0.7	NS	4		As above with a trace of fine wood debris up to 3/4" long. As above with slight chemical odor.
ARK-WB-32-6-8	1540	60 (6–8)	1.3	NS	6		As above with color very dark grayish brown (10YR 3/2), weak chemical odor, no wood debris.
ARK-WB-32-8-10	1555	60 (8–10)	2.2	NS	8		As above with moderately strong chemical odor, trace of orange banding and mottling. As above with a trace of fibrous organic material.
ARK-WB-32-10-12	1610	85 (10–12)	2.3	NS	10	SM	Silty fine SAND: very dark gray (10YR 3/1), 30-40% silt, trace of twigs and wood debris, moderately strong chemical odor, no sheen.
						ML	Clayey SILT (as above).
ARK-WB-32-12-14	1630	100 (12–14)	0.4	NS	12	SP	Fine to moderate SAND: very dark grayish brown (10YR 3/2), mostly fine sand, weak chemical odor, no sheen. As above with no odor below 12 ft bgs.
ARK-WB-80-12-14	1635						
						ML	SILT: very dark grayish brown (10YR 3/2), coarse, micaceous, no sheen, no odor.
ARK-WB-32-14-16	1650	55 (14–16)	0.2	NS	14		As above.

Drilling Contractor: Boart Longyear
Drilling Method: Roto-sonic
Start Time: 1455 22-Sep-09
End Time: 1215 23-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon (0-36 ft bml), 4-7/8" dia. X 5 ft long solid core barrel (36-46 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

integral consulting inc.

BORING NUMBER	WB-32
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above.
ARK-WB-32-16-18	1705	75 (16–18)	2.0	NS	16		As above (Note: fine to medium sand slough at top of sample and along side of sample, likely from vibrating the sample. The sand was not representative of the sample interval).
							As above with color dark grayish brown (10YR 4/2), 25% clay.
ARK-WB-32-18-20	1720	100 (18–20)	0.4	NS	18		As above with no clay, fine to coarse silt, no odor, no sheen.
							As above with 20% clay, fine silt.
ARK-WB-32-20-22	0815	65 (20–22)	0.2	NS	20		As above (Note: fine to medium sand slough was observed at the top of the 20-22-ft bml sample, likely from the casing being left in the borehole overnight. The sand was not representative of the sample interval).
ARK-WB-32-22-24	0830	100 (22–24)	0.3	NS	22		As above with no clay, fine to coarse silt.
ARK-WB-32-24-26	0848	100 (24–26)	0.4	NS	24		As above.
ARK-WB-32-26-28	0900	75 (26–28)	0.3	NS	26		As above with coarse silt, micaceous, no sheen, no odor.
ARK-WB-32-28-30	0920	100 (28–30)	0.7	NS	28		As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1455 22-Sep-09
End Time	1215 23-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon (0-36 ft bml), 4-7/8" dia. X 5 ft long solid core barrel (36-46 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

integral consulting inc.

BORING NUMBER	WB-32
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
AKR-WB-32-30-32	0937	75 (30–32)	0.2	NS		ML	As above with mostly fine silt, <10% clay, slightly stiff, no sheen, no odor.
ARK-WB-32-32-34	0953	100 (32–34)	0.4	NS	32		As above with no clay, fine to coarse silt.
ARK-WB-32-34-36	1017	100 (34–36)	1.4	NS	34		As above.
					36	GW	Sandy GRAVEL: dark grayish brown (10YR 4/2), 25% medium to coarse sand, fine to 3-1/2" diameter subrounded to rounded gravel, no sheen, no odor.
--	1035	~50 (36–38)	--	NS			Recovery 36-38 ft bml was 3/4" to 4-1/2" diameter gravel/cobbles, subrounded to rounded, no sand or fine grained matrix. Gravel is mostly basalt with some quartzite.
--	1050	~75 (38–42)	--	NS	38		As above with color very dark gray (10YR 3/1), 30% fine to coarse sand, fine to 4-1/2" dia. gravel (subrounded to rounded), mostly basalt gravel with some minor quartzite.
					40		
--	1103	~100 (42–44)	--	NS	42		As above with 30% medium to coarse sand, mostly fine 1" diameter subrounded to rounded gravel (basalt), 20% 1" to 4-1/2" diameter gravel/cobbles.
--	1115	~100 (44–46)	--	NS	44		As above with decreased sand content (likely washed out of sampler).

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1455 22-Sep-09
End Time	1215 23-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon (0-36 ft bml), 4-7/8" dia. X 5 ft long solid core barrel (36-46 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

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BORING NUMBER	WB-32
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
							ML	BASALT: Black, massive, well indurated, same vesicles up to 1/8" diameter, no sheen, no odor.
					46–		--	Borehole terminated at 46 ft bml.
					48–			
					50–			
					52–			
					54–			
					56–			
					58–			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1455 22-Sep-09
End Time	1215 23-Sep-09

Sampling Equipment/Notes

4" dia. X 5 ft long split spoon (0-36 ft bml), 4-7/8" dia. X 5 ft long solid core barrel (36-46 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

integral consulting inc.

BORING NUMBER	WB-33
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-33-0-2	0850	100 (0-10)	1.8	NS		ML	Clayey SILT: very dark gray (10YR 3/1), 20% clay, soft, no odor, no sheen.
ARK-WB-33-2-4	0900		1.7	NS	2--		As above.
ARK-WB-33-4-6	0910		2.1	NS	4--		As above with color black (10YR 2/1), 30% clay, slightly firmer, slightly sticky.
ARK-WB-33-6-8	0920		1.8	NS	6--		As above.
							As above with a slight chemical odor.
ARK-WB-33-8-10	0930		3.6	NS	8--		As above with color very dark grayish brown (10YR 3/2), 20% clay, moderately strong chemical odor.
ARK-WB-33-10-12	0955	100 (10-12)	5.4	NS	10--		As above with 30% clay, very soft, sediment is filled with small air pockets, moderately strong chemical odor.
							Note: the 6" casing droped to 12 ft prior to sampling. The sample was collected from the casing (10-12 ft interval only).
ARK-WB-33-12-14	1015	100 (12-14)	10.3	NS	12--		As above with trace of fibrous organic material
							Piece of subrounded gravel ~1/2" diameter at 12.7 ft bml, few pieces of fine wood debris up to 3/4" long.
ARK-WB-33-14-16	1028	100 (14-16)	3.9	NS	14--	GW	Sandy silty GRAVEL: dark grayish brown (10YR 4/2), 15-20% fine to coarse sand, 20-25% silt, fine to 3" diameter gravel (subrounded to rounded), weak chemical odor, no sheen.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0830 04-Sep-09
End Time	1210 04-Sep-09

Sampling Equipment/Notes

3" diameter x 12 ft long vibracore tube (0-10 ft bml); 4" diameter x 5 ft lg split spoon (10-18 ft bml); 4-7/8" diameter x 5 ft lg solid core barrel (18-22 ft bml).

Ran 6" diameter casing beginning at 12 ft bml.

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BORING NUMBER	WB-33
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						GW	As above with 20-25% fine to coarse sand, 10-15% silt (silty sandy gravel).
							As above with faint chemical odor, some angular gravel (likely broken during drilling).
					16		
ARK-WB-33-16-18	1055	30 (16-18)	2.4	NS			
					18		
	1110	0 (18-19.5)	--	--			
						Rx	BASALT: black, highly vesicular (vesicles range from 1/16 to 3/4" diameter), poorly indurated, some secondary mineralization in vesicles and fractures, some orange staining in vesicles and some surfaces, no odor or sheen.
--	1120	100	3.5	NS	20		
--	1133	100	--	NS			Basalt contact based on driller's observations of consistency.
					22	--	Borehole terminated at 22 ft bml.
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0830 04-Sep-09
End Time	1210 04-Sep-09

Sampling Equipment/Notes

3" diameter x 12 ft long vibracore tube (0-10 ft bml); 4" diameter x 5 ft lg split spoon (10-18 ft bml); 4-7/8" diameter x 5 ft lg solid core barrel (18-22 ft bml).

Ran 6" diameter casing beginning at 12 ft bml.

integral consulting inc.

BORING NUMBER	WB-34
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		
ARK-WB-34-0-2	1315	100 (0–2)	2.5	NS			ML	Clayey SILT: very dark grayish brown (10YR 3/2), soft, 15–20% clay, no odor, no sheen.
								As above with a trace of fibrous organic material.
								As above with color black (10YR 2/1).
					2--			As above.
ARK-WB-34-2-4	1325	75 (2–4)	3.1	NS				
								As above with color very dark grayish brown (10YR 3/2), moderately strong chemical odor below 3.5 ft bml.
					4--			
ARK-WB-34-4-6	1355	75 (4–6)	6.6	NS				As above with small air pockets in the sediment, moderately strong chemical odor.
								As above with weak to faint chemical odor.
					6--			
--	1405	~100 (6–6.6)	--	NS			Rx	BASALT: black, massive, few small vesicles (<1/8" dia.), orange staining on some surfaces, well indurated, no odor, no sheen.
						--		Borehole terminated at 6.6 ft blm.
					8--			
					10--			
					12--			
					14--			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1305 04-Sep-09
End Time	1415 04-Sep-09

Sampling Equipment/Notes

No casing was run due to soft sediments.

4" diameter x 5 ft long split spoon sampler (0-6.6 ft bml).

integral consulting inc.

BORING NUMBER	WB-35
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen
ARK-WB-35-0-2	1025	100 (0–2)	0.3	NS
ARK-WB-35-0-10	1310	(0-10)		
ARK-WB-35-2-4	1045	100 (2–4)	1.3	NS
ARK-WB-35-4-6	1105	75 (4-6)	1.3	LS*
ARK-WB-35-6-8	1123	50 (6-8)	1.5	NS
ARK-WB-35-8-10	1140	75 (8–10)	2.5	SH*
ARK-WB-35-10-12	1205	100 (10–12)	10.0	SH*
ARK-WB-35-12-14	1245	100 (12–14)	139.5	LS*
ARK-WB-35-10-20	1745	100	(10-20)	
ARK-WB-35-14-16	1410	(14–16)	305.7	LS*

ASTM SEDIMENT DESCRIPTION

Depth	Group Symbol	Description
	ML	Sandy SILT: very dark gray (2.5Y 3/1), softer, 20% fine sand, no odor, no sheen.
	SP	Fine to medium SAND: black (10YR 3/1), some twigs up to 2-1/2" long, no odor, no sheen.
2	ML	SILT: very dark gray (10YR 3/1), soft, trace of organics (roots), no odor, no sheen.
		As above with 20% fine to medium sand, 5% fibrous organics and roots, black (10YR 2/1), weak chemical odor at 3.0 ft bml.
		At 3.8" bml, as above with 35% fine to medium sand, moderately strong chemical odor.
4		As above with <5% fine sand, very dark gray (10YR 3/1).
		Green paint chip ~1/2" long at 4.7 ft bml.
		As above with very light spotty sheen at 5.0 ft bml.
6		As above with no sheen, no sand, 10-15% fibrous light brown organic material, weak chemical odor.
8		As above with small brown oil globules (1/32"–1/16"), weak to moderately strong petroleum odor, trace of fibrous organic material.
		As above with no fibrous organic material, moderately strong petroleum odor. No oil globules at 9.3 ft, very light spotty sheen.
10		Small brown oil globules (1/32"–1/16" observed on outside of sediment only from 10-10.8 ft bml, 10–15% roots/fibrous organic material, moderately strong petroleum odor.
		Very light spotty sheen observed 10-8-12.0 ft bml.
		At 11.2 ft bml, 15% fine sand. Small red paint chips observed 11.2–11.5 ft bml.
12		As above with no sand, no paint chips, very light spotty sheen, moderately strong petroleum odor, <2% fibrous organic material.
		Few oil globules ~1/4" diameter 13.2–13.3 ft bml. No sheen below 13.5 ft bml.
		Piece of purple plastic debris ~4" diameter in drill bit at 14.0 ft bml.
14		SILT: very dark gray (10YR 3/1), soft, trace of fibrous organic material, moderately strong chemical odor, no sheen observed on sample*.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1012 30-Sep-09
End Time	1818 30-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0–36.1 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (36.1–36.5 ft bml).

Ran 6" diameter casing at 4 ft bml.

Driller broke a drill rod while collecting the basalt sample (36.1-36.5 ft bml). They were able to retrieve the rod by pulling up the casing.

Very light spotty sheen only observed in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-35
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above.
ARK-WB-35-16-18	1435	70 (16–18)	141.4	LS*	16		As above with 15% fine to medium sand, black (10YR 2/1), few pieces of wood debris up to 1/4" long, moderately strong chemical odor, no sheen. Very light spotty sheen, moderately strong petroleum odor.
ARK-WB-35-18-20	1455	100 (18–20)	12.7	HS*	18	SP	Fine to medium SAND: black (10YR 2/1), heavy sheen with oil globules 1/32 to 1/16" diameter, strong petroleum odor. Piece of metal debris ~2" long (sheet metal) at 18.2 ft bml, 2" diameter rock at 18.5 ft bml.
						ML	SILT: dark grayish brown (10YR 4/2), coarse, micaceous, no sheen, slight petroleum odor. As above, no petroleum odor, no sheen.
ARK-WB-35-20-23	1530	65 (20–23)	1.9	NS	20		
					22		
ARK-WB-35-23-26	1550	55 (23–26)	2.2	NS	24		As above with fine to coarse silt. As above with mostly fine silt, no sheen, no odor, silt has "clumpy" texture (silt clumps 1/8 to 1/4" diameter). As above.
ARK-WB-35-26-29	1610	50 (26–29)	3.8	NS	26		As above with coarse silt (near the grain size of fine sand), no clumpy texture, no sheen, no odor. Piece of sheet metal ~2" diameter at 27.8 ft bml.
					28		Piece of crumpled sheet metal ~ 4" diameter in drill bit at 29 ft bml.
ARK-WB-35-29-32	1630	50 (29–32)	5.0	NS			As above, no sheen, no odor.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1012 30-Sep-09
End Time	1818 30-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0–36.1 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (36.1–36.5 ft bml).

Ran 6" diameter casing at 4 ft bml.

Driller broke a drill rod while collecting the basalt sample (36.1-36.5 ft bml). They were able to retrieve the rod by pulling up the casing.

Very light spotty sheen only observed in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-35
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
							ML	As above.
ARK-WB-35-32-35	1700	100 (32–35)	1.9	NS	32--			As above with mostly fine silt, no sheen, no odor.
								Fine sand lamination 33.10–33.15 ft bml, black (10YR 2/1).
					34--			
								As above.
ARK-WB-35-35-35.6	1700	100 (35-36.1)	7.4	NS			GW	Sandy GRAVEL: very dark gray (10YR 3/1), fine to 2" diameter subrounded to rounded gravel 10-20% fine to coarse sand, no sheen, no odor.
					36--			5" long cobble (basalt) in drill bit at 36.1 ft bml. Note: silt slough in sandy gravel.
--	1800	~100 (36.1-36.5)	--	NS		--	Rx	BASALT: black, vesicular (vesicles 1/16-3/8" diameter), moderately well indurated, orange staining on some surfaces and in some vesicles, no sheen, no odor.
								Borehole terminated at 36.5 ft bml.
					38--			
					40--			
					42--			
					44--			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1012 30-Sep-09
End Time	1818 30-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0–36.1 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (36.1–36.5 ft bml).

Ran 6" diameter casing at 4 ft bml.

Driller broke a drill rod while collecting the basalt sample (36.1-36.5 ft bml). They were able to retrieve the rod by pulling up the casing.

Very light spotty sheen only observed in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-36
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen
ARK-WB-36-0-2	0920	60 (0–2)	16.6	NS
ARK-WB-36-2-4	0935	100 (2–4)	0.7	LS*
ARK-WB-36-4-6	0950	75 (4–6)	42.1	LS*
ARK-WB-36-6-8	1002	65 (6–8)	21.4	NS
ARK-WB-36-8-10	1015	60 (8–10)	55.2	LS*
ARK-WB-36-10-12	1035	95 (10–12)	29.8	NS
ARK-WB-36-0-10	1420	(0–10 ft composite)		
ARK-WB-35-12-14		40 (12–14)	56.6	NS
ARK-WB-35-14-16	1410	100 (14–16)	306	LS*

ASTM SEDIMENT DESCRIPTION

Depth (ft)	Group Symbol	Description
0–4	ML	Clayey SILT: very dark gray (10YR 3/1), 10% clay, soft, no sheen, slight chemical odor. Fine to medium sand laminations ~0.05 ft thick at 1.1 and 1.3 ft bml, black (10YR 2/1), slight chemical odor. As above with very light spotty sheen at 2 ft bml. Color black 2.7–3.0 ft bml, moderately strong chemical odor, trace of fine organics, light spotty sheen. Coarse silt, micaceous, no clay, moderately strong chemical odor, very light spotty sheen. 2" diameter rock at 3.5 ft bml.
4–7	SM	Silt fine SAND: dk. grayish brown (10YR 4/2), very light spotty sheen, strong chemical odor, 25% silt. Piece of red brick ~2" diameter at 4.8 ft bml. As above with fine to medium sand at 5.2 ft. Few pieces of fine subrounded gravel 5.5-5.6 ft bml. As above with 15% silt, very dark grayish brown (10YR 3/2), strong chemical/decaying vegetation odor, trace of fine subrounded gravel 6.9-7.1 ft bml.
7–9.5	SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, strong chemical/decaying vegetation odor, no sheen. As above with 25% fine to 3/4" diameter subrounded gravel, piece of glass ~2" long.
9.5–10	SM	Silty fine to medium SAND with black oily material, light sheen, trace of wood debris, strong chemical/decaying vegetation odor.
10–11.5	ML	Clayey SILT: black (10YR 2/1), soft, 30% clay, moderately strong chemical odor.
11.5–16	SP	Fine to medium SAND: very dark gray (10YR 3/1), trace of red sand grains, weak chemical odor, no sheen. As above with color dark gray (10YR 4/1), slight chemical odor, no sheen. As above with strong chemical odor.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0915 01-Oct-09
End Time	1615 01-Oct-09

Sampling Equipment/Notes

4" dia. x 5 ft long split spoon (0–41.9 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (41.9–42.3 ft bml).

Ran 6" dia. casing beginning at 4 ft bml

*Light sheen observed on sediment only in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-36
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	Sand (as above).
					16–	ML	Clayey SILT: very dark grayish brown (10YR 3/2), soft, strong chemical odor, no sheen, 20% clay.
ARK-WB-36-16-18	1130	70 (16–18)	675.0	LS		SP	Fine to medium SAND: dark gray (10YR 4/1), trace of red sand grains, strong chemical odor, light sheen observed on sediment in mixing bowl.
ARK-WB-36-10-22	1545	(10–22 composite)					Silt laminations at 16.6-16.7 and 17.0-17.2 ft, very dark gray (10YR 3/1).
					18–		As above.
ARK-WB-36-18-20	1145	100 (18–20)	342.1	NS		ML	SILT: very dark gray (10YR 3/1), firm, trace of fibrous organic material, moderately strong chemical/decaying vegetation odor, no sheen.
							Trace of orange mottling.
ARK-WB-36-20-22	1205	70 (20–22)	139.2	NS	20–		As above with color black (10YR 2/1), no orange mottling, no organic material, moderately strong chemical/decaying vegetation odor.
							As above with a trace of fibrous organic material.
ARK-WB-36-22-25	1220	100 (22–25)	164.1	NS	22–	SP	Fine to medium SAND: dark gray (10YR 4/1), trace of red sand grains, moderately strong chemical/decaying vegetation odor, no sheen.
						ML	SILT: black (10YR 2/1), trace of fibrous organic material and wood debris up to 3" long, weak chemical odor, no sheen.
					24–		Slightly lighter color below 24 ft bml, decreased organic material content.
ARK-WB-36-25-28	1245	100 (25–28)	102.8	NS		SP	Fine to medium SAND: dark grayish brown (10YR 4/2), trace of red sand grains, no odor, no sheen.
					26–	ML	SILT: dark gray (10YR 4/1), micaceous, coarse, trace of wood debris, no odor, no sheen.
							As above with fine silt, 20% clay, no wood debris, slightly plastic.
ARK-WB-36-28-31	1305	80 (28–31)	67.7	LS*	28–	SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), trace of wood debris up to 3-1/2" long, slight chemical odor, no sheen.
ARK-WB-85-28-31	1310						

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0915 01-Oct-09
End Time	1615 01-Oct-09

Sampling Equipment/Notes

4" dia. x 5 ft long split spoon (0–41.9 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (41.9–42.3 ft bml).

Ran 6" dia. casing beginning at 4 ft bml

*Light sheen observed on sediment only in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-36
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	Silt lamination 30.0–30.1 ft bml, dark gray (10YR 3/1).
							As above (fine to medium sand).
							Silt lamination 30.5–30.6 ft bml.
							Light spotty sheen below 30.6 ft bml, slight chemical odor.
ARK-WB-36-31-34	1430	85 (31–34)	23.8	NS	32--		At 31 ft bml, as above with color very dark gray (10YR 3/1), slight chemical odor, no sheen.
						ML	SILT: very dark grayish brown (10YR 3/2), trace of fibrous organic material, no sheen, faint chemical odor.
					34--	SP	Fine to medium SAND: very dark gray (2.5YR 3/1), trace of red sand grains, slight chemical odor, no sheen.
ARK-WB-36-34-37	1445	65 (34–37)	16.8	NS			35.0–35.1 SILT lamination, gray (2.5Y 3/1), slight chemical odor, no sheen.
					36--		SILT: very dark grayish brown (2.5Y 3/2), trace of wood debris, slight chemical odor, no sheen.
							As above (fine to medium sand), slight chemical odor, no sheen.
ARK-WB-36-37-40	1505	90 (37–40)	21.0	NS	38--		
						ML	SILT: dark grayish brown (10YR 4/2), coarse, micaceous, no odor, no sheen.
					40--	GW	GRAVEL: dark grayish brown (10YR 4/2), fine - 1" diameter subrounded to rounded gravel, 15% medium to coarse sand, faint odor, no sheen.
--	1535	50 (40–41.9)	--	NS			As above with 3 cobbles 2-1/2" to 4" diameter, subrounded to rounded.
					42--	Rx	BASALT: black, slightly vesicular (most vesicles <1/16" diameter), well indurated, no odor, no sheen, trace of orange staining.
						--	Borehole terminated at 42.3 ft bml.
--	1550	75 (41.9–42.3)	--	NS			
					44--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0915 01-Oct-09
End Time	1615 01-Oct-09

Sampling Equipment/Notes

4" dia. x 5 ft long split spoon (0–41.9 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (41.9–42.3 ft bml).

Ran 6" dia. casing beginning at 4 ft bml

*Light sheen observed on sediment only in mixing bowl.

integral consulting inc.

BORING NUMBER	WB-37
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-37-0-2	1330	70 (0–2)	2.0	NS		ML	SILT: very dark gray (10YR 3/1), soft, trace of light brown fibrous organic material, no sheen, no odor.
ARK-WB-37-0-6	1645	(0–6 ft composite)					
					2		As above with weak chemical odor, slightly firmer.
ARK-WB-37-2-4	1340	65 (2–4)	5.0	NS			
					4		As above with weak to moderately strong chemical odor.
ARK-WB-37-4-6	1400	85 (4–6)	89.8	NS			Gray silt lamination 4.50-4.55 ft bml.
							Moderately strong chemical odor.
					6		
ARK-WB-37-6-8	1420	45 (6–8)	59.8	NS			As above.
					8		As above with some black mottling.
ARK-WB-37-8-10	1435	100 (8–10)	81.4	NS			As above with a clay band ~1/16" thick at 8.7 ft bml.
ARK-WB-37-6-14	1700	(6–14 ft composite)					As above with strong chemical odor.
					10		As above with no black mottling, strong chemical odor.
ARK-WB-37-10-12	1450	90 (10–12)	155.6	NS			
							As above with increased fibrous organic material content, dark gray (10YR 4/1), 10% clay.
					12		As above with moderately strong chemical odor, decreased fibrous organic material content.
ARK-WB-37-12-14	1508	90 (12–14)	133.4	NS			
							Trace of wood debris up to 1.5" long.
					14		As above with color very dark gray (10YR 3/1), weak chemical odor, no clay.
ARK-WB-37-14-17	1525	80 (14–17)	4.6	NS			
ARK-WB-83-14-17	1530						

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1323 29-Sep-09
End Time	1700 29-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0-23 ft bml); 4-7/8 " diameter x 5 ft long solid core barrel (23-25.1 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

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BORING NUMBER	WB-37
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
					16	ML	As above.
ARK-WB-37-17-20	1545	55	15.5	NS	18	SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, no sheen, slight chemical odor.
ARK-WB-37-20-23	1620	80	9.1	NS	20	ML	SILT: dark grayish brown (10YR 4/2), micaceous, no sheen, slight chemical odor. As above with coarse silt, slight chemical odor. As above.
--	1640	-- (23-25.1)	--	NS	22, 24	Rx	BASALT: orangish-brown, weathered, vesicular, secondary mineralization in some vesicles and on some surfaces, no sheen, poorly indurated.
					26, 28	--	Borehole terminated at 25.1 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1323 29-Sep-09
End Time	1700 29-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0-23 ft bml); 4-7/8 " diameter x 5 ft long solid core barrel (23-25.1 ft bml).

Ran 6" diameter casing beginning at 6 ft bml.

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BORING NUMBER	WB-38
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-38-0-2	1240	100 (0–10)	13.8	LS		ML	Clayey SILT: very dark gray (10YR 3/1), 30% clay, soft, light spotty sheen, moderately strong chemical odor. As above with color black (10YR 2/1), trace of fine sand, some black banding.
ARK-WB-38-2-4	1250		22.6	LS	2--		As above, slightly firm, moderately strong chemical odor, light spotty sheen.
						SP	Fine to medium SAND: black (10YR 2/1), <5% silt, trace of red sand grains, very light spotty sheen, moderately strong chemical odor.
ARK-WB-38-4-6	1300	*(4–4.7 ft only)	21.7	LS*	4--	ML	Clayey SILT: very dark grayish brown (10YR 3/2), 20% clay, trace of fine wood debris, very light spotty sheen, moderately strong chemical odor.
						SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, no sheen, moderately strong chemical odor.
ARK-WB-38-6-8	1310		16.3	NS	6--		Silt lamination 8.0-8.1 ft bml, dark gray (2.5YR 4/1).
ARK-WB-38-8-10	1320		9.3	NS	8--		As above with fine SAND, very dark grayish brown (10YR 3/2), trace of fine to 3/4" diameter subrounded gravel, micaceous, no sheen, weak chemical odor.
						ML	SILT: dark grayish brown (2.5Y 4/2), micaceous, firm, no sheen, faint chemical odor.
ARK-WB-38-10-11.6	1402	30 (10-12)	5.0	NS	10–		As above with a trace of orange mottling, no sheen.
--	1410	100 (11.6-12.6)	--	NS	12--	Rx	BASALT: black, vesicular (vesicles range from <1/16" to over 1" long), moderately well indurated, iron staining on some surfaces, no sheen, no odor.
						--	Borehole terminated at 12.6 ft bml.
					14--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1225 03-Sep-09
End Time	1450 03-Sep-09

Sampling Equipment/Notes

3" dia. x 12 ft long aluminum vibracore tube (0-10 ft); 4" dia. x 5 ft long split spoon (10-11.6 ft bml); 4-7/8" dia. x 5' long solid core (11.6-12.6 ft bml).

Ran 6" dia. casing beginning at 10 ft bml.

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BORING NUMBER	WB-39
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / **ASTM SEDIMENT DESCRIPTION**

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM Sediment Description
ARK-WB-39-0-2	1525	50 (0–2)	0.4	NS		GW	Sandy silty GRAVEL: very dark gray (10YR 3/1), 40% silt, 10% fine to coarse sand, fine to 3/4" angular gravel, trace of fibrous organic material (light brown), trace of glass and red brick debris up to 1/4" dia., no odor, no sheen.
ARK-WB-39-2-4	1545	75 (2–4)	0.6	LS	2	ML	SILT: very dark gray (10YR 3/1), 10% wood debris and fine fibrous organic material, very light spotty sheen, slight chemical odor.
ARK-WB-39-0-8	1710	(0–8 ft composite)					Piece of rock ~4" diameter at 3.0 ft bml.
ARK-WB-39-4-6	1606	90 (4–6)	4.0	NS	4		As above with color dark gray (10YR 4/1), no wood debris, trace of fine light brown fibrous organic material, abundant tan silt nodules up to 1/2" dia., no sheen, slight chemical odor, 10% clay.
ARK-WB-39-6-8	1655	75 (6–8)	3.9	NS	6		As above with color very dark gray (10YR 3/1), no clay, no odor, no tan silt nodules, trace of sand. Piece of 1/16" thick x 4" long plastic at 7.0 ft bml. Piece of asphalt ~2-1/2" dia. At 8.0 ft bml.
ARK-WB-39-8-10	0900	60 (8–10)	8.2	NS	8		As above with weak chemical odor, trace of angular gravel up to 1/2" dia.
ARK-WB-39-8-18	1150	(8–18 ft composite)					Two pieces of concrete ~2-1/2" dia. at 9 ft bml. Piece of concrete ~2" dia. at 10 ft bml.
ARK-WB-39-10-12	0915	100 (10–12)	824.4	NS	10		As above with no gravel, strong chemical and decaying vegetation odor, dark grayish brown (10YR 4/2), some orange mottling, trace of fibrous organic material, 10% clay. As above with no clay, very dark gray (10YR 3/1).
ARK-WB-39-12-14	0935	100 (12–14)	142.3	NS	12		As above with moderately strong chemical and decaying vegetation odor, 2% wood debris 1/2"–2" long, no orange mottling. Light brown fibrous wood debris below 13.5 ft bml.
*Sheen observed 14-14.7 ft bml.					14	SP	Fine to medium SAND: black (10YR 2/1), trace of wood debris, very light spotty sheen, slight petroleum odor.
ARK-WB-39-14-16	1000	100 (14–16)	14.0	LS*		ML	See page 2 for description.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1520 28-Sep-09
End Time	1200 29-Sep-09

Sampling Equipment/Notes

4" dia. x 5 ft long split spoon (0–25.7 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (25.7-26.1 ft bml).

Ran 6" dia. casing beginning at 6 ft bml.

Barge was pivoted ~1 ft north when the borehole was sampled to 6 ft bml. There was a large rock on the sediment surface that deflected the split spoon sampler and would not allow the casing to be run through the moonpool.

integral consulting inc.

BORING NUMBER	WB-39
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
							ML	SILT: very dark gray (10YR 3/1), coarse, micaceous, no sheen, slight petroleum odor.
					16		SM	Silty fine SAND: very dark gray (10YR 3/1), 30% silt, micaceous, slight chemical odor, no sheen.
ARK-WB-39-16-18	1030	35 (16–18)	24.9	NS			SP	Fine SAND: very dark gray (10YR 3/1), 5% silt, no sheen, slight chemical odor.
ARK-WB-39-18-21	1045	100 (18–21)	14.0	LS*	18			As above with fine to medium sand, black (10YR 2/1), no silt, trace of red sand grains, trace of wood debris 1" to 5" long, no sheen, slight chemical odor.
*Sheen 20.2-21.0 ft bml.								Silt lamination 18.55-18.60 ft bml.
					20			Silt lamination 20.2-20.4 ft bml, gray (10YR 5/1), micaceous, weak chemical odor, very light spotty sheen.
ARK-WB-39-21-24	1100	100 (21–24)	18.1	LS*				At 20.4 ft as above with no wood debris, weak chemical odor. At 21 ft bml, as above with no sheen, slight chemical odor.
*Sheen observed 22.9-23.4 ft bml.					22			Silt laminations ~0.05 ft thick at 21.3, 21.5, 21.7 ft. Silt lamination with wood debris, 22.45 to 22.65, gray (10YR 5/1). Silt lamination 22.9 to 23.0 ft with wood debris, light sheen, weak chemical odor. As above, very light spotty sheen, slight chemical odor.
ARK-WB-39-24-25.7	1130	100 (24–25.7)	8.9	NS	24		ML	SILT: dark gray (10YR 4/1), coarse, micaceous, some orange mottling, no odor, no sheen. As above with color dark grayish brown (10YR 4/2), no odor, no sheen.
					26		Rx	BASALT: black, slightly vesicular (1/16 to 1/8" dia.), well indurated, no sheen, no odor.
--	1140	~100 (25.7–26.1)	--	NS		--		Borehole terminated at 26.1 ft bml.
					28			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1520 28-Sep-09
End Time	1200 29-Sep-09

Sampling Equipment/Notes

4" dia. x 5 ft long split spoon (0–25.7 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (25.7-26.1 ft bml).

Ran 6" dia. casing beginning at 6 ft bml.

Barge was pivoted ~1 ft north when the borehole was sampled to 6 ft bml. There was a large rock on the sediment surface that deflected the split spoon sampler and would not allow the casing to be run through the moonpool.

integral consulting inc.

BORING NUMBER	WB-40
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / ASTM SEDIMENT DESCRIPTION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM Sediment Description
ARK-WB-40-0-2	0840	100 (0-10)	87.2	LS		ML	Clayey SILT: very dark brown (10YR 3/1), 20% clay, light iridescent sheen, moderate chemical odor, soft.
						SM	Silty fine SAND: very dark gray (10YR 3/1), 25% silt, trace of wood debris, light sheen, moderately strong chemical odor.
ARK-WB-40-2-4	0850		26.1	LS	2	ML	Clayey SILT: very dark grayish brown (10YR 3/2), 40% clay, soft, light sheen, moderately strong chemical odor, wood debris 2" long at 2 to 2.2 ft bml.
						SP	Slightly silty fine SAND: black (10YR 2/1), 10% silt, very light spotty sheen 3 to 4.5 ft bml, moderately strong chemical odor.
ARK-WB-40-4-6	0900	*(4 to 4.5 ft only)	21.0	LS*	4		As above with no sheen below 4.5 ft bml, moderately strong chemical odor, 5% silt.
ARK-WB-40-6-8	0910		52.1	NS	6		Piece of wood debris ~3/4" long at 6.2' bml. Clam or mussel shell ~1" long at 6.95' bml. Silt lamination 7.7 to 7.75 ft bml, very dark gray (10YR 3/1). Silt lamination 8.0 to 8.1 ft bml, dark gray (10YR 4/1).
ARK-WB-40-8-10	0920		17.4	NS	8		As above with fine to medium sand, <5% silt, moderately strong chemical odor.
ARK-WB-40-10-12	0936	50 (10-12)	43.1	NS	10		As above with wood debris up to 4" long (4 pieces) at 10 ft, few red sand grains, moderately strong chemical odor. Piece of wood debris ~2" long at 11.5 ft bml.
ARK-WB-40-12-14	1002	100 (12-14)	41.6	NS	12		As above with weak chemical odor.
ARK-WB-40-14-16	1020	40 (14-16)	13.5	NS	14	ML	SILT: dark gray (2.5Y 4/1), firm, micaceous, weak chemical odor, no sheen.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0815 03-Sep-09
End Time	1055 03-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 10 ft bml.

3" dia. x 12 ft long aluminum vibracore tube (0-10 ft bml); 4" dia. x 5 ft long split spoon (10-16 ft bml); 4-7/8" dia. x 5 ft long solid core sampler (16-16.9 ft bml).

integral consulting inc.

BORING NUMBER	WB-40
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above with some orange mottling. Silty fine sand 15.8-15.9 ft bml, brown (10YR 4/4), weak chemical odor, no sheen.
--	1035	50 (16-16.9)	--	NS	16	Rx	BASALT: black, vesicular (vesicles range from 1/16" to 3/4" long), moderately well indurated, orange staining in some vesicles, faint odor, no sheen.
						--	Borehole terminated at 16.9 ft bml.
					18		
					20		
					22		
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0815 03-Sep-09
End Time	1055 03-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 10 ft bml.

3" dia. x 12 ft long aluminum vibracore tube (0-10 ft bml); 4" dia. x 5 ft long split spoon (10-16 ft bml); 4-7/8" dia. x 5 ft long solid core sampler (16-16.9 ft bml).

integral consulting inc.

BORING NUMBER	WB-41
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen
ARK-WB-41-0-2	1000	70 (0-4)	0.1	NS
ARK-WB-41-0-6	1235	(0-6 ft composite)		
ARK-WB-41-2-4	1010	75 (2-4)	0.5	NS
ARK-WB-41-4-6	1025	85 (4-6)	0.5	NS
ARK-WB-41-6-8	1050	75 (6-8)	2.0	NS
ARK-WB-41-6-14	1340	(6-14 ft composite)		
ARK-WB-82-6-14	1345	(6-14 ft composite)		
ARK-WB-41-8-10	1110	100 (8-10)	4.7	NS
ARK-WB-41-10-12	1125	100 (10-12)	2.0	NS
ARK-WB-41-12-14	1142	100 (12-14)	31.0	LS*
ARK-WB-41-14-17	1250	70	51.3	LS*
ARK-WB-81-14-17	1255	(14-17)		

*Very light spotty sheen

ASTM SEDIMENT DESCRIPTION

Depth (ft)	Group Symbol	Description
0	ML	SILT: very dark grayish brown (10YR 3/2), soft, no sheen, no odor.
2		As above with a trace of light brown fine fibrous organic material.
		Piece of leaf debris at 3.0 ft bml.
		As above with some tan silt nodules (~1/8"-1/4" diameter) below 3.3 ft bml, 10% clay, no sheen, no odor.
4		As above with slight chemical odor below 4.0 ft bml.
	SP	Fine SAND lamination 4.8-5.0 ft bml, black (10YR 2/1), slight chemical odor, no sheen. At 5 ft bml, silt (as above) with slight chemical odor, no sheen.
	ML	As above with no clay, slight chemical odor, no sheen, no fibrous organic material, no tan silt nodules, slightly firmer.
6		
8		As above with color very dark gray (10YR 3/1), some black mottling, slight chemical odor, no sheen.
10		As above with no black mottling, <5% wood debris up to 5" long (1/4" to 5" long), slight chemical odor, no sheen.
		Removed wood debris from sample (7-1/2" to 7-3/4" long).
12		As above with slight chemical odor, no sheen.
		Piece of wood debris 3" diameter at 12.5 ft bml.
	SP	Fine SAND: black (10YR 2/1), trace of silt (~5%), moderately strong chemical odor, very light spotty sheen.
14		As above with fine to medium sand, trace red sand grains, trace of fibrous wood debris.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0955 28-Sep-09
End Time	1415 28-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 6 ft bml.

4" diameter x 5 ft long split spoon (0-22.8 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (22.8-23.4 ft bml).

integral consulting inc.

BORING NUMBER	WB-41
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
					16--		
							As above.
ARK-WB-41-17-20	1305	65 (17-20)	34.3	NS			As above with a few pieces of wood debris up to 1/2" long, weak chemical odor, no sheen.
					18--		
							As above.
					20--		
ARK-WB-41-20-22.8	1320	90 (20-22.8)	10.4	NS			As above with slight chemical odor.
							Silt lamination 20.45 to 20.50 ft bml, dark gray (10YR 4/1), micaceous.
							Silt lamination 21.8 to 22.0 ft bml (as above), slight chemical odor.
					22--		
--	1330	100 (22.8-23.4)	--	NS		ML	SILT: dark grayish brown (10YR 4/2), micaceous, coarse, slight chemical odor, no sheen.
						Rx	BASALT: black, slightly vesicular (vesicles up to 1/8" diameter), moderately well indurated, some surfaces with orange staining, no odor, no sheen.
						--	
					24--		Borehole terminated at 23.4 ft bml.
					26--		
					28--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0955 28-Sep-09
End Time	1415 28-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 6 ft bml.

4" diameter x 5 ft long split spoon (0-22.8 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (22.8-23.4 ft bml).

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BORING NUMBER	WB-42
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen
ARK-WB-42-0-2	0920	50 (0-4)	3.3	NS
ARK-WB-42-2-4	0930	--	1.9	NS
ARK-WB-42-4-6	0945	40 (4-6)	27.3	LS
ARK-WB-42-0-6	1215	(0-6 ft composite)		
ARK-WB-42-6-8	1045	100 (6-8)	66.2	LS
ARK-WB-42-8-10	1112	100 (8-10)	240.3	NS
ARK-WB-42-6-14	1450	(6-14 ft composite)		
ARK-WB-42-10-12	1130	100 (10-12)	66.7	LS
ARK-WB-42-12-14	1150	75 (12-14)	35.9	NS
ARK-WB-42-14-17	1313	75 (14-17)	9.1	NS

ASTM SEDIMENT DESCRIPTION

Group Symbol	Description
GW	Sandy GRAVEL: dark brown (7.5YR 3/2), 30-40% fine to medium sand, fine to 3" diameter angular to subrounded gravel, no odor, no sheen, 5% silt.
SW	Gravelly fine to medium SAND: black (10YR 2/1), 15-20% 3/4" to 1" diameter subrounded gravel, trace of red brick debris, slight chemical odor, no sheen.
	Sandy SILT; very dark grayish brown (10YR 3/2), micaceous, 15% fine to medium sand, trace of clear glass, slight chemical odor, no sheen. As above with 15% fine to 1.5" diameter angular gravel, trace of fibrous organic material, very light spotty sheen (1-2 spots), moderately strong chemical odor. Piece of copper wire ~4" long. SILT: very dark grayish brown (10YR 3/2), soft, <5% angular gravel up to 1.5" long, very light spotty sheen, strong chemical odor. As above with no gravel, some black mottling 8 to 8.2 ft bml, strong chemical odor. As above with 30% fine sand. As above with no sand, very light spotty sheen, strong chemical odor.
SP	Fine to medium SAND: black (10YR 2/1), trace of coarse sand, possible very light spotty sheen, strong chemical odor.
ML	SILT (as above)
SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, no sheen, weak chemical odor. Piece of wood debris ~2" long at 12.5 ft bml. Piece of wood debris ~1" long at 13.0 ft bml. As above with slight chemical odor, no sheen.

Depth scale: 2-- 4-- 6-- 8-- 10-- 12-- 14--

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0838 25-Sep-09
End Time	1500 25-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 4 ft bml.
4" dia. x 5 ft long split spoon (0-26 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (26-27 ft bml).

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BORING NUMBER	WB-42
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
					16		SP	As above.
ARK-WB-42-17-20	1325	80 (17-20)	4.3	NS	18		ML	SILT: dark grayish brown (10YR 4/2), micaceous, coarse, no sheen, no odor.
ARK-WB-42-20-23	1345	80 (20-23)	3.4	NS	20			As above with 15% clay, fine silt, stiff, no sheen, no odor (clayey SILT).
					22			As above.
ARK-WB-42-23-26	1420	100	0.7	NS			SP	Fine SAND: very dark gray (10YR 3/1), micaceous, no sheen, no odor.
					24		ML	SILT: dark grayish brown (10YR 4/2), micaceous, coarse, no sheen, no odor.
--	1425	-- (26-27)	--	NS	26		Rx	BASALT: black scoriaceous vesicular texture to vesicular (1/16" to 1/8" diameter vesicles) (very small vesicles), moderately well indurated, no sheen, no odor.
					28			Borehole terminated at 27 ft bgs.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0838 25-Sep-09
End Time	1500 25-Sep-09

Sampling Equipment/Notes

Ran 6" dia. casing beginning at 4 ft bml.
4" dia. x 5 ft long split spoon (0-26 ft bml); 4-7/8" dia. x 5 ft long solid core barrel (26-27 ft bml).

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BORING NUMBER	WB-43
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / **ASTM SEDIMENT DESCRIPTION**

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM Sediment Description
ARK-WB-43-0-2	1005	70 (0-2)	0.6	NS		ML	SILT: very dark gray (10YR 3/1), soft, trace of fibrous organics, no sheen, no odor.
							As above, slightly firmer.
ARK-WB-43-0-8	1250	(Composite 0-8 ft bml)			2--		
ARK-WB-43-2-4	1012	70 (2-4)	0.7	NS			As above with 10% clay, soft.
ARK-WB-43-4-6	1030	100 (4-6)	3.0	NS	4--		As above with increased fibrous organic material content.
							As above with weak chemical odor.
ARK-WB-43-6-8	1120	75 (6-8)	1.3	NS	6--		As above with a few tan silt nodules 1/8 to 1/4" diameter.
ARK-WB-43-8-10	1135	100 (8-10)	5.0	NS	8--		As above with color black (10YR 2/1), weak chemical odor, no sheen, no fibrous organics, some black mottling and banding.
ARK-WB-43-8-18	1455	(Composite 8-18 ft bml)					
ARK-WB-43-10-12	1150	75 (10-12)	4.5	NS	10--		As above with color very dark gray (10YR 3/1), weak chemical odor.
							As above at with 5-10% wood debris, weak petroleum odor.
ARK-WB-43-12-14	1332	85 (12-14)	2.1	LS*	12--		Sand lamination, black (10YR 2/1) with wood debris, fibrous organic material, and strong petroleum odor, moderate sheen at 12.4-12.6 bml.
*Light sheen 12.8 to 12.9 ft bml.							Light sheen on sand lamination 12.8-12.9 ft bml, moderate petroleum odor.
					14--	SP	Fine SAND: black (10YR 2/1), some red sand grains, some medium sand, slight chemical odor, no sheen.
ARK-WB-43-14-16	1358	100 (14-16)	15.9	NS			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1000 24-Sep-09
End Time	1500 24-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft bml.

4" diameter x 5 ft long split spoon (0-19 ft bml); 4-7/8" diameter x 5 ft long core barrel (19.0-19.3 ft bml).

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BORING NUMBER	WB-43
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above with weak chemical odor.
ARK-WB-43-16-18	1412	100 (16-18)	21.6	NS	16		Silt laminations 16.1-16.2 ft and 16.5-16.6 ft, dark gray (2.5Y 4/1), slightly stiff, weak chemical odor, no sheen, 10% clay.
						ML	SILT: dark grayish brown (2.5Y 4/2), micaceous, some orange mottling, no sheen, weak chemical odor.
ARK-WB-43-18-19	1432	~80 (18-19)	6.7	NS	18	SP	Fine SAND: very dark gray (10YR 3/1), some medium sand, micaceous, weak chemical odor, no sheen.
						Rx	BASALT: black, slightly vesicular (vesicles up to 3/8" diameter), well indurated, no odor or sheen.
--	1445	100 (19-19.3)	--	NS	20		Borehole terminated at 19.3 ft bml.
					22		
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1000 24-Sep-09
End Time	1500 24-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft bml.

4" diameter x 5 ft long split spoon (0-19 ft bml); 4-7/8" diameter x 5 ft long core barrel (19.0-19.3 ft bml).

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BORING NUMBER	WB-44
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
ARK-WB-44-0-2	1140	~100 (0-10)	8.5	LS			ML	Clayey SILT: very dark gray (10YR 3/1), trace of fine sand, soft, very light spotty sheen, slight chemical odor. As above with some wood debris below 1.5 ft (up to 3" long).
ARK-WB-44-2-4	1150		6.4	LS	2--		SP	Fine SAND: black (10YR 2/1), 10-15% silt, 20% wood debris up to 2" long, light spotty iridescent sheen, slight chemical odor.
Removed wood debris from sample.								
ARK-WB-44-4-6	1200		3.6	LS*	4--			As above with fine to medium sand, <5% silt, no wood debris. No sheen observed below 4.5 ft bml. Silt lamination 5.4-5.5 ft bml, very dark grayish brown (10YR 3/2). As above with trace of red sand grains, slight chemical odor, no sheen.
*(4-4.5 ft only)								
ARK-WB-44-6-8	1210		4.2	NS	6--			As above, slight chemical odor.
ARK-WB-44-8-10	1220		10.0	NS	8--			As above.
ARK-WB-44-10-12	1302	75 (10-12)	6.5	NS	10--			As above with a few pieces of subrounded fine gravel, no odor, no sheen.
ARK-WB-44-12-14	1318	90 (12-14)	7.2	NS	12--			As above with a trace of coarse sand, no odor, no sheen. Note: steel shard from split spoon sampler observed in sediment. Silt lamination ~13.3-13.35 ft bml.
							ML	SILT: dark grayish brown (10YR 4/2), coarse, micaceous, firm, no odor, no sheen.
ARK-WB-44-14-14.8	1336	75 (14-14.8)	3.2	NS	14--		Rx	BASALT: black, well indurated, slightly vesicular (1/16-3/8" diameter vesicles), orange staining on some surfaces, no odor, no sheen.
					15--	--		Refusal at 15.3 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1115 02-Sep-09
End Time	1405 02-Sep-09

Sampling Equipment/Notes

3" dia. x 12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–14.8 ft bml); solid core sampler 4-7/8" dia. x 5 ft long (14.8-15.3 ft bml).

Ran 6" diameter casing beginning at 10 ft bml.

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BORING NUMBER	WB-45
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-45-0-2	0900	100 (0-10)	0-5	LS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), 25% clay, trace of fine sand, soft, weak to moderately strong chemical odor, light spotty sheen. As above with ~5% wood debris below 0.9 ft (wood debris up to 1.5" long).
ARK-WB-45-2-4	0910		0.8	LS	2		As above with no wood debris, color very dark gray (10YR 3/1), firmer, no wood debris, no odor (2.75-3.4 ft bml).
						SP	Slightly silty fine SAND: very dark gray (10YR 3/1), 10% silt, faint odor, no sheen.
ARK-WB-45-4-6	0920		0.3	NS	4		As above, slightly micaceous, trace of wood debris up to 1/4" diameter, 5-10% silt. Clayey silt laminations 5.6-5.8 ft, very dark grayish brown (10YR 3/2), soft, no odor or sheen.
ARK-WB-45-6-8	0930		0.3	NS	6		As above with fine to medium sand, <5% silt, black (10YR 2/1), few red sand grains, no odor, no sheen. Piece of wood debris 3" long at 7.6 ft bml.
ARK-WB-45-8-10	0940		0.5	NS	8		7.9-8.8 ft, color very dark gray (10YR 3/1), micaceous. As above (same as 5.8-7.9 ft interval).
ARK-WB-45-10-12	1025	75 (10-12)	0.3	NS	10		
						ML	SILT: very dark gray (10YR 3/1), moderately soft, no odor, no sheen.
						SP	Fine SAND: very dark grayish brown (10YR 3/2), moderately micaceous, <5% silt, no odor, no sheen.
ARK-WB-45-12-14	1055	70 (12-14)	0.2	NS	12		As above.
						ML	SILT: dark grayish brown (10YR 4/2), micaceous, firm, no odor, no sheen.
--	1105	100 (14-15)	--	NS	14	Rx	BASALT: black, massive, few vesicles, well indurated, iron staining on some surfaces, no odor, no sheen.
						--	Borehole terminated at 15 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0840 01-Sep-09
End Time	1135 01-Sep-09

Sampling Equipment/Notes

Borehole terminated at 15 ft bml.

3" dia. x 12 ft. long aluminum Vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–14 ft); 4-7/8" diameter solid core 14-15 ft.

Ran 6" diameter casing beginning at 10 ft bml.

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BORING NUMBER	WB-46
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-46-0-2	1358	50 (0-2)	0.6	NS		SW	Slightly gravelly SAND: reddish brown (5YR 4/3), 5-10% fine to 1.5" diameter angular gravel, fine to medium sand, no sheen, no odor.
ARK-WB-46-2-4	1410	75 (2-4)	4.8	NS	2		As above with color dark brown (7.5YR 3/3), angular to subrounded gravel up to 1/2" diameter.
						ML	SILT: very dark gray (10YR 3/1), soft, slight petroleum odor, no sheen.
ARK-WB-46-4-6	1430	55	1.1	NS	4		As above.
--	1450	0 (6-8)	--	--	6	SP	Fine to medium SAND: very dark gray (10YR 3/1), few pieces of subrounded gravel up to 3/4" diameter, no sheen, no odor.
						GW	Sandy fine GRAVEL: very dark gray (10YR 3/1), 35% fine to coarse sand, fine to 3/4" diameter subrounded gravel, gravel is mostly basalt with minor amounts of quartz, no sheen, no odor.
ARK-WB-46-8.3-10	1505	55 (8.3-10)	1.8	NS	8		
ARK-WB-46-10-12	1515	--	1.6	NS	10		
						ML	Clayey SILT: very dark gray (10YR 3/1), 10% clay, micaceous, no sheen, no odor. Silty sand laminations 11.25-11.30 and 11.80-11.85 ft bgs, black (10YR 2/1), no sheen, no odor.
ARK-WB-46-12-14	1540	50 (12-14)	1.6	NS	12	SP	Fine SAND: black (10YR 2/1), uniform, trace of red sand grains, no sheen, no odor.
ARK-WB-46-14-16	1555	60 (14-16)	0.5	NS	14		As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1345 23-Sep-09
End Time	1800 23-Sep-09

Sampling Equipment/Notes

This borehole was drilled from the riverbank just upstream of Outfall 003.

4" dia. x 5 ft long split spoon (0–25 ft bgs); 4-7/8" dia. x 5 ft long solid core barrel (25-26 ft bgs).

Ran 6" casing beginning at 4 ft bgs. This borehole was moved 55 ft toward the riverbank, parallel to Outfall 003, from the coordinates in the FSP.

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BORING NUMBER	WB-46
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
ARK-WB-46-16-18	1628	85 (16-18)	2.0	NS	16		As above.
							As above with 1-2% fine to 1/2" diameter subrounded to rounded gravel, no sheen, no odor.
ARK-WB-46-18-20	1640	100 (18-20)	0.9	NS	18		As above with no gravel, fine to medium sand.
ARK-WB-46-20-22	1655	100 (20-22)	3.2	NS	20		As above. Two pieces of rounded basalt gravel (1" and 1.5") diameter at SP/ML contact.
						ML	SILT: dark grayish brown (10YR 4/2), micaceous, no sheen, no odor.
ARK-WB-46-22-24	1715	75 (22-24)	1.3	NS	22		As above with mostly coarse silt (close to the grain size of fine sand).
ARK-WB-46-24-25	1735	80 (24-25)	2.2	NS	24		As above. Fine to medium SAND: black (10YR 2/1), 24.9-25.0 ft bgs.
--	1745	~100 (25-26)	--	NS		Rx	BASALT: black, massive, well indurated, orange staining on some surfaces, few small vesicles (<1/8" diameter), no sheen, no odor.
					26		Borehole terminated at 26 ft bgs.
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1345 23-Sep-09
End Time	1800 23-Sep-09

Sampling Equipment/Notes

This borehole was drilled from the riverbank just upstream of Outfall 003.

4" dia. x 5 ft long split spoon (0–25 ft bgs); 4-7/8" dia. x 5 ft long solid core barrel (25-26 ft bgs).

Ran 6" casing beginning at 4 ft bgs. This borehole was moved 55 ft toward the riverbank, parallel to Outfall 003, from the coordinates in the FSP.

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BORING NUMBER	WB-47
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-47-0-2	1038	50 (0-2)	1.2	NS		SW	Gravely fine to medium SAND: dark brown (7.5YR 3/2), 15% fine to 1" diameter angular to subrounded gravel, trace of clear glass and brick debris, dry to moist, no odor, no sheen.
ARK-WB-47-2-4	1102	50 (2-4)	1.3	NS	2--		As above with 5-10% gravel, no red brick debris, dark brown (7.5YR 3/3), moist.
--	--	0 (4-6)	--	--	4--		No recovery 4-6 ft bgs. Wet at ~5 ft bgs.
ARK-WB-47-6-8	1123	75 (6-8)	1.1	NS	6--		As above with gravel up to 3" diameter, trace of red brick and glass debris, wet.
ARK-WB-47-8-10	1139	60 (8-10)	3.0	NS	8--		As above with color dark reddish brown (5YR 3/3), 5% silt, trace of coarse sand.
ARK-WB-47-10-12	1200	25 (10-12)	2.6	NS	10--		As above with color dark brown (7.5YR 3/2), 5% subrounded gravel up to 1" diameter, no glass or red brick debris, no silt, mostly medium sand.
ARK-WB-47-12-14	1300	50 (12-14)	1.2	NS	12--		As above.
ARK-WB-47-14-16	1320	75 (12-14)	2.0	NS	14--	SP	As above with no gravel (fine to medium sand with a trace of coarse sand).

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1030 08-Sep-09
End Time	1520 08-Sep-09

Sampling Equipment/Notes

Drillers ran 6" diameter casing beginning at 4 ft bgs. Drilled from riverbank.

4" dia. x 5 ft long split spoon sampler (0–23 ft bgs); 4-7/8" diameter x 5 ft long solid core barrel (23-24 ft bgs).

BORING NUMBER	WB-47
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	Clayey SILT: very dark gray (10YR 3/1), 25% clay, firm, trace of wood debris (twigs) at 15 ft and 16 ft bgs, no odor, no sheen.
ARK-WB-47-16-18	1338	60 (16-18)	2.1	NS	16	SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, faint odor, no sheen. Mostly fine sand.
ARK-WB-47-18-20	1400	95 (18-20)	2.5	NS	18		As above.
ARK-WB-78-18-20	1410						
ARK-WB-47-20-22	1420	75 (20-22)	2.5	NS	20		As above.
						ML	SILT: brown (10YR 4/3), slightly stiff, coarse, micaceous, no odor, no sheen.
ARK-WB-47-22-23	1445	30 (22-23)	3.0	NS	22		As above.
						Rx	BASALT: black, massive, well indurated, few small vesicles (<1/8" diameter), trace of orange staining on a few surfaces, no odor, no sheen.
--	1500	~50 (23-24)	--	NS	24	--	Borehole terminated at 24 ft bgs.
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1030 08-Sep-09
End Time	1520 08-Sep-09

Sampling Equipment/Notes

Drillers ran 6" diameter casing beginning at 4 ft bgs. Drilled from riverbank.

4" dia. x 5 ft long split spoon sampler (0–23 ft bgs); 4-7/8" diameter x 5 ft long solid core barrel (23-24 ft bgs).

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BORING NUMBER	WB-48
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-48-0-2	0950	95 (0-10)	0.4	NS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), 20% clay, soft, no sheen, no odor.
ARK-WB-48-2-4	1000		2.7	NS	2		As above.
							As above with faint chemical odor at 3 ft bml.
ARK-WB-48-4-6	1010		2.2	NS	4		As above with no odor, thin gray laminations (~1/16" thick) from 4.0 to 4.7 ft bgs and 5.1 to 5.6 ft bml.
							As above with increased clay content (~30% clay).
							As above with faint chemical odor.
ARK-WB-48-6-8	1020		3.9	NS	6		As above.
ARK-WB-48-8-10	1030		12.8	NS	8		As above with weak chemical odor.
							As above with 35% fine sand, 15% clay, moderately strong chemical odor, very dark gray (10YR 3/1).
ARK-WB-48-10-12	1108	50 (10-12)	97.3	NS	10	SM	Silty fine SAND: very dark gray (10YR 3/1), 28-30% silt, trace of wood debris (5-10%) up to 5" long, moderately strong chemical odor, no sheen.
ARK-WB-48-12-14	1428	60 (12-14)	10.9	NS	12		As above with weak chemical odor, 15% silt, no sheen.
							3" diameter piece of wood debris at 13.0 ft bml.
						SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, trace of wood debris (<2%) up to 2" long, faint chemical odor, no sheen.
ARK-WB-48-14-16	1144	100 (14-16)	5.2	NS	14		
ARK-WB-75-14-16	1154						As above with no wood debris, no odor, no sheen.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0930 10-Sep-09
End Time	1400 10-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 10 ft bml.

3" dia. x 12 ft. long aluminum vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–21.9 ft); 4-7/8" dia. x 5 ft long solid core barrel (21.9-22.4 ft bml).

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BORING NUMBER	WB-48
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
ARK-WB-48-16-18	1206	90 (16-18)	1.7	NS	16		As above, no odor, no sheen.
ARK-WB-48-18-20	1310	90 (18-20)	0.8	NS	18		As above.
						ML	SILT: dark grayish brown (2.5Y 4/2), micaceous, coarse, no odor, no sheen.
ARK-WB-48-20-21.9	1325	75 (20-21.9)	0.6	NS	20		As above.
						SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, no sheen, no odor.
--	1335	100 (21.9-22.4)	--	NS	22	Rx	BASALT: black, well indurated, massive, few small vesicles (~1/16" diameter), trace of orange staining, no sheen, no odor.
							Borehole terminated at 22.4 ft bml.
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0930 10-Sep-09
End Time	1400 10-Sep-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 10 ft bml.

3" dia. x 12 ft. long aluminum vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–21.9 ft); 4-7/8" dia. x 5 ft long solid core barrel (21.9-22.4 ft bml).

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BORING NUMBER	WB-49
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-49-0-2	1440	85 (0-10)	0.3	LS		ML	Clayey SILT: very dark gray (10YR 3/1), 10-20% clay, soft, weak petroleum odor, light sheen.
							As above.
ARK-WB-49-2-4	1450		0.6	LS	2--		As above with a few small (<1/16" diameter) spotty brown oil globules, trace of fibrous organic material, weak petroleum odor.
ARK-WB-49-4-6	1500		1.1	LS	4--		As above with light sheen, no oil globules (oil globules limited to 3-4 bgs).
						SP	Fine to medium SAND: black (10YR 2/1), 5-10% silt, trace of red sand grains, very light spotty sheen, moderately strong petroleum odor.
ARK-WB-49-6-8	1510		0.6	LS	6--		As above with no silt.
ARK-WB-49-8-10	1520		0.5	LS	8--		As above, very light spotty sheen, moderately strong petroleum odor.
ARK-WB-49-10-12	1550	65 (10-12)	0.8	NS	10--		As above with faint petroleum odor, no sheen, few pieces of fine subrounded gravel.
ARK-WB-49-12-14	1610	65 (12-14)	1.6	NS	12--		As above with no sheen, no odor, trace of coarse sand.
ARK-WB-49-14-16	1620	90 (14-16)	2.5	NS	14--		As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1425 09-Sep-09
End Time	1740 09-Sep-09

Sampling Equipment/Notes

Ran 6" casing beginning at 10 ft bml.

3" dia. x 12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–23.5); 4-7/8" dia. x 5 ft long solid core sampler (23.5–24.0 ft bml).

BORING NUMBER	WB-49
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
ARK-WB-49-16-18	1635	90 (16-18)	1.8	LS	16		As above, no odor, no sheen.
						ML	Clayey SILT: very dark gray (10YR 3/1), soft, 20% clay, very light spotty sheen, faint petroleum odor.
ARK-WB-49-18-20	1650	50 (18-20)	2.5	NS	18	SP	Fine to medium SAND: very dark gray (10YR 3/1), trace of red sand grains, no odor, no sheen.
ARK-WB-49-20-22	1705	75 (20-22)	0.9	NS	20		As above with a few pieces of fine gravel, no sheen, no odor.
							As above with 10% fine to 1/2" diameter subrounded to rounded gravel.
ARK-WB-49-22-23.5	1720	70 (22-23.5)	0.8	NS	22		As above with color very dark grayish brown (10YR 3/2), no gravel.
						ML	Clayey SILT: dark grayish brown (2.5Y 4/2), 10-20% clay, no odor, no sheen. At 23.4-23.5 ft bml, 25% subrounded gravel up to 1.5" diameter.
						Rx	BASALT: black, well indurated, massive, iron staining on some surfaces, no odor or sheen.
--	1740	~100 (23.5-24)	--	NS	24	--	Borehole terminated at 24 ft bml.
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1425 09-Sep-09
End Time	1740 09-Sep-09

Sampling Equipment/Notes

Ran 6" casing beginning at 10 ft bml.

3" dia. x 12 ft. long alum. vibracore tube (0–10 ft bml); 4" dia. x 5 ft long split spoon (10–23.5); 4-7/8" dia. x 5 ft long solid core sampler (23.5–24.0 ft bml).

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BORING NUMBER	WB-50
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth (ft)
ARK-WB-50-0-2	1130	100 (0-6)	0.4	NS	
					2
ARK-WB-50-2-4	1140		0.4	NS	
					4
ARK-WB-50-4-6	1150		0.4	NS	
					6
ARK-WB-50-6-8	1205	50 (6-8)	1.8	NS	
					8
ARK-WB-50-8-10	1330	100	0.8	LS	
ARK-WB-71-8-10	1340	(8-10)			
					10
ARK-WB-50-10-12	1400	100 (10-12.5)	0.8	LS	
					12
ARK-WB-50-12-14	1440	100 (12.5-14)	--	NS	
					14
ARK-WB-50-14-14.5	1505	100	--	NS	
--	1520	100 (14.5-15.2)	--	NS	

ASTM SEDIMENT DESCRIPTION

Group Symbol	Description
ML	Clayey SILT: very dark grayish brown (10YR 3/2), 25% clay, soft, no odor, no sheen. Piece of wood ~1" long at 1.75 ft. Wood debris layer 2.65-3.0 ft bml. As above with color very dark gray (10YR 3/1). Black band ~0.05 ft thick observed at 4.5 ft (organics?). As above with weak to moderately strong chemical odor at 4-5 ft bml. Faint odor below 5 ft bml.
SM	Silty fine to medium SAND: black (10YR 2/1), 25% silt, 15-20% wood debris up to 2" long, faint odor, no sheen.
ML	Clayey SILT: very dark gray (10YR 3/1), 15% clay, soft, no odor, trace of wood debris up to 4" long. As above with 20% fine to medium sand at bottom of sample.
SP	Fine to medium SAND: black (10YR 2/1), piece of wood debris ~1" long at 8.4 ft, no odor, no sheen.
CL	Silty CLAY: very dark gray (7.5YR 3/1), soft, 30% silt, no odor, no sheen. Approximately 25% fine sand at 9.8 ft bml.
SP	Fine to medium SAND: black (7.5YR 2.5/1), trace of coarse sand, no odor. Clayey silt layer 10.6-10.9 ft (very dark gray 7.5YR 3/1). Pieces of wood debris ~2-4" long at 10.5 ft and 11.8 ft. Light spotty sheen below 11.5 ft, weak petroleum odor. As above with color dark brown (7.5YR 3/2).
ML	SILT: dark grayish brown (10YR 4/2), slightly micaceous, firm, no odor, no sheen. Silt is coarse (close to fine sand grain size).
SM	Silty fine SAND: very dark grayish brown (10YR 3/2), 20% silt, no odor, no sheen.
Rx	BASALT: Black, massive, well indurated, some very small vesicles, no odor.
--	Borehole terminated at 15.2 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1100 27-Aug-09
End Time	1635 27-Aug-09

Sampling Equipment/Notes

10 ft x 3" dia. aluminum Vibracore tube (0–6 ft bml); 4" dia. x 5 ft long split spoon (6–14.5); 4-7/8" dia. x 5 ft long solid core sampler (14.5–15.2 ft).

Ran 6" dia. casing beginning at 10 ft bml.

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BORING NUMBER	WB-51
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-51-0-2	0940	90 (0-8)	0.3	NS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), ~30% clay, soft, no odor, no sheen.
							Color black (10YR 2/1), faint odor, no sheen.
ARK-WB-51-2-4	0950		0.5	NS	2--		Color very dark gray (10YR 3/1), trace of fibrous organic material.
ARK-WB-51-4-6	1000		0.6	LS*	4--		As above with 15-20% fine sand, no odor.
							*Very light spotty sheen observed 5.5-5.7 ft bml only.
ARK-WB-51-6-8	1010		1.1	NS	6--	SP	Slighty silty fine to medium SAND: very dark gray (10YR 3/1), 10% silt, no odor, no sheen.
							As above with silt lamination 6.4-6.45 ft bml.
							As above with trace of wood debris (small twigs).
ARK-WB-51-8-10	1033	~2% (8-10)	2.6	NS	8--		As above. Very little recovery. Piece of wood debris observed in the shoe.
ARK-WB-51-10-12	1107	100 (10-12)	0.7	LS	10--		As above with 5% silt, very light spotty iridescent sheen.
							Silt lamination ~10.45-10.50 ft bml, trace of fibrous organic material.
ARK-WB-51-12-14	1140	100 (12-14)	0.8	NS	12--		As above, no sheen, no odor, 5-10% silt.
							Wood debris up to 3" long (<5%) below 12.5 ft, few pieces of subrounded gravel up to 1" diameter, slightly micaceous.
ARK-WB-51-14-16	1209	100 (14-16)	0.9	NS	14--		As above with no silt, no gravel, black (10YR 2/1), some red sand grains.
							Piece of wood debris at 14.7 ft bgs.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0920 28-Aug-09
End Time	1530 28-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft bml.

10 ft x 3" dia. aluminum vibracore tube (0–8 ft bml); 5 ft long x 4" dia. split spoon (8–21.5); 5 ft long x 4-7/8" dia. solid core sampler (21.5–21.8 ft).

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BORING NUMBER	WB-51
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	Fine to medium SAND: black (10YR 2/1), trace of red sand grains, no odor, no sheen (as above). Silt lamination ~15.35-15.40 ft bml, no odor or sheen.
ARK-WB-51-16-18	1330	75 (16-18)	0.4	NS	16--		As above.
ARK-WB-51-18-20	1353	100 (18-20)	0.2	NS	18--		As above. Piece of wood ~3/4" long at 18.4 ft bml. As above with color very dark grayish brown (10YR 3/2) below 19.7 ft.
ARK-WB-51-20-21.5	1423	85 (20-21.5)	0.7	NS	20--		As above.
						ML	SILT: dark grayish brown (10YR 4/2), coarse, micaceous, no odor.
						SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), micaceous, no odor.
--	1450	--	--	NS		Rx	BASALT: black, massive, very well indurated, orange staining on some surfaces, no odor.
					22--	--	Refusal at 21.8 ft bml.
					24--		
					26--		
					28--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0920 28-Aug-09
End Time	1530 28-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft bml.

10 ft x 3" dia. aluminum vibracore tube (0–8 ft bml); 5 ft long x 4" dia. split spoon (8–21.5); 5 ft long x 4-7/8" dia. solid core sampler (21.5–21.8 ft).

BORING NUMBER	WB-52
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / **ASTM SEDIMENT DESCRIPTION**

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM Sediment Description
ARK-WB-52-0-2	0833	75 (0-2)	0.6	NS		SP	Fine to medium SAND: dark brown (7.5YR 3/2), trace of coarse sand, wet, no odor, no sheen.
ARK-WB-52-2-4	0900	70 (2-4)	0.6	LS	2--		As above with 5-10% subrounded gravel up to 3/4" diameter, faint chemical odor, light discontinuous sheen observed in mixing bowl. Angular rock 4-1/4" long from 3-3.4 ft bgs (removed from sample).
						ML	SILT: dark grayish brown (10YR 4/2), micaceous, slightly stiff, no odor, no sheen.
ARK-WB-52-4-6	0925	55 (4-6)	2.3	NS	4--	SP	Fine to medium SAND: dark brown (7.5YR 3/2), few pieces of coarse sand, faint chemical odor, no sheen.
ARK-WB-52-6-8	0943	90 (6-8)	2.4	LS	6--		As above with very light discontinous sheen observed in mixing bowl with sediment, weak chemical odor.
						ML	Clayey SILT layer 7.0-7.4 ft bgs, dark grayish brown (10YR 4/2), 20% clay, 5% angular to subrounded gravel up to 1" diameter.
ARK-WB-52-8-10	1002	75 (8-10)	2.5	LS	8--	SP	As above (SP).
						ML	SILT: very dark gray (10YR 3/1), slightly stiff to soft, micaceous, coarse, 10% clay, very light discontinuous sheen, no odor. Trace of very fine fibrous roots below 9.5 ft bgs.
ARK-WB-52-10-12	1018	55 (10-12)	1.7	LS	10--		As above with 20% clay.
						SW	Gravelly SAND: very dark gray (10YR 3/1), fine to medium sand, 1/4"-3/4" diameter subrounded gravel ~20-25%, very light spotty sheen observed in mixing bowl only, no odor.
ARK-WB-52-12-14	1035	75 (12-14)	1.7	NS	12--	SP	Fine to medium SAND: black (10YR 2/1), mostly fine sand, trace of red sand grains, slightly micaceous, few pieces of rounded gravel 1/2"-1" diameter, no odor, no sheen.
ARK-WB-52-14-16	1054	55 (14-16)	2.6	NS	14--		As above with fine sand, no gravel.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0835 09-Sep-09
End Time	1205 09-Sep-09

Sampling Equipment/Notes

Ran 6" diameter @ casing beginning at 4 ft bml.

4" diameter x 5 ft long split spoon (0–18 bgs); 4-7/8" diameter x 5 ft long solid core barrel (18–18.5 ft bgs).

Drilled from riverbank.

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BORING NUMBER	WB-52
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
							As above with few pieces of rounded gravel 1/4" to 1" diameter.
					16–		As above with no gravel.
ARK-WB-52-16-18	1113	90 (16-18)	2.1	NS			
							As above with some medium sand.
					18–		
--	1120	~50 (18-18.5)	--	NS		Rx	BASALT: very dark gray, well indurated, massive, orange staining along some surfaces, no odor, no sheen.
							Borehole terminated at 18.5 ft bgs.
					20–		
					22–		
					24–		
					26–		
					28–		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0835 09-Sep-09
End Time	1205 09-Sep-09

Sampling Equipment/Notes

Ran 6" diameter @ casing beginning at 4 ft bml.

4" diameter x 5 ft long split spoon (0–18 bgs); 4-7/8" diameter x 5 ft long solid core barrel (18–18.5 ft bgs).

Drilled from riverbank.

integral consulting inc.

BORING NUMBER	WB-53
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-53-0-2	1424	75	0.5	NS		ML	Clayey SILT: dark gray (10YR 3/1), 30-40% clay, soft, no odor.
		(0-2)					
							Wood debris 1/2"-2" long below 1.1 ft, ~15% wood.
							Wood content increasing with depth.
					2		As above with 20% clay.
ARK-WB-53-2-4	1448	80	3.3	NS			Decreasing wood debris content, but larger pieces observed (2-5" long).
		(2-4)					
					4		
ARK-WB-53-4-6	1503	80	1.4	NS			As above with weak petroleum (?) odor.
		(4-6)					Black wood debris up to 3" long, 5.1 to 5.7 ft bml, ~10%.
					6	SM	Silty fine SAND: very dark gray (10YR 3/1), 40% silt, no odor.
ARK-WB-53-6-8	1525	90	0.5	LS			As above with 20-30% silt, weak petroleum odor, very light spotty sheen.
		(6-8)					Trace of wood debris at 6.9 and 7.5 ft bml up to 2" long.
							As above with 15-20% silt, no petroleum odor, no sheen.
					8	SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), <5% silt, no odor, no sheen.
ARK-WB-53-8-10	1542	100	0.7	NS			
		(8-10)					Clayey silt laminations (very dark brownish gray, 10YR 3/2) at 9.25-9.30 and 9.40-9.50 ft bml.
					10		As above.
ARK-WB-53-10-12	1608	100	0.3	NS			
		(10-12)					
							As above with 5-10% silt.
					12		As above with <5% silt, mostly fine sand.
ARK-WB-53-12-14	1640	100	0.3	NS			Silt lamination 12.9-13.1 ft, dark grayish brown (10YR 4/2), no odor.
		(12-14)					Fine to medium sand, micaceous.
							Silt lamination 13.8-14.0 ft (color as above).
					14		As above with piece of subrounded gravel ~1" long at 14.5 ft bml.
ARK-WB-53-14-15.3	1705	100	0.2	NS			
		(14-15.3)				ML	Sandy SILT: dark grayish brown (10YR 4/2), 20% fine micaceous sand, no odor.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1415 24-Aug-09
End Time	1740 24-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft.

4" diameter x 5 ft long split spoon sampler (0-15.3 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (15.3-16.3 ft bml).

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BORING NUMBER	WB-53
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
--	1720	~100	--	NS			ML	Sandy SILT (as above).
		(15.3-16.3)			16--		Rx	BASALT: black, slightly vesicular to massive (massive at bottom of sample), well indurated, trace of orange staining, no odor.
								Borehole terminated at 16.3 ft bml.
					18--			
					20--			
					22--			
					24--			
					26--			
					28--			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1415 24-Aug-09
End Time	1740 24-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft.

4" diameter x 5 ft long split spoon sampler (0-15.3 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (15.3-16.3 ft bml).

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BORING NUMBER	WB-54
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
ARK-WB-54-0-2	0855	30	6.0	NS			ML	Clayey SILT: very dark gray (10YR 3/1), 25% clay, soft, trace fine sand, slight organic odor.
		(0-2)						
								Carbon debris ~2" long observed at 2 ft bgs (see Photo #3616).
ARK-WB-54-2-4	0906	100	1.5	NS	2--			Silty fine SAND layer from 2.0 to 2.1 ft, very dark gray, 10YR 3/1, 30% silt.
		(2-4)						As above with 30-40% clay.
								Fibrous organic material abundant at 2.5-3.5 ft.
								Some fibrous organic material 3.5-4.0 ft.
ARK-WB-54-4-6	0930	100	5.5	LS	4--			As above with weak petroleum, light spotty discontinuous sheen.
								Piece of wood debris ~1" long at 5.3 ft.
								As above with 15-20% clay below 5.3 ft, dark gray (10YR 3/1).
ARK-WB-54-6-8	1010	100	2.6	LS	6--		SM	Silty fine to medium SAND: very dark gray (10YR 3/1), 15-20% silt, light iridescent discontinuous sheen, weak petroleum odor.
		(6-8)						Silty clay lamination from 6.6-6.7 ft, very dark grayish brown 10YR 3/2.
								Heavy sheen around a piece of wood ~1" long at 7.3 ft.
ARK-WB-54-8-10	1005	100	1.5	NS	8--		SP	Slightly silty fine to medium SAND: very dark gray (10YR 3/1), 5-10% silt, trace of non-carbonized wood debris at 8 ft, no odor. Silt lamination 8.70-8.75 ft bml, very dark gray (10YR 3/1).
		(8-10)						
								As above with 10-15% silt.
ARK-WB-54-10-12.3	1035	100	1.0	NS	10--			As above.
		(10-12.3)						
							ML	Clayey SILT: very dark grayish brown (10YR 3/2), 30% clay, soft, no odor.
							SP	Slightly silty fine to medium SAND: very dark gray (10YR 3/1), 5-10% silt, trace of wood debris, no odor.
ARK-WB-54-12.3-14	1048	100	1.5	NS	12--			
		(12.3-14)						Silt lamination 12.6-12.8 (clayey silt), very dark grayish brown (10YR 3/2).
								Clayey silt lamination 13.55-13.65 ft bml, color as above.
								Small piece of wood (root?) ~2" long at 13.7 ft bml.
ARK-WB-54-14-16	1108	100	0.8	NS	14--			As above with color very dark grayish brown (10YR 3/2), <5% silt, no odor. Piece of 1" diameter subrounded gravel at 14.4 ft.
		(14-16)						

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0845 21-Aug-09
End Time	1225 24-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft.

4" diameter x 5 ft long split spoon sampler (0-18 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (18-19.2 ft bml).

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BORING NUMBER	WB-54
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above.
ARK-WB-54-16-18	1125	100 (16-18)	0.0	NS	16		As above.
							As above with 10-15% silt, 2 pieces of subrounded gravel ~3/4" diameter at 18.0 ft bml.
--	1137	90	--	NS	18	Rx	BASALT: dark gray to black, slightly vesicular, well indurated, trace of orange staining. Basalt more massive below 18.5 ft, fewer vesicles.
						--	Borehole terminated at 19.2 ft bml.
					20		
					22		
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0845 21-Aug-09
End Time	1225 24-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft.

4" diameter x 5 ft long split spoon sampler (0-18 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (18-19.2 ft bml).

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BORING NUMBER	WB-55
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-55-0-2	0855	45 (0-2)	0.5	NS		SP	Fine to medium SAND: dark brown (7.5YR 3/2), trace of gravel (1/4" to 1.5" diameter), few pieces of red brick debris, no odor.
							As above with a trace of coarse sand and fine gravel up to 3/8" diameter.
ARK-WB-55-2-4	0918	75 (2-4)	0.8	NS	2		Silt laminations (<0.1 ft thick) at 2.5 ft and 3.4 ft, brown (7.5YR 4/2), no odor.
ARK-WB-55-4-6	0940	95 (4-6)	0.8	NS	4		As above with a few pieces of subrounded to rounded gravel up to 1" diameter, 4 ft to 4.5 ft bgs.
							As above.
ARK-WB-55-6-8	1005	75 (6-8)	0.7	NS	6		As above.
						ML	Clayey SILT: very dark gray (10YR 3/1), soft, trace of fibrous organic material, no odor, ~20% clay.
ARK-WB-55-8-10	1030	65 (8-10)	1.1	NS	8		Piece of concrete ~3" diameter at 8 ft bgs.
							As above with color very dark grayish brown (10YR 3/2), ~10% clay, trace of fine sand.
							Piece of wood debris ~1" diameter at 9.7 ft.
ARK-WB-55-10-12	1048	70 (10-12)	0.8	NS	10		As above with few pieces of angular to subrounded gravel up to 1.25" diameter.
						SP	Fine to medium SAND: very dark gray (10YR 3/1), ~5% silt, slightly micaceous, no odor.
ARK-WB-55-12-14	1110	100 (12-14)	0.4	NS	12		As above with color very dark grayish brown (10YR 3/2).
							Few pieces of fine subrounded gravel (up to 1/4" diameter) below 13.5 ft bgs.
ARK-WB-55-14-16	1132	100 (14-16)	0.5	NS	14		As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0845 26-Aug-09
End Time	1440 26-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 4 ft bgs.

4" diameter x 5 ft long split spoon sampler (0-21 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (21-22.3 ft bml).

Drilled from riverbank.

BORING NUMBER	WB-55
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / **ASTM SEDIMENT DESCRIPTION**

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SM	Silty fine SAND: very dark grayish brown (10YR 3/2), 15-20% silt, slightly micaceous, no odor, no sheen.
					16		
ARK-WB-55-16-18	1255	85 (16-18)	1.9	NS			As above.
							As above with 10-15% silt.
					18	SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), slightly micaceous, mostly fine sand, no odor, no sheen.
ARK-WB-55-18-20	1317	95 (18-20)	0.7	NS			One subrounded rock ~1-1/4" long at 18.5 ft bgs.
							As above with few pieces of gravel up to 3/4" diameter.
					20		Silt laminations 20.5-20.55 ft and 20.6-20.65 ft, dark grayish brown (10YR 4/3). Sandy silty GRAVEL (20.9-21.0 ft), very dark grayish brown (10YR 3/2), 20% fine to medium sand, 30% silt, 50% fine to 1/2" diameter subrounded gravel, no odor.
ARK-WB-55-20-21	1335	100 (20-21)	1.7	NS			
--	1405	100 (21-22.3)	--	NS		Rx	BASALT: black, vesicular, moderately well indurated, large vesicles, no odor, trace of orange staining on some vesicles.
					22	--	Borehole terminated at 22.3 ft bgs.
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0845 26-Aug-09
End Time	1440 26-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 4 ft bgs.

4" diameter x 5 ft long split spoon sampler (0-21 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (21-22.3 ft bml).

Drilled from riverbank.

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BORING NUMBER	WB-56
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
ARK-WB-56-0-2	1005	20 (0-2)	0.4	NS			SW	Gravelly fine to medium SAND: very dark grayish brown (10YR 3/2), 25% fine to 2" diameter angular to subrounded gravel, trace of coarse sand, no sheen, no odor.
ARK-WB-56-2-4	1030	40 (2-4)	0.4	NS	2--			As above with 10-15% fine to 3/4" diameter angular to subrounded gravel. 2" diameter piece of subrounded gravel in drill bit.
ARK-WB-56-4-6	1045	70 (4-6)	0.2	NS	4--		SP	As above with 5% fine to 1/2" diameter subrounded gravel (fine to medium SAND).
							ML	SILT: dark grayish brown (10YR 4/2), soft, no sheen, no odor.
ARK-WB-56-6-8	1105	45 (6-8)	0.1	NS	6--		SW	Gravelly fine to medium SAND: very dark grayish brown (10YR 3/2), 10% fine to 1.5" diameter gravel, no sheen, no odor. Silt lamination 7.7 ft to 7.85 ft bml, dark grayish brown (10YR 4/2), micaceous.
ARK-WB-56-8-10	1125	95 (8-11)	0.2	NS	8--		SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), slightly micaceous, no sheen, no odor. 2-1/2" diameter rock at 9.0 ft, 3.5" diameter rock at 9.5 ft bml, angular to subrounded.
ARK-WB-56-10-11	1150		0.4	NS	10--		ML	SILT: brown (10YR 4/3), slightly to moderately stiff, micaceous, some orange mottling, no sheen, no odor.
--	--	0 (11-12)	--	--				
ARK-WB-56-12-14	1200	75 (12-14)	0.2	NS	12--			As above with 35% clay, some gray mottling, moderately stiff (clayey SILT).
ARK-WB-56-14-16	1300	100	0.6	NS	14--			As above.
ARK-WB-78-14-16	1310	(14-16)						As above with 15-20% clay at 14.5-15.5 ft bgs.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1000 15-Sep-09
End Time	1730 15-Sep-09

Sampling Equipment/Notes

Drillers ran 6" diameter casing beginning at 2 ft bgs.

4" diameter x 5 ft long split spoon sampler (0-26 ft bml).

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BORING NUMBER	WB-56
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above.
							As above with 35% clay.
					16		As above with 10-35% clay, no odor, no sheen.
ARK-WB-56-16-18	1320	75	0.8	NS			
		(16-18)					
							As above with no clay, micaceous, dark grayish brown (10YR 4/2), coarse silt.
					18		
ARK-WB-56-18-20	1352	90	0.8	NS			
		(18-20)					
							As above with 20% clay, dark grayish brown (10YR 4/2).
					20		As above with no clay, coarse silt.
ARK-2B-56-20-22	1440	50	0.5	NS			
		(20-22)					
					22		
ARK-WB-56-22-24	1500	75	1.1	NS			As above with 25% clay, moderately stiff.
		(22-24)					
							As above with no clay, coarse silt.
					24		
							Note: split spoon has ~3 ft of slough in the 24-26 ft interval, mostly fine to medium sand with some angular to subrounded gravel in the middle of the sample. The origin of the slough is unknown. Sample discarded due to excessive slough.
					26	--	Borehole terminated at 26 ft bml due to 15 ft of casing lost in borehole from ~10 ft to 25 ft bml. Redrilled WB-56b ~10 ft to 12 ft east of WB-56 and continued sampling beginning at an elevation equal to 24 ft bml at WB-56.
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1000 15-Sep-09
End Time	1730 15-Sep-09

Sampling Equipment/Notes

Drillers ran 6" diameter casing beginning at 2 ft bgs.

4" diameter x 5 ft long split spoon sampler (0-26 ft bml).

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BORING NUMBER	WB-56b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
							6" diameter casing ran to 20.7 ft prior to collecting the first sample (20.7 ft to 22.7 ft bml).
					16		
					18		
					20		
ARK-WB-56b-20.7-22.7	0940	100 (20.7-22.7)	0.5	NS		ML	SILT: dark grayish brown (10YR 4/2), micaceous, coarse, no sheen, no odor.
							21.8-22.0 ft, as above with 20% clay.
					22		As above.
ARK-WB-56b-22.7-24.7	1000	75 (22.7-24.7)	0.5	NS			As above.
					24		
ARK-WB-56b-24.7-26.7	1012	80 (24.7-26.7)	0.2	NS			As above.
					26		26.0-26.7 ft bml, 20% clay (clayey SILT), finer silt.
ARK-WB-56b-26.7-28.7	1030	50 (26.7-28.7)	4.0	NS			As above (SILT, micaceous, coarse) below 26.7 ft bml.
					28		
ARK-WB-56b-28.7-30.7	1045	100 (28.7-30.7)	3.3	NS			As above with finer silt from 28.7-29.4 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0920 16-Sep-09
End Time	1525 16-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (20.7 ft to 47.5 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (47.5 ft to 49.4 ft).

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BORING NUMBER	WB-56b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	As above with color very dark grayish brown (10YR 3/2).
ARK-WB-56b-30.7-32.7	1105	100 (30.7-32.7)	2.8	NS			As above.
							Clayey SILT lamination 31.5 to 31.7 ft bml, dark grayish brown (10YR 4/2), 20% clay.
					32		As above.
ARK-WB-56b-32.7-34.7	1125	75 (32.7-34.7)	2.4	NS			As above.
					34		
ARK-WB-56b-34.7-36.7	1140	100 (34.7-36.7)	1.1	NS			Silt fine SAND lamination, 34.7 ft to 34.9 ft bml, very dark grayish brown (10YR 3/2), 30% silt, micaceous, no sheen, no odor.
							As above (SILT) with color dark grayish brown (10YR 4/2), finer grained silt, no odor, no sheen.
					36		
ARK-WB-56b-36.7-38.7	1250	85 (36.7-38.7)	1.0	NS			As above with 10% clay, very dark grayish brown (10YR 3/2).
					38		
ARK-WB-56b-38.7-40.7	1307	95 (38.7-40.7)	1.1	NS			As above with color dark gray (10YR 4/1), mostly coarse silt, no clay.
							As above with 10% clay from 39.7 to 40.0 ft bml.
					40		
ARK-WB-56b-40.7-42.7	2327	80 (40.7-42.7)	2.6	NS			As above.
					42		
ARK-WB-56b-42.7-44.7	1350	75 (42.7-44.7)	1.8	NS			As above with color very dark gray (10YR 3/1), micaceous, coarse silt.
					44		
ARK-WB-56b-44.7-46.7	1405	100 (44.7-46.7)	1.7	NS			As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0920 16-Sep-09
End Time	1525 16-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (20.7 ft to 47.5 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (47.5 ft to 49.4 ft).

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BORING NUMBER	WB-56b
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth		Group Symbol	
					46		ML	As above.
ARK-WB-56b-46.7-47.5	1425	50 (46.7-47.5)	1.7	NS			GW	Sandy GRAVEL: very dark grayish brown (10YR 3/2), 40% fine to medium sand, fine to 1.5" diameter subrounded gravel, no sheen, no odor.
--	4050	~100 (47.5-49.4)	--	NS	48		Rx	BASALT: black, massive, well indurated, iron staining on some surfaces, no sheen, no odor.
					50	–		Borehole terminated at 49.4 ft bml.
					52			
					54			
					56			
					58			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0920 16-Sep-09
End Time	1525 16-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (20.7 ft to 47.5 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (47.5 ft to 49.4 ft).

BORING NUMBER	WB-57
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-57-0-2	1020	100	0.2	NS		ML	Clayey SILT: very dark gray (10YR 3/1), 20% clay, soft, slight natural organic odor, no sheen.
		(0-10)					
							As above with color black (10YR 2/1).
ARK-WB-57-2-4	1030		0.3	NS	2--		
							As above with color very dark grayish brown (10YR 3/2), trace of fine organics (rootlets), slight natural organic odor.
ARK-WB-57-4-6	1040		0.3	NS	4--		
							As above with weak chemical odor (beginning at 5 ft bml).
ARK-WB-57-6-8	1050		0.5	NS	6--		
							As above with moderately strong chemical odor.
ARK-WB-57-8-10	1100		0.7	NS	8--		As above.
							As above with a trace of fine sand.
							Few pieces of wood debris up to 1" long at 9.7 ft bml.
ARK-WB-57-10-12	1125	60	0.7	NS	10--		As above with no wood debris, weak to moderately strong chemical odor.
		(10-12)					
ARK-WB-57-12-14	1150	50	0.5	NS	12--		As above with weak chemical odor, 5-10% fine sand, slightly firmer.
		(12-14)					
ARK-WB-47-14-16	1255	70	1.7	NS	14--		As above.
		(14-16)					

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0950 14-Sep-09
End Time	1800 14-Sep-09

Sampling Equipment/Notes

Ran casing (6" diameter) beginning at 16 ft bml. The sediments were too soft to run casing shallower than 16 ft bml.

3" diameter x 12 ft long aluminum vibracore tube (0-10 ft bml); 4" diameter x 5 ft long split spoon (10–27.2 bml); 4-7/8" diameter x 5 ft long solid core barrel (27.2–29.2 ft bgs).

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BORING NUMBER	WB-57
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						ML	Silty clay lamination 15.05-15.10 ft bml, olive brown (2.5Y 4/3), some orange mottling.
ARK-WB-57-16-18	1350	100	1.8	NS	16--	SP	Fine to medium SAND: very dark gray (10YR 3/1), trace of red sand grains, faint chemical odor, no sheen.
ARK-WB-77-16-18	1400	(16-18)				SM	Silty fine SAND: very dark grayish brown (2.5Y 3/2), 30% micaceous silt, no odor, no sheen.
					18--	SP	Fine SAND: dark grayish brown (10YR 4/2), micaceous, 5% silt, no odor, no sheen.
ARK-WB-57-18-20	1425	70	0.4	NS		ML	SILT: dark grayish brown (10YR 4/2), micaceous, coarse, no odor, no sheen.
							Clayey silt lamination 19.0 to 19.2 ft bml, brown (10YR 4/3), slightly stiff.
ARK-WB-57-20-22	1445	100 (20-22)	0.9	NS	20--		As above (silt), no odor, no sheen.
ARK-WB-57-22-24	1510	80 (22-24)	0.7	NS	22--		As above with color very dark grayish brown (10YR 3/2).
ARK-WB-57-24-26	1545	75 (24-26)	1.0	NS	24--		As above with abundant hard clumps of silt up to 3/4" diameter. Silt is coarse.
ARK-WB-57-26-27.2	1620	100 (26-27.2)	0.7	NS	26--	ML/GW	Sandy gravelly SILT: very dark grayish brown (10YR 3/2), 15% fine to medium sand, 20% fine to 1" diameter subrounded gravel, no odor, no sheen. Material from 26-27.7 ft bml might be a sandy GRAVEL. The silt matrix may be slough. 5" long cobble at 26.5 bml.
--	1655	~75 (27.2-29.2)	--	NS	28--	Rx	BASALT: black, slightly vesicular (few vesicles up to 1/8" diameter), well indurated, no odor, no sheen.
						--	Borehole terminated at 29.2 ft bml.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0950 14-Sep-09
End Time	1800 14-Sep-09

Sampling Equipment/Notes

Ran casing (6" diameter) beginning at 16 ft bml. The sediments were too soft to run casing shallower than 16 ft bml.

3" diameter x 12 ft long aluminum vibracore tube (0-10 ft bml); 4" diameter x 5 ft long split spoon (10–27.2 bml); 4-7/8" diameter x 5 ft long solid core barrel (27.2–29.2 ft bgs).

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BORING NUMBER	WB-58
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	
ARK-WB-58-0-2	1010	65 (0-2)	0.3	NS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), 25% clay, soft, no odor, no sheen.
ARK-WB-58-2-4	1027	75	0.4	NS	2--		As above.
ARK-WB-76-2-4	1032	(2-4)					
ARK-WB-58-4-6	1040	65 (4-6)	0.3	NS	4--		As above with a trace of fibrous organic material, weak organic odor.
							Piece of wood debris 5" long at 5.2 to 5.6 ft bml.
ARK-WB-58-6-8	1055	60 (6-8)	0.3	NS	6--		As above with color black (10YR 2/1), slight chemical odor.
							Trace of wood debris up to 2" long below 7.5 ft bml.
ARK-WB-58-8-10	1110	50 (8-10)	0.9	NS	8--		As above with color dark brown (10YR 3/3), weak chemical odor, no wood debris, no fibrous organic material.
ARK-WB-58-10-12	1132	60 (10-12)	1.3	NS	10--		As above, weak chemical odor, no sheen.
ARK-WB-58-12-14	1305	60 (12-14)	0.6	NS	12--		As above.
							As above with no clay, micaceous, very dark grayish brown (10YR 3/2).
ARK-WB-58-14-15.2	1325	100 (14-16)	0.6	NS	14--		As above with 25% clay, no mica, weak chemical odor, soft, no sheen.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1005 11-Sep-09
End Time	1455 11-Sep-09

Sampling Equipment/Notes

Sediment was too soft to run casing. The drilling crew tried to run casing at 12 ft bml, but the sediments were not firm enough to support ~45 ft of casing.

4" diameter x 5 ft long split spoon (0–18 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (18–21.2 ft bgs).

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BORING NUMBER	WB-58
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		
					16--		GW	Sandy GRAVEL: very dark grayish brown (10YR 3/2), 20% coarse sand, fine to 3" diameter subrounded to rounded gravel (mostly fine to 3/4" diameter), no sheen, faint chemical odor.
--	1350	65 (16-18)	--	NS				As above with increased >2" diameter gravel content.
--	1410	~50 (18-19.7)	--	NS	18--			As above. Note: slough abundant in sampler. Hard drilling.
								Harder drilling at 19.5 ft bml, likely due to basalt.
--	1440	~10 (19.7-21.2)	--	NS	20--		Rx	BASALT: black, vesicular, poorly indurated, orange staining in vesicles, no odor, no sheen. Some slough was mixed in with the basalt.
						--		Borehole terminated at 21.2 ft bml.
					22--			
					24--			
					26--			
					28--			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1005 11-Sep-09
End Time	1455 11-Sep-09

Sampling Equipment/Notes

Sediment was too soft to run casing. The drilling crew tried to run casing at 12 ft bml, but the sediments were not firm enough to support ~45 ft of casing.

4" diameter x 5 ft long split spoon (0–18 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (18–21.2 ft bgs).

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BORING NUMBER	WB-60
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-60-0-2	1353	50 (0-2)	0.4	NS		ML	Clayey SILT: very dark gray (10YR 3/1), 20% clay, soft, uniform, no odor, no sheen.
							Piece of wood debris ~4" long at 2 ft.
ARK-WB-60-2-3.5	1416	65 (2-3.7)	0.1	NS	2		As above.
						Rx	BASALT: black, vesicular to massive, moderately well indurated, no odor, no sheen.
					4		Borehole terminated at 3.7 ft bml.
					6		
					8		
					10		
					12		
					14		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1355 01-Sep-09
End Time	1455 01-Sep-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon (0-3.7 ft bml).

BORING NUMBER	WB-61
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-61-0-2	1325	100 (0-2)	0.1	NS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), 25% clay, soft, no odor, no sheen.
							Slight sulfate odor.
ARK-WB-61-2-4	1355	100 (2-4)	0.3	NS	2		As above, no odor, very uniform texture.
ARK-WB-61-4-6	1417	75 (4-6)	0.5	NS	4		As above.
ARK-WB-61-6-8	1437	75 (6-8)	0.9	NS	6		As above with color very dark gray (10YR 3/1).
							As above with 40% fine sand from 7.2 to 7.3 ft bml.
							Piece of wood debris ~1.5" diameter at 8 ft; also a few pieces of basalt.
--	1456	60 (8-10.6)	--	NS	8	Rx	BASALT: black, massive, slightly vesicular, moderately to well indurated, trace of orange staining on some surfaces, no odor, no sheen.
					10		As above with more orange staining on some surfaces.
						--	Borehole terminated at 10.6 ft bml.
					12		
					14		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1310 31-Aug-09
End Time	1525 31-Aug-09

Sampling Equipment/Notes

No casing was used on this borehole due to the soft sediments.

4" diameter x 5 ft long split spoon (0-8 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (8-10.6 ft bml).

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BORING NUMBER	WB-62
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION / **ASTM SEDIMENT DESCRIPTION**

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM Sediment Description
ARK-WB-62-0-2	0935	95 (0-5)	0.7	NS		ML	Clayey SILT: very dark grayish brown (10YR 3/2), 20% clay, soft, faint petroleum odor, no sheen. Fine sand 1.0-1.3 ft bml, black (10YR 2/1), no odor. Clayey silt, as above.
ARK-WB-62-2-4	0945		0.7	NS	2	SP	Fine SAND: black (10YR 2/1), 5% silt, slightly micaceous, no odor, no sheen. Trace of fibrous organic material below 2.9 ft bml.
ARK-WB-62-4-6	1025		0.7	NS	4	ML	SILT: very dark grayish brown (10YR 3/2), coarse, slightly compacted, micaceous, no odor, no sheen. At 5-5.1 ft, as above with 25% clay, trace black organics.
		100 (5-6)	1.0	--		SP	Fine to medium SAND: black (10YR 2/1), 5-10% silt, slightly micaceous, no odor.
ARK-WB-62-6-8	1055	75 (6-8)	0.9	LS*	6		As above, very light spotty sheen 6.5-6.9 ft bml.
						ML	SILT: very dark gray (2.5Y 3/1), coarse silt, micaceous, no odor, no sheen, trace of wood debris ~4" long at 7.0 ft bml.
						SP	Fine to medium SAND: very dark grayish brown (10YR 3/2), micaceous, <5% silt, no odor, no sheen.
ARK-WB-62-8-8.8	1125	90 (8-9)	0.4	NS	8	Rx	BASALT: black, vesicular, moderately well indurated, some orange staining around vesicles, no odor, no sheen.
					--		Borehole terminated at 9.0 ft bml.
					10		
					12		
					14		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0917 31-Aug-09
End Time	1155 31-Aug-09

Sampling Equipment/Notes

Ran 6" diameter casing beginning at 8 ft bml.

3" diameter x 10 ft long alum. vibracore tube (0-5 ft bml); 4" diameter x 5 ft long split spoon sampler (5-9 ft bml).

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BORING NUMBER	WB-63
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION							ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	
ARK-WB-63-0-2	1120	50 (0-2)	0.3	NS*		ML	Clayey SILT: very dark gray (2.5Y 3/1), 30-40% clay, soft, no odor. * There were a few very small <1/4" areas of sheen. These were only observed in the water overlying the sediment, not in the sediment itself.
ARK-WB-63-2-4	1136	100 (2-4)	0.2	NS	2		As above with ~5% wood debris from 2-2.5 ft. As above with fibrous organic material from 2.8-3.2 ft.
ARK-WB-63-4-6	1204	75 (4-6)	0.4	NS	4		As above with trace of fibrous organic material, no wood debris.
ARK-WB-63-6-8	1335	100 (6-8)	1.9	NS	6		As above with weak petroleum hydrocarbon odor. Two pieces of carbon debris at 7.1 ft bml (see photos). Plastic sheeting (clear) in drill bit at 8 ft bml.
ARK-WB-63-8-10	1400	50 (8-10)	1.8	LS	8	SM	Silty fine to medium SAND: very dark gray (10YR 3/1), 15-20% silt, possible slight petroleum odor, very light discontinuous sheen observed in a few small areas at 8 ft bgs. Wood debris observed at 10 ft bgs in the drill bit.
ARK-WB-63-10-12	1428	90 (10-12)	2.3	NS	10	SP	Slightly silty fine to medium SAND: very dark grayish brown (10YR 3/2), 5-10% silt, slightly micaceous, no odor. Two pieces of wood debris <1" long at 10.9 ft.
ARK-WB-63-12-14	1444	100 (12-14)	1.3	NS	12		As above with color dark brown (10YR 3/3), 5% silt.
ARK-WB-63-14-16	1515	100 (14-16)	2.4	NS	14		As above with no silt.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1105 20-Aug-09
End Time	1655 20-Aug-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon sampler (0-16.7 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (16.7-17.5 ft bml).

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BORING NUMBER	WB-63
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION								
Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol		ASTM SEDIMENT DESCRIPTION
							SP	As above.
ARK-WB-63-16-16.7	1540	100 (16-16.7)	0.9	NS	16–			As above with color very dark grayish brown (10YR 3/1). Hard drilling at 16.7 ft.
--		100 (16.7-17.5)	--	NS			Rx	BASALT: black, massive, well indurated, few vesicles, trace of orange staining, no odor.
					18–	--		Refusal at 17.5 ft bml.
					20–			
					22–			
					24–			
					26–			
					28–			

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1105 20-Aug-09
End Time	1655 20-Aug-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon sampler (0-16.7 ft bml); 4-7/8" diameter x 5 ft long solid core barrel (16.7-17.5 ft bml).

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BORING NUMBER	WB-64
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-64-0-2	1040	50 (0-2)	0.0	NS		SW	Gravelly fine to medium SAND: very dark grayish brown (10YR 3/2), 15% angular to subrounded gravel up to 2" diameter, trace of coarse sand, no odor. Gravel content decreasing with depth, mostly fine sand.
ARK-WB-64-2-4	1054	100 (2-4)	0.0	NS	2	SP	Fine SAND: very dark grayish brown (10YR 3/2), 5% silt, trace of fine gravel (up to 1/2" diameter), no odor. Silty fine sand layer 3.0-3.2 ft, very dark gray (10YR 5/1). As above with fine to medium sand, black (7.5YR 2.5/1), ~5% fine to 1/2" diameter subrounded gravel, weak petroleum (?) odor.
ARK-WB-64-4-6	1123	100 (4-6)	0.0	LS?	4		Piece of tan cloth observed at 3.7 ft. As above with 10-15% silt, 10% angular to subrounded gravel (fine to 1.5" diameter), weak odor, possible very light discontinuous sheen. Sheet metal debris ~0.4' long at 5.2-5.6 ft and small piece at 6.0 ft bml.
ARK-WB-64-6-8	1148	55 (6-8)	0.0	NS	6		As above with mostly fine sand, very dark gray (2.5YR 3/1), 5-10% silt, trace of fine to 3/4" diameter subrounded gravel. Rock ~0.3 ft long at 7 ft bgs, piece of sheet metal debris at 8 ft bgs.
ARK-WB-64-8-10	1204	100 (8-10)	0.0	NS	8		Fine to medium SAND: black (2.5Y 2.5/1), ~2% fine to 1" diameter subrounded to rounded gravel, <5% silt, no odor. Piece of sheet metal debris ~0.25 ft long at 8.5 ft.
ARK-WB-64-10-12	1225	95 (10-12)	0.0	LS	10		As above with light spotty iridescent sheen.
						ML	SILT: very dark gray (5Y 3/1), trace of fine sand, trace of black organic matter, light spotty sheen, no odor. Piece of wood ~0.2 ft long at 11.0 ft.
ARK-WB-64-12-14	1325	100 (12-14)	0.0	NS	12		25% clay below 11.5 ft (clayey silt). As above with very dark grayish brown (10YR 3/2), no clay, no odor, no sheen. 15% fine sand below 13.3 ft.
ARK-WB-64-14-16	1355	75 (14-16)	0.0	NS	14	SP	Fine SAND: very dark grayish brown (10YR 3/2), trace of medium sand, micaceous, no odor, no sheen. As above.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1025 25-Aug-09
End Time	1700 25-Aug-09

Sampling Equipment/Notes

4" diameter by 5 ft long split spoon sampler (0-26.5 ft bgs); 4 7/8" diameter by 5 ft long solid core barrel (26.5-28 ft bgs).

Note: This borehole was drilled on the riverbank. Ran 6" diameter casing beginning at 6 ft bgs.

Note: The PID was tested and responded to a sharpie ink pen. The PID is working normally. Also checked with 100-ppm isobutylene at 1340. Meter read 100 ppm in isobutylene.

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BORING NUMBER	WB-64
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION					Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
Sample Number	Time	% Recovery	PID (ppm)	Sheen			
						SP	As above with trace of fine to 3/4" diameter angular to subrounded gravel (~2%) below 15.3 ft.
ARK-WB-64-16-18	1420	100 (16-18)	0.0	NS	16--		As above with a few pieces of fine to 1/4" diameter gravel, subrounded (<1% gravel).
ARK-WB-64-18-20	1451	75 (18-20)	0.0	NS	18--		As above with piece of clear glass ~1/2" diameter at 18.5 ft bgs. As above with 5-10% fine to 1" diameter angular to subrounded gravel. Silt lamination ~19.5-19.55 ft bgs, dark grayish brown (10YR 4/2).
ARK-WB-64-20-22	1510	100 (20-22)	0.0	NS	20--		As above with no gravel, increased mica (muscovite) content. As above with fine to medium sand.
ARK-WB-64-22-24	1528	100 (22-24)	0.0	NS	22--	SM	Silty fine SAND: dark grayish brown (10YR 4/2), 40% silt, micaceous, no odor, no sheen. Piece of metal wire (1/8" diameter x 2" long, bent in a circle) at 23.0 ft bgs.
ARK-WB-64-24-26	1546	90 (24-26)	0.0	NS	24--		As above.
						SW	Gravelly fine to medium SAND: very dark grayish brown (10YR 3/2), 20-25% fine to 3/4" diameter subrounded to rounded gravel, trace coarse sand, no odor.
ARK-WB-64-26-26.5	1610	100 (26-26.5)	0.0	NS	26--	Rx	BASALT: black, vesicular, some orange staining, moderately well indurated, no odor.
--	1620	100 (26.5-28)	--	NS			
					28--	--	Borehole terminated at 28 ft bgs.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1025 25-Aug-09
End Time	1700 25-Aug-09

Sampling Equipment/Notes

4" diameter by 5 ft long split spoon sampler (0-26.5 ft bgs); 4 7/8" diameter by 5 ft long solid core barrel (26.5-28 ft bgs).
Note: This borehole was drilled on the riverbank. Ran 6" diameter casing beginning at 6 ft bgs.
Note: The PID was tested and responded to a sharpie ink pen. The PID is working normally. Also checked with 100-ppm isobutylene at 1340. Meter read 100 ppm in isobutylene.

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BORING NUMBER	WB-65
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-65-0-1.5	1045	20 (0-5)	0.0	NS		ML	Sandy SILT: very dark gray (7.5 YR 3/1), 30% fine sand, trace of wood debris, natural organic odor, soft. Encountered rock at ~1.5 ft bml. No recovery 1.5 to 5 ft bml due to rock.
					2--		
					4--		
		70 (5-10)					No recovery 5-6.5 ft due to soft sediment.
ARK-WB-65-6.5-8	1129		0.7	NS	6--		As above with color very dark gray brown (10YR 3/2), 10% fine sand, trace of wood debris, soft, slight natural organic odor. 3" diameter removed from 6.5-8.0 ft sample.
ARK-WB-65-8-10	1132		1.1	NS	8--	SP	Slightly silty fine to medium SAND: very dark gray brown (10YR 3/2), 5% silt, no odor.
						ML	Clayey SILT: dark olive gray (5Y 3/2), 15-25% clay, soft.
ARK-WB-65-10-15	1227	40 (10-15)	1.5	LS	10--	CL	Silty CLAY: dark grayish brown (10YR 4/2), soft, very light discontinuous iridescent sheen, slight natural organic odor. Piece of bark ~2" diameter at 10.5 ft bml.
					12--	SP	Slightly silty fine to medium SAND: dark brown (7.5YR 3/2), 5-10% silt, no odor, no sheen.
					14--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1015 18-Aug-09
End Time	1535 18-Aug-09

Sampling Equipment/Notes

4" diameter by 5 ft long split spoon sampler (0-18 ft bml); 4 7/8" diameter by 5 ft long solid core barrel (18-20 ft bml).

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BORING NUMBER	WB-65
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-WB-65-15-16	1300	90 (15-16)	1.5	NS	16	SP	As above with color dark grayish brown (10YR 4/2), 5% silt, no sheen, no odor.
ARK-WB-65-16-18	1410	90 (16-18)	0.5	NS			As above with color very dark grayish brown (10YR 3/2), slightly micaceous, no odor or sheen.
--		100 (18-20)	--	NS	18	Rx	BASALT: black, massive, moderately indurated, no sheen.
							Moderately weathered below 19 ft bml.
					20	--	Borehole terminated at 20 ft bml.
					22		
					24		
					26		
					28		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	1015 18-Aug-09
End Time	1535 18-Aug-09

Sampling Equipment/Notes

4" diameter by 5 ft long split spoon sampler (0-18 ft bml); 4 7/8" diameter by 5 ft long solid core barrel (18-20 ft bml).

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BORING NUMBER	WB-66
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
ARK-2B-66-0-2	0850	90 (0-2)	2.5	NS		CL	Silty CLAY: very dark gray (5Y 3/1), soft, 40% silt, trace of fibrous organics, wet, no odor.
ARK-WB-66-2-4	0904	75 (2-4)	2.7	NS	2--		As above with no organics, no odor, no sheen.
							As above with trace of fibrous organic materials.
ARK-2B-66-4-6	0929	80 (4-6)	3.1	NS	4--		Silty fine sand lamination from 4.8-4.83 ft bml.
ARK-WB-66-6-8	0956	90 (6-8)	1.7	NS	6--		As above with a trace of non-carbonized wood debris, decreased clay content.
						ML	Clayey SILT: very dark gray (2.5Y 3/1), ~20% clay, trace of fine sand, trace of wood debris, slight natural organic odor.
ARK-WB-66-8-10	1025	100 (8-12)	3.9	NS	8--		As above with increased clay content (~40%), decreased wood debris content.
ARK-WB-66-10-12	1030			LS	10--		Sandy SILT: very dark gray (10YR 3/1), 30% fine sand, 15-20% wood debris up to 2" long, no odor.
							Increasing sand content with depth.
ARK-WB-66-12-14	1120	100	3.4	NS	12--	SP	Slightly silty fine SAND: very dark grayish brown (10YR 3/2), 5-10% silt, trace of twigs/organics, no odor.
ARK-WB-70-12-14	1127	(12-14)					Clay laminations ~0.05 ft thick at 12.1 and 13.8 ft.
							As above with fine to medium sand, <5% silt, one piece of gravel at 13.6 ft.
ARK-WB-66-14-16	1145	65 (14-16)	4.7	NS	14--		As above, slightly micaceous, no odor.

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0838 19-Aug-09
End Time	1345 19-Aug-09

Sampling Equipment/Notes

4" diameter x 5 ft long split spoon sampler (0-17.5 ft bml); 4 7/8" diameter x 5 ft long solid core barrel (17.5-18.5 ft bml).

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BORING NUMBER	WB-66
PROJECT	Arkema EE/CA
LOCATION	Portland, Oregon
PROJECT NUMBER	C167.1103
LOGGED BY	Eron J. Dodak, R.G.

SAMPLE INFORMATION

Sample Number	Time	% Recovery	PID (ppm)	Sheen	Depth	Group Symbol	ASTM SEDIMENT DESCRIPTION
						SP	As above with two pieces of wood (~1" and 4" long) between 15 and 16 ft.
ARK-WB-66-16-17.5	1200	100 (15-17.5)	--	NS	16--		As above with no wood, trace of coarse sand. Piece of subrounded gravel ~1.5" long at 17.1 ft. Driller noted hard drilling at 17.5 ft.
--	1215	100	--	NS	18--	Rx	BASALT: black, massive, moderately to well indurated, trace of orange staining, no sheen or odor.
						--	Refusal at 18.5 ft bml.
					20--		
					22--		
					24--		
					26--		
					28--		

Drilling Contractor	Boart Longyear
Drilling Method	Roto-sonic
Start Time	0838 19-Aug-09
End Time	1345 19-Aug-09

Sampling Equipment/Notes

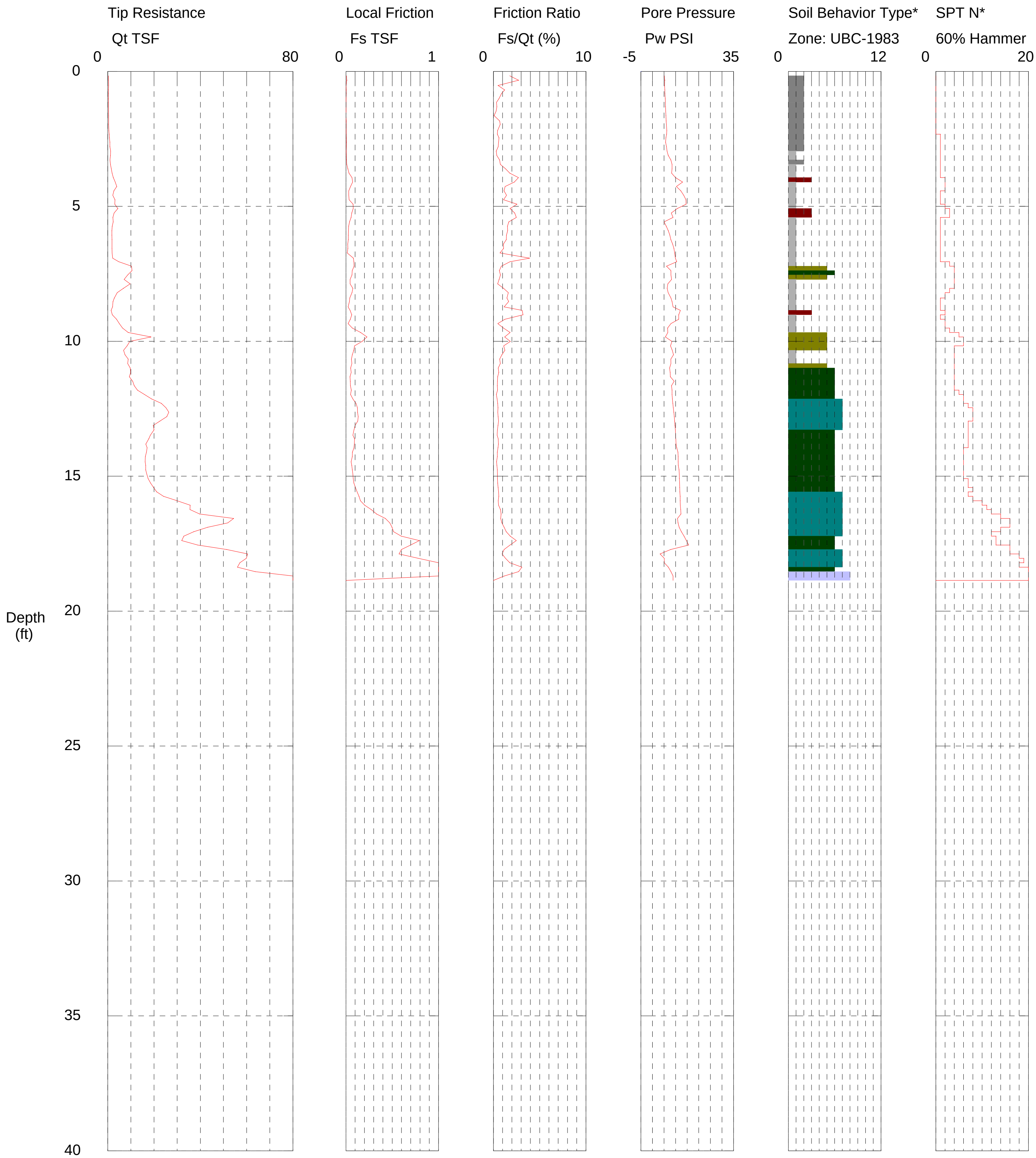
4" diameter x 5 ft long split spoon sampler (0-17.5 ft bml); 4 7/8" diameter x 5 ft long solid core barrel (17.5-18.5 ft bml).

CPT BOREHOLE LOGS

CPT-1

Operator: K.Brown
Sounding: CPT-1
Cone Used: DSG1079

CPT Date/Time: 10/20/2009 2:21:50 PM
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 18.86 feet

Depth Increment = 0.164 feet

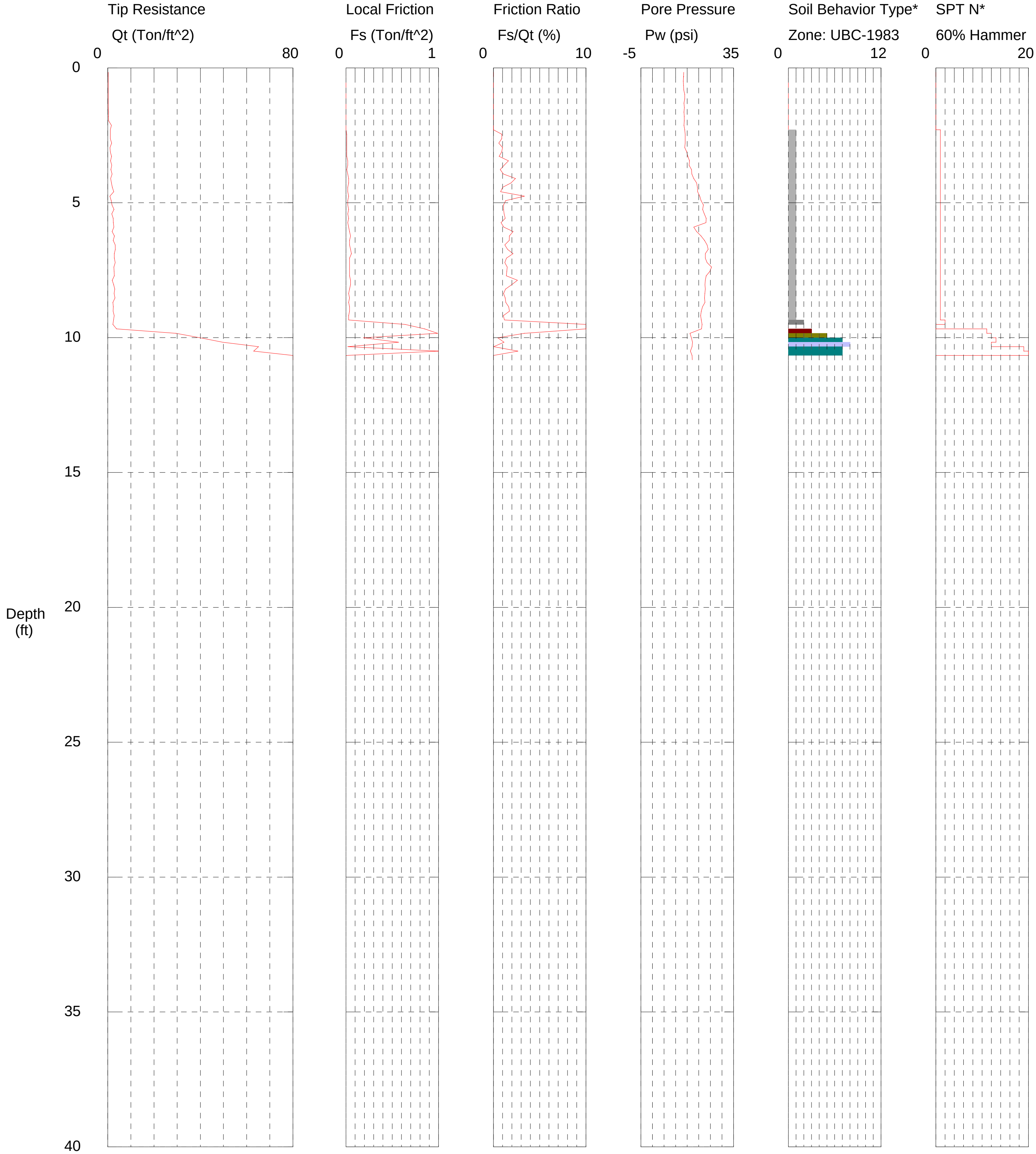
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-2

Operator: S.Vandehey
Sounding: CPT-2
Cone Used: 4CH

CPT Date/Time: 10-15-09 14:57
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 10.83 feet

Depth Increment = 0.164 feet

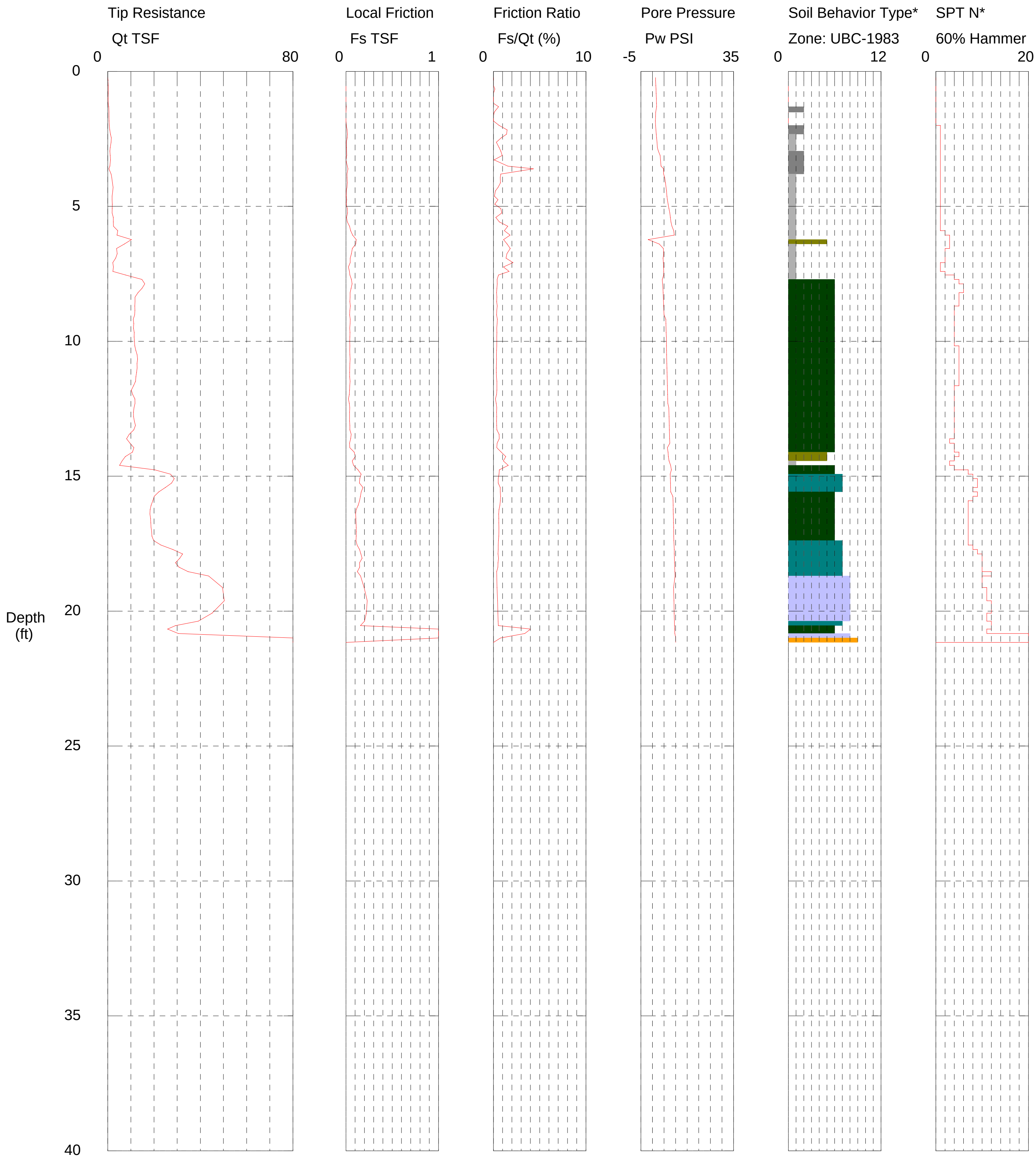
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-3

Operator: K. Brown
Sounding: CPT-3
Cone Used: DSG1079

CPT Date/Time: 10/20/2009 4:34:52 PM
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 21.16 feet

Depth Increment = 0.098 feet

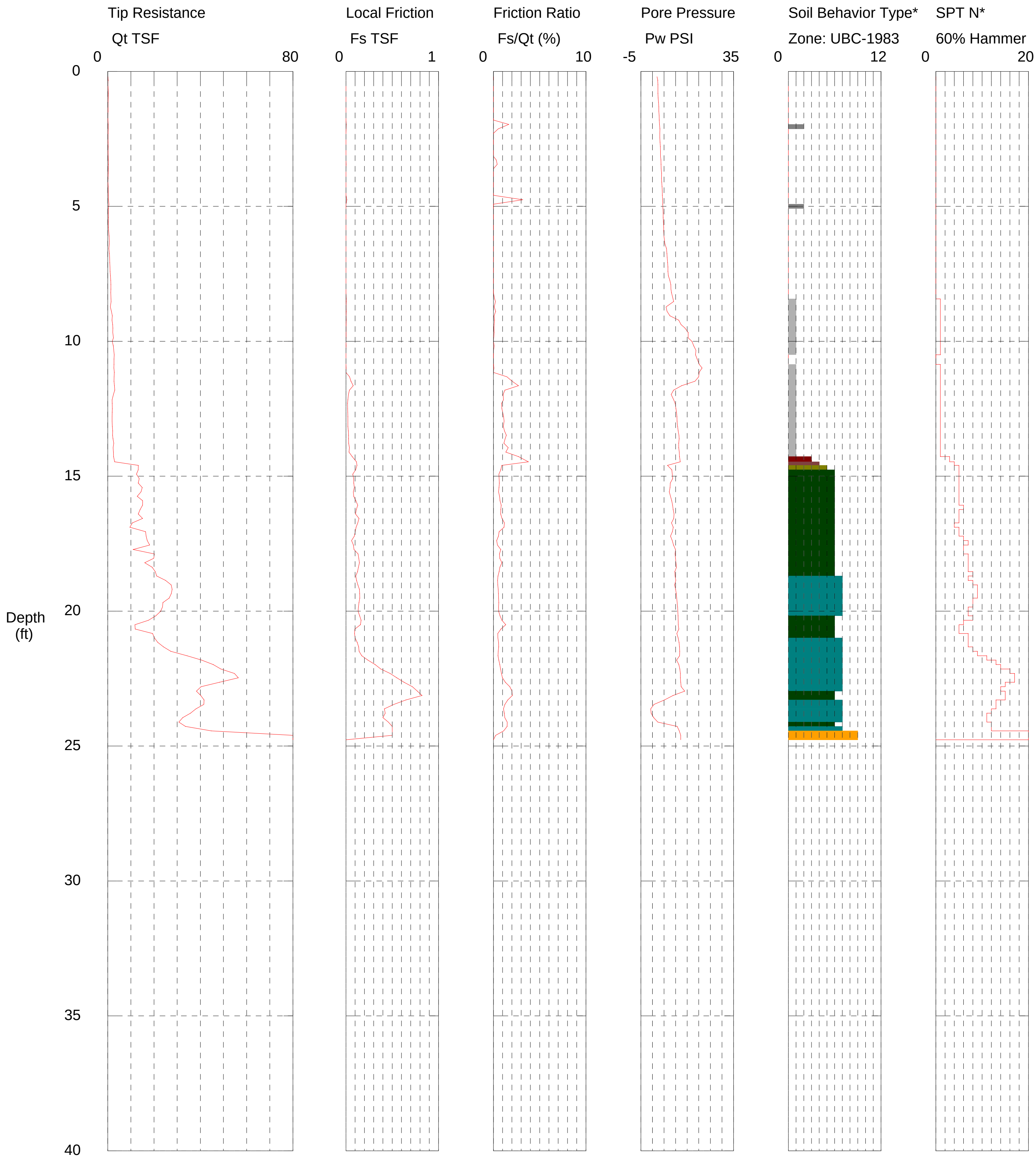
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-4

Operator: K. Brown
Sounding: CPT-4
Cone Used: DSG1079

CPT Date/Time: 10/20/2009 3:14:48 PM
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 24.77 feet

Depth Increment = 0.131 feet

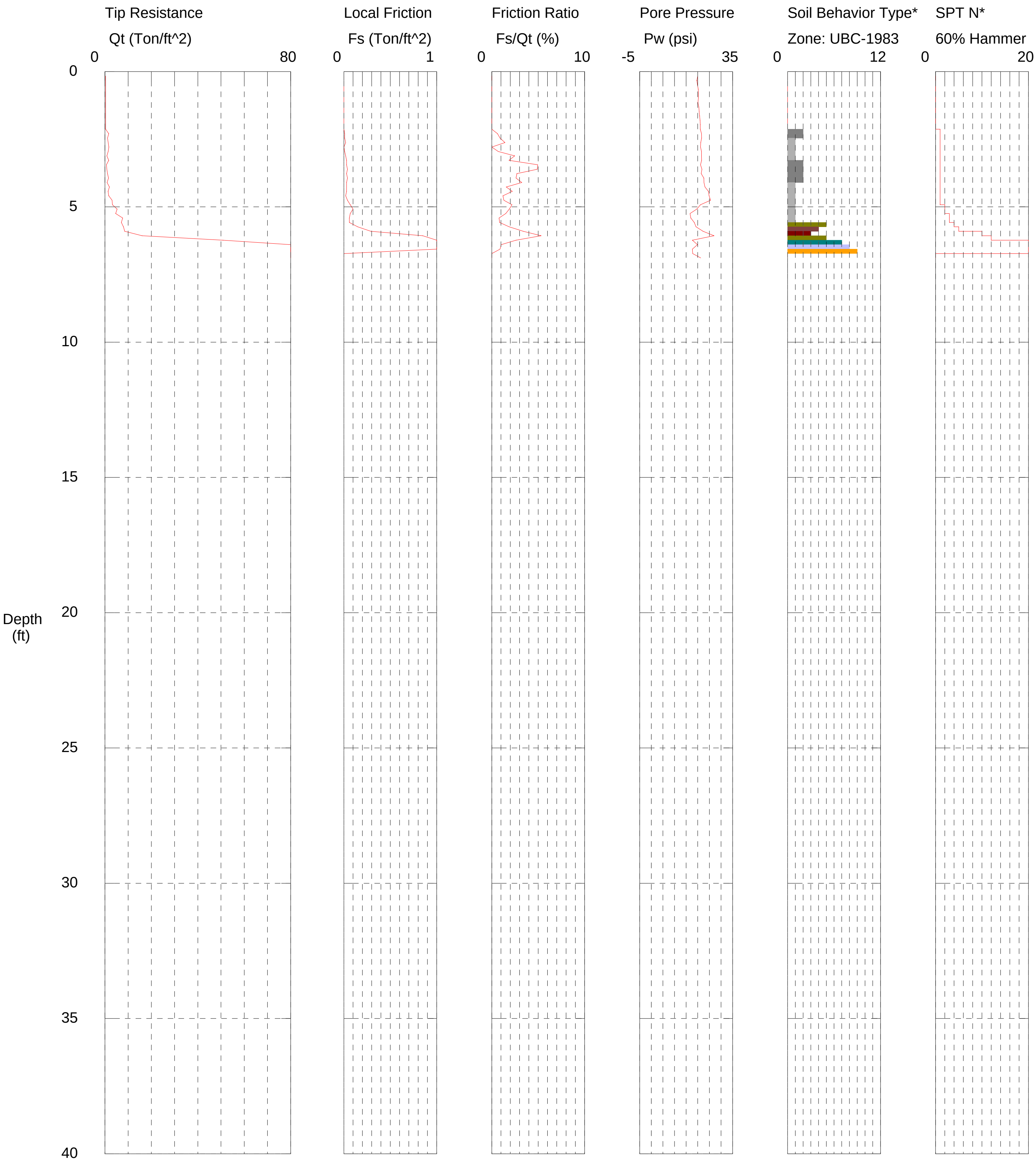
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-5

Operator: S.Vandehey
Sounding: CPT-5
Cone Used: 4CH

CPT Date/Time: 10-15-09 12:27
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 6.89 feet

Depth Increment = 0.164 feet

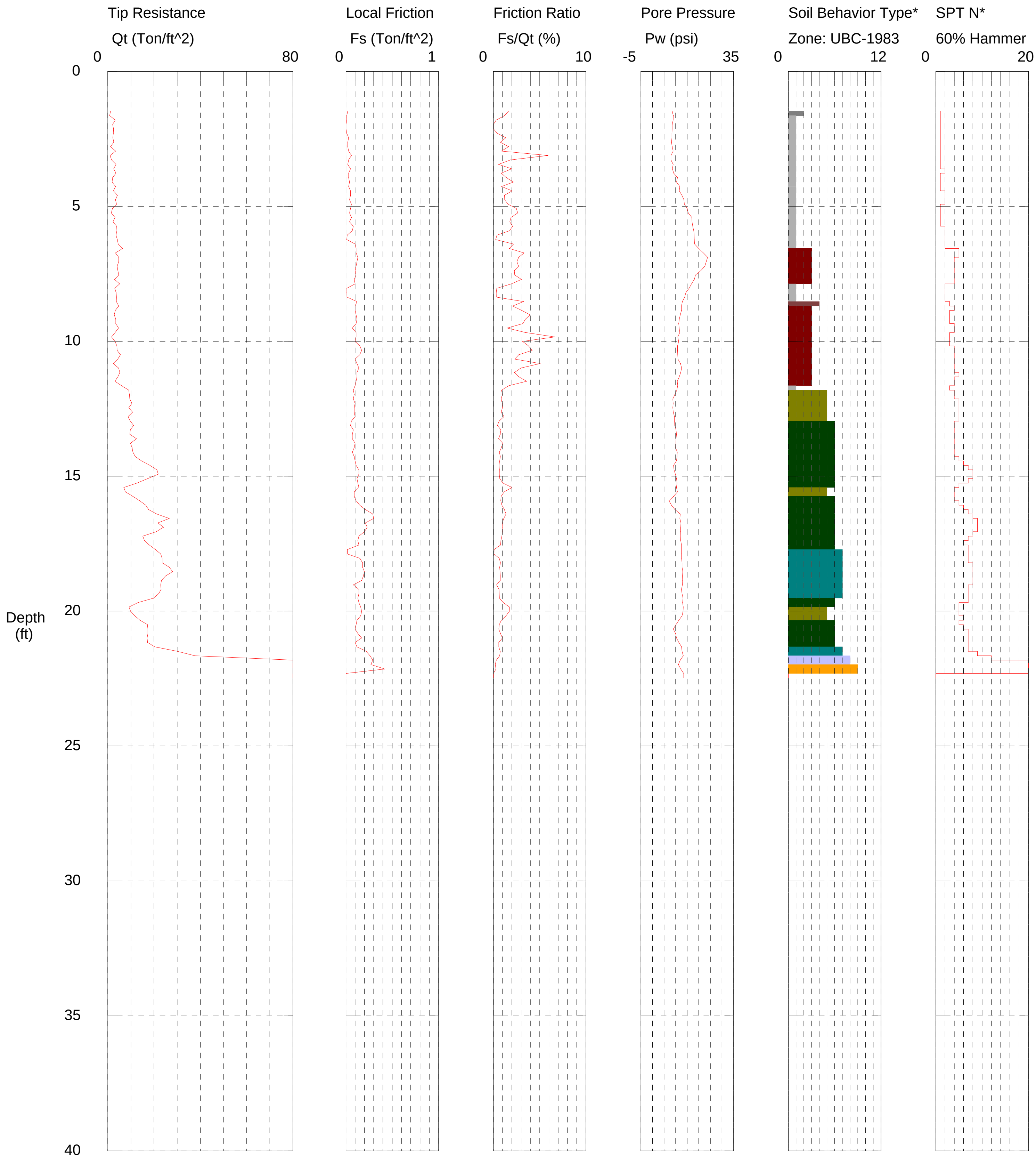
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-6

Operator: S.Vandehey
Sounding: CPT-6
Cone Used: 4CH

CPT Date/Time: 10-14-09 14:14
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 22.47 feet

Depth Increment = 0.164 feet

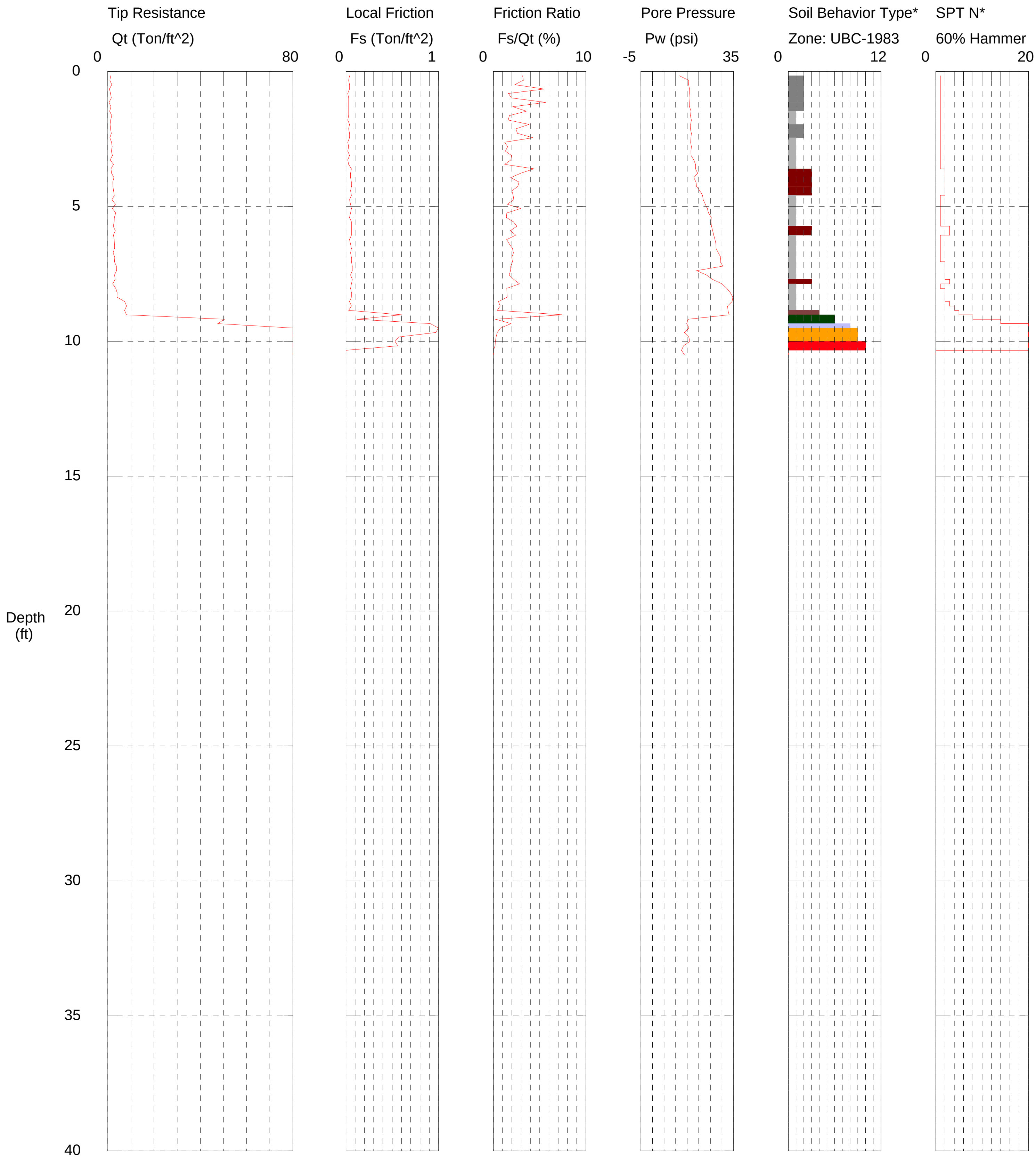
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-7

Operator: S.Vandehey
Sounding: CPT-7
Cone Used: 4CH

CPT Date/Time: 10-13-09 08:54
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 10.50 feet

Depth Increment = 0.164 feet

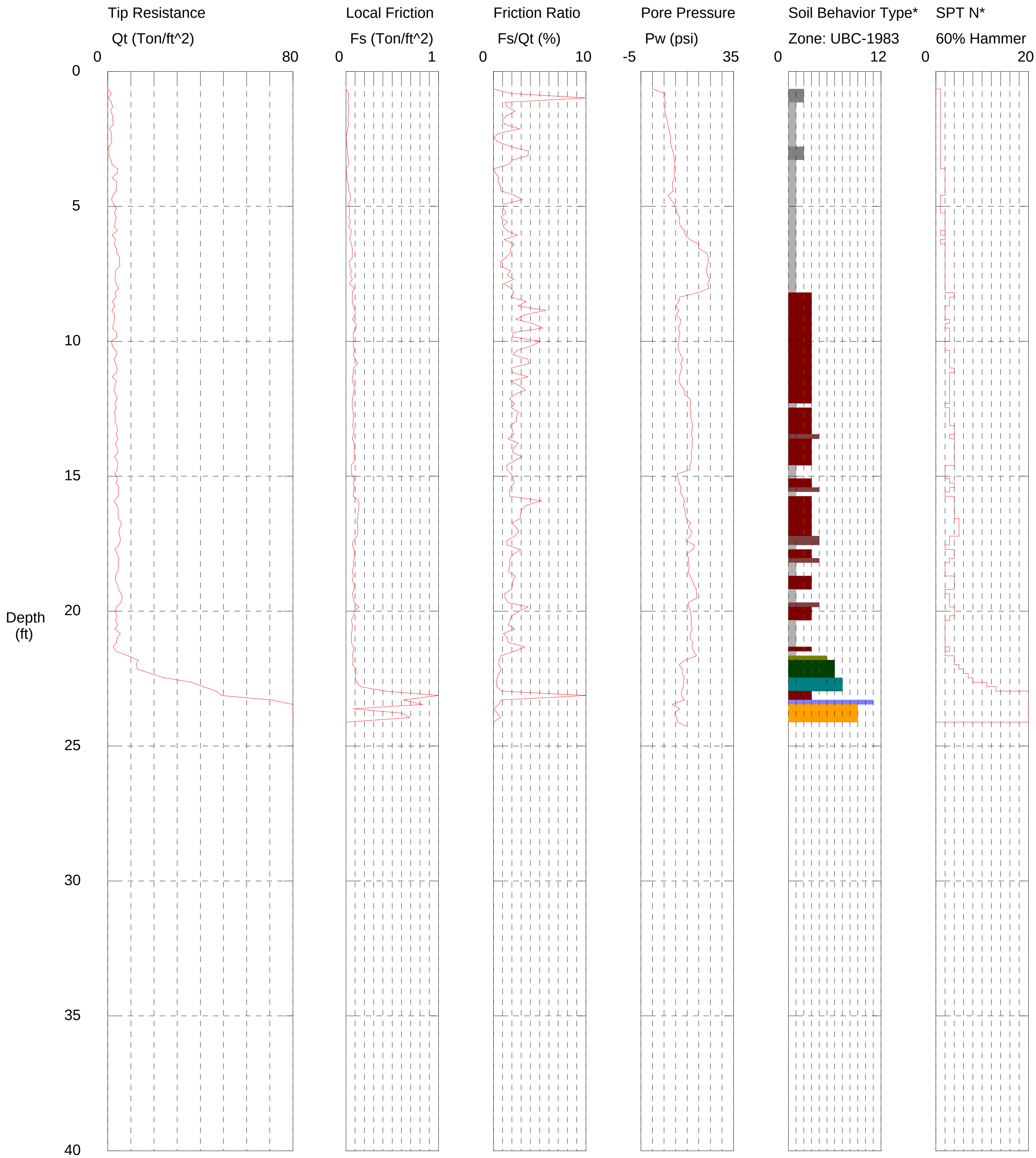
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-8

Operator: S.Vandehey
Sounding: CPT-8
Cone Used: 4CH

CPT Date/Time: 10-14-09 10:53
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 24.28 feet

Depth Increment = 0.164 feet

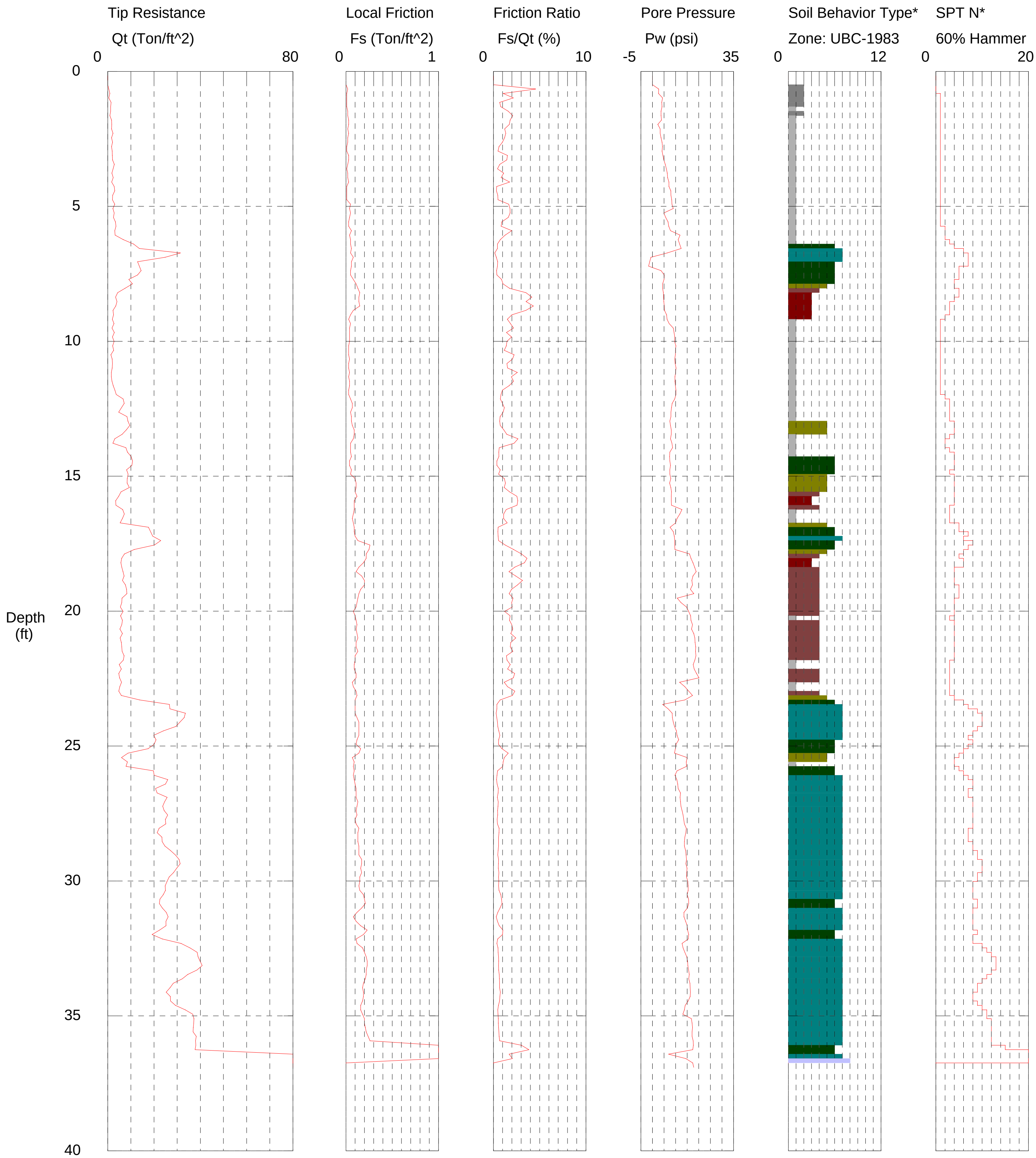
1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-9

Operator: S.Vandehey
Sounding: CPT-9
Cone Used: 4CH

CPT Date/Time: 10-14-09 10:05
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 36.91 feet

Depth Increment = 0.164 feet

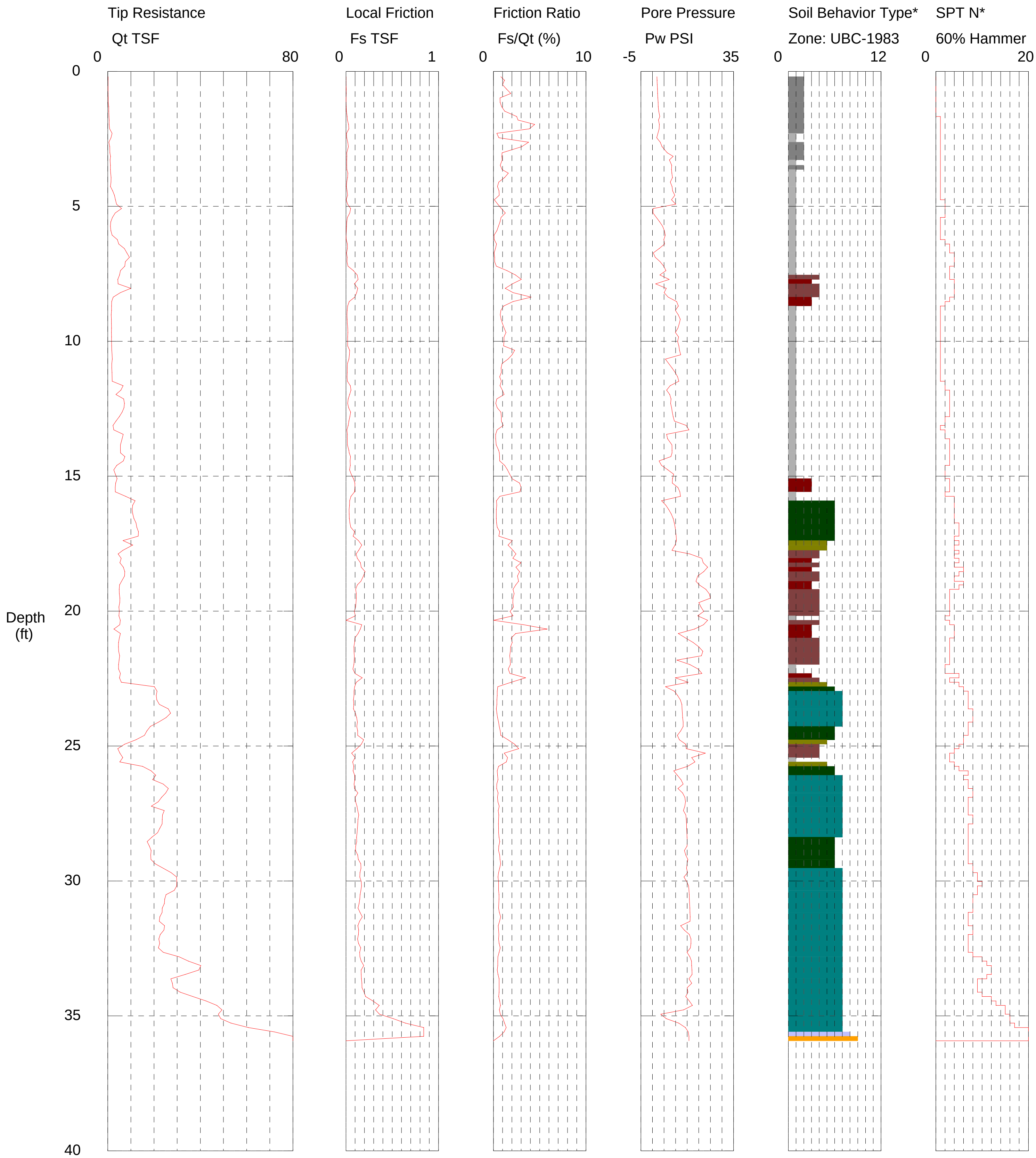
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-9R

Operator: K. Brown
Sounding: CPT-9R
Cone Used: DSG1079

CPT Date/Time: 10/20/2009 3:23:59 PM
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 35.93 feet

Depth Increment = 0.131 feet

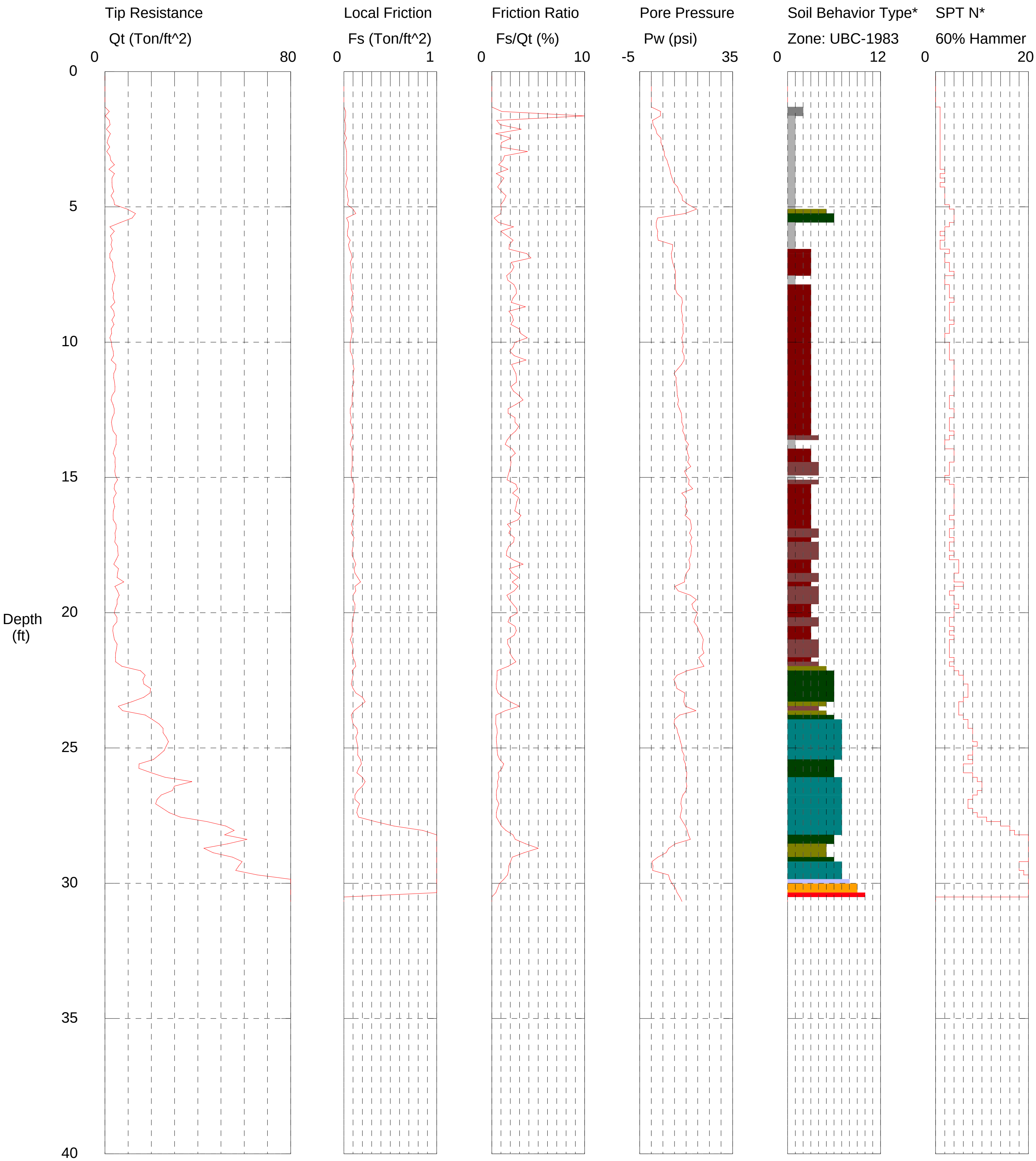
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-10

Operator: S.Vandehey
Sounding: CPT-10
Cone Used: 4CH

CPT Date/Time: 10-14-09 12:00
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 30.68 feet

Depth Increment = 0.164 feet

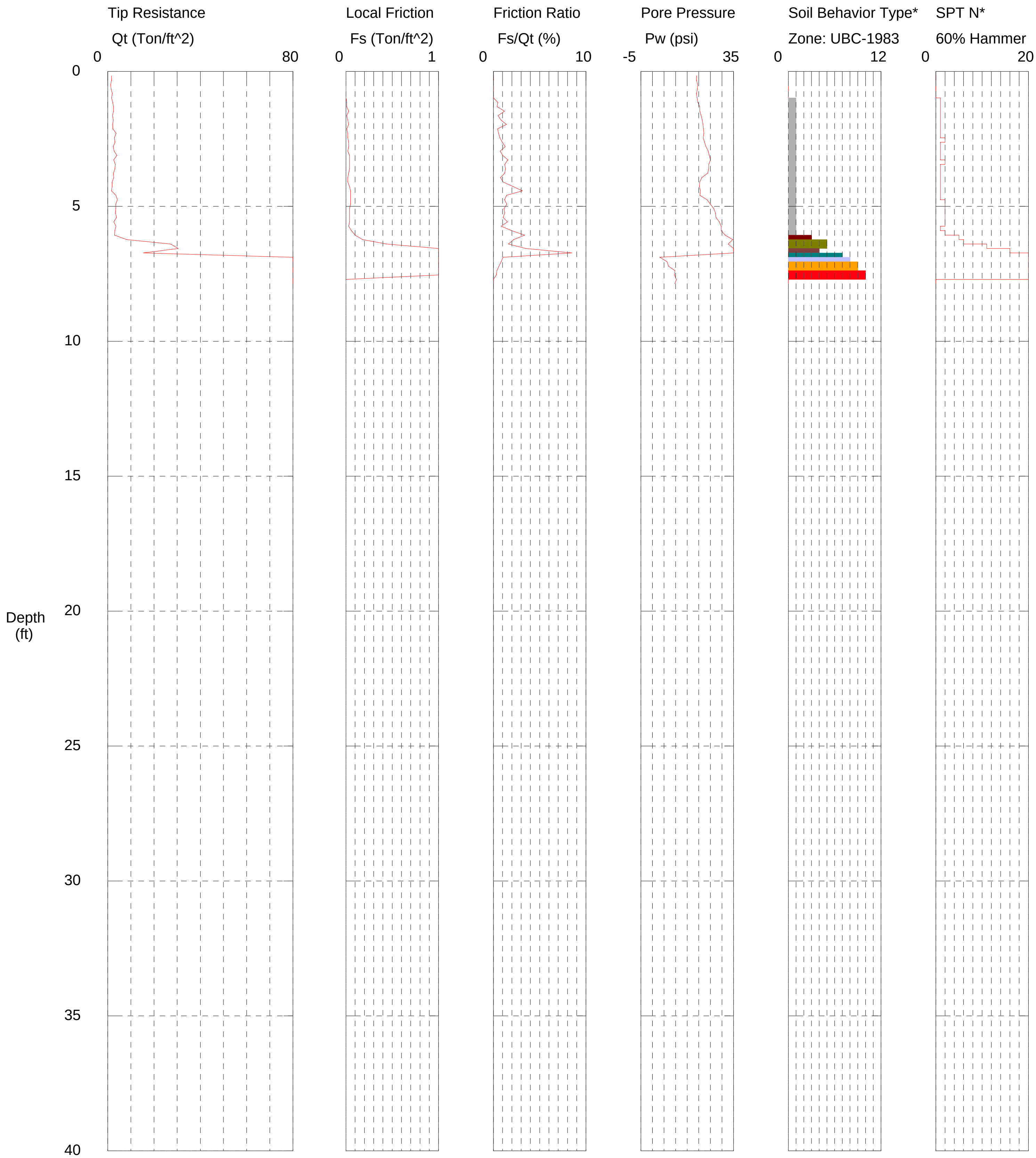
1	sensitive fine grained
2	organic material
3	clay
4	silty clay to clay
5	clayey silt to silty clay
6	sandy silt to clayey silt
7	silty sand to sandy silt
8	sand to silty sand
9	sand
10	gravelly sand to sand
11	very stiff fine grained (*)
12	sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-11

Operator: S.Vandehey
Sounding: CPT-11
Cone Used: 4CH

CPT Date/Time: 10-13-09 11:45
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 7.87 feet

Depth Increment = 0.164 feet

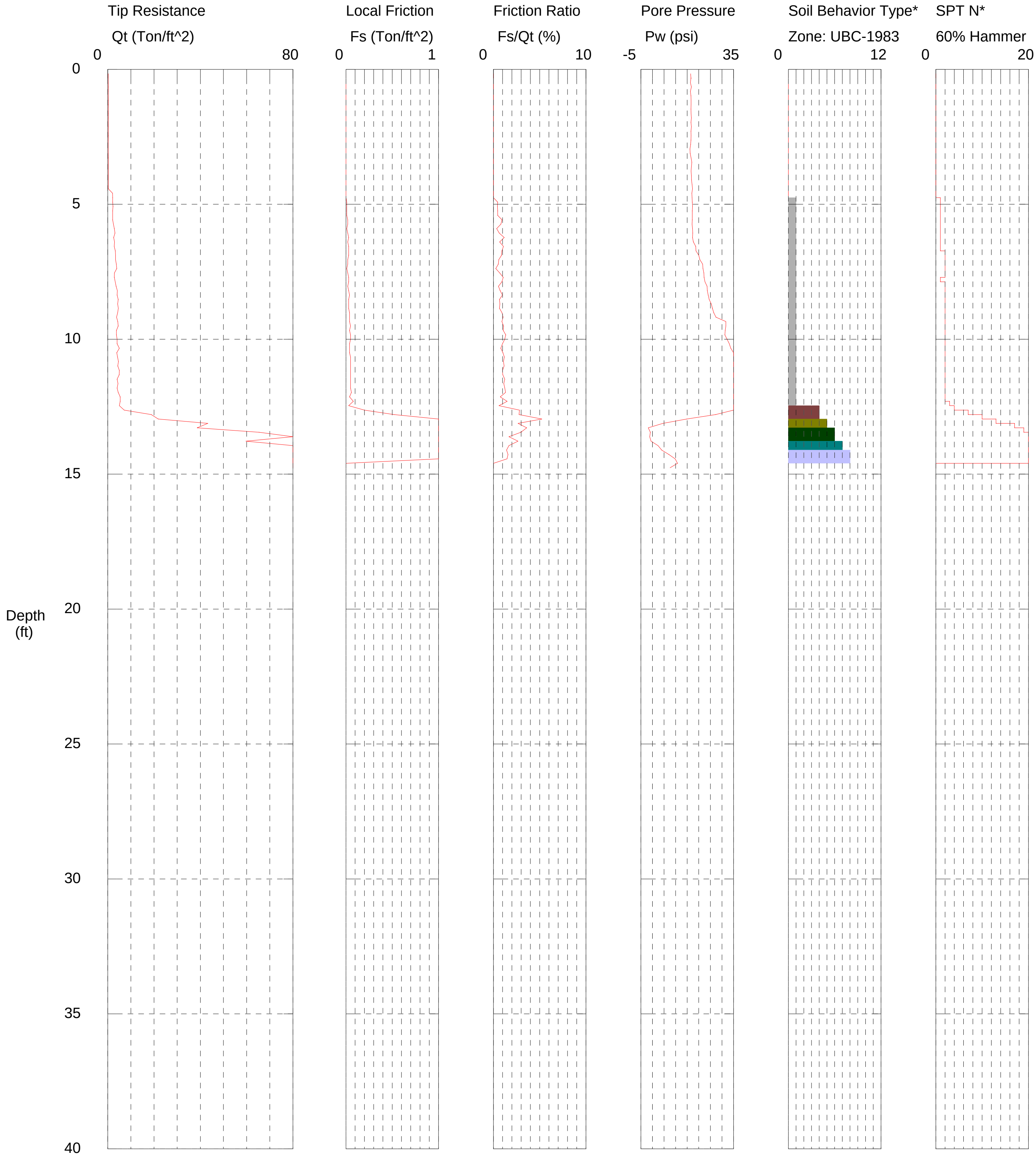
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-12

Operator: S.Vandehey
Sounding: CPT-12
Cone Used: 4CH

CPT Date/Time: 10-15-09 09:08
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 14.76 feet

Depth Increment = 0.164 feet

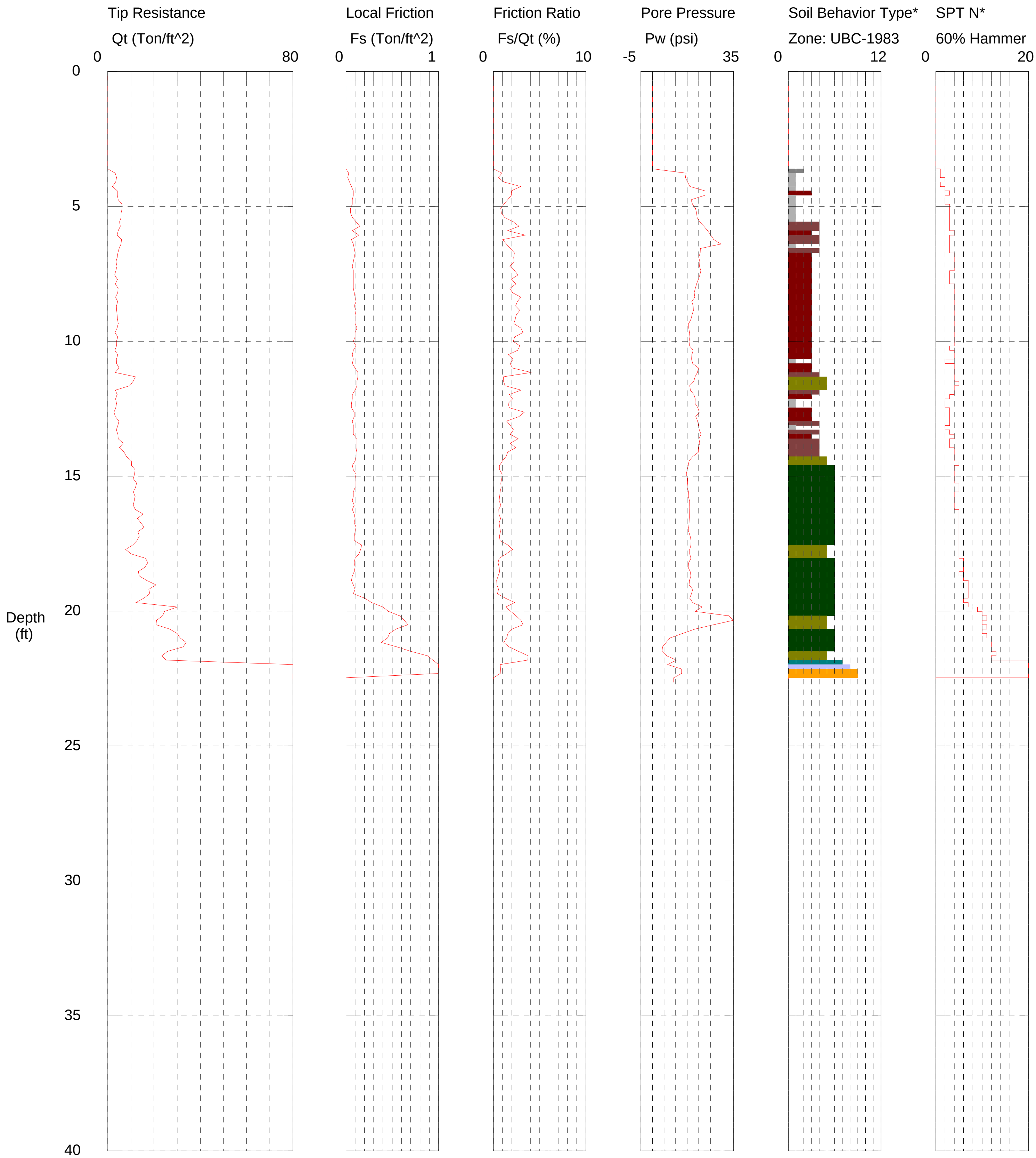
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

CPT-13

Operator: S.Vandehey
Sounding: CPT-13
Cone Used: 4CH

CPT Date/Time: 10-15-09 07:11
Location: Arkema, Portland, OR
Job Number: MN000609.0001.00007 (Arcadis)



Maximum Depth = 22.64 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Geotechnical Borehole Logs

SOIL DESCRIPTION

Soil descriptions on the exploration logs are based on visual observations and laboratory testing on selected samples. The samples were visually classified in general accordance with ASTM D 2488.

Soil descriptions generally consist of the following:
Color, MAJOR CONSTITUENT, minor constituents, moisture, density/consistency, additional observations

MINOR CONSTITUENTS

Description	Estimated Percentage
Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%

MOISTURE

Dry	Little perceptible moisture
Damp	Below optimum moisture for compaction
Moist	Likely near optimum moisture content
Wet	Likely wet of optimum moisture content
Saturated	Probably below water table or in perched groundwater

DENSITY/CONSISTENCY

Soil density/consistency descriptions on boring logs are primarily based on Standard Penetration Resistance. Density/consistency descriptions on exploration logs are provided in parentheses if they are based on visual observations rather than correlations with Standard Penetration Resistance (N-values) and other test results.

Granular Soils Density	Standard Penetration Resistance (N) in Blows/Foot	Cohesive Soils Consistency	Standard Penetration Resistance(N) in Blows/Foot	Approximate Undrained Strength in TSF
Very loose	0 to 4	Very soft	0 to 2	<0.125
Loose	4 to 10	Soft	2 to 4	0.125 to 0.25
Medium dense	10 to 30	Medium stiff	4 to 8	0.25 to 0.5
Dense	30 to 50	Stiff	8 to 15	0.5 to 1.0
Very dense	>50	Very stiff	15 to 30	1.0 to 2.0
		Hard	>30	>2.0

ROCK DESCRIPTION

Rock descriptions on the exploration logs are based on visual observations and generally consist of the following: Color, ROCK TYPE, field strength, structure, decomposition, disintegration, fracture density, fracture type, fracture infilling, fracture uneveness, moisture condition, additional observations.

TEST SYMBOLS

MC	Moisture Content	UC	Unconfined Compression
GS	Grain Size	TX	Triaxial Compressive Strength
AL	Atterberg Limits	DS	Direct Shear
SG	Specific Gravity	PL	Point Load Index
DT	Density Test	K	Permeability
OG	Organic Content	PP	Pocket Penetrometer in $tons/ft^2$
CN	Consolidation	TV	Torvane in $tons/ft^2$
UU	Unconsolidated Undrained Triaxial	PID	Photoionization Detector Reading
CU	Consolidated Undrained Triaxial	CA	Chemical Analysis

SAMPLE TYPE SYMBOLS

- Split Spoon
- Shelby Tube
- Cuttings
- Core Run
- P Tube pushed, not driven

ARKEMA EARLY ACTION
PORTLAND, OREGON
REMOVAL ACTION AREA CHARACTERIZATION REPORT

KEY TO EXPLORATION LOGS

Boring Log *SPT-1*

Arkema EE/CA Geotechnical Field Investigation, Portland, Oregon

N702,428.1 ft E7,627,925.3 ft NAD 83, Oregon North, International Feet

Approximate Mudline Elevation: -1.1 feet NAVD88 Water Depth: 6.4 to 8.7 ft (during drilling)

Sample No.	SPT Results	Approx. Recovery (in.)	Lab Tests	TCR (%)	SCR (%)	RQD (%)
ARK-SPT-1-4-5.5	WOH	6	MC			
ARK-SPT-1-5.5-7	WOH	9	MC, GS, AL			
ARK-SPT-1-7-8.5	WOH	18	MC			
ARK-SPT-1-8.5-10	WOH	18	MC, OG			
ARK-SPT-1-10-11.5	WOH	18	MC			
ARK-SPT-1-11.5-13	WOH	18	MC			
ARK-SPT-1-13-15	P	24	GS, AL, SG, CU, CN, K			
ARK-SPT-1-15-17	P	24	GS, AL, UU			
ARK-SPT-1-17-18.5	WOH	18	MC			
ARK-SPT-1-18.5-20.5	P	25	GS, AL, UU, CN			
ARK-SPT-1-20.5-22	N=16	12	MC			
ARK-SPT-1-22-22.5	N=50/6"	6				
ARK-SPT-1-22.5-27				60	20	0
ARK-SPT-1-27-32			PL, UC	90	83	50
ARK-SPT-1-32-37			PL, UC	100	100	83
ARK-SPT-1-37-42			PL, UC	100	90	84

Description

Dark gray to dark greenish gray ORGANIC SILT AND SILT (high plasticity),trace to little Sand, occasional rootlets and wood fragments, very soft, wet, sheen observed occasionally.

Decrease in moisture/slightly stiffer consistency noted at approximately 10.8 ft.

Bottom of casing at 13.1 feet.
(Casing sank to this depth under its own weight)

Dark geenish gray, fine to medium SAND, little Silt, medium dense, wet

Gray, iron-oxide stained, vesicular BASALT, moderately hard to hard, intensely fractured/brecciated to moderately fractured, moderately to highly weathered, smooth-sided to rough fractures, wet. No recovery from 25.0 to 27.0 ft.

Dark gray with zones of reddish staining, vesicular BASALT, moderately hard to hard, close to very close fractures with iron-stained calcite fill (<0.01 in) in some cases, wet. No recovery from 31.5 to 32.0 ft.

Gray/green, vesicular BASALT, moderately hard to hard, close to moderately close fractures, <0.01 in calcite joint filling with chlorite, jagged to smooth fractures with small dilatency, wet calcite and chlorite vesicle fillings.

Greenish gray, phenocrystic BASALT, slightly weathered, hard, moderately close fractures, smooth with calcite fracture fill, jagged/brecciated at 41.5', vesicular from 40.5' to 41.0', wet.

Bottom of boring at 42 feet. Completed 10/17/2009

1. Refer to Figure B-1, Key to Exploration Logs, for explanation of symbols and definitions.
2. The stratum lines represent the approximate boundaries between soil units. Actual changes may be gradual.
3. The discussion in the text of this report is necessary for a proper understanding of the subsurface conditions.
4. ATD = at time of drilling; WOH = weight of hammer; TCR= total core recovery; SCR= solid core recovery; RQD= rock quality designation

Boring Log *SPT-2*

Arkema EE/CA Geotechnical Field Investigation, Portland, Oregon

N702,305.5 ft E 7,627,989.5 ft NAD 83 Oregon North, International Feet

Approximate Mudline Elevation: +2.3 feet NAVD88 Water Depth: 6.7 to 8.4 ft (during drilling)

Sample No.	SPT Results	Approx. Recovery (in)	Lab Tests
ARK-SPT-2-2-3.5	WOH	4	MC
ARK-SPT-2-3.5-5	WOH	12	MC, GS, AL
ARK-SPT-2-5-6	N = 3	18	MC
ARK-SPT-2-6-6.5			MC
ARK-SPT-2-6.5-7	N = 1	12	MC
ARK-SPT-2-7-7.5			MC, GS
ARK-SPT-2-8-9.5	WOH	NR	
ARK-SPT-2-9.5-10	WOH	12	MC
ARK-SPT-2-10-10.5			MC
ARK-SPT-2-11-12.5	WOH	9	MC
ARK-SPT-2-12.5-14	WOH	12	MC, GS
ARK-SPT-2-14-15	WOH	15	MC
ARK-SPT-2-15-15.5			MC
ARK-SPT-2-15.5-17.5	P	24	
ARK-SPT-2-17.5-19	WOH	NR	
ARK-SPT-2-19-20.5	WOH	15	MC
ARK-SPT-2-20.5-22.5	P	22	GS, AL, OGM SG, CU, K,
ARK-SPT-2-22.5-24.5	P	24	CN
ARK-SPT-2-24.5-26	WOH	6	MC
ARK-SPT-2-26-26.5	N = 3	12	MC, GS
ARK-SPT-2-26.5-27.5			MC
ARK-SPT-2-27.5-29		NR	
ARK-SPT-2-30-30.25	N = 4	9	MC
ARK-SPT-2-30.25-31.5			MC
ARK-SPT-2-32.5-34	N = 4	12	MC
ARK-SPT-2-35-36	N = 38	18	MC
ARK-SPT-2-36-36.5	N = 17		
ARK-SPT-2-38-39	N = 50/6"	4	

Depth (ft.)	Description
0–6	Dark greenish gray to brown ORGANIC SILT, trace fine rootlets, wet, very soft, slight sheen, light chemical/medicinal odor.
6–8	Brown very fine SAND, some Silt, wet, very loose, slight sheen, strong chemical/medicinal odor.
8–15	Dark gray to brown fine (above 10ft) to medium to coarse SAND, trace to few Silt, occasional layer of clay and silt (above10.5ft), wet, very loose, moderate to strong chemical odor.
15–23.5	Brown ORGANIC SILT, trace to some Sand, occasional wood fragments, wet, very soft.
23.5–26.5	Dark gray to brown, fine to medium SAND, some Silt, trace wood fibers and roots, wet, very loose, moderate chemical odor.
26.5–34.5	Dark gray to brown, fine to medium SAND, trace wood fragments, occasional silt layer, wet, very loose, slight sheen.
34.5–36	Brown very fine SAND, some Silt, wet, medium dense.
36–39	Brown to Black, fine to medium rounded GRAVEL (clasts of subangular detrital gneiss and clasts of angular deeply weathered basalt)
39	Bottom of boring at 39.0 feet bgs (SPT refusal). Completeted on 10/18/09

1. Refer to Figure B-1, Key to Exploration Logs, for explanation of symbols and definitions.
2. The stratum lines represent the approximate boundaries between soil units. Actual changes may be gradual.
3. The discussion in the text of this report is necessary for a proper understanding of the subsurface conditions.
4. ATD = at time of drilling; WOH = weight of hammer.

ARCADIS

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Boring Log *SPT-3*

Arkema EE/CA Geotechnical Field Investigation, Portland, Oregon

N702,126.1 ft E7,628,258.0 ft NAD 83, Oregon North, International Feet

Approximate Mudline Elevation: -10.6 feet NAVD88 Water Depth: 17.1 to 20.6 ft (during drilling)

Sample No.	SPT Results	Approx. Recovery (in)	Lab Tests
ARK-SPT-2-5-6.5	WOH	18	MC, GS, AL, OG
ARK-SPT-2-6.5-8	WOH	18	MC
ARK-SPT-2-8-9.5	WOH	16	MC
ARK-SPT-9.5-11.5	P	22.5	GS, AL, SG, UU, CU CN
ARK-SPT-2-11.5-13	WOH	18	MC
ARK-SPT-2-13-15	P	23	GS, AL, CU, K
ARK-SPT-2-15-17	P	6	
ARK-SPT-2-17-19	P	NR	
ARK-SPT-2-19-20.5	WOH	3	MC
ARK-SPT-2-20.5-22	WOH	6	MC, GS
ARK-SPT-2-22-22.25		3	MC
ARK-SPT-2-22.25-23.5	N = 5	15	MC
ARK-SPT-2-23.5-25	N = 66	12	MC
ARK-SPT-2-25-26	N = 84/6"	6	

Depth (ft.): 0, 5, 10, 15, 20, 25

Description:

Dark gray ORGANIC SILT, trace to some Sand, occasional trace Gravel, wood fragments, rootlets, and slight sheen, wet, very soft.

Dark grey/brown SAND, some Silt/SILT, some Sand, occasional wood fragments, wet, very loose to loose.

Dark gray Gravel (derived from basalt), trace wood fragments, wet, very dense.

Rock flour.

Bottom of boring at 26.5 feet bgs (SPT refusal). Completed on

1. Refer to Figure B-1, Key to Exploration Logs, for explanation of symbols and definitions.
2. The stratum lines represent the approximate boundaries between soil units. Actual changes may be gradual.
3. The discussion in the text of this report is necessary for a proper understanding of the subsurface conditions.
4. ATD = at time of drilling; WOH = weight of hammer.

ARCADIS

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APPENDIX D

FIELD CHANGE REQUEST FORMS

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA Project No.: C167.1103
Client: Legacy Site Services Request No.: FCR-1

To: Lance Peterson, CDM Date: August 13, 2009

Field Change Request Title: Station Location Shifts of up to 20 ft

Description:

There are a number of obstructions within the EE/CA sediment characterization area including old pilings, concrete, and other debris. In addition, the width of the barge (24 ft) will not allow drilling activities to occur closer than 12 ft from obstructions such as pilings since the moon pool is located in the approximate center of the barge. As a result, station locations may need to be shifted to accessible areas.

Recommended Change:

All station location shifts of up to 20 ft from the coordinates listed in the Arkema EE/CA field sampling plan (dated May 15, 2009) can be done without formal notification of EPA or CDM representatives. Shifts greater than 20 ft will require formal notification of EPA and/or CDM representatives.

Eron Dodak, R.G.		August 13, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		August 13, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA Project No.: C167.1103
Client: Legacy Site Services Request No.: FCR-2

To: Lance Peterson, CDM Date: August 13, 2009

Field Change Request Title: Move Station WB-46 Approximately 60 ft to the West

Description:

Station WB-46 is located in an area that is inaccessible to the barge selected for the EE/CA sediment characterization work. Overhead clearance of 70 ft is required for the barge to accommodate the spud anchoring system. The overhead clearance beneath the walkway on Dock 2 (located near borehole WB-48) is too short to accommodate the barge. The water depth and presence of Outfall 003 will not accommodate the barge traveling to the station from a downstream direction.

Recommended Change:

Move station WB-46 approximately 60 ft west so it is on the west side of Outfall 003.

Eron Dodak, R.G.		August 13, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		August 13, 2009
Project Manager	Signature	Date

Distribution:

LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA — Project No.: C167.1103
Client: Legacy Site Services — Request No.: FCR-3

To: Sean Sheldrake, EPA — Date: September 11, 2009

Field Change Request Title: Use of a 3-inch diameter aluminum vibracore sampler

Description:
The top 4-8 ft of sediments at the Arkema site are generally very soft. Firmer sandy sediments are typically encountered at depths ranging from approximately 4-8 ft below mudline. The drilling contractor is unable to run 6-inch diameter casing with the rotosonic rig until they drill several feet into sand, which has a bearing capacity sufficient to support the casing. The soft upper sediments can not support the weight of the casing (the casing would drop through the "moon pool" on the barge and would be nearly impossible to retrieve). If casing is not used, sediment samples collected with the split spoon sampler may have excessive amounts of "slough" (sediments from upper intervals that are incorporated into the sampler as it is pushed through the uncased sediments). The casing provides an open borehole for the sediment samples to be collected, which significantly reduces slough in the sampler. Use of the vibracore sampler will also save time and increase production.

Recommended Change:
At boreholes where the sediment thickness is expected to be at least 10 ft, a 3-inch diameter aluminum vibracore sampler may be used to collect sediment samples from mudline to 10 ft below mudline for chemical analysis. The vibracore sampler will not be used in areas where shallow bedrock is expected or concrete or other debris is present, which may damage the sampler.

Eron Dodak, R.G.		September 11, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 11, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA — Project No.: C167.1103
Client: Legacy Site Services — Request No.: FCR-4

To: Sean Sheldrake, EPA — Date: September 11, 2009

Field Change Request Title: Guidance on Sample Collection if Field Evidence of Contamination is Observed

Description:

A light sheen and some low-level photo-ionization detector (PID) hits have been observed in some sediment samples collected as part of the 2009 EE/CA sediment investigation. The field sampling plan does not provide specific guidance on when additional VOC sample jars will be collected based on field evidence of contamination. This field change request form provides guidance on when additional jars that will be filled based on the presence of a sheen or an elevated PID measurement.

Recommended Change:

If sample volume is sufficient, an additional 4 oz (VOC) jar will be collected to be archived at the laboratory for potential chemical analysis if a sheen or a PID measurement greater than 10 ppm is observed. The 4 oz jar will be archived at the analytical laboratory at 4 degrees Celsius.

Eron Dodak, R.G.		September 11, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 11, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA
Project No.: C167.1103
Client: Legacy Site Services
Request No.: FCR-5

To: Sean Sheldrake, EPA
Date: September 21, 2009

Field Change Request Title: Abandon 15 ft of Casing at WB-56 and move to WB-56b to complete borehole.

Description:
At borehole WB-56, the barge was positioned close to the relatively steep riverbank. The drill rig was also positioned on the back moon pool, located at the base of the barge ramp, to advance the borehole within 15 ft of the FSP borehole coordinates. During drilling, the tide dropped and the end of the barge (directly beneath the drill rig) settled on the relatively steep riverbank and moved the barge about 6 inches, which caused misalignment of the casing. The drilling crew attempted to move both the barge and the drill rig several times to try to realign the casing. During the process of unthreading the uppermost section of casing, the bottom 15 ft of casing became unthreaded and separated. The drillers tried repeatedly to reconnect the bottom 15 ft of casing, but were unsuccessful. This section of casing is located approximately 10-25 ft below mudline (bml) and had to be left in the abandoned borehole. The remaining casing was removed and the upper 10 ft of borehole was allowed to close naturally by sloughing.

Recommended Change:
Drilling and sampling in WB-56 was successfully completed to 24 ft bml. To complete this borehole to bedrock the barge platform will need to be moved approximately 10-12 ft east of WB-56 so the barge does not rest on the steep riverbank at low tide. This adjacent borehole, WB-56b, will be about 25-30 ft from the coordinates in the FSP, which requires EPA approval according to FCR-1. At the new WB-56b location, the mudline elevation is approximate 3.3 ft lower than at WB-56. Samples at WB-56b, therefore, will be collected beginning at 20.7 ft bml (which corresponds to the elevation of 24 ft bml at WB-56). The samples from WB-56 and WB-56b will be analyzed in accordance with the requirements for WB-56 in the FSP.

Eron Dodak, R.G.		September 21, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 21, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager

Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA

Project No.: C167.1103

Client: Legacy Site Services

Request No.: FCR-6

To: Sean Sheldrake, EPA

Date: September 21, 2009

Field Change Request Title: Move Station WB-46 to the Riverbank Adjacent to Outfall 003

Description:

As noted in FCR-2, station WB-46 is located in an area that is inaccessible to the barge selected for the EE/CA sediment characterization work. Overhead clearance of 70 ft is required for the barge to accommodate the spud anchoring system. The overhead clearance beneath the walkway on Dock 2 (located near borehole WB-48) is too short to accommodate the barge. The water depth and presence of Outfall 003 will not accommodate the barge traveling to the station from a downstream direction.

FCR-2 proposed moving station WB-46 approximately 60 ft west so it is on the west side of Outfall 003. However, further reconnaissance showed the water depth was too shallow (1-2 ft deep at low tide) to accommodate the barge at this location. In addition, concrete debris and a submerged piling were observed in this area (the barge pivoted on an object thought to be a submerged piling when trying to position on WB-46). The combination of the shallow draft and submerged objects represent a risk for puncturing the barge hull when the tide drops during drilling.

Recommended Change:

Move station WB-46 approximately 50-60 ft from its original location toward the riverbank, parallel to Outfall 003, so it can be drilled from the riverbank.

Eron Dodak, R.G.		September 21, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 21, 2009
Project Manager	Signature	Date

Distribution:

LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA Project No.: C167.1103
Client: Legacy Site Services Request No.: FCR-7

To: Sean Sheldrake, EPA Date: September 22, 2009

Field Change Request Title: Abandon WB-31 and move to WB-31b to complete borehole.

Description:
The barge was positioned on borehole WB-31 parallel to Outfall 001, which is at an angle to the riverbank. The drill rig was positioned on the moon pool located on the base of the barge ramp so the borehole could be drilled as close as possible to the riverbank. The moon pool was positioned within about 12 ft of the coordinates in the FSP, which is within the 20 ft borehole tolerance allowed by FCR-1. As the tide dropped, the upstream corner of the barge (directly beneath the drill rig) became beached. The wakes from the river traffic and the wind in combination with one corner of the barge being beached caused the barge/moon pool to move about 4-6 inches, misaligning the casing. The barge could not be moved a short distance to realign the casing because one corner of the barge was beached. The casing was removed and the borehole was grouted. The tugboat captain did not feel comfortable with leaving the barge so close to Outfall 001 overnight, so it was moved away from the outfall.

Recommended Change:
Drill borehole WB-31b approximately 5 ft toward the river from WB-30. The distance from the FSP coordinates for WB-31 should be within the 20 ft tolerance allowed by FCR-1. The mudline elevation will be approximately 5 ft lower at the new borehole location, so the sample intervals will be adjusted so we begin sampling at an elevation equivalent to 30 ft bml at WB-31. The samples from WB-31 and WB-31b will be analyzed in accordance with the requirements for WB-31 in the FSP.

Eron Dodak, R.G.	[signature]	September 22, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.	[signature]	September 22, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File

Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA | Project No.: C167.1103
Client: Legacy Site Services | Request No.: FCR-8

To: Sean Sheldrake, EPA | Date: September 23, 2009

Field Change Request Title: Preliminary results for WB-65; Abandon installation of WB-59.

Description:
The drill rig and barge could not be maneuvered to the FSP coordinate location for WB-59 because of shallow water and subaqueous obstructions. Access by land was also attempted, but the sediment in this area is saturated with water and would not support the drill rig. Alternative accessible locations were scouted by the barge and tug crew. Two alternative locations are shown on the attached map. The downstream location is located very close to the existing location for WB-56 (i.e., <30 ft away). The upstream location is approximately 100 ft upstream and outside of the Consent Order preliminary RAA boundary. Another lateral location within the Consent Order preliminary RAA boundary is near the downstream end of the Salt Dock, which is also very near borehole WB-57 which was completed on September 14th. In the FSP, WB-59 was proposed as a “step out” borehole and the samples in WB-59 were to be collected, archived, and analyzed depending on the results of WB-56. The purpose of this “step out” borehole was to provide additional definition to the 5 mg/kg boundary if any sediment samples in WB-56 exceeded 5 mg/kg. None of the alternative WB-59 locations summarized above are ideally situated as a 5 mg/kg DDx “step out” borehole.

After conversations with CDM, Integral requested the “preliminary screen” results from TestAmerica’s (TA’s) analysis of the six DDT isomers for the WB-56 samples. These are the same preliminary screen results that TA uses to identify the proper extraction volume for the final, calibrated pesticide analysis on the sample. The preliminary draft results of the “initial screening” analyses are attached. These initial screening analyses are not the final DDT results for WB-56; however, based on TA’s experience with the sediment samples analyzed to date, they are expected to be reasonably close to the final results. The second page of TA’s report provides the appropriate qualifications for the results. Some of the important points include, 1) although TA has had good success correlating the preliminary screen results with final extractions, the final results are based on a separate aliquot and could be affected by sample heterogeneity, 2) preliminary screen analyses are not subject to sample cleanup procedures, and 3) a single chromatographic column is used for the preliminary screen analyses. For these and other reasons the final results for each of these samples will vary from the preliminary screen results attached. One other factor will affect the final results. The sample moisture content is needed to calculate the total DDx concentration based on the sample dry weight. Because the individual sample moisture contents are not yet available, an estimated wet weight of 50 percent was assumed in calculating the dry weight total DDx concentration for all samples. This generalized assumption is still consistent with the moisture content data that are available for samples analyzed, to date, for the EE/CA investigation.

Based on these qualifications, the preliminary screen results from WB-56/56b indicate that the total DDx concentration is more than likely less than 5 mg/kg in all depth intervals at this location. The highest concentration reported is 2.52 mg/kg dry weight in the 0-2 ft below mudline (bml) interval. The next highest total DDx concentrations are 0.36 mg/kg in the 2-4 ft bml sample and 0.10 mg/kg dry weight in the 4-6 ft bml interval. Most of the samples below 8ft bml did not have DDx detections. Note that the detection limit for the final calibrated DDT analyses will be lower than shown on these preliminary screens.

Based on these preliminary results from WB-56/56b, it is likely that once the final analytical results are obtained none of the samples will exceed 5 mg/kg, and no further analyses at WB-59 would be necessary.

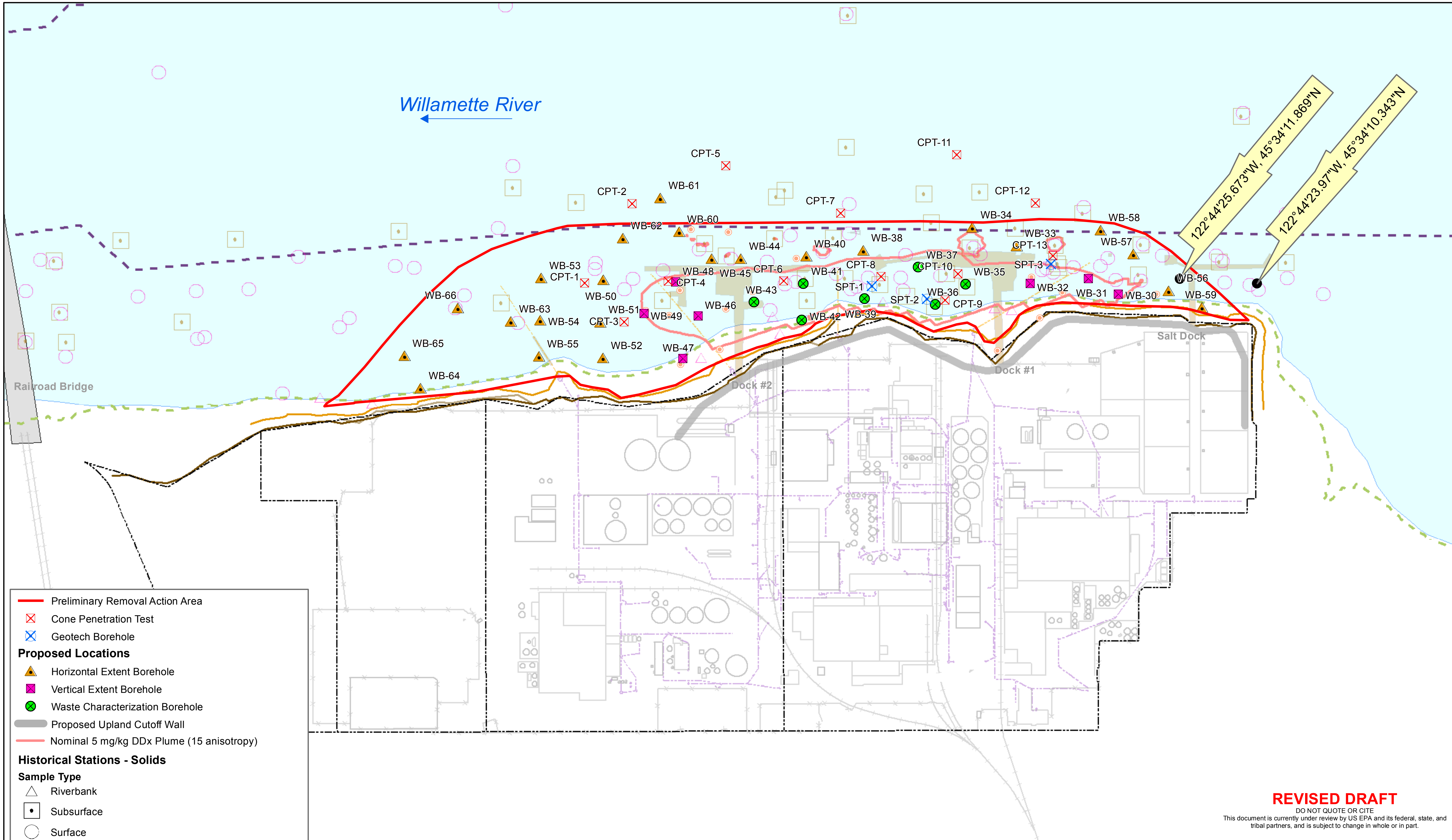
Recommended Change:
Remove the installation of WB-59 from the drilling program. This recommendation is based on the following rationale, 1) The FSP proposed location of WB-59 is inaccessible by barge or by land, 2) alternative locations are either outside of the preliminary RAA near the upstream end of the Salt Dock (>100 ft from the proposed location) or near the downstream end of the Salt Dock near already drilled boreholes, WB-56 and WB-57, 3) WB-59 is a proposed “step out” borehole that was to provide additional information on the extent of total DDx should any of the sediment samples from WB-56 exceed a total DDx concentration of 5 mg/kg, and 4) the preliminary draft DDx results from WB-56/56b indicate that the total DDx concentration is unlikely to exceed 5 mg/kg (on a dry weight basis) and the highest concentration DDx sample is the surface interval.

Eron Dodak, R.G.		September 23, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 23, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:



Map Document: (P:\Projects\Arkema-Oly\C167_1003_FSP\Production_MXDs\Arkema_EECA_05112009_newstations.mxd)
5/11/2009 -- 1:17:25 PM

integral consulting inc.

0 100 200 400 Feet

FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004.
Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988(NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.
Most buildings and structures on the Arkema site have been demolished or removed.
OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

E-Sewer-L
Storm Drain
12ft Contour
Bridges
Navigation Channel
River
Property and Lot Boundaries
Docks and Structures 2005
Ordinary High Water
Top of Bank

Figure 2-1
Arkema EE/CA
Proposed Sediment Sampling Locations

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

September 23, 2009

Ms. Abbie Spielman
Integral Consulting Inc.
319 SW Washington Street
Suite 1150
Portland, OR 97204

Re: Arkema Project, Preliminary Pesticide Results

Dear Ms. Spielman:

Enclosed are preliminary analytical results for the following samples that were received by TestAmerica Burlington on September 22nd, 2009.

Lab Sample ID	Client Sample ID	Collected
15541-1	ARK-WB-56-0-2	09/15/09
15541-2	ARK-WB-56-2-4	09/15/09
15541-3	ARK-WB-56-4-6	09/15/09
15541-4	ARK-WB-56-6-8	09/15/09
15541-5	ARK-WB-56-8-10	09/15/09
15541-6	ARK-WB-56-10-11	09/15/09
15541-7	ARK-WB-56-12-14	09/15/09
15541-8	ARK-WB-56-14-16	09/15/09
15541-9	ARK-WB-78-14-16	09/15/09
15541-10	ARK-WB-56-16-18	09/15/09
15541-11	ARK-WB-56-18-20	09/15/09
15541-12	ARK-WB-56-20-22	09/15/09
15541-13	ARK-WB-56-22-24	09/15/09
15540-1	ARK-WB-56b-20.7-22	09/16/09
15540-2	ARK-WB-56b-22.7-24	09/16/09
15540-3	ARK-WB-56b-24.7-26	09/16/09
15540-4	ARK-WB-56b-26.7-28	09/16/09
15540-5	ARK-WB-56b-28.7-30	09/16/09
15540-6	ARK-WB-56b-30.7-32	09/16/09
15540-7	ARK-WB-56b-32.7-34	09/16/09
15540-8	ARK-WB-56b-34.7-36	09/16/09
15540-9	ARK-WB-56b-36.7-38	09/16/09
15540-10	ARK-WB-56b-38.7-40	09/16/09
15540-11	ARK-WB-56b-40.7-42	09/16/09
15540-12	ARK-WB-56b-42.7-44	09/16/09
15540-13	ARK-WB-56b-44.7-46	09/16/09
15540-14	ARK-WB-56b-46.7-47	09/16/09

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

The results presented in this report reflect preliminary screen analyses for the listed samples. One gram of sample was extracted into ten milliliters of solvent, and analyzed against a calibration standard containing all six DDX isomers, each at a concentration of 80 ug/L. The concentration of this standard is well above the formal analysis calibration range, as it was designed just to indicate if samples required a reduced extraction volume. This scenario results in a nominal wet-weight reporting limit of 800 ug/Kg, or 0.8 mg/Kg, however detections are possible well below this level. Assuming the samples may be up to 50% solid, the approximate dry weight reporting limit for each isomer is 1600 ug/Kg or 1.6 mg/Kg. The following spreadsheet summarizes the results for each sample.

Based on these results, all samples in this group will be formally extracted using twenty grams of sample. Although TestAmerica has had good success correlating the preliminary screen results with the final extractions, it is important to note that the final analyses are performed on a separate aliquot of sample, and the possibility of heterogeneity in the samples does exist. Additionally, the preliminary screen analyses are not subjected to cleanup procedures, and the analysis is accomplished on a single chromatographic column. Final results will vary slightly, but should be within the magnitude reported here.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,

Jim Madison

Jim Madison
Project Manager

Preliminary Screen Results
Arkema WB-56 and WB-56b

Lab Sample ID	Client Sample ID	2,4'-DDD mg/Kg	2,4'-DDE mg/Kg	2,4'-DDT mg/Kg	4,4'-DDD mg/Kg	4,4'-DDE mg/Kg	4,4'-DDT mg/Kg	Total mg/Kg
15541-1	ARK-WB-56-0-2	0.105	0.26	0.0405	0.17	0.185	0.5	**1.26 mg/Kg wet (approx. 2.52 mg/Kg dry)**
15541-2	ARK-WB-56-2-4	0.029	0.014	0.024	0.05	0.0125	0.05	**0.18 mg/Kg wet (approx. 0.36 mg/Kg dry)**
15541-3	ARK-WB-56-4-6	0.02	ND	0.0125	0.0195	0.0065	0.013	**0.052 mg/Kg wet (approx. 0.10 mg/Kg dry)**
15541-4	ARK-WB-56-6-8	ND	ND	ND	0.0075	ND	0.008	**0.016 mg/Kg wet (approx. 0.031 mg/Kg dry)**
15541-5	ARK-WB-56-8-10	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-6	ARK-WB-56-10-11	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-7	ARK-WB-56-12-14	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-8	ARK-WB-56-14-16	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-9	ARK-WB-78-14-16	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-10	ARK-WB-56-16-18	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-11	ARK-WB-56-18-20	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-12	ARK-WB-56-20-22	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15541-13	ARK-WB-56-22-24	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-1	ARK-WB-56b-20.7-22	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-2	ARK-WB-56b-22.7-24	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-3	ARK-WB-56b-24.7-26	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-4	ARK-WB-56b-26.7-28	ND	ND	ND	0.004	ND	ND	**0.004 mg/Kg wet (approx 0.008 mg/Kg dry)**
15540-5	ARK-WB-56b-28.7-30	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-6	ARK-WB-56b-30.7-32	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-7	ARK-WB-56b-32.7-34	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-8	ARK-WB-56b-34.7-36	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-9	ARK-WB-56b-36.7-38	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-10	ARK-WB-56b-38.7-40	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-11	ARK-WB-56b-40.7-42	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-12	ARK-WB-56b-42.7-44	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-13	ARK-WB-56b-44.7-46	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)
15540-14	ARK-WB-56b-46.7-47	ND	ND	ND	ND	ND	ND	< 0.80 mg/Kg wet (< approx. 1.6 mg/Kg dry)

ND = Not Detected

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA Project No.: C167.1103
Client: Legacy Site Services Request No.: FCR-9

To: Sean Sheldrake, EPA Date: September 28, 2009

Field Change Request Title: Move location of WB-39 25 ft from riverbank.

Description:
The steep riverbank and a cutoff piling were located in the general vicinity of the FSP station coordinates for WB-39, which prevented the barge from being positioned at this station this afternoon. Because there is a steep bank in this location, there is also a concern about positioning the barge too close to the riverbank which could cause a misalignment of the casing when the river stage drops as a result of tidal fluctuations (such as what occurred with boreholes WB-31 and WB-56). CDM was notified immediately of the access issues related to WB-39.

Recommended Change:
Drill borehole WB-39 approximately 25 ft toward the river from the FSP coordinates. The drill rig will be positioned on the moon pool located on the base of the barge ramp so the borehole can be drilled as close as possible to the riverbank. The proposed location is considered as close to the riverbank as possible given river stage fluctuations and the steep riverbank in this vicinity. A move of greater than 20 ft from the FSP coordinates requires a field change request (FCR) according to FCR-1.

Eron Dodak, R.G.		September 28, 2009
Field Operations Lead (or designee)	Signature	Date

Approval:

David Livermore, R.G.		September 28, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA | Project No.: C167.1103
Client: Legacy Site Services | Request No.: FCR-10

To: Sean Sheldrake, EPA | Date: September 30, 2009

Field Change Request Title: Move location of WB-36 approximately 25 ft from riverbank.

Description:
A combination of the shallow water depth and Dock 1 structure prevent the barge from being positioned at the FSP station coordinates for WB-36. The barge will need to be positioned in deeper water away from the shoreline to provide enough draft for drilling WB-36.

Recommended Change:
Drill borehole WB-36 approximately 25 ft toward the river from the FSP coordinates. The drill rig will be positioned on the moon pool located on the base of the barge ramp so the borehole can be drilled as close as possible to the riverbank. The proposed location is considered as close to the riverbank as is physically possible to maneuver given the shallow water depths at this location. A move of greater than 20 ft from the FSP coordinates requires a field change request (FCR) according to FCR-1.

Eron Dodak, R.G. — [signature] — September 30, 2009
Field Operations Lead (or designee) — Signature — Date

Approval:

David Livermore, R.G. — [signature] — September 30, 2009
Project Manager — Signature — Date

Distribution:
LSS Project Manager
Integral Project Manager
Field Operations Lead
QA Officer
Project File
Other:

FIELD CHANGE REQUEST (FCR) FORM

Project Name: Arkema EE/CA — Project No.: MN000609.0001.00007
Client: Legacy Site Services — Request No.: FCR-11

To: Sean Sheldrake, EPA — Date: October 12, 2009

Field Change Request Title: Flexibility for Changing Geotechnical Exploration Locations.

Description:
The locations of the co-located CPTs and SPTs were originally selected to be immediately adjacent to existing boring locations from the 2003 investigation (WB-9, WB-11, and WB-23). This was done so that geotechnical data can be collected targeting specific soil layers present at the site. In the process of transferring the locations of the co-located explorations from a drawing that was marked up by hand to a table with target coordinates, the new exploration locations ended up too far apart from each other and too far from the selected 2003 locations.

Recommended Change:
Move the co-located explorations closer to the existing boring locations to increase the likelihood that the new explorations will encounter similar conditions as the 2003 borings. This may require moving the explorations from the target locations provided in the field sampling plan by up to about 30 feet. Generally, we recommend that ARCADIS be provided the flexibility to move exploration locations by up to 50 feet without further field change requests. Changing exploration locations may become necessary if obstruction or other constraints in the field do not allow access to the target locations. Alternative locations will be approved by ARCADIS' engineer prior to advancing the explorations and will generally be selected in the best interest of the project to collect representative and meaningful geotechnical data for engineering purposes.

Carsten Becker	Carsten Becker	October 12, 2009
Engineer	Signature	Date

Approval:

Kristi Maitland	Kristi Maitland	October 12, 2009
Project Manager	Signature	Date

Distribution:
LSS Project Manager
Integral Project Manager
ARCADIS Project Manager
Field Operations Lead
QA Officer
Project File
Other:

APPENDIX E

CHEMISTRY DATA VALIDATION REPORTS

(SEPARATE FILE)

APPENDIX F

EPA'S SPLIT SAMPLING RESULTS AND QUALITY CONTROL REPORTS

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBPJ6		JBPK3		JBPL1		JBPM0		JBPM9		JBQ11		JBQ16		JBQ20	
Sample Name	ARK-WB-65-8-10		ARK-WB-66-8-10		ARK-WB-63-10-12		ARK-WB-51-10-12		ARK-WB-40-6-8		ARK-WB-34-4-6		ARK-WB-49-6-8		ARK-WB-49-14-16	
Sample Date	8/18/2009		8/19/2009		8/20/2009		8/28/2009		9/3/2009		9/4/2009		9/9/2009		9/9/2009	
Chemical Name																
Semi-Volatile Organic Compounds (µg/kg)																
1,1'-Biphenyl	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
1,2,4,5-Tetrachlorobenzene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
1,2,4-Trichlorobenzene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
1,2-Diphenylhydrazine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,2'-oxybis(1-Chloropropane)	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,3,5,6-Tetrachlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,3,4,6-Tetrachlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4,5-Trichlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4,6-Trichlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4-Dichlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4-Dimethylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4-Dinitrophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,4-Dinitrotoluene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2,6-Dinitrotoluene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2-Chloronaphthalene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2-Chlorophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2-Methylnaphthalene	5.0	J	35	J	1.4	J	1.9	J	4.8		3.7	J	2.5	U	2.6	U
2-Methylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2-Nitroaniline	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
2-Nitrophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
3,3'-Dichlorobenzidine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
3-Methylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
3-Nitroaniline	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4,6-Dinitro-2-methylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Bromophenyl-phenylether	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Chloro-3-methylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Chloroaniline	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Chlorophenyl-phenylether	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Methylphenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Nitroaniline	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
4-Nitrophenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Acenaphthene	7.4	J	170		2.1	J	2.6	J	6.4		3.8	U	2.5	U	2.6	U
Acenaphthylene	11	J	26	J	3.4	J	2.7	J	6.7		3.8	U	2.5	U	2.6	U
Acetophenone	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Aniline	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Anthracene	14		95	J	7.4	J	8.1		14		3.8	U	2.5	U	2.6	U
Atrazine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Benzaldehyde	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Benzo(a)anthracene	110	J	180		80	J	71	J	86		24		8.0		7.9	
Benzo(a)pyrene	170		230		160	J	36	J	89		5.0		2.5	U	3.5	
Benzo(b)fluoranthene	110	J	200		130	J	38	J	78		8.7		2.5	U	2.6	U
Benzo(g,h,i)perylene	160		250		44	J	36	J	16		4.7		2.8		2.2	J
Benzo(k)fluoranthene	130		170		94	J	51	J	41	J	3.9	J	2.5	U	2.6	U
Benzoic acid	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Benzyl alcohol	240	U	290	U	220	U	230	U	220	UJ	320	UJ	210	UJ	210	UJ
bis(2-Chloroethoxy)methane	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
bis(2-Chloroethyl)ether	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBPJ6		JBPK3		JBPL1		JBPM0		JBPM9		JBQ11		JBQ16		JBQ20	
Sample Name	ARK-WB-65-8-10		ARK-WB-66-8-10		ARK-WB-63-10-12		ARK-WB-51-10-12		ARK-WB-40-6-8		ARK-WB-34-4-6		ARK-WB-49-6-8		ARK-WB-49-14-16	
Sample Date	8/18/2009		8/19/2009		8/20/2009		8/28/2009		9/3/2009		9/4/2009		9/9/2009		9/9/2009	
Chemical Name																
Semi-Volatile Organic Compounds (µg/kg)																
bis(2-Ethylhexyl)phthalate	240	U	290	U	220	U	150	J	220	U	92	J	110	J	51	J
Butylbenzylphthalate	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Caprolactam	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Carbazole	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Chrysene	120		270		83	J	45	J	120		32		16		12	
Dibenz(a,h)anthracene	61	J	73	J	17	J	6.7		7.1		3.6	J	2.3	J	2.2	J
Dibenzofuran	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Diethylphthalate	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Dimethylphthalate	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Di-n-butylphthalate	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Di-n-octylphthalate	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Fluoranthene	150		840		35	J	45	J	42		25		2.5	U	5.6	
Fluorene	7.6	J	140	J	2.1	J	2.7	J	5		3.8	U	2.5	U	2.6	U
Hexachlorobenzene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Hexachlorobutadiene	240	U	290	U	220	U	230	U	45	J	320	U	210	U	210	U
Hexachlorocyclopentadiene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Hexachloroethane	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Indeno(1,2,3-cd)pyrene	140		180		47	J	38	J	14		3.3	J	2.2	J	2.6	U
Isophorone	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Naphthalene	13	J	79	J	4.2	J	3.8		10		4.8		2.5	U	2.6	U
Nitrobenzene	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
N-Nitrosodimethylamine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
N-Nitroso-di-n-propylamine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
N-Nitrosodiphenylamine	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Pentachlorophenol	5.7	U	6.8	U	5.2	U	35	J	2.9	J	8.6	J	2.8	J	2.9	J
Phenanthrene	61	J	970		16	J	13		19		4.8		2.5	U	2.6	U
Phenol	240	U	290	U	220	U	230	U	220	U	320	U	210	U	210	U
Pyrene	200		710		55	J	65	J	52		30		8.0		7.3	

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBQ23	JBQ31	JBQ36	JBQ40	JBQ45	JBQZ5	JBQZ9	JBR03
Sample Name	ARK-WB-49-20-22	ARK-WB-56-18-20	ARK-WB-30-10-12	ARK-WB-30-26-28	ARK-WB-30-40-42	ARK-WB-42-20-23	ARK-WB-42-23-26	ARK-WB-42-6-14
Sample Date	9/9/2009	9/15/2009	9/18/2009	9/18/2009	9/18/2009	9/25/2009	9/25/2009	9/25/2009
Chemical Name								
Semi-Volatile Organic Compounds (µg/kg)								
1,1'-Biphenyl	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	52 J
1,2,4,5-Tetrachlorobenzene	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
1,2,4-Trichlorobenzene	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
1,2-Diphenylhydrazine	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,2'-oxybis(1-Chloropropane)	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,3,5,6-Tetrachlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,3,4,6-Tetrachlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4,5-Trichlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4,6-Trichlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4-Dichlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4-Dimethylphenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4-Dinitrophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,4-Dinitrotoluene	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2,6-Dinitrotoluene	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2-Chloronaphthalene	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2-Chlorophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	110 J
2-Methylnaphthalene	2.5 UJ	2.8 U	2.7 U	2.8 U	2.7 U	2.8 U	2.7 U	350
2-Methylphenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2-Nitroaniline	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
2-Nitrophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
3,3'-Dichlorobenzidine	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
3-Methylphenol	200 UJ	230 U	220 U	230 U	220 U	230 R	220 U	250 U
3-Nitroaniline	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4,6-Dinitro-2-methylphenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Bromophenyl-phenylether	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Chloro-3-methylphenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Chloroaniline	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Chlorophenyl-phenylether	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Methylphenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Nitroaniline	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
4-Nitrophenol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Acenaphthene	2.5 UJ	2.8 U	2.7 U	2.8 U	2.7 U	2.8 U	2.7 U	140 J
Acenaphthylene	2.5 UJ	2.8 U	2.7 U	2.8 U	2.7 U	2.8 U	2.7 U	250 U
Acetophenone	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Aniline	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Anthracene	2.5 UJ	2.8 UJ	2.7 UJ	2.8 UJ	2.7 UJ	2.8 U	2.7 U	82 J
Atrazine	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Benzaldehyde	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Benzo(a)anthracene	5.6 J	2.8 U	2.7 U	2.8 U	2.7 U	2.8 U	2.7 U	130 J
Benzo(a)pyrene	2.4 J	2.8 U	2.7 U	2.8 U	2.7 U	2.8 UJ	2.7 UJ	250 U
Benzo(b)fluoranthene	4.6 J	2.8 U	2.7 U	2.8 U	2.7 U	2.8 U	2.7 U	110 J
Benzo(g,h,i)perylene	3.4 J	2.8 U	2.7 U	2.8 U	2.7 U	2.4 J	2.7 U	73 J
Benzo(k)fluoranthene	2.8 J	2.8 U	2.7 U	2.8 U	2.7 U	2.8 UJ	2.7 UJ	92 J
Benzoic acid	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
Benzyl alcohol	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
bis(2-Chloroethoxy)methane	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U
bis(2-Chloroethyl)ether	200 UJ	230 U	220 U	230 U	220 U	230 U	220 U	250 U

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBQ23		JBQ31		JBQ36		JBQ40		JBQ45		JBQZ5		JBQZ9		JBR03	
Sample Name	ARK-WB-49-20-22		ARK-WB-56-18-20		ARK-WB-30-10-12		ARK-WB-30-26-28		ARK-WB-30-40-42		ARK-WB-42-20-23		ARK-WB-42-23-26		ARK-WB-42-6-14	
Sample Date	9/9/2009		9/15/2009		9/18/2009		9/18/2009		9/18/2009		9/25/2009		9/25/2009		9/25/2009	
Chemical Name																
Semi-Volatile Organic Compounds (µg/kg)																
bis(2-Ethylhexyl)phthalate	200	UJ	51	J	35	J	230	U	220	U	230	U	220	U	250	U
Butylbenzylphthalate	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Caprolactam	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Carbazole	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Chrysene	9.7	J	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	160	J
Dibenz(a,h)anthracene	2.0	J	2.8	U	2.7	U	2.8	U	2.7	U	2.2	J	2.7	U	65	
Dibenzofuran	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	80	J
Diethylphthalate	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Dimethylphthalate	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Di-n-butylphthalate	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Di-n-octylphthalate	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Fluoranthene	6.8	J	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	420	
Fluorene	2.5	UJ	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	83	J
Hexachlorobenzene	200	UJ	0.28	U	220	U	230	U	220	U	230	U	220	U	250	U
Hexachlorobutadiene	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	39	J
Hexachlorocyclopentadiene	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Hexachloroethane	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Indeno(1,2,3-cd)pyrene	2.5	J	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	58	J
Isophorone	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Naphthalene	2.5	UJ	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	880	
Nitrobenzene	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
N-Nitrosodimethylamine	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
N-Nitroso-di-n-propylamine	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
N-Nitrosodiphenylamine	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Pentachlorophenol	2.4	J	2.8	U	2.7	U	2.8	U	2.7	U	5.6	U	5.4	U	6.1	U
Phenanthrene	4.1	J	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	510	
Phenol	200	UJ	230	U	220	U	230	U	220	U	230	U	220	U	250	U
Pyrene	2.5	UJ	2.8	U	2.7	U	2.8	U	2.7	U	2.8	U	2.7	U	330	

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBR07		JBR12		JBR16		JBR20	
Sample Name	ARK-WB-35-10-20		ARK-WB-35-20-23		ARK-WB-35-23-26		ARK-WB-35-32-35	
Sample Date	9/30/2009		9/30/2009		9/30/2009		9/30/2009	
Chemical Name								
Semi-Volatile Organic Compounds (µg/kg)								
1,1'-Biphenyl	82	J	250	U	240	U	220	U
1,2,4,5-Tetrachlorobenzene	280	U	250	U	240	U	220	U
1,2,4-Trichlorobenzene	280	U	250	U	240	U	220	U
1,2-Diphenylhydrazine	280	U	250	U	240	U	220	U
2,2'-oxybis(1-Chloropropane)	280	U	250	U	240	U	220	U
2,3,5,6-Tetrachlorophenol	280	U	250	U	240	U	220	U
2,3,4,6-Tetrachlorophenol	280	U	250	U	240	U	220	U
2,4,5-Trichlorophenol	280	U	250	U	240	U	220	U
2,4,6-Trichlorophenol	280	U	250	U	240	U	220	U
2,4-Dichlorophenol	280	U	250	U	240	U	220	U
2,4-Dimethylphenol	280	U	250	U	240	U	220	U
2,4-Dinitrophenol	280	U	250	U	240	U	220	U
2,4-Dinitrotoluene	280	U	250	U	240	U	220	U
2,6-Dinitrotoluene	280	U	250	U	240	U	220	U
2-Chloronaphthalene	280	U	250	U	240	U	220	U
2-Chlorophenol	280	U	250	U	240	U	220	U
2-Methylnaphthalene	1100		3.1	U	2.9	U	2.7	U
2-Methylphenol	280	U	250	U	240	U	220	U
2-Nitroaniline	280	U	250	U	240	U	220	U
2-Nitrophenol	280	U	250	U	240	U	220	U
3,3'-Dichlorobenzidine	280	U	250	U	240	U	220	U
3-Methylphenol	280	U	250	U	240	U	220	U
3-Nitroaniline	280	U	250	U	240	U	220	U
4,6-Dinitro-2-methylphenol	280	U	250	U	240	U	220	U
4-Bromophenyl-phenylether	280	U	250	U	240	U	220	U
4-Chloro-3-methylphenol	280	U	250	U	240	U	220	U
4-Chloroaniline	280	U	250	U	240	U	220	U
4-Chlorophenyl-phenylether	280	U	250	U	240	U	220	U
4-Methylphenol	280	U	250	U	240	U	220	U
4-Nitroaniline	280	U	250	U	240	U	220	U
4-Nitrophenol	280	U	250	U	240	U	220	U
Acenaphthene	310		3.1	U	2.9	U	2.7	U
Acenaphthylene	63		3.1	U	2.9	U	2.7	U
Acetophenone	280	U	250	U	240	U	220	U
Aniline	280	U	250	U	240	U	220	U
Anthracene	420		3.1	U	2.9	U	2.7	U
Atrazine	280	U	250	U	240	U	220	U
Benzaldehyde	280	U	250	U	240	U	220	U
Benzo(a)anthracene	670		6.9		3.4		2.7	U
Benzo(a)pyrene	350		4.8	J	2.9	UJ	2.7	UJ
Benzo(b)fluoranthene	520		5.8		3.6		2.7	U
Benzo(g,h,i)perylene	250	J	4.5		4.4		2.8	
Benzo(k)fluoranthene	490		3.9	J	2.6	J	2.7	UJ
Benzoic acid	280	U	250	U	240	U	220	U
Benzyl alcohol	280	U	250	U	240	U	220	U
bis(2-Chloroethoxy)methane	280	U	250	U	240	U	220	U
bis(2-Chloroethyl)ether	280	U	250	U	240	U	220	U

Table 1: Split Sampling Sediment Data - Semivolatile Organic Compounds

Sample Code	JBR07		JBR12		JBR16		JBR20	
Sample Name	ARK-WB-35-10-20		ARK-WB-35-20-23		ARK-WB-35-23-26		ARK-WB-35-32-35	
Sample Date	9/30/2009		9/30/2009		9/30/2009		9/30/2009	
Chemical Name								
Semi-Volatile Organic Compounds (µg/kg)								
bis(2-Ethylhexyl)phthalate	280	U	250	U	240	U	220	U
Butylbenzylphthalate	280	U	250	U	240	U	220	U
Caprolactam	280	U	250	U	240	U	220	U
Carbazole	280	U	250	U	240	U	220	U
Chrysene	850		16		8.5		3.6	
Dibenz(a,h)anthracene	110	J	4.1		3.7		2.5	J
Dibenzofuran	160	J	250	U	240	U	220	U
Diethylphthalate	280	U	250	U	240	U	220	U
Dimethylphthalate	280	U	250	U	240	U	220	U
Di-n-butylphthalate	280	U	250	U	240	U	220	U
Di-n-octylphthalate	280	U	250	U	240	U	220	U
Fluoranthene	1700		4.2		2.9	U	2.7	U
Fluorene	230	J	3.1	U	2.9	U	2.7	U
Hexachlorobenzene	280	U	250	U	240	U	220	U
Hexachlorobutadiene	280	U	250	U	240	U	220	U
Hexachlorocyclopentadiene	280	U	250	U	240	U	220	U
Hexachloroethane	86	J	250	U	240	U	220	U
Indeno(1,2,3-cd)pyrene	230	J	4.2		3.4		2.5	J
Isophorone	280	U	250	U	240	U	220	U
Naphthalene	1200		3.1	U	2.9	U	2.7	U
Nitrobenzene	280	U	250	U	240	U	220	U
N-Nitrosodimethylamine	280	U	250	U	240	U	220	U
N-Nitroso-di-n-propylamine	280	U	250	U	240	U	220	U
N-Nitrosodiphenylamine	280	U	250	U	240	U	220	U
Pentachlorophenol	6.8	U	6.1	U	5.9	U	5.5	U
Phenanthrene	1700		3.1	U	2.9	U	2.7	U
Phenol	280	U	250	U	240	U	220	U
Pyrene	1200		5.4		2.9	U	2.7	U

Notes:
µg/kg - micrograms per kilogram (parts per billion)
J - The value reported is an estimated value
U - Not detected
R - Rejected

Table 2: Split Sampling Sediment Data - Volatile Organic Compounds

Sample Code	JBPJ4	JBPK1	JBPL0	JBPL4	JBPL8	JBPM6	JBPN2	JBPN4	JBQ09
Sample Name	ARK-WB-65-8-10	ARK-WB-66-8-10	ARK-WB-63-10-12	ARK-WB-64-10-12	ARK-WB-51-10-12	ARK-WB-40-0-2	ARK-WB-44-2-4	ARK-WB-40-10-12	ARK-WB-34-4-6
Sample Date	8/18/2009	8/19/2009	8/20/2009	8/25/2009	8/28/2009	9/3/2009	9/2/2009	9/3/2009	9/4/2009
Chemical Name									
Volatile Organic Compounds (µg/kg)									
1,1,1-Trichloroethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,1,2,2-Tetrachloroethane	7.8 U	8.6 U	6.3 U	7.1 R	6.4 U	1300 U	570 U	400 U	660 U
1,1,2-Trichloro-1,2,2-trifluoroethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,1,2-Trichloroethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,1-Dichloroethane	7.8 U	8.6 U	6.3 U	7.1 UJ	6.4 U	1300 U	570 U	400 U	660 U
1,1-Dichloroethene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2,3-Trichlorobenzene	7.8 U	8.6 UJ	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2,4-Trichlorobenzene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2-Dibromo-3-chloropropane	7.8 U	8.6 UJ	6.3 U	7.1 R	6.4 U	1300 U	570 U	400 U	660 U
1,2-Dibromoethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2-Dichlorobenzene	7.8 U	8.6 UJ	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2-Dichloroethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,2-Dichloropropane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,3-Dichlorobenzene	7.8 U	8.6 UJ	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,4-Dichlorobenzene	7.8 U	8.6 UJ	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
1,4-Dioxane	160 R	170 R	130 R	140 R	130 R	130000 R	11000 R	8100 R	13000 R
2-Butanone	8 J	45	13 U	6.2 J	10 J	2700 U	1100 U	810 U	1300 U
2-Hexanone	16 U	17 U	13 U	14 U	13 U	2700 U	1100 U	810 U	1300 U
4-Methyl-2-pentanone	16 U	17 U	13 U	14 U	13 U	2700 U	1100 U	810 U	1300 U
Acetone	25	140	6.8 J	35	24	2700 U	1100 U	810 U	1300 U
Benzene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Bromochloromethane	7.8 U	8.6 U	6.3 U	7.1 UJ	6.4 U	1300 U	570 U	400 U	660 U
Bromodichloromethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Bromoform	7.8 U	8.6 R	6.3 U	7.1 UJ	6.4 U	1300 U	570 U	400 U	660 U
Bromomethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 UJ
Carbon Disulfide	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Carbon Tetrachloride	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Chlorobenzene	7.8 U	23	6.3 U	7.1 U	6.4 U	140000	10000	10000	2200
Chloroethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Chloroform	7.8 U	8.6 U	6.3 U	140 J	6.4 U	1300 U	570 U	400 U	310 J
Chloromethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
cis-1,2-Dichloroethene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
cis-1,3-Dichloropropene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Cyclohexane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Dibromochloromethane	7.8 U	8.6 U	6.3 U	7.1 UJ	6.4 U	1300 U	570 U	400 U	660 U
Dichlorodifluoromethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Ethylbenzene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Isopropylbenzene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
m,p-Xylenes	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Methyl Acetate	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	530 J	140 J	400 U	660 U
Methyl Tert-Butyl Ether	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Metylcyclohexane	7.8 U	8.6 U	6.3 U	3.9 J	6.4 U	1300 U	570 U	400 U	660 U
Methylene Chloride	7.8 U	8.6 U	6.3 U	37	6.4 U	1300 U	570 U	400 U	660 U
o-Xylene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Styrene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Tetrachloroethene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	440	660 U
Toluene	7.8 U	4.4 J	6.3 U	3.3 J	6.4 U	1300 U	570 U	400 U	660 U
trans-1,2-Dichloroethene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
trans-1,3-Dichloropropene	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Trichloroethene	7.8 U	8.6 U	6.3 U	7.4	6.4 U	1300 U	570 U	140 J	660 U
Trichlorofluoromethane	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U
Vinyl Chloride	7.8 U	8.6 U	6.3 U	7.1 U	6.4 U	1300 U	570 U	400 U	660 U

Table 2: Split Sampling Sediment Data - Volatile Organic Compounds

Sample Code	JBQ14	JBQ19	JBQ26	JBQ29	JBQ34	JBQ39	JBQ44	JBQZ4	JBQZ8
Sample Name	ARK-WB-49-4-6	ARK-WB-49-14-16	ARK-WB-49-22-23_5	ARK-WB-56-18-20	ARK-WB-30-10-12	ARK-WB-30-26-28	ARK-WB-30-40-42	ARK-WB-42-20-23	ARK-WB-42-23-26
Sample Date	9/9/2009	9/9/2009	9/9/2009	9/15/2009	9/18/2009	9/18/2009	9/18/2009	9/25/2009	9/25/2009
Chemical Name									
Volatile Organic Compounds (μg/kg)									
1,1,1-Trichloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,1,2,2-Tetrachloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,1,2-Trichloro-1,2,2-trifluoroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,1,2-Trichloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,1-Dichloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,1-Dichloroethene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2,3-Trichlorobenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2,4-Trichlorobenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2-Dibromo-3-chloropropane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2-Dibromoethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2-Dichlorobenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2-Dichloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,2-Dichloropropane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,3-Dichlorobenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,4-Dichlorobenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
1,4-Dioxane	130 U	130 U	130 U	140 U	140 R	130 R	130 R	9000 R	130 R
2-Butanone	7.3 J	13 U	13 U	14 U	14 U	13 U	13 U	900 U	13 U
2-Hexanone	13 U	13 U	13 U	14 U	14 U	13 U	13 U	900 U	13 U
4-Methyl-2-pentanone	13 U	13 U	13 U	14 U	14 U	13 U	13 U	900 U	13 U
Acetone	19	6.3 J	8.5 J	14 U	14 U	12 J	8.6 J	900 U	8.4 J
Benzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Chlorobromomethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Bromodichloromethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Bromoform	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Bromomethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Carbon Disulfide	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Carbon Tetrachloride	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Chlorobenzene	8.8	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	640	270
Chloroethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Chloroform	6.3 U	6.4 U	6.3 U	13	8.7 U	66	76	450 U	6.7 U
Chloromethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
cis-1,2-Dichloroethene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
cis-1,3-Dichloropropene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Cyclohexane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Dibromochloromethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Dichlorodifluoromethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Ethylbenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Isopropylbenzene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
m,p-Xylenes	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Methyl Acetate	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Methyl Tert-Butyl Ether	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Metylcyclohexane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Methylene Chloride	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
o-Xylene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Styrene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Tetrachloroethene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	2.7 J
Toluene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
trans-1,2-Dichloroethene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
trans-1,3-Dichloropropene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Trichloroethene	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Trichlorofluoromethane	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U
Vinyl Chloride	6.3 U	6.4 U	6.3 U	6.9 U	6.9 U	6.6 U	6.5 U	450 U	6.7 U

Table 2: Split Sampling Sediment Data - Volatile Organic Compounds

Sample Code	JBR02		JBR06		JBR10		JBR15		JBR19	
Sample Name	ARK-WB-42-6-14		ARK-WB-35-10-20		ARK-WB-35-20-23		ARK-WB-35-23-26		ARK-WB-35-32-35	
Sample Date	9/25/2009		9/30/2009		9/30/2009		9/30/2009		9/30/2009	
Chemical Name										
Volatile Organic Compounds (µg/kg)										
1,1,1-Trichloroethane	2800	UJ	3100	U	460	U	460	U	6.7	U
1,1,2,2-Tetrachloroethane	2800	U	3100	U	460	U	460	U	6.7	U
1,1,2-Trichloro-1,2,2-trifluoroethane	2800	U	3100	U	460	U	460	U	6.7	U
1,1,2-Trichloroethane	2800	U	3100	U	460	U	460	U	6.7	U
1,1-Dichloroethane	2800	UJ	3100	U	460	U	460	U	6.7	U
1,1-Dichloroethene	2800	U	3100	U	460	U	460	U	6.7	U
1,2,3-Trichlorobenzene	2800	U	3100	U	460	U	460	U	6.7	U
1,2,4-Trichlorobenzene	2800	U	3100	U	460	U	460	U	6.7	U
1,2-Dibromo-3-chloropropane	2800	U	3100	U	460	U	460	U	6.7	U
1,2-Dibromoethane	2800	UJ	3100	U	460	U	460	U	6.7	U
1,2-Dichlorobenzene	2800	U	730	J	460	U	460	U	6.7	U
1,2-Dichloroethane	2800	UJ	3100	U	460	U	460	U	6.7	U
1,2-Dichloropropane	2800	U	3100	U	460	U	460	U	6.7	U
1,3-Dichlorobenzene	2800	U	3100	U	460	U	460	U	6.7	U
1,4-Dichlorobenzene	790	J	2000	J	460	U	460	U	6.7	U
1,4-Dioxane	56000	R	62000	R	9200	R	9200	R	130	R
2-Butanone	5600	U	6200	U	920	U	920	U	13	U
2-Hexanone	5600	U	6200	U	920	U	920	U	13	U
4-Methyl-2-pentanone	5600	U	6200	U	920	U	920	U	13	U
Acetone	5600	U	6200	U	920	U	920	U	14	
Benzene	2800	U	3100	U	460	U	460	U	6.7	U
Chlorobromomethane	2800	U	3100	U	460	U	460	U	6.7	U
Bromodichloromethane	2800	U	3100	U	460	U	460	U	6.7	U
Bromoform	2800	U	3100	U	460	U	460	U	6.7	U
Bromomethane	2800	U	3100	U	460	U	460	U	6.7	U
Carbon Disulfide	2800	U	3100	U	460	U	460	U	6.7	U
Carbon Tetrachloride	2800	UJ	3100	U	460	U	460	U	6.7	U
Chlorobenzene	330000		390000		1600		1500		56	
Chloroethane	2800	U	1600	J	460	U	460	U	6.7	U
Chloroform	2800	U	2300	J	460	U	460	U	49	
Chloromethane	2800	U	3100	U	460	U	460	U	6.7	U
cis-1,2-Dichloroethene	2800	U	3100	U	460	U	460	U	6.7	U
cis-1,3-Dichloropropene	2800	U	3100	U	460	U	460	U	6.7	U
Cyclohexane	2800	U	3100	U	460	U	460	U	6.7	U
Dibromochloromethane	2800	U	3100	U	460	U	460	U	6.7	U
Dichlorodifluoromethane	2800	U	3100	U	460	U	460	U	6.7	U
Ethylbenzene	2800	U	3100	U	460	U	460	U	6.7	U
Isopropylbenzene	2800	U	3100	U	460	U	460	U	6.7	U
m,p-Xylenes	2800	U	3100	U	460	U	460	U	6.7	U
Methyl Acetate	2800	UJ	3100	U	460	U	460	U	6.7	U
Methyl Tert-Butyl Ether	2800	UJ	3100	U	460	U	460	U	6.7	U
Metylcyclohexane	2800	U	3100	U	460	U	460	U	6.7	U
Methylene Chloride	2800	UJ	3100	U	460	U	460	U	6.7	U
o-Xylene	2800	U	3100	U	460	U	460	U	6.7	U
Styrene	2800	U	3100	U	460	U	460	U	6.7	U
Tetrachloroethene	19000		610	J	460	U	460	U	6.7	U
Toluene	2800	U	3100	U	460	U	460	U	6.7	U
trans-1,2-Dichloroethene	2800	U	3100	U	460	U	460	U	6.7	U
trans-1,3-Dichloropropene	2800	U	3100	U	460	U	460	U	6.7	U
Trichloroethene	730	J	3100	U	460	U	460	U	6.7	U
Trichlorofluoromethane	2800	UJ	3100	U	460	U	460	U	6.7	U
Vinyl Chloride	2800	U	3100	U	460	U	460	U	6.7	U

Notes:
µg/kg - micrograms per kilogram (parts per billion)
J - The value reported is an estimated value
U - Not detected
R - Rejected

Table 3: Split Sampling Sediment Data - Pesticide Compounds

Chemical Name	JBPJ3 ARK-WB-65-6-8 8/18/2009		JBPJ6 ARK-WB-65-8-10 8/18/2009		JBPJ9 ARK-WB-66-4-6 8/19/2009		JBPK0 ARK-WB-66-6-8 8/19/2009		JBPK3 ARK-WB-66-8-10 8/19/2009		JBPK8 ARK-WB-63-4-6 8/20/2009		JBPK9 ARK-WB-63-6-8 8/20/2009		JBPL1 ARK-WB-63-10-12 8/20/2009	
Pesticides (µg/kg)																
2,4'-DDD	33	U	27	U	35	U	33	U	33	U	35	U	38	J	25	U
2,4'-DDE	33	U	27	U	35	U	110		32	J	35	U	67	J	25	U
2,4'-DDT	10000	J	27	U	35	U	1200	J	7300		260	J	480		130	
4,4'-DDD	33	U	27	U	35	U	33	U	33	U	35	U	240	J	25	U
4,4'-DDE	17	U	13	U	17	U	130	J	190		17	U	180	J	13	U
4,4'-DDT	21000	J	14	J	33	J	5000		16000		90	J	2900	J	360	
Aldrin	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
alpha-BHC	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
alpha-Chlordane	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
beta-BHC	17	U	13	U	17	U	16	U	17	U	130	J	13	J	13	U
cis-Nonachlor	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
delta-BHC	17	U	13	U	17	U	16	U	23		17	U	16	U	13	U
Dieldrin	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
Endosulfan I	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
Endosulfan II	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Endosulfan sulfate	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Endrin	33	U	27	U	35	U	33	U	33	U	35	U	220	J	25	U
Endrin aldehyde	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Endrin ketone	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
gamma-BHC (Lindane)	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
gamma-Chlordane	17	U	13	U	23	J	16	U	17	U	17	U	16	U	13	U
Heptachlor	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
Heptachlor epoxide	17	U	13	U	17	U	16	U	17	U	17	U	16	U	13	U
Hexachlorobutadiene	33	U	27	U	11	J	11	J	11	J	28	J	12	J	5.6	J
Hexachlorobenzene	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Methoxychlor	170	U	130	U	33	J	160	U	170	U	170	U	160	U	130	U
Oxychlordane	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Octachlorostyrene	33	U	27	U	8.6	U	33	U	33	U	35	U	32	U	25	U
Toxaphene	1700	U	1300	U	1700	U	1600	U	1700	U	1700	U	1600	U	1300	U
trans-Nonachlor	33	U	27	U	35	U	33	U	33	U	35	U	32	U	25	U
Aroclor-1016	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1221	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1232	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1242	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1248	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1254	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1260	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1262	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ
Aroclor-1268	--		1.4	U	--		--		1.7	U	--		--		1.3	UJ

Table 3: Split Sampling Sediment Data - Pesticide Compounds

Chemical Name	JBPL5 ARK-WB-51-4-6 8/28/2009		JBPL7 ARK-WB-51-6-8 8/28/2009		JBPM0 ARK-WB-51-10-12 8/28/2009		JBPM4 ARK-WB-60-2-3-7 9/1/2009		JBPM5 ARK-WB-40-0-2 9/3/2009		JBPM7 ARK-WB-40-2-4 9/3/2009		JBPM9 ARK-WB-40-6-8 9/3/2009		JBPN5 ARK-WB-40-4-6 9/3/2009	
Pesticides (µg/kg)																
2,4'-DDD	24	U	81		26	U	3.1		0.81	J	0.32	U	0.27	U	0.28	U
2,4'-DDE	24	U	27	U	26	U	0.44	J	0.34	U	0.32	U	0.27	U	0.28	U
2,4'-DDT	24	U	130		120		4.7		0.34	U	0.43		0.27	U	0.28	U
4,4'-DDD	200		250	J	26	U	6.1	J	1.1	J	0.32	U	0.27	U	0.28	U
4,4'-DDE	120	J	13	U	13	U	0.68	U	0.17	U	0.16	U	0.13	U	0.14	U
4,4'-DDT	1400		1500		370		14		0.43	U	1.4	J	0.27	U	0.28	U
Aldrin	12	U	13	U	13	U	0.2	UJ	0.17	UJ	0.16	UJ	0.13	UJ	0.14	UJ
alpha-BHC	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
alpha-Chlordane	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
beta-BHC	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
cis-Nonachlor	24	U	37	U	26	U	57	UJ	9.7	UJ	0.7	UJ	0.27	U	0.46	UJ
delta-BHC	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Dieldrin	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Endosulfan I	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Endosulfan II	24	U	27	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Endosulfan sulfate	24	U	27	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Endrin	24	U	27	U	26	U	0.4	UJ	0.34	UJ	0.32	UJ	0.27	UJ	0.28	UJ
Endrin aldehyde	24	U	27	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Endrin ketone	24	U	27	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
gamma-BHC (Lindane)	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.4	J	0.17	J
gamma-Chlordane	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Heptachlor	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Heptachlor epoxide	12	U	13	U	13	U	0.2	U	0.17	U	0.16	U	0.13	U	0.14	U
Hexachlorobutadiene	21	J	7.3	J	11	J	0.4	U	4.1	J	3.7	J	15		5.7	
Hexachlorobenzene	24	U	37	U	26	U	0.4	U	0.34	U	0.32	U	6.5		0.28	U
Methoxychlor	120	U	130	U	130	U	2	U	1.7	U	1.6	U	1.3	U	1.4	U
Oxychlordane	24	U	37	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Octachlorostyrene	24	U	37	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Toxaphene	1200	U	1300	U	1300	U	20	U	17	U	16	U	13	U	14	U
trans-Nonachlor	24	U	37	U	26	U	0.4	U	0.34	U	0.32	U	0.27	U	0.28	U
Aroclor-1016	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1221	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1232	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1242	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1248	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1254	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1260	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1262	--		--		1.4	U	--		--		--		1.3	U	--	
Aroclor-1268	--		--		1.4	U	--		--		--		1.3	U	--	

Table 3: Split Sampling Sediment Data - Pesticide Compounds

Chemical Name	JBPN6 ARK-WB-34-0-2 9/4/2009		JBQ07 ARK-WB-34-2-4 9/4/2009		JBQ11 ARK-WB-34-4-6 9/4/2009		JBQ16 ARK-WB-49-6-8 9/9/2009		JBQ20 ARK-WB-49-14-16 9/9/2009		JBQ23 ARK-WB-49-20-22 9/9/2009		JBQ27 ARK-WB-56-10-11 9/15/2009		JBQ28 ARK-WB-56-14-16 9/15/2009	
Pesticides (µg/kg)																
2,4'-DDD	0.47		0.28	J	4.4	U	2.9	U	0.16	J	0.25	U	0.26	U	0.28	U
2,4'-DDE	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
2,4'-DDT	0.45	U	0.41	U	18		7.7	J	0.076	J	0.25	U	0.26	U	0.28	U
4,4'-DDD	0.75	J	0.23	J	3.2	J	0.83	J	0.5		0.25	U	0.26	U	0.28	U
4,4'-DDE	0.24	J	0.22	J	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
4,4'-DDT	1.1	J	0.17	U	73		20	J	2.4		0.25	U	0.26	U	0.16	J
Aldrin	0.23	UJ	0.2	UJ	2.2	UJ	1.5	UJ	0.13	UJ	0.12	UJ	0.13	UJ	0.14	UJ
alpha-BHC	0.13	J	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
alpha-Chlordane	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
beta-BHC	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
cis-Nonachlor	6.5	UJ	1.9	UJ	4.4	U	2.9	U	4.4	UJ	0.24	UJ	0.26	U	0.28	U
delta-BHC	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
Dieldrin	0.23	U	0.2	U	2.2	U	1.5	U	1.5	U	0.12	U	0.13	U	0.14	U
Endosulfan I	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
Endosulfan II	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Endosulfan sulfate	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Endrin	0.45	UJ	0.41	UJ	4.4	U	2.9	U	0.26	UJ	0.25	UJ	0.26	U	0.28	U
Endrin aldehyde	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Endrin ketone	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
gamma-BHC (Lindane)	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
gamma-Chlordane	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
Heptachlor	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
Heptachlor epoxide	0.23	U	0.2	U	2.2	U	1.5	U	0.13	U	0.12	U	0.13	U	0.14	U
Hexachlorobutadiene	0.45	UJ	0.41	UJ	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Hexachlorobenzene	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Methoxychlor	2.3	U	2	U	22	U	15	U	1.3	U	1.2	U	1.3	U	1.4	U
Oxychlordane	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Octachlorostyrene	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Toxaphene	23	U	20	U	220	U	150	U	13	U	12	U	13	U	14	U
trans-Nonachlor	0.45	U	0.41	U	4.4	U	2.9	U	0.26	U	0.25	U	0.26	U	0.28	U
Aroclor-1016	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1221	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1232	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1242	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1248	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1254	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1260	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1262	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	
Aroclor-1268	--		--		1.9	U	1.2	U	1.3	U	1.2	UJ	--		--	

Table 3: Split Sampling Sediment Data - Pesticide Compounds

Chemical Name	JBQ31 ARK-WB-56-18-20 9/15/2009		JBQ36 ARK-WB-30-10-12 9/18/2009		JBQ40 ARK-WB-30-26-28 9/18/2009		JBQ45 ARK-WB-30-40-42 9/18/2009		JBQZ5 ARK-WB-42-20-23 9/25/2009		JBQZ9 ARK-WB-42-23-26 9/25/2009		JBR03 ARK-WB-42-6-14 9/25/2009	
Pesticides (µg/kg)														
2,4'-DDD	0.28	U	0.27	U	0.78		0.27	U	4.1	J	0.13	J	29000	J
2,4'-DDE	0.28	U	0.27	U	0.28	U	0.27	U	0.28	UJ	0.27	UJ	400	J
2,4'-DDT	0.28	U	0.27	U	0.88		0.27	U	4.7	J	0.076	J	11000	J
4,4'-DDD	0.28	U	0.27	U	2.1		0.27	U	12	J	0.26	J	37000	
4,4'-DDE	0.14	U	0.14	U	0.14	U	0.13	U	0.19	J	0.14	U	1300	J
4,4'-DDT	0.28	U	0.27	U	2.7	J	0.27	U	39	J	0.34	J	93000	
Aldrin	0.14	UJ	0.14	UJ	0.14	UJ	0.27	U	0.14	UJ	0.14	UJ	15	UJ
alpha-BHC	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
alpha-Chlordane	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
beta-BHC	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
cis-Nonachlor	0.28	U	0.27	U	13	UJ	0.27	U	86	UJ	1.6	UJ	140000	UJ
delta-BHC	0.14	U	0.14	U	0.14	U	0.13	U	0.34	J	0.14	U	15	UJ
Dieldrin	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
Endosulfan I	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
Endosulfan II	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	UJ
Endosulfan sulfate	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	UJ
Endrin	0.28	U	0.27	U	0.28	U	0.27	U	6.2	UJ	0.27	U	30	R
Endrin aldehyde	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	UJ
Endrin ketone	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	UJ
gamma-BHC (Lindane)	0.14	U	0.14	U	0.14	U	0.13	U	0.32	J	0.14	U	15	UJ
gamma-Chlordane	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	330	R
Heptachlor	0.14	U	0.14	U	0.14	U	0.13	U	0.11	J	0.14	U	15	UJ
Heptachlor epoxide	0.14	U	0.14	U	0.14	U	0.13	U	0.14	U	0.14	U	15	UJ
Hexachlorobutadiene	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	39	J
Hexachlorobenzene	0.28	U	0.27	U	0.28	U	0.27	U	17	J	0.27	U	22	J
Methoxychlor	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.4	U	150	U
Oxychlordane	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	U
Octachlorostyrene	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	30	R
Toxaphene	14	U	14	U	14	U	13	U	14	U	14	U	1500	UJ
trans-Nonachlor	0.28	U	0.27	U	0.27	U	0.27	U	0.28	U	0.27	U	30	U
Aroclor-1016	1.4	U	1.4	U	1.4	U	1.3	U	1.4	UJ	1.3	UJ	1.5	UJ
Aroclor-1221	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1232	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1242	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1248	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1254	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1260	1.4	U	1.4	U	1.4	U	1.3	U	1.4	UJ	1.3	UJ	1.5	UJ
Aroclor-1262	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
Aroclor-1268	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U

Table 3: Split Sampling Sediment Data - Pesticide Compounds

Chemical Name	JBR07 ARK-WB-35-10-20 9/30/2009		JBR12 ARK-WB-35-20-23 9/30/2009		JBR16 ARK-WB-35-23-26 9/30/2009		JBR20 ARK-WB-35-32-35 9/30/2009	
Pesticides (µg/kg)								
2,4'-DDD	23000	J	7.5	J	5.4	J	0.063	J
2,4'-DDE	33	UJ	0.31	UJ	0.29	UJ	0.27	UJ
2,4'-DDT	6000	J	2.6	J	1.6	J	0.27	UJ
4,4'-DDD	62000	J	17	J	12	J	0.12	J
4,4'-DDE	3000	J	0.15	U	0.15	U	0.14	U
4,4'-DDT	87000	J	25	J	14	J	0.13	J
Aldrin	17	UJ	0.15	UJ	0.15	UJ	0.14	UJ
alpha-BHC	17	U	0.15	U	0.15	U	0.14	U
alpha-Chlordane	17	U	0.15	U	0.15	U	0.14	U
beta-BHC	17	U	0.15	U	0.15	U	0.14	U
cis-Nonachlor	7100	UJ	120	R	110	R	0.72	U
delta-BHC	17	U	0.15	U	0.15	U	0.14	U
Dieldrin	17	U	0.15	U	0.15	U	0.14	U
Endosulfan I	17	U	0.38	J	0.15	U	0.14	U
Endosulfan II	33	U	0.31	U	0.29	U	0.27	U
Endosulfan sulfate	33	U	0.31	U	0.29	U	0.27	U
Endrin	33	U	0.31	U	0.29	U	0.27	U
Endrin aldehyde	33	U	0.31	U	0.29	U	0.27	U
Endrin ketone	33	U	0.31	U	0.29	U	0.27	U
gamma-BHC (Lindane)	17	U	0.15	U	0.15	U	0.14	U
gamma-Chlordane	17	U	0.15	U	0.15	U	0.14	U
Heptachlor	17	U	0.15	U	0.15	U	0.14	U
Heptachlor epoxide	17	U	0.15	U	0.15	U	0.14	U
Hexachlorobutadiene	110	J	0.31	U	0.29	U	0.27	U
Hexachlorobenzene	380	J	0.31	U	0.29	U	0.27	U
Methoxychlor	170	UJ	1.5	U	1.5	U	1.4	U
Oxychlordane	33	U	0.31	U	0.29	U	0.27	U
Octachlorostyrene	33	U	0.31	U	0.29	U	0.27	U
Toxaphene	1700	U	15	U	15	U	14	U
trans-Nonachlor	33	U	0.31	U	0.29	U	0.27	U
Aroclor-1016	1.7	UJ	1.5	UJ	1.5	UJ	1.4	UJ
Aroclor-1221	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1232	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1242	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1248	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1254	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1260	1.7	UJ	1.5	UJ	1.5	UJ	1.4	UJ
Aroclor-1262	1.7	U	1.5	U	1.5	U	1.4	U
Aroclor-1268	1.7	U	1.5	U	1.5	U	1.4	U

Notes:
-- Not analyzed
µg/kg - micrograms per kilogram (parts per billion)
J - The value reported is an estimated value
U - Not detected
R - Rejected

Table 4: Split Sampling Sediment Data - Dioxins and Furans

Sample Code	JBPJ7		JBPK4		JBPL2		JBPM1		JBPN0		JBQ12		JBQ17	
Sample Name	ARK-WB-65-8-10		ARK-WB-66-8-10		ARK-WB-63-10-12		ARK-WB-51-10-12		ARK-WB-40-6-8		ARK-WB-34-4-6		ARK-WB-49-6-8	
Sample Date	8/18/2009		8/19/2009		8/20/2009		8/28/2009		9/3/2009		9/4/2009		9/9/2009	
Chemical Name														
Dioxins (ng/kg)														
2,3,7,8-TCDD	0.21	J	1.44		0.107	UJ	0.0989	J	0.0473	UJ	0.91	J	0.11	UJ
1,2,3,7,8-PeCDD	0.585	J	2.17	J	0.069	U	0.165	J	0.0981	J	1.92		0.151	U
1,2,3,6,7,8-HxCDD	2.03		16.3		0.208	U	1.27	U	0.157	J	10.1		0.518	J
1,2,3,4,7,8-HxCDD	1.27	U	2.87	J	0.247	U	0.586	U	0.143	U	2.01		0.232	U
1,2,3,7,8,9-HxCDD	1.24	J	7.49	U	0.188	U	0.417	U	0.134	U	5.41		0.4	J
1,2,3,4,6,7,8-HpCDD	40.1		392		2.65		12.9		0.62	J	211		11.4	
OCDD	532		4220		31.8		139		4.71		3150		116	
2,3,7,8-TCDF	151		1770	J	18.1	J	139	J	0.119	J	306	J	83.7	
1,2,3,7,8-PeCDF	252		1470		32.3		235		0.198	U	495		125	
2,3,4,7,8-PeCDF	157		1470		18.3		135		0.177	J	230		60.7	
1,2,3,6,7,8-HxCDF	122		940		6.59		94.5		0.197	J	429		74.6	
1,2,3,7,8,9-HxCDF	50.4		526		5.24		50.9		0.148	J	156		24.6	
1,2,3,4,7,8-HxCDF	252		3050		37.4		431		0.338	U	1290	J	241	
2,3,4,6,7,8-HxCDF	27.8		175		2.69		32		0.116	J	64.3		15.3	
1,2,3,4,6,7,8-HpCDF	186		1560		10.5		222		0.596	U	720		102	
1,2,3,4,7,8,9-HpCDF	77.2		597		4.47		129		0.162	J	299		41.1	
OCDF	394		2410		20.3		717		0.781	U	1390		189	
Total TCDD	2.95	J	42.3	J	86.3	J	13		0.581	U	4.62	J	1.44	U
Total PeCDD	5.34	J	30.4	J	1.63	J	1.79		1.75	U	13.9	J	0.581	U
Total HxCDD	17.3	J	132	J	2.6	J	6.31		2.54	U	72.9	J	4.82	U
Total HpCDD	87.8		893		6.12		25.4		1.33		388		23.4	
Total TCDF	449		5460	J	56.8	J	388		2.01	U	836	J	249	J
Total-PeCDF	815	J	5870		93.1	J	682		1.81	U	1510	J	309	
Total HxCDF	708		5130		61.2	J	708		1.54	U	2680	J	404	
Total HpCDF	364	J	2390		21.2		479		1.17	U	1590	J	185	
Total TEQ ND=0	139.7		1291		13.6		111.3		0.27		391.6	J	67.6	J
Total TEQ ND=0.5	139.7		1291		13.8		111.4		0.31		391.6	J	67.7	J
Total TEQ ND=1.0	139.7		1291		13.9		111.4		0.34		391.6	J	67.8	J

Table 4: Split Sampling Sediment Data - Dioxins and Furans

Sample Code	JBQ21		JBQ24		JBQ32		JBQ37		JBQ42		JBQ46	
Sample Name	ARK-WB-49-14-16		ARK-WB-49-20-22		ARK-WB-56-18-20		ARK-WB-30-10-12		ARK-WB-30-26-28		ARK-WB-30-40-42	
Sample Date	9/9/2009		9/9/2009		9/15/2009		9/18/2009		9/18/2009		9/18/2009	
Chemical Name												
Dioxins (ng/kg)												
2,3,7,8-TCDD	0.0297	J	0.0129	UJ	0.0147	UJ	0.0124	U	0.0141	U	0.0197	U
1,2,3,7,8-PeCDD	0.0184	U	0.0173	J	0.0127	U	0.0261	J	0.0274	J	0.0339	J
1,2,3,6,7,8-HxCDD	0.0566	J	0.0393	U	0.0259	J	0.075	J	0.0619	J	0.0561	U
1,2,3,4,7,8-HxCDD	0.0218	J	0.0285	U	0.0179	U	0.0514	U	0.0337	U	0.0329	J
1,2,3,7,8,9-HxCDD	0.049	U	0.0367	J	0.0566	J	0.149	J	0.0973	J	0.0885	J
1,2,3,4,6,7,8-HpCDD	0.976	U	0.387	U	0.62	U	1.72	U	1.16	U	0.969	U
OCDD	11.6		3.68	U	5.06	U	16		21.3		10.2	
2,3,7,8-TCDF	3.22	J	0.374	UJ	0.134	UJ	0.151	U	0.272	U	0.121	U
1,2,3,7,8-PeCDF	5.51		0.371	J	0.0127	U	0.0449	J	0.0758	J	0.0194	U
2,3,4,7,8-PeCDF	2.6		0.167	J	0.0104	U	0.0271	J	0.0485	J	0.0142	J
1,2,3,6,7,8-HxCDF	2.95		0.176	J	0.0102	U	0.0264	U	0.0248	J	0.0113	J
1,2,3,7,8,9-HxCDF	1.14	J	0.0669	J	0.0138	U	0.00943	U	0.0208	U	0.0139	U
1,2,3,4,7,8-HxCDF	9.74		0.683	J	0.00896	U	0.0892	J	0.0846	J	0.0192	U
2,3,4,6,7,8-HxCDF	0.659	J	0.0531	J	0.00825	U	0.0126	U	0.0134	U	0.0655	U
1,2,3,4,6,7,8-HpCDF	3.98		0.319	J	0.0322	U	0.0708	J	0.0636	J	0.0273	U
1,2,3,4,7,8,9-HpCDF	1.77		0.157	J	0.0237	U	0.024	U	0.0298	U	0.0387	U
OCDF	9.34		0.909	U	0.168	U	0.233	U	0.207	U	0.202	U
Total TCDD	0.185		0.0287		0.0605	U	0.125	U	0.13		0.372	U
Total PeCDD	0.244	U	0.0605	U	0.0757	U	0.187	U	0.23	U	0.395	U
Total HxCDD	0.814	U	0.366	U	0.562	U	1.62		1.22	U	1.31	
Total HpCDD	2.57		0.966	U	1.44	U	4.33		2.72		2.68	
Total TCDF	8.09		0.864	U	0.273	U	0.303	U	0.622	U	0.265	U
Total-PeCDF	13		0.803		0.0104	U	0.0923		0.226	U	0.0517	
Total HxCDF	16.2		1.16		0.0394	U	0.199	U	0.192	U	0.0735	
Total HpCDF	7.19		0.694		0.0963	U	0.178		0.18	U	0.13	
Total TEQ ND=0	2.83	J	0.227	J	0.03	J	0.0724		0.0922		0.0545	
Total TEQ ND=0.5	2.84	J	0.237	J	0.05	J	0.1142		0.1417		0.0928	
Total TEQ ND=1.0	2.84	J	0.247	J	0.07	J	0.1235		0.1523		0.1092	

Table 4: Split Sampling Sediment Data - Dioxins and Furans

Sample Code	JBQZ6		JBR00		JBR04		JBR08		JBR13	
Sample Name	ARK-WB-42-20-23		ARK-WB-42-23-26		ARK-WB-42-6-14		ARK-WB-35-10-20		ARK-WB-35-20-23	
Sample Date	9/25/2009		9/25/2009		9/25/2009		9/30/2009		9/30/2009	
Chemical Name										
Dioxins (ng/kg)										
2,3,7,8-TCDD	0.0191	UJ	0.0141	UJ	3.23	J	3.84	J	0.0137	UJ
1,2,3,7,8-PeCDD	0.0286	U	0.0217	U	5.55	J	8.9		0.0208	J
1,2,3,6,7,8-HxCDD	0.0491	J	0.0442	U	12.6		12.7		0.058	U
1,2,3,4,7,8-HxCDD	0.036	J	0.0255	U	5.21		9.96		0.0343	U
1,2,3,7,8,9-HxCDD	0.0946	J	0.0727	J	5.54		5.88		0.0929	J
1,2,3,4,6,7,8-HpCDD	1.15		0.652	U	235		234		1.04	U
OCDD	12.4		5.35		2790		3090		9.61	
2,3,7,8-TCDF	0.197	J	0.424	UJ	12300	J	21400	J	5.03	J
1,2,3,7,8-PeCDF	0.0343	J	0.471	J	18800		46800		6.39	
2,3,4,7,8-PeCDF	0.0325	U	0.249	J	10300		24100		3.83	
1,2,3,6,7,8-HxCDF	0.0225	J	0.207	J	7810		18200		2.28	
1,2,3,7,8,9-HxCDF	0.0246	U	0.116	J	3660		9480		1.18	
1,2,3,4,7,8-HxCDF	0.0561	U	0.762		29400		69600	J	9.19	
2,3,4,6,7,8-HxCDF	0.0151	U	0.0491	J	2110		5580		0.578	J
1,2,3,4,6,7,8-HpCDF	0.109	U	0.265	U	7560		14500		2.72	
1,2,3,4,7,8,9-HpCDF	0.0371	U	0.0765	U	3520		7410		0.998	
OCDF	0.386	U	0.424	U	9010		21200		3.68	
Total TCDD	0.108	UJ	0.063	U	31.1		25.9	J	0.0846	
Total PeCDD	0.21	U	0.117	U	25.3		35.8	J	0.148	J
Total HxCDD	1.16	U	0.798	U	89.8		84.6	J	0.97	J
Total HpCDD	2.86		1.64		477		500		2.45	
Total TCDF	0.416	U	1.01	J	32300	J	50500	J	13.4	J
Total-PeCDF	0.113	U	1.21		49500		121000	J	17.2	
Total HxCDF	0.15	U	1.29	J	47100		113000	J	14.8	
Total HpCDF	0.294	U	0.521	U	14100		28400		4.84	
Total TEQ ND=0	0.056	J	0.211	J	9300	J	21300		3.24	
Total TEQ ND=0.5	0.08	J	0.281	J	9300	J	21300		3.26	
Total TEQ ND=1.0	0.104	J	0.299	J	9300	J	21300		3.27	

Table 4: Split Sampling Sediment Data - Dioxins and Furans

Sample Code	JBR17		JBR21	
Sample Name	ARK-WB-35-23-26		ARK-WB-35-32-35	
Sample Date	9/30/2009		9/30/2009	
Chemical Name				
Dioxins (ng/kg)				
2,3,7,8-TCDD	0.0217	J	0.0131	UJ
1,2,3,7,8-PeCDD	0.0331	J	0.0265	U
1,2,3,6,7,8-HxCDD	0.0958	J	0.0891	J
1,2,3,4,7,8-HxCDD	0.0513	U	0.0428	U
1,2,3,7,8,9-HxCDD	0.151	U	0.13	J
1,2,3,4,6,7,8-HpCDD	1.7		1.4	
OCDD	16.4		11	
2,3,7,8-TCDF	1.48	J	0.407	J
1,2,3,7,8-PeCDF	2.48		0.444	J
2,3,4,7,8-PeCDF	1.42		0.215	J
1,2,3,6,7,8-HxCDF	0.931		0.202	J
1,2,3,7,8,9-HxCDF	0.574	J	0.0992	J
1,2,3,4,7,8-HxCDF	3.18		0.752	
2,3,4,6,7,8-HxCDF	0.245	J	0.0575	J
1,2,3,4,6,7,8-HpCDF	1.2		0.247	U
1,2,3,4,7,8,9-HpCDF	0.458	J	0.0817	J
OCDF	1.6		0.46	U
Total TCDD	0.185		0.139	U
Total PeCDD	0.259	J	0.252	
Total HxCDD	1.9	J	1.73	
Total HpCDD	4.55		3.58	
Total TCDF	3.65	J	0.9	U
Total-PeCDF	6.45		1.04	J
Total HxCDF	5.66	J	1.26	J
Total HpCDF	2.31		0.494	U
Total TEQ ND=0	1.245		0.2722	
Total TEQ ND=0.5	1.247		0.2864	
Total TEQ ND=1.0	1.248		0.3005	

Notes:
TCDD - Tetrachlorodibenzo-p-dioxin
PeCDD - Pentachlorodibenzo-p-dioxin
HxCDD - Hexachlorodibenzo-p-dioxin
HpCDD - Heptachlorodibenzo-p-dioxin
OCDD - Octachlorodibenzo-p-dioxin
TCDF - Tetrachlorodibenzofuran
PeCDF - Pentachlorodibenzofuran
HxCDF - Hexachlorodibenzofuran
HpCDF - Heptachlorodibenzofuran
OCDF - Octachlorodibenzofuran

ng/kg - nanograms per kilogram (parts per trillion)
J - The value reported is an estimated value
U - Not detected
TEQ - Toxic equivalency
ND - Non-detect

Table 5: Split Sampling Sediment Data - Tributyltin and Asbestos

Sample Code	JBPJ8		JBPK5		JBPL3		JBPM2		JBPN3		JBQ13		JBQ18	
Sample Name	ARK-WB-65-8-10		ARK-WB-66-8-10		ARK-WB-63-10-12		ARK-WB-51-10-12		ARK-WB-40-6-8		ARK-WB-34-4-6		ARK-WB-49-6-8	
Sample Date	8/18/2009		8/19/2009		8/20/2009		8/28/2009		9/3/2009		9/4/2009		9/9/2009	
Chemical Name														
Tributyltin (µg/kg)														
Dibutyl Tin	14	U	17	U	13	U	14	U	13	U	20	U	13	U
Monobutyl Tin	14	UJ	17	UJ	13	UJ	14	U	13	UJ	20	UJ	13	UJ
Tetrabutyl Tin	14	U	17	U	13	U	14	U	13	U	20	U	13	U
Tributyl Tin	14	U	17	U	13	U	14	U	13	U	20	U	13	U

Sample Name	ARK-WB-42-0-6		ARK-WB-42-6-14		ARK-WB-35-0-10		ARK-WB-35-10-20	
Sample Date	9/25/2009		9/25/2009		9/30/2009		9/30/2009	
Chemical Name								
Asbestos (%)								
Chrysotile	T		T		4.5		2.8	
Amosite	T		ND		ND		ND	

Table 5: Split Sampling Sediment Data - Tributyltin and Asbestos

Sample Code	JBQ22		JBQ25		JBQ33		JBQ38		JBQ43		JBQZ2		JBR09	
Sample Name	ARK-WB-49-14-16		ARK-WB-49-20-22		ARK-WB-56-18-20		ARK-WB-30-10-12		ARK-WB-30-26-28		ARK-WB-30-40-42		ARK-WB-35-10-20	
Sample Date	9/9/2009		9/9/2009		9/15/2009		9/18/2009		9/18/2009		9/18/2009		9/30/2009	
Chemical Name														
Tributyltin (µg/kg)														
Dibutyl Tin	13	U	14	U	16	U	14	U	16	U	15	U	17	U
Monobutyl Tin	13	UJ	14	UJ	16	UJ	14	UJ	16	UJ	15	UJ	17	UJ
Tetrabutyl Tin	13	U	14	U	16	U	14	U	16	U	15	U	17	U
Tributyl Tin	13	U	14	U	16	U	14	U	16	U	15	U	17	U

Table 5: Split Sampling Sediment Data - Tributyltin and Asbestos

Sample Code	JBR14		JBR18		JBR22		JBR05		JBQZ4		JBR01	
Sample Name	ARK-WB-35-20-23		ARK-WB-35-23-26		ARK-WB-35-32-35		ARK-WB-42-6-14		ARK-WB-42-20-23		ARK-WB-42-23-26	
Sample Date	9/30/2009		9/30/2009		9/30/2009		9/25/2009		9/25/2009		9/25/2009	
Chemical Name												
Tributyltin (µg/kg)												
Dibutyl Tin	14	U	14	U	13	R	16	UJ	14	U	14	UJ
Monobutyl Tin	14	U	14	UJ	13	R	16	UJ	14	UJ	14	UJ
Tetrabutyl Tin	14	U	14	U	13	R	16	UJ	14	U	14	UJ
Tributyl Tin	14	U	14	U	13	R	16	UJ	14	U	14	UJ

Notes:
µg/kg - micrograms per kilogram (parts per billion)
J - The value reported is an estimated value
U - Not detected
R - Rejected
% - Percent
T - Trace
ND - Not detected

Description of Changes to Arkema Preliminary Split Sample Data Tables Transmitted on June 17, 2010

Revised Tables dated July 12, 2010

Table 1 – Semivolatile Organic Compounds

- Added compound:
  2,3,4,6-Tetrachlorophenol

Table 2 – Volatile Organic Compounds

- Corrected the qualifier for six samples for 1,2,4-Trichlorobenzene from "R" (rejected) to "U" (not detected). Samples for which the qualifier was revised include:

ARK-WB-34-4-6	ARK-WB-35-10-20
ARK-WB-42-20-23	ARK-WB-35-20-23
ARK-WB-42-6-14	ARK-WB-35-23-26

Table 3 – Pesticides Compounds

- Added compounds:
  cis-Nonachlor
  Hexachlorobutadiene
  Hexachlorobenzene
  Methoxychlor
  Oxychlordane
  Octachlorostyrene
  Toxaphene
  trans-Nonachlor

Table 4 – Dioxins and Furans

- Added compounds:
  2,3,7,8-TCDF
  Total HpCDD
- Added missing concentrations for sample JBQ46.
- Some concentrations for Total HxCDD were incorrect and have been corrected.
- The final qualifiers were not correct for all entries, including some entries that were actually not detected "U" but did not include the "U" qualifier. Qualifiers were corrected.
- TEQ values have been added.

Table 5 – Tributyltin and Asbestos

- No revisions

ORGANIC AUDIT REPORT

FOR

TASK ORDER 4001
DATA PACKAGE AND ELECTRONIC MEDIA REVIEW

AUDIT REPORT FOR CASE 38883, SDG JBPJ3
SOM01.2

KAP Technologies, Inc. (KAP)

Prepared by:

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April 23, 2010

Contract Number: EP-W-06-005

Prepared for:

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OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION
U. S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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EXECUTIVE SUMMARY

The data materials for SOM01.2 Case 38883, SDG JBPJ3 were received at QATS for audit from KAP Technologies, Inc. (KAP) on 02/17/2009 (hardcopy) and 02/18/2010 (electronic media). The data consist of 13 soil samples received by the laboratory on 08/27/2009 and 09/02/2009. At the direction of EPA, the pesticide analysis data fraction was audited against the Statement of Work (SOW) SOM01.2 with additional criteria as noted in Modified Analysis (MA) 1790.0. MA 1790.0 requires the detection of both SOW Pesticide target compounds and additional compounds at projected target Analytical Concentration Goals (ACGs) as specified in Table 1 of the MA.

The data package/electronic media audit identified 27 contractual defects, including 14 critical, 9 major, and 4 minor defects. Also, 4 critical defects and one major defect were assessed for the SEDD evaluation of this SDG.

The defects most significantly impacting the technical data quality are summarized here by fraction:

General Requirements – One critical defect was assessed for failure to submit one electronic media data file. Three major defects were assessed for incorrectly completing the SDG Narrative, failure to submit standard preparation logs, and analyzing samples without prior establishment of valid method detection limits (MDLs).

Pesticide – Fourteen critical defects were assessed for issues including misidentification of a target compound in all initial calibration and calibration verifications standards; incorrect reporting of compound retention times and area responses; incorrect calculations of %R, CF, $\overline{CF}$, and %D; failure of CCVs to meet %D criteria; failure of CCVs to meet breakdown criteria; insufficient chromatographic resolution; reporting target compounds outside RT windows; and non-submission of a report form. Nine major defects were assessed for issues including incorrect completion of report forms; incorrect calculation of CRQLs; failure to submit several samples at the SOW required dilutions; incorrect reporting of a compound concentration; and non-submission of a data system printout.

Other defects impacting data quality include incorrect calculation of Endrin and DDT breakdown and their combined breakdown and incorrect completion of the MS/MSD report forms.

SEDD Comments – Four critical defects were assessed for failure to enter all required nodes, data elements, and values associated with the initial calibration of Toxaphene; for incorrect values for GPC cleanup of all samples; for failure to document manual integrations; and for reporting SEDD values which do not match values in the hardcopy. One major defect was assessed for incorrect use of the DTD version.

Overall, the data package/electronic audit of Case 38883, SDG JBPJ3 revealed a significant number of critical defects given that only one fraction was evaluated. Samples were analyzed with initial calibrations and calibration verifications which failed QC criteria. Note that several of the samples were highly contaminated and required multiple dilutions. Numerous reanalyses, problems with analytical procedures, and QC failures appeared to occur from a combination of laboratory process failures and the difficulty of the sample matrices characteristic of this SDG.

ORGANIC ELECTRONIC DATA COMPLETENESS AUDIT

ORGANIC ELECTRONIC DATA/MEDIA SUMMARY

Date Original Data/Media Received			______
Total Number of Media Received (__1__ CD(s) _____ Tape(s) _____ Other)			______
Files Received on Web Portal?	☐ Yes	☒ No	
Date Resubmission of Media Requested			2/23/2010
Date Resubmitted Media Received			2/26/2010
File Directory Listing Submitted with Data/Media?	☐ Yes	☐ No	

ORGANIC ELECTRONIC RAW DATA FILE SUMMARY

Total Number of Raw Data/Method Files Required	122
Total Number of Raw Data/Method Files Submitted	121
Total Number of Raw Data/Method Files Missing	1
Total Number of Raw Data/Method Files Unreadable	0
Date Resubmission of Files Requested	
Date Resubmitted Files Received	

GC/MS/ECD Instruments Used by Laboratory

	Instrument IDs	
1. Trace Volatiles (TVOA) Instrument ID(s)		
2. Low/Medium Volatiles (L/M VOA) Instrument ID(s)		
3. Semivolatiles (SVOA) Instrument ID(s)		
4. Pesticides (PEST) Instrument ID(s)	A-6890A	A-6890B
5. Aroclors (ARO) Instrument ID(s)		

GC/MS/ECD Raw Data File Summary

	Number of Raw Data Files			
	Required	Submitted	Missing	Resubmitted
A. Instrument Performance Check				
1. Trace Volatiles Analysis (BFB)				
2. Low/Medium Volatiles Analysis (BFB)				
3. Semivolatiles Analysis (DFTPP)				
B. Calibration Standards				
1. Initial Calibration				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis	34	34		
e. Aroclors Analysis				
2. Continuing Calibration				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis	18	18		
e. Aroclors Analysis				

GC/MS/ECD Raw Data File Summary

GC/MS/ECD Raw Data File Summary	Number of Raw Data Files: Required	Submitted	Missing	Resubmitted
C. Sample/QC Data Files				
1. Trace Volatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
2. Low/Medium Volatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
3. Semivolatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
4. Pesticides Analysis				
a. Blank Data Files	14	14		
b. Sample Data Files	44	44		
c. MS/MSD Data Files	4	4		
d. LCS Data Files	4	4		
5. Aroclors Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
d. LCS Data Files				
D. Method/Library Files				
1. Tune Method Files				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
2. Quantitation Method Files				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis	3	3		
e. Aroclors Analysis				
3. Reverse Search Libraries				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
E. SEDD Files				
1. Trace Volatile Analysis				
2. Low/Medium Volatiles Analysis				
3. Semivolatiles Analysis				
4. Pesticides Analysis	1		1	
5. Aroclors Analysis				
TOTALS	122	121	1	0

ORGANIC DATA AUDIT REPORT

LABORATORY NAME	KAP TECHNOLOGIES	LABORATORY CODE	KAP
CONTRACT NUMBER	EP-W-05-032	SAMPLES/LEVEL/MATRIX	13/LOW/SOIL
SOW PROTOCOL	SOM01.2	REGION	VI
CASE NUMBER	38883	SDG NUMBER	JBPJ3
ANALYSES TYPE	PEST	VTSR	08/27/09, 09/02/09
RECEIPT DATE (PKG)	02/17/09	RECEIPT DATE (EM)	02/18/10
AUDIT STARTED	03/05/10	AUDIT COMPLETED	04/07/10

DATA AUDIT DEFECT SUMMARY

CHECKLIST DESCRIPTION	CRITICAL	MAJOR	MINOR	TOTAL DEFECTS
A. GENERAL REQUIREMENTS	1	3	0	4
B. TRACE VOLATILES DATA	NA	NA	NA	NA
C. LOW/MEDIUM VOLATILES DATA	NA	NA	NA	NA
D. SEMIVOLATILES DATA	NA	NA	NA	NA
E. PESTICIDES DATA	13	6	4	23
F. AROCLORS DATA	NA	NA	NA	NA
TOTALS	14	9	4	27

SEDD FILE ASSESSMENT SUMMARY

CHECKLIST DESCRIPTION	CRITICAL	MAJOR	MINOR	TOTAL DEFECTS
A. GENERAL REQUIREMENTS	0	1	0	1
B. TRACE VOLATILES DATA	NA	NA	NA	NA
C. LOW/MEDIUM VOLATILES DATA	NA	NA	NA	NA
D. SEMIVOLATILES DATA	NA	NA	NA	NA
E. PESTICIDES DATA	4	0	0	4
F. AROCLORS DATA	NA	NA	NA	NA
TOTALS	4	1	0	5

DEFINITIONS OF DEFECT CATEGORIES

Critical Defect: A deficiency that affects analytical results.
Major Defect: A deficiency that may or may not affect analytical results.
Minor Defect: A deficiency that does not affect analytical results.

ORGANIC DATA AUDIT SAMPLE SUMMARY

LIST OF SAMPLE AND QC ANALYSES

EPA SAMPLE NO.	TVOA	VOA	SV	PEST	ARO	LEVEL S/W	EPA SAMPLE NO.	TVOA	VOA	SV	PEST	ARO	LEVEL S/W
PBLK24				X		L/S	JBPK9DL				X		L/S
JBPJ3				X		L/S	JBPK9MS				X		L/S
JBPJ3DL				X		L/S	JBPK9MSD				X		L/S
JBPJ6				X		L/S	JBPL1				X		L/S
JBPJ9				X		L/S	JBPL1DL				X		L/S
JBPK0				X		L/S	JBPL5				X		L/S
JBPK0DL				X		L/S	JBPL5DL				X		L/S
JBPK3				X		L/S	JBPL6				X		L/S
JBPK3DL				X		L/S	JBPL6DL				X		L/S
JBPK6				X		L/S	JBPL7				X		L/S
JBPK6DL				X		L/S	JBPL7DL				X		L/S
JBPK8				X		L/S	JBPM0				X		L/S
JBPJ9				X		L/S							

REPEAT DEFECTS

The audit of Case 38883, SDG JBPJ3 was not compared with the most recent SOM01.2 data package/electronic media audit from this laboratory for repeat defects since this audit is for analysis of pesticide target compounds and additional requested compounds at specific CRQLs using MA 1790.0.

DATA PACKAGE AUDIT COMMENTS

GENERAL REQUIREMENTS

Critical Defects

1. The laboratory did not submit the SEDD data file 38883_JBPJ3_EPW05032_1_ORGANICGENERAL_3_2_PEST.zip for pesticide analyses with the original electronic media submission. The missing file was requested by EPA and received at QATS prior to the submission of this audit report.

   Reference: SOW SOM01.2, Page E-29, Paragraph 11.1.3.1, and Checklist No. A.4.F.

Major Defects

2. Parts of the SDG Narrative are incomplete as follows:

   - The laboratory did not attach a copy of the requirements for Modified Analysis (MA) 1790.0 to the SDG Narrative. The Request for Quote (RFQ) for MA 1790.0 states, “All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative.” In addition, the SOW states, “The Contractor shall also include a discussion of any flexibility Statement of Work (SOW) modifications. This includes attaching a copy of the USEPA-approved modification form to the SDG Narrative.” The missing MA 1790.0 was requested by EPA and received at QATS prior to the submission of this audit report.

   - The laboratory did not report the initial and continuing calibration failures (see Comments 7 and 8). The SOW states, “This document shall be clearly labeled ‘SDG Narrative’ and shall contain . . . detailed documentation of any Quality Control (QC), sample, shipment, and/or analytical problems encountered in processing the samples reported in the data package.”

   - The laboratory did not report the reason for not including the initial calibration INDC CS1-CS5 standards on the FORM VIII PEST report forms from both GC columns (see Comment 12).

   - The laboratory did not document all instances of manual integration in the SDG Narrative. None of the manually integrated pesticide compounds and surrogates were listed in the pesticide section of the SDG Narrative. The SOW states, “The Contractor shall document in the SDG Narrative all instances of manual integration.”

   - The laboratory did not explain the reason for not analyzing an additional extract 10 times more concentrated than the diluted sample extracts and reporting the results with the sample data (see Comment 15).

   - The laboratory states in the pesticide section of the SDG Narrative, “The samples JBPJ3, JBPJ6, JBPK0, JBPK3, JBPK6, JBPK9, JBPL1, JBPL5, JBPL6 and JBPL7 failed in the internal standards and were reanalyzed.” However, internal standards are not part of pesticide analysis as outlined in SOM01.2 or MA 1790.0.

- The equation to allow recalculation of sample results for the soil samples, provided in the SDG Narrative, contains an incorrect value. The equation includes the "Vt" value (Volume of concentrated Extract) in both the numerator and the denominator of the formula. The "Vt" value in the denominator should be replaced with "Vi", volume of extract injected. The SOW states, "The Contractor shall also provide, in the SDG Narrative, sufficient information, including equations or curves (at least one equation or curve per method), to allow the recalculation of sample results from raw instrument output."

- The laboratory deviated from the MA 1790.0 requirement for extraction and analysis procedures by using a 5 mL concentrated extract volume versus the 1 mL volume required in MA 1790.0. Discussion of this change from the requirement listed in MA 1790.0 should have been included in the SDG Narrative.

Pages 2 and 3 from the SDG Narrative and Page 4 of MA 1790.0 are submitted as enclosures.

Reference: SOW SOM01.2, Page A-6, Paragraph 4.2.1.2, Page B-12, Paragraph 2.5.1, Page B-33, Paragraph 2.6.2.6, Page E-29, Paragraph 11.1.3.1, Enclosures 2A-2C, SDG Narrative and MA 1790.0, and Checklist No. A.2.A.1.

3. The standard preparation logs for the pesticide surrogate, laboratory control sample (LCS), matrix spike and matrix spike duplicate (MS/MSD) samples associated with this SDG were not included with the original data package submission. The SOW states that the Complete SDG File (CSF) will include "Log book preparation entries documenting the steps and calculations of diluted and working standards and/or receipt of stock standards showing the lot number and date of receipt or date of preparation for all standards and spiking solutions." In addition, the laboratory did not report the solution ID (146-142-01) on the extraction logs for the MS/MSD solution containing the additional MA 1790.0 compounds spiked into the MS/MSD samples. The organic extraction logs submitted with the data package showing the standard IDs for the surrogate, LCS, and MS/MSD solutions are submitted as examples. The missing standard preparation logs were requested by EPA and received at QATS prior to the submission of this report.

   Reference: SOW SOM01.2, Page B-33, Paragraph 2.6.2.5, Page F-10, Paragraph 2.7.6, Enclosures 3A-3B, and Checklist No. A.6.C.

4. The pesticide samples in this SDG were analyzed without prior establishment of valid method detection limits (MDLs). Specifically,

   - MA 1790.0 has specific MDL requirements for all target compounds. The laboratory-signed bid sheet contains pesticide MDLs that do not meet these specifications. The MDLs provided by the laboratory on the bid sheet for 13 of 21 pesticide target compounds are higher than the MDLs required by MA 1790.0 and, in fact, are higher than CRQLs required by the MA.

   - The MDLs for six of the MA 1790.0 additional compounds were not provided.

   - The MDLs established by the laboratory and submitted to QATS for pesticides in soil analyzed on instrument A-6890 were analyzed on 02/06/2008. These MDLs were valid for one year and expired on 02/07/2009. The pesticide soil samples, analyzed on instrument A-6890, were analyzed on 09/23/2009. The MDL data for the CLP target compounds stated on the signed bid sheet have not been submitted to QATS. Note that a request for current MDLs was submitted to the laboratory on 07/17/2009 before the samples were analyzed and again on 01/06/2010. Pesticide soil MDL data were received for instrument A-6890 before the submission of this report; however, the date of the MDL study is 01/30/2010, almost one year after expiration of the last MDL study. The SOW states, “Before any field samples are analyzed under the contract, the MDL for each target compound shall be determined on each instrument used for analysis.”

Pages 2 and 3 of the MA 1790.0 showing the required MDLs, Pages 2 and 3 of the laboratory-signed bid sheet showing the MDL values reported by the laboratory and the associated auditor-generated pages from the expired laboratory-submitted MDL study showing the expiration date and pesticide soil MDLs are submitted as enclosures.

Reference: SOW SOM01.2, Page D-75/PEST, Paragraph 12.4.1, Page D-76/PEST, Paragraph 12.4.2, MA 1790.0, Enclosures 4A-4E, and Checklist No. A.7.A.

PESTICIDES DATA

Critical Defects

5. Target compound alpha-Chlordane on the RTX-CLP2 GC column is misidentified on all calibration standards associated with this SDG. The laboratory reported both alpha-Chlordane and Endosulfan I at the identical retention time (RT) of 17.16 minutes and with identical area responses in all raw data and associated report forms for the initial and continuing calibrations. The electronic media auditors determined that the peak at this RT is Endosulfan I and that the alpha-Chlordane peak should have been reported at RT 17.03 minutes with a different area response. As a result, all analytical data for alpha-Chlordane in all initial and continuing calibration standards were incorrectly reported on the raw data and incorrectly calculated and reported on associated report forms from the RTX-CLP2 GC column. The SOW states, “The identification of single component pesticides by GC methods is based primarily on RT data.” All samples in this SDG are associated with the affected initial calibration and continuing calibration verifications; however, alpha-Chlordane was not detected in any of the samples in this SDG. Examples of the report forms, associated raw data, and auditor-generated raw data report are submitted as enclosures.

   Note: Two critical defects are assessed.

   Reference: SOW SOM01.2, Page B-59, Paragraph 3.12.1, Page B-61, Paragraphs 3.12.4.1 and 3.12.4.2, Page D-28/PEST, Paragraph 9.2.5.10, Page D-29/PEST, Paragraph 9.2.6.5, Page D-34, Paragraph 9.3.6.8, Page D-58/PEST, Paragraph 11.1.1, Enclosures 5A-5L, and Checklist Nos. E.2.D.6.A and E.2.H.5.A.

6. The auditor-calculated values for target compound alpha-Chlordane do not match the laboratory-reported values for all calibration standard analyses on the RTX-CLP2 GC column due to the misidentification of the compound as Endosulfan I as described in Comment 5.

The Laboratory-Reported and Auditor-Calculated RT and Response for alpha-Chlordane and Endosulfan I from the resolution check standard and individual calibration standard are provided in the following tables:

Resolution Calibration		Laboratory-Reported		Auditor-Calculated	
Standard	Compound	RT	Response	RT	Response
RESC11	Endosulfan I	17.16	283330048	17.16	28157022
RESC11	alpha-Chlordane	17.16	283330048	17.03	25259433
INDC311	Endosulfan I	17.16	567900916	17.16	56754032
INDC311	alpha-Chlordane	17.16	567900916	17.03	50769702
INDC331	Endosulfan I	17.16	584430490	17.16	58383350
INDC331	alpha-Chlordane	17.16	584430490	17.02	49486399
INDC361	Endosulfan I	17.17	685377516	17.17	68639688
INDC361	alpha-Chlordane	17.17	685377516	17.03	50504035

Resolution Calibration		Laboratory-Reported	Auditor-Calculated
Standard	Compound	%R	%R
RESC11	Endosulfan I	96.0	76.6*
RESC11	alpha-Chlordane	100.0	76.4*
INDC311	Endosulfan I	96.9	81.1
INDC311	alpha-Chlordane	100.0	81.0
INDC321	Endosulfan I	94.9	79.3*
INDC321	alpha-Chlordane	100.0	79.2*
INDC361	Endosulfan I	88.6	66.4*
INDC361	alpha-Chlordane	100.0	68.0*

* Does not meet SOW criteria.

The auditors re-calculated the percent resolution between alpha-Chlordane and Endosulfan I and found that the actual %R values were significantly lower than those reported by the laboratory. Six of the eight %R values for Endosulfan I and alpha-Chlordane do not meet the SOW-specified 80% resolution criteria.

The auditors also re-calculated the calibration factors (CFs), CF %RSDs, and CF %Ds for Endosulfan I and alpha-Chlordane in the individual calibration standards; compared those with the laboratory-reported CF data; and listed them in the following tables:

Initial Calibration		Laboratory-Reported			Auditor-Calculated		
Standard	Compound	RT	Response	CF	RT	Response	CF
INDC111	Endosulfan I	17.16	142585785	28517157000	17.16	13742630	2748526000
INDC111	alpha-Chlordane	17.16	142585785	28517157000	17.03	12351131	2470226200
INDC211	Endosulfan I	17.16	299271551	29927155100	17.16	29801026	2980102600
INDC211	alpha-Chlordane	17.16	299271551	29927155100	17.03	27310395	2731039500

Initial Calibration		Laboratory-Reported			Auditor-Calculated		
Standard	Compound	RT	Response	CF	RT	Response	CF
INDC311	Endosulfan I	17.16	567900916	28395045800	17.16	56754032	2837701600
INDC311	alpha-Chlordane	17.16	567900916	28395045800	17.03	50769702	2538485100
INDC411	Endosulfan I	17.16	1306391373	32659784325	17.16	131019870	3275496750
INDC411	alpha-Chlordane	17.16	1306391373	32659784325	17.03	119962764	2999069100
INDC511	Endosulfan I	17.16	2658314597	33228932463	17.16	265384967	3317312088
INDC511	alpha-Chlordane	17.16	2658314597	33228932463	17.03	244327424	3054092800

Initial Calibration	Laboratory-Reported		Auditor-Calculated	
Compound	$\overline{CF}$	%RSD	$\overline{CF}$	%RSD
Endosulfan I	30545614938	7.46	3031827808	8.43
alpha-Chlordane	30545614938	7.46	2758582540	9.55

Note that the laboratory-reported and auditor-calculated %RSD values meet the SOW-specified %RSD criteria.

The Calibration Verification Standard, Compound, Laboratory-Reported and Auditor-Calculated RT (minutes), Response, CF, $\overline{CF}$, and %D are listed in the following tables:

Calibration Verification		Laboratory-Reported			Auditor-Calculated		
Standard	Compound	RT	Response	CF	RT	Response	CF
INDC331	Endosulfan I	17.16	584430490	29221524500	17.16	58383350	2919167500
INDC331	alpha-Chlordane	17.16	584430490	29221524500	17.02	49486399	2474319950
INDC361	Endosulfan I	17.17	685377516	34268875800	17.17	68639688	3431984400
INDC361	alpha-Chlordane	17.17	685377516	34268875800	17.03	50504035	2525201750

Calibration Verification		Laboratory-Reported		Auditor-Calculated	
Standard	Compound	$\overline{CF}$	%D	$\overline{CF}$	%D
INDC331	Endosulfan I	30545614938	-4.3	3031827808	-3.6
INDC331	alpha-Chlordane	30545614938	-4.3	2758582540	-10.5
INDC361	Endosulfan I	30545614938	12.2	3031827808	13.2
INDC361	alpha-Chlordane	30545614938	12.2	2758582540	-8.3

Note that the auditor-calculated %D values meet the SOW-specified %D criteria.

The SOW states, "Initial calibration technical acceptance criteria MUST be met before any samples . . . are analyzed. Any samples or required blanks analyzed when the initial calibration technical acceptance criteria have not been met will require reanalysis at no additional cost to USEPA." Examples of laboratory-submitted FORM VI PEST-5 report forms, auditor-generated worksheets, and laboratory-submitted and auditor-generated initial calibration and continuing calibration quantitation reports are submitted as enclosures.

Note: Four critical defects and one major defect are assessed.

Reference: SOW SOM01.2, Page D-28/PEST, Paragraphs 9.2.5.2 and 9.2.5.8, Page D-29/PEST, Paragraph 9.2.6.5, Page D-32/PEST, Paragraph 9.3.5.2, Page D-58/PEST, Paragraph 11.1.1, Enclosures 6A-6J, and Checklist Nos. E.2.D.2.A, E.2.D.2.B, E.2.D.5.A, E.2.D.5.B, and E.2.D.5.C.

7. The Percent Difference (%D) between the calculated amount and nominal amount for the pesticide target compound Endrin in one pesticide calibration verification Performance Evaluation Mixture (PEM) exceeded the technical acceptance criteria of ±25.0%. The EPA Sample No., Analysis Date, Analysis Time, Compound, GC Column, Lab-Reported %D, and the %D Criteria are listed in the following table:

EPA Sample No.	Analysis Date	Analysis Time	Compound	GC Column	Lab-Reported %D	%D Criteria
PEM41	09/23/2009	0115	Endrin	RTX-CLP2	-28.8	±25.0%

In addition, the percent breakdown reported by the laboratory for Endrin and the combined percent breakdown for Endrin and 4,4'-DDT in several pesticide calibration verification standards exceeded the technical acceptance criteria of 20.0% and 30.0%, respectively. The EPA Sample Number, GC Column, Analysis Date, Analysis Time, Endrin % Breakdown, and % Breakdown Limit are shown in the following tables:

Endrin % Breakdown

EPA Sample No.	GC Column	Analysis Date	Analysis Time	Endrin % Breakdown	% Breakdown Limit
PEM21	RTXCLP2	09/22/2009	0513	21.5%*	20.0%
PEM41	RTXCLP2	09/23/2009	0115	33.6%*	20.0%
PEM51	RTXCLP2	09/23/2009	1917	34.8%	20.0%

* Auditor-calculated (see Comment 17).

Combined % Breakdown

EPA Sample No.	GC Column	Analysis Date	Analysis Time	Combined % Breakdown	% Breakdown Limit
PEM41	RTXCLP2	09/23/2009	0115	42.4%	30.0%
PEM51	RTXCLP2	09/23/2009	1917	34.8%	30.0%

The SOW states, "If a PEM or Individual Standard Mixture does not meet the technical acceptance criteria listed above, it must be reinjected immediately. If the second injection of the PEM or Individual Standard Mixture meets the criteria, sample analysis may continue. If the second injection does not meet the criteria, all data collection must be stopped. Appropriate corrective action must be taken, and a new initial calibration sequence must be run before more sample data are collected." The SOW also states, "Calibration verification technical acceptance criteria must be met before any samples (including the LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) are reported. Any samples and required blanks associated with a calibration verification which did not meet the technical acceptance criteria will require reanalysis at no additional cost to USEPA." All samples in this SDG are associated with one of the above PEMs and should have been reanalyzed. The laboratory did not report the pesticide calibration and % breakdown failures in the SDG Narrative. The FORM VII PEST-1 report forms, one FORM VIII PEST report form page showing the analytical sequence, and Pages 2 and 3 from the SDG Narrative are submitted as examples.

Note: Three critical defects are assessed.

Reference: SOW SOM01.2, Page D-32/PEST, Paragraphs 9.3.5.4 and 9.3.5.5, Page D-33/PEST, Paragraph 9.3.6.4, Page D-34/PEST, Paragraph 9.3.6.8, Enclosures 7A-7F, and Checklist Nos. E.2.H.2.D, E.2.H.2.E, and E.2.H.2.F.

8. The calibration factor (CF) percent differences (%Ds) reported by the laboratory for two target compounds in calibration verification standard INDC361 exceeded the technical acceptance criteria of ±20.0%. The EPA Sample No., Date Analyzed, GC Column, Compound, Mean Calibration Factor ($\overline{CF}$), CF, and %D are listed in the following table:

EPA Sample No.	Date Analyzed	GC Column	Compound	$\overline{CF}$	CF	%D
INDC361	09/23/2009	RTX-CLP2	Endrin	22787170475	17100912275	-25.0
INDC361	09/23/2009	RTX-CLP2	Delta-BHC	33552804390	26320959800	-21.6

The SOW states, "If a PEM or Individual Standard Mixture does not meet the technical acceptance criteria listed above, it must be reinjected immediately. If the second injection of the PEM or Individual Standard Mixture meets the criteria, sample analysis may continue. If the second injection does not meet the criteria, all data collection must be stopped. Appropriate corrective action must be taken, and a new initial calibration sequence must be run before more sample data are collected." The SOW also states, "Calibration verification technical acceptance criteria must be met before any samples (including the LCSs and MS/MSDs) and required blanks (method/sulfur cleanup) are reported. Any samples and required blanks associated with a calibration verification which did not meet the technical acceptance criteria will require reanalysis at no additional cost to USEPA." The laboratory did not report these calibration failures in the SDG Narrative. Samples JBPL6, JBPL7, JBPM0, JBPJ3DL, JBPK0DL, JBPK3DL, JBPK6DL, JBPK9DL, JBPL1DL, JBPL5DL, JBPL6DL, JBPL7DL and QC samples JBPK9MS, JBPK9MSD, and GPCPEST24 are associated with the above calibration verification standards.

In addition, the CF %Ds reported by the laboratory for cis-Nonachlor in calibration verification standards INDT321 and INDT361 exceeded the advisory technical acceptance criteria of ±20.0%. The EPA Sample No., Date Analyzed, GC Column, Compound, $\overline{CF}$, CF, and %D are listed in the following table:

EPA Sample No.	Date Analyzed	GC Column	Compound	$\overline{CF}$	CF	%D
INDT321	09/22/2009	RTX-CLP	cis-Nonachlor	3482467730	2483040375	-28.7
INDT361	09/23/2009	RTX-CLP	cis-Nonachlor	3482467730	2563622775	-26.4

Note that MA 1790.0 states, "Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**." All samples are associated with one of the above calibration verification standards.

The FORM VII PEST-3 report forms for INDC361, INDT321, and INDT361; the associated FORM VIII PEST report forms from one GC column showing the analytical sequence; and Page 4 of MA 1790.0 are submitted as examples.

Reference: SOW SOM01.2, Page D-32/PEST, Paragraph 9.3.5.6, Page D-33/PEST, Paragraph 9.3.6.4, Page D-34/PEST, Paragraph 9.3.6.8, MA 1790.0, Enclosures 8A-8F, and Checklist No. E.2.H.3.D.

9. Review of the data revealed that the GC profile used by the laboratory provide for inadequate resolution of gamma-Chlordane, Dieldrin, Endrin, Heptachlor epoxide, cis-Nonachlor, and trans-Nonachlor in the calibration standards from the DDT isomers and their breakdown products. Note that the electronic media auditor determined that the pesticide target compounds gamma-Chlordane, Dieldrin, Endrin, Heptachlor epoxide, cis-Nonachlor, and trans-Nonachlor are not present in any samples analyzed in this SDG. The target compounds listed above elute within the retention time (RT) windows of other target compounds. The chromatographic resolutions on the RTX-CLP2 and RTX-CLP GC columns are inadequate to separate DDT isomers, their breakdown products, cis-Nonachlor, and trans-Nonachlor from other pesticide target compounds. The table below shows the Compound Name, Mean Retention Time (Mean RT), Mean Retention Time Limit Low (RT Low), Mean Retention Time Limit High (RT High), the Retention Time Window Half Width (Window), and GC Column. The data below also are grouped in pairs. The shaded and unshaded cells denote compounds which elute within another compounds RT window. Note that in the first pair below, the Mean RT of 16.68 minutes for 2,4'-DDE elutes within gamma-Chlordane's RT window of 16.62 to 16.76 minutes. At the same time, the mean RT of 16.69 minutes for gamma-Chlordane elutes within 2,4'-DDE's RT window of 16.61 to 16.75 minutes.

Compound Name	Mean RT	RT Low	RT High	Window	GC Column
2,4'-DDE	16.68	16.61	16.75	0.07	RTX-CLP2
gamma-Chlordane	16.69	16.62	16.76	0.07	RTX-CLP2
Dieldrin	17.78	17.71	17.85	0.07	RTX-CLP2
2,4'-DDD	17.83	17.76	17.90	0.07	RTX-CLP2
Endrin	18.46	18.39	18.53	0.07	RTX-CLP2
2,4'-DDT	18.51	18.44	18.58	0.07	RTX-CLP2
cis-Nonachlor	18.63	18.56	18.70	0.07	RTX-CLP2
4,4'-DDD	18.66	18.59	18.73	0.07	RTX-CLP2
2,4'-DDE	15.27	15.20	15.34	0.07	RTX-CLP
Heptachlor epoxide	15.28	15.21	15.35	0.07	RTX-CLP
trans-Nonachlor	15.82	15.75	15.89	0.07	RTX-CLP
alpha-Chlordane	15.86	15.79	15.93	0.07	RTX-CLP
Endrin	17.23	17.16	17.30	0.07	RTX-CLP
cis-Nonachlor	17.29	17.22	17.36	0.07	RTX-CLP

Note: The Mean RT, RT Low, and RT High values were taken from the INDC and INDT initial calibrations for their respective columns.

Four FORM VI PEST-1 report forms and two chromatograms for INDC311 and INDT311 from the RTX-CLP2 GC Column, and two chromatograms for INDC311 and INDT311 from the RTX-CLP GC Column are submitted as examples.

Reference: SOW SOM01.2, Page D-58/PEST, Paragraph 11.1.1.1, Enclosures 9A-9H, and Checklist No. E.3.B.3.

10. The laboratory did not submit a complete FORM X PEST-1 report form for sample JBPK9MSD. The submitted report form does not contain several target compounds that are reported as detected on the FORM I PEST report forms for both GC columns. The SOW states, "FORM X is required for each sample, including dilutions and reanalyses, blanks, LCSs, and MS/MSDs in which compounds listed in Exhibit C-Pesticides and Aroclors are detected and reported on FORM I." Note that the laboratory-submitted FORM X PEST-1 report form was labeled as "page 1 of 2"; however, the FORM X PEST-1 report form, "page 2 of 2" was not submitted with the hardcopy data. The values reported on the FORM I PEST report forms were verified by the auditor using the raw data. The FORM I PEST and FORM X PEST-1 report forms for sample JBPK9MSD are submitted as enclosures.

Reference: SOW SOM01.2, Page B-25, Paragraph 2.5.5.3.13, Page B-69, Paragraph 3.18.1, Enclosures 10A-10C, and Checklist No. E.3.C.1.

11. Several target compounds reported in several samples had retention times (RTs) outside of the laboratory-calculated RT windows from one or both GC columns. The following table shows the EPA Sample No., Compound, GC column, RT, and RT Window for the affected samples:

EPA Sample No.	Compound	GC Column	RT	RT Window
JBPJ9	Methoxychlor	RTX-CLP2	20.71	20.73 - 20.87
JBPK3	delta-BHC	RTX-CLP2	13.85	13.87 - 13.97
JBPK3	delta-BHC	RTX-CLP	12.74	12.52 - 12.62
JBPK6	delta-BHC	RTX-CLP2	13.85	13.87 - 13.97
JBPK6	delta-BHC	RTX-CLP	12.73	12.54 -12.62
JBPK9	Endrin	RTX-CLP	17.37	17.16 - 17.30

The SOW states, "The single component compounds are identified when peaks are observed in the RT window for the compound on both Gas Chromatograph (GC) columns." The FORM X PEST report forms and data system printouts for the affected samples are submitted as enclosures.

Reference: SOW SOM01.2, Page D-58/PEST, Paragraph 11.1.1.1, Enclosures 11A-11H, and Checklist No. E.3.C.2.

Major Defects

12. The FORM VIII PEST report forms from both GC columns for the pesticide analytical sequence initiated on 02/27/2007 on instrument A-6890 are incomplete. The submitted report forms do not include Lab File IDs A18980 through A18984 of the initial calibration INDC CS1-CS5 standards (Lab File IDs A18980 through A18984). The SOW states, "Each sample analyzed as part of the sequence shall be reported on FORM VIII PEST **even** if it is not associated with the SDG. The Contractor shall use ZZZZZ as the EPA

Sample Number to distinguish all samples that are not part of the SDG being reported using military time." The FORM VIII PEST report form from one GC column and the associated injection log page are submitted as examples.

Reference: SOW SOM01.2, Page B-67, Paragraph 3.16.2.4, Page B-68, Paragraph 3.16.2.7, Enclosures 12A-12B, and Checklist No. E.1.G.

13. The laboratory incorrectly calculated and reported the CRQL values for Dieldrin and 4,4'-DDE on all of the FORM I PEST report forms. The laboratory-reported adjusted CRQLs for the two target compounds are one-half of the auditor-calculated adjusted CRQL values. The calculation used by the auditor to determine the CRQLs is shown below. The formula used is from the SOW Modifications Updating SOM01.1 to SOM01.2.

$$\text{Adjusted CRQL} = \frac{\text{Contract CRQL}}{\text{(from SOW)}} \times \frac{W_x}{W_s \times D} \times \frac{V_t}{V_y} \times DF \; \frac{CV_{outG}}{CV_{inG} \times E} \times \frac{CV_{outF}}{CV_{inF}}$$

V_t= Concentrated extract volume
V_y= Contract concentrated extract volume
CV_{outG}= Volume of extract produced by a cleanup process, in µL (GPC)
CV_{outF}= Volume of extract produced by a cleanup process in µL (Florisil)
CV_{inG}= Initial volume of extract for a cleanup process, in µL(GPC)
CV_{inF}= Initial volume of extract for a cleanup process, in µL (Florisil)
E= The efficiency of the cleanup process expressed as a fraction

The calculation used by the auditor to determine the CRQL of 4,4'-DDE for sample JBPJ3DL is shown below. The formula used is from the SOW, and the data are from various data sources for sample JBPJ3.

$$\text{Adjusted CRQL} = 3.3 \times \frac{30}{5.1^* \times 0.60} \times \frac{5000}{10000} \times 1 \; \frac{10000}{10000 \times 0.5} \times \frac{2000}{2000} = 32.35$$

*Note that the sample weight is incorrectly reported on the FORM I PEST report form.

The laboratory reported a CRQL of 17 µg/Kg for 4,4'-DDE.

Several examples of the incorrectly calculated CRQLs are shown in the following table:

EPA Sample No.	Compound	Laboratory-Reported CRQL (µg/Kg)	Auditor-Calculated CRQL (µg/Kg)
JBPJ3	Dieldrin	17	32
JBPJ3	4,4'-DDE	17	32
JBPJ3DL	Dieldrin	3300	6500
JBPJ3DL	4,4'-DDE	3300	6500
JBPJ6	Dieldrin	13	27
JBPJ6	4,4'-DDE	13	27
JBPL1DL	Dieldrin	130	250
JBPL1DL	4,4'-DDE	130	250

The FORM I PEST report forms for samples JBPJ3 and JBPJ3DL are submitted as examples.

Reference: SOW SOM01.2, Page D-64/PEST, Paragraph 11.2.2.2, Modifications Updating SOM01.1 to SOM01.2: Pest-Item 10, Exhibit D – Pesticide Section 11.2.2.2 - Equation 20, Enclosures 13A-13E and Checklist No. E.3.B.5.

14. The concentration of the pesticide target compound 2,4'-DDT in sample JBPJ3 was incorrectly reported on the FORM I PEST report form. The laboratory used the higher of the two concentrations from the corresponding FORM X PEST report form to report the final value on the FORM I PEST report form. The SOW states, "The lower of the two concentrations is reported on Form I for each pesticide compound." Note that 2,4'-DDT was reported with an "E" qualifier in the original analysis of sample JBPJ3 at a dilution factor of one. The sample was diluted and the final result was correctly reported on the FORM I PEST report form for sample JBPJ3DL. The following table shows the EPA Sample No., Compound, Laboratory-Reported FORM I PEST Concentration (Conc.), the two concentrations from the FORM X ARO report form:

EPA Sample No.	Compound	Laboratory-Reported FORM I PEST Conc. (µg/Kg)	FORM X PEST Conc. Column 1	FORM X PEST Conc. Column 2
JBPJ3	2,4'-DDT	17,000 EP	17,000	12,000

In addition, the sample weight was incorrectly reported on the FORM I PEST report form as 5.0 g instead of 5.1 g as reported on the associated organic extraction log and data system printout for the sample. Note that all the sample analytical results were verified using sample weight of 5.1 g. The FORM I PEST and FORM X PEST report forms for sample JBPJ3 and the associated organic extraction log are submitted as examples.

Reference: SOW SOM01.2, Page B-70, Paragraph 3.18.2.8, Enclosures 14A-14B, and Checklist No. E.3.B.6.

15. Several pesticide samples in this SDG were analyzed using dilutions from 50 to 200 without an additional extract analysis 10 times more concentrated than the diluted sample. The SOW states, "If the Dilution Factor (DF) is greater than 10, an additional extract 10 times more concentrated than the diluted sample extract must be analyzed and reported with the sample data." If a more concentrated dilution is not possible, than this information must be listed in the SDG Narrative. An additional extract 10 times more concentrated than the diluted sample should have been analyzed and reported for samples JBPJ3, JBPK0, JBPK3, JBPK6, JBPK9, JBPL5, and JBPL6. The FORM I PEST report forms for sample JBPJ3 and JBPJ3DL are submitted as examples.

Reference: SOW SOM01.2, Page D-56 PEST, Paragraph 10.4.3.5, Enclosures 15A-15B and Checklist No. E.3.B.8.

16. The laboratory did not provide the data system printout for the SOW pesticide target compounds for sample JBPK9MS with the original submission. Note that the laboratory submitted the data system printout for the sample for the MA 1790.0 additional target compounds. The missing raw data were requested by EPA and received at QATS prior to the submission of this report.

Reference: SOW SOM01.2, Page B-30, Paragraph 2.5.6.3.5, and Checklist No. E.3.E.1.

Minor Defects

17. The auditors are unable to duplicate the individual and combined DDT and Endrin percent breakdown values reported by the laboratory on the FORM VII PEST-1 report form for several pesticide calibration verification Performance Evaluation Mixtures (PEMs). A comparison of the Laboratory-Reported and Auditor-Calculated % Breakdown results are given in the following table:

			Laboratory-Reported % Breakdown			Auditor-Calculated % Breakdown		
Standard	GC Column	Date	4,4'-DDT	Endrin	Combined	4,4'-DDT	Endrin	Combined
PEM21	RTX-CLP2	09/22/2009	0.0	20.6	20.6	0.0	21.5	21.5
PEM41	RTX-CLP2	09/23/2009	8.8	0.0	8.8	8.8	33.6	42.4
PEM42	RTX-CLP	09/23/2009	33.6	8.2	41.8	0.0	8.2	8.2

Note that the percent breakdown reported by the laboratory for Endrin and/or the combined percent breakdown for Endrin and 4,4'-DDT in PEM21 and PEM41 exceeded the technical acceptance criteria (see Comment 7). The FORM VII PEST-1 report forms and data system printout for the PEM calibration standards, the injection log, and the FORM VIII PEST report form are submitted as enclosures.

Reference: SOW SOM01.2, Page B-64, Paragraph 3.14.2.9, Enclosures 17A-17E, and Checklist No. E.2.H.2.F.1.

18. The FORM III PEST-2 report forms for the matrix spike and matrix spike duplicate (MS/MSD) samples JBPK9MS and JBPK9MSD are incorrectly completed. The auditor was unable to duplicate several Spike Added (µg/Kg), sample concentration (µg/Kg), MS/MSD concentration (µg/Kg), and MS/MSD %REC reported on the report forms for the MS/MSD samples as in the following:

- The spike added values for the CLP target compounds reported on the FORM III PEST-2 report forms do not correspond to the values provided on the standard prep log for the MS/MSD standards. It appears that all spike added values correspond to the MA 1790.0 additional target compounds spike added concentrations. Note that the MS mixture for the MA compounds was prepared at a concentration of 0.8 µg/mL whereas the CLP target compound MS mixture was prepared at concentrations of 0.5 µg/mL and 1.0 µg/mL for the two target compound levels.

- The laboratory incorrectly reported the sample used for MS/MSD analyses on the FORM III PEST-2 report forms as JBPK6. The correct EPA Sample No. should have been reported as JBPK9, which agrees with the other data submitted. Also, it appears that the spike added (µg/Kg) values for the MA 1790.0 compounds are calculated based on the sample weight and percent moisture for sample JBPK6. The correct spike added (µg/Kg) values should have been based on the sample weight and percent moisture of sample JBPK9. The laboratory reported the spike added value for cis-Nonachlor, as an example, is 260 µg/Kg, whereas, the auditor-calculated value is 268 µg/Kg.

- Several sample concentration (µg/Kg) values reported by the laboratory on the

FORM III PEST-2 report forms do not match the FORM X PEST report form values for the original sample. For example, cis-Nonachlor is reported with a sample concentration of 3000 µg/Kg on the FORM III PEST-2 Report form; however, the compound was not reported in the sample.

- The Percent Recovery (%R) values for several compounds in the MS and MSD analyses can not be duplicated by the auditors; however, these discrepancies appear to be related to the incorrect spike added values and incorrect sample concentration values noted above.

The FORM I PEST, FORM III PEST report forms, the associated organic extraction log and standard preparation logs are submitted as enclosures

Note: Three minor defects are assessed.

Reference: SOW SOM01.2, Page B-53, Paragraphs 3.8.1.2 and 3.8.1.2.3, Page B-54, Paragraphs 3.8.1.2.4 - 3.8.1.2.11, Page D-73/PEST, Paragraph 12.3.2.5, Enclosures 18A-18G, and Checklist Nos. E.4.B.1.A, E.4.B.4, and E.4.B.5.

SEDD FILE AUDIT COMMENTS

GENERAL REQUIREMENTS

Major Defects

19. The laboratory used the incorrect Data Table Definition (DTD) version "**ORGANICGENERAL_3_2.dtd**" with the XML file submitted. All laboratories using SOW SOM01.2 are required to use DTD version "**ORGANICGENERAL_3_3.dtd**," which was released during May 2007, as per direction from EPA to QATS and the laboratories. The first 17 lines of the laboratory-submitted SEDD file "38883_JBPJ3_EPW05032_1_ORGANICGENERAL_3_2_PEST.xml" are included as an example.

    Reference: SOW SOM01.2, Pages H-51 and H-61, Section 6, Enclosure 19, and Checklist No. A.8.A.

PESTICIDES DATA

Critical Defects

20. The laboratory failed to enter all required nodes, data elements, and values associated with the initial calibration of the target compound Toxaphene for both the RTX-CLP2 and RTX-CLP GC columns for this SDG. Analysis of the laboratory-submitted SEDD data file shows that the laboratory duplicated the results for the five calibration standards INDC111, INDC211, INDC311, INDC411, and INDC511 for both columns in the SEDD data file. The SEDD data file contains a comment on line 5460 which states, "Start ICal Sequence for Toxaphene ICal ID: A18973;" however, this "InstrumentQC" node contains the second set (duplicate) of the Individual C Mixture five point calibration and does not contain any Toxaphene data. Two FORM VIII PEST report forms, a printout of values extracted from the laboratory-submitted SEDD file which shows the duplication of the Individual C Mixture five point curves, and a section of the SEDD file which shows the "Start ICal Sequence for Toxaphene ICal ID: A18973" comment are submitted as examples.

    Reference: SOW SOM01.2, Pages H-61 through H-66, Section 6, Enclosures 20A-20G, and Checklist No. E.7.D.

21. The laboratory entered seven incorrect values for the data element **/Header/SamplePlusMethod/Analysis/Analyte/Peak/ManualIntegration** for four sample analyses. The SOW states for the "**ManualIntegration**" data element, "Report 'Yes' if this peak was manually integrated, otherwise report 'No'." The laboratory's data system(s) documented these manual integrations in the data system printouts for the individual samples; however, the required discussion of these manual integrations is not present in the SDG Narrative. The SOW also states, "The Contractor shall document in the SDG Narrative all instances of manual integration" and that, "If manual integration of peaks is required, it must be documented in the SDG Narrative." The table below lists the Sample No., Target Compound, and the Column for which manual integration are not documented; an "X" indicates whether a manual integration was performed.

Sample No.	Target Compound	Column RTX-CLP2	Column RTX-CLP
JBPK8	4,4'-DDT	X	X
JBPK9	cis-Nonachlor	X	X
JBPK9DL	cis-Nonachlor	X	X
JBPM0	4,4'-DDT	X	

The data system printouts for sample JBPK8 and JBP9 are submitted as examples.

Reference: SOW SOM01.2, Page B-12, Section 2.5.1, Page D-60/PEST, Section 11.2.1.2, Page H-59, Section 6, Enclosures 21A-21B, and Checklist No. E.7.D.

22. The laboratory entered incorrect values for the SEDD data file elements **/Header/SamplePlusMethod/Analysis/PreparationPlusCleanup/InitialAmount** and **/Header/SamplePlusMethod/Analysis/PreparationPlusCleanup/Efficiency** for the GPC cleanup performed on all samples, matrix spikes, matrix spike duplicates, laboratory control samples, laboratory control sample duplicates, and method blanks in this SDG. In all preparations, the laboratory reported a value of 5,000 µL for the "**InitialAmount**." This value does not match the corresponding value of 10 mL (10,000 µL) which is reported as the concentrated extract volume in the organic extraction log. In addition, since only 5,000 µL of the original 10,000 µL concentrated extract volume was used for GPC, the values for the "**Efficiency**" data element should have been reported as "0.5" instead of the laboratory-reported values of "1.0." The SOW SOM01.2 states, "Report the efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step, in decimal percent (e.g. 50% efficiency must be expressed as 0.50). Leave blank if cleanup is not performed." A printout containing values extracted from the laboratory-submitted SEDD file for soil sample JBPJ3 analyzed on column RTX-CLP2 and one page from the laboratory's organic extraction log are submitted as examples.

    Reference: SOW Modifications Updating SOM01.1 to SOM01.2 October 5, 2006 (Updated 02-12-2007) Amended 04-11-2007, Page H-44, Enclosures 22A-22B, and Checklist No. E.7.D.

23. There are discrepancies between the values reported for the SEDD data file element **/Header/SamplePlusMethod/Analysis/Analyte/PercentRecovery** for the Pesticide surrogates TCX and DCB for the five instrument blanks analyzed on the RTX-CLP GC column versus those reported on the Form II PEST-2 report forms. The surrogate percent recovery (%R) values reported in the hardcopy data package and the values for the "**PercentRecovery**" data element are summarized in the table below.

Sample No.	SEDD File Reported %R Values				Hardcopy Reported %R Values			
	Column RTX-CLP2		Column RTX-CLP		Column RTX-CLP2		Column RTX-CLP	
	TCX	DCB	TCX	DCB	TCX	DCB	TCX	DCB
PIBLK11	105	97	2	4	105	97	99	96
PIBLK21	89	88	2	4	89	88	95	90
PIBLK31	84	75	2	4	84	75	93	88
PIBLK41	97	72	2	3	97	72	102	80

Sample No.	SEDD File Reported %R Values				Hardcopy Reported %R Values			
	Column RTX-CLP2		Column RTX-CLP		Column RTX-CLP2		Column RTX-CLP	
	TCX	DCB	TCX	DCB	TCX	DCB	TCX	DCB
PIBLK51	93	78	2	3	93	78	94	85

A table containing values extracted from the laboratory submitted SEDD file and one Form II PEST-2 report form are submitted as enclosures.

Reference: SOW SOM01.2, Page H-10, Section 4.4, Enclosures 23A-23B, and Checklist No. E.7.E.

Observations

24. Thirty two values for the pesticide SEDD data file element **/Header/SamplePlusMethod/Analysis/Analyte/PercentRecovery** are incorrectly reported for the Pesticide surrogates Tetrachloro-m-Xylene (TCX) and Decachlorobiphenyl (DCB) for the RTX-CLP2 and RTX-CLP GC columns of instrument A-6890 for the analysis of soil samples JBPJ3DL, JBPK0DL, JBPK3DL, JBPK6DL, JBPK9DL, JBPL5DL, JBPL6DL, and JBPL7DL. Analysis of the SEDD data file element shows that the laboratory entered a carriage return followed by eight spaces. When no value is to be associated with the "**PercentRecovery**" data element, the data element should be left null.

    Reference: SEDD SPECIFICATION Draft Version 5.1, Section 2.1.2, Data Element Values.

DEFECT ORIGINATION SUMMARY

The following table indicates whether the audit comment originated from the hardcopy or electronic audit and whether the electronic audit confirmed the findings of the hardcopy audit.

Comment	Hardcopy Audit	Electronic Audit	Confirmed by Electronic Audit	Comment	Hardcopy Audit	Electronic Audit	Confirmed by Electronic Audit
1		X		13	X		
2	X			14	X		
3	X			15	X		
4	X			16	X		X
5	X		X	17	X		
6	X		X	18	X		
7	X		X	19		X	
8	X		X	20		X	
9	X		X	21		X	
10	X		X	22		X	
11	X		X	23		X	
12	X			24		X	

ENCLOSURES

SDG NARRATIVE

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

SAMPLE RECEIPT:

On 08/27/09 @ 10:00 A.M. - Received one cooler via FedEx with shipment number 796895110847. The cooler temperature was 3.0^{0}C.
On 09/02/09 @ 09:55 A.M. - Received one cooler via FedEx with shipment number 832617001727. The cooler temperature was 3.0^{0}C.

The package contained the following samples for SVOA, SVSIM, PESTICIDES and AROCLORS analyses. The custody seals and the samples were intact.

EPA SAMPLE ID	pH	EPA SAMPLE ID	pH
JBPJ3	NA	JBPL6	NA
JBPJ6	NA	JBPL7	NA
JBPJ9	NA	JBPM0	NA
JBPK0	NA	JBPJ6MS	NA
JBPK3	NA	JBPJ6MSD	NA
JBPK6	NA	JBPJ6DL	NA
JBPK8	NA	JBPK3DL	NA
JBPK9	NA	JBPM0DL	NA
JBPL1	NA	JBPJ3DL	NA
JBPL5	NA	JBPK0DL	NA
JBPK9DL	NA	JBPK3DL	NA
JBPL1DL	NA	JBPK6DL	NA
JBPL5DL	NA	JBPL6DL	NA
JBPL7DL	NA	JBPK9MSD	NA
JBPK9MS	NA	JBPK3MS	NA
JBPK3MSD	NA		

No problems were encountered during sample receiving and login.

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

SEMIVOLATILES SOIL/ SVSIM:

The soil samples were extracted on 09/05/09 using 60 grams sample to achieve low CRQL's for MA by sonication method as per statement of work SOM 1.2. The samples were cleaned by the GPC. No problems were encountered during the extraction and analysis.

The samples were analyzed on instrument F-5973 GC/MS using a 30 meters long RTX-5MS column having a 0.25mm ID and 0.25µm film thickness.

The samples were analyzed as per the modification 1788.0

The SVSIM samples JBPJ6, JBPL1 and JBPM0 had target compound concentrations above the calibration range and were analyzed using the dilutions. Both the analyses were reported and are billable.

The samples SVSIM samples JBPJ6 and JBPK3 were failed in the internal standards and were reanalyzed. Upon reanalysis again failed due to sample matrix. Both the analyses were reported and are billable.

No problems were encountered during the sample analyses.

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Soil, Sediment sample ug/kg} = \frac{(Ax)(Is)(Vt)(DF)(GPC)}{(Ais)(RRF)(Vi)(Ws)(D)}$$

Where,

Ax, Is, Vin, Vout are given for water, above.
Vt = Volume of concentrated extract in uL.
Vi = Volume of extract injected.
GPC = GPC cleaning Factor.

$$D = \frac{100 - \%moisture}{100}$$

Ws = Weight of sample extract.
RRF = Mean relative Response Factor determined from the initial calibration standard.
DF = Dilution Factor.

PESTICIDES:

The Soil samples were extracted on 09/05/09 using both by low (60 Grams) and medium level(5 Grams) by sonication method as per statement of work SOM1.2. The soil sample was cleaned by GPC. After GPC clean up the extract was concentrated to a final volume of 5mL.

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

Very high concentration of DDT isomers were dectected in all samples.All these samples were analysed by using 5 grams extract. The additional compounds are also spiked to LCS/LCSD and MS/MSD samples.No problems were encountered during extraction and sample analyses.

*1) RTX - CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)*
*2) RTX - CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)*

A 1uL injection was used.

The sample JBPJ3, JBPJ6, JBPK0, JBPK3, JBPK6, JBPK9, JBPL1, JBPL5, JBPL6 and JBPL7 were failed in the internal standards and were reanalyzed. Upon reanalysis again failed due to sample matrix. Both the analyses were reported and are billable.

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)(GPC)}{(CF)(Vt)(Ws)(D)}$$

Where,

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 5,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.
GPC = GPC Factor
DF = Dilution Factor

$$D = \frac{100 - \%\text{moisture}}{100}$$

AROCLORS:

The soil samples were extracted on 09/02/09 using 100 grams Wt. of sample by sonication method as per statement of work SOM1.2 and concentrated to final volume of 1.0mL to meet low CRQL's for this MA. No problems were encountered during extraction.

All samples were analyzed on a P-6890 GC using two columns manufactured by Restek . No Aroclors were detected in these samples.
RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)
RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

A 1uL injection was used.

The formula used to calculate the Sample concentration:

SOIL SAMPLE:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)}{(CF)(Vt)(Ws)(D)}$$

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 10,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.

$$D = \frac{100 - \%\text{moisture}}{100}$$

DF = Dilution Factor.

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 above. Release of the data contained in this hard copy sample data package and in the electronic data deliverable has been authorized by the laboratory manager or the manager's designee, as verified by the following signature:

Signature/Title

9/24/05
Date of Signature

Request for Quote (RFQ) for Modified Analysis

Date: August 24, 2009

Subject: Modification Reference Number: 1790.0
Title: Lower CRQLs and Nine Additional Pesticide Compounds
Sample Matrix: Sediment
Fraction Affected: PEST
Statement of Work: SOM01.2

Purpose:

The Contractor Laboratory is requested to perform the following modified analyses under the Organic Statement of Work (SOW) SOM01.2, based on the additional specifications listed below. Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in SOW SOM01.2 remain unchanged and in full force and effect. The number of samples requested in this modification is about 40 samples but not guaranteed.

Please note that accepting a modified analysis request is voluntary, and that the Laboratory is not required to accept the modified analysis. There will be no adverse effect to the Laboratory for not accepting the modified analysis request. However, once the Laboratory accepts the request for modified analysis, it shall perform the analysis in accordance with this modification and as specified in SOW SOM01.2.

The Laboratory is requested to review the modification described herein, determine whether or not it shall accept the requested modified analyses, and complete the attached response form. The Laboratory shall provide comments in response to the required changes in the designated area, in order to ensure that the modified analysis can be completed in accordance with the specifications described herein.

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	
Dieldrin	60-57-1	**0.001**	µg/kg	**≤ 0.5**	**<0.001**
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
Endrin	**72-20-8**	**0.084**	**µg/kg**	**≤ 0.5**	**<0.084**
Endrin aldehyde	7421-93-4	CLP CRQL	µg/kg	3.3	
Endrin ketone	53494-70-5	CLP CRQL	µg/kg	3.3	
Gamma-BHC (Lindane)	58-89-9	**0.005**	µg/kg	**≤ 0.5**	**<0.005**
gamma-Chlordane	**5103-74-2**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
Heptachlor	**76-44-8**	**0.0014**	**µg/kg**	**≤ 0.5**	**<0.0014**
Heptachlor epoxide	**1024-57-3**	**0.0007**	**µg/kg**	**≤ 0.5**	**<0.0007**
Methoxychlor	**72-43-5**	**1.4**	**µg/kg**	**1**	
Toxaphene	8001-35-2	**0.0059**	µg/kg	**10**	**<0.0059**
Additional Target Compounds					
2,4'-DDD	53-19-0	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDE	3424-82-6	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDT	789-02-6	0.04	µg/kg	≤ 0.5	**<0.05**
Oxychlordane	27304-13-8	0.05	µg/kg	≤ 0.5	**<0.05**
cis-Nonachlor	5103-73-1	0.05	µg/kg	≤ 0.5	**<0.05**
Trans-Nonachlor	39765-80-5	0.05	µg/kg	≤ 0.5	**<0.05**
Hexachlorobenzene	118-74-1	2.3	µg/kg	≤ 0.5	
Hexachlorobutadiene	87-68-3	0.6	µg/kg	≤ 0.5	
Octachlorostyrene	29082-74-4	1.0	µg/kg	1	

Technical Instructions:

Some of the samples may have high levels of DDTs. For this reason, it is required that samples be analyzed using two scenarios, that is, some samples may require two separate extractions followed by analyses.

Scenario 1: The Laboratory shall analyze ***all the samples*** following the SOW with the following modifications:

Use 5 grams of sample; sonicate using micro-tip or a sonic water bath with a final volume of 10 mls of primary extract. Inject 10 mls of extract through GPC with a final volume of 5 ml. Use the same amount of surrogates and spike compounds and follow the clean-up (sulfur and florisil as specified in the SOW. Extract volume after florisil clean-up shall be 1.0 ml. Analyze this aliquot following the SOW. If DDT isomer(s) or other organochlorine pesticides are detected, the lower level analysis is not necessary. If any target PEST compound was detected at

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

<u>Scenario 2: Lower level analyses:</u>

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

All samples analyzed for the same fraction within an SDG must be analyzed under the same fractional requirements. The Laboratory shall not include data for the same fraction with different requirements in the same SDG.

The Laboratory shall include the Modification Reference Number 1790.0 on each hardcopy data form under the "Mod. Ref. No." header appearing on each form as well as the data element "ServicesID" under the "SamplePlusMethod" node of the EDD. This should be done for the fractions affected by the modified analysis only. The "ServicesID" field should remain blank for all other fractions reported in the SDG. The Laboratory shall also document the Modification Reference Number and the Solicitation Number on the SDG Coversheet.

Clarifications/Revisions to the RFQ for Modified Analysis:

Laboratory Name:
Laboratory Comments:

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE Mod.1788.0, 1789.0, 1790.0

SEMIVOLATILES SOIL/ SVSIM:

The soil samples were extracted on 09/05/09 using 60 grams sample to achieve low CRQL's for MA by sonication method as per statement of work SOM 1.2. The samples were cleaned by the GPC. No problems were encountered during the extraction and analysis.

The samples were analyzed on instrument F-5973 GC/MS using a 30 meters long RTX-5MS column having a 0.25mm ID and 0.25µm film thickness.

The samples were analyzed as per the modification 1788.0

The SVSIM samples JBPJ6, JBPL1 and JBPM0 had target compound concentrations above the calibration range and were analyzed using the dilutions. Both the analyses were reported and are billable.

The samples SVSIM samples JBPJ6 and JBPK3 were failed in the internal standards and were reanalyzed. Upon reanalysis again failed due to sample matrix. Both the analyses were reported and are billable.

No problems were encountered during the sample analyses.

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Soil, Sediment sample ug/kg} = \frac{(Ax)(Is)(Vt)(DF)(GPC)}{(Ais)(RRF)(Vi)(Ws)(D)}$$

Where,

Ax, Is, Vin, Vout are given for water, above.
Vt = Volume of concentrated extract in uL.
Vi = Volume of extract injected.
GPC = GPC cleaning Factor.

$$D = \frac{100 - \%\text{moisture}}{100}$$

Ws = Weight of sample extract.
RRF = Mean relative Response Factor determined from the initial calibration standard.
DF = Dilution Factor.

PESTICIDES:

The Soil samples were extracted on 09/05/09 using both by low (60 Grams) and medium level(5 Grams) by sonication method as per statement of work SOM1.2. The soil sample was cleaned by GPC. After GPC clean up the extract was concentrated to a final volume of 5mL.

ENCLOSURE 2A

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBPJ3

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

Very high concentration of DDT isomers were dectected in all samples.All these samples were analysed by using 5 grams extract. The additional compounds are also spiked to LCS/LCSD and MS/MSD samples.No problems were encountered during extraction and sample analyses.

*1) RTX CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)*
*2) RTX - CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)*

A 1uL injection was used.

The sample JBPJ3, JBPJ6, JBPK0, JBPK3, JBPK6, JBPK9, JBPL1, JBPL5, JBPL6 and JBPL7 were failed in the internal standards and were reanalyzed. Upon reanalysis again failed due to sample matrix. Both the analyses were reported and are billable.

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)(GPC)}{(CF)(Vt)(Ws)(D)}$$

Where,

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 5,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.
GPC = GPC Factor
DF = Dilution Factor

$$D = \frac{100 - \%\text{moisture}}{100}$$

AROCLORS:

The soil samples were extracted on 09/02/09 using 100 grams Wt. of sample by sonication method as per statement of work SOM1.2 and concentrated to final volume of 1.0mL to meet low CRQL's for this MA. No problems were encountered during extraction.

All samples were analyzed on a P-6890 GC using two columns manufactured by Restek . No Aroclors were detected in these samples.
RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)
RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)

ENCLOSURE 2B

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

ENCLOSURE 2c

4001-05112010-5

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10.35

Extr. Complete Date/Time: 9.5.09 16.30

FRACTION

PEST ✓ PCB —

GPC Date/Time: 9.4.09 15.35

EXTRACTION PROCEDURE

SEP. FUNNEL — SONIC ✓ OTHER —

CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK24	PBLK24	8.27.09	Soil	–	–	5.0	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
PLCS24	PLCS24			–	–	5.0									1000		
PLCS24DUP	PLCS24DUP			–	–	5.0									1000		
PLCS24(S.P)	PLCS24(S.P)			–	–	5.0									1000		
PLCS24(S.P)DUP	PLCS24(SP)DUP			–	–	5.0									1000		
S-2603.01	JBPJ3			6.8	40	5.1									NA		
02	JBPJ6			7.3	30	5.3											
03	JBPJ9			7.1	41	4.9											
04	JBPK0			6.9	40	5.1											
05	JBPK3			6.6	41	5.1											
06	JBPK6			6.3	41	5.2											
07	JBPK8			6.1	46	5.3											
08	JBPK9			6.6	39	5.1											

Methy. Chloride Lot No.: 904038

Hexane Lot No.: 904009

Acetone Lot No.: 906072

Freon Lot No.: —

NOTES —

Surrogate Sol. ID: 146.99.01

LCS/Matrix Spike Sol. ID: 146-44-05, 146-143-01, 146-44-07

Florisil Lot ID: E45632

H_2SO_4 Lot No.: —

Initials of Extraction Leader [signature] Assistants

Initials of Sample Cleanup Leader — Assistants

Initials of Surrogate Spiker [signature] Verifier

Initials of Matrix Spike Spiker [signature] Verifier

RECEIVED FOR ANALYSIS BY: [signature] DATE: 09/05/09 TIME: 16.55 COMMENTS:

ENCLOSURE 3A

KAP Technologies, Inc
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10:35
Extr. Complete Date/Time: 9.5.09 16:30

FRACTION
PEST ✓ PCB —
GPC Date/Time: 9.4.09 15:35

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC ✓ OTHER —
CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	~~Client~~ Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
S-2603.9	JBPN1	8.27.09	SOIL	7.0	23	5.1	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
S-2617.01	JBPL5	9.2.09		6.9	39	5.3											
02	JBPL6			7.1	27	5.1											
03	JBPL7			7.2	27	5.1											
04	JBPM0			6.8	27	5.3											
S-2603.08MS	JBPK9MS	8.27.09		6.6	39	5.1									1000		
.08MSD	JBPK9MSD			6.6	39	4.9									1000		

Methy. Chloride Lot No.: 904038
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.:

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146-44-05; 146-143-01 146-44-07
Florisil Lot ID: E45632
H_2SO_4 Lot No.: —

Initials of Extraction Leader KH Assistants
Initials of Sample Cleanup Leader ______ Assistants
Initials of Surrogate Spiker ______ Verifier
Initials of Matrix Spike Spiker ______ Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: [signature] DATE: 09/05/09 TIME: 16:55 COMMENTS:

ENCLOSURE 3B

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	
Dieldrin	60-57-1	**0.001**	µg/kg	**≤ 0.5**	**<0.001**
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	

ENCLOSURE 4A

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
Endrin	**72-20-8**	**0.084**	**µg/kg**	**≤ 0.5**	**<0.084**
Endrin aldehyde	7421-93-4	CLP CRQL	µg/kg	3.3	
Endrin ketone	53494-70-5	CLP CRQL	µg/kg	3.3	
Gamma-BHC (Lindane)	58-89-9	**0.005**	µg/kg	**≤ 0.5**	**<0.005**
gamma-Chlordane	**5103-74-2**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
Heptachlor	**76-44-8**	**0.0014**	**µg/kg**	**≤ 0.5**	**<0.0014**
Heptachlor epoxide	**1024-57-3**	**0.0007**	**µg/kg**	**≤ 0.5**	**<0.0007**
Methoxychlor	**72-43-5**	**1.4**	**µg/kg**	**1**	
Toxaphene	8001-35-2	**0.0059**	µg/kg	**10**	**<0.0059**
		Additional Target Compounds			
2,4'-DDD	53-19-0	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDE	3424-82-6	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDT	789-02-6	0.04	µg/kg	≤ 0.5	**<0.05**
Oxychlordane	27304-13-8	0.05	µg/kg	≤ 0.5	**<0.05**
cis-Nonachlor	5103-73-1	0.05	µg/kg	≤ 0.5	**<0.05**
Trans-Nonachlor	39765-80-5	0.05	µg/kg	≤ 0.5	**<0.05**
Hexachlorobenzene	118-74-1	2.3	µg/kg	≤ 0.5	
Hexachlorobutadiene	87-68-3	0.6	µg/kg	≤ 0.5	
Octachlorostyrene	29082-74-4	1.0	µg/kg	1	

Technical Instructions:

Some of the samples may have high levels of DDTs. For this reason, it is required that samples be analyzed using two scenarios, that is, some samples may require two separate extractions followed by analyses.

Scenario 1: The Laboratory shall analyze ***all the samples*** following the SOW with the following modifications:

Use 5 grams of sample; sonicate using micro-tip or a sonic water bath with a final volume of 10 mls of primary extract. Inject 10 mls of extract through GPC with a final volume of 5 ml. Use the same amount of surrogates and spike compounds and follow the clean-up (sulfur and florisil as specified in the SOW. Extract volume after florisil clean-up shall be 1.0 ml. Analyze this aliquot following the SOW. If DDT isomer(s) or other organochlorine pesticides are detected, the lower level analysis is not necessary. If any target PEST compound was detected at

ENCLOSURE 4B

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs	
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**	0.85
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**	0.91
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**	1.0
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.8
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**	1.1
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.1
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.3
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	1.1	
Dieldrin	60-57-1	0.001	µg/kg	≤ 0.5	<0.001	1.9
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	0.99	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	2.2	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	2.9	

ENCLOSURE 4C

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs	
Endrin	**72-20-8**	**0.084**	**µg/kg**	**≤ 0.5**	**<0.084**	2.47
Endrin aldehyde	7421-93-4	CLP CRQL	µg/kg	3.3	3.31	
Endrin ketone	53494-70-5	CLP CRQL	µg/kg	3.3	3.66	
Gamma-BHC (Lindane)	58-89-9	**0.005**	µg/kg	**≤ 0.5**	**<0.005**	0.89
gamma-Chlordane	**5103-74-2**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**	0.97
Heptachlor	**76-44-8**	**0.0014**	**µg/kg**	**≤ 0.5**	**<0.0014**	0.85
Heptachlor epoxide	**1024-57-3**	**0.0007**	**µg/kg**	**≤ 0.5**	**<0.0007**	0.98
Methoxychlor	**72-43-5**	**1.4**	**µg/kg**	**1**	13.7	
Toxaphene	8001-35-2	**0.0059**	µg/kg	**10**	**<0.0059**	
Additional Target Compounds						
2,4'-DDD	53-19-0	0.04	µg/kg	≤ 0.5	**<0.04**	2.77
2,4'-DDE	3424-82-6	0.04	µg/kg	≤ 0.5	**<0.04**	~~3.4~~ 2.12
2,4'-DDT	789-02-6	0.04	µg/kg	≤ 0.5	**<0.05**	2.3
Oxychlordane	27304-13-8	0.05	µg/kg	≤ 0.5	**<0.05**	NA
cis-Nonachlor	5103-73-1	0.05	µg/kg	≤ 0.5	**<0.05**	NA
Trans-Nonachlor	39765-80-5	0.05	µg/kg	≤ 0.5	**<0.05**	NA
Hexachlorobenzene	118-74-1	2.3	µg/kg	≤ 0.5	NA	
Hexachlorobutadiene	87-68-3	0.6	µg/kg	≤ 0.5	NA	
Octachlorostyrene	29082-74-4	1.0	µg/kg	1	NA	

Technical Instructions:

Some of the samples may have high levels of DDTs. For this reason, it is required that samples be analyzed using two scenarios, that is, some samples may require two separate extractions followed by analyses.

Scenario 1: The Laboratory shall analyze ***all the samples*** following the SOW with the following modifications:

Use 5 grams of sample; sonicate using micro-tip or a sonic water bath with a final volume of 10 mls of primary extract. Inject 10 mls of extract through GPC with a final volume of 5 ml. Use the same amount of surrogates and spike compounds and follow the clean-up (sulfur and florisil as specified in the SOW. Extract volume after florisil clean-up shall be 1.0 ml. Analyze this aliquot following the SOW. If DDT isomer(s) or other organochlorine pesticides are detected, the lower level analysis is not necessary. If any target PEST compound was detected at

ENCLOSURE 4D

SOM01.2 Pesticides MDL Study Report

Fraction: PEST SOIL | **Lab Code:** KAP | **Instrument:** A-6890

Unit: µg/Kg

Compound	CRQL	Column 1				Column 2				Overall Pass/Fail	Anal. Date
		MDL	Spike Level	Factor	Pass/Fail	MDL	Spike Level	Factor	Pass/Fail		
ALPHA-BHC	1.7	1.4	3.3	2.31	Pass	1.5	3.3	2.30	Pass	PASS	02/06/2008
BETA-BHC	1.7	1.4	3.3	2.43	Pass	0.94	3.3	3.54	Pass	PASS	02/06/2008
DELTA-BHC	1.7	1.6	3.3	2.11	Pass	1.1	3.3	3.17	Pass	PASS	02/06/2008
GAMMA-BHC (LINDANE)	1.7	1.4	3.3	2.33	Pass	1.0	3.3	3.20	Pass	PASS	02/06/2008
HEPTACHLOR	1.7	0.74	3.3	4.50	Pass	0.51	3.3	6.53	Pass	PASS	05/07/2007
HEPTACHLOR	1.7	Peak incorrectly identified								FAIL	02/06/2008
ALDRIN	1.7	0.73	3.3	4.56	Pass	0.62	3.3	5.37	Pass	PASS	05/07/2007
ALDRIN	1.7	Peak incorrectly identified								FAIL	02/06/2008
HEPTACHLOR EPOXIDE	1.7	1.4	3.3	2.31	Pass	1.0	3.3	3.30	Pass	PASS	02/06/2008
ENDOSULFAN I	1.7	1.3	3.3	2.62	Pass	1.0	3.3	3.23	Pass	PASS	02/06/2008
DIELDRIN	3.3	2.6	6.7	2.57	Pass	2.1	6.7	3.14	Pass	PASS	02/06/2008
4,4-DDE	3.3	2.8	6.7	2.35	Pass	1.0	6.7	6.47	Pass	PASS	02/06/2008
ENDRIN	3.3	3.0	6.7	2.22	Pass	2.2	6.7	3.00	Pass	PASS	02/06/2008
ENDOSULFAN II	3.3	2.5	6.7	2.67	Pass	2.1	6.7	3.13	Pass	PASS	02/06/2008
4,4-DDD	3.3	2.9	6.7	2.29	Pass	2.0	6.7	3.26	Pass	PASS	02/06/2008
ENDOSULFAN SULFATE	3.3	2.7	6.7	2.44	Pass	1.9	6.7	3.43	Pass	PASS	02/06/2008
4,4-DDT	3.3	3.0	6.7	2.23	Pass	2.3	6.7	2.87	Pass	PASS	02/06/2008
METHOXYCHLOR	17	15	33	2.22	Pass	12	33	2.80	Pass	PASS	02/06/2008
ENDRIN KETONE	3.3	2.7	6.7	2.50	Pass	2.0	6.7	3.42	Pass	PASS	02/06/2008
ENDRIN ALDEHYDE	3.3	2.7	6.7	2.50	Pass	2.0	6.7	3.35	Pass	PASS	02/06/2008
ALPHA-CHLORDANE	1.7	1.3	3.3	2.56	Pass	0.98	3.3	3.40	Pass	PASS	02/06/2008
GAMMA-CHLORDANE	1.7	1.3	3.3	2.60	Pass	1.0	3.3	3.20	Pass	PASS	02/06/2008
TOXAPHENE	170	70	340	4.86	Pass	41	340	8.22	Pass	PASS	02/06/2008

ENCLOSURE 4E

6J - FORM VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 09/21/2009 09/22/2009

	RT OF STANDARDS					$\overline{RT}$	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC	12.00	12.00	12.00	12.00	12.00	12.00	11.95	12.05
beta-BHC	13.18	13.18	13.18	13.17	13.18	13.18	13.13	13.23
delta-BHC	13.92	13.92	13.92	13.92	13.92	13.92	13.87	13.97
gamma-BHC (Lindane)	12.96	12.95	12.96	12.95	12.95	12.95	12.90	13.00
Heptachlor	14.10	14.10	14.10	14.10	14.10	14.10	14.05	14.15
Aldrin	14.90	14.90	14.90	14.90	14.90	14.90	14.85	14.95
Heptachlor epoxide	16.25	16.25	16.25	16.25	16.25	16.25	16.18	16.32
Endosulfan I	17.16	17.16	17.16	17.16	17.16	17.16	17.09	17.23
Dieldrin	17.78	17.78	17.78	17.78	17.78	17.78	17.71	17.85
4,4'-DDE	17.38	17.38	17.39	17.38	17.38	17.38	17.31	17.45
Endrin	18.46	18.46	18.46	18.46	18.46	18.46	18.39	18.53
Endosulfan II	18.92	18.92	18.92	18.92	18.92	18.92	18.85	18.99
4,4'-DDD	18.66	18.66	18.66	18.66	18.66	18.66	18.59	18.73
Endosulfan sulfate	20.26	20.26	20.26	20.26	20.26	20.26	20.19	20.33
4,4'-DDT	19.35	19.35	19.36	19.35	19.35	19.35	19.28	19.42
Methoxychlor	20.80	20.80	20.80	20.80	20.80	20.80	20.73	20.87
Endrin ketone	21.47	21.46	21.47	21.46	21.46	21.46	21.39	21.53
Endrin aldehyde	19.65	19.65	19.65	19.65	19.65	19.65	19.58	19.72
alpha-Chlordane	17.16	17.16	17.16	17.16	17.16	17.16	17.09	17.23
gamma-Chlordane	16.69	16.69	16.69	16.69	16.69	16.69	16.62	16.76
TCX (A)	10.23	10.23	10.23	10.23	10.23	10.23	10.18	10.28
DCB (A)	24.78	24.78	24.78	24.78	24.78	24.78	24.68	24.88
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

SOM01.1 (5/2005)

ENCLOSURE 5A

6K - FORM VI PEST-2

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 09/21/2009 09/22/2009

COMPOUND	CALIBRATION FACTORS (CFs)					%
	CS1	CS2	CS3	CS4	CS5	RSD
alpha-BHC	35038968600	40187327900	39913400400	49298683150	51677445575	16.18
beta-BHC	17263087200	18079845400	16699575900	18311740325	18354179088	4.11
delta-BHC	27620334200	31081193500	30067215950	38579817950	40415460350	16.72
gamma-BHC (Lindane)	34917109600	38703022800	37549987700	45685412450	47437980363	13.26
Heptachlor	34218662600	37719382500	36217442400	43022771850	44765570338	11.52
Aldrin	29277786400	32401915500	31937541200	38206403150	39438232163	12.73
Heptachlor epoxide	28664125200	30669737000	29013707400	33995240200	34760651413	8.97
Endosulfan I	28517157000	29927155100	28395045800	32659784325	33228932463	7.46
Dieldrin	27490155500	29589660350	28542312850	33819358850	35054997050	10.82
4,4'-DDE	24626451900	26980011350	26066975150	31480174088	32672363763	12.39
Endrin	18930773500	21539734450	20809344675	25721679525	26934320225	14.91
Endosulfan II	27048093100	28328525350	27184556225	30900808850	31272485894	6.98
4,4'-DDD	20192151800	21811476300	21086095075	25077927713	25942794363	11.12
Endosulfan sulfate	22115954800	23367968850	23185819175	26644783275	27006152100	9.04
4,4'-DDT	13392352800	15310937300	15059314150	20312149063	21215471963	20.38
Methoxychlor	6940383100	7973277220	7806907535	10168776538	10504401084	18.07
Endrin ketone	28355002200	32564954250	30614387400	33997711613	33952252519	7.56
Endrin aldehyde	29314469100	24402632000	22748240775	24426536450	23960188069	10.10
alpha-Chlordane	28517157000	29927155100	28395045800	32659784325	33228932463	7.46
gamma-Chlordane	28569581200	30180042000	28471156100	33386308825	34351151088	8.82
Tetrachloro-m-xylene	25335872200	27656208100	26097710050	30272401600	30374840500	8.32
Decachlorobiphenyl	23699307500	24371510600	22555489325	24285223338	23427949775	3.11

(A) Surrogate CFs and %RSD are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate CFs and %RSD are measured from Standard Mixture B if two mixtures are used. Leave entries if Standard Mixture C is used.

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 5B

6R - FORM VI PEST-5
PESTICIDE RESOLUTION CHECK SUMMARY
COLUMN 1

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (RESC##): RESC11 Lab Sample ID (1): RESC11

Date Analyzed (1): 09/21/2009 Time Analyzed (1): 1810

	ANALYTE	RT	RESOLUTION (%)
01	Tetrachloro-m-xylene	10.23	100.00
02	alpha-BHC	12.00	100.00
03	gamma-BHC (Lindane)	12.96	91.79
04	beta-BHC	13.18	100.00
05	delta-BHC	13.92	83.91
06	Heptachlor	14.10	100.00
07	Aldrin	14.90	100.00
08	Heptachlor epoxide	16.26	100.00
09	gamma-Chlordane	16.70	100.00
10	alpha-Chlordane	17.16	100.00
11	Endosulfan I	17.16	95.96
12	4,4'-DDE	17.39	98.90
13	Dieldrin	17.78	100.00
14	Endrin	18.46	95.89
15	4,4'-DDD	18.66	89.99
16	Endosulfan II	18.92	98.02
17	4,4'-DDT	19.35	100.00
18	Endrin aldehyde	19.65	98.81
19	Endosulfan sulfate	20.26	100.00
20	Methoxychlor	20.80	100.00
21	Endrin ketone	21.47	100.00
22	Decachlorobiphenyl	24.78	

SOM01.1 (05/2005)

ENCLOSURE 5C

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (INDC##): INDC361 Lab Sample ID (1): INDC361

Date Analyzed (1): 09/23/2009 Time Analyzed (1): 1246

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.69	100.00
02	Tetrachloro-m-xylene	10.24	100.00
03	Tetrachloro-m-xylene	10.24	100.00
04	Hexachlorobenzene	11.60	100.00
05	alpha-BHC	12.00	100.00
06	gamma-BHC (Lindane)	12.96	79.71
07	beta-BHC	13.18	100.00
08	delta-BHC	13.93	79.61
09	Heptachlor	14.11	100.00
10	Aldrin	14.91	100.00
11	Octachlorostyrene	15.55	98.87
12	Oxychlordane	16.05	100.00
13	Heptachlor epoxide	16.26	99.17
14	2,4'-DDE	16.68	65.22
15	gamma-Chlordane	16.70	100.00
16	Trans-Nonachlor	16.91	100.00
17	alpha-Chlordane	17.17	100.00
18	Endosulfan I	17.17	88.60
19	4,4'-DDE	17.39	96.46
20	Dieldrin	17.79	100.00
21	2,4'-DDD	17.83	99.12
22	Endrin	18.46	93.77
23	2,4'-DDT	18.51	27.11
24	cis-Nonachlor	18.63	100.00
25	4,4'-DDD	18.66	83.10
26	Endosulfan II	18.92	93.98
27	4,4'-DDT	19.36	96.42
28	Endrin aldehyde	19.66	97.41
29	Endosulfan sulfate	20.27	100.00
30	Methoxychlor	20.81	100.00
31	Endrin ketone	21.47	100.00
32	Decachlorobiphenyl	24.79	
33	Decachlorobiphenyl	24.79	

ENCLOSURE 5 D

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (INDC##): INDC321 Lab Sample ID (1): INDC321

Date Analyzed (1): 09/22/2009 Time Analyzed (1): 1717

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.68	100.00
02	Tetrachloro-m-xylene	10.23	100.00
03	Tetrachloro-m-xylene	10.23	100.00
04	Hexachlorobenzene	11.60	100.00
05	alpha-BHC	12.00	100.00
06	gamma-BHC (Lindane)	12.95	90.42
07	beta-BHC	13.17	100.00
08	delta-BHC	13.92	87.72
09	Heptachlor	14.10	100.00
10	Aldrin	14.90	100.00
11	Octachlorostyrene	15.54	99.38
12	Oxychlordane	16.04	100.00
13	Heptachlor epoxide	16.25	99.84
14	2,4'-DDE	16.67	71.78
15	gamma-Chlordane	16.69	100.00
16	Trans-Nonachlor	16.91	100.00
17	alpha-Chlordane	17.16	100.00
18	Endosulfan I	17.16	94.93
19	4,4'-DDE	17.38	98.68
20	Dieldrin	17.77	100.00
21	2,4'-DDD	17.82	99.55
22	Endrin	18.46	96.35
23	2,4'-DDT	18.51	43.38
24	cis-Nonachlor	18.63	100.00
25	4,4'-DDD	18.66	91.18
26	Endosulfan II	18.92	97.46
27	4,4'-DDT	19.35	98.84
28	Endrin aldehyde	19.65	98.42
29	Endosulfan sulfate	20.26	100.00
30	Methoxychlor	20.80	100.00
31	Endrin ketone	21.46	100.00
32	Decachlorobiphenyl	24.78	
33	Decachlorobiphenyl	24.78	

6Y - FORM VI PEST-10
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (2): RTX-CLP ID: 0.53 (mm) Instrument ID (2) A-6890B

EPA Sample No. (INDC##): INDC362 Lab Sample ID (2): INDC362

Date Analyzed (2): 09/23/2009 Time Analyzed (2): 1323

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.51	100.00
02	Tetrachloro-m-xylene	9.44	100.00
03	Tetrachloro-m-xylene	9.44	100.00
04	Hexachlorobenzene	10.54	100.00
05	alpha-BHC	11.03	100.00
06	gamma-BHC (Lindane)	11.88	97.74
07	beta-BHC	12.12	100.00
08	delta-BHC	12.56	100.00
09	Heptachlor	13.09	100.00
10	Aldrin	13.82	100.00
11	Octachlorostyrene	14.25	100.00
12	Oxychlordane	15.03	97.63
13	2,4'-DDE	15.26	100.00
14	Heptachlor epoxide	15.27	99.79
15	gamma-Chlordane	15.55	99.63
16	Trans-Nonachlor	15.82	100.00
17	alpha-Chlordane	15.86	94.65
18	4,4'-DDE	16.05	69.20
19	Endosulfan I	16.17	100.00
20	2,4'-DDD	16.43	100.00
21	Dieldrin	16.71	100.00
22	2,4'-DDT	16.99	86.62
23	Endrin	17.22	89.33
24	cis-Nonachlor	17.29	100.00
25	4,4'-DDD	17.37	97.45
26	Endosulfan II	17.72	96.68
27	4,4'-DDT	17.98	100.00
28	Endrin aldehyde	18.64	98.32
29	Methoxychlor	19.01	98.72
30	Endosulfan sulfate	19.59	100.00
31	Endrin ketone	20.20	100.00
32	Decachlorobiphenyl	22.40	
33	Decachlorobiphenyl	22.40	

SOM01.1 (05/2005)

ENCLOSURE 5F

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): PIBLK21 Date Analyzed: 09/22/2009

Lab Sample ID(PIBLK): PIBLK21 Time Analyzed: 1526

EPA Sample No.(INDC3##): INDC331 Date Analyzed: 09/22/2009

Lab Sample ID(INDC3): INDC331 Time Analyzed: 1640

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	$\overline{CF}$	CF	%D
alpha-BHC	12	11.95	12.05	43223165125	40165561900	-7.1
gamma-BHC (Lindane)	12.95	12.90	13.00	40858702583	37082097150	-9.2
Heptachlor	14.1	14.05	14.15	39188765938	37723951350	-3.7
Endosulfan I	17.16	17.09	17.23	30545614938	29221524500	-4.3
Dieldrin	17.77	17.71	17.85	30899296920	29114594000	-5.8
Endrin	18.46	18.39	18.53	22787170475	19598046925	-14.0
4,4'-DDD	18.66	18.59	18.73	22822089050	20575505050	-9.8
4,4'-DDT	19.35	19.28	19.42	17058045055	15704974525	-7.9
Methoxychlor	20.8	20.73	20.87	8678749095	8034802290	-7.4
beta-BHC	13.17	13.13	13.23	17741685583	17161305850	-3.3
delta-BHC	13.92	13.87	13.97	33552804390	29076077450	-13.3
Aldrin	14.9	14.85	14.95	34252375683	32237766400	-5.9
Heptachlor epoxide	16.25	16.18	16.32	31420692243	29180889100	-7.1
4,4'-DDE	17.38	17.31	17.45	28365195250	26240089575	-7.5
Endosulfan II	18.92	18.85	18.99	28946893884	28060328925	-3.1
Endosulfan sulfate	20.26	20.19	20.33	24464135640	23561053975	-3.7
Endrin ketone	21.46	21.39	21.53	31896861596	31493751925	-1.3
Endrin aldehyde	19.65	19.58	19.72	24970413279	23290935625	-6.7
alpha-Chlordane	17.16	17.09	17.23	30545614938	29221524500	-4.3
gamma-Chlordane	16.69	16.62	16.76	30991647843	28594073750	-7.7
TCX	10.23	10.18	10.28	27947406490	26428223400	-5.4
DCB	24.78	24.68	24.88	23667896108	22622997425	-4.4

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (05/2005)

ENCLOSURE 5G

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18980.D(Signal #1)           A18980.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/21/09 22:27 (Signal #1); 09/21/09 23:04 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC111 (Sig #1); INDC112 (Sig #2)
Misc      : INDC111 (Sig #1); INDC112 (Sig #2)
ALS Vial  : 8   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:05:35 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:05:27 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D  Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	126.7E6	101.3E6	4.312	4.722
	Spiked Amount 60.000			Recovery	=	7.19%	7.87%
22) S	Decachlorobiphen	24.78	22.40	237.0E6	173.2E6	10.206	9.562
	Spiked Amount 120.000			Recovery	=	8.51%	7.97%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	175.2E6	134.9E6	4.002	4.355
3)	Gamma-BHC (Linda	12.96	11.88	174.6E6	130.4E6	4.219	4.433
4)	Beta-BHC	13.18	12.12	86315436	44793888	4.952	3.844
5)	Delta-BHC	13.92	12.57	138.1E6	95072448	3.902	3.498
6)	Heptachlor	14.10	13.09	171.1E6	137.7E6	4.412	4.648
7)	Aldrin	14.90	13.82	146.4E6	126.1E6	4.221	4.551
8)	Heptachlor Epoxi	16.25	15.27	143.3E6	120.9E6	4.552	4.817
9)	Gamma-Chlordane	16.69	15.55	142.8E6	124.5E6	4.609	4.890
10)	Alpha-Chlordane	17.16	15.86	142.6E6	112.1E6	4.725	4.739
11)	Endosulfan I	17.16	16.17	142.6E6	143.2E6	4.753	5.111
12)	4,4'-DDE	17.38	16.05	246.3E6	174.4E6	8.627	8.336
13)	Dieldrin	17.78	16.71	274.9E6	232.0E6	8.902	9.280
14)	Endrin	18.46	17.22	189.3E6	195.7E6	8.232	9.215
15)	4,4'-DDD	18.66	17.37	201.9E6	169.5E6	8.694	8.865
16)	Endosulfan II	18.92	17.72	270.5E6	193.7E6	9.550	9.321
17)	4,4'-DDT	19.35	17.98	133.9E6	166.8E6	7.763	9.362
18)	Endrin Aldehyde	19.65	18.64	293.1E6	162.7E6	13.091	9.759 #
19)	Endosulfan sulfa	20.26	19.59	221.2E6	169.8E6	9.119	9.218
20)	Methoxychlor	20.80	19.01	347.0E6	428.2E6	39.304	48.210
21)	Endrin Ketone	21.47	20.20	283.6E6	209.9E6	8.949	9.022

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2603 init/date Ovd 09/24/09

ENCLOSURE 5 H

Quantitation Report (Not Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19035.D(Signal #1)          A19035.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/23/09 12:46 (Signal #1); 09/23/09 13:23 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC361 (Sig #1); INDC362 (Sig #2)
Misc      : INDC361 (Sig #1); INDC362 (Sig #2)
ALS Vial  : 14   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:57:59 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:56:20 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.24	9.44	590.0E6	433.9E6	21.111	20.244	
	Spiked Amount 60.000			Recovery	=	35.19%	33.74%	
22) S	Decachlorobiphen	24.79	22.40	1033.6E6	770.5E6	43.673	40.780	
	Spiked Amount 120.000			Recovery	=	36.39%	33.98%	
	Target Compounds							
2)	Alpha-BHC	12.00	11.03	877.6E6	664.6E6	20.304	20.314	
3)	Gamma-BHC (Linda	12.96	11.88	773.5E6	629.9E6	18.932	20.225	
4)	Beta-BHC	13.18	12.12	391.9E6	248.2E6	22.089	21.188	
5)	Delta-BHC	13.93	12.56	526.4E6	563.7E6	15.689	20.250	#
6)	Heptachlor	14.11	13.09	916.3E6	606.4E6	23.382	19.977	
7)	Aldrin	14.91	13.82	718.9E6	565.5E6	20.988	20.025	
8)	Heptachlor Epoxi	16.26	15.27	650.6E6	518.6E6	20.706	20.046	
9)	Gamma-Chlordane	16.70	15.55	630.1E6	520.1E6	20.331	19.794	
10)	Alpha-Chlordane	17.17	15.86	685.4E6	495.9E6	22.438	20.007	
11)	Endosulfan I	17.17	16.17	685.4E6	625.3E6	22.438	20.819	
12)	4,4'-DDE	17.39	16.05	1168.8E6	857.4E6	41.206	39.954	
13)	Dieldrin	17.79	16.71	1339.0E6	1058.4E6	43.334	40.503	
14)	Endrin	18.46	17.22	684.0E6	837.7E6	30.018	37.423	
15)	4,4'-DDD	18.66	17.37	832.3E6	799.4E6	36.469	40.207	
16)	Endosulfan II	18.92	17.72	1334.0E6	906.7E6	46.084	41.118	
17)	4,4'-DDT	19.36	17.98	647.4E6	803.5E6	37.955	41.818	
18)	Endrin Aldehyde	19.66	18.64	1066.4E6	762.7E6	42.705	42.361	
19)	Endosulfan sulfa	20.27	19.59	1035.7E6	838.0E6	42.337	43.302	
20)	Methoxychlor	20.81	19.01	1561.7E6	2031.5E6	179.948	213.536	
21)	Endrin Ketone	21.47	20.20	1513.8E6	1117.2E6	47.459	45.987	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JB8JJ
Episode 5-2603 init/date [signature] 09/24/09

Quantitation Report (Not Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19036.D(Signal #1)           A19036.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/23/09 13:23 (Signal #1); 09/23/09 14:00 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDT361 (Sig #1); INDT361 (Sig #2)
Misc      : INDT361 (Sig #1); INDT361 (Sig #2)
ALS Vial  : 15   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 23 22:15:07 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Wed Sep 23 21:53:18 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.24	9.44	547.4E6	417.1E6	18.284	18.076
	Spiked Amount 60.000			Recovery	=	30.47%	30.13%
11) S	Decachlorobiphen	24.79	22.40	785.7E6	661.5E6	34.624	38.766
	Spiked Amount 120.000			Recovery	=	28.85%	32.31%
	Target Compounds						
2)	Hexachlorobutadi	4.69	4.51	1939.5E6	1499.1E6	37.448	39.536
3)	Hexachlorobenzen	11.60	10.54	1254.4E6	956.4E6	36.653	35.754
4)	Octachlorostyren	15.55	14.25	1587.0E6	1298.0E6	37.314	36.728
5)	Oxychlordane	16.05	15.03	983.8E6	798.6E6	37.685	36.751
6)	2,4'-DDE	16.68	15.26	718.3E6	640.7E6	34.094	35.448
7)	Trans-Nonachlor	16.91	15.82	232.2E6	132.2E6	44.933	36.653
8)	2,4'-DDD	17.83	16.43	676.5E6	508.6E6	36.104	36.853
9)	2,4'-DDT	18.51	16.99	489.4E6	598.2E6	35.142	37.018
10)	cis-Nonachlor	18.63	17.29	151.5E6	102.5E6	44.794	26.534 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2603 Init/date Ouko
08/24/09.

ENCLOSURE 5 J

AUDITOR GENERATED

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18973.D
Report Date: 23-Feb-2010 09:21

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.235	9.443	25914891	21028077	0.093	0.098	Lowest	0.093		N/A(aR)
Decachlorobiphenyl	24.781	22.406	43531934	40882863	0.19	0.21	Lowest	0.19		N/A(aR)
alpha-BHC	12.000	11.035	37341160	29098440	0.087	0.089	Lowest	0.087		N/A
beta-BHC	13.176	12.126	14572157	13849119	0.093	0.11	Lowest	0.093		N/A
delta-BHC	13.921	12.568	28190681	28223422	0.084	0.096	Lowest	0.084		N/A
gamma-BHC (Lindane)	12.958	11.885	35286331	29215497	0.087	0.093	Lowest	0.087		N/A
Heptachlor	14.100	13.094	33519888	29446112	0.087	0.096	Lowest	0.087		N/A
Aldrin	14.901	13.827	30170944	26726433	0.088	0.095	Lowest	0.088		N/A
Heptachlor epoxide	16.255	15.276	28590851	25035004	0.092	0.096	Lowest	0.092		N/A
Endosulfan I	17.160	16.171	28157022	32606825	0.093	0.11	Highest	0.11		N/A(QM)
Dieldrin	17.780	16.712	54902823	49738866	0.18	0.19	Lowest	0.18		N/A
4,4'-DDE	17.384	16.050	49969754	37366603	0.18	0.17	Highest	0.18		N/A
Endrin	18.460	17.228	39593434	42146081	0.17	0.19	Lowest	0.17		N/A
Endosulfan II	18.920	17.721	53812897	43224748	0.19	0.19	Lowest	0.19		N/A
4,4'-DDD	18.660	17.372	40631797	38107389	0.18	0.19	Lowest	0.18		N/A
Endosulfan sulfate	20.265	19.596	43590948	39273601	0.091	0.099	Lowest	0.091		N/A(a)
4,4'-DDT	19.354	17.980	26272410	34627804	0.16	0.18	Lowest	0.16		N/A
Methoxychlor	20.803	19.015	69162960	90831319	0.80	0.94	Highest	0.94		N/A(M)
Endrin ketone	21.467	20.203	55935604	49804821	0.18	0.20	Lowest	0.18		N/A
Endrin aldehyde	19.650	18.645	45249896	36758246	0.19	0.20	Lowest	0.19		N/A
alpha-Chlordane	17.030	15.862	25259433	23689137	0.092	0.094	Lowest	0.092		N/A(M)
gamma-Chlordane	16.695	15.559	28164407	25668634	0.092	0.097	Lowest	0.092		N/A

QC Flag Legend

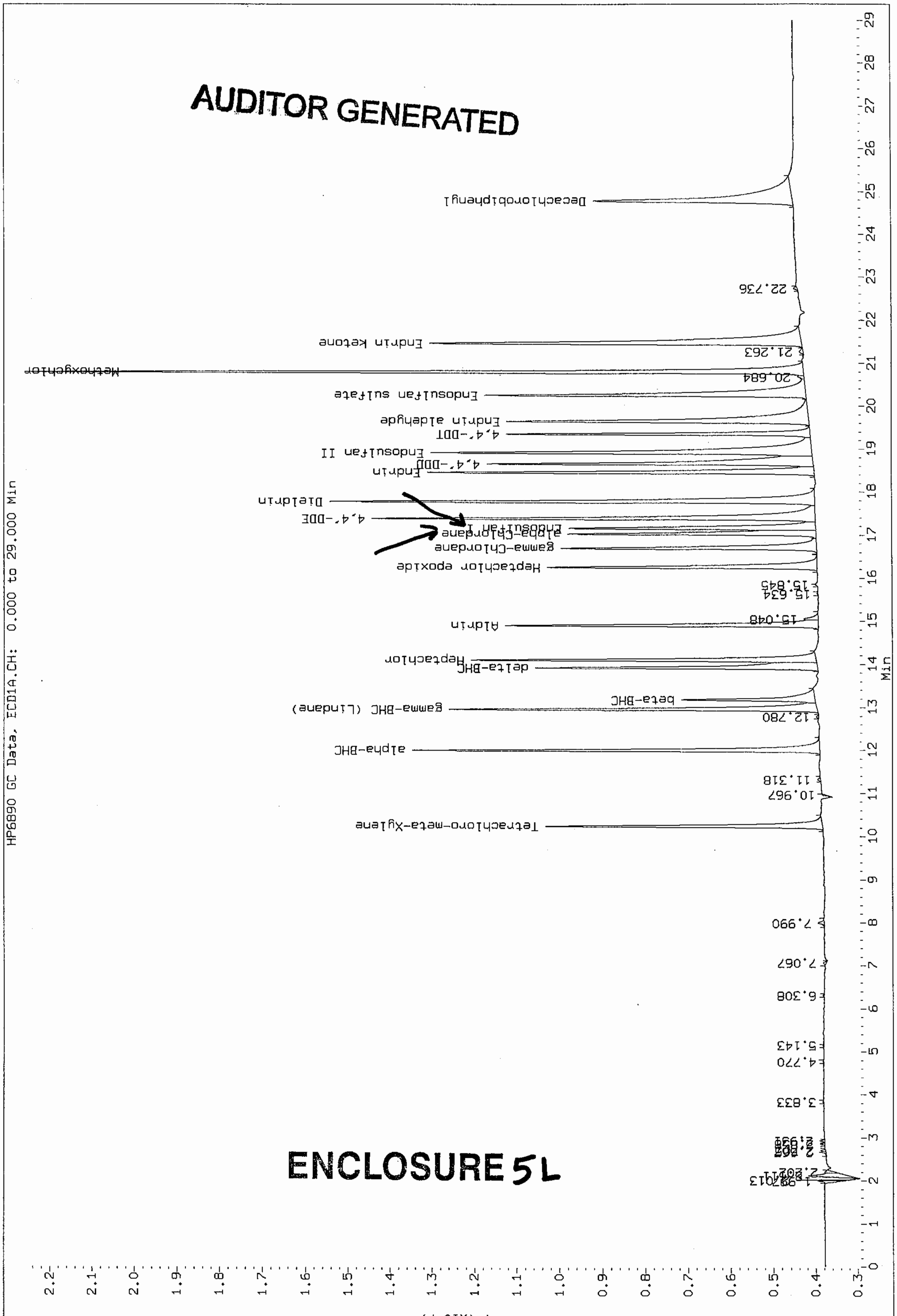
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

ENCLOSURE 5 K

4001-05112010-5

AUDITOR GENERATED

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18973.D
Injection Date: 21-SEP-2009 18:10
Instrument: A6890.i
Client Sample ID: RESC11



ENCLOSURE 5L

6R - FORM VI PEST-5
PESTICIDE RESOLUTION CHECK SUMMARY
COLUMN 1

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (RESC##): RESC11 Lab Sample ID (1): RESC11

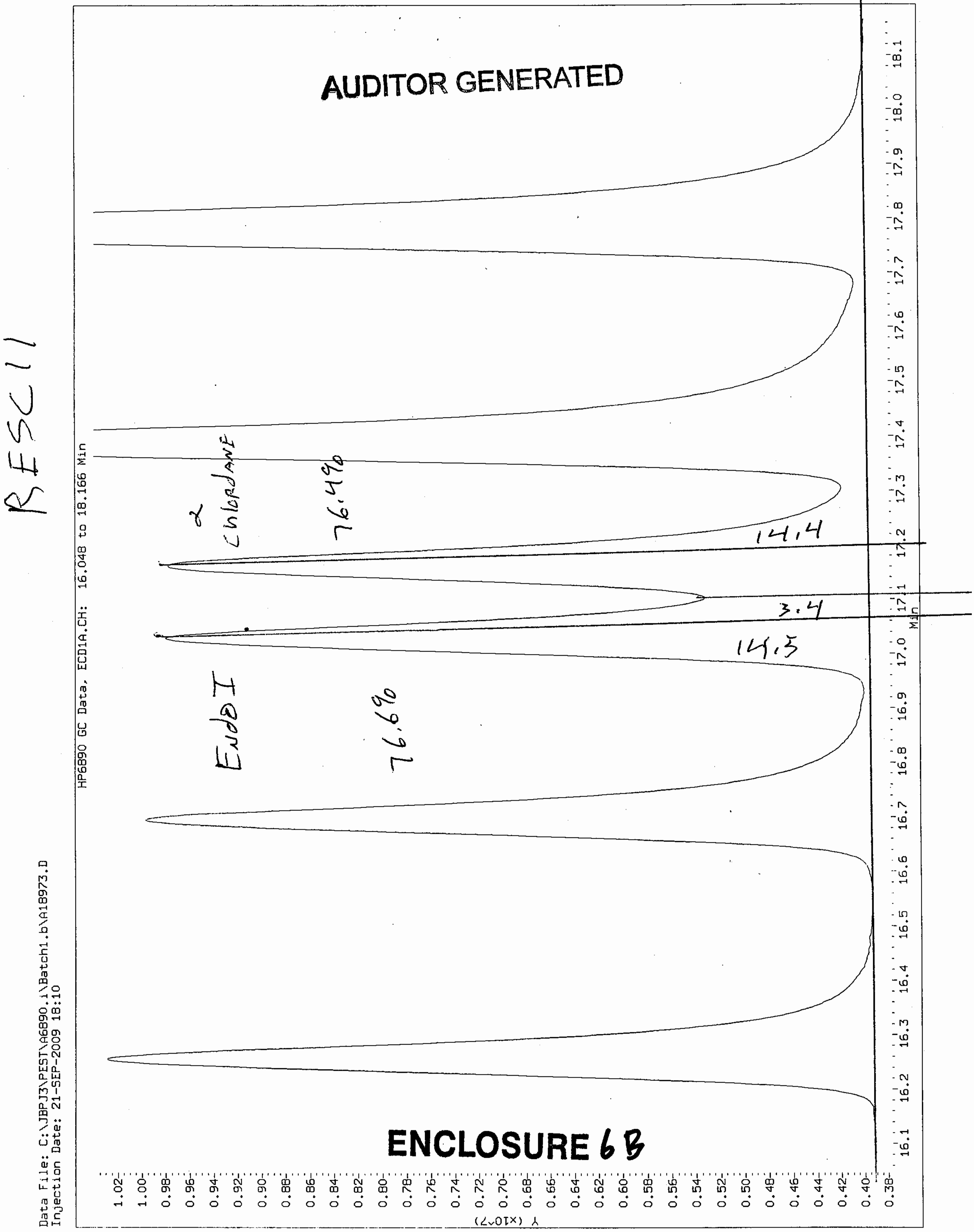
Date Analyzed (1): 09/21/2009 Time Analyzed (1): 1810

	ANALYTE	RT	RESOLUTION (%)
01	Tetrachloro-m-xylene	10.23	100.00
02	alpha-BHC	12.00	100.00
03	gamma-BHC (Lindane)	12.96	91.79
04	beta-BHC	13.18	100.00
05	delta-BHC	13.92	83.91
06	Heptachlor	14.10	100.00
07	Aldrin	14.90	100.00
08	Heptachlor epoxide	16.26	100.00
09	gamma-Chlordane	16.70	100.00
10	alpha-Chlordane	17.16	100.00
11	Endosulfan I	17.16	95.96
12	4,4'-DDE	17.39	98.90
13	Dieldrin	17.78	100.00
14	Endrin	18.46	95.89
15	4,4'-DDD	18.66	89.99
16	Endosulfan II	18.92	98.02
17	4,4'-DDT	19.35	100.00
18	Endrin aldehyde	19.65	98.81
19	Endosulfan sulfate	20.26	100.00
20	Methoxychlor	20.80	100.00
21	Endrin ketone	21.47	100.00
22	Decachlorobiphenyl	24.78	

ENCLOSURE 6A

4001-05112010-5

AUDITOR GENERATED



ENCLOSURE 6B

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (INDC##): INDC311 Lab Sample ID (1): INDC311

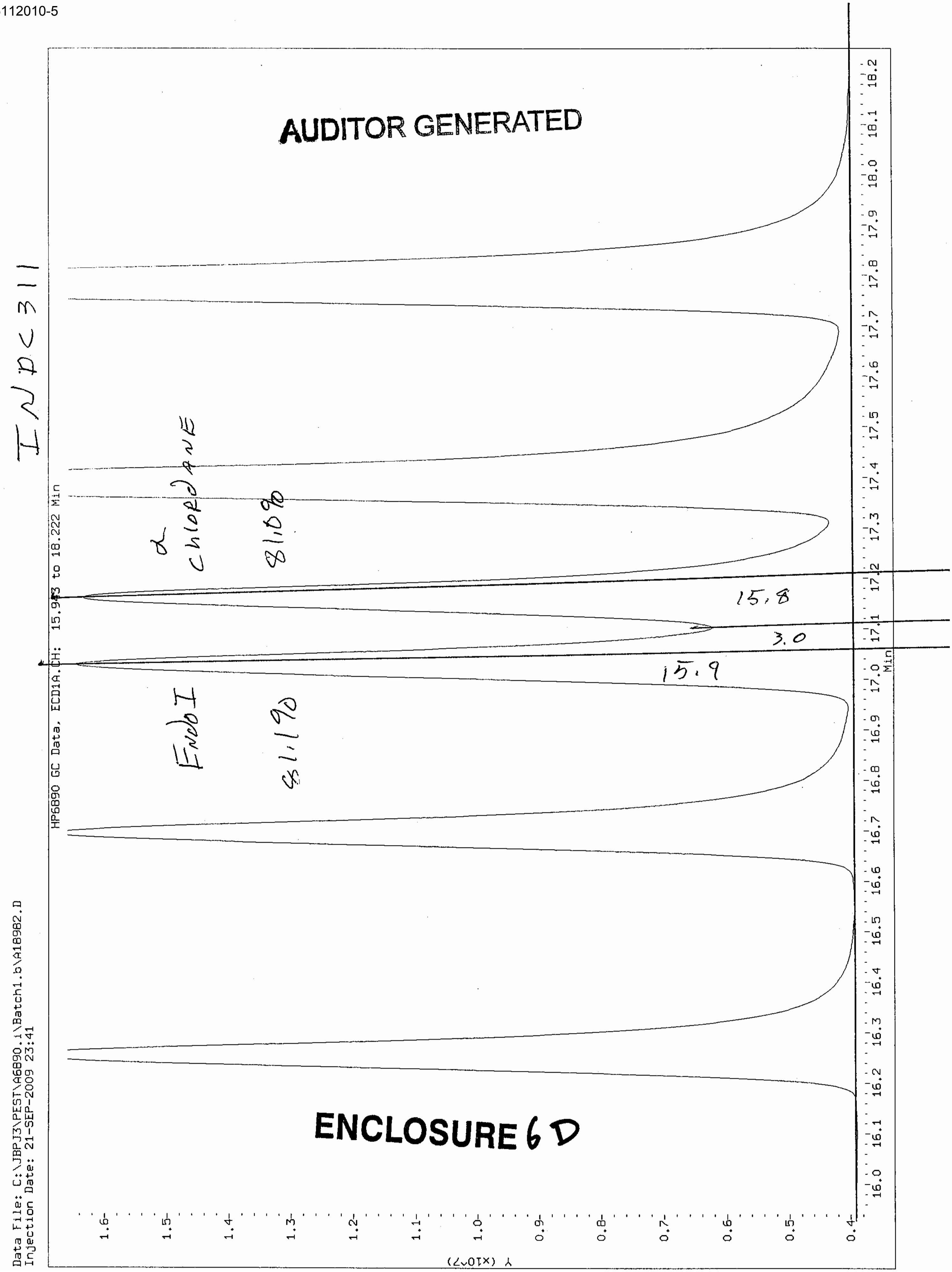
Date Analyzed (1): 09/21/2009 Time Analyzed (1): 2341

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.68	100.00
02	Tetrachloro-m-xylene	10.23	100.00
03	Tetrachloro-m-xylene	10.23	100.00
04	Hexachlorobenzene	11.60	100.00
05	alpha-BHC	12.00	100.00
06	gamma-BHC (Lindane)	12.96	93.27
07	beta-BHC	13.18	100.00
08	delta-BHC	13.92	87.72
09	Heptachlor	14.10	100.00
10	Aldrin	14.90	100.00
11	Octachlorostyrene	15.54	99.75
12	Oxychlordane	16.05	100.00
13	Heptachlor epoxide	16.25	99.97
14	2,4'-DDE	16.68	74.38
15	gamma-Chlordane	16.69	100.00
16	Trans-Nonachlor	16.91	100.00
17	alpha-Chlordane	17.16	100.00
18	Endosulfan I	17.16	96.94
19	4,4'-DDE	17.39	99.23
20	Dieldrin	17.78	100.00
21	2,4'-DDD	17.83	99.55
22	Endrin	18.46	97.04
23	2,4'-DDT	18.51	46.99
24	cis-Nonachlor	18.63	100.00
25	4,4'-DDD	18.66	92.57
26	Endosulfan II	18.92	98.30
27	4,4'-DDT	19.36	99.24
28	Endrin aldehyde	19.65	98.64
29	Endosulfan sulfate	20.26	100.00
30	Methoxychlor	20.80	100.00
31	Endrin ketone	21.47	100.00
32	Decachlorobiphenyl	24.78	
33	Decachlorobiphenyl	24.78	

SOM01.1 (05/2005)

ENCLOSURE 6C

AUDITOR GENERATED



ENCLOSURE 6 D

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (INDC##): INDC321   Lab Sample ID (1): INDC321

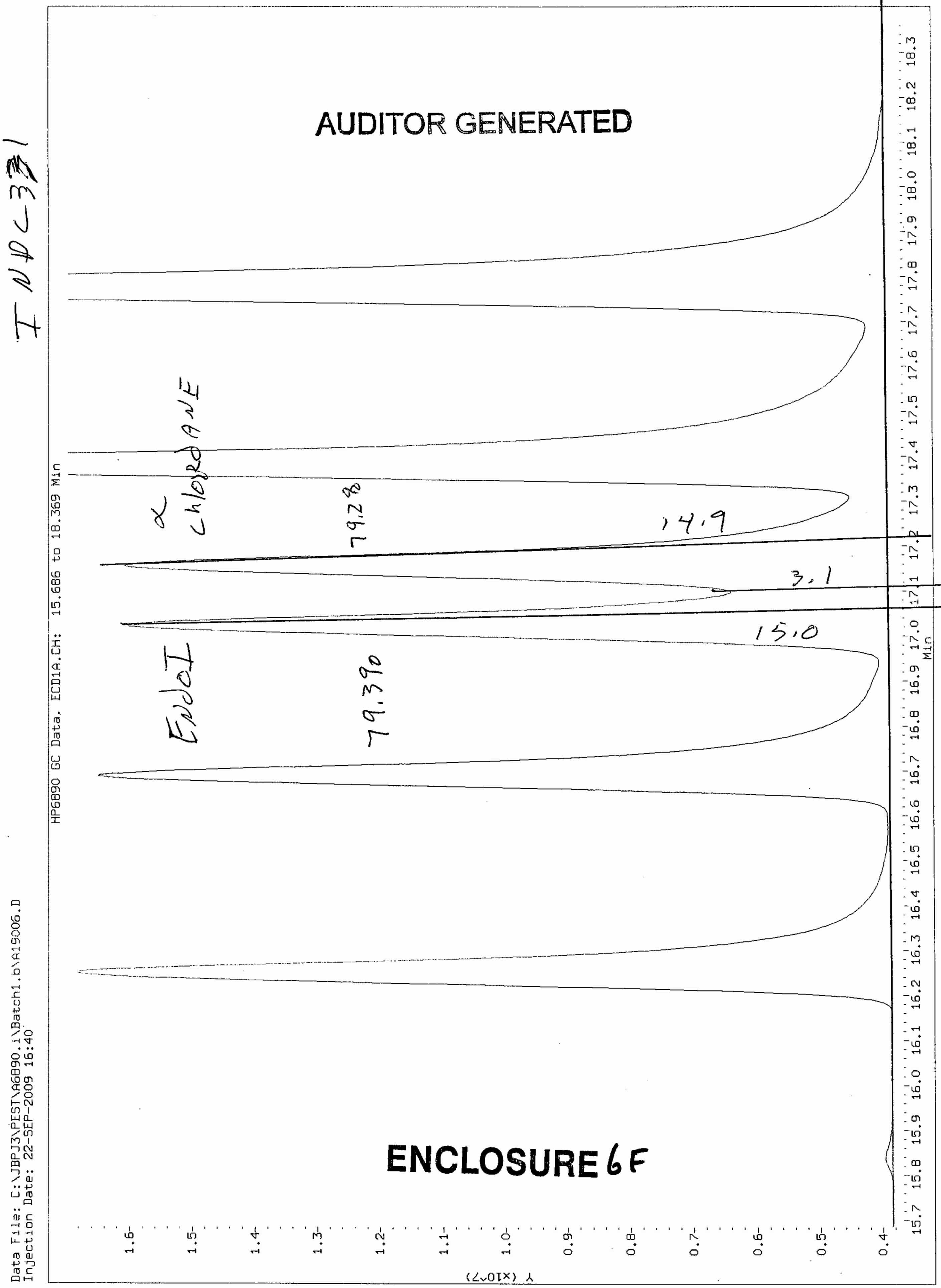
Date Analyzed (1): 09/22/2009   Time Analyzed (1): 1717

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.68	100.00
02	Tetrachloro-m-xylene	10.23	100.00
03	Tetrachloro-m-xylene	10.23	100.00
04	Hexachlorobenzene	11.60	100.00
05	alpha-BHC	12.00	100.00
06	gamma-BHC (Lindane)	12.95	90.42
07	beta-BHC	13.17	100.00
08	delta-BHC	13.92	87.72
09	Heptachlor	14.10	100.00
10	Aldrin	14.90	100.00
11	Octachlorostyrene	15.54	99.38
12	Oxychlordane	16.04	100.00
13	Heptachlor epoxide	16.25	99.84
14	2,4'-DDE	16.67	71.78
15	gamma-Chlordane	16.69	100.00
16	Trans-Nonachlor	16.91	100.00
17	alpha-Chlordane	17.16	100.00
18	Endosulfan I	17.16	94.93
19	4,4'-DDE	17.38	98.68
20	Dieldrin	17.77	100.00
21	2,4'-DDD	17.82	99.55
22	Endrin	18.46	96.35
23	2,4'-DDT	18.51	43.38
24	cis-Nonachlor	18.63	100.00
25	4,4'-DDD	18.66	91.18
26	Endosulfan II	18.92	97.46
27	4,4'-DDT	19.35	98.84
28	Endrin aldehyde	19.65	98.42
29	Endosulfan sulfate	20.26	100.00
30	Methoxychlor	20.80	100.00
31	Endrin ketone	21.46	100.00
32	Decachlorobiphenyl	24.78	
33	Decachlorobiphenyl	24.78	

SOM01.1 (05/2005)

ENCLOSURE 6E

AUDITOR GENERATED



ENCLOSURE 6F

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) Instrument ID (1) A-6890A

EPA Sample No. (INDC##): INDC361 Lab Sample ID (1): INDC361

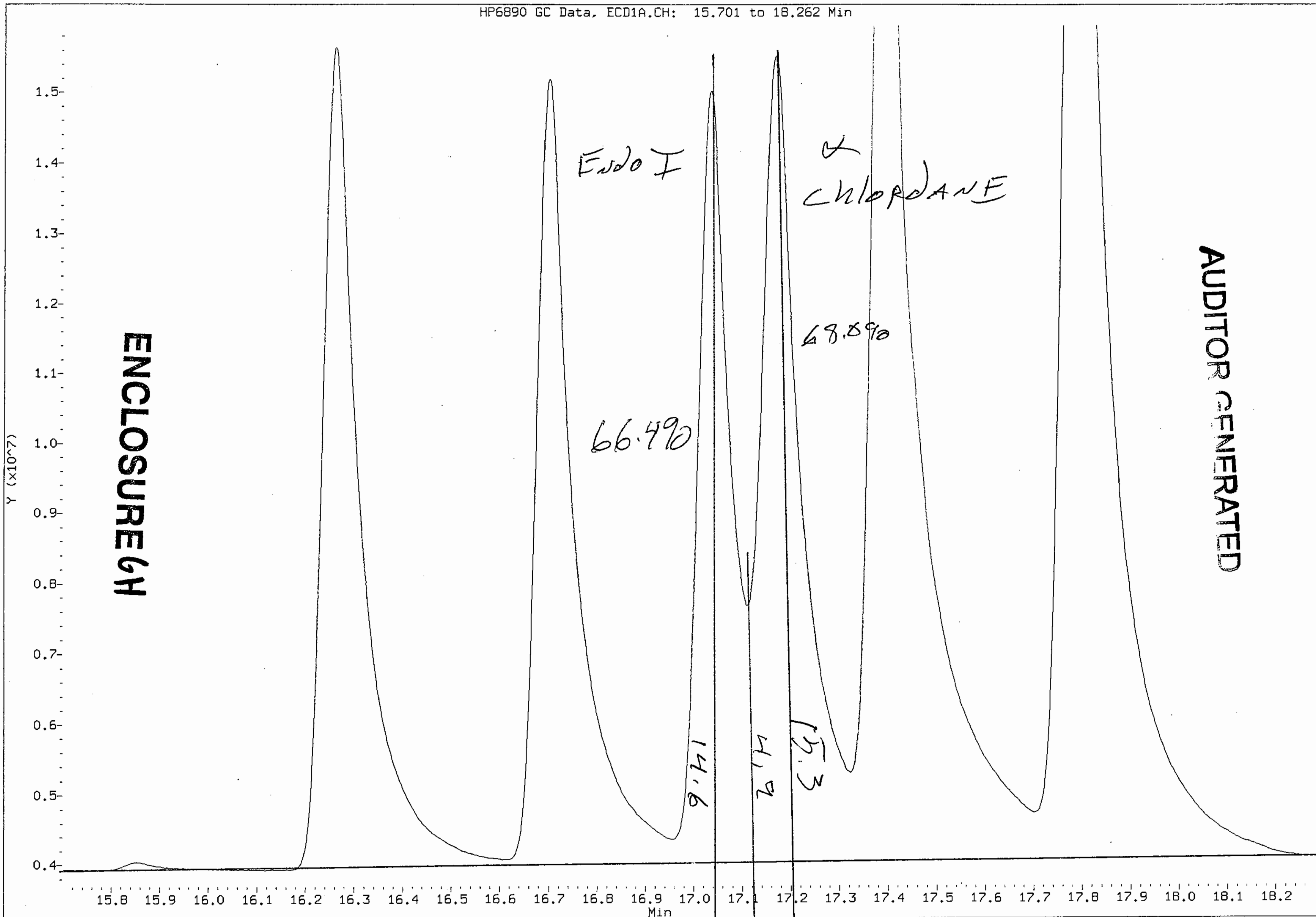
Date Analyzed (1): 09/23/2009 Time Analyzed (1): 1246

	ANALYTE	RT	RESOLUTION (%)
01	Hexachlorobutadiene	4.69	100.00
02	Tetrachloro-m-xylene	10.24	100.00
03	Tetrachloro-m-xylene	10.24	100.00
04	Hexachlorobenzene	11.60	100.00
05	alpha-BHC	12.00	100.00
06	gamma-BHC (Lindane)	12.96	79.71
07	beta-BHC	13.18	100.00
08	delta-BHC	13.93	79.61
09	Heptachlor	14.11	100.00
10	Aldrin	14.91	100.00
11	Octachlorostyrene	15.55	98.87
12	Oxychlordane	16.05	100.00
13	Heptachlor epoxide	16.26	99.17
14	2,4'-DDE	16.68	65.22
15	gamma-Chlordane	16.70	100.00
16	Trans-Nonachlor	16.91	100.00
17	alpha-Chlordane	17.17	100.00
18	Endosulfan I	17.17	88.60
19	4,4'-DDE	17.39	96.46
20	Dieldrin	17.79	100.00
21	2,4'-DDD	17.83	99.12
22	Endrin	18.46	93.77
23	2,4'-DDT	18.51	27.11
24	cis-Nonachlor	18.63	100.00
25	4,4'-DDD	18.66	83.10
26	Endosulfan II	18.92	93.98
27	4,4'-DDT	19.36	96.42
28	Endrin aldehyde	19.66	97.41
29	Endosulfan sulfate	20.27	100.00
30	Methoxychlor	20.81	100.00
31	Endrin ketone	21.47	100.00
32	Decachlorobiphenyl	24.79	
33	Decachlorobiphenyl	24.79	

ENCLOSURE 6G

4001-05112010-5

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A19035.D
Injection Date: 23-SEP-2009 12:46



Quantitation Report (Not Reviewed)

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Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18973.D(Signal #1)            A18973.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/21/09 18:10 (Signal #1); 09/21/09 18:47 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : RESC11 (Sig #1); RESC12 (Sig #2)
Misc      : RESC11 (Sig #1); RESC12 (Sig #2)
ALS Vial  : 1   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 19:12:41 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:05:54 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1)	S Tetrachloro-m-xy	10.23	9.44	260.2E6	206.2E6	9.309	9.621	
	Spiked Amount 60.000			Recovery	=	15.51%	16.04%	
22)	S Decachlorobiphen	24.78	22.41	454.5E6	398.1E6	19.202	21.072	
	Spiked Amount 120.000			Recovery	=	16.00%	17.56%	
	Target Compounds							
2)	Alpha-BHC	12.00	11.04	373.2E6	293.8E6	8.635	8.979	
3)	Gamma-BHC (Linda	12.96	11.89	358.6E6	277.6E6	8.776	8.914	
4)	Beta-BHC	13.18	12.13	173.2E6	81814808	9.762	6.984	#
5)	Delta-BHC	13.92	12.57	284.3E6	246.8E6	8.474	8.866	
6)	Heptachlor	14.10	13.09	351.9E6	280.0E6	8.980	9.224	
7)	Aldrin	14.90	13.83	301.7E6	264.8E6	8.809	9.376	
8)	Heptachlor Epoxi	16.26	15.28	286.4E6	248.7E6	9.115	9.614	
9)	Gamma-Chlordane	16.70	15.56	282.5E6	252.7E6	9.117	9.616	
~~10)~~	Alpha-Chlordane	17.16	15.86	283.3E6	232.3E6	9.276	9.373	
~~11)~~	Endosulfan I	17.16	16.17	283.3E6	314.9E6	9.276	10.485	
12)	4,4'-DDE	17.39	16.05	502.0E6	372.4E6	17.698	17.354	
13)	Dieldrin	17.78	16.71	552.1E6	496.2E6	17.868	18.987	
14)	Endrin	18.46	17.23	398.8E6	420.4E6	17.500	18.780	
15)	4,4'-DDD	18.66	17.37	409.1E6	378.7E6	17.928	19.047	
16)	Endosulfan II	18.92	17.72	540.9E6	429.7E6	18.685	19.488	
17)	4,4'-DDT	19.35	17.98	266.3E6	345.1E6	15.609	17.959	
18)	Endrin Aldehyde	19.65	18.65	460.1E6	365.2E6	18.424	20.284	
19)	Endosulfan sulfa	20.26	19.60	444.2E6	387.1E6	18.157	20.001	
20)	Methoxychlor	20.80	19.02	697.9E6	902.9E6	80.413	94.907	
21)	Endrin Ketone	21.47	20.20	566.7E6	476.3E6	17.767	19.605	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2602 init/date OU 09/24/09.

ENCLOSURE 61

4001-05112010-5

AUDITOR GENERATED

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18973.D
Report Date: 02-Mar-2010 15:49

Shaw Group

Sample #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18973.D
Sample #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18973.D
Inj Date : 21-SEP-2009 18:10
Sample Info: RESC11
Misc Info :
Cal Date : 02-MAR-2010 15:27
Operator : Auditor
Inst ID : A6890.i
Dil Factor : 1.000000

Method #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1 : resc.sub
Sub List #2 : resc.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6 J

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18973.D
Report Date: 02-Mar-2010 15:49

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.234	9.443	25861781	20649360	0.092	0.096	Lowest	0.092		N/A(aR)
Decachlorobiphenyl	24.782	22.406	42100305	40778771	0.18	0.22	Lowest	0.18		N/A(aR)
alpha-BHC	12.000	11.035	37025668	29385058	0.086	0.090	Lowest	0.086		N/A
beta-BHC	13.177	12.126	14531923	13173168	0.083	0.10	Lowest	0.083		N/A
delta-BHC	13.921	12.568	28104385	27174204	0.083	0.093	Lowest	0.083		N/A
gamma-BHC (Lindane)	12.957	11.885	35263735	28852606	0.086	0.092	Lowest	0.086		N/A
Heptachlor	14.100	13.094	33541773	28711168	0.086	0.094	Lowest	0.086		N/A
Aldrin	14.901	13.827	30141617	26427213	0.088	0.094	Lowest	0.088		N/A
Heptachlor epoxide	16.255	15.276	28503262	24854819	0.091	0.096	Lowest	0.091		N/A
Endosulfan I	17.161	16.171	28175685	31479723	0.092	0.10	Lowest	0.092		N/A
Dieldrin	17.780	16.712	54871474	49706435	0.18	0.19	Lowest	0.18		N/A
4,4'-DDE	17.384	16.050	49927033	37076371	0.18	0.17	Lowest	0.17		N/A
Endrin	18.460	17.228	39575318	41960707	0.17	0.19	Lowest	0.17		N/A
Endosulfan II	18.921	17.721	53806797	42744467	0.19	0.19	Lowest	0.19		N/A
4,4'-DDD	18.660	17.372	40617453	37718783	0.18	0.19	Lowest	0.18		N/A
Endosulfan sulfate	20.264	19.596	43632220	37708358	0.089	0.095	Lowest	0.089		N/A(a)
4,4'-DDT	19.354	17.980	26252378	33981024	0.15	0.17	Lowest	0.15		N/A
Methoxychlor	20.803	19.015	69167408	89824412	0.80	0.94	Lowest	0.80		N/A
Endrin ketone	21.467	20.203	56040851	47464815	0.18	0.19	Lowest	0.18		N/A
Endrin aldehyde	19.650	18.645	45242336	36187540	0.18	0.20	Lowest	0.18		N/A
alpha-Chlordane	17.029	15.862	25151325	23205140	0.091	0.093	Lowest	0.091		N/A
gamma-Chlordane	16.695	15.559	28111534	25221678	0.091	0.095	Lowest	0.091		N/A

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.

AUDITOR GENERATED

ENCLOSURE 6K

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18982.D(Signal #1) A18982.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/21/09 23:41 (Signal #1); 09/22/09 00:18 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : INDC311 (Sig #1); INDC312 (Sig #2)
Misc : INDC311 (Sig #1); INDC312 (Sig #2)
ALS Vial : 10 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:04:11 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Mon Sep 21 09:24:01 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	522.0E6	417.6E6	17.161	18.675	
	Spiked Amount 60.000			Recovery	=	28.60%	31.13%	
22) S	Decachlorobiphen	24.78	22.41	902.2E6	754.7E6	41.097	42.821	
	Spiked Amount 120.000			Recovery	=	34.25%	35.68%	
	Target Compounds							
2)	Alpha-BHC	12.00	11.03	798.3E6	637.1E6	18.509	21.003	
3)	Gamma-BHC (Linda	12.96	11.88	751.0E6	603.4E6	18.250	21.069	
4)	Beta-BHC	13.18	12.13	334.0E6	241.2E6	20.039	21.256	
5)	Delta-BHC	13.92	12.57	601.3E6	552.6E6	16.544	21.318	#
6)	Heptachlor	14.10	13.09	724.3E6	585.8E6	19.515	19.816	
7)	Aldrin	14.90	13.83	638.8E6	545.7E6	18.675	19.721	
8)	Heptachlor Epoxi	16.25	15.28	580.3E6	499.5E6	18.731	20.036	
9)	Gamma-Chlordane	16.69	15.56	569.4E6	498.7E6	18.582	19.724	
~~10)~~	Alpha-Chlordane	17.16	15.86	567.9E6	479.6E6	19.602	20.745	
~~11)~~	Endosulfan I	17.16	16.17	567.9E6	554.9E6	19.702	19.967	
12)	4,4'-DDE	17.39	16.05	1042.7E6	860.8E6	36.830	41.272	
13)	Dieldrin	17.78	16.71	1141.7E6	1021.1E6	37.540	41.139	
14)	Endrin	18.46	17.23	832.4E6	886.5E6	36.429	42.878	
15)	4,4'-DDD	18.66	17.37	843.4E6	771.2E6	36.298	40.953	
16)	Endosulfan II	18.92	17.72	1087.4E6	868.0E6	40.355	43.438	
17)	4,4'-DDT	19.36	17.98	602.4E6	755.6E6	35.353	42.806	
18)	Endrin Aldehyde	19.65	18.64	909.9E6	711.5E6	43.227	44.618	
19)	Endosulfan sulfa	20.26	19.59	927.4E6	757.7E6	39.626	42.595	
20)	Methoxychlor	20.80	19.01	1561.4E6	1908.5E6	181.780	224.567	
21)	Endrin Ketone	21.47	20.20	1224.6E6	951.8E6	40.453	42.277	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode. [illegible]-2603 init/date [illegible] 09/24/09.

AUDITOR GENERATED

```
Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D                Page 1
Report Date: 02-Mar-2010 15:49

                                            Shaw Group

Sample #1   : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D
Sample #2   : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18982.D
Inj Date    : 21-SEP-2009 23:41
Sample Info: INDC311
Misc Info   :
Cal Date    : 02-MAR-2010 15:49
Operator    : Auditor
Inst ID     : A6890.i
Dil Factor : 1.000000

Method #1     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1   : inda.sub
Sub List #2   : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable
```

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6 M

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D

Report Date: 02-Mar-2010 15:49

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.232	9.441	51904742	41907974	0.018	0.019	Lowest	0.018		N/A(a)
Decachlorobiphenyl	24.782	22.405	88306772	74737468	0.038	0.039	Lowest	0.038		N/A(aM)
alpha-BHC	11.998	11.032	79867022	63701067	0.018	0.019	Lowest	0.018		N/A(aM)
beta-BHC	13.177	12.126	32683194	26145548	0.019	0.020	Lowest	0.019		N/A(aM)
delta-BHC	13.920	12.569	60604439	57695371	0.018	0.020	Lowest	0.018		N/A(aM)
gamma-BHC (Lindane)	12.955	11.884	75252054	61206117	0.018	0.019	Lowest	0.018		N/A(aM)
Heptachlor	14.101	13.093	72941899	59325630	0.019	0.019	Lowest	0.019		N/A(aM)
Aldrin	14.902	13.826	63847560	54510581	0.019	0.019	Lowest	0.019		N/A(aM)
Heptachlor epoxide	16.255	15.275	58033347	49889695	0.018	0.019	Lowest	0.018		N/A(aM)
Endosulfan I	17.161	16.170	56988036	55418504	0.019	0.018	Lowest	0.018		N/A(aM)
Dieldrin	17.779	16.710	114788051	102285244	0.037	0.039	Lowest	0.037		N/A(aM)
4,4'-DDE	17.385	16.050	104669923	86032199	0.037	0.040	Lowest	0.037		N/A(aM)
Endrin	18.459	17.226	83124897	88634378	0.037	0.040	Lowest	0.037		N/A(aM)
Endosulfan II	18.919	17.719	108239880	86507698	0.037	0.039	Lowest	0.037		N/A(aM)
4,4'-DDD	18.660	17.372	84148633	76858628	0.037	0.038	Lowest	0.037		N/A(aM)
Endosulfan sulfate	20.263	19.594	91119130	76692135	0.019	0.019	Lowest	0.019		N/A(aM)
4,4'-DDT	19.354	17.981	59701444	75001308	0.035	0.039	Lowest	0.035		N/A(aM)
Methoxychlor	20.804	19.014	153575798	190773424	0.18	0.20	Lowest	0.18		N/A(aM)
Endrin ketone	21.464	20.202	117279333	94703384	0.038	0.038	Lowest	0.038		N/A(aM)
Endrin aldehyde	19.652	18.644	89379013	71117040	0.036	0.039	Lowest	0.036		N/A(aM)
alpha-Chlordane	17.028	15.862	50934509	47884630	0.018	0.019	Lowest	0.018		N/A(aM)
gamma-Chlordane	16.694	15.557	57078503	49743733	0.018	0.019	Lowest	0.018		N/A(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit of Quantitation(BLOQ).
M - Compound response manually integrated.

ENCLOSURE 6 N

AUDITOR GENERATED

Quantitation Report (Not Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19006.D(Signal #1)           A19006.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 16:40 (Signal #1); 09/22/09 17:17 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC331 (Sig #1); INDC332 (Sig #2)
Misc      : INDC331 (Sig #1); INDC332 (Sig #2)
ALS Vial  : 75   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 19:34:50 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:05:54 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	528.6E6	414.6E6	18.913	19.347
	Spiked Amount 60.000			Recovery	=	31.52%	32.25%
22) S	Decachlorobiphen	24.78	22.41	904.9E6	754.6E6	38.234	39.936
	Spiked Amount 120.000			Recovery	=	31.86%	33.28%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	803.3E6	627.9E6	18.585	19.191
3)	Gamma-BHC (Linda	12.95	11.88	741.6E6	602.2E6	18.151	19.337
4)	Beta-BHC	13.17	12.12	343.2E6	238.6E6	19.346	20.370
5)	Delta-BHC	13.92	12.57	581.5E6	541.9E6	17.332	19.469
6)	Heptachlor	14.10	13.09	754.5E6	579.2E6	19.252	19.080
7)	Aldrin	14.90	13.82	644.8E6	542.9E6	18.824	19.224
8)	Heptachlor Epoxi	16.25	15.27	583.6E6	497.4E6	18.574	19.225
9)	Gamma-Chlordane	16.69	15.55	571.9E6	495.6E6	18.453	18.862
~~10)~~	Alpha-Chlordane	17.16	15.86	584.4E6	472.3E6	19.133	19.053
~~11)~~	Endosulfan I	17.16	16.17	584.4E6	592.2E6	19.133	19.717
12)	4,4'-DDE	17.38	16.05	1049.6E6	807.5E6	37.003	37.628
13)	Dieldrin	17.77	16.71	1164.6E6	1012.7E6	37.690	38.752
14)	Endrin	18.46	17.23	783.9E6	841.0E6	34.402	37.569
15)	4,4'-DDD	18.66	17.37	823.0E6	771.0E6	36.062	38.776
16)	Endosulfan II	18.92	17.72	1122.4E6	865.3E6	38.775	39.243
17)	4,4'-DDT	19.35	17.98	628.2E6	718.4E6	36.827	37.387
18)	Endrin Aldehyde	19.65	18.64	931.6E6	704.5E6	37.310	39.127
19)	Endosulfan sulfa	20.26	19.60	942.4E6	743.8E6	38.523	38.434
20)	Methoxychlor	20.80	19.02	1607.0E6	1813.0E6	185.160	190.574
21)	Endrin Ketone	21.46	20.20	1259.8E6	958.5E6	39.494	39.455

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JRPJ3
Episode S-2607 init/date [illegible] 03/24/09

ENCLOSURE 60

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A19006.D
Report Date: 02-Mar-2010 15:57

Shaw Group

AUDITOR GENERATED

Sample #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\A19006.D
Sample #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A19006.D
Inj Date : 22-SEP-2009 16:40
Sample Info: INDC331
Misc Info :
Cal Date : 02-MAR-2010 15:55
Operator : Auditor
Inst ID : A6890.i
Dil Factor : 1.000000

Method #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1 : inda.sub
Sub List #2 : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6P

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A19006.D
Report Date: 02-Mar-2010 15:57

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.228	9.436	52655399	41633608	0.019	0.019	Lowest	0.019		N/A(a)
Decachlorobiphenyl	24.774	22.408	88936021	75468149	0.038	0.040	Lowest	0.038		N/A(aM)
alpha-BHC	11.995	11.028	79183505	62797102	0.018	0.019	Lowest	0.018		N/A(a)
beta-BHC	13.172	12.122	33169698	26005979	0.019	0.020	Lowest	0.019		N/A(aM)
delta-BHC	13.916	12.565	58248539	57048602	0.017	0.020	Lowest	0.017		N/A(a)
gamma-BHC (Lindane)	12.950	11.880	74314215	60879974	0.018	0.019	Lowest	0.018		N/A(aM)
Heptachlor	14.095	13.090	74718910	58612771	0.019	0.019	Lowest	0.019		N/A(a)
Aldrin	14.896	13.821	64240061	54189620	0.019	0.019	Lowest	0.019		N/A(a)
Heptachlor epoxide	16.250	15.271	58400627	49941225	0.019	0.019	Lowest	0.019		N/A(a)
Endosulfan I	17.155	16.168	58383350	60759476	0.019	0.020	Lowest	0.019		N/A(a)
Dieldrin	17.774	16.709	116211119	101449531	0.038	0.039	Lowest	0.038		N/A(a)
4,4'-DDE	17.380	16.048	104864035	81370276	0.037	0.038	Lowest	0.037		N/A(a)
Endrin	18.455	17.225	78444282	84201766	0.034	0.038	Lowest	0.034		N/A(a)
Endosulfan II	18.915	17.720	111744013	86771588	0.039	0.039	Lowest	0.039		N/A(a)
4,4'-DDD	18.656	17.370	82357554	77186219	0.036	0.039	Lowest	0.036		N/A(a)
Endosulfan sulfate	20.260	19.596	92650800	76581770	0.019	0.019	Lowest	0.019		N/A(a)
4,4'-DDT	19.351	17.980	62416633	72150874	0.037	0.037	Lowest	0.037		N/A(a)
Methoxychlor	20.800	19.015	158651858	182116614	0.18	0.19	Lowest	0.18		N/A(a)
Endrin ketone	21.461	20.202	123951638	96156614	0.040	0.039	Lowest	0.039		N/A(a)
Endrin aldehyde	19.647	18.645	91708703	70769713	0.037	0.039	Lowest	0.037		N/A(a)
alpha-Chlordane	17.022	15.860	49486399	47861807	0.018	0.019	Lowest	0.018		N/A(a)
gamma-Chlordane	16.689	15.555	57199839	50178959	0.018	0.019	Lowest	0.018		N/A(a)

AUDITOR GENERATED

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

ENCLOSURE 6G

Quantitation Report (Not Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19035.D(Signal #1) A19035.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 12:46 (Signal #1); 09/23/09 13:23 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : INDC361 (Sig #1); INDC362 (Sig #2)
Misc : INDC361 (Sig #1); INDC362 (Sig #2)
ALS Vial : 14 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:57:59 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:56:20 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.24	9.44	590.0E6	433.9E6	21.111	20.244	
	Spiked Amount 60.000			Recovery	=	35.19%	33.74%	
22) S	Decachlorobiphen	24.79	22.40	1033.6E6	770.5E6	43.673	40.780	
	Spiked Amount 120.000			Recovery	=	36.39%	33.98%	
	Target Compounds							
2)	Alpha-BHC	12.00	11.03	877.6E6	664.6E6	20.304	20.314	
3)	Gamma-BHC (Linda	12.96	11.88	773.5E6	629.9E6	18.932	20.225	
4)	Beta-BHC	13.18	12.12	391.9E6	248.2E6	22.089	21.188	
5)	Delta-BHC	13.93	12.56	526.4E6	563.7E6	15.689	20.250	#
6)	Heptachlor	14.11	13.09	916.3E6	606.4E6	23.382	19.977	
7)	Aldrin	14.91	13.82	718.9E6	565.5E6	20.988	20.025	
8)	Heptachlor Epoxi	16.26	15.27	650.6E6	518.6E6	20.706	20.046	
9)	Gamma-Chlordane	16.70	15.55	630.1E6	520.1E6	20.331	19.794	
~~10)~~	Alpha-Chlordane	17.17	15.86	685.4E6	495.9E6	22.438	20.007	
~~11)~~	Endosulfan I	17.17	16.17	685.4E6	625.3E6	22.438	20.819	
12)	4,4'-DDE	17.39	16.05	1168.8E6	857.4E6	41.206	39.954	
13)	Dieldrin	17.79	16.71	1339.0E6	1058.4E6	43.334	40.503	
14)	Endrin	18.46	17.22	684.0E6	837.7E6	30.018	37.423	
15)	4,4'-DDD	18.66	17.37	832.3E6	799.4E6	36.469	40.207	
16)	Endosulfan II	18.92	17.72	1334.0E6	906.7E6	46.084	41.118	
17)	4,4'-DDT	19.36	17.98	647.4E6	803.5E6	37.955	41.818	
18)	Endrin Aldehyde	19.66	18.64	1066.4E6	762.7E6	42.705	42.361	
19)	Endosulfan sulfa	20.27	19.59	1035.7E6	838.0E6	42.337	43.302	
20)	Methoxychlor	20.81	19.01	1561.7E6	2031.5E6	179.948	213.536	
21)	Endrin Ketone	21.47	20.20	1513.8E6	1117.2E6	47.459	45.987	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode 5-2603 init/date [illegible] 09/24/09

ENCLOSURE 6 R

AUDITOR GENERATED

ENCLOSURE 6S

```
Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A19035.D                 Page 1
Report Date: 02-Mar-2010 16:00

                                             Shaw Group

Sample #1    : C:\JBPJ3\PEST\A6890.i\Batch1.b\A19035.D
Sample #2    : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A19035.D
Inj Date     : 23-SEP-2009 12:46
Sample Info: INDC361
Misc Info    :
Cal Date     : 02-MAR-2010 15:58
Operator     : Auditor
Inst ID      : A6890.i
Dil Factor : 1.000000

Method #1      : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2      : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1    : inda.sub
Sub List #2    : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

     Name           Value     Description
-------------- ---------- -----------------------
     DF              1.000    Dilution Factor
    GPC              1.000    GPC Factor
     Vt          10000.000    Volume of final extract (uL)
     Vo           1000.000    Volume of sample extracted (mL)
     Vi              1.000    Volume injected (uL)
Cpnd Variable                 Local Compound Variable
```

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A19035.D

Report Date: 02-Mar-2010 16:00

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.239	9.435	59211222	43464954	0.021	0.020	Lowest	0.020		N/A(aM)
Decachlorobiphenyl	24.785	22.404	100946272	76458214	0.044	0.040	Lowest	0.040		N/A(aM)
alpha-BHC	12.005	11.027	87308319	66323504	0.020	0.020	Lowest	0.020		N/A(aM)
beta-BHC	13.179	12.120	42207181	27046553	0.024	0.021	Lowest	0.021		N/A(aM)
delta-BHC	13.925	12.564	53555977	59983463	0.016	0.021	Lowest	0.016		N/A(aM)
gamma-BHC (Lindane)	12.960	11.879	77880350	63396255	0.019	0.020	Lowest	0.019		N/A(aM)
Heptachlor	14.108	13.088	93463086	62022806	0.024	0.020	Lowest	0.020		N/A(aM)
Aldrin	14.908	13.819	72562617	56465924	0.021	0.020	Lowest	0.020		N/A(aM)
Heptachlor epoxide	16.260	15.269	65161699	51928756	0.021	0.020	Lowest	0.020		N/A(a)
Endosulfan I	17.166	16.166	68639688	63345575	0.022	0.021	Lowest	0.021		N/A(a)
Dieldrin	17.785	16.708	133535498	105932464	0.043	0.040	Lowest	0.040		N/A(a)
4,4'-DDE	17.389	16.046	116474652	86132498	0.041	0.040	Lowest	0.040		N/A(a)
Endrin	18.464	17.223	68225352	83948710	0.030	0.037	Lowest	0.030		N/A(a)
Endosulfan II	18.925	17.715	132516992	90936916	0.046	0.041	Lowest	0.041		N/A(a)
4,4'-DDD	18.665	17.368	82797817	80114179	0.036	0.040	Lowest	0.036		N/A(a)
Endosulfan sulfate	20.267	19.592	104251943	80753762	0.021	0.020	Lowest	0.020		N/A(a)
4,4'-DDT	19.360	17.975	64019610	80735884	0.038	0.041	Lowest	0.038		N/A(a)
Methoxychlor	20.808	19.012	154552622	199945557	0.18	0.21	Lowest	0.18		N/A(a)
Endrin ketone	21.470	20.199	149789069	102597566	0.048	0.041	Lowest	0.041		N/A(a)
Endrin aldehyde	19.655	18.641	105042005	75526444	0.043	0.041	Lowest	0.041		N/A(a)
alpha-Chlordane	17.033	15.858	50504035	49879945	0.018	0.020	Lowest	0.018		N/A(a)
gamma-Chlordane	16.700	15.553	62970354	52252693	0.020	0.020	Lowest	0.020		N/A(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

ENCLOSURE 6 T

AUDITOR GENERATED

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18980.D(Signal #1) A18980.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/21/09 22:27 (Signal #1); 09/21/09 23:04 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : INDC111 (Sig #1); INDC112 (Sig #2)
Misc : INDC111 (Sig #1); INDC112 (Sig #2)
ALS Vial : 8 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:05:35 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Tue Sep 22 09:05:27 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	126.7E6	101.3E6	4.312	4.722
	Spiked Amount 60.000			Recovery	=	7.19%	7.87%
22) S	Decachlorobiphen	24.78	22.40	237.0E6	173.2E6	10.206	9.562
	Spiked Amount 120.000			Recovery	=	8.51%	7.97%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	175.2E6	134.9E6	4.002	4.355
3)	Gamma-BHC (Linda	12.96	11.88	174.6E6	130.4E6	4.219	4.433
4)	Beta-BHC	13.18	12.12	86315436	44793888	4.952	3.844
5)	Delta-BHC	13.92	12.57	138.1E6	95072448	3.902	3.498
6)	Heptachlor	14.10	13.09	171.1E6	137.7E6	4.412	4.648
7)	Aldrin	14.90	13.82	146.4E6	126.1E6	4.221	4.551
8)	Heptachlor Epoxi	16.25	15.27	143.3E6	120.9E6	4.552	4.817
9)	Gamma-Chlordane	16.69	15.55	142.8E6	124.5E6	4.609	4.890
~~10)~~	Alpha-Chlordane	17.16	15.86	142.6E6	112.1E6	4.725	4.739
~~11)~~	Endosulfan I	17.16	16.17	142.6E6	143.2E6	4.753	5.111
12)	4,4'-DDE	17.38	16.05	246.3E6	174.4E6	8.627	8.336
13)	Dieldrin	17.78	16.71	274.9E6	232.0E6	8.902	9.280
14)	Endrin	18.46	17.22	189.3E6	195.7E6	8.232	9.215
15)	4,4'-DDD	18.66	17.37	201.9E6	169.5E6	8.694	8.865
16)	Endosulfan II	18.92	17.72	270.5E6	193.7E6	9.550	9.321
17)	4,4'-DDT	19.35	17.98	133.9E6	166.8E6	7.763	9.362
18)	Endrin Aldehyde	19.65	18.64	293.1E6	162.7E6	13.091	9.759 #
19)	Endosulfan sulfa	20.26	19.59	221.2E6	169.8E6	9.119	9.218
20)	Methoxychlor	20.80	19.01	347.0E6	428.2E6	39.304	48.210
21)	Endrin Ketone	21.47	20.20	283.6E6	209.9E6	8.949	9.022

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2603 init/date [illegible]
09/24/09

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18980.D
Report Date: 02-Mar-2010 15:49

Shaw Group

AUDITOR GENERATED

Sample #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18980.D
Sample #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18980.D
Inj Date : 21-SEP-2009 22:27
Sample Info: INDC111
Misc Info :
Cal Date : 02-MAR-2010 15:49
Operator : Auditor
Inst ID : A6890.i
Dil Factor : 1.000000

Method #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1 : inda.sub
Sub List #2 : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6V

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18980.D

Report Date: 02-Mar-2010 15:49

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.232	9.439	12878963	10225445	0.0046	0.0048	Lowest	0.0046		N/A(aM)
Decachlorobiphenyl	24.782	22.401	23426854	18093392	0.010	0.0096	Lowest	0.0096		N/A(aM)
alpha-BHC	11.997	11.029	17779764	13493717	0.0041	0.0041	Lowest	0.0041		N/A(aM)
beta-BHC	13.176	12.123	8395638	5000005	0.0048	0.0039	Lowest	0.0039		N/A(aM)
delta-BHC	13.921	12.565	14072325	11247833	0.0042	0.0038	Lowest	0.0038		N/A(aM)
gamma-BHC (Lindane)	12.954	11.880	17660549	13263349	0.0043	0.0042	Lowest	0.0042		N/A(aM)
Heptachlor	14.100	13.091	17273927	13733238	0.0044	0.0045	Lowest	0.0044		N/A(aM)
Aldrin	14.901	13.824	14650971	12633618	0.0043	0.0045	Lowest	0.0043		N/A(a)
Heptachlor epoxide	16.253	15.273	14221765	12254421	0.0045	0.0047	Lowest	0.0045		N/A(aM)
Endosulfan I	17.159	16.169	14117026	15441147	0.0046	0.0050	Lowest	0.0046		N/A(aM)
Dieldrin	17.777	16.708	26852941	23562701	0.0087	0.0090	Lowest	0.0087		N/A(aM)
4,4'-DDE	17.384	16.047	24265035	17799879	0.0086	0.0083	Lowest	0.0083		N/A(aM)
Endrin	18.457	17.223	18736637	19666059	0.0082	0.0088	Lowest	0.0082		N/A(aM)
Endosulfan II	18.919	17.716	26894041	20004904	0.0093	0.0090	Lowest	0.0090		N/A(aM)
4,4'-DDD	18.659	17.367	20173247	17437525	0.0088	0.0087	Lowest	0.0087		N/A(aM)
Endosulfan sulfate	20.264	19.591	22406241	17897872	0.0046	0.0045	Lowest	0.0045		N/A(aM)
4,4'-DDT	19.352	17.976	13317832	17635850	0.0078	0.0091	Lowest	0.0078		N/A(aM)
Methoxychlor	20.802	19.011	35057785	44139212	0.040	0.046	Lowest	0.040		N/A(aM)
Endrin ketone	21.465	20.198	29013724	22777238	0.0093	0.0092	Lowest	0.0092		N/A(aM)
Endrin aldehyde	19.649	18.641	28610858	17241147	0.012	0.0094	Lowest	0.0094		N/A(aM)
alpha-Chlordane	17.027	15.860	12685188	11637312	0.0046	0.0047	Lowest	0.0046		N/A(aM)
gamma-Chlordane	16.694	15.555	13972688	12808861	0.0045	0.0048	Lowest	0.0045		N/A(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

M - Compound response manually integrated.

ENCLOSURE 6 W

AUDITOR GENERATED

4001-05112010-5

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18981.D(Signal #1) A18981.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/21/09 23:04 (Signal #1); 09/21/09 23:41 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : INDC211 (Sig #1); INDC212 (Sig #2)
Misc : INDC211 (Sig #1); INDC212 (Sig #2)
ALS Vial : 9 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:05:46 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Tue Sep 22 09:05:41 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1)	S Tetrachloro-m-xy	10.23	9.44	276.6E6	206.0E6	9.733	9.700
	Spiked Amount 60.000			Recovery	=	16.22%	16.17%
22)	S Decachlorobiphen	24.78	22.41	487.4E6	390.5E6	20.864	21.485
	Spiked Amount 120.000			Recovery	=	17.39%	17.90%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	401.9E6	298.2E6	9.304	9.464
3)	Gamma-BHC (Linda	12.95	11.88	387.0E6	285.1E6	9.470	9.520
4)	Beta-BHC	13.18	12.13	180.8E6	97784952	10.341	8.480
5)	Delta-BHC	13.92	12.57	310.8E6	253.1E6	9.067	9.426
6)	Heptachlor	14.10	13.09	377.2E6	282.3E6	9.741	9.490
7)	Aldrin	14.90	13.83	324.0E6	263.0E6	9.470	9.490
8)	Heptachlor Epoxi	16.25	15.28	306.7E6	247.8E6	9.820	9.806
9)	Gamma-Chlordane	16.69	15.56	301.8E6	251.8E6	9.787	9.848
~~10)~~ →	Alpha-Chlordane	17.16	15.86	299.3E6	236.4E6	9.891	9.864
~~11)~~ →	Endosulfan I	17.16	16.17	299.3E6	298.1E6	9.939	10.339
12)	4,4'-DDE	17.38	16.05	539.6E6	386.4E6	19.045	18.430
13)	Dieldrin	17.78	16.71	591.8E6	499.3E6	19.234	19.658
14)	Endrin	18.46	17.23	430.8E6	424.4E6	18.859	19.674
15)	4,4'-DDD	18.66	17.37	436.2E6	381.7E6	19.054	19.841
16)	Endosulfan II	18.92	17.72	566.6E6	432.3E6	19.889	20.484
17)	4,4'-DDT	19.35	17.98	306.2E6	351.9E6	17.719	19.130
18)	Endrin Aldehyde	19.65	18.64	488.1E6	365.9E6	20.199	21.423
19)	Endosulfan sulfa	20.26	19.60	467.4E6	384.6E6	19.198	20.724
20)	Methoxychlor	20.80	19.01	797.3E6	924.4E6	90.369	101.764
21)	Endrin Ketone	21.46	20.20	651.3E6	474.7E6	20.646	20.277

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2603 init/date [illegible] 09/24/09.

4001-05112010-5

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18981.D Page 1
Report Date: 02-Mar-2010 15:49

Shaw Group

AUDITOR GENERATED

Sample #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18981.D
Sample #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18981.D
Inj Date : 21-SEP-2009 23:04
Sample Info: INDC211
Misc Info :
Cal Date : 02-MAR-2010 15:49
Operator : Auditor
Inst ID : A6890.i
Dil Factor : 1.000000

Method #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1 : inda.sub
Sub List #2 : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6Y

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18981.D

Report Date: 02-Mar-2010 15:49

AUDITOR GENERATED

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.233	9.440	28097216	20647030	0.010	0.0096	Lowest	0.0096		N/A(aM)
Decachlorobiphenyl	24.781	22.405	47854981	38733291	0.021	0.020	Lowest	0.020		N/A(aM)
alpha-BHC	11.997	11.032	40020475	29862909	0.0093	0.0091	Lowest	0.0091		N/A(a)
beta-BHC	13.175	12.126	17510633	13186388	0.010	0.010	Lowest	0.010		N/A(aM)
delta-BHC	13.921	12.567	31237821	27707321	0.0093	0.0095	Lowest	0.0093		N/A(aM)
gamma-BHC (Lindane)	12.954	11.884	38661754	29090947	0.0094	0.0093	Lowest	0.0093		N/A(aM)
Heptachlor	14.100	13.092	37350006	28751499	0.0095	0.0094	Lowest	0.0094		N/A(aM)
Aldrin	14.901	13.826	32410542	26309804	0.0095	0.0093	Lowest	0.0093		N/A(aM)
Heptachlor epoxide	16.254	15.275	30720877	24879090	0.0098	0.0096	Lowest	0.0096		N/A(aM)
Endosulfan I	17.161	16.171	29992067	30555097	0.0098	0.0100	Lowest	0.0098		N/A(aM)
Dieldrin	17.778	16.710	59369221	49883116	0.019	0.019	Lowest	0.019		N/A(aM)
4,4'-DDE	17.383	16.050	54158266	38969604	0.019	0.018	Lowest	0.018		N/A(aM)
Endrin	18.459	17.226	43164874	42387408	0.019	0.019	Lowest	0.019		N/A(aM)
Endosulfan II	18.920	17.718	57002992	43308471	0.020	0.020	Lowest	0.020		N/A(aM)
4,4'-DDD	18.660	17.372	43818239	38176169	0.019	0.019	Lowest	0.019		N/A(aM)
Endosulfan sulfate	20.263	19.595	48169660	38965712	0.0098	0.0098	Lowest	0.0098		N/A(aM)
4,4'-DDT	19.353	17.979	30968818	35355078	0.018	0.018	Lowest	0.018		N/A(aM)
Methoxychlor	20.803	19.015	80992901	92543066	0.093	0.096	Lowest	0.093		N/A(aM)
Endrin ketone	21.464	20.202	61838294	49021079	0.020	0.020	Lowest	0.020		N/A(aM)
Endrin aldehyde	19.651	18.643	49356835	36533050	0.020	0.020	Lowest	0.020		N/A(aM)
alpha-Chlordane	17.027	15.862	27465867	23954193	0.0099	0.0096	Lowest	0.0096		N/A(aM)
gamma-Chlordane	16.694	15.557	30313779	25487872	0.0098	0.0096	Lowest	0.0096		N/A(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

M - Compound response manually integrated.

ENCLOSURE 6Z

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18982.D(Signal #1)           A18982.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/21/09 23:41 (Signal #1); 09/22/09 00:18 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC311 (Sig #1); INDC312 (Sig #2)
Misc      : INDC311 (Sig #1); INDC312 (Sig #2)
ALS Vial  : 10   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:04:11 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Mon Sep 21 09:24:01 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1)	S Tetrachloro-m-xy	10.23	9.44	522.0E6	417.6E6	17.161	18.675	
	Spiked Amount 60.000			Recovery	=	28.60%	31.13%	
22)	S Decachlorobiphen	24.78	22.41	902.2E6	754.7E6	41.097	42.821	
	Spiked Amount 120.000			Recovery	=	34.25%	35.68%	
	Target Compounds							
2)	Alpha-BHC	12.00	11.03	798.3E6	637.1E6	18.509	21.003	
3)	Gamma-BHC (Linda	12.96	11.88	751.0E6	603.4E6	18.250	21.069	
4)	Beta-BHC	13.18	12.13	334.0E6	241.2E6	20.039	21.256	
5)	Delta-BHC	13.92	12.57	601.3E6	552.6E6	16.544	21.318	#
6)	Heptachlor	14.10	13.09	724.3E6	585.8E6	19.515	19.816	
7)	Aldrin	14.90	13.83	638.8E6	545.7E6	18.675	19.721	
8)	Heptachlor Epoxi	16.25	15.28	580.3E6	499.5E6	18.731	20.036	
9)	Gamma-Chlordane	16.69	15.56	569.4E6	498.7E6	18.582	19.724	
~~10)~~	Alpha-Chlordane	17.16	15.86	567.9E6	479.6E6	19.602	20.745	
~~11)~~	Endosulfan I	17.16	16.17	567.9E6	554.9E6	19.702	19.967	
12)	4,4'-DDE	17.39	16.05	1042.7E6	860.8E6	36.830	41.272	
13)	Dieldrin	17.78	16.71	1141.7E6	1021.1E6	37.540	41.139	
14)	Endrin	18.46	17.23	832.4E6	886.5E6	36.429	42.878	
15)	4,4'-DDD	18.66	17.37	843.4E6	771.2E6	36.298	40.953	
16)	Endosulfan II	18.92	17.72	1087.4E6	868.0E6	40.355	43.438	
17)	4,4'-DDT	19.36	17.98	602.4E6	755.6E6	35.353	42.806	
18)	Endrin Aldehyde	19.65	18.64	909.9E6	711.5E6	43.227	44.618	
19)	Endosulfan sulfa	20.26	19.59	927.4E6	757.7E6	39.626	42.595	
20)	Methoxychlor	20.80	19.01	1561.4E6	1908.5E6	181.780	224.567	
21)	Endrin Ketone	21.47	20.20	1224.6E6	951.8E6	40.453	42.277	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode I-2603 init/date ew 09/24/09.

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D
Report Date: 02-Mar-2010 15:49

Shaw Group

```
Sample #1   : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D
Sample #2   : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18982.D
Inj Date    : 21-SEP-2009 23:41
Sample Info: INDC311
Misc Info   :
Cal Date    : 02-MAR-2010 15:49
Operator    : Auditor
Inst ID     : A6890.i
Dil Factor : 1.000000

Method #1     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1   : inda.sub
Sub List #2   : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP
```

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

AUDITOR GENERATED

ENCLOSURE 6AB

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D
Report Date: 02-Mar-2010 15:49

AUDITOR GENERATED

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.232	9.441	51904742	41907974	0.018	0.019	Lowest	0.018		N/A(a)
Decachlorobiphenyl	24.782	22.405	88306772	74737468	0.038	0.039	Lowest	0.038		N/A(aM)
alpha-BHC	11.998	11.032	79867022	63701067	0.018	0.019	Lowest	0.018		N/A(aM)
beta-BHC	13.177	12.126	32683194	26145548	0.019	0.020	Lowest	0.019		N/A(aM)
delta-BHC	13.920	12.569	60604439	57695371	0.018	0.020	Lowest	0.018		N/A(aM)
gamma-BHC (Lindane)	12.955	11.884	75252054	61206117	0.018	0.019	Lowest	0.018		N/A(aM)
Heptachlor	14.101	13.093	72941899	59325630	0.019	0.019	Lowest	0.019		N/A(aM)
Aldrin	14.902	13.826	63847560	54510581	0.019	0.019	Lowest	0.019		N/A(aM)
Heptachlor epoxide	16.255	15.275	58033347	49889695	0.018	0.019	Lowest	0.018		N/A(aM)
Endosulfan I	17.161	16.170	56988036	55418504	0.019	0.018	Lowest	0.018		N/A(aM)
Dieldrin	17.779	16.710	114788051	102285244	0.037	0.039	Lowest	0.037		N/A(aM)
4,4'-DDE	17.385	16.050	104669923	86032199	0.037	0.040	Lowest	0.037		N/A(aM)
Endrin	18.459	17.226	83124897	88634378	0.037	0.040	Lowest	0.037		N/A(aM)
Endosulfan II	18.919	17.719	108239880	86507698	0.037	0.039	Lowest	0.037		N/A(aM)
4,4'-DDD	18.660	17.372	84148633	76858628	0.037	0.038	Lowest	0.037		N/A(aM)
Endosulfan sulfate	20.263	19.594	91119130	76692135	0.019	0.019	Lowest	0.019		N/A(aM)
4,4'-DDT	19.354	17.981	59701444	75001308	0.035	0.039	Lowest	0.035		N/A(aM)
Methoxychlor	20.804	19.014	153575798	190773424	0.18	0.20	Lowest	0.18		N/A(aM)
Endrin ketone	21.464	20.202	117279333	94703384	0.038	0.038	Lowest	0.038		N/A(aM)
Endrin aldehyde	19.652	18.644	89379013	71117040	0.036	0.039	Lowest	0.036		N/A(aM)
alpha-Chlordane	17.028	15.862	50934509	47884630	0.018	0.019	Lowest	0.018		N/A(aM)
gamma-Chlordane	16.694	15.557	57078503	49743733	0.018	0.019	Lowest	0.018		N/A(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

ENCLOSURE 6 Ac

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18983.D(Signal #1)          A18983.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 00:18 (Signal #1); 09/22/09 00:55 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC411 (Sig #1); INDC412 (Sig #2)
Misc      : INDC411 (Sig #1); INDC412 (Sig #2)
ALS Vial  : 11   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:04:58 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:04:54 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1210.9E6	867.9E6	40.021	38.781
	Spiked Amount 60.000			Recovery	=	66.70%	64.63%
22) S	Decachlorobiphen	24.78	22.41	1942.8E6	1523.2E6	85.647	85.553
	Spiked Amount 120.000			Recovery	=	71.37%	71.29%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	1971.9E6	1408.9E6	45.246	45.552
3)	Gamma-BHC (Linda	12.95	11.88	1827.4E6	1335.6E6	44.034	45.891
4)	Beta-BHC	13.17	12.13	732.5E6	535.9E6	42.683	46.756
5)	Delta-BHC	13.92	12.57	1543.2E6	1256.6E6	42.454	47.790
6)	Heptachlor	14.10	13.09	1720.9E6	1267.6E6	45.717	42.264
7)	Aldrin	14.90	13.83	1528.3E6	1183.0E6	44.258	42.173
8)	Heptachlor Epoxi	16.25	15.27	1359.8E6	1061.4E6	43.465	41.970
9)	Gamma-Chlordane	16.69	15.56	1335.5E6	1068.6E6	43.196	41.672
~~10)~~	Alpha-Chlordane	17.16	15.86	1306.4E6	1026.0E6	44.103	43.664
~~11)~~	Endosulfan I	17.16	16.17	1306.4E6	1250.5E6	44.576	43.849
12)	4,4'-DDE	17.38	16.05	2518.4E6	1827.1E6	88.151	86.846
13)	Dieldrin	17.78	16.71	2705.5E6	2182.9E6	87.960	86.714
14)	*Endrin*	*18.46*	*17.23*	*2057.7E6*	*1863.5E6*	*89.209*	*88.896*
15)	4,4'-DDD	18.66	17.37	2006.2E6	1674.7E6	85.590	87.849
16)	Endosulfan II	18.92	17.72	2472.1E6	1833.4E6	89.794	90.264
17)	4,4'-DDT	19.35	17.98	1625.0E6	1596.0E6	93.733	88.443
18)	Endrin Aldehyde	19.65	18.64	1954.1E6	1450.2E6	89.564	89.067
19)	Endosulfan sulfa	20.26	19.59	2131.6E6	1574.0E6	89.187	87.159
20)	Methoxychlor	20.80	19.01	4067.5E6	3836.2E6	463.335	442.851
21)	Endrin Ketone	21.46	20.20	2719.8E6	2058.5E6	87.704	90.178

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode S-2607 init/date Ultro 09/24/09.

ENCLOSURE 6AD

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18983.D
Report Date: 02-Mar-2010 15:52

Shaw Group

Sample #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18983.D
Sample #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18983.D
Inj Date : 22-SEP-2009 00:18
Sample Info: INDC411
Misc Info :
Cal Date : 02-MAR-2010 15:52
Operator : Auditor
Inst ID : A6890.i
Dil Factor : 1.000000

Method #1 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2 : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1 : inda.sub
Sub List #2 : inda.sub
Col #1 Phase : RTX-CLP2
Col #2 Phase : RTX-CLP

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

AUDITOR GENERATED

ENCLOSURE 6AE

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18983.D

Report Date: 02-Mar-2010 15:52

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.232	9.441	120683670	86936024	0.043	0.040	Lowest	0.040		N/A(a)
Decachlorobiphenyl	24.780	22.405	188544462	151329261	0.081	0.080	Lowest	0.080		N/A(a)
alpha-BHC	11.997	11.032	196507101	141505633	0.045	0.043	Lowest	0.043		N/A(a)
beta-BHC	13.174	12.126	74122733	53660330	0.042	0.042	Lowest	0.042		N/A(aM)
delta-BHC	13.919	12.568	155028301	125697645	0.046	0.043	Lowest	0.043		N/A(aM)
gamma-BHC (Lindane)	12.953	11.883	182981279	133320195	0.045	0.042	Lowest	0.042		N/A(aM)
Heptachlor	14.099	13.093	172828072	126776225	0.044	0.042	Lowest	0.042		N/A(aM)
Aldrin	14.899	13.825	152878510	118137994	0.045	0.042	Lowest	0.042		N/A(aM)
Heptachlor epoxide	16.251	15.274	136185474	106080092	0.043	0.041	Lowest	0.041		N/A(a)
Endosulfan I	17.157	16.170	131019870	125765595	0.043	0.041	Lowest	0.041		N/A(a)
Dieldrin	17.776	16.710	271996797	218316120	0.088	0.083	Lowest	0.083		N/A(a)
4,4'-DDE	17.382	16.049	252730326	182652465	0.089	0.085	Lowest	0.085		N/A(a)
Endrin	18.457	17.226	205700805	186285260	0.090	0.083	Lowest	0.083		N/A(a)
Endosulfan II	18.917	17.719	245907660	183104257	0.085	0.083	Lowest	0.083		N/A(a)
4,4'-DDD	18.659	17.372	200364913	166893390	0.088	0.084	Lowest	0.084		N/A(a)
Endosulfan sulfate	20.260	19.594	209306020	162917372	0.043	0.041	Lowest	0.041		N/A(a)
4,4'-DDT	19.353	17.979	161431263	159374702	0.095	0.082	Lowest	0.082		N/A(a)
Methoxychlor	20.803	19.014	403489158	387304713	0.47	0.40	Lowest	0.40		N/A(a)
Endrin ketone	21.462	20.201	262644400	206668498	0.084	0.083	Lowest	0.083		N/A(a)
Endrin aldehyde	19.651	18.644	192006308	146232209	0.078	0.080	Lowest	0.078		N/A(a)
alpha-Chlordane	17.025	15.862	119962764	102595912	0.043	0.041	Lowest	0.041		N/A(a)
gamma-Chlordane	16.690	15.557	133975495	106768533	0.043	0.040	Lowest	0.040		N/A(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

M - Compound response manually integrated.

ENCLOSURE 6 AF

AUDITOR GENERATED

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18984.D(Signal #1)             A18984.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)              A-6890B(Signal # 2)
Acq On    : 09/22/09 00:55 (Signal #1); 09/22/09 01:32 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC511 (Sig #1); INDC512 (Sig #2)
Misc      : INDC511 (Sig #1); INDC512 (Sig #2)
ALS Vial  : 12   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 09:05:12 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:05:07 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	2430.0E6	1897.6E6	82.254	87.529
	Spiked Amount 60.000			Recovery	=	137.09%	145.88%
22) S	Decachlorobiphen	24.78	22.41	3748.5E6	3155.7E6	163.968	177.034
	Spiked Amount 120.000			Recovery	=	136.64%	147.53%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	4134.2E6	3176.9E6	95.656	103.686
3)	Gamma-BHC (Linda	12.95	11.88	3795.0E6	3004.7E6	92.526	103.879
4)	Beta-BHC	13.18	12.13	1468.3E6	1150.1E6	85.470	99.591
5)	Delta-BHC	13.92	12.57	3233.2E6	2865.3E6	90.924	107.613
6)	Heptachlor	14.10	13.09	3581.2E6	2802.7E6	94.899	94.956
7)	Aldrin	14.90	13.82	3155.1E6	2625.5E6	92.067	95.293
8)	Heptachlor Epoxi	16.25	15.28	2780.9E6	2310.5E6	89.504	92.773
9)	Gamma-Chlordane	16.69	15.56	2748.1E6	2371.7E6	89.744	93.904
~~10)~~	Alpha-Chlordane	17.16	15.86	2658.3E6	2258.9E6	89.744	96.808
~~11)~~	Endosulfan I	17.16	16.17	2658.3E6	2618.0E6	90.616	93.512
12)	4,4'-DDE	17.38	16.05	5227.6E6	4189.4E6	185.073	202.504
13)	Dieldrin	17.78	16.71	5608.8E6	4749.7E6	184.127	191.575
14)	Endrin	18.46	17.23	4309.5E6	4108.4E6	191.462	197.482
15)	4,4'-DDD	18.66	17.37	4150.8E6	3706.2E6	179.712	196.201
16)	Endosulfan II	18.92	17.72	5003.6E6	3944.8E6	180.911	193.773
17)	4,4'-DDT	19.35	17.98	3394.5E6	3674.1E6	198.141	207.406
18)	Endrin Aldehyde	19.65	18.64	3833.6E6	3126.7E6	172.882	191.190
19)	Endosulfan sulfa	20.26	19.59	4321.0E6	3510.4E6	181.011	194.782
20)	Methoxychlor	20.80	19.01	8403.5E6	8502.2E6	963.595	980.862
21)	Endrin Ketone	21.46	20.20	5432.4E6	4353.7E6	174.159	190.114

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JB1J1
Episode S2607 init/date Ollo 09/24/09.

ENCLOSURE 6 A G

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18984.D
Report Date: 02-Mar-2010 15:49

Shaw Group

```
Sample #1   : C:\JBPJ3\PEST\A6890.i\Batch1.b\A18984.D
Sample #2   : C:\JBPJ3\PEST\A6890.i\Batch1.b\Batch1.b\A18984.D
Inj Date    : 22-SEP-2009 00:55
Sample Info: INDC511
Misc Info   :
Cal Date    : 02-MAR-2010 15:49
Operator    : Auditor
Inst ID     : A6890.i
Dil Factor  : 1.000000

Method #1     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m
Method #2     : C:\JBPJ3\PEST\A6890.i\Batch1.b\PESTDDTF.m\PESTDDTR.m
Sub List #1   : inda.sub
Sub List #2   : inda.sub
Col #1 Phase  : RTX-CLP2
Col #2 Phase  : RTX-CLP
```

Concentration Formula: Amt * DF * GPC * Vt/(Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
GPC	1.000	GPC Factor
Vt	10000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Vi	1.000	Volume injected (uL)
Cpnd Variable		Local Compound Variable

ENCLOSURE 6 A H

AUDITOR GENERATED

4001-05112010-5

Compound	RT#1	RT#2	Resp#1	Resp#2	Conc#1 (ug/L)	Conc#2 (ug/L)	RptCol	Result	Target Range	Ratio
Tetrachloro-meta-Xylene	10.230	9.439	242916651	190029941	0.087	0.088	Lowest	0.087		N/A(aA)
Decachlorobiphenyl	24.780	22.405	367397812	314006461	0.16	0.17	Lowest	0.16		N/A(a)
alpha-BHC	11.997	11.032	411442464	318818637	0.095	0.097	Lowest	0.095		N/A(A)
beta-BHC	13.175	12.125	146372357	114885610	0.084	0.090	Lowest	0.084		N/A(AM)
delta-BHC	13.919	12.567	322892442	286285202	0.096	0.098	Lowest	0.096		N/A(AM)
gamma-BHC (Lindane)	12.954	11.883	379736428	299974631	0.093	0.096	Lowest	0.093		N/A(AM)
Heptachlor	14.100	13.092	353985273	280081412	0.090	0.092	Lowest	0.090		N/A(A)
Aldrin	14.899	13.824	314414025	262407685	0.092	0.093	Lowest	0.092		N/A(A)
Heptachlor epoxide	16.252	15.276	277989126	230884605	0.089	0.089	Lowest	0.089		N/A(A)
Endosulfan I	17.159	16.171	265384967	262029930	0.087	0.085	Lowest	0.085		N/A(A)
Dieldrin	17.777	16.712	560106372	475242456	0.18	0.18	Lowest	0.18		N/A(A)
4,4'-DDE	17.382	16.051	522294491	419402675	0.18	0.19	Lowest	0.18		N/A(A)
Endrin	18.457	17.227	430715949	412008791	0.19	0.18	Lowest	0.18		N/A(A)
Endosulfan II	18.919	17.720	499989086	396529706	0.17	0.18	Lowest	0.17		N/A(A)
4,4'-DDD	18.659	17.372	414694215	372488772	0.18	0.19	Lowest	0.18		N/A(A)
Endosulfan sulfate	20.262	19.594	430845273	354193262	0.088	0.089	Lowest	0.088		N/A(a)
4,4'-DDT	19.354	17.979	338942265	373228098	0.20	0.19	Lowest	0.19		N/A(A)
Methoxychlor	20.803	19.015	839055707	855771050	0.97	0.89	Lowest	0.89		N/A
Endrin ketone	21.463	20.201	541966851	437938404	0.17	0.18	Lowest	0.17		N/A(A)
Endrin aldehyde	19.652	18.644	382298593	316732592	0.15	0.17	Lowest	0.15		N/A
alpha-Chlordane	17.026	15.862	244327424	225918408	0.088	0.090	Lowest	0.088		N/A(A)
gamma-Chlordane	16.692	15.558	274620999	236988744	0.089	0.090	Lowest	0.089		N/A(A)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

ENCLOSURE 6 A I

AUDITOR GENERATED

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53   (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________   Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________   Time Analyzed: ____________

EPA Sample No.(PEM##): PEM41   Date Analyzed: 09/23/2009

Lab Sample ID(PEM): PEM41   Time Analyzed: 0115

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	11.99	11.95	12.05	0.0095163	0.010	-4.8
beta-BHC	13.17	13.13	13.23	0.0109486	0.010	9.5
gamma-BHC (Lindane)	12.95	12.90	13.00	0.0092931	0.010	-7.1
Endrin	18.45	18.39	18.53	0.0356211	0.050	-28.8
4,4'-DDT	19.35	19.28	19.42	0.1048566	0.100	4.9
Methoxychlor	20.8	20.73	20.87	0.2543095	0.250	1.7
TCX	10.23	10.18	10.28	0.0205661	0.020	2.8
DCB	24.77	24.68	24.88	0.0183703	0.020	-8.1

4,4'-DDT % Breakdown (1): 8.8   Endrin % breakdown (1): 0.0

Combined % Breakdown (1): 8.8

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 7 A

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53   (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): PIBLK11   Date Analyzed: 09/22/2009

Lab Sample ID(PIBLK): PIBLK11   Time Analyzed: 0436

EPA Sample No.(PEM##): PEM21   Date Analyzed: 09/22/2009

Lab Sample ID(PEM): PEM21   Time Analyzed: 0513

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	12	11.95	12.05	0.0096609	0.010	-3.4
beta-BHC	13.18	13.13	13.23	0.0092183	0.010	-7.8
gamma-BHC (Lindane)	12.96	12.90	13.00	0.0095624	0.010	-4.4
Endrin	18.46	18.39	18.53	0.0472403	0.050	-5.5
4,4'-DDT	19.35	19.28	19.42	0.1045362	0.100	4.5
Methoxychlor	20.8	20.73	20.87	0.2571190	0.250	2.8
TCX	10.23	10.18	10.28	0.0205506	0.020	2.8
DCB	24.78	24.68	24.88	0.0189327	0.020	-5.3

4,4'-DDT % Breakdown (1): 0.0   Endrin % breakdown (1): 20.6

Combined % Breakdown (1): 20.6

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (05/2005)

ENCLOSURE 7B

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(PEM##): PEM41 Date Analyzed: 09/23/2009

Lab Sample ID(PEM): PEM41 Time Analyzed: 0115

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	11.99	11.95	12.05	0.0095163	0.010	-4.8
beta-BHC	13.17	13.13	13.23	0.0109486	0.010	9.5
gamma-BHC (Lindane)	12.95	12.90	13.00	0.0092931	0.010	-7.1
Endrin	18.45	18.39	18.53	0.0356211	0.050	-28.8
4,4'-DDT	19.35	19.28	19.42	0.1048566	0.100	4.9
Methoxychlor	20.8	20.73	20.87	0.2543095	0.250	1.7
TCX	10.23	10.18	10.28	0.0205661	0.020	2.8
DCB	24.77	24.68	24.88	0.0183703	0.020	-8.1

4,4'-DDT % Breakdown (1): 8.8 Endrin % breakdown (1): 0.0

Combined % Breakdown (1): 8.8

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 7c

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): PIBLK51   Date Analyzed: 09/23/2009

Lab Sample ID(PIBLK): PIBLK51   Time Analyzed: 1841

EPA Sample No.(PEM##): PEM51   Date Analyzed: 09/23/2009

Lab Sample ID(PEM): PEM51   Time Analyzed: 1917

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	12	11.95	12.05	0.0097903	0.010	-2.1
beta-BHC	13.18	13.13	13.23	0.0095415	0.010	-4.6
gamma-BHC (Lindane)	12.96	12.90	13.00	0.0094559	0.010	-5.4
Endrin	18.46	18.39	18.53	0.0379169	0.050	-24.2
4,4'-DDT	19.36	19.28	19.42	0.1165121	0.100	16.5
Methoxychlor	20.81	20.73	20.87	0.2701297	0.250	8.1
TCX	10.23	10.18	10.28	0.0209567	0.020	4.8
DCB	24.79	24.68	24.88	0.0181951	0.020	-9.0

4,4'-DDT % Breakdown (1): 0.0   Endrin % breakdown (1): 34.8

Combined % Breakdown (1): 34.8

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 7D

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23 DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A18973	9/21/2009	18:10	10.23	24.78
02	PEM11	A18974	9/21/2009	18:47	10.23	24.78
03	TOXAPH111	A18975	9/21/2009	19:24	10.23	24.78
04	TOXAPH211	A18976	9/21/2009	20:00	10.23	24.78
05	TOXAPH311	A18977	9/21/2009	20:37	10.23	24.78
06	TOXAPH411	A18978	9/21/2009	21:14	10.23	24.78
07	TOXAPH511	A18979	9/21/2009	21:51	10.23	24.78
08	INDT111	A18985	9/22/2009	01:32	10.24	24.78
09	INDT211	A18986	9/22/2009	02:08	10.23	24.78
10	INDT311	A18987	9/22/2009	02:45	10.23	24.78
11	INDT411	A18988	9/22/2009	03:22	10.23	24.78
12	INDT511	A18989	9/22/2009	03:59	10.23	24.78
13	PIBLK11	A18990	9/22/2009	04:36	10.23	24.78
14	PEM21	A18991	9/22/2009	05:13	10.23	24.78
15	GPCBLK24	A18995	9/22/2009	09:05	0 *	0 *
16	ZZZZZ	A18996	9/22/2009	09:44	0 *	0 *
17	ZZZZZ	A18997	9/22/2009	10:20	10.23	24.78
18	PLCS24	A18998	9/22/2009	11:09	10.24	24.78
19	PLCSD24	A18999	9/22/2009	11:45	10.23	24.78
20	PBLK24	A19002	9/22/2009	13:35	10.23	24.78
21	JBPJ3	A19003	9/22/2009	14:12	10.23	24.78
22	ZZZZZ	A19004	9/22/2009	14:49	10.23	24.78
23	PIBLK21	A19005	9/22/2009	15:26	10.23	24.78
24	INDC331	A19006	9/22/2009	16:40	10.23	24.78
25	INDT321	A19007	9/22/2009	17:17	10.23	24.78
26	JBPJ6	A19008	9/22/2009	17:53	10.23	24.78
27	JBPJ9	A19009	9/22/2009	18:30	10.23	24.78
28	JBPK0	A19010	9/22/2009	19:07	10.23	24.78
29	JBPK3	A19011	9/22/2009	19:44	10.23	24.78
30	ZZZZZ	A19012	9/22/2009	20:21	0 *	0 *
31	JBPK6	A19013	9/22/2009	20:57	10.23	24.78
32	JBPK8	A19014	9/22/2009	21:34	10.23	24.77

QC LIMITS
TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 7E

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23 DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	JBPK9	A19015	9/22/2009	22:11	10.23	24.78
02	JBPL1	A19016	9/22/2009	22:48	10.23	24.77
03	JBPL5	A19017	9/22/2009	23:25	10.23	24.78
04	PIBLK31	A19018	9/23/2009	00:02	10.23	24.78
05	PEM31	A19019	9/23/2009	00:38	10.23	24.78
06	PEM41	A19020	9/23/2009	01:15	10.23	24.77
07	ZZZZZ	A19021	9/23/2009	02:59	0 *	0 *
08	GPCPEST24	A19022	9/23/2009	03:36	0 *	0 *
09	JBPL6	A19023	9/23/2009	04:13	10.23	24.78
10	JBPL7	A19024	9/23/2009	04:50	10.23	24.78
11	JBPM0	A19025	9/23/2009	05:27	10.23	24.77
12	ZZZZZ	A19026	9/23/2009	06:03	10.23	24.77
13	ZZZZZ	A19027	9/23/2009	06:40	10.23	24.77
14	JBPJ3DL	A19028	9/23/2009	07:17	0 *	0 *
15	JBPK0DL	A19029	9/23/2009	07:54	0 *	0 *
16	JBPK3DL	A19030	9/23/2009	08:31	0 *	0 *
17	JBPK6DL	A19031	9/23/2009	09:07	0 *	0 *
18	JBPK9DL	A19032	9/23/2009	09:44	0 *	0 *
19	JBPL1DL	A19033	9/23/2009	10:55	10.25	24.8
20	PIBLK41	A19034	9/23/2009	11:32	10.24	24.79
21	INDC361	A19035	9/23/2009	12:46	10.24	24.79
22	INDT361	A19036	9/23/2009	13:23	10.24	24.79
23	JBPL5DL	A19037	9/23/2009	14:00	0 *	0 *
24	JBPL6DL	A19038	9/23/2009	14:36	0 *	0 *
25	JBPL7DL	A19039	9/23/2009	15:13	0 *	0 *
26	JBPK9MS	A19040	9/23/2009	15:50	10.23	24.77
27	JBPK9MSD	A19041	9/23/2009	16:27	10.23	24.78
28	PIBLK51	A19042	9/23/2009	18:41	10.24	24.79
29	PEM51	A19043	9/23/2009	19:17	10.23	24.79
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 7F

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): PIBLK41 Date Analyzed: 09/23/2009

Lab Sample ID(PIBLK): PIBLK41 Time Analyzed: 1132

EPA Sample No.(INDC3##): INDC361 Date Analyzed: 09/23/2009

Lab Sample ID(INDC3): INDC361 Time Analyzed: 1246

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	$\overline{CF}$	CF	%D
alpha-BHC	12	11.95	12.05	43223165125	43880890400	1.5
gamma-BHC (Lindane)	12.96	12.90	13.00	40858702583	38677476100	-5.3
Heptachlor	14.11	14.05	14.15	39188765938	45815255950	16.9
Endosulfan I	17.17	17.09	17.23	30545614938	34268875800	12.2
Dieldrin	17.79	17.71	17.85	30899296920	33474632350	8.3
Endrin	18.46	18.39	18.53	22787170475	17100912275	-25.0
4,4'-DDD	18.66	18.59	18.73	22822089050	20807267350	-8.8
4,4'-DDT	19.36	19.28	19.42	17058045055	16186001350	-5.1
Methoxychlor	20.81	20.73	20.87	8678749095	7808608135	-10.0
beta-BHC	13.18	13.13	13.23	17741685583	19594867100	10.4
delta-BHC	13.93	13.87	13.97	33552804390	26320959800	-21.6
Aldrin	14.91	14.85	14.95	34252375683	35944527000	4.9
Heptachlor epoxide	16.26	16.18	16.32	31420692243	32530437400	3.5
4,4'-DDE	17.39	17.31	17.45	28365195250	29220468675	3.0
Endosulfan II	18.92	18.85	18.99	28946893884	33349406400	15.2
Endosulfan sulfate	20.27	20.19	20.33	24464135640	25893358350	5.8
Endrin ketone	21.47	21.39	21.53	31896861596	37844714950	18.6
Endrin aldehyde	19.66	19.58	19.72	24970413279	26658902925	6.8
alpha-Chlordane	17.17	17.09	17.23	30545614938	34268875800	12.2
gamma-Chlordane	16.7	16.62	16.76	30991647843	31504800000	1.7
TCX	10.24	10.18	10.28	27947406490	29499757900	5.6
DCB	24.79	24.68	24.88	23667896108	25841170300	9.2

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 8A

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP   ID: 0.53   (mm)   Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________   Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________   Time Analyzed: ____________

EPA Sample No.(INDC##): INDT321   Date Analyzed: 09/22/2009

Lab Sample ID(INDC): INDT321   Time Analyzed: 1753

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
2,4'-DDD	16.43	16.36	16.50	13801672615	13735791525	-0.5
2,4'-DDE	15.26	15.20	15.34	18075042270	16863424675	-6.7
2,4'-DDT	16.99	16.92	17.06	16159448503	15361298500	-4.9
Oxychlordane	15.03	14.97	15.11	22378363083	20931933250	-6.5
cis-Nonachlor	17.29	17.22	17.36	3482467730	2483040375	-28.7
Trans-Nonachlor	15.82	15.75	15.89	3754210320	3314292600	-11.7
Hexachlorobenzene	10.54	10.47	10.61	26749870279	24790905000	-7.3
Hexachlorobutadiene	4.51	4.44	4.58	37918261420	37275715750	-1.7
Octachlorostyrene	14.26	14.19	14.33	36346227154	33853255300	-6.9
TCX	~~9.44~~	~~9.39~~	~~9.49~~	~~23073225000~~	~~21596711600~~	~~-6.4~~
DCB	22.41	22.30	22.50	17064980045	18217319925	6.8

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (05/2005)

ENCLOSURE 8B

7L - FORM VII PEST-3

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(INDC##): INDT361 Date Analyzed: 09/23/2009

Lab Sample ID(INDC): INDT361 Time Analyzed: 1400

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	$\overline{CF}$	CF	%D
2,4'-DDD	16.43	16.36	16.50	13801672615	12715945950	-7.9
2,4'-DDE	15.26	15.20	15.34	18075042270	16018164975	-11.4
2,4'-DDT	16.99	16.92	17.06	16159448503	14954663925	-7.5
Oxychlordane	15.03	14.97	15.11	22378363083	19965973150	-10.8
cis-Nonachlor	17.29	17.22	17.36	3482467730	2563622775	-26.4
Trans-Nonachlor	15.82	15.75	15.89	3754210320	3304735975	-12.0
Hexachlorobenzene	10.54	10.47	10.61	26749870279	23910196100	-10.6
Hexachlorobutadiene	4.51	4.44	4.58	37918261420	37478678425	-1.2
Octachlorostyrene	14.25	14.19	14.33	36346227154	32449483700	-10.7
TCX	9.44	9.39	9.49	23073225000	20853228100	-9.6
DCB	22.4	22.30	22.50	17064980045	16538366000	-3.1

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

ENCLOSURE 8C

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: _______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53   (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23   DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A18973	9/21/2009	18:10	10.23	24.78
02	PEM11	A18974	9/21/2009	18:47	10.23	24.78
03	TOXAPH111	A18975	9/21/2009	19:24	10.23	24.78
04	TOXAPH211	A18976	9/21/2009	20:00	10.23	24.78
05	TOXAPH311	A18977	9/21/2009	20:37	10.23	24.78
06	TOXAPH411	A18978	9/21/2009	21:14	10.23	24.78
07	TOXAPH511	A18979	9/21/2009	21:51	10.23	24.78
08	INDT111	A18985	9/22/2009	01:32	10.24	24.78
09	INDT211	A18986	9/22/2009	02:08	10.23	24.78
10	INDT311	A18987	9/22/2009	02:45	10.23	24.78
11	INDT411	A18988	9/22/2009	03:22	10.23	24.78
12	INDT511	A18989	9/22/2009	03:59	10.23	24.78
13	PIBLK11	A18990	9/22/2009	04:36	10.23	24.78
14	PEM21	A18991	9/22/2009	05:13	10.23	24.78
15	GPCBLK24	A18995	9/22/2009	09:05	0 *	0 *
16	ZZZZZ	A18996	9/22/2009	09:44	0 *	0 *
17	ZZZZZ	A18997	9/22/2009	10:20	10.23	24.78
18	PLCS24	A18998	9/22/2009	11:09	10.24	24.78
19	PLCSD24	A18999	9/22/2009	11:45	10.23	24.78
20	PBLK24	A19002	9/22/2009	13:35	10.23	24.78
21	JBPJ3	A19003	9/22/2009	14:12	10.23	24.78
22	ZZZZZ	A19004	9/22/2009	14:49	10.23	24.78
23	PIBLK21	A19005	9/22/2009	15:26	10.23	24.78
24	INDC331	A19006	9/22/2009	16:40	10.23	24.78
25	INDT321	A19007	9/22/2009	17:17	10.23	24.78
26	JBPJ6	A19008	9/22/2009	17:53	10.23	24.78
27	JBPJ9	A19009	9/22/2009	18:30	10.23	24.78
28	JBPK0	A19010	9/22/2009	19:07	10.23	24.78
29	JBPK3	A19011	9/22/2009	19:44	10.23	24.78
30	ZZZZZ	A19012	9/22/2009	20:21	0 *	0 *
31	JBPK6	A19013	9/22/2009	20:57	10.23	24.78
32	JBPK8	A19014	9/22/2009	21:34	10.23	24.77

QC LIMITS
TCX = Tetrachloro-m-xylene   ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl   ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 8D

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23 DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	JBPK9	A19015	9/22/2009	22:11	10.23	24.78
02	JBPL1	A19016	9/22/2009	22:48	10.23	24.77
03	JBPL5	A19017	9/22/2009	23:25	10.23	24.78
04	PIBLK31	A19018	9/23/2009	00:02	10.23	24.78
05	PEM31	A19019	9/23/2009	00:38	10.23	24.78
06	PEM41	A19020	9/23/2009	01:15	10.23	24.77
07	ZZZZZ	A19021	9/23/2009	02:59	0 *	0 *
08	GPCPEST24	A19022	9/23/2009	03:36	0 *	0 *
09	JBPL6	A19023	9/23/2009	04:13	10.23	24.78
10	JBPL7	A19024	9/23/2009	04:50	10.23	24.78
11	JBPM0	A19025	9/23/2009	05:27	10.23	24.77
12	ZZZZZ	A19026	9/23/2009	06:03	10.23	24.77
13	ZZZZZ	A19027	9/23/2009	06:40	10.23	24.77
14	JBPJ3DL	A19028	9/23/2009	07:17	0 *	0 *
15	JBPK0DL	A19029	9/23/2009	07:54	0 *	0 *
16	JBPK3DL	A19030	9/23/2009	08:31	0 *	0 *
17	JBPK6DL	A19031	9/23/2009	09:07	0 *	0 *
18	JBPK9DL	A19032	9/23/2009	09:44	0 *	0 *
19	JBPL1DL	A19033	9/23/2009	10:55	10.25	24.8
20	PIBLK41	A19034	9/23/2009	11:32	10.24	24.79
21	INDC361	A19035	9/23/2009	12:46	10.24	24.79
22	INDT361	A19036	9/23/2009	13:23	10.24	24.79
23	JBPL5DL	A19037	9/23/2009	14:00	0 *	0 *
24	JBPL6DL	A19038	9/23/2009	14:36	0 *	0 *
25	JBPL7DL	A19039	9/23/2009	15:13	0 *	0 *
26	JBPK9MS	A19040	9/23/2009	15:50	10.23	24.77
27	JBPK9MSD	A19041	9/23/2009	16:27	10.23	24.78
28	PIBLK51	A19042	9/23/2009	18:41	10.24	24.79
29	PEM51	A19043	9/23/2009	19:17	10.23	24.79
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 8E

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

6J - FORM VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 09/21/2009 09/22/2009

	RT OF STANDARDS					RT	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC	12.00	12.00	12.00	12.00	12.00	12.00	11.95	12.05
beta-BHC	13.18	13.18	13.18	13.17	13.18	13.18	13.13	13.23
delta-BHC	13.92	13.92	13.92	13.92	13.92	13.92	13.87	13.97
gamma-BHC (Lindane)	12.96	12.95	12.96	12.95	12.95	12.95	12.90	13.00
Heptachlor	14.10	14.10	14.10	14.10	14.10	14.10	14.05	14.15
Aldrin	14.90	14.90	14.90	14.90	14.90	14.90	14.85	14.95
Heptachlor epoxide	16.25	16.25	16.25	16.25	16.25	16.25	16.18	16.32
Endosulfan I	17.16	17.16	17.16	17.16	17.16	17.16	17.09	17.23
Dieldrin	17.78	17.78	17.78	17.78	17.78	17.78	17.71	17.85
4,4'-DDE	17.38	17.38	17.39	17.38	17.38	17.38	17.31	17.45
Endrin	18.46	18.46	18.46	18.46	18.46	18.46	18.39	18.53
Endosulfan II	18.92	18.92	18.92	18.92	18.92	18.92	18.85	18.99
4,4'-DDD	18.66	18.66	18.66	18.66	18.66	18.66	18.59	18.73
Endosulfan sulfate	20.26	20.26	20.26	20.26	20.26	20.26	20.19	20.33
4,4'-DDT	19.35	19.35	19.36	19.35	19.35	19.35	19.28	19.42
Methoxychlor	20.80	20.80	20.80	20.80	20.80	20.80	20.73	20.87
Endrin ketone	21.47	21.46	21.47	21.46	21.46	21.46	21.39	21.53
Endrin aldehyde	19.65	19.65	19.65	19.65	19.65	19.65	19.58	19.72
alpha-Chlordane	17.16	17.16	17.16	17.16	17.16	17.16	17.09	17.23
gamma-Chlordane	16.69	16.69	16.69	16.69	16.69	16.69	16.62	16.76
TCX (A)	10.23	10.23	10.23	10.23	10.23	10.23	10.18	10.28
DCB (A)	24.78	24.78	24.78	24.78	24.78	24.78	24.68	24.88
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

SOM01.1 (5/2005)

ENCLOSURE 9A

4001-05112010-5

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18982.D

Date : 21-SEP-2009 23:41

Client ID: INDC311

Instrument: A6890.i

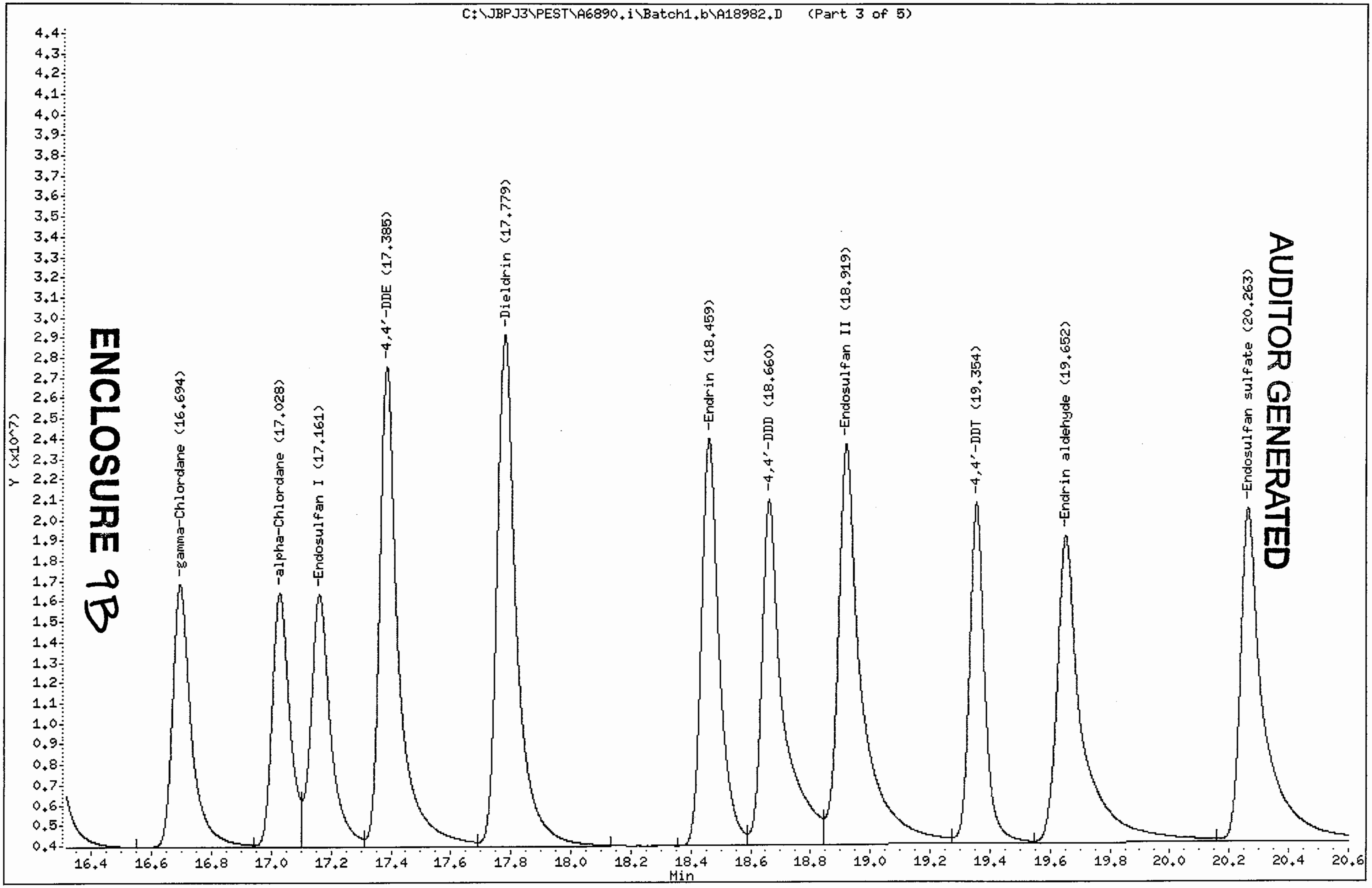
Sample Info: INDC311

Volume Injected (uL): 1.0

Operator: Auditor

Column phase: RTX-CLP2

Column diameter: 0.32



ENCLOSURE 9B

AUDITOR GENERATED

6J - FORM VI PEST-1
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 09/22/2009 09/22/2009

	RT OF STANDARDS					$\overline{RT}$	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
2,4'-DDD	17.83	17.83	17.83	17.83	17.83	17.83	17.76	17.90
2,4'-DDE	16.68	16.68	16.68	16.68	16.68	16.68	16.61	16.75
2,4'-DDT	18.51	18.51	18.51	18.51	18.51	18.51	18.44	18.58
Oxychlordane	16.05	16.05	16.05	16.05	16.05	16.05	15.98	16.12
cis-Nonachlor	18.64	18.63	18.63	18.63	18.63	18.63	18.56	18.70
Trans-Nonachlor	16.91	16.91	16.91	16.91	16.91	16.91	16.84	16.98
Hexachlorobenzene	11.60	11.60	11.60	11.60	11.60	11.60	11.53	11.67
Hexachlorobutadiene	4.68	4.68	4.68	4.68	4.68	4.68	4.61	4.75
Octachlorostyrene	15.55	15.54	15.54	15.54	15.54	15.54	15.47	15.61
TCX (A)	10.24	10.23	10.23	10.23	10.23	10.23	10.18	10.28
DCB (A)	24.78	24.78	24.78	24.78	24.78	24.78	24.68	24.88

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

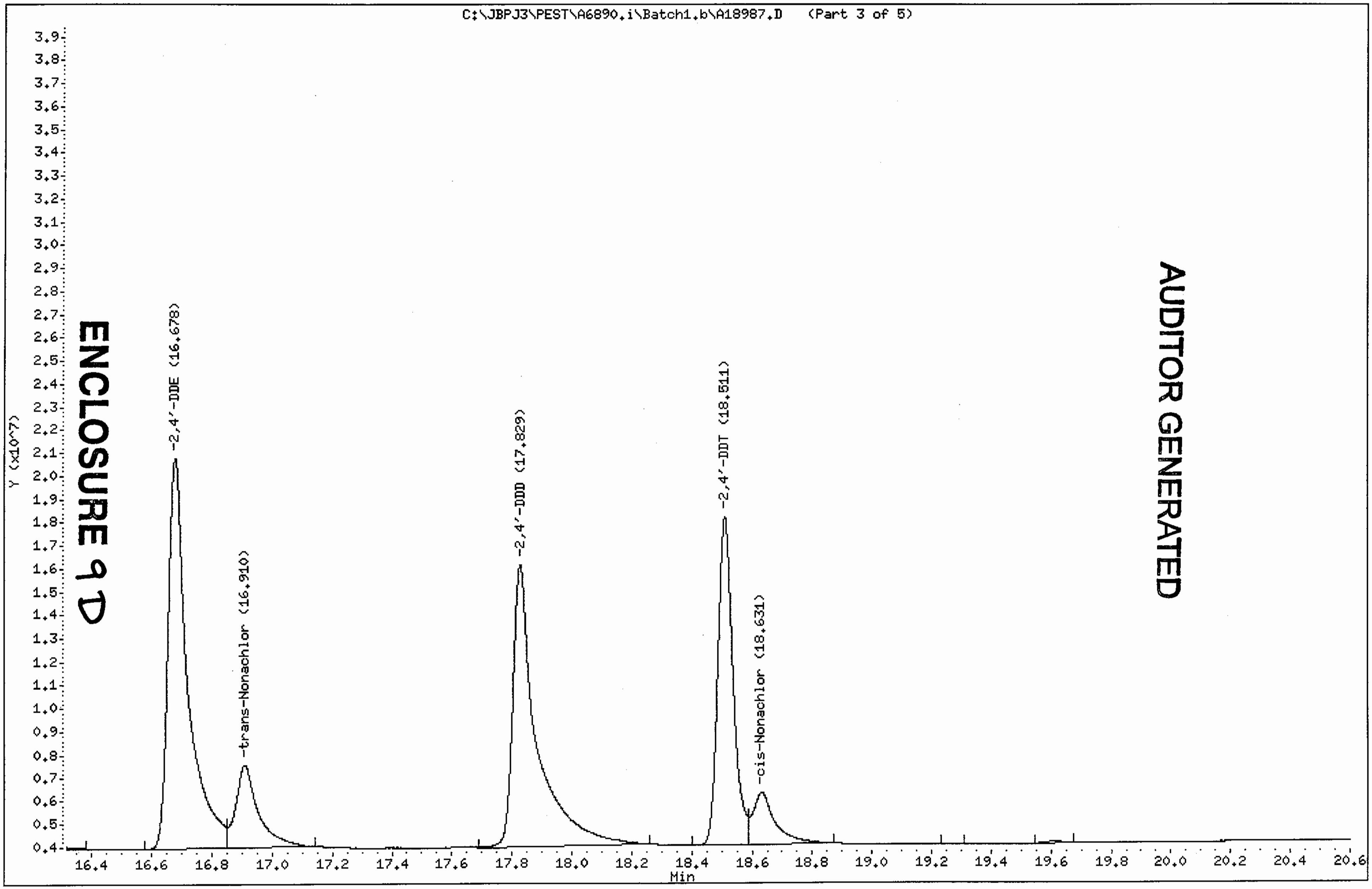
* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (5/2005)

ENCLOSURE 9C

Data File: C:\JBPJ3\PEST\A6890.i\Batch1.b\A18987.D
Date : 22-SEP-2009 02:45
Client ID: INDT311 Instrument: A6890.i
Sample Info: INDA
Volume Injected (uL): 1.0 Operator: Auditor
Column phase: RTX-CLP2 Column diameter: 0.32



ENCLOSURE 9D

AUDITOR GENERATED

6J - Form VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

Instrument ID: A-6890B

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (2): RTX-CLP ID 0.53 (mm) Date(s) Analyzed: 09/21/2009 09/22/2009

	RT OF STANDARDS					$\overline{RT}$	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC	11.03	11.03	11.03	11.03	11.03	11.03	10.98	11.08
beta-BHC	12.12	12.13	12.13	12.13	12.13	12.13	12.08	12.18
delta-BHC	12.57	12.57	12.57	12.57	12.57	12.57	12.52	12.62
gamma-BHC (Lindane)	11.88	11.88	11.88	11.88	11.88	11.88	11.83	11.93
Heptachlor	13.09	13.09	13.09	13.09	13.09	13.09	13.04	13.14
Aldrin	13.82	13.83	13.83	13.83	13.82	13.83	13.78	13.88
Heptachlor epoxide	15.27	15.28	15.28	15.27	15.28	15.28	15.21	15.35
Endosulfan I	16.17	16.17	16.17	16.17	16.17	16.17	16.10	16.24
Dieldrin	16.71	16.71	16.71	16.71	16.71	16.71	16.64	16.78
4,4'-DDE	16.05	16.05	16.05	16.05	16.05	16.05	15.98	16.12
Endrin	17.22	17.23	17.23	17.23	17.23	17.23	17.16	17.30
Endosulfan II	17.72	17.72	17.72	17.72	17.72	17.72	17.65	17.79
4,4'-DDD	17.37	17.37	17.37	17.37	17.37	17.37	17.30	17.44
Endosulfan sulfate	19.59	19.60	19.59	19.59	19.59	19.59	19.52	19.66
4,4'-DDT	17.98	17.98	17.98	17.98	17.98	17.98	17.91	18.05
Methoxychlor	19.01	19.01	19.01	19.01	19.01	19.01	18.94	19.08
Endrin ketone	20.20	20.20	20.20	20.20	20.20	20.20	20.13	20.27
Endrin aldehyde	18.64	18.64	18.64	18.64	18.64	18.64	18.57	18.71
alpha-Chlordane	15.86	15.86	15.86	15.86	15.86	15.86	15.79	15.93
gamma-Chlordane	15.55	15.56	15.56	15.56	15.56	15.56	15.49	15.63
TCX (A)	9.44	9.44	9.44	9.44	9.44	9.44	9.39	9.49
DCB (A)	22.40	22.41	22.41	22.41	22.41	22.41	22.31	22.51
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

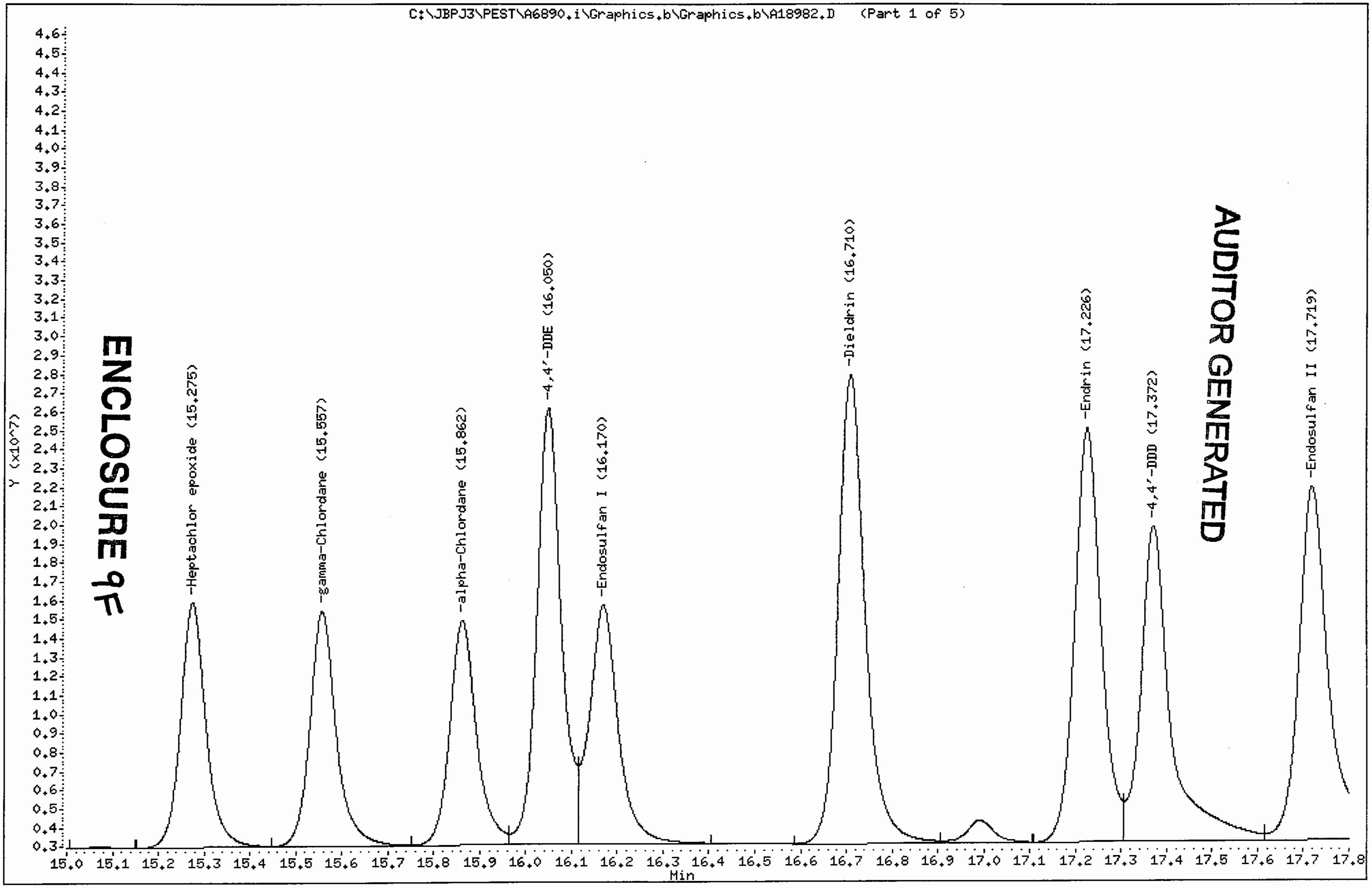
* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

ENCLOSURE 9E

Data File: C:\JBPJ3\PEST\A6890.i\Graphics.b\Graphics.b\A18982.D
Date : 22-SEP-2009 00:18
Client ID: INDC311 Instrument: A6890.i
Sample Info: INDC311
Volume Injected (uL): 1.0 Operator: Auditor
Column phase: RTX-CLP Column diameter: 0.32



6J - Form VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

Instrument ID: A-6890B

Level (x CS1): CS1 1.0   CS2 2.0   CS3 4.0   CS4 8.0   CS5 16.0

GC Column (2): RTX-CLP   ID 0.53   (mm) Date(s) Analyzed: 09/22/2009 09/22/2009

	RT OF STANDARDS					$\overline{RT}$	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
2,4'-DDD	16.43	16.43	16.43	16.43	16.43	16.43	16.36	16.50
2,4'-DDE	15.27	15.27	15.27	15.26	15.26	15.27	15.20	15.34
2,4'-DDT	16.99	16.99	16.99	16.99	16.99	16.99	16.92	17.06
Oxychlordane	15.04	15.04	15.04	15.03	15.03	15.04	14.97	15.11
cis-Nonachlor	17.29	17.30	17.29	17.29	17.29	17.29	17.22	17.36
Trans-Nonachlor	15.82	15.82	15.82	15.82	15.82	15.82	15.75	15.89
Hexachlorobenzene	10.55	10.54	10.55	10.54	10.54	10.54	10.47	10.61
Hexachlorobutadiene	4.51	4.51	4.51	4.51	4.51	4.51	4.44	4.58
Octachlorostyrene	14.26	14.26	14.26	14.26	14.26	14.26	14.19	14.33
TCX (A)	9.44	9.44	9.44	9.44	9.44	9.44	9.39	9.49
DCB (A)	22.40	22.40	22.40	22.40	22.41	22.40	22.30	22.50

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

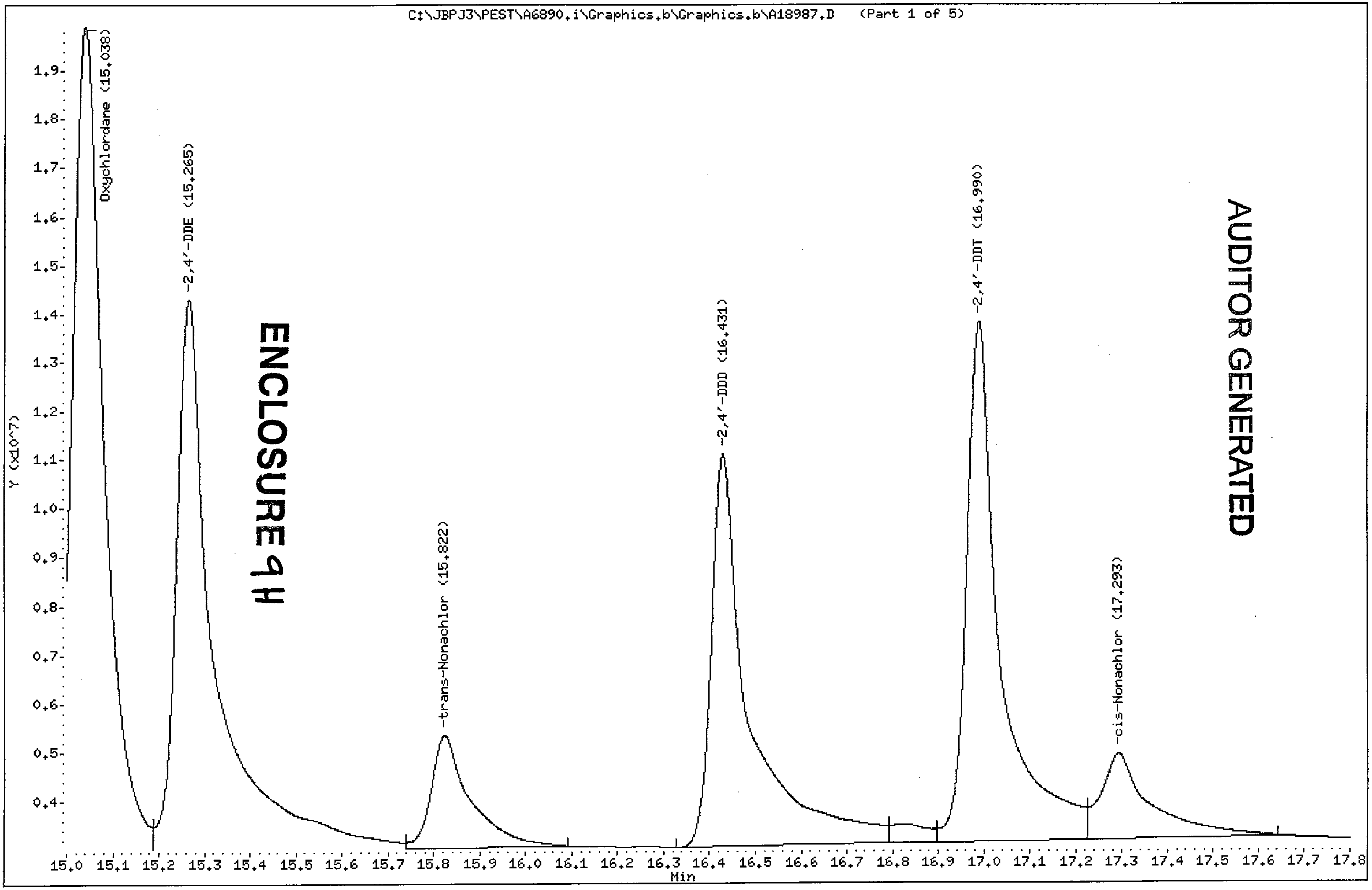
(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 9 G

Data File: C:\JBPJ3\PEST\A6890.i\Graphics.b\Graphics.b\A18987.D
Date : 22-SEP-2009 03:22
Client ID: INDT311 Instrument: A6890.i
Sample Info: INDA
Volume Injected (uL): 1.0 Operator: Auditor
Column phase: RTX-CLP Column diameter: 0.32



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK9MSD(1)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.08MSD

Sample wt/vol: 4.900 (g/mL) G Lab File ID: A19041

% Moisture: 39 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	140	
76-44-8	Heptachlor	150	
309-00-2	Aldrin	170	
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	450	
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	750	E
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	6000	E
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	730	E
3424-82-6	2,4'-DDE	240	
789-02-6	2,4'-DDT	1200	E
27304-13-8	Oxychlordane	110	
5103-73-1	cis-Nonachlor	3900	E
39765-80-5	Trans-Nonachlor	180	
118-74-1	Hexachlorobenzene	110	
87-68-3	Hexachlorobutadiene	120	
29082-74-4	Octachlorostyrene	120	

SOM01.2 (6/2007)

ENCLOSURE 10A

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK9MSD(2)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.08MSD

Sample wt/vol: 4.900 (g/mL) G Lab File ID: A19041

% Moisture: 39 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	200	
76-44-8	Heptachlor	170	
309-00-2	Aldrin	180	
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	360	
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	390	
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	5500	E
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	190	
3424-82-6	2,4'-DDE	260	
789-02-6	2,4'-DDT	700	E
27304-13-8	Oxychlordane	110	
5103-73-1	cis-Nonachlor	2600	E
39765-80-5	Trans-Nonachlor	170	
118-74-1	Hexachlorobenzene	130	
87-68-3	Hexachlorobutadiene	140	
29082-74-4	Octachlorostyrene	110	

SOM01.2 (6/2007)

ENCLOSURE 10 B

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPK9MSD

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Lab Sample ID: S-2603.08MSD Date(s) Analyzed 09/23/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
Hexachlorobenzene	1	11.6	11.53	11.67	110	11.4
	2	10.55	10.47	10.61	130	
gamma-BHC (Lindane)	1	12.95	12.90	13.00	140	44.6
	2	11.88	11.83	11.93	200	
Heptachlor	1	14.1	14.05	14.15	150	18.7
	2	13.09	13.04	13.14	170	
Aldrin	1	14.9	14.85	14.95	170	7.4
	2	13.83	13.78	13.88	180	
Octachlorostyrene	1	15.54	15.47	15.61	120	10.2
	2	14.26	14.19	14.33	110	
Oxychlordane	1	16.04	15.98	16.12	110	3.1
	2	15.04	14.97	15.11	110	
2,4'-DDE	1	16.67	16.61	16.75	240	11.5
	2	15.28	15.20	15.34	260	
Trans-Nonachlor	1	16.9	16.84	16.98	180	5.1
	2	15.83	15.75	15.89	170	

ENCLOSURE 10C

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPJ9

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: 1790.0   SDG No.: JBPJ3

Lab Sample ID: S-2603.03   Date(s) Analyzed 09/22/2009

Instrument ID (1): A-6890A   Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm)   GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Octachlorostyrene	1	15.52	15.47	15.61	20	127.8
	2	14.28	14.19	14.33	8.6	
gamma-Chlordane	1	16.76	16.62	16.76	43	90.3
	2	15.5	15.49	15.63	23	
4,4'-DDT	1	19.35	19.28	19.42	47	41.8
	2	17.98	17.91	18.05	33	
Methoxychlor	1	20.71	20.73	20.87	36	9.6
	2	19.07	18.94	19.08	33	
Hexachlorobutadiene	1	4.71	4.61	4.75	11	31.2
	2	4.51	4.44	4.58	15	
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

ENCLOSURE 11A

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19009.D(Signal #1) A19009.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 18:30 (Signal #1); 09/22/09 19:07 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ9 (Sig #1); JBPJ9 (Sig #2)
Misc : S-2603.03 4.9G/5ML (Sig #1); S-2603.03 4.9G/5ML (Sig #2)
ALS Vial : 78 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:03:31 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 12:56:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Oeko 09/24/09

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1561.1E6	1253.5E6	55.860	58.492
	Spiked Amount 60.000			Recovery	=	93.10%	97.49%
22) S	Decachlorobiphen	24.78	22.41	2237.8E6	2101.3E6	94.549	111.212
	Spiked Amount 120.000			Recovery	=	78.79%	92.68%
	Target Compounds						
9)	Gamma-Chlordane	16.76	15.50	385.1E6	171.5E6	12.427	6.529 #
17)	4,4'-DDT	19.35	17.98	229.7E6	182.5E6	13.467	9.498 #
20)	Methoxychlor	20.71	19.07	90242158	90247659	10.398	9.486

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 11B

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPK3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Lab Sample ID: S-2603.05 Date(s) Analyzed 09/22/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
delta-BHC	1	13.85	13.87	13.97	28	21.3
	2	12.74	12.52	12.62	23	
2,4'-DDE	1	16.67	16.61	16.75	32	34.6
	2	15.28	15.20	15.34	44	
4,4'-DDE	1	17.38	17.31	17.45	210	13.6
	2	16.05	15.98	16.12	190	
2,4'-DDT	1	18.51	18.44	18.58	11000	44.5
	2	16.99	16.92	17.06	7900	
4,4'-DDT	1	19.37	19.28	19.42	24000	12.9
	2	17.98	17.91	18.05	22000	
Hexachlorobutadiene	1	4.71	4.61	4.75	12	7.6
	2	4.51	4.44	4.58	11	
	1					
	2					
	1					
	2					
	1					
	2					

ENCLOSURE \\C

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19011.D(Signal #1) A19011.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:44 (Signal #1); 09/22/09 20:21 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK3 (Sig #1); JBPK3 (Sig #2)
Misc : S-2603.05 5.1G/5ML (Sig #1); S-2603.05 5.1G/5ML (Sig #2)
ALS Vial : 80 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:12:33 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 12:56:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

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Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1621.8E6	1104.8E6	58.032	51.550
	Spiked Amount 60.000			Recovery	=	96.72%	85.92%
22) S	Decachlorobiphen	24.78	22.40	2481.5E6	1517.7E6	104.848	80.325
	Spiked Amount 120.000			Recovery	=	87.37%	66.94%
	Target Compounds						
5)	Delta-BHC	13.85	12.74	280.4E6	191.8E6	8.357	6.889
12)	4,4'-DDE	17.38	16.05	1830.4E6	1218.6E6	64.531	56.781
17)	4,4'-DDT	19.37	17.98	125066.7E6	124820.2E6	7331.829	6496.146

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPK6

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Lab Sample ID: S-2603.06 Date(s) Analyzed 09/22/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
delta-BHC	1	13.85	13.87	13.97	550	3.3
	2	12.73	12.52	12.62	530	
2,4'-DDE	1	16.67	16.61	16.75	56	46.3
	2	15.27	15.20	15.34	82	
4,4'-DDE	1	17.38	17.31	17.45	410	6.7
	2	16.05	15.98	16.12	380	
2,4'-DDT	1	18.51	18.44	18.58	5500	24.6
	2	16.99	16.92	17.06	4400	
4,4'-DDT	1	19.35	19.28	19.42	16000	19.7
	2	17.98	17.91	18.05	13000	
Hexachlorobutadiene	1	4.71	4.61	4.75	13	8.3
	2	4.51	4.44	4.58	14	
	1					
	2					
	1					
	2					
	1					
	2					

ENCLOSURE 11 E

Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19013.D(Signal #1)          A19013.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On     : 09/22/09 20:57 (Signal #1); 09/22/09 21:34 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPK6 (Sig #1); JBPK6 (Sig #2)
Misc       : S-2603.06 5.2G/5ML (Sig #1); S-2603.06 5.2G/5ML (Sig #2)
ALS Vial   : 82   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:38:57 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 19:45:07 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2        Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

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Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.23	9.44	1585.0E6	1170.3E6	56.713	54.607
Spiked Amount 60.000			Recovery	=	94.52%	91.01%
22) S Decachlorobiphen	24.78	22.40	2399.4E6	1982.4E6	101.376	104.918
Spiked Amount 120.000			Recovery	=	84.48%	87.43%
Target Compounds						
5) Delta-BHC	13.85	12.73	5637.4E6	4525.7E6	168.015	162.580
12) 4,4'-DDE	17.38	16.05	3525.7E6	2499.8E6	124.296	116.485
17) 4,4'-DDT	19.35	17.98	81872.5E6	77048.0E6	4799.644	4009.890

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1)          A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc      : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial  : 84   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:50:20 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 12:56:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

09/24/09

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1)	S Tetrachloro-m-xy	10.23	9.44	1554.8E6	1163.6E6	55.634	54.295	
	Spiked Amount 60.000				Recovery =	92.72%	90.49%	
22)	S Decachlorobiphen	24.78	22.40	2320.9E6	2044.0E6	98.063	108.182	
	Spiked Amount 120.000				Recovery =	81.72%	90.15%	
	Target Compounds							
4)	Beta-BHC	13.20	12.11	73052321	77163447	4.118	6.587	#
12)	4,4'-DDE	17.39	16.05	2003.0E6	1204.6E6	70.615	56.129	
14)	Endrin	18.51	17.37	2072.7E6	1512.6E6	90.957	67.571	#
15)	~~4,4'-DDD~~	~~18.66~~	~~17.37~~	~~3224.9E6~~	~~1512.6E6~~	~~141.308~~	~~76.075~~	#
17)	4,4'-DDT	19.35	17.98	24781.1E6	25108.0E6	1452.749	1306.720	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 11G

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPK9

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Lab Sample ID: S-2603.08 Date(s) Analyzed 09/22/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
beta-BHC	1	13.2	13.13	13.23	13	60.0
	2	12.11	12.08	12.18	21	
2,4'-DDE	1	16.67	16.61	16.75	67	93.4
	2	15.27	15.20	15.34	130	
4,4'-DDE	1	17.39	17.31	17.45	230	25.8
	2	16.05	15.98	16.12	180	
2,4'-DDD	1	17.83	17.76	17.90	38	48.8
	2	16.43	16.36	16.50	56	
2,4'-DDT	1	18.51	18.44	18.58	480	0.8
	2	16.99	16.92	17.06	480	
Endrin	1	18.51	18.39	18.53	290	34.6
	2	17.37	17.16	17.30	220	
4,4'-DDD	1	18.66	18.59	18.73	450	85.7
	2	17.37	17.30	17.44	240	
4,4'-DDT	1	19.35	19.28	19.42	4700	11.2
	2	17.98	17.91	18.05	4200	

ENCLOSURE "H"

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53   (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23   DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A18973	9/21/2009	18:10	10.23	24.78
02	PEM11	A18974	9/21/2009	18:47	10.23	24.78
03	TOXAPH111	A18975	9/21/2009	19:24	10.23	24.78
04	TOXAPH211	A18976	9/21/2009	20:00	10.23	24.78
05	TOXAPH311	A18977	9/21/2009	20:37	10.23	24.78
06	TOXAPH411	A18978	9/21/2009	21:14	10.23	24.78
07	TOXAPH511	A18979	9/21/2009	21:51	10.23	24.78
08	INDT111	A18985	9/22/2009	01:32	10.24	24.78
09	INDT211	A18986	9/22/2009	02:08	10.23	24.78
10	INDT311	A18987	9/22/2009	02:45	10.23	24.78
11	INDT411	A18988	9/22/2009	03:22	10.23	24.78
12	INDT511	A18989	9/22/2009	03:59	10.23	24.78
13	PIBLK11	A18990	9/22/2009	04:36	10.23	24.78
14	PEM21	A18991	9/22/2009	05:13	10.23	24.78
15	GPCBLK24	A18995	9/22/2009	09:05	0 *	0 *
16	ZZZZZ	A18996	9/22/2009	09:44	0 *	0 *
17	ZZZZZ	A18997	9/22/2009	10:20	10.23	24.78
18	PLCS24	A18998	9/22/2009	11:09	10.24	24.78
19	PLCSD24	A18999	9/22/2009	11:45	10.23	24.78
20	PBLK24	A19002	9/22/2009	13:35	10.23	24.78
21	JBPJ3	A19003	9/22/2009	14:12	10.23	24.78
22	ZZZZZ	A19004	9/22/2009	14:49	10.23	24.78
23	PIBLK21	A19005	9/22/2009	15:26	10.23	24.78
24	INDC331	A19006	9/22/2009	16:40	10.23	24.78
25	INDT321	A19007	9/22/2009	17:17	10.23	24.78
26	JBPJ6	A19008	9/22/2009	17:53	10.23	24.78
27	JBPJ9	A19009	9/22/2009	18:30	10.23	24.78
28	JBPK0	A19010	9/22/2009	19:07	10.23	24.78
29	JBPK3	A19011	9/22/2009	19:44	10.23	24.78
30	ZZZZZ	A19012	9/22/2009	20:21	0 *	0 *
31	JBPK6	A19013	9/22/2009	20:57	10.23	24.78
32	JBPK8	A19014	9/22/2009	21:34	10.23	24.77

QC LIMITS

TCX = Tetrachloro-m-xylene   ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl   ($\pm$ 0.10 MINUTES)

\# Column used to flag RT values with an asterisk.

ENCLOSURE 12 A

KAP Technologies, Inc.
9391 Grogans Mill Rd., Suite A2
The Woodlands, TX 77380

RCN 199-0909

INSTRUMENT RUN LOG – GC EXTRACTABLES
INSTRUMENT ID: A-6890

DETECTOR A: ECD — COLUMN A: RTX-CLP II — DATE: 08/21/2008
DETECTOR B: ECD — COLUMN B: RTX-CLP — METHOD FILES: CREST-18982.M
ANALYTICAL METHOD: SOM1.2 1788 mod — Cal. Std ID's: 146-144-01 to 12, 146-151-10 to 14

FILE ID	SAMPLE POSITION	CLIENT SAMPLE ID	LAB SAMPLE ID	SAMPLE WT VOL	DIL.	INJ. VOL	STANDARDS ID & COMMENTS
A18973	1	RESC11	RESC11	—	—	1uL	
74	2	PEM11	PEM11				
75	3	TOXAPH11	TOXAPH11				
76	4	21	21				
77	5	31	31				
78	6	41	41				
79	7	51	51				
80	8	INDC11	INDC11				
81	9	21	21				
82	10	31	31				
83	11	41	41				
84	12	51	51				
85	13	INDT11	INDT11				
86	14	21	21				
87	15	31	31				
88	16	41	41				
89	17	51	51				
90	18	PIBLK11	PIBLK11				
91	19	~~PIND~~ PEM21	PEM21				
92	20	AR124831	AR124831				
93	21	AR125431	AR125431				
94	22	AR126031	AR126031				
95	23	~~ET~~ PEBLK24	G PEBLK24				

NOTES:

ANALYST: [signature] — REVIEWER: [signature]

ENCLOSURE 12 B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01

Sample wt/vol: 5.000 (g/mL) G Lab File ID: A19003

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	26000	EP
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	33	U
3424-82-6	2,4'-DDE	33	U
789-02-6	2,4'-DDT	17000	EP
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	33	U
29082-74-4	Octachlorostyrene	33	U

ENCLOSURE 13A

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19003.D(Signal #1) A19003.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 14:12 (Signal #1); 09/22/09 14:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ3 (Sig #1); JBPJ3 (Sig #2)
Misc : S-2603.01 5.1G/5ML (Sig #1); S-2603.01 5.1G/5ML (Sig #2)
ALS Vial : 71 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 23 21:51:55 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Wed Sep 23 21:45:34 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

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09/24/09

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.23	9.44	1472.0E6	1219.4E6	49.168	52.849
Spiked Amount 60.000			Recovery	=	81.95%	88.08%
11) S Decachlorobiphen	24.78	22.41	2343.9E6	2095.8E6	103.286	122.811
Spiked Amount 120.000			Recovery	=	86.07%	102.34%
Target Compounds						
9) 2,4'-DDT	18.52	16.99	71721.9E6	59496.0E6	5149.811	3681.807 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 13B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19028

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 200.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3300	U
319-85-7	beta-BHC	3300	U
319-86-8	delta-BHC	3300	U
58-89-9	gamma-BHC (Lindane)	3300	U
76-44-8	Heptachlor	3300	U
309-00-2	Aldrin	3300	U
1024-57-3	Heptachlor epoxide	3300	U
959-98-8	Endosulfan I	3300	U
60-57-1	Dieldrin	3300	U
72-55-9	4,4'-DDE	3300	U
72-20-8	Endrin	6500	U
33213-65-9	Endosulfan II	6500	U
72-54-8	4,4'-DDD	6500	U
1031-07-8	Endosulfan sulfate	6500	U
50-29-3	4,4'-DDT	21000	DP
72-43-5	Methoxychlor	33000	U
53494-70-5	Endrin ketone	6500	U
7421-93-4	Endrin aldehyde	6500	U
5103-71-9	alpha-Chlordane	3300	U
5103-74-2	gamma-Chlordane	3300	U
8001-35-2	Toxaphene	330000	U
53-19-0	2,4'-DDD	6500	U
3424-82-6	2,4'-DDE	6500	U
789-02-6	2,4'-DDT	10000	D
27304-13-8	Oxychlordane	6500	U
5103-73-1	cis-Nonachlor	6500	U
39765-80-5	Trans-Nonachlor	6500	U
118-74-1	Hexachlorobenzene	6500	U
87-68-3	Hexachlorobutadiene	6500	U
29082-74-4	Octachlorostyrene	6500	U

SOM01.2 (6/2007)

ENCLOSURE 13C

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19028.D(Signal #1)          A19028.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/23/09 07:17 (Signal #1); 09/23/09 07:54 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ3DL 200X (Sig #1); JBPJ3DL 200X (Sig #2)
Misc      : S-2603.01DL  5.1G/5ML (Sig #1); S-2603.01DL  5.1G/5ML (Sig #2)
ALS Vial  : 6   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 24 09:20:51 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Wed Sep 23 21:53:18 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

okho 09/24/09

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
9)	2,4'-DDT	18.51	16.99	214.9E6	248.4E6	15.431	15.371

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 13 D

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10.35 — FRACTION: PEST ✓ PCB —
Extr. Complete Date/Time: 9.5.09 16.30 — GPC Date/Time: 9.4.09 15.35

EXTRACTION PROCEDURE: SEP. FUNNEL — SONIC ✓ OTHER — CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK24	PBLK24	8.27.09	Soil	–	–	5.0	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
PLCS24	PLCS24			–	–	5.0									1000		
PLCS24DUP	PLCS24DUP			–	–	5.0									1000		
PLCS24(S.P)	PLCS24(S.P)			–	–	5.0									1000		
PLCS24(S.P)DUP	PLCS24(SP)DUP			–	–	5.0									1000		
S-2603.01	JBPJ3			6.8	40	5.1									NA		
02	JBPJ6			7.3	30	5.3											
03	JBPJ9			7.1	41	4.9											
04	JBPK0			6.9	40	5.1											
05	JBPK3			6.6	41	5.1											
06	JBPK6			6.3	41	5.2											
07	JBPK8			6.1	46	5.3											
08	JBPK9			6.6	39	5.1											

Methy. Chloride Lot No.: 904088
Hexane Lot No.: 904009
Acetone Lot No.: 906071
Freon Lot No.: —
NOTES: —

Surrogate Sol. ID: 146,99.01
LCS/Matrix Spike Sol. ID: 146-44-05, 146-143-01, 146-44-07
Florisil Lot ID: E45632
H_2SO_4 Lot No.: —

Initials of Extraction Leader AQui Assistants
Initials of Sample Cleanup Leader — Assistants
Initials of Surrogate Spiker [signature] Verifier
Initials of Matrix Spike Spiker [signature] Verifier

RECEIVED FOR ANALYSIS BY: [signature] DATE: 09/05/09 TIME: 16.55 COMMENTS:

ENCLOSURE 13E

1052

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01

Sample wt/vol: 5.000 (g/mL) G Lab File ID: A19003

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	26000	EP
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	33	U
3424-82-6	2,4'-DDE	33	U
789-02-6	2,4'-DDT	17000	EP
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	33	U
29082-74-4	Octachlorostyrene	33	U

SOM01.2 (6/2007)

ENCLOSURE 14A

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBPJ3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Lab Sample ID: S-2603.01 Date(s) Analyzed 09/22/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
2,4'-DDT	1	18.52	18.44	18.58	17000	39.9
	2	16.99	16.92	17.06	12000	
4,4'-DDT	1	19.38	19.28	19.42	33000	27.9
	2	18	17.91	18.05	26000	
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

 SOM01.1 (05/2005)

ENCLOSURE 14 B

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10.35
Extr. Complete Date/Time: 9.5.09 16.30

FRACTION
PEST ✓ PCB —
GPC Date/Time: 9.4.09 15.35

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC ✓ OTHER —
CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Clenup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK24	PBLK24	8.27.09	Soil	—	—	5.0	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
PLCS24	PLCS24			—	—	5.0									1000		
PLCS24DUP	PLCS24DUP			—	—	5.0									1000		
PLCS24(S.P)	PLCS24(S.P)			—	—	5.0									1000		
PLCS24(S.P)DUP	PLCS24(SP)DUP			—	—	5.0									1000		
S-2603.01	JBPJ3			6.8	40	5.1									NA		
02	JBPJ6			7.3	30	5.3											
03	JBPJ9			7.1	41	4.9											
04	JBPK0			6.9	40	5.1											
05	JBPK3			6.6	41	5.1											
06	JBPK6			6.3	41	5.2											
07	JBPK8			6.1	46	5.3											
08	JBPK9			6.6	39	5.1											

Methy. Chloride Lot No.: 904088
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.: —
NOTES: —

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146-44-05, 146-143-01, 146-44-07
Florisil Lot ID: E45632
H_2SO_4 Lot No.: —

Initials of Extraction Leader [signature], Assistants
Initials of Sample Cleanup Leader —, Assistants
Initials of Surrogate Spiker [signature] Verifier
Initials of Matrix Spike Spiker [signature] Verifier

RECEIVED FOR ANALYSIS BY: [signature] DATE: 09/05/09 TIME: 16.55 COMMENTS:

ENCLOSURE 4C

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01

Sample wt/vol: 5.000 (g/mL) G Lab File ID: A19003

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	26000	EP
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	33	U
3424-82-6	2,4'-DDE	33	U
789-02-6	2,4'-DDT	17000	EP
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	33	U
29082-74-4	Octachlorostyrene	33	U

SOM01.2 (6/2007)

ENCLOSURE 15A

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3DL

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: 1790.0   SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL   Lab Sample ID: S-2603.01DL

Sample wt/vol: 5.100 (g/mL) G   Lab File ID: A19028

% Moisture: 40   Decanted: (Y/N) N   Date Received: 08/27/2009

Extraction: (Type) SONC   Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL)   Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL)   GPC Factor: 2.0   Dilution Factor: 200.0

GPC Cleanup: (Y/N) Y   pH: ______   Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3300	U
319-85-7	beta-BHC	3300	U
319-86-8	delta-BHC	3300	U
58-89-9	gamma-BHC (Lindane)	3300	U
76-44-8	Heptachlor	3300	U
309-00-2	Aldrin	3300	U
1024-57-3	Heptachlor epoxide	3300	U
959-98-8	Endosulfan I	3300	U
60-57-1	Dieldrin	3300	U
72-55-9	4,4'-DDE	3300	U
72-20-8	Endrin	6500	U
33213-65-9	Endosulfan II	6500	U
72-54-8	4,4'-DDD	6500	U
1031-07-8	Endosulfan sulfate	6500	U
50-29-3	4,4'-DDT	21000	DP
72-43-5	Methoxychlor	33000	U
53494-70-5	Endrin ketone	6500	U
7421-93-4	Endrin aldehyde	6500	U
5103-71-9	alpha-Chlordane	3300	U
5103-74-2	gamma-Chlordane	3300	U
8001-35-2	Toxaphene	330000	U
53-19-0	2,4'-DDD	6500	U
3424-82-6	2,4'-DDE	6500	U
789-02-6	2,4'-DDT	10000	D
27304-13-8	Oxychlordane	6500	U
5103-73-1	cis-Nonachlor	6500	U
39765-80-5	Trans-Nonachlor	6500	U
118-74-1	Hexachlorobenzene	6500	U
87-68-3	Hexachlorobutadiene	6500	U
29082-74-4	Octachlorostyrene	6500	U

SOM01.2 (6/2007)

ENCLOSURE 15B

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): PIBLK11 Date Analyzed: 09/22/2009

Lab Sample ID(PIBLK): PIBLK11 Time Analyzed: 0436

EPA Sample No.(PEM##): PEM21 Date Analyzed: 09/22/2009

Lab Sample ID(PEM): PEM21 Time Analyzed: 0513

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	12	11.95	12.05	0.0096609	0.010	-3.4
beta-BHC	13.18	13.13	13.23	0.0092183	0.010	-7.8
gamma-BHC (Lindane)	12.96	12.90	13.00	0.0095624	0.010	-4.4
Endrin	18.46	18.39	18.53	0.0472403	0.050	-5.5
4,4'-DDT	19.35	19.28	19.42	0.1045362	0.100	4.5
Methoxychlor	20.8	20.73	20.87	0.2571190	0.250	2.8
TCX	10.23	10.18	10.28	0.0205506	0.020	2.8
DCB	24.78	24.68	24.88	0.0189327	0.020	-5.3

4,4'-DDT % Breakdown (1): 0.0 Endrin % breakdown (1): 20.6 ←

Combined % Breakdown (1): 20.6

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (05/2005)

ENCLOSURE 16A

4001-05112010-5

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A18991.D(Signal #1)             A18991.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)              A-6890B(Signal # 2)
Acq On    : 09/22/09 05:13 (Signal #1); 09/22/09 05:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : PEM21 (Sig #1); PEM22 (Sig #2)
Misc      : PEM21 (Sig #1); PEM22 (Sig #2)
ALS Vial  : 19   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 22 19:24:28 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 09:05:54 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1)	S Tetrachloro-m-xy	10.23	9.43	574.3E6	451.9E6	20.551	21.088
	Spiked Amount 60.000			Recovery	=	34.25%	35.15%
22)	S Decachlorobiphen	24.78	22.41	448.1E6	364.0E6	18.933	19.267
	Spiked Amount 120.000			Recovery	=	15.78%	16.06%
	Target Compounds						
2)	Alpha-BHC	12.00	11.03	417.6E6	327.1E6	9.661	9.997
3)	Gamma-BHC (Linda	12.96	11.88	390.7E6	313.4E6	9.562	10.064
4)	Beta-BHC	13.18	12.12	163.5E6	117.5E6	9.218	10.032
14)	Endrin	18.46	17.22	1076.5E6	1223.7E6	47.240	54.666
17)	4,4'-DDT	19.35	17.98	1783.2E6	2210.9E6	104.536	115.064
18)	Endrin Aldehyde	19.68	0.00	56469337	0	2.261	N.D. d#
20)	Methoxychlor	20.80	19.01	2231.5E6	2666.7E6	257.119	280.305
21)	Endrin Ketone	21.50	20.22	271.3E6	47234146	8.506	1.944 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 3883 SDG JBPJ3
Episode S2602 init/date ukc 09/24/09.

ENCLOSURE 16B

0790

7J - FORM VII PEST-1

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(PEM##): PEM41 Date Analyzed: 09/23/2009

Lab Sample ID(PEM): PEM41 Time Analyzed: 0115

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	11.99	11.95	12.05	0.0095163	0.010	-4.8
beta-BHC	13.17	13.13	13.23	0.0109486	0.010	9.5
gamma-BHC (Lindane)	12.95	12.90	13.00	0.0092931	0.010	-7.1
Endrin	18.45	18.39	18.53	0.0356211	0.050	-28.8
4,4'-DDT	19.35	19.28	19.42	0.1048566	0.100	4.9
Methoxychlor	20.8	20.73	20.87	0.2543095	0.250	1.7
TCX	10.23	10.18	10.28	0.0205661	0.020	2.8
DCB	24.77	24.68	24.88	0.0183703	0.020	-8.1

4,4'-DDT % Breakdown (1): 8.8 Endrin % breakdown (1): 0.0

Combined % Breakdown (1): 8.8

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

ENCLOSURE 16C

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBPJ3

GC Column: RTX-CLP   ID: 0.53   (mm)   Init. Calib. Date(s) 09/21/2009 09/22/2009

EPA Sample No.(PIBLK##): ____________   Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________   Time Analyzed: ____________

EPA Sample No.(PEM##): PEM42   Date Analyzed: 09/23/2009

Lab Sample ID(PEM): PEM42   Time Analyzed: 0222

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC	11.03	10.98	11.08	0.0094013	0.010	-6.0
beta-BHC	12.13	12.08	12.18	0.0101875	0.010	1.9
gamma-BHC (Lindane)	11.88	11.83	11.93	0.0095157	0.010	-4.8
Endrin	17.23	17.16	17.30	0.0495389	0.050	-0.9
4,4'-DDT	17.98	17.91	18.05	0.1117833	0.100	11.8
Methoxychlor	19.02	18.94	19.08	0.2680547	0.250	7.2
TCX	9.44	9.39	9.49	0.0199575	0.020	-0.2
DCB	22.41	22.31	22.51	0.0176795	0.020	-11.6

4,4'-DDT % Breakdown (2): 33.6 ←   Endrin % breakdown (2): 8.2

Combined % Breakdown (2): 41.8 ←

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.1 (05/2005)

ENCLOSURE 16D

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19020.D(Signal #1)          A19020.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/23/09 01:15 (Signal #1); 09/23/09 02:22 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : PEM41 (Sig #1); PEM42 (Sig #2)
Misc      : PEM41 (Sig #1); PEM42 (Sig #2)
ALS Vial  : 89   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 14:16:51 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	574.8E6	427.7E6	20.566	19.957
	Spiked Amount 60.000			Recovery	=	34.28%	33.26%
22) S	Decachlorobiphen	24.77	22.41	434.8E6	334.0E6	18.370	17.679
	Spiked Amount 120.000			Recovery	=	15.31%	14.73%
	Target Compounds						
2)	Alpha-BHC	11.99	11.03	411.3E6	307.6E6	9.516	9.401
3)	Gamma-BHC (Linda	12.95	11.88	379.7E6	296.3E6	9.293	9.516
4)	Beta-BHC	13.17	12.13	194.2E6	119.3E6	10.949	10.188
14)	Endrin	18.45	17.23	811.7E6	1108.9E6	35.621	49.539 #
15)	4,4'-DDD	18.74	0.00	201.9E6	0	8.845	N.D. d#
17)	4,4'-DDT	19.35	17.98	1788.6E6	2147.9E6	104.857	111.783
18)	Endrin Aldehyde	19.67	18.66	131.6E6	25611272	5.271	1.422 #
20)	Methoxychlor	20.80	19.02	2207.1E6	2550.2E6	~~254.309~~	268.055
21)	Endrin Ketone	21.48	20.21	367.6E6	64996544	11.524	2.675 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38883 SDG JBPJ3
Episode R2607 init/date Owb 09/24/09.

3H - FORM III PEST-2
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBBJ3

Matrix Spike - EPA Sample No.:JBPK6

Instrument ID: A-6890A GC Column:RTX-CLP2 ID: 0.53(mm)

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
gamma-BHC (Lindane)	130	0	140	108	46-127
Heptachlor	130	0	150	115	35-130
Aldrin	130	0	160	123	34-132
Dieldrin	260	0	440	169	31-134
Endrin	260	290	780	188	42-139
4,4'-DDT	260	3000	6000	1875	23-134
Hexachlorobutadiene	260	12	110	38	50-150
Hexachlorobenzene	260	0	110	42	50-150
Octachlorostyrene	260	0	130	50	50-150
Oxychlordane	260	0	110	42	50-150
Trans-Nonachlor	260	0	170	65	50-150
Cis-Nonachlor	260	3000	3400	153	50-150
2,4'-DDE	260	67	230	-37	50-150
2,4'-DDD	260	38	730	266	50-150
2,4'-DDT	260	480	1300	315	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

Spike Recovery: 10 out of 15 outside limits

COMMENTS: ______________________________

ENCLOSURE 18A

3H - FORM III PEST-2
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBBJ3

Matrix Spike - EPA Sample No.: JBPK6

Instrument ID: A-6890A GC Column:RTX-CLP2 ID: 0.53(mm)

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD % REC.	% RPD	QC LIMIT REC.
gamma-BHC (Lindane)	130	140	108	0	50
Heptachlor	130	150	115	0	50
Aldrin	130	170	131	6.2	50
Dieldrin	260	440	169	0	50
Endrin	260	750	177	6.0	50
4,4'-DDT	260	6000	1875	0	50
Hexachlorobutadiene	260	120	46	19	50
Hexachlorobenzene	260	110	42	0	50
Octachlorostyrene	260	120	46	8.3	50
Oxychlordane	260	110	42	0	50
Trans-Nonachlor	260	180	69	5.9	50
Cis-Nonachlor	260	3600	230	20	50
2,4'-DDE	260	240	67	90	50
2,4'-DDD	260	730	266	0	50
2,4'-DDT	260	1200	277	13	50

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: ____________

ENCLOSURE 18B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK9

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.08

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19015

% Moisture: 39 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	13	JP
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	180	P
72-20-8	Endrin	220	P
33213-65-9	Endosulfan II	32	U
72-54-8	4,4'-DDD	240	P
1031-07-8	Endosulfan sulfate	32	U
50-29-3	4,4'-DDT	4200	E
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	32	U
7421-93-4	Endrin aldehyde	32	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1600	U
53-19-0	2,4'-DDD	38	P
3424-82-6	2,4'-DDE	67	P
789-02-6	2,4'-DDT	480	
27304-13-8	Oxychlordane	32	U
5103-73-1	cis-Nonachlor	32	U
39765-80-5	Trans-Nonachlor	32	U
118-74-1	Hexachlorobenzene	32	U
87-68-3	Hexachlorobutadiene	12	J
29082-74-4	Octachlorostyrene	32	U

SOM01.2 (6/2007)

ENCLOSURE 18C

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK6

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.06

Sample wt/vol: 5.200 (g/mL) G Lab File ID: A19013

% Moisture: 41 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.3 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	530	E
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	380	
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	13000	E
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1600	U
53-19-0	2,4'-DDD	33	U
3424-82-6	2,4'-DDE	56	P
789-02-6	2,4'-DDT	4400	E
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	13	J
29082-74-4	Octachlorostyrene	33	U

SOM01.2 (6/2007)

ENCLOSURE 18D

KAP Technologies, Inc
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10:35
Extr. Complete Date/Time: 9.5.09 16:30

FRACTION
PEST ✓ PCB —
GPC Date/Time: 9.4.09 15:35

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC ✓ OTHER —
CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	~~Client~~ Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
S-2603.9	JBPK1	8.27.09	SOIL	7.0	23	5.1	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
S-2617.01	JBPL5	9.2.09		6.9	39	5.3											
02	JBPL6			7.1	27	5.1											
03	JBPL7			7.2	27	5.1											
04	JBPM0			6.8	27	5.3											
S-2603.08MS	JBPK9MS	8.27.09		6.6	39	5.1									1000		
.08MSD	JBPK9MSD			6.6	39	4.9									1000		

Methy. Chloride Lot No.: 904038
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.:

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146-44-05; 146-143-01; 146-44-07
Florisil Lot ID: E45632
H_2SO_4 Lot No.: —

Initials of Extraction Leader KH Assistants
Initials of Sample Cleanup Leader ____ Assistants
Initials of Surrogate Spiker ____ Verifier
Initials of Matrix Spike Spiker ____ Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: [signature] DATE: 09/05/09 TIME: 16:55 COMMENTS:

ENCLOSURE 18E

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

ORGANICS STANDARD PREP LOGBOOK

RCN: 146-1008

ANALYST: K V RAO

DILUTION SOLVENT/ Lot No.: Acetone

PREP DATE: 01/28/2009

EXPIRATION DATE: 07/27/2009

Std. Name	Std. ID	LAB ID (Receipt)	Conc. (ug/mL)	Vol. Added (uL)	Final Conc. (ug/mL	Final Vol. (uL)
OTD - PEST	146-44-01	002-0466	8-80	250.0	0.2-2.0	10,000
PCB-LCS	146-44-02	002-0534	1000	200.0	1.0	200,000
PCB-Matrix	146-44-03	002-0534	1000	800.0	4.0	200,000
Surrogate PEST	146-44-04	002-0582	200	600	0.6	200,000
↓ PCBS	↓	002-0583	200	1200	1.2	↓
PEST-Matrix	146-44-05	002-0~~580~~ 590	25-50	1000	0.5-1.0	50,000
GPC-PEST	146-44-06	002-0590	25-50	400	0.2-0.4	50,000
PEST-LCS	146-44-07	002-0161	10-20	500	0.05-0.1	100,000
		—				

FIGURE 18F

PROBLEMS ENCOUNTERED/SPECIAL TECHNIQUES UTILIZED

REVIEWER: [signature]

Page:

0044

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

ORGANICS STANDARD PREP LOGBOOK

RCN: 146-1008

ANALYST: K.V. Rao

DILUTION SOLVENT/ Lot No.: Acetone

PREP DATE: 9/01/2009

EXPIRATION DATE: 03/01/2010

PEST-Mod 1788 8081.2

Std. Name	Std. ID	LAB ID (Receipt)	Conc. (ug/mL)	Vol. Added (uL)	Final Conc. (ug/mL	Final Vol. (uL)
Matrix Spike Mod 1788	146-142-01	—	1000	—	0.80	40,000
Hexachlorobutadiene		002-0475	1000	320	0.80	40,000
Hexachlorobenzene		002-0480				
Oxychlordane		002-0757				
2'4'-DDE		002-0477				
Trans Nonachlor		002-0690				
2,4'-DDD		002-0478				
2,4'-DDT		002-0476				
CIS Nonachlor		002-0691				
Octachlorostyrene		002-0756				

PROBLEMS ENCOUNTERED/SPECIAL TECHNIQUES UTILIZED

REVIEWER: K

Page:

0142

ENCLOSURE 18G

AUDITOR GENERATED

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ENCLOSURE 19

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.23 DCB: 24.78

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A18973	9/21/2009	18:10	10.23	24.78
02	PEM11	A18974	9/21/2009	18:47	10.23	24.78
03	TOXAPH111	A18975	9/21/2009	19:24	10.23	24.78
04	TOXAPH211	A18976	9/21/2009	20:00	10.23	24.78
05	TOXAPH311	A18977	9/21/2009	20:37	10.23	24.78
06	TOXAPH411	A18978	9/21/2009	21:14	10.23	24.78
07	TOXAPH511	A18979	9/21/2009	21:51	10.23	24.78
08	INDT111	A18985	9/22/2009	01:32	10.24	24.78
09	INDT211	A18986	9/22/2009	02:08	10.23	24.78
10	INDT311	A18987	9/22/2009	02:45	10.23	24.78
11	INDT411	A18988	9/22/2009	03:22	10.23	24.78
12	INDT511	A18989	9/22/2009	03:59	10.23	24.78
13	PIBLK11	A18990	9/22/2009	04:36	10.23	24.78
14	PEM21	A18991	9/22/2009	05:13	10.23	24.78
15	GPCBLK24	A18995	9/22/2009	09:05	0 *	0 *
16	ZZZZZ	A18996	9/22/2009	09:44	0 *	0 *
17	ZZZZZ	A18997	9/22/2009	10:20	10.23	24.78
18	PLCS24	A18998	9/22/2009	11:09	10.24	24.78
19	PLCSD24	A18999	9/22/2009	11:45	10.23	24.78
20	PBLK24	A19002	9/22/2009	13:35	10.23	24.78
21	JBPJ3	A19003	9/22/2009	14:12	10.23	24.78
22	ZZZZZ	A19004	9/22/2009	14:49	10.23	24.78
23	PIBLK21	A19005	9/22/2009	15:26	10.23	24.78
24	INDC331	A19006	9/22/2009	16:40	10.23	24.78
25	INDT321	A19007	9/22/2009	17:17	10.23	24.78
26	JBPJ6	A19008	9/22/2009	17:53	10.23	24.78
27	JBPJ9	A19009	9/22/2009	18:30	10.23	24.78
28	JBPK0	A19010	9/22/2009	19:07	10.23	24.78
29	JBPK3	A19011	9/22/2009	19:44	10.23	24.78
30	ZZZZZ	A19012	9/22/2009	20:21	0 *	0 *
31	JBPK6	A19013	9/22/2009	20:57	10.23	24.78
32	JBPK8	A19014	9/22/2009	21:34	10.23	24.77

QC LIMITS

TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 20A

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBPJ3

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 09/21/2009 09/22/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: 9.44 DCB: 22.40					
	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC12	A18973	9/21/2009	18:47	9.44	22.41
02	PEM12	A18974	9/21/2009	19:24	9.44	22.41
03	TOXAPH112	A18975	9/21/2009	20:00	9.44	22.4
04	TOXAPH212	A18976	9/21/2009	20:37	9.44	22.41
05	TOXAPH312	A18977	9/21/2009	21:14	9.44	22.4
06	TOXAPH412	A18978	9/21/2009	21:51	9.44	22.4
07	TOXAPH512	A18979	9/21/2009	22:27	9.44	22.4
08	INDT111	A18985	9/22/2009	02:08	9.44	22.4
09	INDT211	A18986	9/22/2009	02:45	9.44	22.4
10	INDT311	A18987	9/22/2009	03:22	9.44	22.4
11	INDT411	A18988	9/22/2009	03:59	9.44	22.4
12	INDT511	A18989	9/22/2009	04:36	9.44	22.41
13	PIBLK12	A18990	9/22/2009	05:13	9.44	22.41
14	PEM22	A18991	9/22/2009	05:49	9.43	22.41
15	GPCBLK24	A18995	9/22/2009	09:44	0 *	0 *
16	ZZZZZ	A18996	9/22/2009	10:20	0 *	0 *
17	ZZZZZ	A18997	9/22/2009	11:09	9.44	22.41
18	PLCS24	A18998	9/22/2009	11:45	9.44	22.41
19	PLCSD24	A18999	9/22/2009	12:22	9.44	22.41
20	PBLK24	A19002	9/22/2009	14:12	9.44	22.41
21	JBPJ3	A19003	9/22/2009	14:49	9.44	22.41
22	ZZZZZ	A19004	9/22/2009	15:26	9.44	22.41
23	PIBLK22	A19005	9/22/2009	16:03	9.44	22.41
24	INDC332	A19006	9/22/2009	17:17	9.44	22.41
25	INDT321	A19007	9/22/2009	17:53	9.44	22.41
26	JBPJ6	A19008	9/22/2009	18:30	9.43	22.4
27	JBPJ9	A19009	9/22/2009	19:07	9.44	22.41
28	JBPK0	A19010	9/22/2009	19:44	9.44	22.41
29	JBPK3	A19011	9/22/2009	20:21	9.44	22.4
30	ZZZZZ	A19012	9/22/2009	20:57	0 *	0 *
31	JBPK6	A19013	9/22/2009	21:34	9.44	22.4
32	JBPK8	A19014	9/22/2009	22:11	9.44	22.4

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 20 B

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Batch Summary

CASE	SDG	Laboratory	Method	Fraction	DTD Implementation
38883	JBPJ3	KAP Technologies, Inc.	SOM01.2	Pest	ORGANIC_GENERAL_3.2

No.	Sample ID	Matrix	Dil. Factor	Date	Time	Column	Analyzed	Units	Per. Moisture	pH	Preservative	T	Units	Filename	Instrument
1	RESC11	DENF	DENF	09/21/2009	18:10:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18973-1	A-6890A
2	PEM11	DENF	DENF	09/21/2009	18:47:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18974-1	A-6890A
3	INDC111	DENF	DENF	09/21/2009	22:27:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18980-1	A-6890A
4	INDC111	DENF	DENF	09/21/2009	22:27:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18980-1	A-6890A
5	INDC211	DENF	DENF	09/21/2009	23:04:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18981-1	A-6890A
6	INDC211	DENF	DENF	09/21/2009	23:04:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18981-1	A-6890A
7	INDC311	DENF	DENF	09/21/2009	23:41:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18982-1	A-6890A
8	INDC311	DENF	DENF	09/21/2009	23:41:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18982-1	A-6890A
9	INDC411	DENF	DENF	09/22/2009	00:18:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18983-1	A-6890A
10	INDC411	DENF	DENF	09/22/2009	00:18:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18983-1	A-6890A
11	INDC511	DENF	DENF	09/22/2009	00:55:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18984-1	A-6890A
12	INDC511	DENF	DENF	09/22/2009	00:55:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18984-1	A-6890A
13	INDT111	DENF	DENF	09/22/2009	01:32:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18985-1	A-6890A
14	INDT211	DENF	DENF	09/22/2009	02:08:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18986-1	A-6890A
15	INDT311	DENF	DENF	09/22/2009	02:45:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18987-1	A-6890A
16	INDT411	DENF	DENF	09/22/2009	03:22:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18988-1	A-6890A
17	INDT511	DENF	DENF	09/22/2009	03:59:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18989-1	A-6890A
18	PIBLK11	Water	1.0	09/22/2009	04:36:00	RTX-CLP2	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A18990-1	A-6890A
19	PEM21	DENF	DENF	09/22/2009	05:13:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18991-1	A-6890A
20	PLCS24	Soil	1.0	09/22/2009	11:09:00	RTX-CLP2	5.000	g	0.0	DENF	DENF	DENF	DENF	A18998-1	A-6890A
21	PLCSD24	Soil	1.0	09/22/2009	11:45:00	RTX-CLP2	5.000	g	0.0	DENF	DENF	DENF	DENF	A18999-1	A-6890A
22	PBLK24	Soil	1.0	09/22/2009	13:35:00	RTX-CLP2	5.000	g	0.0	DENF	DENF	DENF	DENF	A19002-1	A-6890A
23	JBPJ3	Soil	1.0	09/22/2009	14:12:00	RTX-CLP2	5.000	g	40.0	6.8	ICE	3	C	A19003-1	A-6890A

ENCLOSURE 20 C

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ENCLOSURE 20D

No.	Sample ID	Matrix	Dil. Factor	Date	Time	Column	Analyzed	Units	Per. Moisture	pH	Preservative	T	Units	Filename	Instrument
24	PIBLK21	Water	1.0	09/22/2009	15:26:00	RTX-CLP2	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19005-1	A-6890A
25	INDC331	DENF	DENF	09/22/2009	16:40:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19006-1	A-6890A
26	INDT321	DENF	DENF	09/22/2009	17:17:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19007-1	A-6890A
27	JBPJ6	Soil	1.0	09/22/2009	17:53:00	RTX-CLP2	5.300	g	30.0	7.3	ICE	3	C	A19008-1	A-6890A
28	JBPJ9	Soil	1.0	09/22/2009	18:30:00	RTX-CLP2	4.900	g	41.0	7.1	ICE	3	C	A19009-1	A-6890A
29	JBPK0	Soil	1.0	09/22/2009	19:07:00	RTX-CLP2	5.100	g	40.0	6.9	ICE	3	C	A19010-1	A-6890A
30	JBPK3	Soil	1.0	09/22/2009	19:44:00	RTX-CLP2	5.100	g	41.0	6.6	ICE	3	C	A19011-1	A-6890A
31	JBPK6	Soil	1.0	09/22/2009	20:57:00	RTX-CLP2	5.200	g	41.0	6.3	ICE	3	C	A19013-1	A-6890A
32	JBPK8	Soil	1.0	09/22/2009	21:34:00	RTX-CLP2	5.300	g	46.0	6.1	ICE	3	C	A19014-1	A-6890A
33	JBPK9	Soil	1.0	09/22/2009	22:11:00	RTX-CLP2	5.100	g	39.0	6.6	ICE	3	C	A19015-1	A-6890A
34	JBPL1	Soil	1.0	09/22/2009	22:48:00	RTX-CLP2	5.100	g	23.0	7.0	ICE	3	C	A19016-1	A-6890A
35	JBPL[illegible]	Soil	1.0	09/22/2009	23:25:00	RTX-CLP2	5.300	g	23.0	6.9	ICE	3	C	A19017-1	A-6890A
36	PIBLK[illegible]	Water	1.0	09/23/2009	00:02:00	RTX-CLP2	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19018-1	A-6890A
37	PEM3[illegible]	DENF	DENF	09/23/2009	00:38:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19019-1	A-6890A
38	PEM4[illegible]	DENF	DENF	09/23/2009	01:15:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19020-1	A-6890A
39	GPC[illegible]T24	DENF	DENF	09/23/2009	03:36:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19022-1	A-6890A
40	JBPL6	Soil	1.0	09/23/2009	04:13:00	RTX-CLP2	5.100	g	39.0	7.1	ICE	3	C	A19023-1	A-6890A
41	JBPL7	Soil	1.0	09/23/2009	04:50:00	RTX-CLP2	5.100	g	27.0	7.2	ICE	3	C	A19024-1	A-6890A
42	JBPM0	Soil	1.0	09/23/2009	05:27:00	RTX-CLP2	5.300	g	27.0	6.8	ICE	3	C	A19025-1	A-6890A
43	JBPJ3DL	Soil	200.0	09/23/2009	07:17:00	RTX-CLP2	5.100	g	40.0	6.8	ICE	3	C	A19028-1	A-6890A
44	JBPK0DL	Soil	100.0	09/23/2009	07:54:00	RTX-CLP2	5.100	g	40.0	6.9	ICE	3	C	A19029-1	A-6890A
45	JBPK3DL	Soil	200.0	09/23/2009	08:31:00	RTX-CLP2	5.100	g	41.0	6.6	ICE	3	C	A19030-1	A-6890A
46	JBPK6DL	Soil	200.0	09/23/2009	09:07:00	RTX-CLP2	5.200	g	41.0	6.3	ICE	3	C	A19031-1	A-6890A
47	JBPK9DL	Soil	50.0	09/23/2009	09:44:00	RTX-CLP2	5.100	g	39.0	6.6	ICE	3	C	A19032-1	A-6890A
48	JBPL1DL	Soil	10.0	09/23/2009	10:55:00	RTX-CLP2	5.100	g	23.0	7.0	ICE	3	C	A19033-1	A-6890A
49	PIBLK41	Water	1.0	09/23/2009	11:32:00	RTX-CLP2	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19034-1	A-6890A
50	INDC361	DENF	DENF	09/23/2009	12:46:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19035-1	A-6890A
51	INDT361	DENF	DENF	09/23/2009	13:23:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19036-1	A-6890A

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No.	Sample ID	Matrix	Dil. Factor	Date	Time	Column	Analyzed	Units	Per. Moisture	pH	Preservative	T	Units	Filename	Instrument
52	JBPL5DL	Soil	50.0	09/23/2009	14:00:00	RTX-CLP2	5.300	g	23.0	6.9	ICE	3	C	A19037-1	A-6890A
53	JBPL6DL	Soil	100.0	09/23/2009	14:36:00	RTX-CLP2	5.100	g	39.0	7.1	ICE	3	C	A19038-1	A-6890A
54	JBPL7DL	Soil	10.0	09/23/2009	15:13:00	RTX-CLP2	5.100	g	27.0	7.2	ICE	3	C	A19039-1	A-6890A
55	JBPK9MS	Soil	1.0	09/23/2009	15:50:00	RTX-CLP2	5.100	g	39.0	6.6	ICE	3	C	A19040-1	A-6890A
56	JBPK9MSD	Soil	1.0	09/23/2009	16:27:00	RTX-CLP2	4.900	g	39.0	6.6	ICE	3	C	A19041-1	A-6890A
57	PIBLK51	Water	1.0	09/23/2009	18:41:00	RTX-CLP2	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19042-1	A-6890A
58	PEM51	DENF	DENF	09/23/2009	19:17:00	RTX-CLP2	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19043-1	A-6890A
59	RESC12	DENF	DENF	09/21/2009	18:47:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18973-2	A-6890B
60	PEM12	DENF	DENF	09/21/2009	19:24:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18974-2	A-6890B
61	INDC112	DENF	DENF	09/21/2009	23:04:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18980-2	A-6890B
62	INDC112	DENF	DENF	09/21/2009	23:04:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18980-2	A-6890B
63	INDC212	DENF	DENF	09/21/2009	23:41:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18981-2	A-6890B
64	INDC212	DENF	DENF	09/21/2009	23:41:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18981-2	A-6890B
65	INDC312	DENF	DENF	09/22/2009	00:18:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18982-2	A-6890B
66	INDC312	DENF	DENF	09/22/2009	00:18:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18982-2	A-6890B
67	INDC412	DENF	DENF	09/22/2009	00:55:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18983-2	A-6890B
68	INDC412	DENF	DENF	09/22/2009	00:55:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18983-2	A-6890B
69	INDC512	DENF	DENF	09/22/2009	01:32:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18984-2	A-6890B
70	INDC512	DENF	DENF	09/22/2009	01:32:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18984-2	A-6890B
71	INDT111	DENF	DENF	09/22/2009	02:08:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18985-2	A-6890B
72	INDT211	DENF	DENF	09/22/2009	02:45:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18986-2	A-6890B
73	INDT311	DENF	DENF	09/22/2009	03:22:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18987-2	A-6890B
74	INDT411	DENF	DENF	09/22/2009	03:59:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18988-2	A-6890B
75	INDT511	DENF	DENF	09/22/2009	04:36:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18989-2	A-6890B
76	PIBLK12	Water	1.0	09/22/2009	05:13:00	RTX-CLP	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A18990-2	A-6890B
77	PEM22	DENF	DENF	09/22/2009	05:49:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A18991-2	A-6890B
78	PLCS24	Soil	1.0	09/22/2009	11:45:00	RTX-CLP	5.000	g	0.0	DENF	DENF	DENF	DENF	A18998-2	A-6890B
79	PLCSD24	Soil	1.0	09/22/2009	12:22:00	RTX-CLP	5.000	g	0.0	DENF	DENF	DENF	DENF	A18999-2	A-6890B

ENCLOSURE 20 E

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ENCLOSURE 2oF

No.	Sample ID	Matrix	Dil. Factor	Date	Time	Column	Analyzed	Units	Per. Moisture	pH	Preservative	T	Units	Filename	Instrument
80	PBLK24	Soil	1.0	09/22/2009	14:12:00	RTX-CLP	5.000	g	0.0	DENF	DENF	DENF	DENF	A19002-2	A-6890B
81	JBPJ3	Soil	1.0	09/22/2009	14:49:00	RTX-CLP	5.000	g	40.0	6.8	ICE	3	C	A19003-2	A-6890B
82	PIBLK22	Water	1.0	09/22/2009	16:03:00	RTX-CLP	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19005-2	A-6890B
83	INDC332	DENF	DENF	09/22/2009	17:17:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19006-2	A-6890B
84	INDT321	DENF	DENF	09/22/2009	17:53:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19007-2	A-6890B
85	JBPJ6	Soil	1.0	09/22/2009	18:30:00	RTX-CLP	5.300	g	30.0	7.3	ICE	3	C	A19008-2	A-6890B
86	JBPJ9	Soil	1.0	09/22/2009	19:07:00	RTX-CLP	4.900	g	41.0	7.1	ICE	3	C	A19009-2	A-6890B
87	JBPK0	Soil	1.0	09/22/2009	19:44:00	RTX-CLP	5.100	g	40.0	6.9	ICE	3	C	A19010-2	A-6890B
88	JBPK3	Soil	1.0	09/22/2009	20:21:00	RTX-CLP	5.100	g	41.0	6.6	ICE	3	C	A19011-2	A-6890B
89	JBPK6	Soil	1.0	09/22/2009	21:34:00	RTX-CLP	5.200	g	41.0	6.3	ICE	3	C	A19013-2	A-6890B
90	JBPK8	Soil	1.0	09/22/2009	22:11:00	RTX-CLP	5.300	g	46.0	6.1	ICE	3	C	A19014-2	A-6890B
91	JBPK9	Soil	1.0	09/22/2009	22:48:00	RTX-CLP	5.100	g	39.0	6.6	ICE	3	C	A19015-2	A-6890B
92	JBPL1	Soil	1.0	09/22/2009	23:25:00	RTX-CLP	5.100	g	23.0	7.0	ICE	3	C	A19016-2	A-6890B
93	JBPL5	Soil	1.0	09/23/2009	00:02:00	RTX-CLP	5.300	g	23.0	6.9	ICE	3	C	A19017-2	A-6890B
94	PIBLK32	Water	1.0	09/23/2009	00:38:00	RTX-CLP	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19018-2	A-6890B
95	PEM32	DENF	DENF	09/23/2009	01:15:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19019-2	A-6890B
96	PEM42	DENF	DENF	09/23/2009	02:22:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19020-2	A-6890B
97	GPCPEST24	DENF	DENF	09/23/2009	04:13:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19022-2	A-6890B
98	JBPL6	Soil	1.0	09/23/2009	04:50:00	RTX-CLP	5.100	g	39.0	7.1	ICE	3	C	A19023-2	A-6890B
99	JBPL7	Soil	1.0	09/23/2009	05:27:00	RTX-CLP	5.100	g	27.0	7.2	ICE	3	C	A19024-2	A-6890B
100	JBPM0	Soil	1.0	09/23/2009	06:03:00	RTX-CLP	5.300	g	27.0	6.8	ICE	3	C	A19025-2	A-6890B
101	JBPJ3DL	Soil	200.0	09/23/2009	07:54:00	RTX-CLP	5.100	g	40.0	6.8	ICE	3	C	A19028-2	A-6890B
102	JBPK0DL	Soil	100.0	09/23/2009	08:31:00	RTX-CLP	5.100	g	40.0	6.9	ICE	3	C	A19029-2	A-6890B
103	JBPK3DL	Soil	200.0	09/23/2009	09:07:00	RTX-CLP	5.100	g	41.0	6.6	ICE	3	C	A19030-2	A-6890B
104	JBPK6DL	Soil	200.0	09/23/2009	09:44:00	RTX-CLP	5.200	g	41.0	6.3	ICE	3	C	A19031-2	A-6890B
105	JBPK9DL	Soil	50.0	09/23/2009	10:55:00	RTX-CLP	5.100	g	39.0	6.6	ICE	3	C	A19032-2	A-6890B
106	JBPL1DL	Soil	10.0	09/23/2009	11:32:00	RTX-CLP	5.100	g	23.0	7.0	ICE	3	C	A19033-2	A-6890B
107	PIBLK42	Water	1.0	09/23/2009	12:09:00	RTX-CLP	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19034-2	A-6890B

No.	Sample ID	Matrix	Dil. Factor	Date	Time	Column	Analyzed	Units	Per. Moisture	pH	Preservative	T	Units	Filename	Instrument
108	INDC362	DENF	DENF	09/23/2009	13:23:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19035-2	A-6890B
109	INDT361	DENF	DENF	09/23/2009	14:00:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19036-2	A-6890B
110	JBPL5DL	Soil	50.0	09/23/2009	14:36:00	RTX-CLP	5.300	g	23.0	6.9	ICE	3	C	A19037-2	A-6890B
111	JBPL6DL	Soil	100.0	09/23/2009	15:13:00	RTX-CLP	5.100	g	39.0	7.1	ICE	3	C	A19038-2	A-6890B
112	JBPL7DL	Soil	10.0	09/23/2009	15:50:00	RTX-CLP	5.100	g	27.0	7.2	ICE	3	C	A19039-2	A-6890B
113	JBPK9MS	Soil	1.0	09/23/2009	16:27:00	RTX-CLP	5.100	g	39.0	6.6	ICE	3	C	A19040-2	A-6890B
114	JBPK9MSD	Soil	1.0	09/23/2009	17:27:00	RTX-CLP	4.900	g	39.0	6.6	ICE	3	C	A19041-2	A-6890B
115	PIBLK52	Water	1.0	09/23/2009	19:17:00	RTX-CLP	DENF	DENF	0.0	DENF	DENF	DENF	DENF	A19042-2	A-6890B
116	PEM52	DENF	DENF	09/23/2009	19:54:00	RTX-CLP	DENF	DENF	DENF	DENF	DENF	DENF	DENF	A19043-2	A-6890B

ENCLOSURE 20G

AUDITOR GENERATED

4001-05112010-5

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19014.D(Signal #1)           A19014.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 21:34 (Signal #1); 09/22/09 22:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK8 (Sig #1); JBPK8 (Sig #2)
Misc      : S-2603.07 5.3G/5ML (Sig #1); S-2603.07 5.3G/5ML (Sig #2)
ALS Vial  : 83   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Sep 23 13:44:10 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Tue Sep 22 19:45:07 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Ouho 09/24/09

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1569.9E6	1353.6E6	56.173	63.160
	Spiked Amount 60.000				Recovery =	93.62%	105.27%
22) S	Decachlorobiphen	24.77	22.40	4451.6E6	1697.8E6	188.086	89.856 #
	Spiked Amount 120.000				Recovery =	156.74%	74.88%
	Target Compounds						
4)	~~Beta-BHC~~	~~13.20~~	~~12.11~~	~~680.3E6~~	~~751.8E6~~	~~38.342~~	~~64.179 #~~
17)	4,4'-DDT	19.35	17.98	738.3E6	492.6E6	43.280m	25.635m#

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 21A

4001-05112010-5

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1) A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial : 84 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 24 15:14:54 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Wed Sep 23 21:53:18 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1554.8E6	1164.7E6	51.936	50.480
	Spiked Amount 60.000			Recovery	=	86.56%	84.13%
11) S	Decachlorobiphen	24.78	22.40	2320.9E6	2321.9E6	102.276	136.060 #
	Spiked Amount 120.000			Recovery	=	85.23%	113.38%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	188.1E6	156.9E6	3.632	4.139
6)	2,4'-DDE	16.67	15.27	440.9E6	731.5E6	20.929	40.469 #
8)	2,4'-DDD	17.83	16.43	219.5E6	240.6E6	11.717	17.435 #
9)	2,4'-DDT	18.51	16.99	2072.7E6	2424.4E6	148.822	150.028
10)	cis-Nonachlor	18.66	17.37	2202.3E6	1387.0E6	600.072m	469.186m

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 21B

AUDITOR GENERATED

Sample ID	File ID
JBPJ3	A19003-1

Sample Receipt and Preparation

Receipt Date	Matrix	Prep. Date	Prep. Method	Aliquot	Units	Final Amount	Units	Percent Solids
08/27/2009	Soil	09/05/2009	Sonication	5.000	g	10,000	uL	0.60

Sample Cleanup

Cleanup Type	Initial Volume	Units	Final Volume	Units	Date	Time	Efficiency
GPC	5,000	uL	5,000	uL	09/04/2009	15:35:00	1.0
Florisil	2,000	uL	2,000	uL	09/05/2009	14:30:00	1.0

Sample Analysis

Analysis Type	Inst.	Analysis Date	Analysis Time	Amount Analyzed	Units	Column	Lenght (m)	Diameter (um)
Initial	A-6890A	09/22/2009	14:12:00	1,000	uL	RTX-CLP2	30	0.53

Dilution Factor	Injection Volume	Units
1.0	1.00	uL

ENCLOSURE 22 A

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 9.4.09 10.35

Extr. Complete Date/Time: 9.5.09 16.30

FRACTION: PEST ✓ PCB —

GPC Date/Time: 9.4.09 15.35

EXTRACTION PROCEDURE: SEP. FUNNEL — SONIC. ✓ OTHER — CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Clenup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK24	PBLK24	8.27.09	Soil	–	–	5.0	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
PLCS24	PLCS24			–	–	5.0									1000		
PLCS24DUP	PLCS24DUP			–	–	5.0									1000		
PLCS24(S.P)	PLCS24(SP)			–	–	5.0									1000		
PLCS24(SP)DUP	PLCS24(SP)DUP			–	–	5.0									1000		
S-2603.01	JBPJ3			6.8	40	5.1									NA		
02	JBPJ6			7.3	30	5.3											
03	JBPJ9			7.1	41	4.9											
04	JBPK0			6.9	40	5.1											
05	JBPK3			6.6	41	5.1											
06	JBPK6			6.3	41	5.2											
07	JBPK8			6.1	46	5.3											
08	JBPK9			6.6	39	5.1											

Methy. Chloride Lot No.: 904088

Hexane Lot No.: 904009

Acetone Lot No.: 906072

Freon Lot No.: —

NOTES: —

Surrogate Sol. ID: 146.99.01

LCS/Matrix Spike Sol. ID: 146-44-05, 146-143-01, 146-44-07

Florisil Lot ID: E45632

H_2SO_4 Lot No.: —

Initials of Extraction Leader: AQui Assistants

Initials of Sample Cleanup Leader — Assistants

Initials of Surrogate Spiker [signature] Verifier

Initials of Matrix Spike Spiker [signature] Verifier

RECEIVED FOR ANALYSIS BY: [signature] DATE: 08/05/09 TIME: 16.55 COMMENTS:

ENCLOSURE 22 B

2N - FORM II PEST-1
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PIBLK11	105	99	97	96			0
02	PIBLK21	89	95	88	90			0
03	PIBLK31	84	93	75	88			0
04	PIBLK41	97	102	72	80			0
05	PIBLK51	93	94	78	85			0
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		QC LIMITS
TCX =	Tetrachloro-m-xylene	(30-150)
DCB =	Decachlorobiphenyl	(30-150)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

ENCLOSURE 23A

Surrogate Recoveries

Sample	RTX-CLP2		RTX-CLP	
	TCX	DCB	TCX	DCB
PIBLK11	105	97	2	4
PIBLK21	89	88	2	4
PIBLK31	84	75	2	4
PIBLK41	97	72	2	3
PIBLK51	93	78	2	3

AUDITOR GENERATED

ENCLOSURE 23B

ORGANIC AUDIT REPORT

FOR

TASK ORDER 4001
DATA PACKAGE AND ELECTRONIC MEDIA REVIEW

AUDIT REPORT FOR CASE 38883, SDG JBQZ5
SOM01.2

KAP Technologies, Inc. (KAP)

Prepared by:

The Data Auditing Group
Quality Assurance Technical Support Program
Shaw Environmental, Inc.
2700 Chandler Avenue
Las Vegas, Nevada 89120

April 29, 2010

Contract Number: EP-W-06-005

Prepared for:

John Nebelsick

Task Order Manager
Analytical Services Branch
U.S. Environmental Protection Agency
Washington, D.C. 20460

OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION
U. S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Table of Contents

EXECUTIVE SUMMARY

The data materials for SOM01.2 Case 38883 SDG JBQZ5 were received at QATS for audit from KAP Technologies, Inc. (KAP) on 02/17/2010 (hardcopy) and 02/18/2010 (electronic media). Additional hardcopy and electronic media raw data missing from the original submission were requested on 11/17/2009 and received on 02/22/2010, 02/23/2010, and 02/26/2010. The data consist of seven low soil samples received by the laboratory on 10/02/2009. At the direction of EPA, the pesticide analysis fraction was audited against the Statement of Work (SOW) SOM01.2 with additional criteria as noted in Modified Analysis (MA) 1790.0. MA 1790.0 requires the detection of both SOW pesticide target compounds and additional compounds at projected target Analytical Concentration Goals (ACGs) as specified in Table 1 of the MA.

The data package/electronic media audit identified 17 contractual defects, including 6 critical, 5 major, and 6 minor defects. Also, three critical defects and one major defect were assessed for the SEDD evaluation of this SDG.

The defects most impacting the technical data quality are summarized here by fraction:

General Requirements – One critical defect was assessed for failure to submit one electronic media data file. Three major defects were assessed for issues including incorrectly completing the SDG Narrative; failure to submit standard preparation logs; and analyzing samples without prior establishment of valid method detection limits (MDLs).

Pesticide – Five critical defects were assessed for issues including reporting unverifiable compound concentration in most samples; failing LCS and LCSD; incorrect compound chromatographic resolution; reporting target compounds with RTs outside RT windows; and non-submission of one report form. Two major defects were assessed for incorrect completion of report forms and incorrect calculation of CRQLs.

Other defects impacting data quality include incorrect completion of the MS/MSD report forms.

SEDD Comments – Three critical defects were assessed for issues including failure to enter correct values associated with manual integration of standards, samples, and LCS; entering incorrect values for GPC cleanup of all samples; and SEDD values which do not match hardcopy values. One major defect was assessed for incorrect use of the DTD version.

Overall, the data package/electronic audit of Case 38883, SDG JBQZ5 revealed a significant number of critical defects given that only one fraction was evaluated. Numerous reanalyses, problems with analytical procedures, and QC failures appeared to occur from a combination of laboratory process failures and the difficulty of the sample matrices characteristic of this SDG.

ORGANIC ELECTRONIC DATA COMPLETENESS AUDIT

ORGANIC ELECTRONIC DATA/MEDIA SUMMARY

Date Original Data/Media Received	02/17/2010
Total Number of Media Received (__1__ CD(s) _____ Tape(s) _____ Other)	
Files Received on Web Portal? ☒ Yes ☐ No	
Date Resubmission of Media Requested	
Date Resubmitted Media Received	03/03/2010
File Directory Listing Submitted with Data/Media? ☐ Yes ☒ No	

ORGANIC ELECTRONIC RAW DATA FILE SUMMARY

Total Number of Raw Data/Method Files Required	129
Total Number of Raw Data/Method Files Submitted	86
Total Number of Raw Data/Method Files Missing	43
Total Number of Raw Data/Method Files Resubmitted	43
Date Resubmission of Files Requested	
Date Resubmitted Files Received	

GC/MS/ECD Instruments Used by Laboratory

	Instrument IDs	
1. Trace Volatiles (TVOA) Instrument ID(s)		
2. Low/Medium Volatiles (L/M VOA) Instrument ID(s)		
3. Semivolatiles (SVOA) Instrument ID(s)		
4. Pesticides (PEST) Instrument ID(s)	A-6890A	A-6890-B
5. Aroclors (ARO) Instrument ID(s)		

GC/MS/ECD Raw Data File Summary

	Number of Raw Data Files			
	Required	Submitted	Missing	Resubmitted
A. Instrument Performance Check				
1. Trace Volatiles Analysis (BFB)				
2. Low/Medium Volatiles Analysis (BFB)				
3. Semivolatiles Analysis (DFTPP)				
B. Calibration Standards				
1. Initial Calibration				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis	34	0	34	34
e. Aroclors Analysis				
2. Continuing Calibration				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis	22	18	4	4
e. Aroclors Analysis				

GC/MS/ECD Raw Data File Summary

	Number of Raw Data Files			
	Required	Submitted	Missing	Resubmitted
C. Sample/QC Data Files				
1. Trace Volatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
2. Low/Medium Volatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
3. Semivolatiles Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
4. Pesticides Analysis				
a. Blank Data Files	22	20	2	2
b. Sample Data Files	38	36	2	2
c. MS/MSD Data Files	4	4		
d. LCS Data Files	8	8		
5. Aroclors Analysis				
a. Blank Data Files				
b. Sample Data Files				
c. MS/MSD Data Files				
d. LCS Data Files				
D. Method/Library Files				
1. Tune Method Files				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
2. Quantitation Method Files				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
d. Pesticides Analysis				
e. Aroclors Analysis				
3. Reverse Search Libraries				
a. Trace Volatiles Analysis				
b. Low/Medium Volatiles Analysis				
c. Semivolatiles Analysis				
E. SEDD Files				
1. Trace Volatile Analysis				
2. Low/Medium Volatiles Analysis				
3. Semivolatiles Analysis				
4. Pesticides Analysis	1	0	1	1
5. Aroclors Analysis				
TOTALS	129	86	43	43

ORGANIC DATA AUDIT REPORT

LABORATORY NAME	KAP TECHNOLOGIES	LABORATORY CODE	KAP
CONTRACT NUMBER	EPW05032	SAMPLES/LEVEL/MATRIX	7/LOW/SOIL
SOW PROTOCOL	SOM01.2	REGION	VI
CASE NUMBER	38883	SDG NUMBER	JBQZ5
ANALYSES TYPE	PEST	VTSR	10/02/09
RECEIPT DATE (PKG)	02/17/10	RECEIPT DATE (EM)	02/18/10
AUDIT STARTED	03/22/10	AUDIT COMPLETED	04/15/10

DATA AUDIT DEFECT SUMMARY

CHECKLIST DESCRIPTION	CRITICAL	MAJOR	MINOR	TOTAL DEFECTS
A. GENERAL REQUIREMENTS	1	3	0	4
B. TRACE VOLATILES DATA	NA	NA	NA	NA
C. LOW/MEDIUM VOLATILES DATA	NA	NA	NA	NA
D. SEMIVOLATILES DATA	NA	NA	NA	NA
E. PESTICIDES DATA	5	2	6	13
F. AROCLORS DATA	NA	NA	NA	NA
TOTALS	6	5	6	17

SEDD FILE AUDIT DEFECT SUMMARY

CHECKLIST DESCRIPTION	CRITICAL	MAJOR	MINOR	TOTAL DEFECTS
A. GENERAL REQUIREMENTS	0	1	0	1
B. TRACE VOLATILES DATA	NA	NA	NA	NA
C. LOW/MEDIUM VOLATILES DATA	NA	NA	NA	NA
D. SEMIVOLATILES DATA	NA	NA	NA	NA
E. PESTICIDES DATA	3	0	0	3
F. AROCLORS DATA	NA	NA	NA	NA
TOTALS	3	1	0	4

DEFINITIONS OF DEFECT CATEGORIES

Critical Defect: A deficiency that affects analytical results.

Major Defect: A deficiency that may or may not affect analytical results.

Minor Defect: A deficiency that does not affect analytical results.

ORGANIC DATA AUDIT SAMPLE SUMMARY

LIST OF SAMPLE AND QC ANALYSES

EPA SAMPLE NO.	TVOA	VOA	SV	PEST	ARO	LEVEL S/W	EPA SAMPLE NO.	TVOA	VOA	SV	PEST	ARO	LEVEL S/W
PBLK62				X		L/S	JBR07DL2				X		L/S
PBLK65				X		L/S	JBR12				X		L/S
JBQZ5				X		L/S	JBR12DL				X		L/S
JBQZ5DL				X		L/S	JBR12DL2				X		L/S
JBQZ5DL2				X		L/S	JBR16				X		L/S
JBQZ9				X		L/S	JBR16DL				X		L/S
JBR03				X		L/S	JBR16DL2				X		L/S
JBR03DL				X		L/S	JBR20				X		L/S
JBR03DL2				X		L/S	JBR20MS				X		L/S
JBR07				X		L/S	JBR20MSD				X		L/S
JBR07DL				X		L/S							

REPEAT DEFECTS

The audit of Case 38883, SDG JBQZ5 was not compared with the most recent SOM01.2 data package/electronic media audit from this laboratory for repeat defects since this audit is for analysis of pesticide target compounds and additional requested compounds at specific CRQLs using MA 1790.0.

DATA AUDIT COMMENTS

GENERAL REQUIREMENTS

Critical Defects

1. The laboratory did not submit the SEDD data file 38883_JBQZ5_EPW05032_1_ORGANICGENERAL_3_2_PEST.xml for pesticide analyses with the original electronic media submission. The missing file was requested by EPA and received at QATS prior to the submission of this audit report.

   Reference: SOW SOM01.2, Page E-29, Paragraph 11.1.3.1, and Checklist No. A.4.F.

Major Defects

2. Parts of the SDG Narrative are incorrect and/or incomplete as in the following:

   - The laboratory did not attach a copy of the requirements for modified analysis to the SDG Narrative. The Request for Quote (RFQ) for Modified Analysis (MA 1790.0) states, “All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative.” In addition the SOW states, “The Contractor shall also include a discussion of any flexibility Statement of Work (SOW) modifications. This includes attaching a copy of the USEPA-approved modification form to the SDG Narrative.” A copy of MA 1790.0 was requested by EPA and received at QATS prior to the auditing of the data in this SDG.

   - The laboratory did not document all instances of manual integration in the SDG Narrative. None of the manually integrated pesticide compounds and surrogates were listed in the pesticide section of the SDG Narrative. The SOW states, “The Contractor shall document in the SDG Narrative all instances of manual integration.”

   - The equation to allow recalculation of sample results for the soil samples, provided in the SDG Narrative, contains an incorrect value. The equation includes the “Vt” value (Volume of concentrated Extract) in both the numerator and the denominator of the formula. The “Vt” value in the denominator should be replaced with “Vi”, volume of extract injected. The SOW states, “The Contractor shall also provide, in the SDG Narrative, sufficient information, including equations or curves (at least one equation or curve per method), to allow the recalculation of sample results from raw instrument output.”

   - The laboratory deviated from the MA 1790.0 requirement for Scenario 1 extraction and analysis procedures by using a 5 mL concentrated extract volume versus the 1 mL volume required in MA 1790.0. Discussion of this change from the requirement listed in MA 1790.0 should have been included in the SDG Narrative.

   - The laboratory deviated from the MA 1790.0 requirement for Scenario 2 low level extraction and analysis procedures by using a 1 mL concentrated extract volume versus the 0.5 mL volume required in MA 1790.0. In addition, the laboratory used a 1 µL injection volume for the low level analysis versus the 2 µL injection volume required in MA 1790.0. Discussion of this change from the requirement listed in

MA 1790.0 should have been included in the SDG Narrative.

Pages 2 and 3 from the SDG Narrative and Page 4 of MA 1790.0 are submitted as enclosures.

Reference: SOW SOM01.2, Page A-6, Paragraph 4.2.1.2, Page B-12, Paragraph 2.5.1, Enclosures 2A-2C, SDG Narrative, MA 1790.0, and Checklist No. A.2.A.1.

3. The standard preparation logs for pesticide surrogate, laboratory control sample (LCS), matrix spike and matrix spike duplicate (MS/MSD) analyses associated with this SDG were not included with the original data package submission. The SOW states that the Complete SDG File (CSF) will include "Log book preparation entries documenting the steps and calculations of diluted and working standards and/or receipt of stock standards showing the lot number and date of receipt or date of preparation for all standards and spiking solutions." In addition, the laboratory did not report the solution ID (146-142-01) on the extraction logs for the MS/MSD solution containing the additional MA 1790.0 compounds spiked into the MS/MSD samples. The organic extraction logs submitted with the data package showing the standard IDs for the surrogate, LCS, and MS/MSD solutions are submitted as enclosures. The missing standard preparation logs were obtained from standard prep logs submitted for SDG JBPJ3.

   Reference: SOW SOM01.2, Page B-33, Paragraph 2.6.2.5, Page F-10, Paragraph 2.7.6, Enclosures 3A-3B, and Checklist No. A.6.C.

4. The pesticide samples in this SDG were analyzed without prior establishment of valid method detection limits (MDLs). Specifically,

   - MA 1790.0 states specific MDL requirements for all target compounds. The laboratory-signed bid sheet contains pesticide MDLs that do not meet these specifications. Note that the MDLs provided by the laboratory on the bid sheet for most compounds are higher than the MDLs required by the MA 1790.0.

   - The MDLs for six of the MA 1790.0 additional compounds were not provided.

   - The MDLs established by the laboratory and submitted to QATS for pesticides in soil analyzed on instrument A-6890 were analyzed on 02/06/2008. These MDLs were valid for one year and expired on 02/07/2009. The pesticide soil samples, analyzed on instrument A-6890, were analyzed on 09/23/2009. The MDL data for the CLP target compounds stated on the signed bid sheet have not been submitted to QATS. Note that a request for current MDLs was submitted to the laboratory on 07/17/2009 before the samples were analyzed and again on 01/06/2010. Pesticide soil MDL data for instrument A-6890 were received before the submission of this report; however, the date of the MDL study is 01/30/2010, almost one year after expiration of the last MDL study.

   The SOW states, "Before any field samples are analyzed under the contract, the MDL for each target compound shall be determined on each instrument used for analysis."

   Pages 2 and 3 of the MA 1790.0 showing the required MDLs, Pages 2 and 3 of the laboratory-signed bid sheet showing the MDL values reported by the laboratory, and the associated auditor-generated page showing the expired laboratory-submitted MDL study are submitted as enclosures.

Reference: SOW SOM01.2, Page D-75/PEST, Paragraph 12.4.1, Page D-76/PEST, Paragraph 12.4.2, MA 1790.0, Enclosures 4A-4E, and Checklist No. A.7.A.

PESTICIDES DATA

Critical Defects

5. The auditor was unable to duplicate the concentration of several pesticide target compounds reported by the laboratory on the FORM I PEST and FORM X PEST report forms. All samples with a concentrated extract volume of 1000 µL (MA 1790.0 Scenario 2, lower level analysis with modifications) appear to be low by a factor of 2 when calculated using the concentrated extract volume, GPC factor, weight, percent moisture, and dilution factor values provided by the laboratory on the extraction log, injection log, and FORM I PEST report forms. Several pesticide target compounds in samples JBQZ5, JBQZ5DL, JBQZ5DL2, JBQZ9, JBR12, JBR12DL, JBR12DL2, JBR16, JBR16DL, JBR20, JBR20MS, and JBR20MSD were incorrectly calculated. As an example, the calculation used by the auditor to determine the concentration of 2,4'-DDT from the RTX-CLP2 GC column for sample JBR16 is shown below. The formula used is from the SOW Modifications Updating SOM01.1 to SOM01.2, and the data are from the data system printout for sample JBR16.

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x)(DF)(V_t) \quad (CV_{outG}) \quad (CV_{outF})}{(\overline{CF})(V_i)(W_t \times D)\ (CV_{inG} \times E)\ (CV_{inF} \times E)}$$

$$\text{Concentration } (\mu g/Kg) = \frac{(2091.5E6)\ (1)\ (1000)\ (10000)\ (1000)}{(31566525798)\ (1.0)\ (60.0 \times 0.68)\ \ (10000 \times 0.50)\ \ (1000 \times 1.0)} = 3.2\ (\mu g/Kg)$$

CV_{outG} = Volume of extract produced by a cleanup process, in µL (GPC)
CV_{outF} = Volume of extract produced by a cleanup process in µL (Florisil)
CV_{inG} = Initial volume of extract for a cleanup process, in µL(GPC)
CV_{inF} = Initial volume of extract for a cleanup process, in µL (Florisil)
E = The efficiency of the cleanup process expressed as a fraction

The following is the laboratory-transcribed equation from the SDG Narrative. As noted in Comment 2, there is one error in the laboratory-submitted equation, and this has been corrected by the auditor.

$$\text{Concentration (ug/Kg)} = \frac{(A_x)\,(V_t)\,(DF)\,(GPC)}{(\overline{CF})\,(V_i)\,(W_s)\,(D)}$$

$$\text{Concentration (ug/Kg)} = \frac{(2091.5E6)\,(1000)\,(1)\,(2)}{(31566525798)\,(1.0)\,(60.0)\,(.68)} = 3.2\ \text{ug/Kg}$$

The laboratory reported a concentration of 1.6 µg/Kg for 2,4'-DDT in sample JBR16.

The EPA Sample No., Compound, GC Column, Laboratory-Reported Concentration (µg/Kg), and the Auditor-Calculated Concentration (µg/Kg) are given in the following examples:

EPA Sample No.	Compound	GC Column	Laboratory-Reported Concentration (µg/Kg)	Auditor-Calculated Concentration (µg/Kg)
JBQZ5	4,4'-DDE	RTX-CLP2	0.22	0.44
JBQZ5	4,4'-DDE	RTX-CLP	0.19	0.38
JBQZ5DL	4,4'-DDD	RTX-CLP2	15 D	31 D
JBQZ5DL	4,4'-DDD	RTX-CLP	12 D	24 D
JBQZ5DL	4,4'-DDT	RTX-CLP2	41 D	82 D
JBQZ5DL	4,4'-DDT	RTX-CLP	39 D	78 D
JBQZ5DL	2,4'-DDD	RTX-CLP2	4.1 D	8.2 D
JBQZ5DL	2,4'-DDD	RTX-CLP	4.2 D	8.4 D
JBQZ5DL	2,4'-DDT	RTX-CLP2	4.7 D	9.4 D
JBQZ5DL	2,4'-DDT	RTX-CLP	5.6 D	11.2 D
JBR16	2,4'-DDT	RTX-CLP2	1.6	3.2
JBR16	2,4'-DDT	RTX-CLP	2.2	4.4
JBR16DL	4,4'-DDD	RTX-CLP2	15 D	30 D
JBR16DL	4,4'-DDD	RTX-CLP	12 D	24 D
JBR16DL	4,4'-DDT	RTX-CLP2	17 D	34 D
JBR16DL	4,4'-DDT	RTX-CLP	14 D	28 D
JBR16DL	2,4'-DDD	RTX-CLP2	5.7 D	11.4 D
JBR16DL	2,4'-DDD	RTX-CLP	5.4 D	10.8 D
JBR20MS	4,4'-DDT	RTX-CLP2	3.0	6.1
JBR20MS	4,4'-DDT	RTX-CLP	2.5	4.9
JBR20MSD	4,4'-DDT	RTX-CLP2	3.3	6.6
JBR20MSD	4,4'-DDT	RTX-CLP	2.6	5.2

* The electronic auditor determined that the compound cis-Nonachlor is not present in this SDG. See Comment 6 below.

Note that the laboratory deviated from the MA 1790.0 Scenario 2 low level extraction analysis procedures by using a 1 mL concentrated extract volume versus the 0.5 mL required by the MA. In addition, the laboratory injected 1 µL for analysis versus the 2 µL required by the MA. The MA states, "The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs."

The FORM I and FORM X PEST report forms and data system printouts for samples JBR16, JBR16DL, and JBR16DL2, the FORM VII PEST-3 report forms showing the average CFs, and Page 4 of MA 1790.0 are submitted as examples.

Reference: SOW SOM01.2, Modifications Updating SOM01.1 to SOM01.2: Pest-Item 8, Exhibit D – Pesticides Section 11.2.1.6.2.1 - Equation 16, Enclosures 5A-5Q, and Checklist No. E.3.B.2.

6. The data submitted show that the pesticide target compounds, alpha-Chlordane, gamma-Chlordane, Endrin, Heptachlor epoxide, cis-Nonachlor, and trans-Nonachlor, in the calibration standards cannot be resolved from the DDT breakdown products. Note that the electronic media auditor determined that the pesticide target compounds, alpha-Chlordane, gamma-Chlordane, Endrin, Heptachlor epoxide, cis-Nonachlor, and trans-Nonachlor, are not present in any samples analyzed in this SDG. The target compounds listed above elute within the retention time (RT) windows of other target

compounds. The chromatographic resolutions on the RTX-CLP2 and RTX-CLP GC columns are inadequate to separate DDT isomers and their breakdown products, cis-Nonachlor and trans-Nonachlor, from other pesticide target compounds. The table below shows the Compound Name, Mean Retention Time (Mean RT), Mean Retention Time Limit Low (RT Low), Mean Retention Time Limit High (RT High), the Retention Time Window Half Width (Window), and GC Column. The shaded and unshaded cells denote compounds which elute within another compound's RT window. Note that, in the first pair below, the Mean RT of 15.91 minutes for gamma-Chlordane elutes within the 2,4'-DDE RT window of 15.85 to 15.99 minutes. At the same time, the Mean RT of 15.92 minutes for 2,4'-DDE elutes within the gamma-Chlordane RTwindow of 15.84 to 15.98 minutes.

Compound Name	Mean RT	RT Low	RT High	Window	GC Column
gamma-Chlordane	15.91	15.84	15.98	0.07	RTX-CLP2
2,4'-DDE	15.92	15.85	15.99	0.07	RTX-CLP2
cis-Nonachlor	17.84	17.77	17.91	0.07	RTX-CLP2
4,4'-DDD	17.89	17.82	17.96	0.07	RTX-CLP2
2,4'-DDE	15.94	15.87	16.01	0.07	RTX-CLP
Heptachlor epoxide	15.98	15.91	16.05	0.07	RTX-CLP
trans-Nonachlor	16.52	16.45	16.59	0.07	RTX-CLP
alpha-Chlordane	16.57	16.50	16.64	0.07	RTX-CLP
Endrin	17.96	17.89	18.03	0.07	RTX-CLP
cis-Nonachlor	18.01	17.94	18.08	0.07	RTX-CLP
cis-Nonachlor	18.01	17.94	18.08	0.07	RTX-CLP
4,4'-DDD	18.07	18.00	18.14	0.07	RTX-CLP

Note: The Mean RT, RT Low, and RT High values were taken from the INDC and INDT initial calibration curves for their respective columns.

Four FORM VI PEST-1 report forms are submitted as enclosures.

Reference: SOW SOM01.2, Page D-58/PEST, Paragraph 11.1.1.1, Enclosures 6A-6D, and Checklist No. E.3.B.3.

7. The laboratory did not submit the FORM X PEST-1 report forms for samples JBR20MS and JBR20MSD. The SOW states, "FORM X is required for each sample, including dilutions and reanalyses, blanks, LCSs, and MS/MSDs in which compounds listed in Exhibit C-Pesticides and Aroclors are detected and reported on FORM I." Note that the values reported on the FORM I PEST report forms were verified from the raw data by the auditor.

   Reference: SOW SOM01.2, Page B-25, Paragraph 2.5.5.3.13, Page B-69, Paragraph 3.18.1, and Checklist No. E.3.C.1.

8. Several target compounds reported in several samples had retention times (RTs) outside of the laboratory-calculated RT windows from one or both GC columns. The following table shows the EPA Sample No., Compound, GC Column, RT, and RT Window for the

affected samples:

EPA Sample No.	Compound	GC Column	RT (min.)	RT Window (min.)
JBQZ5	gamma-BHC	RTX-CLP2	12.16	12.17 - 12.27
JBQZ5	gamma-BHC	RTX-CLP	12.49	12.50 - 12.60
JBQZ5	delta-BHC	RTX-CLP	13.38	13.19 - 13.29
JBQZ5	Endrin	RTX-CLP	18.06	17.89 - 18.03
JBQZ5DL	gamma-BHC	RTX-CLP2	12.16	12.17 - 12.27
JBQZ5DL	gamma-BHC	RTX-CLP	12.49	12.50 - 12.60
JBQZ5DL	delta-BHC	RTX-CLP	13.38	13.19 - 13.29
JBQZ5DL	Endrin	RTX-CLP	18.08	17.89 - 18.03

The SOW states, "The single component analytes are identified when peaks are observed in the RT window for the analyte on both Gas Chromatograph (GC) columns." The FORM X PEST report forms and data system printouts for the affected samples are submitted as enclosures.

Reference: SOW SOM01.2, Page D-58/PEST, Paragraph 11.1.1.1, Enclosures 8A-8D, and Checklist No. E.3.C.2.

9. The laboratory incorrectly transcribed the SOW pesticide target compound concentration values from the FORM I PEST report forms onto the FORM III PEST-4 report forms for the Laboratory Control Samples (LCSs), PLCS62 and PLCSD62. The laboratory transcribed one-half the concentration values from the FORM I PEST report forms onto the FORM III PEST-4 for the two LCS samples. As transcribed, the results on the FORM III-PEST appear to pass the %REC technical acceptance criteria. However, when the auditors calculated the %REC using the compound concentration values from the FORM I PEST report forms, the %RECs failed the technical acceptance criteria for the LCS PLCS62 and PLCSD62. The SOW states, "LCS technical acceptance criteria MUST be met before data are reported. LCS contamination from laboratory sources or any LCS analyzed not meeting the technical acceptance criteria will require reextraction and reanalysis of the LCS at no additional cost to the USEPA. All samples (including MS/MSD and PE samples) and required blanks, prepared and analyzed in an SDG with an LCS that does not meet the technical acceptance criteria, will also require reextraction and reanalysis at no additional cost to USEPA." In addition, MA 1790.0 requires that, "Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost." Note that all low level analyses in this SDG are associated with LCS PLCS62 and PLCSD62. In addition, discrepancies exist between the values reported in the "Sample wt/vol:" and "Concentrated extract volume:" fields on the FORM I PEST report forms for LCS PLCS62 and PLCSD62 and the extraction log and data system printouts. The FORM I PEST and the FORM III PEST-4 report forms and data system printouts for LCS samples PLCS62 and PLCSD62, the extraction and injection log pages, and Page 4 of MA 1790.0 are submitted as enclosures. Note that the LCS PLCS62 and PLCSD62 FORM I PEST report form concentration values are the only low level concentrations which can be duplicated by the auditors (see Comment 5).

Note: One critical defect and one minor defect are assessed.

Reference: SOW SOM01.2, Modifications Updating SOM01.1 to SOM01.2: Pest-Item 8, Exhibit D – Pesticides, Section 11.2.1.6.2.1 - Equation 16, Page D-72/PEST, Paragraph 12.2.5.5, Page D-73/PEST, Paragraphs 12.2.6.2 and 12.2.6.3, Enclosures 9A-9I, SDG Narrative, and Checklist Nos. E.4.C.1.A and E.4.C.5.

Major Defects

10. The laboratory submitted two sets of the FORM VIII PEST report forms for the analyses performed in this SDG. Both sets are incorrectly completed.

The first set (pages 949 through 954) include the following deficiencies:

- EPA Sample Nos. INDT111, INDT211, INDT311, INDT411, INDT511, INDT112, INDT212, INDT312, INDT412, INDT512 are incorrectly reported on the report forms as INDC111, INDC211, INDC311, INDC411, INDC512 INDC112, INDC212, INDC312, INDC412, and INDC512, respectively.

- EPA Sample Nos. INDT321, INDT322, INDT331, INDT332, INDT341, and INDT342 are missing from the report forms.

The second set (pages 955 through 960) include the following deficiencies:

- EPA Sample Nos. INDC111, INDC211, INDC311, INDC411, INDC511, INDC112, INDC212, INDC312, INDC412, and INDC512 are not reported on the report forms.

Note: All of the files listed above which are incorrectly reported or missing are present in the laboratory-submitted hardcopy data package and the electronic-media files and are reported in the SEDD file.

The SOW states, "For every analysis associated with a particular analytical sequence starting with the initial calibration, enter the EPA Sample Number, Laboratory File Identifier, and date and time of analysis." Four FORM VIII PEST report forms and a printout of the analytical sequences which were extracted from the laboratory-submitted SEDD file are submitted as enclosures.

Note: One major defect and two minor defects are assessed.

Reference: SOW SOM01.2, Page B-67, Paragraph 3.16.2.4, Enclosures 10A-10Q, and Checklist Nos. E.1.A.1, E.1.C and E.1.G.

11. The auditors were unable to duplicate the laboratory-reported CRQL values for several compounds in several samples in this SDG. For the high level analyses, the CRQLs for Dieldrin and 4,4'-DDE are incorrectly calculated and reported on all FORM I PEST report forms. For the low level analyses, all the CRQLs are incorrectly calculated and reported on all FORM I PEST report forms. The calculation used by the auditor to determine the CRQL of 4,4'-DDE for sample JBR16DL2 is shown below. The formula used is from the SOW, and the data are from various data sources for sample JBR16DL2.

$$\text{Adjusted CRQL} = \begin{matrix}\text{Contract CRQL}\\ \text{(from SOW)}\end{matrix} \times \frac{W_x}{W_s \times D} \times \frac{V_t}{V_y} \times DF \; \frac{CV_{outG}}{CV_{inG} \times E} \times \frac{CV_{outF}}{CV_{inF}}$$

V_t = Concentrated extract volume.
V_y = Contract concentrated extract volume.
CV_{outG} = Volume of extract produced by a cleanup process, in µL (GPC)
CV_{outF} = Volume of extract produced by a cleanup process in µL (Florisil)
CV_{inG} = Initial volume of extract for a cleanup process, in µL(GPC)
CV_{inF} = Initial volume of extract for a cleanup process, in µL (Florisil)
E = The efficiency of the cleanup process expressed as a fraction

$$\text{Contract CRQL} = 3.3\ \mu g/Kg \times \frac{30}{60.00 \times 0.68} \times \frac{1000}{10000} \times 100 \frac{10000}{10000 \times 0.5} \times \frac{1000}{1000} = 49\ \mu g/Kg$$

The laboratory reported a CRQL of 14 µg/Kg.

The following table shows several examples of the incorrectly calculated and reported CRQLs:

EPA Sample No.	Compound	Laboratory-Reported CRQL (µg/Kg)	Auditor-Calculated CRQL (µg/Kg)
JBR12	4,4'-DDE	0.15	0.51
JBR16	4,4'-DDE	0.15	0.49
JBR16DL	4,4'-DDE	1.5	4.9
JBR16DL2	4,4'-DDE	15	49
PBLK62	2,4'-DDE	0.20	0.33
PBLK62	4,4'-DDE	0.20	0.33

The FORM I PEST report forms for samples JBR16, JBR16DL, and JBR16DL2 are submitted as examples.

Reference: SOW SOM01.2, Page D-64/PEST, Paragraph 11.2.2.2, Modifications Updating SOM01.1 to SOM01.2: Pest-Item 10, Exhibit D – Pesticide, Section 11.2.2.2 - Equation 20, Enclosures 11A-11C, and Checklist No. E.3.B.5.

Minor Defects

12. The FORM III PEST-2 report forms for the matrix spike and matrix spike duplicate (MS/MSD) samples JBR20MS and JBR20MSD are incorrectly completed. The auditor was unable to duplicate several Spike Added (µg/Kg) concentrations, MS Recoveries, and sample concentrations reported on the FORM III PEST-2 report forms for the matrix spike and matrix spike duplicate (MS/MSD) samples JBP20MS and JBP20MSD.

- The spike added values reported for the CLP target compounds do not correspond to the values provided on the standard preparation log and extraction log for the CLP target compounds. It appears that the values are set corresponding to the MA 1790.0 target compounds; however, MA compounds were prepared at spike concentrations of 0.8 µg/mL; whereas, the CLP target compound matrix spike mixture was prepared at spike concentrations of 0.5 µg/mL and 1.0 µg/mL for the two target compound levels.

- As noted in Comment 5, the concentration values for samples JBR20, JBR20MS, and JBR20MSD were all incorrectly calculated; therefore, the values reported on the FORM III PEST-2 report forms are incorrect.

The FORM I and III PEST report forms, the associated organic extraction log, and standard preparation logs are submitted as enclosures.

Note: Three minor defects are assessed.

Reference: SOW SOM01.2, Page B-53, Paragraph 3.8.1.2.3, Page B-54, Paragraphs 3.8.1.2.4 - 3.8.1.2.11, Enclosures 12A-12I, and Checklist Nos. E.4.B.1.A, E.4.B.4, and E.4.B.5.

Observations

13. The calibration factor (CF) percent differences (%Ds) reported by the laboratory for several MA 1790.0 target compounds in several calibration verification standards exceeded the advisory technical acceptance criteria of ±20.0%. The EPA Sample No., Date Analyzed, GC Column, Compound, $\overline{CF}$, CF, and %D are listed in the following table:

EPA Sample No.	Date Analyzed	GC Column	Compound	$\overline{CF}$	CF	%D
INDT321	10/12/2009	RTX-CLP2	2,4'-DDD	27494609958	21277453175	-22.6
INDT321	10/12/2009	RTX-CLP2	2,4'-DDE	34509704923	26868275225	-22.1
INDT321	10/12/2009	RTX-CLP2	2,4'-DDT	31566525798	23995161600	-24.0
INDT331	10/14/2009	RTX-CLP2	2,4'-DDE	34509704923	26664236300	-22.7
INDT331	10/14/2009	RTX-CLP2	2,4'-DDT	31566525798	21290228200	-32.6
INDT331	10/14/2009	RTX-CLP2	cis-Nonachlor	4951548733	7154808175	44.5
INDT331	10/14/2009	RTX-CLP	2,4'-DDD	2224413458	16767788125	-24.6
INDT331	10/14/2009	RTX-CLP	2,4'-DDT	27303410723	20685407550	-24.2
INDT331	10/14/2009	RTX-CLP	cis-Nonachlor	4246951896	5482711725	29.1
INDT341	10/15/2009	RTX-CLP2	cis-Nonachlor	4951548733	7073828700	42.9
INDT341	10/15/2009	RTX-CLP	cis-Nonachlor	4246951896	6256136075	47.3
INDT341	10/15/2009	RTX-CLP	DCB	31402915910	42794069200	36.3

Note that MA 1790.0 states that "Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**." All samples are associated with one of the above calibration verification standards.

Examples from the FORM VII PEST-2 report forms and Page 4 of MA 1790.0 are submitted as enclosures.

Reference: SOW SOM01.2, Page D-32/PEST, Paragraph 9.3.5.6, Page D-33/PEST, Paragraph 9.3.6.4, Page D-34/PEST, Paragraph 9.3.6.8, MA 1790.0, and Enclosures 13A-13C.

SEDD FILE AUDIT COMMENTS

GENERAL REQUIREMENTS

Major Defects

14. The laboratory used the incorrect Data Table Definition (DTD) version "**ORGANICGENERAL_3_2.dtd**" with the XML file submitted. All laboratories using SOW SOM01.2 are required to use DTD version "**ORGANICGENERAL_3_3.dtd**," which was released during May of 2007, as per direction of EPA to QATS and the laboratories. The first 17 lines of the laboratory-submitted SEDD file "38883_JBPJ3_EPW05032_1_ORGANICGENERAL_3_2_PEST.xml" are included as an example.

    Reference: SOW SOM01.2, Pages H-51 and H-61, Section 6, Enclosure 14, and Checklist No. A.8.A.

PESTICIDES DATA

Critical Defects

15. The laboratory entered 46 incorrect values for the data elements **/Header/SamplePlusMethod/Analysis/Analyte/Peak/ManualIntegration** and **/Header/InstrumentQC/Analysis/Analyte/Peak/ManualIntegration** for six calibration standards, nine soil samples, five performance evaluation mixtures, and one laboratory control sample duplicate analysis. The SOW SOM01.2 states for the "**ManualIntegration**" data element, "Report 'Yes' if this peak was manually integrated, otherwise report 'No'." Note that the laboratory's data system(s) documented these manual integrations in the data system printouts for the individual samples. The following table lists the Sample No., Target Analyte, and the Column for which manual integration are not documented; an "X" indicates that a manual integration was performed.

		Column	
Sample No.	Target Analyte	RTX-CLP2	RTX-CLP
INDC211	DCB	X	X
INDC361	DCB		X
INDT111	DCB		X
INDT211	DCB		X
INDT321	DCB		X
INDT341	2,4'-DDT	X	
JBPK8	4,4'-DDT	X	X
JBPK9	cis-Nonachlor	X	X
JBPK9DL	cis-Nonachlor	X	X
JBQZ5DL2	4,4'-DDT		X
JBR03	gamma-Chlordane		X
JBR03DL	4,4'-DDD		X
JBR07	TCX	X	X
JBR07	DCB	X	X

Sample No.	Target Analyte	Column RTX-CLP2	Column RTX-CLP
JBR12	TCX	X	X
JBR12	DCB	X	X
JBR16	DCB	X	X
PEM31	DCB		X
PEM61	DCB		X
PEM61	Endrin Aldehyde	X	X
PEM61	Endrin Ketone		X
PEM71	DCB		X
PEM71	4,4'-DDT	X	
PEM71	Endrin Aldehyde	X	
PEM81	DCB		X
PEM81	Endrin Aldehyde	X	X
PEM81	Endrin Ketone	X	X
PEM91	DCB		X
PEM91	Endrin Aldehyde	X	X
PEM91	Endrin Ketone	X	X
PLCSD65	cis-Nonachlor	X	X

Examples from the data system print outs are submitted as enclosures.

Reference: SOW SOM01.2, Page B-12, Section 2.5.1, Page D-60/PEST, Section 11.2.1.2, Pages H-59 and H-65, Section 6, Enclosures 15A-15C, and Checklist No. E.7.D.

16. The laboratory entered incorrect values for the data elements **/Header/SamplePlusMethod/Analysis/PreparationPlusCleanup/InitialAmount** and **/Header/SamplePlusMethod/Analysis/PreparationPlusCleanup/Efficiency** for the GPC cleanup performed on all samples, matrix spikes, matrix spike duplicates, laboratory control samples, laboratory control sample duplicates, and method blanks in this SDG. In all preparations, the laboratory reported a value of 1,000 µL for the "InitialAmount." This value does not match the corresponding value of 10 mL (10,000 µL) which is reported as the concentrated extract volume in the organic extraction log. In addition, since only 5,000 µL of the original 10,000 µL concentrated extract volume was used for GPC, the values for the "**Efficiency**" data element should have been reported as "0.5" instead of the laboratory-reported values of "1.0." The SOW states, "Report the efficiency of the cleanup process expressed as a fraction of material that passes through or is not mechanically lost during the cleanup step, in decimal percent (e.g. 50% efficiency must be expressed as 0.50). Leave blank if cleanup is not performed." A printout containing values extracted from the laboratory-submitted SEDD file for soil sample JBQZ9 analyzed on column RTX-CLP2, and one page from the laboratory's organic extraction log are submitted as examples.

Reference: SOW Modifications Updating SOM01.1 to SOM01.2 October 5, 2006 (Updated 02-12-2007) Amended 04-11-2007, Page H-44, Enclosures 16A-16B, and Checklist No. E.7.D.

17. There are discrepancies between the values reported for the SEDD file data element **/Header/SamplePlusMethod/Analysis/Analyte/PercentRecovery** for the pesticide surrogates TCX and DCB for the nine instrument blanks analyzed on the RTX-CLP GC column versus those reported on the FORM II PEST-2 report forms. The surrogate percent recovery (%R) values reported in the hardcopy data package and the values for the "**PercentRecovery**" data element are summarized in the table below.

Sample No.	**SEDD File Reported %R Values**				**Hardcopy Reported %R Values**			
	Column RTX-CLP2		Column RTX-CLP		Column RTX-CLP2		Column RTX-CLP	
	TCX	DCB	TCX	DCB	TCX	DCB	TCX	DCB
PIBLKY1	94	93	2	3	94	93	91	87
PIBLKZ1	96	93	2	3	96	93	86	72
PIBLK11	82	92	2	4	82	92	87	92
PIBLK21	102	91	2	4	102	91	100	94
PIBLK31	106	95	2	3	106	95	95	72
PIBLK61	118	94	2	3	118	94	98	64
PIBLK71	114	91	2	2	114	91	96	58
PIBLK81	108	88	2	2	108	88	97	58
PIBLK91	112	89	2	3	112	89	107	63

A table containing values extracted from the laboratory submitted SEDD file data element and one FORM II PEST-2 report form are submitted as examples.

Reference: SOW SOM01.2, Page H-10, Section 4.4, Enclosures 17A-17B, and Checklist No. E.7.E.

Observations

18. Twenty-eight values for the pesticide SEDD file data element **/Header/SamplePlusMethod/Analysis/Analyte/PercentRecovery** are incorrectly reported for the pesticide surrogates Tetrachloro-m-Xylene and Decachlorobiphenyl on instrument A-6890 for the RTX-CLP2 and RTX-CLP GC columns for the analysis of water samples JBQZ5DL2, JBR03DL, JB03DL2, JBR07DL, JBR07DL2, JBR12DL2, and JBR16DL2. Analysis of the SEDD file shows that the laboratory entered a carriage return followed by eight spaces. When no value is to be associated with the "**PercentRecovery**" data element, the data element should be left null.

Reference: SEDD SPECIFICATION Draft Version 5.1, Section 2.1.2, Data Element Values.

DEFECT ORIGINATION SUMMARY

The following table indicates whether the audit comment originated from the hardcopy or electronic audit and whether the electronic audit confirmed the findings of the hardcopy audit.

Comment	Hardcopy Audit	Electronic Audit	Confirmed by Electronic Audit	Comment	Hardcopy Audit	Electronic Audit	Confirmed by Electronic Audit
1		X		10	X		X
2	X			11	X		X
3	X			12	X		X
4	X			13	X		
5	X		X	14		X	
6	X		X	15		X	
7		X		16		X	
8	X		X	17		X	
9	X		X	18		X	

ENCLOSURES

SDG NARRATIVE

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

SAMPLE RECEIPT:

On 10/02/09 @ 09:45 A.M. - Received one cooler via FedEx with shipment number 870440632900. The cooler temperature was 3.3^{0}C.

In the first submission Lab missed the SVOA, SVOA-SIM and Arclor analysis for the sample JBQ23.This sample is extracted and analysed for SVOA/SVOA-SIM and Aroclor and submitted as additional data.

EPA SAMPLE ID	pH	EPA SAMPLE ID	pH
JBQZ5	NA	JBR20MS	NA
JBQZ9	NA	JBR20MSD	NA
JBR03	NA	JBR03DL	NA
JBR07	NA	JBR07DL	NA
JBR12	NA	JBR03DL2	NA
JBR16	NA	JBR07DL2	NA
JBR20	NA	JBR12DL	NA
JBQZ5DL	NA	BR12DL2	NA
JBQZ5DL2	NA	JBR16DL	NA
JBR16DL2	NA		

No problems were encountered during sample receiving and login.

SEMIVOLATILES SOIL/ SVSIM:

The soil samples were extracted on 10/05/09 using 60 grams sample to achieve low CRQL's for MA by sonication method as per statement of work SOM 1.2. The samples were cleaned by the GPC. No problems were encountered during the extraction and analysis.

The samples were analyzed on instrument F-5973 GC/MS using a 30 meters long RTX-5MS column having a 0.25mm ID and 0.25μm film thickness.

During the SIM analyses the samples JBR03 and JBR07 had target compounds beyond the calibration range and were analyzed using the dilutions. The samples had analyzed using the multiple dilutions in order to bring the target compound concentrations with on the calibration range. Both the analyses were reported and are billable.

No problems were encountered during the sample analyses.

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE Mod.1788.0, 1789.0, 1790.0

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Soil, Sediment sample ug/kg} = \frac{(Ax)(Is)(Vt)(DF)(GPC)}{(Ais)(RRF)(Vi)(Ws)(D)}$$

Where,

Ax, Is, Vin, Vout are given for water, above.
Vt = Volume of concentrated extract in uL.
Vi = Volume of extract injected.
GPC = GPC cleaning Factor.

$$D = \frac{100 - \%moisture}{100}$$

Ws = Weight of sample extract.
RRF = Mean relative Response Factor determined from the initial calibration standard.
DF = Dilution Factor.

PESTICIDES:

The Soil samples were extracted on 09/24/09 using both by low (60 Grams) and medium level(5 Grams) by sonication method as per statement of work SOM1.2. After screening the samples only 60gram extracts were analysed.The soil sample was cleaned by GPC. After GPC clean up the extract was concentrated to a final volume of 1mL.

All the samples were analysed by using 60 grams extract. To get all the target compounds within the calibration the sample, JBQ40 was analyzed at 10x dilution.The additional compounds are also spiked to LCS/LCSD and MS/MSD samples. No problems were encountered during extraction and sample analyses.

*1) RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)*
*2) RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)*

A 1uL injection was used.

The samples JBRZ5, JBR03, JBR07, JBR12 and JBR16and had target compounds beyond the calibration range and were analyzed using the dilutions. The samples had analyzed using the multiple dilutions in order to bring the target compound concentrations with on the calibration range. Both the analyses were reported and are billable.

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)(GPC)}{(CF)(Vt)(Ws)(D)}$$

Where,

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 5,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.
GPC = GPC Factor
DF = Dilution Factor

$$D = \frac{100 - \%\text{moisture}}{100}$$

AROCLORS:

The soil samples were extracted on 10/06/09 using 100 grams Wt. of sample by sonication method as per statement of work SOM1.2 and concentrated to final volume of 1.0mL to meet low CRQL's for this MA. No problems were encountered during extraction.

All samples were analyzed on a P-6890 GC using two columns manufactured by Restek . No Aroclors were detected in these samples.
RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)
RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)
A 1uL injection was used.

The formula used to calculate the Sample concentration:

SOIL SAMPLE:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)}{(CF)(Vt)(Ws)(D)}$$

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 10,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

$$D = \frac{100 - \%moisture}{100}$$

DF = Dilution Factor.

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 above. Release of the data contained in this hard copy sample data package and in the electronic data deliverable has been authorized by the laboratory manager or the manager's designee, as verified by the following signature:

Signature/Title

Date of Signature

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 above. Release of the data contained in this hard copy sample data package and in the electronic data deliverable has been authorized by the laboratory manager or the manager's designee, as verified by the following signature:

Signature/Title

10/22/05
Date of Signature

Request for Quote (RFQ) for Modified Analysis

Date: August 24, 2009

Subject: Modification Reference Number: 1790.0
Title: Lower CRQLs and Nine Additional Pesticide Compounds
Sample Matrix: Sediment
Fraction Affected: PEST
Statement of Work: SOM01.2

Purpose:

The Contractor Laboratory is requested to perform the following modified analyses under the Organic Statement of Work (SOW) SOM01.2, based on the additional specifications listed below. Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in SOW SOM01.2 remain unchanged and in full force and effect. The number of samples requested in this modification is about 40 samples but not guaranteed.

Please note that accepting a modified analysis request is voluntary, and that the Laboratory is not required to accept the modified analysis. There will be no adverse effect to the Laboratory for not accepting the modified analysis request. However, once the Laboratory accepts the request for modified analysis, it shall perform the analysis in accordance with this modification and as specified in SOW SOM01.2.

The Laboratory is requested to review the modification described herein, determine whether or not it shall accept the requested modified analyses, and complete the attached response form. The Laboratory shall provide comments in response to the required changes in the designated area, in order to ensure that the modified analysis can be completed in accordance with the specifications described herein.

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	
Dieldrin	60-57-1	**0.001**	µg/kg	**≤ 0.5**	**<0.001**
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
Endrin	**72-20-8**	**0.084**	**µg/kg**	**≤ 0.5**	**<0.084**
Endrin aldehyde	7421-93-4	CLP CRQL	µg/kg	3.3	
Endrin ketone	53494-70-5	CLP CRQL	µg/kg	3.3	
Gamma-BHC (Lindane)	58-89-9	**0.005**	µg/kg	**≤ 0.5**	**<0.005**
gamma-Chlordane	**5103-74-2**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
Heptachlor	**76-44-8**	**0.0014**	**µg/kg**	**≤ 0.5**	**<0.0014**
Heptachlor epoxide	**1024-57-3**	**0.0007**	**µg/kg**	**≤ 0.5**	**<0.0007**
Methoxychlor	**72-43-5**	**1.4**	**µg/kg**	**1**	
Toxaphene	8001-35-2	**0.0059**	µg/kg	**10**	**<0.0059**
Additional Target Compounds					
2,4'-DDD	53-19-0	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDE	3424-82-6	0.04	µg/kg	≤ 0.5	**<0.04**
2,4'-DDT	789-02-6	0.04	µg/kg	≤ 0.5	**<0.05**
Oxychlordane	27304-13-8	0.05	µg/kg	≤ 0.5	**<0.05**
cis-Nonachlor	5103-73-1	0.05	µg/kg	≤ 0.5	**<0.05**
Trans-Nonachlor	39765-80-5	0.05	µg/kg	≤ 0.5	**<0.05**
Hexachlorobenzene	118-74-1	2.3	µg/kg	≤ 0.5	
Hexachlorobutadiene	87-68-3	0.6	µg/kg	≤ 0.5	
Octachlorostyrene	29082-74-4	1.0	µg/kg	1	

<u>Technical Instructions:</u>

Some of the samples may have high levels of DDTs. For this reason, it is required that samples be analyzed using two scenarios, that is, some samples may require two separate extractions followed by analyses.

<u>Scenario 1:</u> The Laboratory shall analyze ***all the samples*** following the SOW with the following modifications:

Use 5 grams of sample; sonicate using micro-tip or a sonic water bath with a final volume of 10 mls of primary extract. Inject 10 mls of extract through GPC with a final volume of 5 ml. Use the same amount of surrogates and spike compounds and follow the clean-up (sulfur and florisil as specified in the SOW. Extract volume after florisil clean-up shall be 1.0 ml. Analyze this aliquot following the SOW. If DDT isomer(s) or other organochlorine pesticides are detected, the lower level analysis is not necessary. If any target PEST compound was detected at

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

All samples analyzed for the same fraction within an SDG must be analyzed under the same fractional requirements. The Laboratory shall not include data for the same fraction with different requirements in the same SDG.

The Laboratory shall include the Modification Reference Number 1790.0 on each hardcopy data form under the "Mod. Ref. No." header appearing on each form as well as the data element "ServicesID" under the "SamplePlusMethod" node of the EDD. This should be done for the fractions affected by the modified analysis only. The "ServicesID" field should remain blank for all other fractions reported in the SDG. The Laboratory shall also document the Modification Reference Number and the Solicitation Number on the SDG Coversheet.

Clarifications/Revisions to the RFQ for Modified Analysis:

Laboratory Name:
Laboratory Comments:

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{:.oncentration of Soil, Sediment sample ug/kg} = \frac{(Ax)(Is)(Vt)(DF)(GPC)}{(Ais)(RRF)(Vi)(Ws)(D)}$$

Where,

Ax, Is, Vin, Vout are given for water, above.
Vt = Volume of concentrated extract in uL.
Vi = Volume of extract injected.
GPC = GPC cleaning Factor.

$$D = \frac{100 - \%moisture}{100}$$

Ws = Weight of sample extract.
RRF = Mean relative Response Factor determined from the initial calibration standard.
DF = Dilution Factor.

PESTICIDES:

The Soil samples were extracted on 09/24/09 using both by low (60 Grams) and medium level(5 Grams) by sonication method as per statement of work SOM1.2. After screening the samples only 60gram extracts were analysed.The soil sample was cleaned by GPC. After GPC clean up the extract was concentrated to a final volume of 1mL.

All the samples were analysed by using 60 grams extract. To get all the target compounds within the calibration the sample, JBQ40 was analyzed at 10x dilution.The additional compounds are also spiked to LCS/LCSD and MS/MSD samples. No problems were encountered during extraction and sample analyses.

*1) RTX - CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)*
*2) RTX CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)*

A 1uL injection was used.

The samples JBRZ5, JBR03, JBR07, JBR12 and JBR16and had target compounds beyond the calibration range and were analyzed using the dilutions. The samples had analyzed using the multiple dilutions in order to bring the target compound concentrations with on the calibration range. Both the analyses were reported and are billable.

ENCLOSURE 2A

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd, Suite A2 • The Woodlands, TX 77380 • Phone (281) 367-0065

Contract No. EPW05032	Case No. 38883	SDG No. JBQZ5

SDG NARRATIVE **Mod.1788.0, 1789.0, 1790.0**

The formula used to calculate the Sample concentration:

SOIL SAMPLES:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)(GPC)}{(CF)(Vt)(Ws)(D)}$$

Where,

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 5,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.
GPC = GPC Factor
DF = Dilution Factor

$$D = \frac{100 - \%moisture}{100}$$

AROCLORS:

The soil samples were extracted on 10/06/09 using 100 grams Wt. of sample by sonication method as per statement of work SOM1.2 and concentrated to final volume of 1.0mL to meet low CRQL's for this MA. No problems were encountered during extraction.

All samples were analyzed on a P-6890 GC using two columns manufactured by Restek . No Aroclors were detected in these samples.
RTX – CLP2: 30m*0.53mmID*0.41um film thickness. (Primary Column)
RTX – CLP: 30m*0.53mmID*0.50um film thickness. (Confirmation Column)
A 1uL injection was used.

The formula used to calculate the Sample concentration:

SOIL SAMPLE:

$$\text{Concentration of Target compound in soil/sediment} = \frac{(Ax)(Vt)(DF)}{(CF)(Vt)(Ws)(D)}$$

Ax = Response of the compound to be measured.
CF = Mean calibration factor from the initial calibration (area/ng)
Vt = 10,000 uL.
Vi = Volume of extract injected.
Ws = Weight of sample extracted.

ENCLOSURE 2B

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

ENCLOSURE 2c

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 10.06.09 12.30

Extr. Complete Date/Time: 10.07.09 13.20

FRACTION

PEST ✓ PCB —

GPC Date/Time: 10.6.09 14.10 PM

EXTRACTION PROCEDURE

SEP. FUNNEL — SONIC. ✓ OTHER —

CONT. LIQ/LIQ ✗ SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK 62	PBLK62	10.2.09	SOIL	—	—	60.0	600	10mL	5ML	200 ML	1mL	1mL	1mL	NO	NA	100	
PLCS 62	PLCS 62			—	—	60.0									100		
PLCS 62 DUP	PLCS62DUP			—	—	60.0									100		
PLCS 62	PLCS62			—	—	60.0									100		
PLCS 62DUP	PLCS62D			—	—	60.0									100		
2713.01	JBQZ5			6.7	29	60.1									NA		
02	JBQZ9			7.1	26	59.9											
03	JBR03			7.0	35	60.2											
04	JBR07			6.8	41	60.3											
05	JBR12			6.7	35	60.1											
06	JBR16			6.6	32	~~60.0~~											
07	JBR20			6.1	27	60.2											
07MS	MS			6.1	27	60.3									100		
07 MSD	MSD			6.1	27	60.1									100		

Methy. Chloride Lot No.: 904058

Hexane Lot No.: 904009

Acetone Lot No.: 906072

Freon Lot No.: —

Surrogate Sol. ID: 146.99.01

LCS/Matrix Spike Sol. ID: 146.44.05, 146.143.01

Florisil Lot ID: EH5632 146.44.07

H_2SO_4 Lot No.: —

Initials of Extraction Leader RAy Assistants

Initials of Sample Cleanup Leader — Assistants

Initials of Surrogate Spiker CW Verifier

Initials of Matrix Spike Spiker DW Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: BV Kao DATE: 10/07/09 TIME: 14.20 COMMENTS:

ENCLOSURE 3A

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 10.09.09 11.50AM
Extr. Complete Date/Time: 10.10.09 9.30AM

FRACTION
PEST ✓ PCB —
GPC Date/Time: 10.09.09 13:02PM

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC. ✓ OTHER —
CONT. LIQ/LIQ — SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Clenup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK65	PBLK65	10.2.09	Soil	—	—	5.0	300	10mL	5mL	200mL	5mL	2mL	2mL	NO	NA	1000	
PLCS65	PLCS65			—	—	5.0									1000		
PLCS65	PLCS65			—	—	5.0									1000		
PLCS65(S.D)	PLCS65(S.D)			—	—	5.0									1000		
PLCS65(S.D)D	PLCS65(S.D)D			—	—	5.0									1000		
S-2713.01	JBQ25			6.7	29	5.1									NA		
02	JBQ29			7.1	26	4.9											
03	JBR03			7.0	35	~~5.0~~ 5.2											
04	JBR07			6.8	41	5.1											
05	JBR12			6.7	35	5.1											
06	JBR16			6.6	32	5.2											
07	JBR20			6.1	27	5.1											
07MS	MS			6.1	27	5.3									1000		
07MSD	MSD			6.1	27	5.1									1000		

Methy. Chloride Lot No.: 904038
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.:

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146.44.05, 146.44.07
Florisil Lot ID: 146.44.07
H_2SO_4 Lot No.: —

Initials of Extraction Leader RAy Assistants
Initials of Sample Cleanup Leader — Assistants
Initials of Surrogate Spiker [signature] Verifier
Initials of Matrix Spike Spiker [signature] Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: [signature] DATE: 10/10/08 TIME: 9.45 COMMENTS:

ENCLOSURE 3B

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	
Dieldrin	60-57-1	**0.001**	µg/kg	**≤ 0.5**	**<0.001**
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	

ENCLOSURE 4A

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs
alpha-BHC	**319-84-6**	**0.001**	**μg/kg**	**≤ 0.5**	**<0.001**
Aldrin	**309-00-2**	**0.00038**	**μg/kg**	**≤ 0.5**	**<0.00038**
beta-BHC	**319-85-7**	**0.0036**	**μg/kg**	**≤ 0.5**	**<0.0036**
4,4'-DDD	**72-54-8**	**0.04**	**μg/kg**	**≤ 0.5**	**<0.04**
alpha-Chlordane	**5103-71-9**	**0.046**	**μg/kg**	**≤ 0.5**	**<0.046**
4,4'-DDE	**72-55-9**	**0.04**	**μg/kg**	**≤ 0.5**	**<0.04**
4,4'-DDT	**50-29-3**	**0.04**	**μg/kg**	**≤ 0.5**	**<0.04**
delta-BHC	319-86-8	CLP CRQL	μg/kg	1.7	
Dieldrin	60-57-1	**0.001**	μg/kg	**≤ 0.5**	**<0.001**
Endosulfan I	959-98-8	CLP CRQL	μg/kg	1.7	
Endosulfan II	33213-65-9	CLP CRQL	μg/kg	3.3	
Endosulfan sulfate	1031-07-8	CLP CRQL	μg/kg	3.3	

ENCLOSURE 4B

Modification to the SOW Specifications:

SOW SOM01.2 requires contract Laboratories to analyze samples for the list of Pesticide (PEST) target compounds at the Contract Required Quantitation Limits (CRQLs) in Exhibit C, Section 3.0 through the protocol outlined in Exhibit D, Analytical Method for the Analysis of Pesticides. The proposed modified analysis request, include the following changes outlined below.

The Laboratory shall analyze soil samples for the complete PEST target compound list as specified in SOW SOM01.2, including the nine additional compounds, at the CRQLs listed in Table 1.

PEST Analysis

The target CRQL ranges are calculated with the SOW modifications to meet or get close to the project's target Analytical Concentration Goals (ACGs). Both target ACGs and CRQLs are listed in the Table below. If the Laboratory cannot meet the target CRQLs in Table 1, they shall notify SMO during the solicitation process and include the achievable CRQLs along with their bid sheet.

The laboratory shall be allowed to report down to the MDL levels to meet or get closer to the project's target analytical concentration goals (ACGs). Because of this, the laboratories bidding on this project shall be required to submit an MDL study for the target compounds.

A low standard at the CRQL is required for each new additional compound.

Table 1- PEST Target Compounds and Target CRQLs

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs	
alpha-BHC	**319-84-6**	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**	0.85
Aldrin	**309-00-2**	**0.00038**	**µg/kg**	**≤ 0.5**	**<0.00038**	0.91
beta-BHC	**319-85-7**	**0.0036**	**µg/kg**	**≤ 0.5**	**<0.0036**	1.0
4,4'-DDD	**72-54-8**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.8
alpha-Chlordane	**5103-71-9**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**	1.1
4,4'-DDE	**72-55-9**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.1
4,4'-DDT	**50-29-3**	**0.04**	**µg/kg**	**≤ 0.5**	**<0.04**	2.3
delta-BHC	319-86-8	CLP CRQL	µg/kg	1.7	1.1	
Dieldrin	60-57-1	**0.001**	**µg/kg**	**≤ 0.5**	**<0.001**	1.9
Endosulfan I	959-98-8	CLP CRQL	µg/kg	1.7	0.99	
Endosulfan II	33213-65-9	CLP CRQL	µg/kg	3.3	2.2	
Endosulfan sulfate	1031-07-8	CLP CRQL	µg/kg	3.3	2.9	

ENCLOSURE 4C

Analyte	CAS No	Target ACGs	Units (dw)	Target CRQLs (MA)	MDLs	
Endrin	**72-20-8**	**0.084**	**µg/kg**	**≤ 0.5**	**<0.084**	2.47
Endrin aldehyde	7421-93-4	CLP CRQL	µg/kg	3.3	3.31	
Endrin ketone	53494-70-5	CLP CRQL	µg/kg	3.3	3.66	
Gamma-BHC (Lindane)	58-89-9	**0.005**	µg/kg	**≤ 0.5**	**<0.005**	0.89
gamma-Chlordane	**5103-74-2**	**0.046**	**µg/kg**	**≤ 0.5**	**<0.046**	0.97
Heptachlor	**76-44-8**	**0.0014**	**µg/kg**	**≤ 0.5**	**<0.0014**	0.85
Heptachlor epoxide	**1024-57-3**	**0.0007**	**µg/kg**	**≤ 0.5**	**<0.0007**	0.98
Methoxychlor	**72-43-5**	**1.4**	**µg/kg**	**1**	13.7	
Toxaphene	8001-35-2	**0.0059**	µg/kg	**10**	**<0.0059**	
Additional Target Compounds						
2,4'-DDD	53-19-0	0.04	µg/kg	≤ 0.5	**<0.04**	2.77
2,4'-DDE	3424-82-6	0.04	µg/kg	≤ 0.5	**<0.04**	~~3.4~~ 2.12
2,4'-DDT	789-02-6	0.04	µg/kg	≤ 0.5	**<0.05**	2.3
Oxychlordane	27304-13-8	0.05	µg/kg	≤ 0.5	**<0.05**	NA
cis-Nonachlor	5103-73-1	0.05	µg/kg	≤ 0.5	**<0.05**	NA
Trans-Nonachlor	39765-80-5	0.05	µg/kg	≤ 0.5	**<0.05**	NA
Hexachlorobenzene	118-74-1	2.3	µg/kg	≤ 0.5	NA	
Hexachlorobutadiene	87-68-3	0.6	µg/kg	≤ 0.5	NA	
Octachlorostyrene	29082-74-4	1.0	µg/kg	1	NA	

Technical Instructions:

Some of the samples may have high levels of DDTs. For this reason, it is required that samples be analyzed using two scenarios, that is, some samples may require two separate extractions followed by analyses.

Scenario 1: The Laboratory shall analyze ***all the samples*** following the SOW with the following modifications:

Use 5 grams of sample; sonicate using micro-tip or a sonic water bath with a final volume of 10 mls of primary extract. Inject 10 mls of extract through GPC with a final volume of 5 ml. Use the same amount of surrogates and spike compounds and follow the clean-up (sulfur and florisil as specified in the SOW. Extract volume after florisil clean-up shall be 1.0 ml. Analyze this aliquot following the SOW. If DDT isomer(s) or other organochlorine pesticides are detected, the lower level analysis is not necessary. If any target PEST compound was detected at

ENCLOSURE 4D

AUDITOR GENERATED

SOM01.2 Pesticides MDL Study Report		
Fraction: PEST SOIL	**Lab Code:** KAP	**Instrument:** A-6890
Unit: µg/Kg		

Compound	CRQL	Column 1				Column 2				Overall Pass/Fail	Anal. Date
		MDL	Spike Level	Factor	Pass/Fail	MDL	Spike Level	Factor	Pass/Fail		
ALPHA-BHC	1.7	1.4	3.3	2.31	Pass	1.5	3.3	2.30	Pass	PASS	02/06/2008
BETA-BHC	1.7	1.4	3.3	2.43	Pass	0.94	3.3	3.54	Pass	PASS	02/06/2008
DELTA-BHC	1.7	1.6	3.3	2.11	Pass	1.1	3.3	3.17	Pass	PASS	02/06/2008
GAMMA-BHC (LINDANE)	1.7	1.4	3.3	2.33	Pass	1.0	3.3	3.20	Pass	PASS	02/06/2008
HEPTACHLOR	1.7	0.74	3.3	4.50	Pass	0.51	3.3	6.53	Pass	PASS	05/07/2007
HEPTACHLOR	1.7	Peak incorrectly identified								FAIL	02/06/2008
ALDRIN	1.7	0.73	3.3	4.56	Pass	0.62	3.3	5.37	Pass	PASS	05/07/2007
ALDRIN	1.7	Peak incorrectly identified								FAIL	02/06/2008
HEPTACHLOR EPOXIDE	1.7	1.4	3.3	2.31	Pass	1.0	3.3	3.30	Pass	PASS	02/06/2008
ENDOSULFAN I	1.7	1.3	3.3	2.62	Pass	1.0	3.3	3.23	Pass	PASS	02/06/2008
DIELDRIN	3.3	2.6	6.7	2.57	Pass	2.1	6.7	3.14	Pass	PASS	02/06/2008
4,4-DDE	3.3	2.8	6.7	2.35	Pass	1.0	6.7	6.47	Pass	PASS	02/06/2008
ENDRIN	3.3	3.0	6.7	2.22	Pass	2.2	6.7	3.00	Pass	PASS	02/06/2008
ENDOSULFAN II	3.3	2.5	6.7	2.67	Pass	2.1	6.7	3.13	Pass	PASS	02/06/2008
4,4-DDD	3.3	2.9	6.7	2.29	Pass	2.0	6.7	3.26	Pass	PASS	02/06/2008
ENDOSULFAN SULFATE	3.3	2.7	6.7	2.44	Pass	1.9	6.7	3.43	Pass	PASS	02/06/2008
4,4-DDT	3.3	3.0	6.7	2.23	Pass	2.3	6.7	2.87	Pass	PASS	02/06/2008
METHOXYCHLOR	17	15	33	2.22	Pass	12	33	2.80	Pass	PASS	02/06/2008
ENDRIN KETONE	3.3	2.7	6.7	2.50	Pass	2.0	6.7	3.42	Pass	PASS	02/06/2008
ENDRIN ALDEHYDE	3.3	2.7	6.7	2.50	Pass	2.0	6.7	3.35	Pass	PASS	02/06/2008
ALPHA-CHLORDANE	1.7	1.3	3.3	2.56	Pass	0.98	3.3	3.40	Pass	PASS	02/06/2008
GAMMA-CHLORDANE	1.7	1.3	3.3	2.60	Pass	1.0	3.3	3.20	Pass	PASS	02/06/2008
TOXAPHENE	170	70	340	4.86	Pass	41	340	8.22	Pass	PASS	02/06/2008

ENCLOSURE 4E

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19508

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.15	U
319-85-7	beta-BHC	0.15	U
319-86-8	delta-BHC	0.15	U
58-89-9	gamma-BHC (Lindane)	0.15	U
76-44-8	Heptachlor	0.15	U
309-00-2	Aldrin	0.15	U
1024-57-3	Heptachlor epoxide	0.15	U
959-98-8	Endosulfan I	0.15	U
60-57-1	Dieldrin	0.15	U
72-55-9	4,4'-DDE	0.15	U
72-20-8	Endrin	0.29	U
33213-65-9	Endosulfan II	0.29	U
72-54-8	4,4'-DDD	17	E
1031-07-8	Endosulfan sulfate	0.29	U
50-29-3	4,4'-DDT	20	EP
72-43-5	Methoxychlor	1.5	U
53494-70-5	Endrin ketone	0.29	U
7421-93-4	Endrin aldehyde	0.29	U
5103-71-9	alpha-Chlordane	0.15	U
5103-74-2	gamma-Chlordane	0.15	U
8001-35-2	Toxaphene	15	U
53-19-0	2,4'-DDD	7.3	E
3424-82-6	2,4'-DDE	0.29	U
789-02-6	2,4'-DDT	1.6	P
27304-13-8	Oxychlordane	0.29	U
5103-73-1	cis-Nonachlor	110	E
39765-80-5	Trans-Nonachlor	0.29	U
118-74-1	Hexachlorobenzene	0.29	U
87-68-3	Hexachlorobutadiene	0.29	U
29082-74-4	Octachlorostyrene	0.29	U

SOM01.2 (6/2007)

ENCLOSURE 5A

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBR16

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: S-2713.06 Date(s) Analyzed 10/14/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
2,4'-DDD	1	17.02	16.99	17.13	7.5	3.0
	2	17.11	17.05	17.19	7.3	
2,4'-DDT	1	17.69	17.66	17.80	1.6	37.0
	2	17.68	17.62	17.76	2.2	
cis-Nonachlor	1	17.85	17.77	17.91	130	18.9
	2	18.06	17.94	18.08	110	
4,4'-DDD	1	17.85	17.82	17.96	21	22.1
	2	18.06	18.00	18.14	17	
4,4'-DDT	1	18.53	18.50	18.64	25	25.5
	2	18.67	18.62	18.76	20	
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

ENCLOSURE 5B

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19508.D(Signal #1)            A19508.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16 (Sig #1); JBR16 (Sig #2)
Misc      : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial  : 19   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 17 14:39:15 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Tue Oct 13 11:20:23 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

ouho 10/20/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.51	10.07	2559.7E6	2616.8E6	77.709	87.555
	Spiked Amount 60.000				Recovery =	129.52%	145.93%
22) S	Decachlorobiphen	23.54	23.28	4357.5E6	2844.3E6	117.872	104.739
	Spiked Amount 120.000				Recovery =	98.23%	87.28%
	Target Compounds						
15)	4,4'-DDD	17.85	18.06	25012.0E6	17930.7E6	856.287	701.405
17)	4,4'-DDT	18.53	18.67	31019.8E6	22693.3E6	1023.669	815.362

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5c

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19508.D(Signal #1) A19508.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR16 (Sig #1); JBR16 (Sig #2)
Misc : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial : 19 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Oct 17 14:37:19 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Thu Oct 15 09:21:50 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

bjko
10/20/09

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.51	10.07	2649.0E6	2562.4E6	60.719	65.647
	Spiked Amount 60.000				Recovery =	101.20%	109.41%
11) S	Decachlorobiphen	23.54	23.28	4613.4E6	2329.2E6	110.264m	74.171m#
	Spiked Amount 120.000				Recovery =	91.89%	61.81%
	Target Compounds						
8)	2,4'-DDD	17.02	17.11	8398.3E6	6596.8E6	305.452	296.612
9)	2,4'-DDT	17.69	17.68	2091.5E6	2478.8E6	66.256	90.787 #
10)	cis-Nonachlor	17.85	18.06	25296.3E6	18240.7E6	5108.761	4295.011

u 10/2?/?

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5D

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06DL

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19519

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	1.5	U
72-20-8	Endrin	2.9	U
33213-65-9	Endosulfan II	2.9	U
72-54-8	4,4'-DDD	12	DP
1031-07-8	Endosulfan sulfate	2.9	U
50-29-3	4,4'-DDT	14	D
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	2.9	U
7421-93-4	Endrin aldehyde	2.9	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	150	U
53-19-0	2,4'-DDD	5.4	D
3424-82-6	2,4'-DDE	2.9	U
789-02-6	2,4'-DDT	1.2	DJ
27304-13-8	Oxychlordane	2.9	U
5103-73-1	cis-Nonachlor	73	DE
39765-80-5	Trans-Nonachlor	2.9	U
118-74-1	Hexachlorobenzene	2.9	U
87-68-3	Hexachlorobutadiene	2.9	U
29082-74-4	Octachlorostyrene	2.9	U

ENCLOSURE 5E

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBR16DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: S-2713.06DL Date(s) Analyzed 10/15/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
2,4'-DDD	1	17.01	16.99	17.13	5.7	6.8
	2	17.11	17.05	17.19	5.4	
2,4'-DDT	1	17.68	17.66	17.80	1.2	0.8
	2	17.68	17.62	17.76	1.2	
cis-Nonachlor	1	17.84	17.77	17.91	92	25.0
	2	18.06	17.94	18.08	73	
4,4'-DDD	1	17.84	17.82	17.96	15	27.4
	2	18.06	18.00	18.14	12	
4,4'-DDT	1	18.52	18.50	18.64	17	18.2
	2	18.67	18.62	18.76	14	
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

ENCLOSURE 5F

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1)          A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc      : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2)
ALS Vial  : 76   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Oct 17 14:40:55 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Thu Oct 15 09:21:50 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2        Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Ocuko 10/20/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	187.2E6	158.1E6	4.292	4.051
	Spiked Amount 60.000			Recovery	=	7.15%	6.75%
11) S	Decachlorobiphen	23.53	23.28	455.2E6	254.6E6	10.880	8.109 #
	Spiked Amount 120.000			Recovery	=	9.07%	6.76%
	Target Compounds						
8)	2,4'-DDD	17.01	17.11	641.9E6	486.2E6	23.346	21.860
9)	2,4'-DDT	17.68	17.68	157.1E6	136.9E6	4.976	5.015
10)	cis-Nonachlor	17.84	18.06	1856.6E6	1273.5E6	374.963	299.864

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5G

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1)           A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc      : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2)
ALS Vial  : 76   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 17 14:40:10 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Tue Oct 13 11:20:23 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

ORho 10/20/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1)	S Tetrachloro-m-xy	9.50	10.06	185.9E6	167.8E6	5.645	5.615
	Spiked Amount 60.000			Recovery	=	9.41%	9.36%
22)	S Decachlorobiphen	23.53	23.28	458.4E6	244.3E6	12.400	8.994 #
	Spiked Amount 120.000			Recovery	=	10.33%	7.50%
	Target Compounds						
15)	4,4'-DDD	17.84	18.06	1841.2E6	1264.6E6	63.032	49.470
17)	4,4'-DDT	18.52	18.67	2092.7E6	1626.0E6	69.059	58.421

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5 H

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16DL2

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06DL2

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19520

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	15	U
72-55-9	4,4'-DDE	15	U
72-20-8	Endrin	29	U
33213-65-9	Endosulfan II	29	U
72-54-8	4,4'-DDD	11	DJ
1031-07-8	Endosulfan sulfate	29	U
50-29-3	4,4'-DDT	14	DJ
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	29	U
7421-93-4	Endrin aldehyde	29	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	1500	U
53-19-0	2,4'-DDD	29	U
3424-82-6	2,4'-DDE	29	U
789-02-6	2,4'-DDT	29	U
27304-13-8	Oxychlordane	29	U
5103-73-1	cis-Nonachlor	68	DP
39765-80-5	Trans-Nonachlor	29	U
118-74-1	Hexachlorobenzene	29	U
87-68-3	Hexachlorobutadiene	29	U
29082-74-4	Octachlorostyrene	29	U

SOM01.2 (6/2007)

ENCLOSURE 5I

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBR16DL2

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: S-2713.06DL2 Date(s) Analyzed 10/15/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
cis-Nonachlor	1	17.84	17.77	17.91	85	25.4
	2	18.07	17.94	18.08	68	
4,4'-DDD	1	17.84	17.82	17.96	14	21.1
	2	18.07	18.00	18.14	11	
4,4'-DDT	1	18.52	18.50	18.64	15	3.7
	2	18.68	18.62	18.76	14	
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

 SOM01.1 (05/2005)

ENCLOSURE 5 J

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19520.D(Signal #1)            A19520.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 10/15/09 09:49 (Signal #1); 10/15/09 10:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL2 100X (Sig #1); JBR16DL2 100X (Sig #2)
Misc      : S-2713.06DL2 60.0G/1.0ML (Sig #1); S-2713.06DL2 60.0G/1.0ML (Sig #2
)
ALS Vial  : 77   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 17 14:42:51 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Tue Oct 13 11:20:23 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

cerho 10/20/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
15)	4,4'-DDD	17.84	18.07	162.3E6	117.2E6	5.555	4.586
17)	4,4'-DDT	18.52	18.68	183.0E6	162.0E6	6.038	5.820

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5K

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19520.D(Signal #1)           A19520.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/15/09 09:49 (Signal #1); 10/15/09 10:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL2 100X (Sig #1); JBR16DL2 100X (Sig #2)
Misc      : S-2713.06DL2 60.0G/1.0ML (Sig #1); S-2713.06DL2 60.0G/1.0ML (Sig #2
)
ALS Vial  : 77   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Oct 17 14:41:57 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Thu Oct 15 09:21:50 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

ocho 10/12/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
10)	cis-Nonachlor	17.84	18.07	171.9E6	117.6E6	34.710	27.687

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 5L

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): PIBLK21 Date Analyzed: 10/12/2009

Lab Sample ID(PIBLK): PIBLK21 Time Analyzed: 1725

EPA Sample No.(INDC3##): INDC321 Date Analyzed: 10/12/2009

Lab Sample ID(INDC3): INDC321 Time Analyzed: 1801

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
alpha-BHC	11.27	11.23	11.33	55341802858	59164510900	6.9
gamma-BHC (Lindane)	12.21	12.17	12.27	52222277880	55497890700	6.3
Heptachlor	13.34	13.30	13.40	50580075750	53798067050	6.4
Endosulfan I	16.36	16.30	16.44	36883124020	38360497550	4.0
Dieldrin	16.97	16.91	17.05	39415287788	41430193800	5.1
Endrin	17.64	17.58	17.72	34797281526	35747202500	2.7
4,4'-DDD	17.88	17.82	17.96	29209820341	31240593000	7.0
4,4'-DDT	18.56	18.50	18.64	30302549455	32674989775	7.8
Methoxychlor	20.01	19.95	20.09	16628475643	17798149170	7.0
beta-BHC	12.45	12.41	12.51	20470985833	22640258500	10.6
delta-BHC	13.18	13.14	13.24	45770053565	51664380450	12.9
Aldrin	14.12	14.08	14.18	44846387020	47169308650	5.2
Heptachlor epoxide	15.47	15.41	15.55	40457502325	42304333600	4.6
4,4'-DDE	16.61	16.55	16.69	37439382406	39467431600	5.4
Endosulfan II	18.1	18.04	18.18	33656239314	35410517775	5.2
Endosulfan sulfate	19.43	19.37	19.51	31395194564	33353901025	6.2
Endrin ketone	20.59	20.53	20.67	38352890016	39913385400	4.1
Endrin aldehyde	18.83	18.77	18.91	28153062904	29446127125	4.6
alpha-Chlordane	16.24	16.18	16.32	38820941345	40557059900	4.5
gamma-Chlordane	15.9	15.84	15.98	41117956410	42605519550	3.6
TCX	9.53	9.49	9.59	32939654345	35830175500	8.8
DCB	23.59	23.50	23.70	36968069450	37474644000	1.4

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 5M

7L - FORM VII PEST-3

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBQZ5

GC Column: RTX-CLP   ID: 0.53   (mm)   Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): PIBLK22   Date Analyzed: 10/12/2009

Lab Sample ID(PIBLK): PIBLK22   Time Analyzed: 1801

EPA Sample No.(INDC##): INDC322   Date Analyzed: 10/12/2009

Lab Sample ID(INDC): INDC322   Time Analyzed: 1838

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
alpha-BHC	11.68	11.64	11.74	43907880285	46600362100	6.1
gamma-BHC (Lindane)	12.54	12.50	12.60	42671626148	47046965950	10.3
Heptachlor	13.76	13.72	13.82	42260253943	45548178050	7.8
Endosulfan I	16.88	16.82	16.96	38103175435	37066284250	-2.7
Dieldrin	17.42	17.36	17.50	32335959025	35496532025	9.8
Endrin	17.95	17.89	18.03	25888509555	29640150425	14.5
4,4'-DDD	18.07	18.00	18.14	25563950899	28341334825	10.9
4,4'-DDT	18.68	18.62	18.76	27832199603	29831661525	7.2
Methoxychlor	19.71	19.65	19.79	13866399903	15354231565	10.7
beta-BHC	12.78	12.73	12.83	17779095773	19937172550	12.1
delta-BHC	13.23	13.19	13.29	39627626910	45728733800	15.4
Aldrin	14.51	14.46	14.56	37740458958	40734963600	7.9
Heptachlor epoxide	15.97	15.91	16.05	33559055533	36515549950	8.8
4,4'-DDE	16.73	16.67	16.81	29238544546	33368788650	14.1
Endosulfan II	18.45	18.38	18.52	26153649575	29660262000	13.4
Endosulfan sulfate	20.34	20.28	20.42	27385446609	28049435325	2.4
Endrin ketone	20.97	20.90	21.04	31179123018	34147142200	9.5
Endrin aldehyde	19.38	19.32	19.46	22932401761	25085523375	9.4
alpha-Chlordane	16.56	16.50	16.64	31195969333	34536899350	10.7
gamma-Chlordane	16.25	16.19	16.33	35574655308	36993148300	4.0
TCX	10.07	10.03	10.13	29886980225	32054392550	7.3
DCB	23.3	23.20	23.40	27156422245	26213310125	-3.5

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

ENCLOSURE 5N

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(INDC3##): INDT321 Date Analyzed: 10/12/2009

Lab Sample ID(INDC3): INDT321 Time Analyzed: 1838

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
2,4'-DDD	17.05	16.99	17.13	27494609958	21277453175	-22.6
2,4'-DDE	15.91	15.85	15.99	34509704923	26868275225	-22.1
2,4'-DDT	17.73	17.66	17.80	31566525798	23995161600	-24.0
Oxychlordane	15.27	15.20	15.34	43690555159	34095154100	-22.0
cis-Nonachlor	17.83	17.77	17.91	4951548733	4224795350	-14.7
Trans-Nonachlor	16.12	16.06	16.20	7424814065	6063005775	-18.3
Hexachlorobenzene	10.87	10.81	10.95	54254272171	42887620350	-21.0
Hexachlorobutadiene	4.16	4.10	4.24	73518326634	59348744000	-19.3
Octachlorostyrene	14.78	14.72	14.86	68291214458	53684032750	-21.4
TCX	9.53	9.48	9.58	43626392723	34699969950	-20.5
DCB	23.59	23.50	23.70	41839990410	32920923925	-21.3

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 5 0

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(INDC##): INDT322 Date Analyzed: 10/12/2009

Lab Sample ID(INDC): INDT322 Time Analyzed: 1915

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	$\overline{CF}$	CF	%D
2,4'-DDD	17.12	17.05	17.19	22240413458	18865848100	-15.2
2,4'-DDE	15.94	15.87	16.01	29664262689	24933259975	-15.9
2,4'-DDT	17.69	17.62	17.76	27303410723	23972648175	-12.2
Oxychlordane	15.72	15.66	15.80	32593997586	28340267825	-13.1
cis-Nonachlor	18.01	17.94	18.08	4246951896	3346635425	-21.2
Trans-Nonachlor	16.52	16.45	16.59	5738025271	4742378100	-17.4
Hexachlorobenzene	11.19	11.13	11.27	45341173103	38576984800	-14.9
Hexachlorobutadiene	5	4.93	5.07	56354056954	45266273425	-19.7
Octachlorostyrene	14.93	14.87	15.01	57722889826	48674096700	-15.7
TCX	10.07	10.02	10.12	39032714273	33371647100	-14.5
DCB	23.29	23.20	23.40	31402915910	27525288675	-12.3

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 5P

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

6J - FORM VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 10/12/2009 10/12/2009

	RT OF STANDARDS					RT	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC	11.28	11.28	11.28	11.28	11.28	11.28	11.23	11.33
beta-BHC	12.46	12.46	12.46	12.46	12.46	12.46	12.41	12.51
delta-BHC	13.19	13.19	13.19	13.19	13.19	13.19	13.14	13.24
gamma-BHC (Lindane)	12.23	12.23	12.22	12.22	12.22	12.22	12.17	12.27
Heptachlor	13.35	13.35	13.35	13.35	13.35	13.35	13.30	13.40
Aldrin	14.13	14.13	14.13	14.13	14.13	14.13	14.08	14.18
Heptachlor epoxide	15.48	15.48	15.48	15.48	15.48	15.48	15.41	15.55
Endosulfan I	16.37	16.37	16.37	16.37	16.37	16.37	16.30	16.44
Dieldrin	16.98	16.98	16.98	16.98	16.98	16.98	16.91	17.05
4,4'-DDE	16.62	16.63	16.63	16.62	16.62	16.62	16.55	16.69
Endrin	17.65	17.65	17.65	17.65	17.65	17.65	17.58	17.72
Endosulfan II	18.11	18.11	18.11	18.11	18.11	18.11	18.04	18.18
4,4'-DDD	17.89	17.89	17.89	17.89	17.89	17.89	17.82	17.96
Endosulfan sulfate	19.44	19.44	19.44	19.44	19.44	19.44	19.37	19.51
4,4'-DDT	18.57	18.57	18.57	18.57	18.57	18.57	18.50	18.64
Methoxychlor	20.02	20.02	20.02	20.02	20.02	20.02	19.95	20.09
Endrin ketone	20.60	20.60	20.60	20.60	20.60	20.60	20.53	20.67
Endrin aldehyde	18.84	18.84	18.84	18.84	18.84	18.84	18.77	18.91
alpha-Chlordane	16.25	16.25	16.25	16.24	16.25	16.25	16.18	16.32
gamma-Chlordane	15.92	15.92	15.91	15.91	15.91	15.91	15.84	15.98
TCX (A)	9.54	9.54	9.53	9.53	9.54	9.54	9.49	9.59
DCB (A)	23.60	23.60	23.60	23.60	23.60	23.60	23.50	23.70
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

SOM01.1 (5/2005)

ENCLOSURE 6A

6J - Form VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

Instrument ID: A-6890B

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (2): RTX-CLP ID 0.53 (mm) Date(s) Analyzed: 10/12/2009 10/12/2009

	RT OF STANDARDS					RT	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC	11.68	11.68	11.69	11.69	11.69	11.69	11.64	11.74
beta-BHC	12.78	12.78	12.79	12.79	12.78	12.78	12.73	12.83
delta-BHC	13.23	13.23	13.24	13.24	13.24	13.24	13.19	13.29
gamma-BHC (Lindane)	12.54	12.54	12.55	12.55	12.55	12.55	12.50	12.60
Heptachlor	13.76	13.76	13.77	13.77	13.77	13.77	13.72	13.82
Aldrin	14.51	14.50	14.52	14.52	14.52	14.51	14.46	14.56
Heptachlor epoxide	15.97	15.97	15.98	15.98	15.98	15.98	15.91	16.05
Endosulfan I	16.88	16.88	16.89	16.89	16.89	16.89	16.82	16.96
Dieldrin	17.42	17.42	17.43	17.43	17.43	17.43	17.36	17.50
4,4'-DDE	16.73	16.73	16.74	16.74	16.74	16.74	16.67	16.81
Endrin	17.95	17.95	17.96	17.96	17.96	17.96	17.89	18.03
Endosulfan II	18.45	18.44	18.46	18.46	18.45	18.45	18.38	18.52
4,4'-DDD	18.07	18.07	18.08	18.08	18.07	18.07	18.00	18.14
Endosulfan sulfate	20.34	20.34	20.35	20.35	20.35	20.35	20.28	20.42
4,4'-DDT	18.68	18.68	18.69	18.69	18.69	18.69	18.62	18.76
Methoxychlor	19.71	19.71	19.72	19.72	19.72	19.72	19.65	19.79
Endrin ketone	20.97	20.96	20.98	20.98	20.97	20.97	20.90	21.04
Endrin aldehyde	19.38	19.38	19.39	19.39	19.39	19.39	19.32	19.46
alpha-Chlordane	16.56	16.56	16.57	16.57	16.57	16.57	16.50	16.64
gamma-Chlordane	16.25	16.25	16.26	16.26	16.26	16.26	16.19	16.33
TCX (A)	10.07	10.07	10.08	10.08	10.08	10.08	10.03	10.13
DCB (A)	23.30	23.29	23.30	23.30	23.30	23.30	23.20	23.40
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

SOM01.0 (10/2004)

ENCLOSURE 6B

6J - FORM VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

Instrument ID: A-6890A

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (1): RTX-CLP2 ID: 0.53 (mm Date(s) Analyzed: 10/12/2009 10/12/2009

	RT OF STANDARDS					RT	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
2,4'-DDD	17.06	17.06	17.06	17.06	17.06	17.06	16.99	17.13
2,4'-DDE	15.92	15.92	15.92	15.92	15.92	15.92	15.85	15.99
2,4'-DDT	17.73	17.73	17.73	17.73	17.73	17.73	17.66	17.80
Oxychlordane	15.27	15.27	15.27	15.27	15.27	15.27	15.20	15.34
cis-Nonachlor	17.84	17.84	17.84	17.84	17.84	17.84	17.77	17.91
Trans-Nonachlor	16.13	16.13	16.13	16.13	16.13	16.13	16.06	16.20
Hexachlorobenzene	10.88	10.88	10.88	10.88	10.88	10.88	10.81	10.95
Hexachlorobutadiene	4.17	4.16	4.17	4.17	4.16	4.17	4.10	4.24
Octachlorostyrene	14.79	14.79	14.79	14.79	14.79	14.79	14.72	14.86
TCX (A)	9.53	9.53	9.54	9.53	9.53	9.53	9.48	9.58
DCB (A)	23.60	23.60	23.60	23.60	23.60	23.60	23.50	23.70

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 6c

6J - Form VI PEST-1

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

Instrument ID: A-6890B

Level (x CS1): CS1 1.0 CS2 2.0 CS3 4.0 CS4 8.0 CS5 16.0

GC Column (2): RTX-CLP ID 0.53 (mm) Date(s) Analyzed: 10/12/2009 10/12/2009

	RT OF STANDARDS					RT	RT WINDOW*	
COMPOUND	CS1	CS2	CS3	CS4	CS5		FROM	TO
2,4'-DDD	17.13	17.12	17.12	17.13	17.12	17.12	17.05	17.19
2,4'-DDE	15.95	15.94	15.94	15.95	15.94	15.94	15.87	16.01
2,4'-DDT	17.70	17.69	17.69	17.69	17.69	17.69	17.62	17.76
Oxychlordane	15.73	15.73	15.73	15.73	15.73	15.73	15.66	15.80
cis-Nonachlor	18.02	18.01	18.01	18.01	18.01	18.01	17.94	18.08
Trans-Nonachlor	16.53	16.52	16.52	16.52	16.52	16.52	16.45	16.59
Hexachlorobenzene	11.20	11.20	11.20	11.19	11.20	11.20	11.13	11.27
Hexachlorobutadiene	5.00	5.00	5.00	5.00	5.00	5.00	4.93	5.07
Octachlorostyrene	14.94	14.94	14.94	14.94	14.94	14.94	14.87	15.01
TCX (A)	10.08	10.07	10.07	10.07	10.07	10.07	10.02	10.12
DCB (A)	23.30	23.30	23.30	23.30	23.30	23.30	23.20	23.40

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

SOM01.0 (10/2004)

ENCLOSURE 6D

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBQZ5

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: S-2713.01 Date(s) Analyzed 10/14/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
Hexachlorobenzene	1	10.85	10.81	10.95	0.17	32.6
	2	11.15	11.13	11.27	0.22	
gamma-BHC (Lindane)	1	12.16	12.17	12.27	0.32	48.7
	2	12.49	12.50	12.60	0.47	
delta-BHC	1	13.18	13.14	13.24	0.34	6.9
	2	13.38	13.19	13.29	0.37	
Heptachlor	1	13.33	13.30	13.40	0.16	43.5
	2	13.74	13.72	13.82	0.11	
4,4'-DDE	1	16.59	16.55	16.69	0.22	14.3
	2	16.73	16.67	16.81	0.19	
2,4'-DDD	1	17.02	16.99	17.13	5.3	20.0
	2	17.11	17.05	17.19	4.4	
Endrin	1	17.7	17.58	17.72	6.2	125.1
	2	18.06	17.89	18.03	14	
2,4'-DDT	1	17.7	17.66	17.80	6.9	14.8
	2	17.68	17.62	17.76	6.0	

ENCLOSURE 8A

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19505.D(Signal #1)           A19505.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 19:47 (Signal #1); 10/14/09 20:23 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQZ5 (Sig #1); JBQZ5 (Sig #2)
Misc      : S-2713.01 60.1G/1.0ML (Sig #1); S-2713.01 60.1G/1.0ML (Sig #2)
ALS Vial  : 16   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 17 10:34:18 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Tue Oct 13 11:20:23 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Ulio 10/20/09

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.51	10.07	2962.4E6	2513.2E6	89.935	84.092
	Spiked Amount 60.000				Recovery =	149.89%	140.15%
22) S	Decachlorobiphen	23.55	23.28	5107.6E6	3242.4E6	138.162	119.398
	Spiked Amount 120.000				Recovery =	115.14%	99.50%
	Target Compounds						
3)	Gamma-BHC (Linda	12.16	12.49	705.8E6	857.8E6	13.516	20.102 #
5)	Delta-BHC	13.18	13.38	672.1E6	621.9E6	14.685	15.694
6)	Heptachlor	13.33	13.74	343.6E6	200.1E6	6.794	4.734 #
12)	4,4'-DDE	16.59	16.73	354.4E6	242.2E6	9.465	8.283
14)	Endrin	17.70	18.06	9263.7E6	15514.6E6	266.219	599.286 #
15)	4,4'-DDD	17.85	18.06	23986.1E6	15514.6E6	821.166	606.894 #
17)	4,4'-DDT	18.54	18.67	82699.2E6	54152.3E6	2729.117	1945.670 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 8B

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
JBQZ5DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: S-2713.01DL Date(s) Analyzed 10/15/2009

Instrument ID (1): A-6890A Instrument ID (2): A-6890B

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
gamma-BHC (Lindane)	1	12.16	12.17	12.27	0.16	111.3
	2	12.49	12.50	12.60	0.34	
delta-BHC	1	13.18	13.14	13.24	0.23	52.1
	2	13.38	13.19	13.29	0.35	
Heptachlor	1	13.33	13.30	13.40	0.051	48.4
	2	13.74	13.72	13.82	0.075	
2,4'-DDD	1	17.02	16.99	17.13	4.1	1.4
	2	17.12	17.05	17.19	4.2	
Endrin	1	17.69	17.58	17.72	4.3	182.7
	2	18.08	17.89	18.03	12	
2,4'-DDT	1	17.69	17.66	17.80	4.7	17.9
	2	17.69	17.62	17.76	5.6	
cis-Nonachlor	1	17.84	17.77	17.91	91	21.4
	2	18.08	17.94	18.08	75	
4,4'-DDD	1	17.84	17.82	17.96	15	24.8
	2	18.08	18.00	18.14	12	

ENCLOSURE 8c

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19521.D(Signal #1)          A19521.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/15/09 10:33 (Signal #1); 10/15/09 11:29 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQZ5DL 10X (Sig #1); JBQZ5DL 10X (Sig #2)
Misc      : S-2713.01DL 60.1G/1.0ML (Sig #1); S-2713.01DL 60.1G/1.0ML (Sig #2)
ALS Vial  : 78   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 17 10:33:55 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Tue Oct 13 11:20:23 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

cwho 10/20/09.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.07	205.4E6	189.6E6	6.236	6.345
	Spiked Amount 60.000			Recovery	=	10.39%	10.57%
22) S	Decachlorobiphen	23.53	23.30	486.8E6	220.1E6	13.167	8.104 #
	Spiked Amount 120.000			Recovery	=	10.97%	6.75%
	Target Compounds						
3)	Gamma-BHC (Linda	12.16	12.49	35719340	61668112	0.684	1.445 #
5)	Delta-BHC	13.18	13.38	44766664	58955527	0.978	1.488 #
6)	Heptachlor	13.33	13.74	10919568	13539083	0.216	0.320 #
14)	Endrin	17.69	18.08	639.2E6	1344.1E6	18.368	51.919 #
15)	4,4'-DDD	17.84	18.08	1916.9E6	1344.1E6	65.627	52.579
17)	4,4'-DDT	18.53	18.69	5238.1E6	4642.1E6	172.859	166.789

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 8D

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
PLCS62(1)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: PLCS62

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A19466

% Moisture: 0 Decanted: (Y/N) N Date Received: ________

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.20	U
319-85-7	beta-BHC	0.20	U
319-86-8	delta-BHC	0.20	U
58-89-9	gamma-BHC (Lindane)	0.17	
76-44-8	Heptachlor	0.20	U
309-00-2	Aldrin	0.20	U
1024-57-3	Heptachlor epoxide	0.19	
959-98-8	Endosulfan I	0.20	U
60-57-1	Dieldrin	0.38	
72-55-9	4,4'-DDE	0.38	
72-20-8	Endrin	0.34	
33213-65-9	Endosulfan II	0.40	U
72-54-8	4,4'-DDD	0.40	U
1031-07-8	Endosulfan sulfate	0.29	J
50-29-3	4,4'-DDT	0.40	U
72-43-5	Methoxychlor	2.0	U
53494-70-5	Endrin ketone	0.40	U
7421-93-4	Endrin aldehyde	0.40	U
5103-71-9	alpha-Chlordane	0.20	U
5103-74-2	gamma-Chlordane	0.20	
8001-35-2	Toxaphene	20	U
53-19-0	2,4'-DDD	0.40	U
3424-82-6	2,4'-DDE	0.40	U
789-02-6	2,4'-DDT	0.40	U
27304-13-8	Oxychlordane	0.40	U
5103-73-1	cis-Nonachlor	0.40	U
39765-80-5	Trans-Nonachlor	0.40	U
118-74-1	Hexachlorobenzene	0.40	U
87-68-3	Hexachlorobutadiene	0.40	U
29082-74-4	Octachlorostyrene	0.40	U

SOM01.2 (6/2007)

ENCLOSURE 9A

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
PLCS62(2)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: PLCS62

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A19466

% Moisture: 0 Decanted: (Y/N) N Date Received: ________

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.20	U
319-85-7	beta-BHC	0.20	U
319-86-8	delta-BHC	0.20	U
58-89-9	gamma-BHC (Lindane)	0.14	J
76-44-8	Heptachlor	0.20	U
309-00-2	Aldrin	0.20	U
1024-57-3	Heptachlor epoxide	0.17	
959-98-8	Endosulfan I	0.20	U
60-57-1	Dieldrin	0.35	
72-55-9	4,4'-DDE	0.35	
72-20-8	Endrin	0.36	
33213-65-9	Endosulfan II	0.40	U
72-54-8	4,4'-DDD	0.40	U
1031-07-8	Endosulfan sulfate	0.26	J
50-29-3	4,4'-DDT	0.40	U
72-43-5	Methoxychlor	2.0	U
53494-70-5	Endrin ketone	0.40	U
7421-93-4	Endrin aldehyde	0.40	U
5103-71-9	alpha-Chlordane	0.20	U
5103-74-2	gamma-Chlordane	0.18	
8001-35-2	Toxaphene	20	U
53-19-0	2,4'-DDD	0.40	U
3424-82-6	2,4'-DDE	0.40	U
789-02-6	2,4'-DDT	0.40	U
27304-13-8	Oxychlordane	0.40	U
5103-73-1	cis-Nonachlor	0.40	U
39765-80-5	Trans-Nonachlor	0.40	U
118-74-1	Hexachlorobenzene	0.40	U
87-68-3	Hexachlorobutadiene	0.40	U
29082-74-4	Octachlorostyrene	0.40	U

SOM01.2 (6/2007)

ENCLOSURE 9B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
PLCSD62(1)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: PLCSD62

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A19467

% Moisture: 0 Decanted: (Y/N) N Date Received: ________

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.20	U
319-85-7	beta-BHC	0.20	U
319-86-8	delta-BHC	0.20	U
58-89-9	gamma-BHC (Lindane)	0.16	J
76-44-8	Heptachlor	0.20	U
309-00-2	Aldrin	0.20	U
1024-57-3	Heptachlor epoxide	0.18	
959-98-8	Endosulfan I	0.20	U
60-57-1	Dieldrin	0.37	
72-55-9	4,4'-DDE	0.36	
72-20-8	Endrin	0.30	J
33213-65-9	Endosulfan II	0.40	U
72-54-8	4,4'-DDD	0.40	U
1031-07-8	Endosulfan sulfate	0.27	J
50-29-3	4,4'-DDT	0.40	U
72-43-5	Methoxychlor	2.0	U
53494-70-5	Endrin ketone	0.40	U
7421-93-4	Endrin aldehyde	0.40	U
5103-71-9	alpha-Chlordane	0.20	U
5103-74-2	gamma-Chlordane	0.20	
8001-35-2	Toxaphene	20	U
53-19-0	2,4'-DDD	0.40	U
3424-82-6	2,4'-DDE	0.40	U
789-02-6	2,4'-DDT	0.40	U
27304-13-8	Oxychlordane	0.40	U
5103-73-1	cis-Nonachlor	0.40	U
39765-80-5	Trans-Nonachlor	0.40	U
118-74-1	Hexachlorobenzene	0.40	U
87-68-3	Hexachlorobutadiene	0.40	U
29082-74-4	Octachlorostyrene	0.40	U

ENCLOSURE 9C

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

ENCLOSURE 9D

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
PLCSD62(2)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: PLCSD62

Sample wt/vol: 30.00 (g/mL) G Lab File ID: A19467

% Moisture: 0 Decanted: (Y/N) N Date Received: ________

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/13/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.20	U
319-85-7	beta-BHC	0.20	U
319-86-8	delta-BHC	0.20	U
58-89-9	gamma-BHC (Lindane)	0.16	J
76-44-8	Heptachlor	0.20	U
309-00-2	Aldrin	0.20	U
1024-57-3	Heptachlor epoxide	0.19	
959-98-8	Endosulfan I	0.20	U
60-57-1	Dieldrin	0.39	
72-55-9	4,4'-DDE	0.39	
72-20-8	Endrin	0.40	
33213-65-9	Endosulfan II	0.40	U
72-54-8	4,4'-DDD	0.40	U
1031-07-8	Endosulfan sulfate	0.22	J
50-29-3	4,4'-DDT	0.40	U
72-43-5	Methoxychlor	2.0	U
53494-70-5	Endrin ketone	0.40	U
7421-93-4	Endrin aldehyde	0.40	U
5103-71-9	alpha-Chlordane	0.20	U
5103-74-2	gamma-Chlordane	0.20	
8001-35-2	Toxaphene	20	U
53-19-0	2,4'-DDD	0.40	U
3424-82-6	2,4'-DDE	0.40	U
789-02-6	2,4'-DDT	0.40	U
27304-13-8	Oxychlordane	0.40	U
5103-73-1	cis-Nonachlor	0.40	U
39765-80-5	Trans-Nonachlor	0.40	U
118-74-1	Hexachlorobenzene	0.40	U
87-68-3	Hexachlorobutadiene	0.40	U
29082-74-4	Octachlorostyrene	0.40	U

SOM01.2 (6/2007)

ENCLOSURE 9E

3M - FORM III PEST-4
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.
PLCS62

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: PLCS62 LCS Lot No.: A062940

Date Extracted: 10/06/2009 Date Analyzed (1): 10/13/2009

Instrument ID (1):A-6890A GC Column (1):Rtx-CLP2 ID:0.53(mm)

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC #	QC LIMIT
gamma-BHC(LINDANE)	0.08	0.08	100	50-120
Heptachlor epoxide	0.08	0.09	113	50-150
Dieldrin	0.17	0.19	112	30-130
4,4'-DDE	0.17	0.19	112	50-150
Endrin	0.17	0.17	100	50-150
Endosulfan sulfate	0.17	0.15	88	50-150
gamma-Chlordane	0.08	0.10	125	30-150
Hexachlorobutadien	0.17	0.16	94	50-150
Hexachlorobenzene	0.17	0.17	100	50-150
Octachlorostyrene	0.17	0.17	100	50-150
Oxychlordane	0.17	0.17	100	50-150
Trans-Nonachlor	0.17	0.16	94	50-150
Cis-Nonachlor	0.17	0.17	100	50-150
2,4'-DDE	0.17	0.17	100	50-150
2,4'-DDD	0.17	0.17	100	50-150
2,4-DDT	0.17	0.17	100	50-150

ENCLOSURE 9F

3M - FORM III PEST-4
SOIL PESTICIDE LABORATORY CONTROL DUPLICATE
SAMPLE RECOVERY

EPA SAMPLE NO.
PLCS62/PLCD62

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Lab Sample ID: PLCSD62 LCS Lot No.: A062940

Date Extracted: 10/06/2009 Date Analyzed (1): 10/13/2009

Instrument ID (1):A-6890A GC Column (1):Rtx-CLP2 ID:0.53(mm)

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC	%RPD	RPD LIMIT
gamma-BHC(LINDANE)	0.08	0.08	100	0	50
Heptachlor epoxide	0.08	0.09	113	0	50
Dieldrin	0.17	0.18	106	5.5	50
4,4'-DDE	0.17	0.18	106	5.5	50
Endrin	0.17	0.15	88	13	50
Endosulfan sulfate	0.17	0.13	76	14	50
gamma-Chlordane	0.08	0.10	125	0	50
Hexachlorobutadien	0.17	0.17	100	6.1	50
Hexachlorobenzene	0.17	0.18	106	5.8	50
Octachlorostyrene	0.17	0.18	106	5.8	50
Oxychlordane	0.17	0.18	106	5.8	50
Trans-Nonachlor	0.17	0.19	112	17	50
Cis-Nonachlor	0.17	0.18	106	5.8	50
2,4'-DDE	0.17	0.18	106	5.8	50
2,4'-DDD	0.17	0.18	106	5.8	50
2,4-DDT	0.17	0.17	100	0	50

ENCLOSURE 96

KAP Technologies, Inc.
9391 Grogans Mill Rd., Suite A2
The Woodlands, TX 77380

RCN: 199-0909

INSTRUMENT RUN LOG – GC EXTRACTABLES
INSTRUMENT ID: A-6890

DETECTOR A: ECD COLUMN A: RTX-CLP II DATE: 10/13/2008

DETECTOR B: ECD COLUMN B : RTX-CLP METHOD FILES: CPEST-19427

ANALYTICAL METHOD: SOM1.2 Mod 1788. Cal. Std. ID's: 146-145-01(61) 146-151-010-14 146-155-01

FILE ID	SAMPLE POSITION	CLIENT SAMPLE ID	LAB SAMPLE ID	SAMPLE WT/VOL	DIL.	INJ. VOL	STANDARDS ID & COMMENTS
A19464	87	GPCPEST62	GPCPEST62	—	—	1uL	
65	88	PBLK62	PBLK62	60.0g/1.0mL	—		
66	89	PLCS62	PLCS62		—		
67	90	PLCSD62	PLCSD62		—		
68	91	PLCS62	PLCS62		—		
69	92	PLCSD62	PLCSD62		—		
70	93	PIBLK31	PIBLK31	—	—		
71	94	PEM31	PEM31	—	—		Not used
72	95	PEM41	PEM41	—	—		
73	1	GPCBLK63	GPCBLK63		—		X
74	2	GPCPEST63	GPCPEST63				X
75	3	JBQ25	S-2813.01	60.1 g/1.0mL			X
76	4	Q29	.02	59.9			X
77	5	R03	.03	60.2			X High DDT
78	6	R07	.04	60.3			X High DDT
79	7	R12	.05	60.1			X
80	8	R16	.06	60.0			X
81	9	R20	.07	60.2			X
82	10	R20MS	.07MS	60.3			X
83	11	R20MSD	.07MSD	60.1			X
84	18u	R03	.03	5.2g/5.0mL			X
85	13	R07	.04	5.1g/5.0mL			X
86	14	PIBLK41	PIBLK41	—			X

NOTES: INDCJ41, INDC351 Failed. A19487, A19488)

ANALYST: [signature] REVIEWER: [signature]

Page: 1344

ENCLOSURE 9H

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 10.06.09 12.30
Extr. Complete Date/Time: 10.07.09 13.20

FRACTION
PEST ✓ PCB —
GPC Date/Time: 10.6.09 14.10 PM

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC. ✓ OTHER —
CONT. LIQ/LIQ ✗ SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
BBLK 62	PBLK62	10.2.09	Soil	—	—	60.0	600	10mL	5mL	200mL	1mL	1mL	1mL	NO	NA	100	
PLCS 62	PLCS 62			—	—	60.0									100		
PLCS 62 DUP	PLCS 62 DUP			—	—	60.0									100		
PLCS 62	PLCS 62			—	—	60.0									100		
PLCS 62 DUP	PLCS 62 D			—	—	60.0									100		
S-2713.01	JBQZ5			6.7	29	60.1									NA		
02	JBQZ9			7.1	26	59.9											
03	JBR03			7.0	35	60.2											
04	JBR07			6.8	41	60.3											
05	JBR12			6.7	35	60.1											
06	JBR16			6.6	32	~~60.0~~											
07	JBR20			6.1	27	60.2											
07MS	MS			6.1	27	60.3									100		
07 MSD	MSD			6.1	27	60.1									100		

Methy. Chloride Lot No.: 904038
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.: —

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146.44.05, 146.143.01, 146.44.07
Florisil Lot ID: EH5632
H_2SO_4 Lot No.: —

Initials of Extraction Leader RG Assistants
Initials of Sample Cleanup Leader — Assistants
Initials of Surrogate Spiker [signature] Verifier
Initials of Matrix Spike Spiker [signature] Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: [signature] DATE: 10/07/09 TIME: 14.20 COMMENTS:

ENCLOSURE 9I

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: 9.54 DCB: 23.60					
	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A19418	10/11/2009	20:28	9.54	23.6
02	PEM11	A19419	10/11/2009	21:05	9.53	23.59
03	TOXAPH111	A19420	10/11/2009	21:41	9.54	23.61
04	TOXAPH211	A19421	10/11/2009	22:18	9.54	23.6
05	TOXAPH311	A19422	10/11/2009	22:54	9.54	23.6
06	TOXAPH411	A19423	10/11/2009	23:31	9.54	23.6
07	TOXAPH511	A19424	10/12/2009	00:08	9.54	23.6
08	INDC111	A19425	10/12/2009	00:44	9.54	23.6
09	INDC211	A19426	10/12/2009	01:21	9.54	23.6
10	INDC311	A19427	10/12/2009	01:57	9.53	23.6
11	INDC411	A19428	10/12/2009	02:34	9.53	23.6
12	INDC511	A19429	10/12/2009	03:10	9.54	23.6
13	INDC111	A19425	10/12/2009	03:47	9.53	23.6
14	INDC211	A19426	10/12/2009	04:24	9.53	23.6
15	INDC311	A19427	10/12/2009	05:00	9.54	23.6
16	INDC411	A19428	10/12/2009	05:37	9.53	23.6
17	INDC511	A19429	10/12/2009	06:14	9.53	23.6
18	PIBLK11	A19435	10/12/2009	06:50	9.53	23.6
19	PEM21	A19436	10/12/2009	07:27	9.53	23.6
20	PIBLK21	A19452	10/12/2009	17:25	9.53	23.59
21	INDC321	A19453	10/12/2009	18:01	9.53	23.59
22	ZZZZZ	A19455	10/12/2009	19:15	9.53	23.58
23	ZZZZZ	A19456	10/12/2009	19:52	9.52	23.58
24	ZZZZZ	A19457	10/12/2009	20:28	9.53	23.58
25	ZZZZZ	A19458	10/12/2009	21:05	9.53	23.59
26	ZZZZZ	A19459	10/12/2009	21:42	9.53	23.59
27	ZZZZZ	A19460	10/12/2009	22:18	9.53	23.58
28	ZZZZZ	A19461	10/12/2009	22:55	9.53	23.58
29	ZZZZZ	A19462	10/12/2009	23:32	9.53	23.58
30	GPCBLK62	A19463	10/13/2009	00:08	0 *	0 *
31	GPCPEST62	A19464	10/13/2009	00:45	0 *	0 *
32	PBLK62	A19465	10/13/2009	01:21	9.52	23.58

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

 SOM01.1 (05/2005)

ENCLOSURE 10A

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 9.54 DCB: 23.60

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PLCS62	A19466	10/13/2009	01:58	9.52	23.58
02	PLCSD62	A19467	10/13/2009	02:35	9.52	23.58
03	PIBLK31	A19470	10/13/2009	04:25	9.52	23.58
04	PEM31	A19471	10/13/2009	05:01	9.52	23.58
05	PEM41	A19472	10/13/2009	05:38	9.52	23.58
06	PIBLK61	A19498	10/14/2009	14:45	9.5	23.54
07	INDC361	A19499	10/14/2009	15:59	9.51	23.55
08	JBR03	A19501	10/14/2009	17:18	9.51	23.55
09	JBR07	A19502	10/14/2009	17:54	9.5	23.55
10	JBR03DL	A19503	10/14/2009	18:33	0 *	0 *
11	JBR07DL	A19504	10/14/2009	19:10	0 *	0 *
12	JBQZ5	A19505	10/14/2009	19:47	9.51	23.55
13	JBQZ9	A19506	10/14/2009	20:23	9.5	23.54
14	JBR12	A19507	10/14/2009	21:00	9.5	23.54
15	JBR16	A19508	10/14/2009	21:37	9.51	23.54
16	JBR20	A19509	10/14/2009	22:13	9.5	23.54
17	JBR03DL2	A19510	10/15/2009	00:03	0 *	0 *
18	JBR07DL2	A19511	10/15/2009	00:40	0 *	0 *
19	ZZZZZ	A19512	10/15/2009	01:16	9.5	23.54
20	PIBLK71	A19513	10/15/2009	01:53	9.5	23.54
21	PEM61	A19514	10/15/2009	03:06	9.5	23.54
22	PEM71	A19515	10/15/2009	03:43	9.5	23.54
23	GPCBLK65	A19516	10/15/2009	04:56	0 *	0 *
24	GPCPEST65	A19517	10/15/2009	05:32	0 *	0 *
25	PBLK65	A19518	10/15/2009	06:09	9.5	23.53
26	JBR16DL	A19519	10/15/2009	09:12	9.5	23.53
27	JBR16DL2	A19520	10/15/2009	09:49	0 *	0 *
28	JBQZ5DL	A19521	10/15/2009	10:33	9.5	23.53
29	JBQZ5DL2	A19522	10/15/2009	11:29	0 *	0 *
30	PIBLK81	A19523	10/15/2009	12:06	9.5	23.53
31	INDC381	A19524	10/15/2009	12:42	9.49	23.53
32	INDC391	A19526	10/15/2009	13:55	9.49	23.53

QC LIMITS

TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10B

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 9.54 DCB: 23.60

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PLCS65	A19527	10/15/2009	14:47	9.5	23.53
02	PLCSD65	A19528	10/15/2009	15:23	9.49	23.52
03	JBR20MS	A19531	10/15/2009	17:13	9.5	23.53
04	JBR20MSD	A19532	10/15/2009	17:50	9.49	23.52
05	JBR12DL	A19533	10/15/2009	18:27	9.49	23.52
06	JBR12DL2	A19534	10/15/2009	19:03	0 *	0 *
07	PIBLK91	A19535	10/15/2009	20:54	9.49	23.52
08	PEM81	A19536	10/15/2009	21:30	9.49	23.52
09	PEM91	A19537	10/15/2009	22:07	9.49	23.52
10						
11						
12						
13						
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16						
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29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

 ENCLOSURE 10C

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.08 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC12	A19418	10/11/2009	21:05	10.08	23.3
02	PEM12	A19419	10/11/2009	21:41	10.07	23.3
03	TOXAPH112	A19420	10/11/2009	22:18	10.08	23.3
04	TOXAPH212	A19421	10/11/2009	22:54	10.08	23.3
05	TOXAPH312	A19422	10/11/2009	23:31	10.07	23.3
06	TOXAPH412	A19423	10/12/2009	00:08	10.07	23.3
07	TOXAPH512	A19424	10/12/2009	00:44	10.07	23.3
08	INDC112	A19425	10/12/2009	01:21	10.07	23.3
09	INDC212	A19426	10/12/2009	01:57	10.07	23.29
10	INDC312	A19427	10/12/2009	02:34	10.08	23.3
11	INDC412	A19428	10/12/2009	03:10	10.08	23.3
12	INDC512	A19429	10/12/2009	03:47	10.08	23.3
13	INDC112	A19425	10/12/2009	04:24	10.08	23.3
14	INDC212	A19426	10/12/2009	05:00	10.07	23.3
15	INDC312	A19427	10/12/2009	05:37	10.07	23.3
16	INDC412	A19428	10/12/2009	06:14	10.07	23.3
17	INDC512	A19429	10/12/2009	06:50	10.07	23.3
18	PIBLK12	A19435	10/12/2009	07:27	10.07	23.29
19	PEM22	A19436	10/12/2009	08:03	10.07	23.3
20	PIBLK22	A19452	10/12/2009	18:01	10.07	23.3
21	INDC322	A19453	10/12/2009	18:38	10.07	23.3
22	ZZZZZ	A19455	10/12/2009	19:52	10.07	23.29
23	ZZZZZ	A19456	10/12/2009	20:28	10.07	23.29
24	ZZZZZ	A19457	10/12/2009	21:05	10.07	23.29
25	ZZZZZ	A19458	10/12/2009	21:42	10.06	23.28
26	ZZZZZ	A19459	10/12/2009	22:18	10.07	23.3
27	ZZZZZ	A19460	10/12/2009	22:55	10.07	23.29
28	ZZZZZ	A19461	10/12/2009	23:32	10.07	23.29
29	ZZZZZ	A19462	10/13/2009	00:08	10.07	23.29
30	GPCBLK62	A19463	10/13/2009	00:45	0 *	0 *
31	GPCPEST62	A19464	10/13/2009	01:21	0 *	0 *
32	PBLK62	A19465	10/13/2009	01:58	10.07	23.29

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

 ENCLOSURE 10D

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.08 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PLCS62	A19466	10/13/2009	02:35	10.06	23.29
02	PLCSD62	A19467	10/13/2009	03:11	10.06	23.29
03	PIBLK32	A19470	10/13/2009	05:01	10.06	23.29
04	PEM32	A19471	10/13/2009	05:38	10.06	23.29
05	PEM42	A19472	10/13/2009	06:15	10.06	23.29
06	PIBLK62	A19498	10/14/2009	15:22	10.07	23.29
07	INDC362	A19499	10/14/2009	16:40	10.06	23.3
08	JBR03	A19501	10/14/2009	17:54	10.06	23.29
09	JBR07	A19502	10/14/2009	18:33	10.05	23.29
10	JBR03DL	A19503	10/14/2009	19:10	0 *	0 *
11	JBR07DL	A19504	10/14/2009	19:47	0 *	0 *
12	JBQZ5	A19505	10/14/2009	20:23	10.07	23.28
13	JBQZ9	A19506	10/14/2009	21:00	10.06	23.28
14	JBR12	A19507	10/14/2009	21:37	10.06	23.28
15	JBR16	A19508	10/14/2009	22:13	10.07	23.28
16	JBR20	A19509	10/14/2009	22:50	10.06	23.28
17	JBR03DL2	A19510	10/15/2009	00:40	0 *	0 *
18	JBR07DL2	A19511	10/15/2009	01:16	0 *	0 *
19	ZZZZZ	A19512	10/15/2009	01:53	10.06	23.28
20	PIBLK72	A19513	10/15/2009	02:29	10.06	23.28
21	PEM62	A19514	10/15/2009	03:43	10.06	23.28
22	PEM72	A19515	10/15/2009	04:19	10.06	23.28
23	GPCBLK65	A19516	10/15/2009	05:32	0 *	0 *
24	GPCPEST65	A19517	10/15/2009	06:09	0 *	0 *
25	PBLK65	A19518	10/15/2009	06:46	10.06	23.28
26	JBR16DL	A19519	10/15/2009	09:49	10.06	23.28
27	JBR16DL2	A19520	10/15/2009	10:33	0 *	0 *
28	JBQZ5DL	A19521	10/15/2009	11:29	10.07	23.3
29	JBQZ5DL2	A19522	10/15/2009	12:06	0 *	0 *
30	PIBLK82	A19523	10/15/2009	12:42	10.06	23.29
31	INDC382	A19524	10/15/2009	13:19	10.06	23.29
32	INDC392	A19526	10/15/2009	14:47	10.06	23.29

QC LIMITS
TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10E

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.08 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PLCS65	A19527	10/15/2009	15:23	10.06	23.28
02	PLCSD65	A19528	10/15/2009	16:00	10.06	23.28
03	JBR20MS	A19531	10/15/2009	17:50	10.05	23.27
04	JBR20MSD	A19532	10/15/2009	18:27	10.05	23.27
05	JBR12DL	A19533	10/15/2009	19:03	10.05	23.27
06	JBR12DL2	A19534	10/15/2009	19:40	0 *	0 *
07	PIBLK92	A19535	10/15/2009	21:30	10.05	23.28
08	PEM82	A19536	10/15/2009	22:07	10.06	23.28
09	PEM92	A19537	10/15/2009	22:58	10.06	23.29
10						
11						
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31						
32						

QC LIMITS
TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 1 of

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 9.53 DCB: 23.60

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC11	A19418	10/11/2009	20:28	9.54	23.6
02	PEM11	A19419	10/11/2009	21:05	9.53	23.59
03	TOXAPH111	A19420	10/11/2009	21:41	9.54	23.61
04	TOXAPH211	A19421	10/11/2009	22:18	9.54	23.6
05	TOXAPH311	A19422	10/11/2009	22:54	9.54	23.6
06	TOXAPH411	A19423	10/11/2009	23:31	9.54	23.6
07	TOXAPH511	A19424	10/12/2009	00:08	9.54	23.6
08	INDT111	A19430	10/12/2009	03:47	9.53	23.6
09	INDT211	A19431	10/12/2009	04:24	9.53	23.6
10	INDT311	A19432	10/12/2009	05:00	9.54	23.6
11	INDT411	A19433	10/12/2009	05:37	9.53	23.6
12	INDT511	A19434	10/12/2009	06:14	9.53	23.6
13	PIBLK11	A19435	10/12/2009	06:50	9.53	23.6
14	PEM21	A19436	10/12/2009	07:27	9.53	23.6
15	PIBLK21	A19452	10/12/2009	17:25	9.53	23.59
16	INDC321	A19453	10/12/2009	18:01	9.53	23.59
17	INDT321	A19454	10/12/2009	18:38	9.53	23.59
18	ZZZZZ	A19455	10/12/2009	19:15	9.53	23.58
19	ZZZZZ	A19456	10/12/2009	19:52	9.52	23.58
20	ZZZZZ	A19457	10/12/2009	20:28	9.53	23.58
21	ZZZZZ	A19458	10/12/2009	21:05	9.53	23.59
22	ZZZZZ	A19459	10/12/2009	21:42	9.53	23.59
23	ZZZZZ	A19460	10/12/2009	22:18	9.53	23.58
24	ZZZZZ	A19461	10/12/2009	22:55	9.53	23.58
25	ZZZZZ	A19462	10/12/2009	23:32	9.53	23.58
26	GPCBLK62	A19463	10/13/2009	00:08	0 *	0 *
27	GPCPEST62	A19464	10/13/2009	00:45	0 *	0 *
28	PBLK62	A19465	10/13/2009	01:21	9.52	23.58
29	PLCS62	A19468	10/13/2009	03:11	9.52	23.58
30	PLCSD62	A19469	10/13/2009	03:48	9.52	23.58
31	PIBLK31	A19470	10/13/2009	04:25	9.52	23.58
32	PEM31	A19471	10/13/2009	05:01	9.52	23.58

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10 b

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 9.53 DCB: 23.60

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PEM41	A19472	10/13/2009	05:38	9.52	23.58
02	PIBLK61	A19498	10/14/2009	14:45	9.5	23.54
03	INDC361	A19499	10/14/2009	15:59	9.51	23.55
04	INDT331	A19500	10/14/2009	16:40	9.51	23.56
05	JBR03	A19501	10/14/2009	17:18	9.51	23.55
06	JBR07	A19502	10/14/2009	17:54	9.5	23.55
07	JBR03DL	A19503	10/14/2009	18:33	0 *	0 *
08	JBR07DL	A19504	10/14/2009	19:10	0 *	0 *
09	JBQZ5	A19505	10/14/2009	19:47	9.51	23.55
10	JBQZ9	A19506	10/14/2009	20:23	9.5	23.54
11	JBR12	A19507	10/14/2009	21:00	9.5	23.54
12	JBR16	A19508	10/14/2009	21:37	9.51	23.54
13	JBR20	A19509	10/14/2009	22:13	9.5	23.54
14	JBR03DL2	A19510	10/15/2009	00:03	0 *	0 *
15	JBR07DL2	A19511	10/15/2009	00:40	0 *	0 *
16	ZZZZZ	A19512	10/15/2009	01:16	9.5	23.54
17	PIBLK71	A19513	10/15/2009	01:53	9.5	23.54
18	PEM61	A19514	10/15/2009	03:06	9.5	23.54
19	PEM71	A19515	10/15/2009	03:43	9.5	23.54
20	GPCBLK65	A19516	10/15/2009	04:56	0 *	0 *
21	GPCPEST65	A19517	10/15/2009	05:32	0 *	0 *
22	PBLK65	A19518	10/15/2009	06:09	9.5	23.53
23	JBR16DL	A19519	10/15/2009	09:12	9.5	23.53
24	JBR16DL2	A19520	10/15/2009	09:49	0 *	0 *
25	JBQZ5DL	A19521	10/15/2009	10:33	9.5	23.53
26	JBQZ5DL2	A19522	10/15/2009	11:29	0 *	0 *
27	PIBLK81	A19523	10/15/2009	12:06	9.5	23.53
28	INDC381	A19524	10/15/2009	12:42	9.49	23.53
29	INDT341	A19525	10/15/2009	13:19	9.49	23.53
30	INDC391	A19526	10/15/2009	13:55	9.49	23.53
31	PLCS65	A19529	10/15/2009	16:00	9.49	23.53
32	PLCSD65	A19530	10/15/2009	16:37	9.5	23.53

QC LIMITS

TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10 H

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53   (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890A

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 9.53   DCB: 23.60

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	JBR20MS	A19531	10/15/2009	17:13	9.5	23.53
02	JBR20MSD	A19532	10/15/2009	17:50	9.49	23.52
03	JBR12DL	A19533	10/15/2009	18:27	9.49	23.52
04	JBR12DL2	A19534	10/15/2009	19:03	0 *	0 *
05	PIBLK91	A19535	10/15/2009	20:54	9.49	23.52
06	PEM81	A19536	10/15/2009	21:30	9.49	23.52
07	PEM91	A19537	10/15/2009	22:07	9.49	23.52
08						
09						
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QC LIMITS

TCX = Tetrachloro-m-xylene   ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl   ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10 I

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.07 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	RESC12	A19418	10/11/2009	21:05	10.08	23.3
02	PEM12	A19419	10/11/2009	21:41	10.07	23.3
03	TOXAPH112	A19420	10/11/2009	22:18	10.08	23.3
04	TOXAPH212	A19421	10/11/2009	22:54	10.08	23.3
05	TOXAPH312	A19422	10/11/2009	23:31	10.07	23.3
06	TOXAPH412	A19423	10/12/2009	00:08	10.07	23.3
07	TOXAPH512	A19424	10/12/2009	00:44	10.07	23.3
08	INDT112	A19430	10/12/2009	04:24	10.08	23.3
09	INDT212	A19431	10/12/2009	05:00	10.07	23.3
10	INDT312	A19432	10/12/2009	05:37	10.07	23.3
11	INDT412	A19433	10/12/2009	06:14	10.07	23.3
12	INDT512	A19434	10/12/2009	06:50	10.07	23.3
13	PIBLK12	A19435	10/12/2009	07:27	10.07	23.29
14	PEM22	A19436	10/12/2009	08:03	10.07	23.3
15	PIBLK22	A19452	10/12/2009	18:01	10.07	23.3
16	INDC322	A19453	10/12/2009	18:38	10.07	23.3
17	INDT322	A19454	10/12/2009	19:15	10.07	23.29
18	ZZZZZ	A19455	10/12/2009	19:52	10.07	23.29
19	ZZZZZ	A19456	10/12/2009	20:28	10.07	23.29
20	ZZZZZ	A19457	10/12/2009	21:05	10.07	23.29
21	ZZZZZ	A19458	10/12/2009	21:42	10.06	23.28
22	ZZZZZ	A19459	10/12/2009	22:18	10.07	23.3
23	ZZZZZ	A19460	10/12/2009	22:55	10.07	23.29
24	ZZZZZ	A19461	10/12/2009	23:32	10.07	23.29
25	ZZZZZ	A19462	10/13/2009	00:08	10.07	23.29
26	GPCBLK62	A19463	10/13/2009	00:45	0 *	0 *
27	GPCPEST62	A19464	10/13/2009	01:21	0 *	0 *
28	PBLK62	A19465	10/13/2009	01:58	10.07	23.29
29	PLCS62	A19468	10/13/2009	03:48	10.06	23.29
30	PLCSD62	A19469	10/13/2009	04:25	10.06	23.29
31	PIBLK32	A19470	10/13/2009	05:01	10.06	23.29
32	PEM32	A19471	10/13/2009	05:38	10.06	23.29

QC LIMITS

TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)

DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10 J

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.07 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	PEM42	A19472	10/13/2009	06:15	10.06	23.29
02	PIBLK62	A19498	10/14/2009	15:22	10.07	23.29
03	INDC362	A19499	10/14/2009	16:40	10.06	23.3
04	INDT332	A19500	10/14/2009	17:18	10.07	23.3
05	JBR03	A19501	10/14/2009	17:54	10.06	23.29
06	JBR07	A19502	10/14/2009	18:33	10.05	23.29
07	JBR03DL	A19503	10/14/2009	19:10	0 *	0 *
08	JBR07DL	A19504	10/14/2009	19:47	0 *	0 *
09	JBQZ5	A19505	10/14/2009	20:23	10.07	23.28
10	JBQZ9	A19506	10/14/2009	21:00	10.06	23.28
11	JBR12	A19507	10/14/2009	21:37	10.06	23.28
12	JBR16	A19508	10/14/2009	22:13	10.07	23.28
13	JBR20	A19509	10/14/2009	22:50	10.06	23.28
14	JBR03DL2	A19510	10/15/2009	00:40	0 *	0 *
15	JBR07DL2	A19511	10/15/2009	01:16	0 *	0 *
16	ZZZZZ	A19512	10/15/2009	01:53	10.06	23.28
17	PIBLK72	A19513	10/15/2009	02:29	10.06	23.28
18	PEM62	A19514	10/15/2009	03:43	10.06	23.28
19	PEM72	A19515	10/15/2009	04:19	10.06	23.28
20	GPCBLK65	A19516	10/15/2009	05:32	0 *	0 *
21	GPCPEST65	A19517	10/15/2009	06:09	0 *	0 *
22	PBLK65	A19518	10/15/2009	06:46	10.06	23.28
23	JBR16DL	A19519	10/15/2009	09:49	10.06	23.28
24	JBR16DL2	A19520	10/15/2009	10:33	0 *	0 *
25	JBQZ5DL	A19521	10/15/2009	11:29	10.07	23.3
26	JBQZ5DL2	A19522	10/15/2009	12:06	0 *	0 *
27	PIBLK82	A19523	10/15/2009	12:42	10.06	23.29
28	INDC382	A19524	10/15/2009	13:19	10.06	23.29
29	INDT342	A19525	10/15/2009	13:55	10.06	23.28
30	INDC392	A19526	10/15/2009	14:47	10.06	23.29
31	PLCS65	A19529	10/15/2009	16:37	10.05	23.27
32	PLCSD65	A19530	10/15/2009	17:13	10.06	23.27

QC LIMITS
TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)
DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10K

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP ID: 0.53 (mm) Init. Calib. Date(s): 10/11/2009 10/12/2009

Instrument ID: A-6890B

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs and LCSs IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: 10.07 DCB: 23.30

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01	JBR20MS	A19531	10/15/2009	17:50	10.05	23.27
02	JBR20MSD	A19532	10/15/2009	18:27	10.05	23.27
03	JBR12DL	A19533	10/15/2009	19:03	10.05	23.27
04	JBR12DL2	A19534	10/15/2009	19:40	0 *	0 *
05	PIBLK92	A19535	10/15/2009	21:30	10.05	23.28
06	PEM82	A19536	10/15/2009	22:07	10.06	23.28
07	PEM92	A19537	10/15/2009	22:58	10.06	23.29
08						
09						
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31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene ($\pm$ 0.05 MINUTES)

DCB = Decachlorobiphenyl ($\pm$ 0.10 MINUTES)

Column used to flag RT values with an asterisk.

ENCLOSURE 10L

Batch Summary

AUDITOR GENERATED

CASE	SDG	Laboratory	Method	Fraction	DTD Implementation
38883	JBQZ5	KAP Technologies, Inc.	SOM01.2	Pest	ORGANIC_GENERAL_3.2

Sample ID	Date	Time	Column	Filename	Instrument
RESC11	10/11/2009	20:28:00	RTX-CLP2	A19418-1	A-6890A
PEM11	10/11/2009	21:05:00	RTX-CLP2	A19419-1	A-6890A
TOXAPH111	10/11/2009	21:41:00	RTX-CLP2	A19420-1	A-6890A
TOXAPH211	10/11/2009	22:18:00	RTX-CLP2	A19421-1	A-6890A
TOXAPH311	10/11/2009	22:54:00	RTX-CLP2	A19422-1	A-6890A
TOXAPH411	10/11/2009	23:31:00	RTX-CLP2	A19423-1	A-6890A
TOXAPH511	10/12/2009	00:08:00	RTX-CLP2	A19424-1	A-6890A
INDC111	10/12/2009	00:44:00	RTX-CLP2	A19425-1	A-6890A
INDC211	10/12/2009	01:21:00	RTX-CLP2	A19426-1	A-6890A
INDC311	10/12/2009	01:57:00	RTX-CLP2	A19427-1	A-6890A
INDC411	10/12/2009	02:34:00	RTX-CLP2	A19428-1	A-6890A
INDC511	10/12/2009	03:10:00	RTX-CLP2	A19429-1	A-6890A
INDT111	10/12/2009	03:47:00	RTX-CLP2	A19430-1	A-6890A
INDT211	10/12/2009	04:24:00	RTX-CLP2	A19431-1	A-6890A
INDT311	10/12/2009	05:00:00	RTX-CLP2	A19432-1	A-6890A
INDT411	10/12/2009	05:37:00	RTX-CLP2	A19433-1	A-6890A
INDT511	10/12/2009	06:14:00	RTX-CLP2	A19434-1	A-6890A
PIBLK11	10/12/2009	06:50:00	RTX-CLP2	A19435-1	A-6890A
PEM21	10/12/2009	07:27:00	RTX-CLP2	A19436-1	A-6890A
PIBLK21	10/12/2009	17:25:00	RTX-CLP2	A19452-1	A-6890A
INDC321	10/12/2009	18:01:00	RTX-CLP2	A19453-1	A-6890A
INDT321	10/12/2009	18:38:00	RTX-CLP2	A19454-1	A-6890A
GPCPEST62	10/13/2009	00:45:00	RTX-CLP2	A19464-1	A-6890A
PBLK62	10/13/2009	01:21:00	RTX-CLP2	A19465-1	A-6890A
PLCS62	10/13/2009	01:58:00	RTX-CLP2	A19466-1	A-6890A
PLCSD62	10/13/2009	02:35:00	RTX-CLP2	A19467-1	A-6890A
PIBLK31	10/13/2009	04:25:00	RTX-CLP2	A19470-1	A-6890A

ENCLOSURE 10 m

AUDITOR GENERATED

Sample ID	Date	Time	Column	Filename	Instrument
PEM31	10/13/2009	05:01:00	RTX-CLP2	A19471-1	A-6890A
PEM41	10/13/2009	05:38:00	RTX-CLP2	A19472-1	A-6890A
PIBLK61	10/14/2009	14:45:00	RTX-CLP2	A19498-1	A-6890A
INDC361	10/14/2009	15:59:00	RTX-CLP2	A19499-1	A-6890A
INDT331	10/14/2009	16:40:00	RTX-CLP2	A19500-1	A-6890A
JBR03	10/14/2009	17:18:00	RTX-CLP2	A19501-1	A-6890A
JBR07	10/14/2009	17:54:00	RTX-CLP2	A19502-1	A-6890A
JBR03DL	10/14/2009	18:33:00	RTX-CLP2	A19503-1	A-6890A
JBR07DL	10/14/2009	19:10:00	RTX-CLP2	A19504-1	A-6890A
JBQZ5	10/14/2009	19:47:00	RTX-CLP2	A19505-1	A-6890A
JBQZ9	10/14/2009	20:23:00	RTX-CLP2	A19506-1	A-6890A
JBR12	10/14/2009	21:00:00	RTX-CLP2	A19507-1	A-6890A
JBR16	10/14/2009	21:37:00	RTX-CLP2	A19508-1	A-6890A
JBR20	10/14/2009	22:13:00	RTX-CLP2	A19509-1	A-6890A
JBR03DL2	10/15/2009	00:03:00	RTX-CLP2	A19510-1	A-6890A
JBR07DL2	10/15/2009	00:40:00	RTX-CLP2	A19511-1	A-6890A
PIBLK71	10/15/2009	01:53:00	RTX-CLP2	A19513-1	A-6890A
PEM61	10/15/2009	03:06:00	RTX-CLP2	A19514-1	A-6890A
PEM71	10/15/2009	03:43:00	RTX-CLP2	A19515-1	A-6890A
GPCPEST65	10/15/2009	05:32:00	RTX-CLP2	A19517-1	A-6890A
PBLK65	10/15/2009	06:09:00	RTX-CLP2	A19518-1	A-6890A
JBR16DL	10/15/2009	09:12:00	RTX-CLP2	A19519-1	A-6890A
JBR16DL2	10/15/2009	09:49:00	RTX-CLP2	A19520-1	A-6890A
JBQZ5DL	10/15/2009	10:33:00	RTX-CLP2	A19521-1	A-6890A
JBQZ5DL2	10/15/2009	11:29:00	RTX-CLP2	A19522-1	A-6890A
PIBLK81	10/15/2009	12:06:00	RTX-CLP2	A19523-1	A-6890A
INDC381	10/15/2009	12:42:00	RTX-CLP2	A19524-1	A-6890A
INDT341	10/15/2009	13:19:00	RTX-CLP2	A19525-1	A-6890A
INDC391	10/15/2009	13:55:00	RTX-CLP2	A19526-1	A-6890A
PLCS65	10/15/2009	14:47:00	RTX-CLP2	A19527-1	A-6890A
PLCSD65	10/15/2009	15:23:00	RTX-CLP2	A19528-1	A-6890A
JBR20MS	10/15/2009	17:13:00	RTX-CLP2	A19531-1	A-6890A

ENCLOSURE 10N

Sample ID	Date	Time	Column	Filename	Instrument
JBR20MSD	10/15/2009	17:50:00	RTX-CLP2	A19532-1	A-6890A
JBR12DL	10/15/2009	18:27:00	RTX-CLP2	A19533-1	A-6890A
JBR12DL2	10/15/2009	19:03:00	RTX-CLP2	A19534-1	A-6890A
PIBLK91	10/15/2009	20:54:00	RTX-CLP2	A19535-1	A-6890A
PEM81	10/15/2009	21:30:00	RTX-CLP2	A19536-1	A-6890A
PEM91	10/15/2009	22:07:00	RTX-CLP2	A19537-1	A-6890A
RESC12	10/11/2009	21:05:00	RTX-CLP	A19418-2	A-6890B
PEM12	10/11/2009	21:41:00	RTX-CLP	A19419-2	A-6890B
TOXAPH112	10/11/2009	22:18:00	RTX-CLP	A19420-2	A-6890B
TOXAPH212	10/11/2009	22:54:00	RTX-CLP	A19421-2	A-6890B
TOXAPH312	10/11/2009	23:31:00	RTX-CLP	A19422-2	A-6890B
TOXAPH412	10/12/2009	00:08:00	RTX-CLP	A19423-2	A-6890B
TOXAPH512	10/12/2009	00:44:00	RTX-CLP	A19424-2	A-6890B
INDC112	10/12/2009	01:21:00	RTX-CLP	A19425-2	A-6890B
INDC212	10/12/2009	01:57:00	RTX-CLP	A19426-2	A-6890B
INDC312	10/12/2009	02:34:00	RTX-CLP	A19427-2	A-6890B
INDC412	10/12/2009	03:10:00	RTX-CLP	A19428-2	A-6890B
INDC512	10/12/2009	03:47:00	RTX-CLP	A19429-2	A-6890B
INDT112	10/12/2009	04:24:00	RTX-CLP	A19430-2	A-6890B
INDT212	10/12/2009	05:00:00	RTX-CLP	A19431-2	A-6890B
INDT312	10/12/2009	05:37:00	RTX-CLP	A19432-2	A-6890B
INDT412	10/12/2009	06:14:00	RTX-CLP	A19433-2	A-6890B
INDT512	10/12/2009	06:50:00	RTX-CLP	A19434-2	A-6890B
PIBLK12	10/12/2009	07:27:00	RTX-CLP	A19435-2	A-6890B
PEM22	10/12/2009	08:03:00	RTX-CLP	A19436-2	A-6890B
PIBLK22	10/12/2009	18:01:00	RTX-CLP	A19452-2	A-6890B
INDC322	10/12/2009	18:38:00	RTX-CLP	A19453-2	A-6890B
INDT322	10/12/2009	19:15:00	RTX-CLP	A19454-2	A-6890B
GPCPEST62	10/13/2009	01:21:00	RTX-CLP	A19464-2	A-6890B
PBLK62	10/13/2009	01:58:00	RTX-CLP	A19465-2	A-6890B
PLCS62	10/13/2009	02:35:00	RTX-CLP	A19466-2	A-6890B
PLCSD62	10/13/2009	03:11:00	RTX-CLP	A19467-2	A-6890B

AUDITOR GENERATED

Sample ID	Date	Time	Column	Filename	Instrument
PIBLK32	10/13/2009	05:01:00	RTX-CLP	A19470-2	A-6890B
PEM32	10/13/2009	05:38:00	RTX-CLP	A19471-2	A-6890B
PEM42	10/13/2009	06:15:00	RTX-CLP	A19472-2	A-6890B
PIBLK62	10/14/2009	15:22:00	RTX-CLP	A19498-2	A-6890B
INDC362	10/14/2009	16:40:00	RTX-CLP	A19499-2	A-6890B
INDT332	10/14/2009	17:18:00	RTX-CLP	A19500-2	A-6890B
JBR03	10/14/2009	17:54:00	RTX-CLP	A19501-2	A-6890B
JBR07	10/14/2009	18:33:00	RTX-CLP	A19502-2	A-6890B
JBR03DL	10/14/2009	19:10:00	RTX-CLP	A19503-2	A-6890B
JBR07DL	10/14/2009	19:47:00	RTX-CLP	A19504-2	A-6890B
JBQZ5	10/14/2009	20:23:00	RTX-CLP	A19505-2	A-6890B
JBQZ9	10/14/2009	21:00:00	RTX-CLP	A19506-2	A-6890B
JBR12	10/14/2009	21:37:00	RTX-CLP	A19507-2	A-6890B
JBR16	10/14/2009	22:13:00	RTX-CLP	A19508-2	A-6890B
JBR20	10/14/2009	22:50:00	RTX-CLP	A19509-2	A-6890B
JBR03DL2	10/15/2009	00:40:00	RTX-CLP	A19510-2	A-6890B
JBR07DL2	10/15/2009	01:16:00	RTX-CLP	A19511-2	A-6890B
PIBLK72	10/15/2009	02:29:00	RTX-CLP	A19513-2	A-6890B
PEM62	10/15/2009	03:43:00	RTX-CLP	A19514-2	A-6890B
PEM72	10/15/2009	04:19:00	RTX-CLP	A19515-2	A-6890B
GPCPEST65	10/15/2009	06:09:00	RTX-CLP	A19517-2	A-6890B
PBLK65	10/15/2009	06:46:00	RTX-CLP	A19518-2	A-6890B
JBR16DL	10/15/2009	09:49:00	RTX-CLP	A19519-2	A-6890B
JBR16DL2	10/15/2009	10:33:00	RTX-CLP	A19520-2	A-6890B
JBQZ5DL	10/15/2009	11:29:00	RTX-CLP	A19521-2	A-6890B
JBQZ5DL2	10/15/2009	12:06:00	RTX-CLP	A19522-2	A-6890B
PIBLK82	10/15/2009	12:42:00	RTX-CLP	A19523-2	A-6890B
INDC382	10/15/2009	13:19:00	RTX-CLP	A19524-2	A-6890B
INDT342	10/15/2009	13:55:00	RTX-CLP	A19525-2	A-6890B
INDC392	10/15/2009	14:47:00	RTX-CLP	A19526-2	A-6890B
PLCS65	10/15/2009	15:23:00	RTX-CLP	A19527-2	A-6890B
PLCSD65	10/15/2009	16:00:00	RTX-CLP	A19528-2	A-6890B

AUDITOR GENERATED

ENCLOSURE 10P

Sample ID	Date	Time	Column	Filename	Instrument
JBR20MS	10/15/2009	17:50:00	RTX-CLP	A19531-2	A-6890B
JBR20MSD	10/15/2009	18:27:00	RTX-CLP	A19532-2	A-6890B
JBR12DL	10/15/2009	19:03:00	RTX-CLP	A19533-2	A-6890B
JBR12DL2	10/15/2009	19:40:00	RTX-CLP	A19534-2	A-6890B
PIBLK92	10/15/2009	21:30:00	RTX-CLP	A19535-2	A-6890B
PEM82	10/15/2009	22:07:00	RTX-CLP	A19536-2	A-6890B
PEM92	10/15/2009	22:58:00	RTX-CLP	A19537-2	A-6890B

AUDITOR GENERATED

ENCLOSURE 10 Q

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19508

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.15	U
319-85-7	beta-BHC	0.15	U
319-86-8	delta-BHC	0.15	U
58-89-9	gamma-BHC (Lindane)	0.15	U
76-44-8	Heptachlor	0.15	U
309-00-2	Aldrin	0.15	U
1024-57-3	Heptachlor epoxide	0.15	U
959-98-8	Endosulfan I	0.15	U
60-57-1	Dieldrin	0.15	U
72-55-9	4,4'-DDE	0.15	U
72-20-8	Endrin	0.29	U
33213-65-9	Endosulfan II	0.29	U
72-54-8	4,4'-DDD	17	E
1031-07-8	Endosulfan sulfate	0.29	U
50-29-3	4,4'-DDT	20	EP
72-43-5	Methoxychlor	1.5	U
53494-70-5	Endrin ketone	0.29	U
7421-93-4	Endrin aldehyde	0.29	U
5103-71-9	alpha-Chlordane	0.15	U
5103-74-2	gamma-Chlordane	0.15	U
8001-35-2	Toxaphene	15	U
53-19-0	2,4'-DDD	7.3	E
3424-82-6	2,4'-DDE	0.29	U
789-02-6	2,4'-DDT	1.6	P
27304-13-8	Oxychlordane	0.29	U
5103-73-1	cis-Nonachlor	110	E
39765-80-5	Trans-Nonachlor	0.29	U
118-74-1	Hexachlorobenzene	0.29	U
87-68-3	Hexachlorobutadiene	0.29	U
29082-74-4	Octachlorostyrene	0.29	U

SOM01.2 (6/2007)

ENCLOSURE 11A

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06DL

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19519

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	1.5	U
72-20-8	Endrin	2.9	U
33213-65-9	Endosulfan II	2.9	U
72-54-8	4,4'-DDD	12	DP
1031-07-8	Endosulfan sulfate	2.9	U
50-29-3	4,4'-DDT	14	D
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	2.9	U
7421-93-4	Endrin aldehyde	2.9	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	150	U
53-19-0	2,4'-DDD	5.4	D
3424-82-6	2,4'-DDE	2.9	U
789-02-6	2,4'-DDT	1.2	DJ
27304-13-8	Oxychlordane	2.9	U
5103-73-1	cis-Nonachlor	73	DE
39765-80-5	Trans-Nonachlor	2.9	U
118-74-1	Hexachlorobenzene	2.9	U
87-68-3	Hexachlorobutadiene	2.9	U
29082-74-4	Octachlorostyrene	2.9	U

ENCLOSURE 11B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16DL2

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06DL2

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19520

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	15	U
72-55-9	4,4'-DDE	15	U
72-20-8	Endrin	29	U
33213-65-9	Endosulfan II	29	U
72-54-8	4,4'-DDD	11	DJ
1031-07-8	Endosulfan sulfate	29	U
50-29-3	4,4'-DDT	14	DJ
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	29	U
7421-93-4	Endrin aldehyde	29	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	1500	U
53-19-0	2,4'-DDD	29	U
3424-82-6	2,4'-DDE	29	U
789-02-6	2,4'-DDT	29	U
27304-13-8	Oxychlordane	29	U
5103-73-1	cis-Nonachlor	68	DP
39765-80-5	Trans-Nonachlor	29	U
118-74-1	Hexachlorobenzene	29	U
87-68-3	Hexachlorobutadiene	29	U
29082-74-4	Octachlorostyrene	29	U

SOM01.2 (6/2007)

ENCLOSURE 11C

3H - FORM III PEST-2
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix Spike - EPA Sample No.:JBR20

Instrument ID: A-6890A GC Column:RTX-CLP2 ID: 0.53(mm)

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
gamma-BHC (Lindane)	0.91	0	0.78	86	46-127
Heptachlor	0.91	0	0.81	89	35-130
Aldrin	0.91	0	0.84	92	34-132
Dieldrin	1.82	0	1.23	68	31-134
Endrin	1.82	0	1.20	66	42-139
4,4'-DDT	1.82	0.18	2.85	157	23-134
Hexachlorobutadiene	1.82	0	1.40	77	50-150
Hexachlorobenzene	1.82	0	1.20	66	50-150
Octachlorostyrene	1.82	0	1.22	67	50-150
Oxychlordane	1.82	0	1.23	68	50-150
Trans-Nonachlor	1.82	0	1.32	73	50-150
Cis-Nonachlor	1.82	0.96	5.98	328	50-150
2,4'-DDE	1.82	0	1.21	66	50-150
2,4'-DDD	1.82	0.07	1.76	97	50-150
2,4'-DDT	1.82	0	1.33	73	50-150

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

Spike Recovery: 10 out of 15 outside limits

COMMENTS: ______________________________

ENCLOSURE 12A

3H - FORM III PEST-2
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: KAP TECHNOLOGIES INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix Spike - EPA Sample No.: JBR20

Instrument ID: A-6890A GC Column:RTX-CLP2 ID: 0.53 (mm)

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD % REC.	% RPD	% RPD LIMIT REC.
gamma-BHC (Lindane)	0.91	0.84	92	6.7	50
Heptachlor	0.91	0.84	93	4.3	50
Aldrin	0.91	0.87	96	4.3	50
Dieldrin	1.82	1.23	68	0	50
Endrin	1.82	1.28	70	5.9	50
4,4'-DDT	1.82	3.10	170	8.0	50
Hexachlorobutadiene	1.82	1.54	85	9.9	50
Hexachlorobenzene	1.82	1.27	70	5.9	50
Octachlorostyrene	1.82	1.27	70	4.4	50
Oxychlordane	1.82	1.29	71	4.3	50
Trans-Nonachlor	1.82	1.35	74	1.4	50
Cis-Nonachlor	1.82	5.88	323	1.5	50
2,4'-DDE	1.82	1.28	70	5.9	50
2,4'-DDD	1.82	1.77	97	0	50
2,4'-DDT	1.82	1.42	78	6.6	50

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

ENCLOSURE 12B

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07

Sample wt/vol: 60.20 (g/mL) G Lab File ID: A19509

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.14	U
76-44-8	Heptachlor	0.14	U
309-00-2	Aldrin	0.14	U
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	0.14	U
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	0.27	U
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.12	JP
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	0.13	JP
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	0.063	J
3424-82-6	2,4'-DDE	0.27	U
789-02-6	2,4'-DDT	0.27	U
27304-13-8	Oxychlordane	0.27	U
5103-73-1	cis-Nonachlor	0.72	P
39765-80-5	Trans-Nonachlor	0.27	U
118-74-1	Hexachlorobenzene	0.27	U
87-68-3	Hexachlorobutadiene	0.27	U
29082-74-4	Octachlorostyrene	0.27	U

ENCLOSURE 12c

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20MS(1)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07MS

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19531

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.79	
76-44-8	Heptachlor	0.81	
309-00-2	Aldrin	0.84	
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	1.2	
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	1.2	
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.27	U
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	3.0	
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	1.8	
3424-82-6	2,4'-DDE	1.2	
789-02-6	2,4'-DDT	1.3	
27304-13-8	Oxychlordane	1.2	
5103-73-1	cis-Nonachlor	6.9	E
39765-80-5	Trans-Nonachlor	1.3	
118-74-1	Hexachlorobenzene	1.2	
87-68-3	Hexachlorobutadiene	1.4	
29082-74-4	Octachlorostyrene	1.2	

ENCLOSURE 12-D

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20MS(2)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07MS

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19531

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.71	
76-44-8	Heptachlor	0.72	
309-00-2	Aldrin	0.75	
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	1.5	
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	1.4	
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.27	U
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	2.5	
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	1.1	
3424-82-6	2,4'-DDE	1.1	
789-02-6	2,4'-DDT	1.2	
27304-13-8	Oxychlordane	1.1	
5103-73-1	cis-Nonachlor	5.1	E
39765-80-5	Trans-Nonachlor	1.0	
118-74-1	Hexachlorobenzene	1.2	
87-68-3	Hexachlorobutadiene	1.2	
29082-74-4	Octachlorostyrene	1.1	

SOM01.2 (6/2007)

ENCLOSURE 12E

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20MSD(1)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07MSD

Sample wt/vol: 60.10 (g/mL) G Lab File ID: A19532

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.85	
76-44-8	Heptachlor	0.84	
309-00-2	Aldrin	0.87	
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	1.2	
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	1.3	
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.27	U
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	3.3	
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	1.8	
3424-82-6	2,4'-DDE	1.3	
789-02-6	2,4'-DDT	1.4	
27304-13-8	Oxychlordane	1.3	
5103-73-1	cis-Nonachlor	6.9	E
39765-80-5	Trans-Nonachlor	1.4	
118-74-1	Hexachlorobenzene	1.3	
87-68-3	Hexachlorobutadiene	1.5	
29082-74-4	Octachlorostyrene	1.3	

ENCLOSURE 12F

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20MSD(2)

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07MSD

Sample wt/vol: 60.10 (g/mL) G Lab File ID: A19532

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.74	
76-44-8	Heptachlor	0.75	
309-00-2	Aldrin	0.77	
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	1.6	
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	1.5	
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.27	U
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	2.6	
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	1.2	
3424-82-6	2,4'-DDE	1.2	
789-02-6	2,4'-DDT	1.2	
27304-13-8	Oxychlordane	1.1	
5103-73-1	cis-Nonachlor	5.2	E
39765-80-5	Trans-Nonachlor	1.1	
118-74-1	Hexachlorobenzene	1.2	
87-68-3	Hexachlorobutadiene	1.3	
29082-74-4	Octachlorostyrene	1.1	

SOM01.2 (6/2007)

ENCLOSURE 12-G

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 146-1008

ORGANICS STANDARD PREP LOGBOOK

ANALYST: KVRAO

DILUTION SOLVENT/ Lot No.: Acetone

PREP DATE: 01/28/2009

EXPIRATION DATE: 07/27/2009

Std. Name	Std. ID	LAB ID (Receipt)	Conc. (ug/mL)	Vol. Added (uL)	Final Conc. (ug/mL	Final Vol. (uL)
OTD-PEST	146-44-01	002-0466	8-80	250.0	0.2-2.0	10,000
PCB-LCS	146-44-02	002-0534	1000	200.0	1.0	200,000
PCB-Matrix	146-44-03	002-0534	1000	800.0	4.0	200,000
Surrogate PEST	146-44-04	002-0582	200	600	0.6	200,000
↓ PCBS	↓	002-0583	200	1200	1.2	↓
PEST-Matrix	146-44-05	002-0~~590~~ 570	25-50	1000	0.5-1.0	50,000
GPC-PEST	146-44-06	002-0590	25-50	400	0.2-0.4	50,000
PEST-LCS	146-44-07	002-0161	10-20	500	0.05-0.1	100,000

ENCLOSURE 12 H

PROBLEMS ENCOUNTERED/SPECIAL TECHNIQUES UTILIZED

REVIEWER:

Page: 0044

RCN: 146-1008

KAP TECHNOLOGIES, INC.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

ORGANICS STANDARD PREP LOGBOOK

ANALYST: K.V. Rao

DILUTION SOLVENT/ Lot No.: Acetone

PREP DATE: 9/01/2009

EXPIRATION DATE: 03/01/2010

PEST - Mod 1788 8041-2

Std. Name	Std. ID	LAB ID (Receipt)	Conc. (ug/mL)	Vol. Added (uL)	Final Conc. (ug/mL)	Final Vol. (uL)
Matrix Spike Mod 1788	146-142-01	—	1000	—	0.80	40,000
Hexachlorobutadiene		002-0475	1000	320	0.80	40,000
Hexachlorobenzene		002-0480				
Oxychlordane		002-0757				
2,4'-DDE		002-0477				
Trans Nonachlor		002-0690				
2,4'-DDD		002-0478				
2,4'-DDT		002-0476				
CIS Nonachlor		002-0691				
Octachlorostyrene		002-0756				

PROBLEMS ENCOUNTERED/SPECIAL TECHNIQUES UTILIZED

REVIEWER: K

Page:

ENCLOSURE 12 F

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: ______ SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): ____________ Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________ Time Analyzed: ____________

EPA Sample No.(INDC3##): INDT321 Date Analyzed: 10/12/2009

Lab Sample ID(INDC3): INDT321 Time Analyzed: 1838

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
2,4'-DDD	17.05	16.99	17.13	27494609958	21277453175	-22.6
2,4'-DDE	15.91	15.85	15.99	34509704923	26868275225	-22.1
2,4'-DDT	17.73	17.66	17.80	31566525798	23995161600	-24.0
Oxychlordane	15.27	15.20	15.34	43690555159	34095154100	-22.0
cis-Nonachlor	17.83	17.77	17.91	4951548733	4224795350	-14.7
Trans-Nonachlor	16.12	16.06	16.20	7424814065	6063005775	-18.3
Hexachlorobenzene	10.87	10.81	10.95	54254272171	42887620350	-21.0
Hexachlorobutadiene	4.16	4.10	4.24	73518326634	59348744000	-19.3
Octachlorostyrene	14.78	14.72	14.86	68291214458	53684032750	-21.4
TCX	9.53	9.48	9.58	43626392723	34699969950	-20.5
DCB	23.59	23.50	23.70	41839990410	32920923925	-21.3

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

ENCLOSURE 13A

7L - FORM VII PEST-3

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: ______   SDG No.: JBQZ5

GC Column: RTX-CLP2 ID: 0.53 (mm) Init. Calib. Date(s) 10/11/2009 10/12/2009

EPA Sample No.(PIBLK##): ____________   Date Analyzed: ____________

Lab Sample ID(PIBLK): ____________   Time Analyzed: ____________

EPA Sample No.(INDC3##): INDT331   Date Analyzed: 10/14/2009

Lab Sample ID(INDC3): INDT331   Time Analyzed: 1640

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
2,4'-DDD	17.03	16.99	17.13	27494609958	23680947325	-13.9
2,4'-DDE	15.89	15.85	15.99	34509704923	26664236300	-22.7
2,4'-DDT	17.7	17.66	17.80	31566525798	21290228200	-32.6
Oxychlordane	15.25	15.20	15.34	43690555159	36137128575	-17.3
cis-Nonachlor	17.8	17.77	17.91	4951548733	7154808175	44.5
Trans-Nonachlor	16.1	16.06	16.20	7424814065	7738343500	4.2
Hexachlorobenzene	10.86	10.81	10.95	54254272171	46520153350	-14.3
Hexachlorobutadiene	4.15	4.10	4.24	73518326634	72094829600	-1.9
Octachlorostyrene	14.76	14.72	14.86	68291214458	56769363625	-16.9
TCX	9.51	9.48	9.58	43626392723	37849437500	-13.2
DCB	23.56	23.50	23.70	41839990410	35205606200	-15.9

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

concentration levels that are detectable by GC/MS, a confirmatory GC/MS run is required and the PEST spectra (enhanced and unenhanced) shall be submitted with the data package.

Scenario 2: Lower level analyses:

If none of the target PEST compounds are detected during the initial run, a lower level PEST analysis shall be performed. A bigger sample size (50-75 grams) will be used. Analyze the primary extract through GPC. Adjust the surrogates and spike compounds so that the extract volume after GPC shall be 1 .0 ml (instead of 5). Run the1 mL primary extract through sulfur and florisil clean-ups. Final extract volume after florisil shall be 0.5 ml. Inject 2 ul during analyses. Use the lowest concentration of standards that could be detected with signal to noise ratio at 10 (S/N = 10) in the initial calibration. The Laboratory has the option to make additional modifications to the SOW or MA in order to meet or get close to the target ACGs.

The Laboratory shall notify SMO prior to data delivery of all adjustments employed to achieve the reported CRQLs.

These samples shall be reported, using an RX suffix.

The Laboratory shall analyze a Laboratory Control Sample (LCS) at a frequency of 1 per 20 samples. For Matrix Spike, Matrix Spike Duplicate (MS/MSD) and LCS, add the additional target compounds to the SOM01.2 spike compounds. Recovery limits for the additional compounds shall be 50-150% and relative percent difference at 50%. Re-extraction, re-analyses shall be performed on the associated samples for LCS/LCSD %R failures, at no additional cost.

In addition, analyze mid-point concentration levels of Aroclors 1248, 1254 and 1260 immediately after the initial calibration for each instrument as an interference check. These interference check standards must be analyzed prior to sample analyses. All associated raw data must be submitted immediately after the initial calibration. No additional forms are required.

Initial calibration and continuing calibration frequency remain at the SOW specifications. All technical acceptance criteria for the additional compounds shall be **advisory**.

Reporting Requirements:

Hardcopy and electronic data reporting are required as specified per SOW SOM01.2. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample Management Office (SMO) at (703) 818-4233 or via e-mail at CCSSUPPORT@fedcsc.com for resolution.

AUDITOR GENERATED

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ENCLOSURE 14

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19426.D(Signal #1)           A19426.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/12/09 01:21 (Signal #1); 10/12/09 01:57 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : INDC211 (Sig #1); INDC212 (Sig #2)
Misc      : INDC211 (Sig #1); INDC212 (Sig #2)
ALS Vial  : 9   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 12 09:11:15 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Mon Oct 12 09:10:21 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.54	10.07	322.6E6	325.1E6	10.397	11.565
	Spiked Amount 60.000			Recovery	=	17.33%	19.28%
22) S	Decachlorobiphen	23.60	23.29	753.9E6	603.1E6	20.841m	22.950m
	Spiked Amount 120.000			Recovery	=	17.37%	19.13%
	Target Compounds						
2)	Alpha-BHC	11.28	11.68	501.7E6	462.7E6	9.477	11.065
3)	Gamma-BHC (Linda	12.23	12.54	486.8E6	456.4E6	9.770	11.091
4)	Beta-BHC	12.46	12.78	156.9E6	152.9E6	7.334	8.215
5)	Delta-BHC	13.19	13.23	370.5E6	363.0E6	8.004	9.038
6)	Heptachlor	13.35	13.76	471.3E6	444.6E6	9.734	10.794
7)	Aldrin	14.13	14.50	421.2E6	398.8E6	9.799	10.739
8)	Heptachlor Epoxi	15.48	15.97	386.2E6	358.1E6	9.902	10.818
9)	Gamma-Chlordane	15.92	16.25	390.5E6	368.2E6	9.842	10.425
10)	Alpha-Chlordane	16.25	16.56	374.6E6	347.3E6	9.942	11.013
11)	Endosulfan I	16.37	16.88	352.6E6	344.0E6	9.897	9.552
12)	4,4'-DDE	16.63	16.73	697.8E6	661.3E6	19.168	22.353
13)	Dieldrin	16.98	17.42	733.6E6	701.1E6	19.046	22.071
14)	Endrin	17.65	17.95	650.1E6	615.0E6	19.744	24.425
15)	4,4'-DDD	17.89	18.07	540.9E6	491.2E6	19.087	19.625
16)	Endosulfan II	18.11	18.44	636.8E6	583.5E6	19.450	23.328
17)	4,4'-DDT	18.57	18.68	564.7E6	579.3E6	19.032	21.037
18)	Endrin Aldehyde	18.84	19.38	540.1E6	528.2E6	19.955	24.300
19)	Endosulfan sulfa	19.44	20.34	592.1E6	592.2E6	19.270	22.969
20)	Methoxychlor	20.02	19.71	1583.9E6	1616.5E6	97.617	122.294 #
21)	Endrin Ketone	20.60	20.96	729.9E6	679.5E6	19.551	22.125

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
Case 38882 SDG JRA27
Episode S-266P Init/Date WM 10/13/09.

ENCLOSURE 15A

4001-05112010-5

Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19471.D(Signal #1)           A19471.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 10/13/09 05:01 (Signal #1); 10/13/09 05:38 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : PEM31 (Sig #1); PEM32 (Sig #2)
Misc       : PEM31 (Sig #1); PEM32 (Sig #2)
ALS Vial   : 94   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Oct 13 07:15:52 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Mon Oct 12 22:53:36 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.52	10.06	661.5E6	560.8E6	20.083	18.765
	Spiked Amount 60.000			Recovery	=	33.47%	31.28%
22) S	Decachlorobiphen	23.58	23.29	649.6E6	433.0E6	17.573	15.944m
	Spiked Amount 120.000			Recovery	=	14.64%	13.29%
	Target Compounds						
2)	Alpha-BHC	11.26	11.67	509.4E6	374.1E6	9.205	8.520
3)	Gamma-BHC (Linda	12.21	12.53	489.5E6	376.9E6	9.372	8.833
4)	Beta-BHC	12.44	12.77	220.6E6	184.3E6	10.778	10.368
14)	Endrin	17.63	17.94	1456.2E6	1253.8E6	41.847	48.430
15)	4,4'-DDD	17.89	0.00	45663431	0	1.563	N.D. d#
17)	4,4'-DDT	18.55	18.68	3196.8E6	2486.7E6	105.497	89.347
18)	Endrin Aldehyde	18.82	19.42	64284861	26922226	2.283	1.174 #
20)	Methoxychlor	20.00	19.71	4123.9E6	3101.5E6	248.000	223.670
21)	Endrin Ketone	20.57	20.99	125.2E6	61169731	3.263	1.962 #

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ORIGINAL
38883 JB&22
S-2669 Clh
10/13/09

ENCLOSURE 15B

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1) A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial : 84 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Sep 24 15:14:54 2009
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Wed Sep 23 21:53:18 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1554.8E6	1164.7E6	51.936	50.480
	Spiked Amount 60.000				Recovery =	86.56%	84.13%
11) S	Decachlorobiphen	24.78	22.40	2320.9E6	2321.9E6	102.276	136.060 #
	Spiked Amount 120.000				Recovery =	85.23%	113.38%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	188.1E6	156.9E6	3.632	4.139
6)	2,4'-DDE	16.67	15.27	440.9E6	731.5E6	20.929	40.469 #
8)	2,4'-DDD	17.83	16.43	219.5E6	240.6E6	11.717	17.435 #
9)	2,4'-DDT	18.51	16.99	2072.7E6	2424.4E6	148.822	150.028
10)	cis-Nonachlor	18.66	17.37	2202.3E6	1387.0E6	600.072m	469.186m

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

ENCLOSURE 15c

JBQZ9 A19506-1

Sample Receipt and Preparation

Receipt Date	Matrix	Prep. Date	Prep. Method	Aliquot	Units	Final Amount	Units	Percent Solids
10/02/2009	Soil	10/07/2009	Sonication	59.90	g	1,000	uL	0.74

Sample Cleanup

Cleanup Type	Initial Volume	Units	Final Volume	Units	Date	Time	Efficiency
GPC	1,000	uL	1,000	uL	10/06/2009	14:10:00	1.0
Florisil	1,000	uL	1,000	uL	10/07/2009	11:20:00	1.0

Sample Analysis

Analysis Type	Inst.	Analysis Date	Analysis Time	Amount Analyzed	Units	Column	Lenght (m)	Diameter (um)
Initial	A-6890A	10/14/2009	20:23:00	1,000	uL	RTX-CLP2	30	0.53

Dilution Factor	Injection Volume	Units
1.0	1.00	uL

ENCLOSURE 16A

AUDITOR GENERATED

KAP Technologies, Inc.
9391 Grogans Mill Rd. Suite A2
The Woodlands, TX 77380

RCN: 198-0809

ORGANIC EXTRACTION LOG

Extr. Start Date/Time: 10.06.09 12.30
Extr. Complete Date/Time: 10.07.09 13.20

FRACTION
PEST ✓ PCB —
GPC Date/Time: 10.6.09 14.10 PM

EXTRACTION PROCEDURE
SEP. FUNNEL — SONIC. ✓ OTHER —
CONT. LIQ/LIQ ✗ SOXHLET —

Lab Sample ID	Client Sample ID	Date Rec'd	Matrix	pH	% Moist	Sample Amount (g/ml)	Solvent Added (ml)	Conc. Volume (ml)	Vol. for GPC (ml)	GPC Elute Vol. (ml)	GPC Final Conc. Vol.(ml)	Vol. for Flori.(ml)	Flori.Final Vol. (ml)	Acid Cleanup Y/N	Matrix Spike Added (ul)	Surr Added (ul)	Remarks
PBLK 62	PBLK62	10.2.09	Soil	—	—	60.0	600	10mL	5mL	200mL	1mL	1mL	1mL	NO	NA	100	
PLCS 62	PLCS 62			—	—	60.0									100		
PLCS 62 DUP	PLCS62DUP			—	—	60.0									100		
PLCS 62	PLCS62			—	—	60.0									100		
PLCS 62DUP	PLCS62D			—	—	60.0									100		
602713.01	JBQZ5			6.7	29	60.1									NA		
02	JBQZ9			7.1	26	59.9											
03	JBR03			7.0	35	60.2											
04	JBR07			6.8	41	60.3											
05	JBR12			6.7	35	60.1											
06	JBR16			6.6	32	60.0											
07	JBR20			6.1	27	60.2											
07MS	MS			6.1	27	60.3									100		
07 MSD	MSD			6.1	27	60.1									100		

ENCLOSURE 16B

Methy. Chloride Lot No.: 904038
Hexane Lot No.: 904009
Acetone Lot No.: 906072
Freon Lot No.: —

Surrogate Sol. ID: 146.99.01
LCS/Matrix Spike Sol. ID: 146.44.05, 146.143.01, 146.44.07
Florisil Lot ID: EH5632
H_2SO_4 Lot No.: —

Initials of Extraction Leader RC Assistants
Initials of Sample Cleanup Leader — Assistants
Initials of Surrogate Spiker CH Verifier
Initials of Matrix Spike Spiker OU Verifier

NOTES:

RECEIVED FOR ANALYSIS BY: KV Kao DATE: 10/07/09 TIME: 14.20 COMMENTS:

Surrogate Recoveries

AUDITOR GENERATED

Sample	RTX-CLP2		RTX-CLP	
	TCX	DCB	TCX	DCB
PIBLKY1	94	93	2	3
PIBLKZ1	96	93	2	3
PIBLK11	82	92	2	4
PIBLK21	102	91	2	4
PIBLK31	106	95	2	3
PIBLK61	118	94	2	3
PIBLK71	114	91	2	2
PIBLK81	108	88	2	2
PIBLK91	112	89	2	3

ENCLOSURE 17A

2N - FORM II PEST-1
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

GC Column (1): RTX-CLP2 ID: 0.53 (mm) GC Column (2) RTX-CLP ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01	PIBLKY1	94	91	93	87			0
02	PIBLKZ1	96	86	93	72			0
03	PIBLK11	82	87	92	92			0
04	PIBLK21	102	100	91	94			0
05	PIBLK31	106	95	95	72			0
06	PIBLK61	118	98	94	64			0
07	PIBLK71	114	96	91	58			0
08	PIBLK81	108	97	88	58			0
09	PIBLK91	112	107	89	63			0
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		QC LIMITS
TCX	= Tetrachloro-m-xylene	(30-150)
DCB	= Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

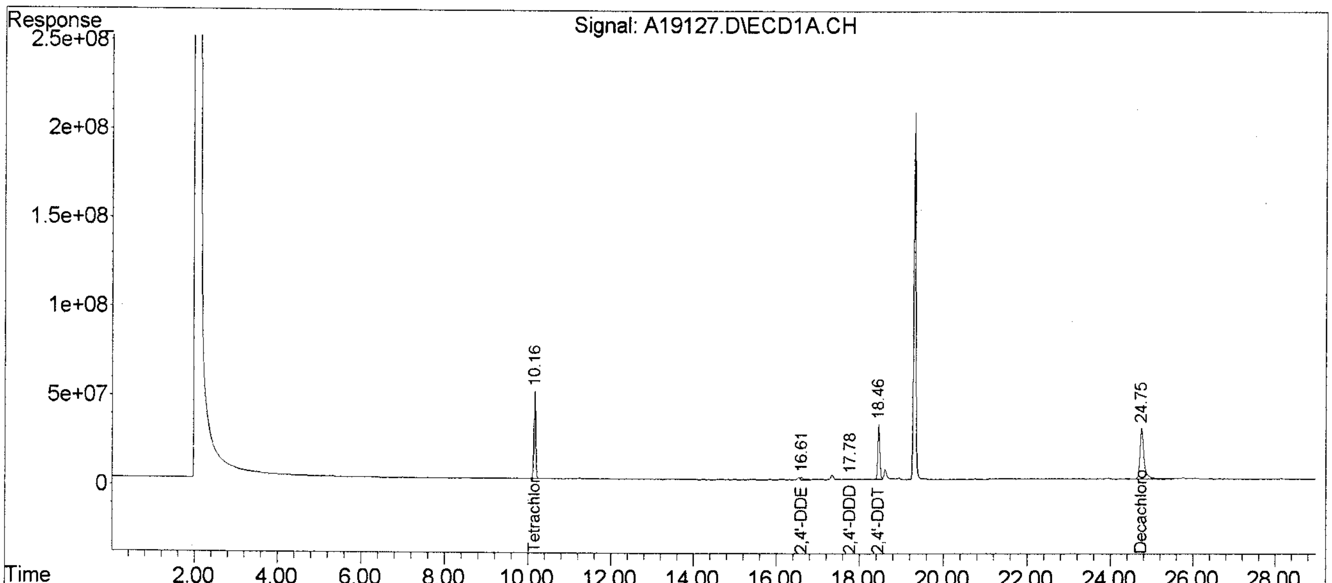
ENCLOSURE 17 B

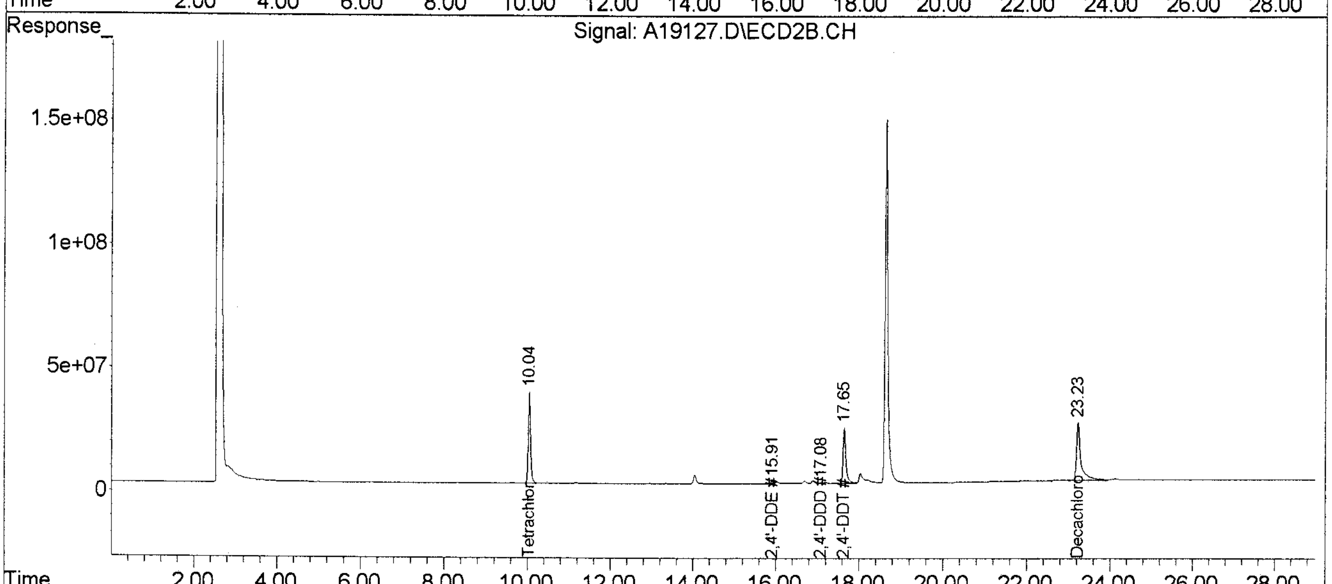
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19127.D(Signal #1)           A19127.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/28/09 12:53 (Signal #1); 09/28/09 13:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ11 (Sig #1); JBQ11 (Sig #2)
Misc      : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial  : 11   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:15:14 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBQ11DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2628.04DL

Sample wt/vol: 5.300 (g/mL) G Lab File ID: A19130

% Moisture: 48 Decanted: (Y/N) N Date Received: 09/11/2009

Extraction: (Type) SONC Date Extracted: 09/13/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	1.8	U
72-55-9	4,4'-DDE	1.8	U
72-20-8	Endrin	3.6	U
33213-65-9	Endosulfan II	3.6	U
72-54-8	4,4'-DDD	62	DJP
1031-07-8	Endosulfan sulfate	3.6	U
50-29-3	4,4'-DDT	730	D
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.6	U
7421-93-4	Endrin aldehyde	3.6	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
53-19-0	2,4'-DDD	3.6	U
3424-82-6	2,4'-DDE	3.6	U
789-02-6	2,4'-DDT	160	DJ
27304-13-8	Oxychlordane	3.6	U
5103-73-1	cis-Nonachlor	3.6	U
39765-80-5	Trans-Nonachlor	3.6	U
118-74-1	Hexachlorobenzene	3.6	U
87-68-3	Hexachlorobutadiene	3.6	U
29082-74-4	Octachlorostyrene	3.6	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19130.D(Signal #1) A19130.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 14:43 (Signal #1); 09/28/09 15:19 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ11DL 10X (Sig #1); JBQ11DL 10X (Sig #2)
Misc : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial : 14 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:02:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.17	10.04	156.8E6	142.5E6	5.352	4.951
Spiked Amount 60.000			Recovery	=	8.92%	8.25%
22) S Decachlorobiphen	24.75	23.23	229.1E6	162.7E6	8.919	7.238
Spiked Amount 120.000			Recovery	=	7.43%	6.03%
Target Compounds						
15) 4,4'-DDD	18.62	18.04	42681746	68790564	1.709m	2.489m#
17) 4,4'-DDT	19.31	18.64	575.9E6	482.0E6	24.207	20.161

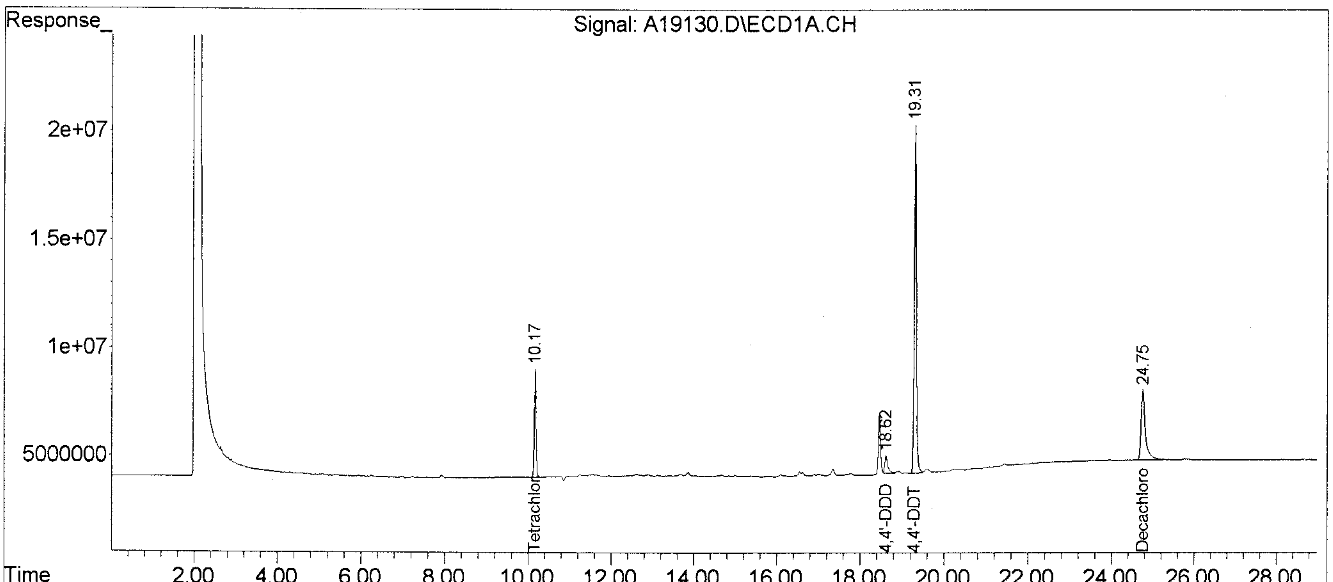
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

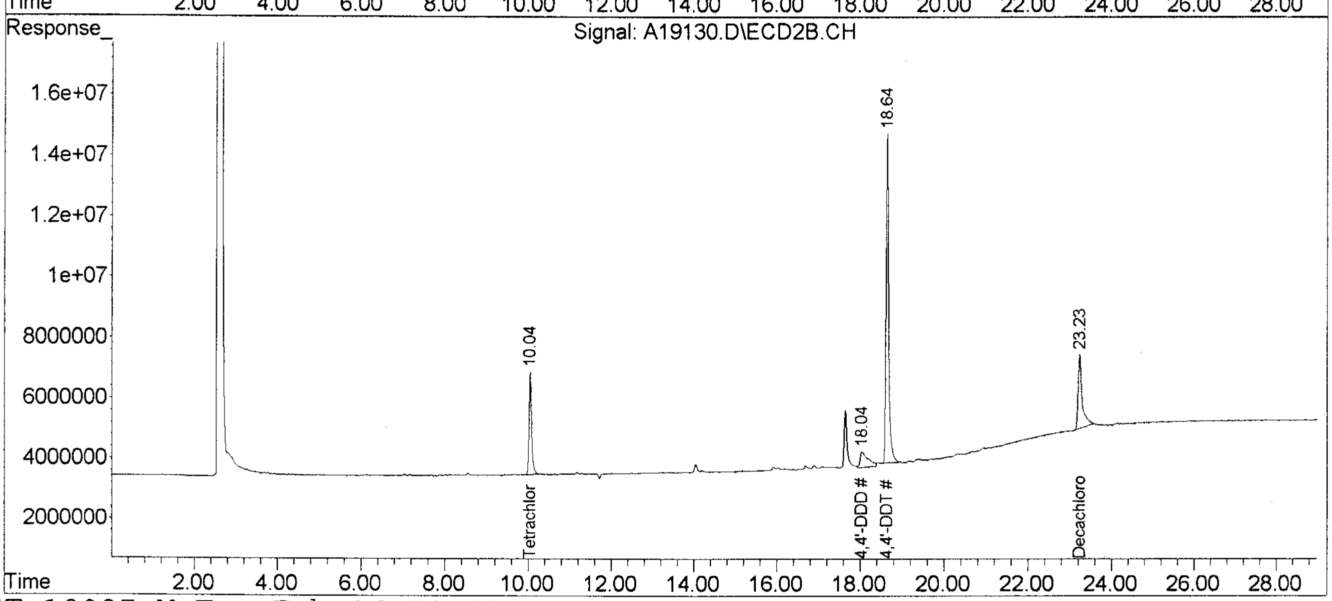
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19130.D(Signal #1) A19130.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 14:43 (Signal #1); 09/28/09 15:19 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ11DL 10X (Sig #1); JBQ11DL 10X (Sig #2)
Misc : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial : 14 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:02:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



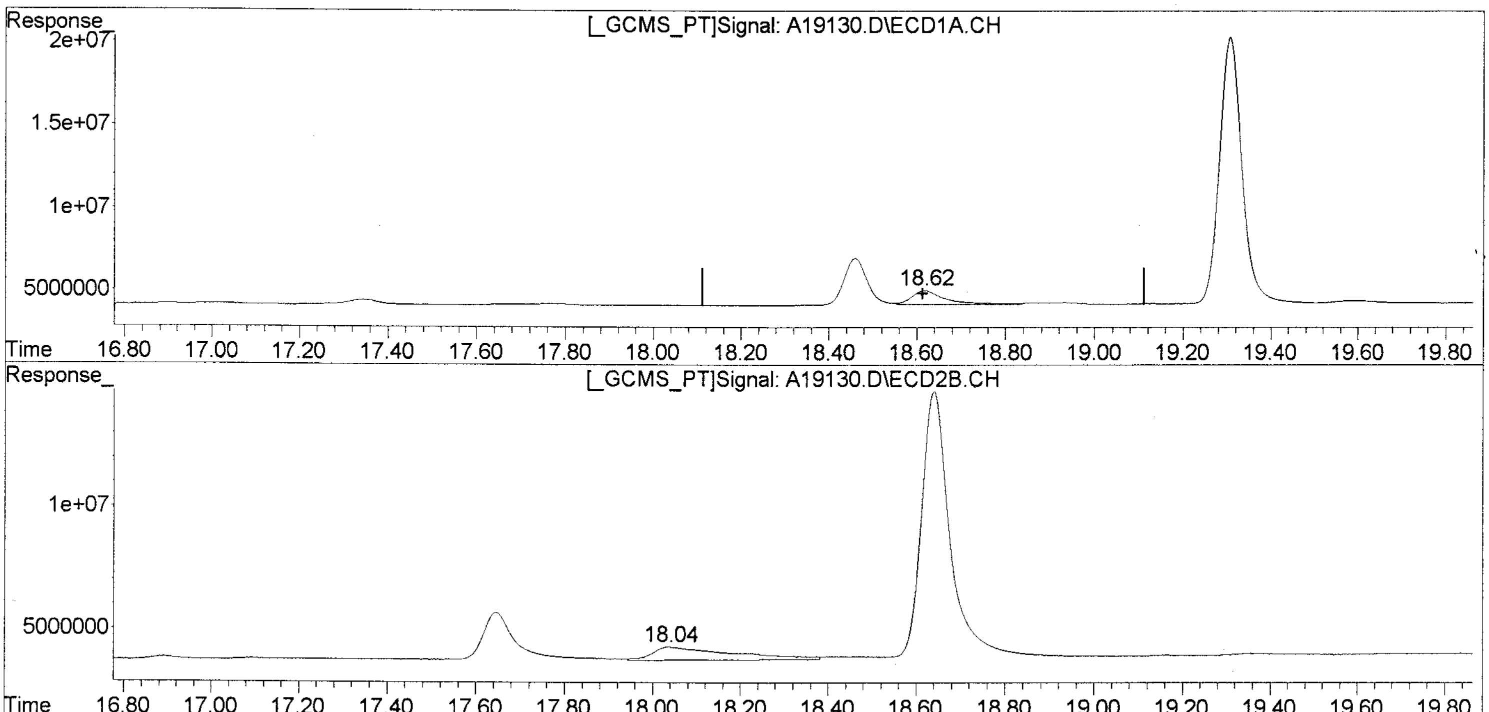


Quantitation Report (Qedit)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19130.D(Signal #1)           A19130.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 09/28/09 14:43 (Signal #1); 09/28/09 15:19 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBQ11DL 10X (Sig #1); JBQ11DL 10X (Sig #2)
Misc       : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial   : 14   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:17:00 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



QEdit

(15) 4,4'-DDD
18.62min 1.709ng/mL m
response 42681746

(15) 4,4'-DDD #2
18.04min 2.489ng/mL m
response 68790564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19130.D(Signal #1)            A19130.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/28/09 14:43 (Signal #1); 09/28/09 15:19 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ11DL 10X (Sig #1); JBQ11DL 10X (Sig #2)
Misc      : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial  : 14   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:17:53 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.17	10.04	156.8E6	144.1E6	4.912	4.716
Spiked Amount 60.000			Recovery	=	8.19%	7.86%
11) S Decachlorobiphen	24.75	23.23	229.1E6	168.4E6	9.354	6.936 #
Spiked Amount 120.000			Recovery	=	7.79%	5.78%
Target Compounds						
9) 2,4'-DDT	18.46	17.65	103.6E6	90029039	4.771	4.419

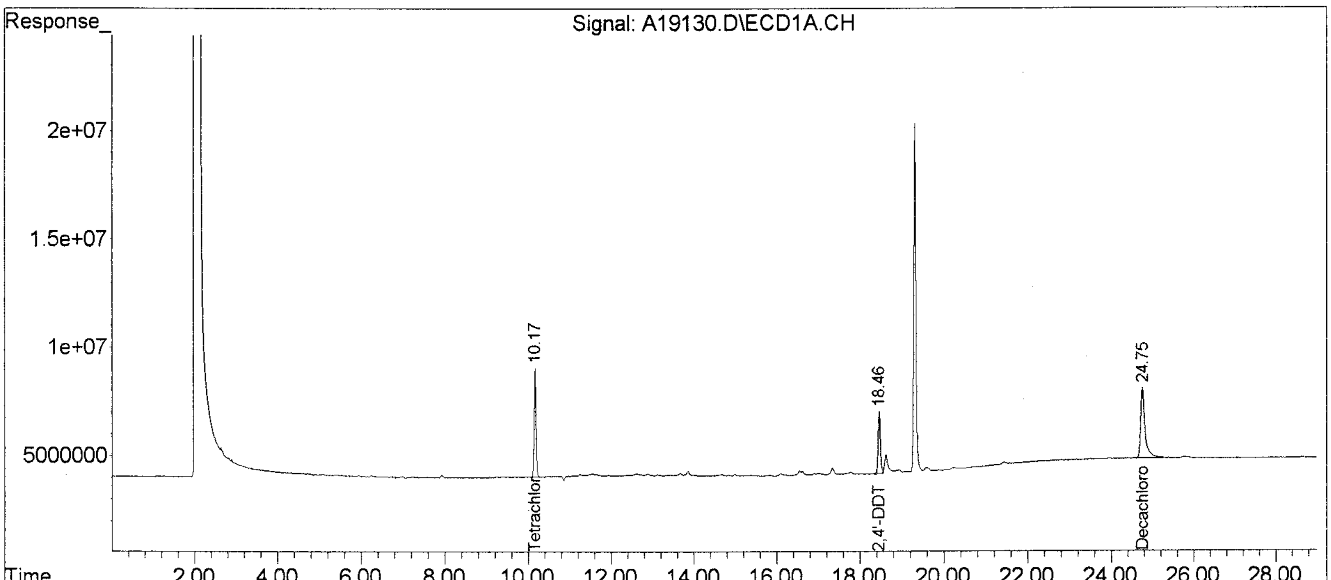
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

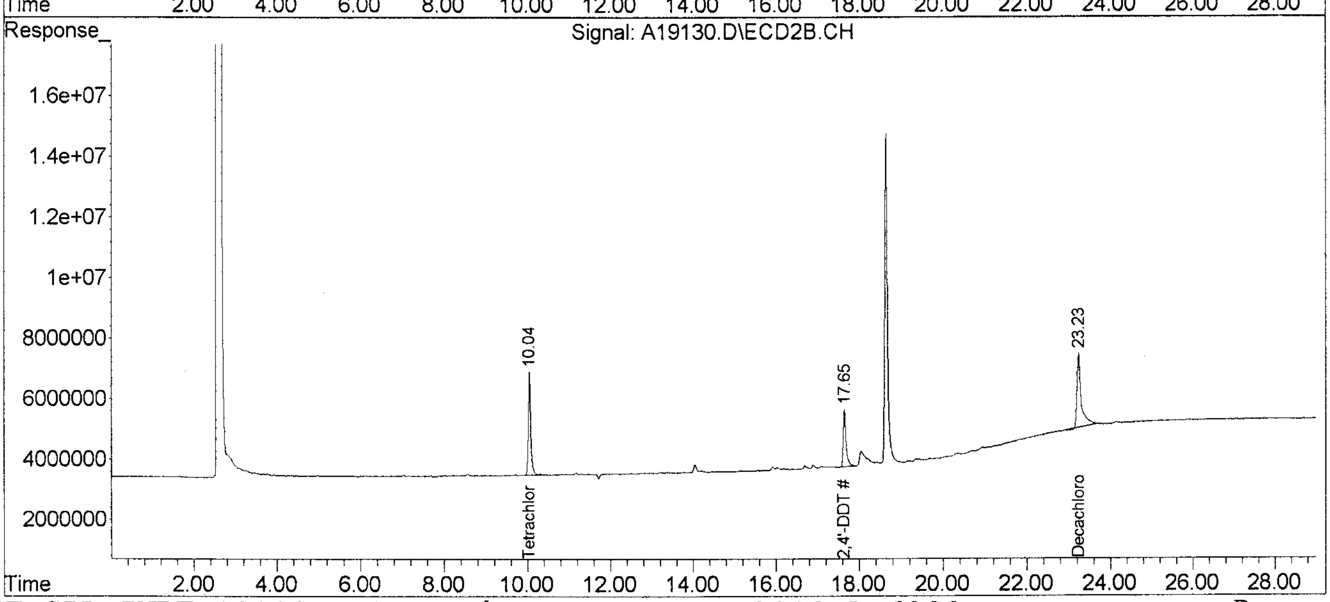
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19130.D(Signal #1)          A19130.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/28/09 14:43 (Signal #1); 09/28/09 15:19 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ11DL 10X (Sig #1); JBQ11DL 10X (Sig #2)
Misc      : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial  : 14   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:17:53 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBQ16

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2628.05

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19128

% Moisture: 20 Decanted: (Y/N) N Date Received: 09/11/2009

Extraction: (Type) SONC Date Extracted: 09/13/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.12	U
319-85-7	beta-BHC	0.12	U
319-86-8	delta-BHC	0.12	U
58-89-9	gamma-BHC (Lindane)	0.12	U
76-44-8	Heptachlor	0.12	U
309-00-2	Aldrin	0.12	U
1024-57-3	Heptachlor epoxide	0.12	U
959-98-8	Endosulfan I	0.12	U
60-57-1	Dieldrin	0.12	U
72-55-9	4,4'-DDE	2.5	JP
72-20-8	Endrin	0.25	U
33213-65-9	Endosulfan II	0.25	U
72-54-8	4,4'-DDD	8.3	JP
1031-07-8	Endosulfan sulfate	0.25	U
50-29-3	4,4'-DDT	200	P
72-43-5	Methoxychlor	1.2	U
53494-70-5	Endrin ketone	0.25	U
7421-93-4	Endrin aldehyde	0.25	U
5103-71-9	alpha-Chlordane	0.12	U
5103-74-2	gamma-Chlordane	0.12	U
8001-35-2	Toxaphene	12	U
53-19-0	2,4'-DDD	1.5	JP
3424-82-6	2,4'-DDE	0.25	U
789-02-6	2,4'-DDT	77	
27304-13-8	Oxychlordane	0.25	U
5103-73-1	cis-Nonachlor	0.25	U
39765-80-5	Trans-Nonachlor	0.25	U
118-74-1	Hexachlorobenzene	0.25	U
87-68-3	Hexachlorobutadiene	0.25	U
29082-74-4	Octachlorostyrene	0.25	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19128.D(Signal #1)           A19128.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/28/09 13:30 (Signal #1); 09/28/09 14:06 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ16 (Sig #1); JBQ16 (Sig #2)
Misc      : S-2628.05 5.1G/5.0ML (Sig #1); S-2628.05 5.1G/5.0ML (Sig #2)
ALS Vial  : 12   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:22:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.16	10.05	3333.6E6	2838.4E6	113.775	98.618
Spiked Amount 60.000			Recovery	=	189.63%	164.36%
22) S Decachlorobiphen	24.75	23.23	2607.7E6	1885.5E6	101.532	83.887
Spiked Amount 120.000			Recovery	=	84.61%	69.91%
Target Compounds						
12) 4,4'-DDE	17.33	16.69	65206212	31106693	2.119	1.034 #
15) 4,4'-DDD	18.61	18.06	84444919	135.6E6	3.381	4.907 #
17) 4,4'-DDT	19.30	18.64	2964.3E6	1975.1E6	124.600	82.619 #

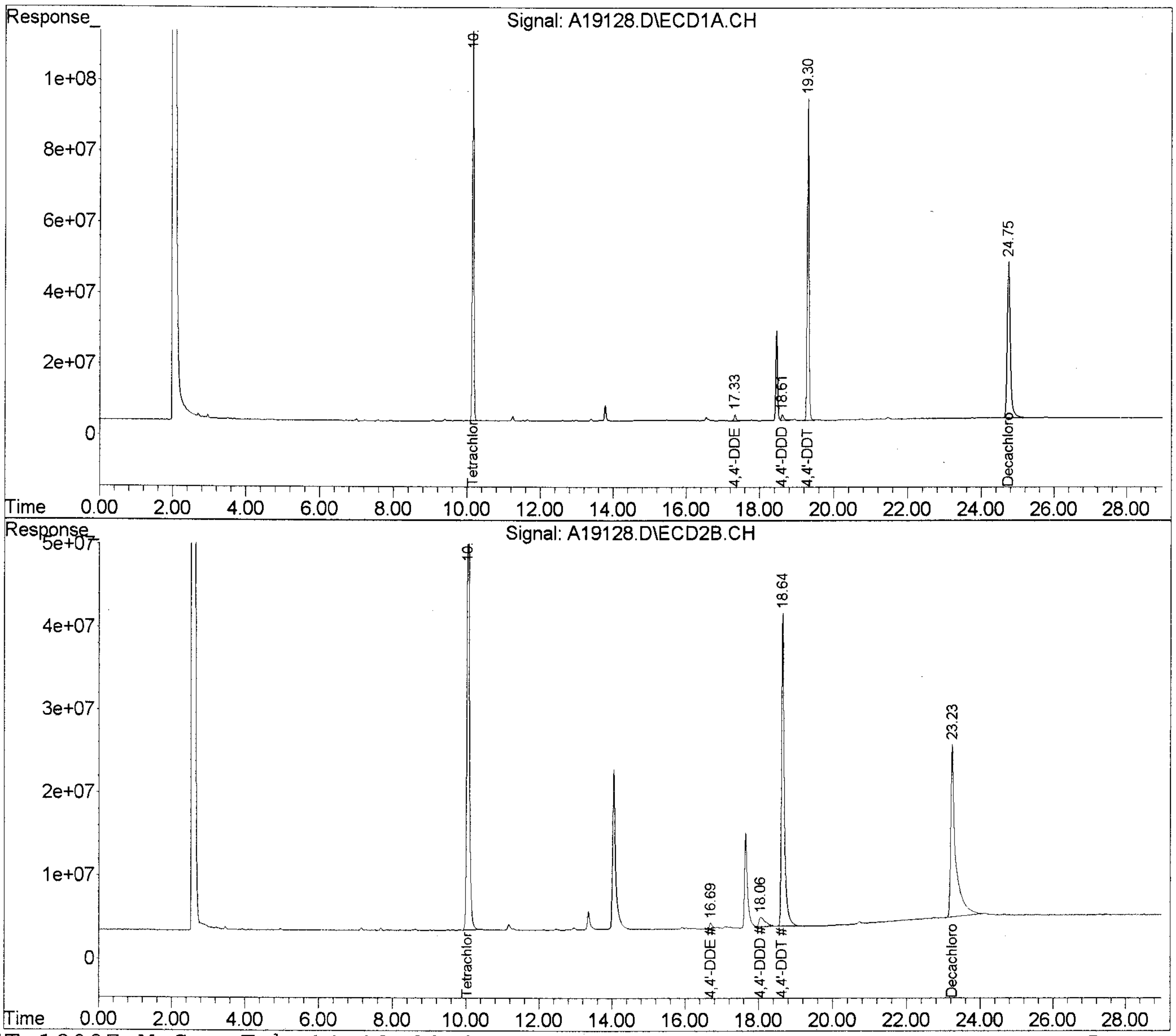
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19128.D(Signal #1) A19128.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 13:30 (Signal #1); 09/28/09 14:06 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ16 (Sig #1); JBQ16 (Sig #2)
Misc : S-2628.05 5.1G/5.0ML (Sig #1); S-2628.05 5.1G/5.0ML (Sig #2)
ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:22:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19128.D(Signal #1) A19128.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 13:30 (Signal #1); 09/28/09 14:06 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ16 (Sig #1); JBQ16 (Sig #2)
Misc : S-2628.05 5.1G/5.0ML (Sig #1); S-2628.05 5.1G/5.0ML (Sig #2)
ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:24:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.16	10.05	3333.6E6	2839.0E6	104.413	92.931
Spiked Amount 60.000			Recovery	=	174.02%	154.89%
11) S Decachlorobiphen	24.75	23.23	2607.7E6	1962.5E6	106.484	80.824
Spiked Amount 120.000			Recovery	=	88.74%	67.35%
Target Compounds						
8) 2,4'-DDD	17.77	17.10	11713353	14667544	0.621	0.785 #
9) 2,4'-DDT	18.46	17.65	829.4E6	638.3E6	38.193	31.329

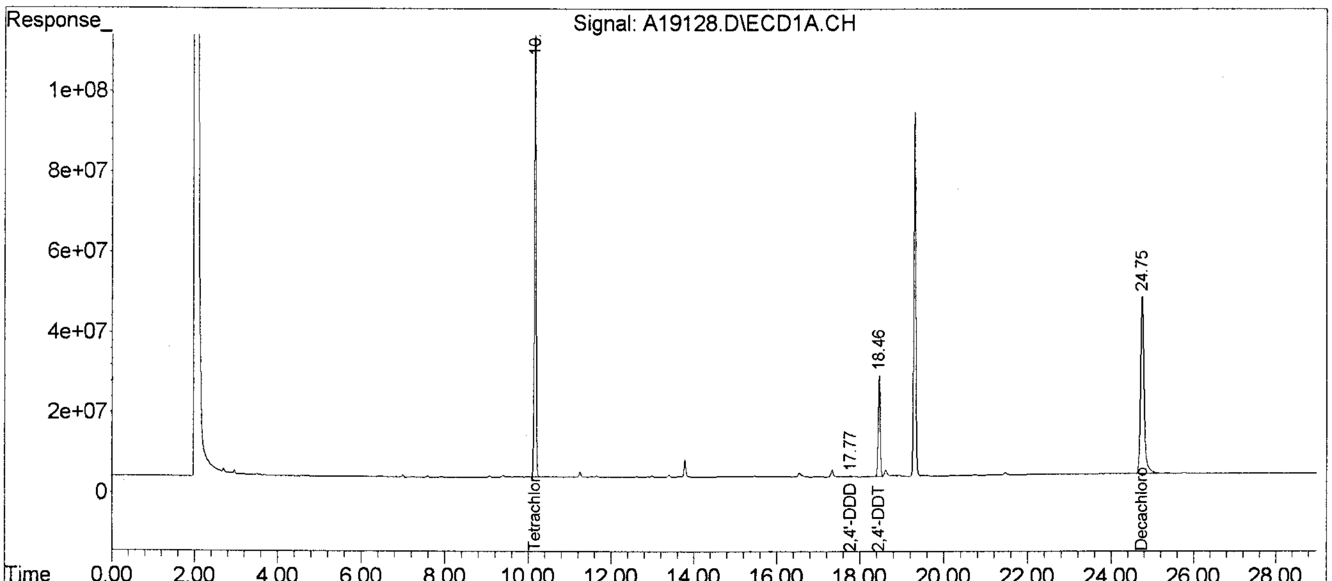
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

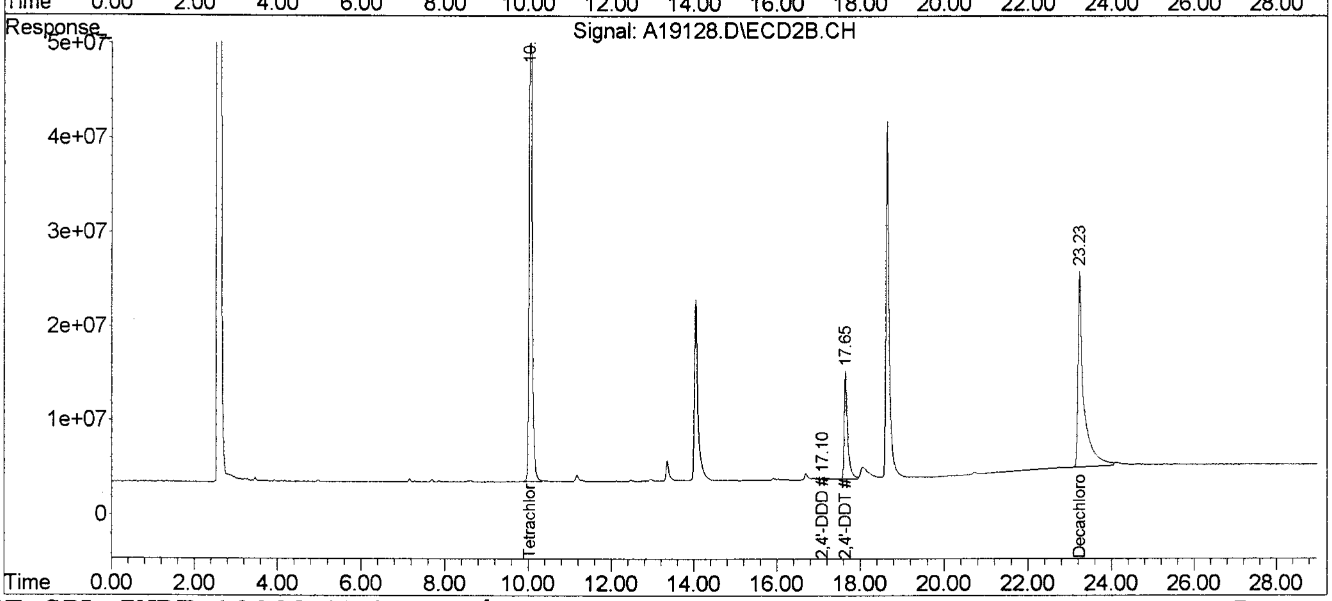
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19128.D(Signal #1) A19128.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 13:30 (Signal #1); 09/28/09 14:06 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ16 (Sig #1); JBQ16 (Sig #2)
Misc : S-2628.05 5.1G/5.0ML (Sig #1); S-2628.05 5.1G/5.0ML (Sig #2)
ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:24:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JBQ20

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2628.06

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19150

% Moisture: 22 Decanted: (Y/N) N Date Received: 09/11/2009

Extraction: (Type) SONC Date Extracted: 09/12/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/29/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.13	U
319-85-7	beta-BHC	0.13	U
319-86-8	delta-BHC	0.13	U
58-89-9	gamma-BHC (Lindane)	0.13	U
76-44-8	Heptachlor	0.13	U
309-00-2	Aldrin	0.13	U
1024-57-3	Heptachlor epoxide	0.13	U
959-98-8	Endosulfan I	0.13	U
60-57-1	Dieldrin	0.13	U
72-55-9	4,4'-DDE	0.035	JP
72-20-8	Endrin	0.26	U
33213-65-9	Endosulfan II	0.26	U
72-54-8	4,4'-DDD	0.50	
1031-07-8	Endosulfan sulfate	0.26	U
50-29-3	4,4'-DDT	2.4	
72-43-5	Methoxychlor	1.3	U
53494-70-5	Endrin ketone	0.26	U
7421-93-4	Endrin aldehyde	0.26	U
5103-71-9	alpha-Chlordane	0.13	U
5103-74-2	gamma-Chlordane	0.13	U
8001-35-2	Toxaphene	13	U
53-19-0	2,4'-DDD	0.16	J
3424-82-6	2,4'-DDE	0.019	JP
789-02-6	2,4'-DDT	0.076	J
27304-13-8	Oxychlordane	0.26	U
5103-73-1	cis-Nonachlor	0.26	U
39765-80-5	Trans-Nonachlor	0.26	U
118-74-1	Hexachlorobenzene	0.090	JP
87-68-3	Hexachlorobutadiene	0.12	JP
29082-74-4	Octachlorostyrene	0.26	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19150.D(Signal #1) A19150.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 02:54 (Signal #1); 09/29/09 03:30 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ20 (Sig #1); JBQ20 (Sig #2)
Misc : S-2628.06 60.3G/1.0ML (Sig #1); S-2628.06 60.3G/1.0ML (Sig #2)
ALS Vial : 74 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 14:31:35 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.17	10.04	1772.6E6	1584.0E6	60.497	55.034
	Spiked Amount 60.000			Recovery	=	100.83%	91.72%
22) S	Decachlorobiphen	24.75	23.23	2052.9E6	1619.3E6	79.933	72.044
	Spiked Amount 120.000			Recovery	=	66.61%	60.04%
	Target Compounds						
12)	4,4'-DDE	17.33	16.68	185.9E6	50154928	6.043	1.666 #
15)	4,4'-DDD	18.61	18.02	704.9E6	652.1E6	28.223	23.596
17)	4,4'-DDT	19.31	18.64	2825.7E6	2672.4E6	118.774	111.786

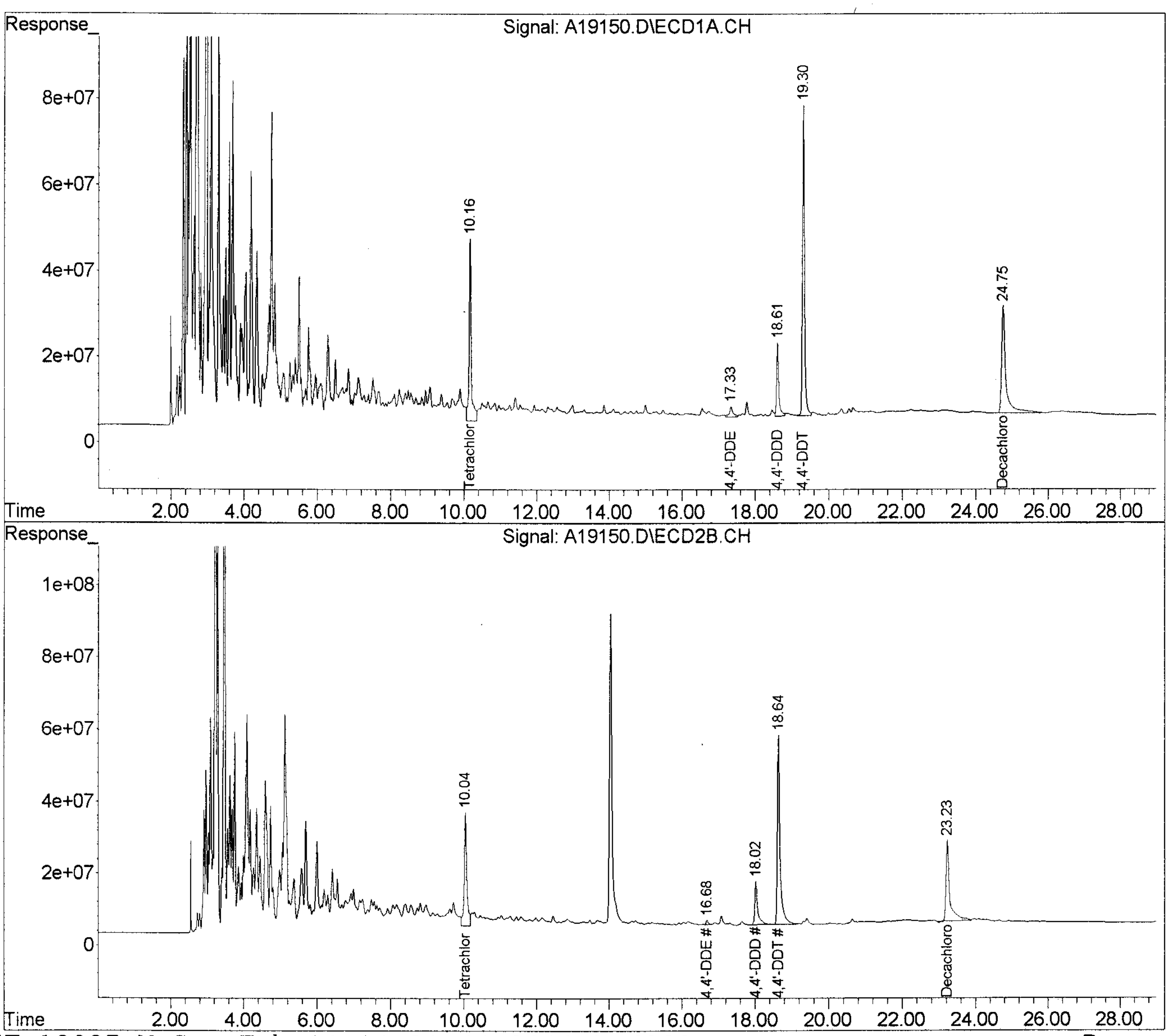
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19150.D(Signal #1)           A19150.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/29/09 02:54 (Signal #1); 09/29/09 03:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ20 (Sig #1); JBQ20 (Sig #2)
Misc      : S-2628.06  60.3G/1.0ML (Sig #1); S-2628.06  60.3G/1.0ML (Sig #2)
ALS Vial  : 74   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 14:31:35 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19150.D(Signal #1)          A19150.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/29/09 02:54 (Signal #1); 09/29/09 03:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ20 (Sig #1); JBQ20 (Sig #2)
Misc      : S-2628.06  60.3G/1.0ML (Sig #1); S-2628.06  60.3G/1.0ML (Sig #2)
ALS Vial  : 74   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 14:41:19 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2        Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.17	10.04	1772.6E6	1682.7E6	55.519	55.080
	Spiked Amount 60.000			Recovery	=	92.53%	91.80%
11) S	Decachlorobiphen	24.75	23.23	2052.9E6	1741.0E6	83.831	71.702
	Spiked Amount 120.000			Recovery	=	69.86%	59.75%
	Target Compounds						
2)	Hexachlorobutadi	4.59	4.98	266.9E6	944.0E6	5.590	26.823 #
3)	Hexachlorobenzen	11.54	11.19	203.2E6	144.1E6	5.444	4.224
6)	2,4'-DDE	16.55	15.91	151.1E6	21403350	6.402	0.903 #
8)	2,4'-DDD	17.77	17.08	137.7E6	145.3E6	7.302	7.778
9)	2,4'-DDT	18.46	17.65	77193220	72380621	3.555	3.552

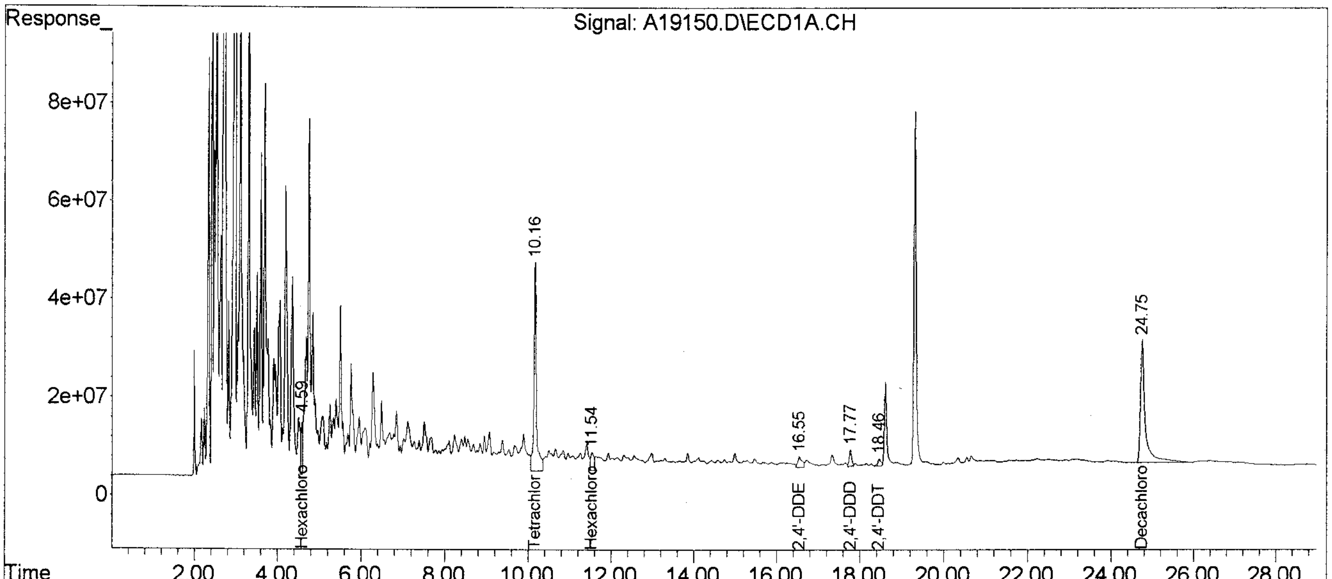
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

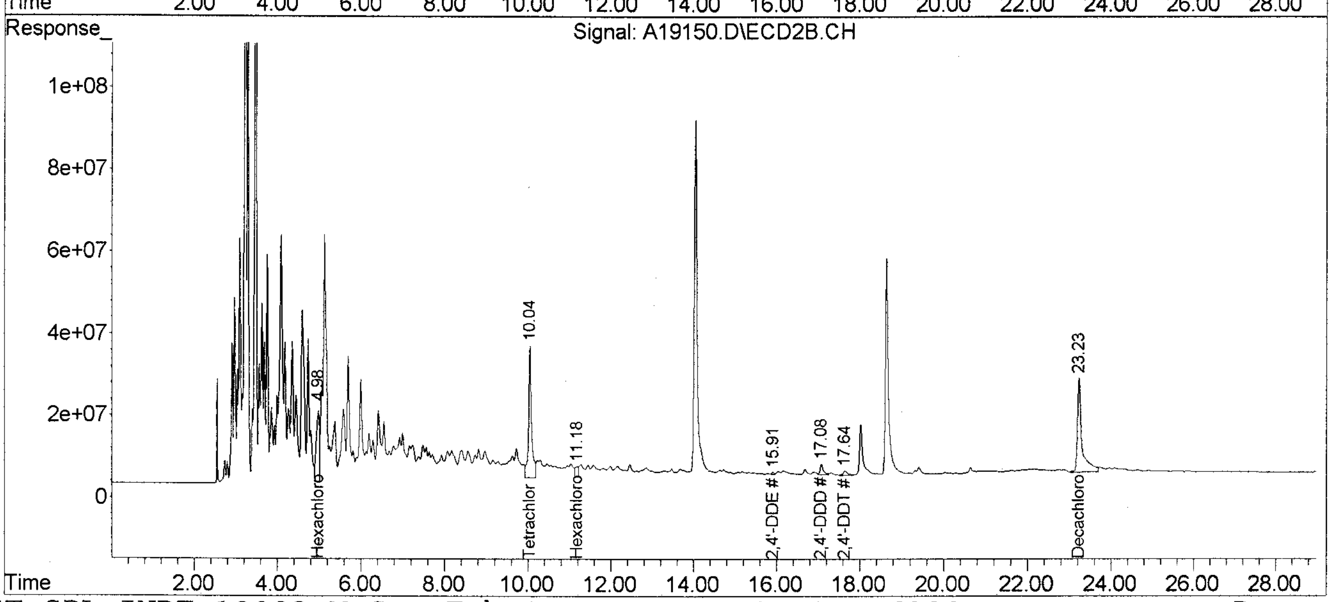
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19150.D(Signal #1)          A19150.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/29/09 02:54 (Signal #1); 09/29/09 03:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ20 (Sig #1); JBQ20 (Sig #2)
Misc      : S-2628.06  60.3G/1.0ML (Sig #1); S-2628.06  60.3G/1.0ML (Sig #2)
ALS Vial  : 74   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 14:41:19 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase   : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info    : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR03

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.03

Sample wt/vol: 5.200 (g/mL) G Lab File ID: A19501

% Moisture: 35 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.15	U
319-85-7	beta-BHC	28	P
319-86-8	delta-BHC	0.15	U
58-89-9	gamma-BHC (Lindane)	11	J
76-44-8	Heptachlor	0.15	U
309-00-2	Aldrin	0.15	U
1024-57-3	Heptachlor epoxide	52	P
959-98-8	Endosulfan I	51	P
60-57-1	Dieldrin	0.15	U
72-55-9	4,4'-DDE	1100	EP
72-20-8	Endrin	0.30	U
33213-65-9	Endosulfan II	0.30	U
72-54-8	4,4'-DDD	23000	E
1031-07-8	Endosulfan sulfate	0.30	U
50-29-3	4,4'-DDT	31000	E
72-43-5	Methoxychlor	1.5	U
53494-70-5	Endrin ketone	0.30	U
7421-93-4	Endrin aldehyde	0.30	U
5103-71-9	alpha-Chlordane	29	P
5103-74-2	gamma-Chlordane	330	EP
8001-35-2	Toxaphene	15	U
53-19-0	2,4'-DDD	16000	E
3424-82-6	2,4'-DDE	400	P
789-02-6	2,4'-DDT	11000	EP
27304-13-8	Oxychlordane	26	J
5103-73-1	cis-Nonachlor	0.30	U
39765-80-5	Trans-Nonachlor	180	P
118-74-1	Hexachlorobenzene	22	JP
87-68-3	Hexachlorobutadiene	110	
29082-74-4	Octachlorostyrene	8.4	JP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19501.D(Signal #1) A19501.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 17:18 (Signal #1); 10/14/09 17:54 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR03 (Sig #1); JBR03 (Sig #2)
Misc : S-2713.03 5.2G/5.0ML (Sig #1); S-2713.03 5.2G/5.0ML (Sig #2)
ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 13:48:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	9.51	10.06	2062.2E6	1840.7E6	62.606	61.590	
	Spiked Amount 60.000				Recovery =	104.34%	102.65%	
22) S	Decachlorobiphen	23.55	23.29	4944.5E6	4236.7E6	133.752	156.010	
	Spiked Amount 120.000				Recovery =	111.46%	130.01%	
	Target Compounds							
3)	Gamma-BHC (Linda	12.20	12.52	195.3E6	181.2E6	3.739	4.245	
4)	Beta-BHC	12.47	12.83	194.9E6	222.0E6	9.519	12.487	#
8)	Heptachlor Epoxi	15.46	15.94	709.1E6	4954.6E6	17.528	147.639	#
9)	Gamma-Chlordane	15.88	16.28	4591.3E6	6427.9E6	111.662	180.688	#
10)	Alpha-Chlordane	16.29	16.61	966.7E6	308.5E6	24.901	9.889	#
11)	Endosulfan I	16.38	16.92	6285.8E6	658.6E6	170.425	17.284	#
12)	4,4'-DDE	16.59	16.73	13646.5E6	13784.2E6	364.496	471.439	#
15)	4,4'-DDD	17.82	18.11	275542.9E6	195862.1E6	9433.229	7661.654	
17)	4,4'-DDT	18.50	18.75	321735.0E6	310175.3E6	10617.425	11144.47 5	

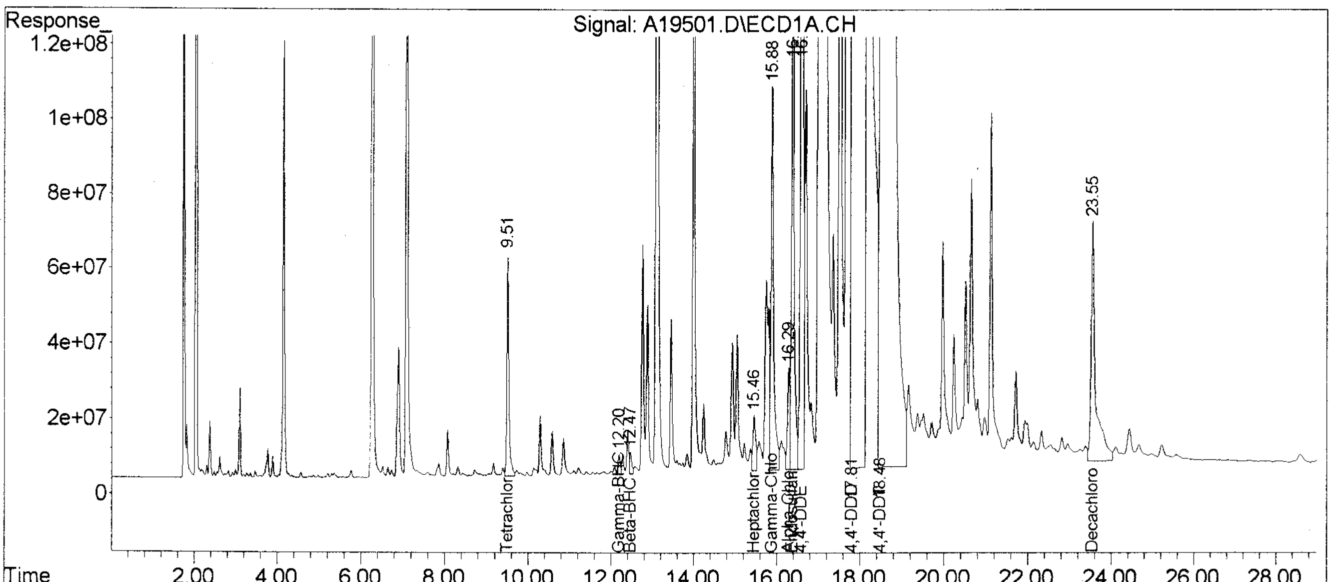
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

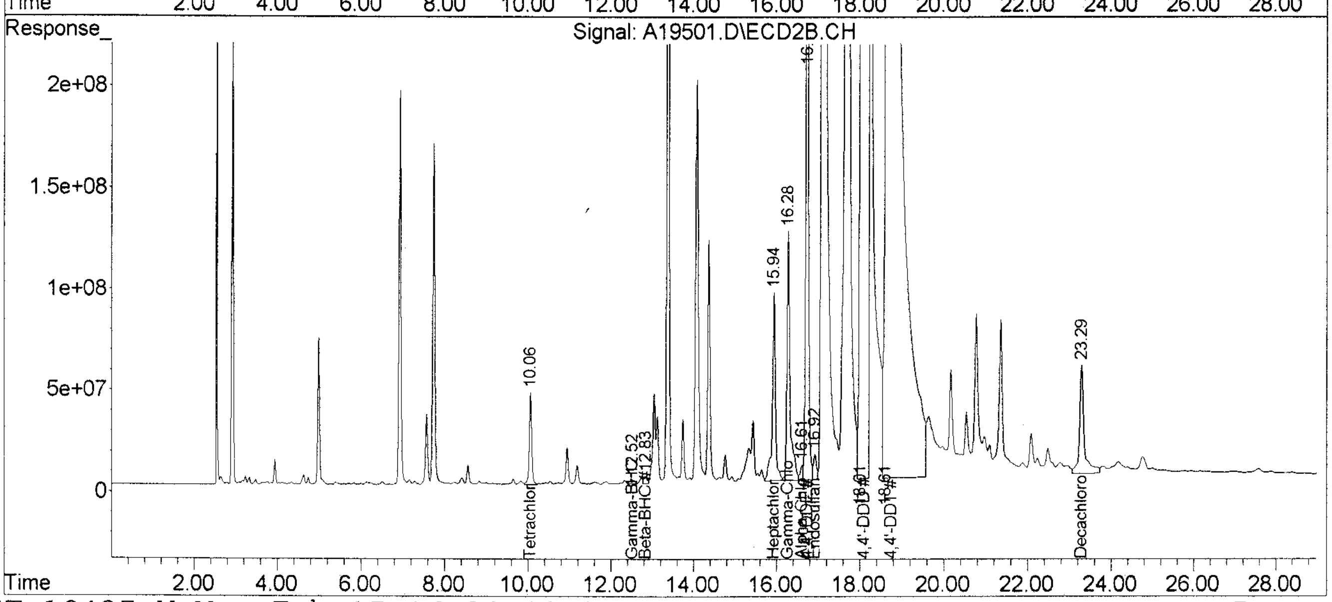
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19501.D(Signal #1)          A19501.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On     : 10/14/09 17:18 (Signal #1); 10/14/09 17:54 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR03 (Sig #1); JBR03 (Sig #2)
Misc       : S-2713.03  5.2G/5.0ML (Sig #1); S-2713.03  5.2G/5.0ML (Sig #2)
ALS Vial   : 12   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 13:48:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19501.D(Signal #1) A19501.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 17:18 (Signal #1); 10/14/09 17:54 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR03 (Sig #1); JBR03 (Sig #2)
Misc : S-2713.03 5.2G/5.0ML (Sig #1); S-2713.03 5.2G/5.0ML (Sig #2)
ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:54:48 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	9.51	10.06	2062.3E6	1840.9E6	47.271	47.162	
	Spiked Amount 60.000				Recovery =	78.79%	78.60%	
11) S	Decachlorobiphen	23.55	23.29	5406.0E6	4991.1E6	129.207	158.936	
	Spiked Amount 120.000				Recovery =	107.67%	132.45%	
	Target Compounds							
2)	Hexachlorobutadi	4.15	4.99	2951.3E6	2163.0E6	40.143	38.381	
3)	Hexachlorobenzen	10.85	11.18	412.3E6	452.2E6	7.599	9.973	#
4)	Octachlorostyren	14.78	14.92	669.3E6	163.7E6	9.801	2.836	#
5)	Oxychlordane	15.22	15.64	380.3E6	298.9E6	8.703	9.170	
6)	2,4'-DDE	15.88	15.94	4658.6E6	5129.1E6	134.995	172.906	#
7)	Trans-Nonachlor	16.11	16.61	587.1E6	357.9E6	79.070	62.368	
8)	2,4'-DDD	17.05	17.13	149293.1E6	139899.2E6	5429.904	6290.315	
9)	2,4'-DDT	17.69	17.70	116905.8E6	131251.2E6	3703.475	4807.135	
#								

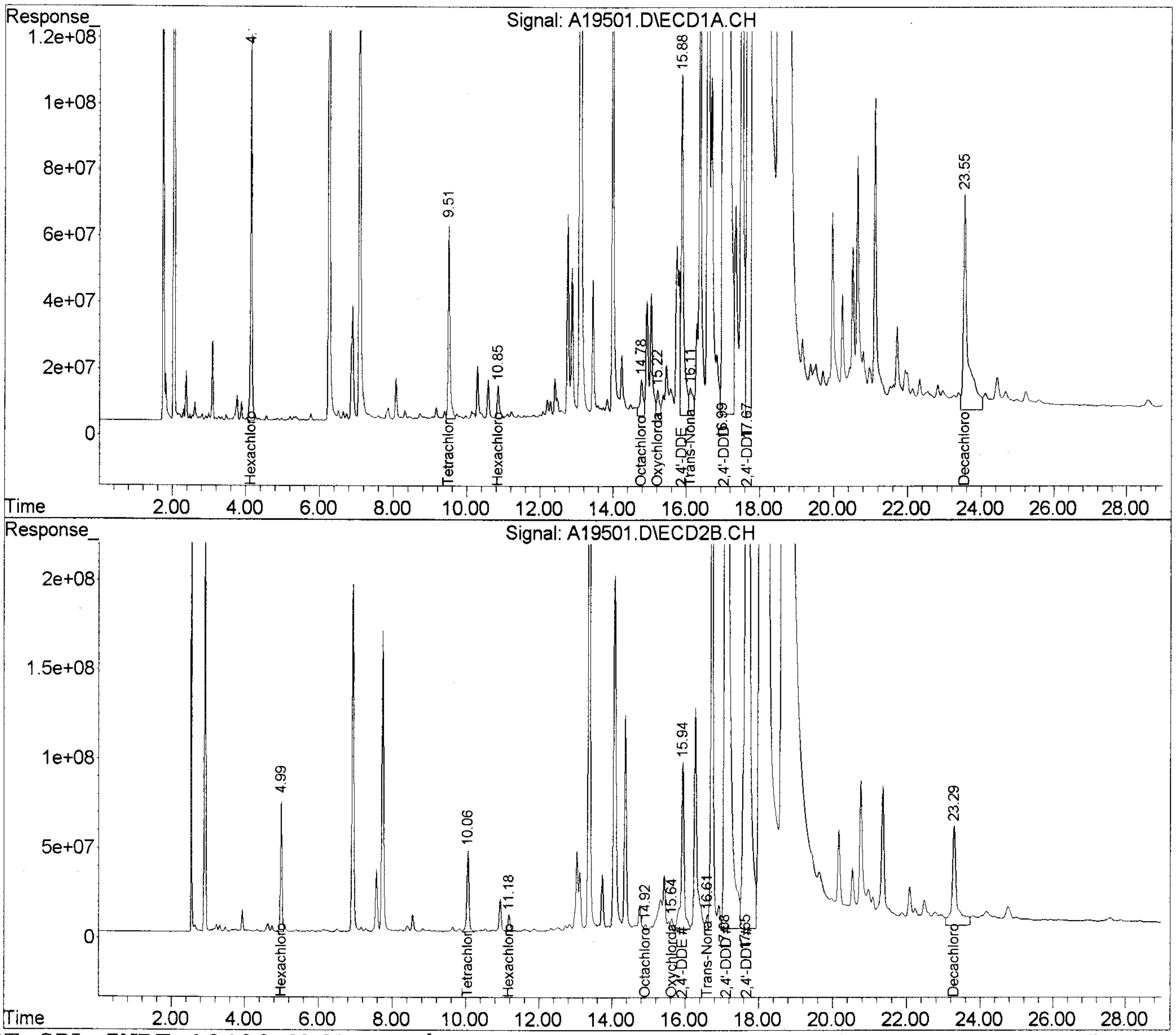
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19501.D(Signal #1)          A19501.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On      : 10/14/09 17:18 (Signal #1); 10/14/09 17:54 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBR03 (Sig #1); JBR03 (Sig #2)
Misc        : S-2713.03  5.2G/5.0ML (Sig #1); S-2713.03  5.2G/5.0ML (Sig #2)
ALS Vial    : 12   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:54:48 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR03DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.03DL

Sample wt/vol: 5.200 (g/mL) G Lab File ID: A19503

% Moisture: 35 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	15	U
72-55-9	4,4'-DDE	15	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	37000	DP
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	86000	DE
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	1500	U
53-19-0	2,4'-DDD	29000	D
3424-82-6	2,4'-DDE	30	U
789-02-6	2,4'-DDT	11000	DP
27304-13-8	Oxychlordane	30	U
5103-73-1	cis-Nonachlor	30	U
39765-80-5	Trans-Nonachlor	30	U
118-74-1	Hexachlorobenzene	30	U
87-68-3	Hexachlorobutadiene	30	U
29082-74-4	Octachlorostyrene	30	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19503.D(Signal #1)          A19503.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/14/09 18:33 (Signal #1); 10/14/09 19:10 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR03DL 100X (Sig #1); JBR03DL 100X (Sig #2)
Misc      : S-2713.03DL 5.2G/5.0ML (Sig #1); S-2713.03DL 5.2G/5.0ML (Sig #2)
ALS Vial  : 14   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:19:57 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
	Target Compounds							
15)	4,4'-DDD	17.85	18.06	3622.8E6	5375.8E6	124.028	210.288	#
17)	4,4'-DDT	18.53	18.68	8834.3E6	9627.2E6	291.535	345.901	

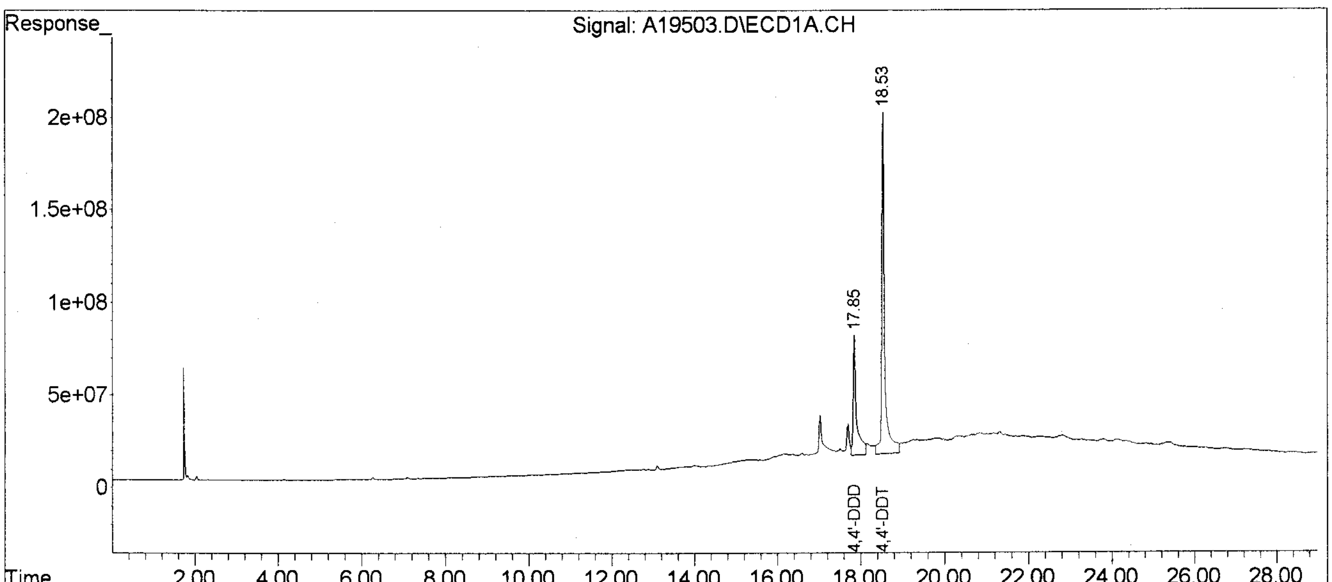
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

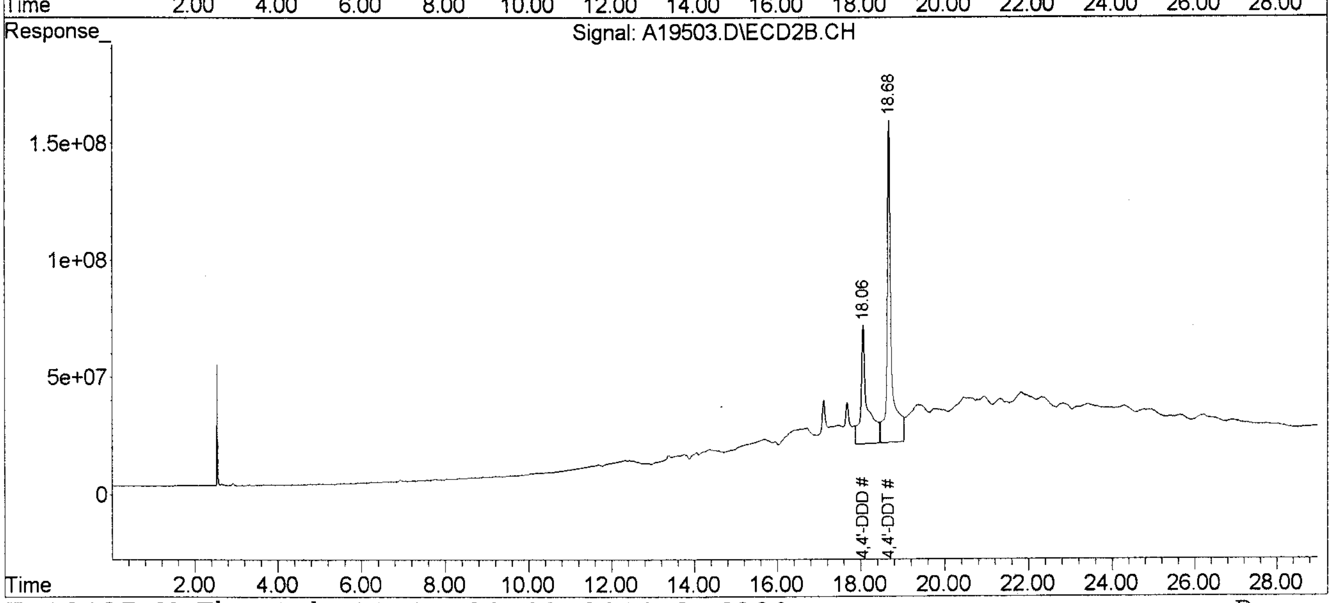
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19503.D(Signal #1)          A19503.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/14/09 18:33 (Signal #1); 10/14/09 19:10 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR03DL 100X (Sig #1); JBR03DL 100X (Sig #2)
Misc      : S-2713.03DL 5.2G/5.0ML (Sig #1); S-2713.03DL 5.2G/5.0ML (Sig #2)
ALS Vial  : 14   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:19:57 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19503.D(Signal #1) A19503.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 18:33 (Signal #1); 10/14/09 19:10 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR03DL 100X (Sig #1); JBR03DL 100X (Sig #2)
Misc : S-2713.03DL 5.2G/5.0ML (Sig #1); S-2713.03DL 5.2G/5.0ML (Sig #2)
ALS Vial : 14 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:21:23 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
8)	2,4'-DDD	17.02	17.11	2876.4E6	2200.6E6	104.616	98.946
9)	2,4'-DDT	17.70	17.68	1217.9E6	1998.4E6	38.583	73.191 #

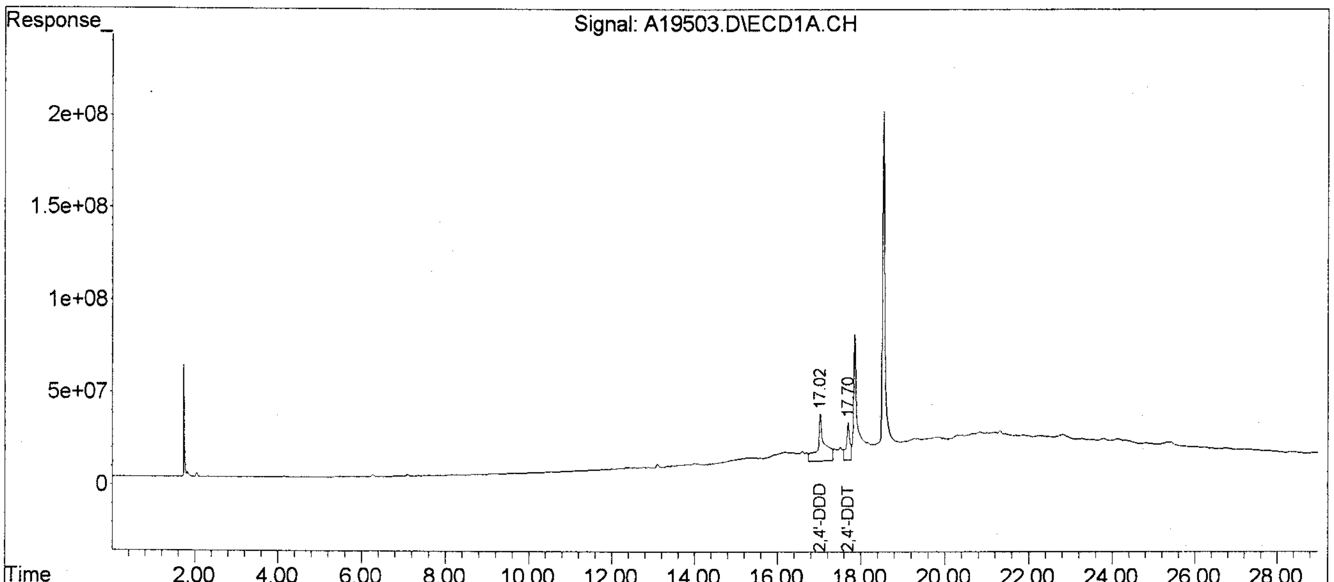
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

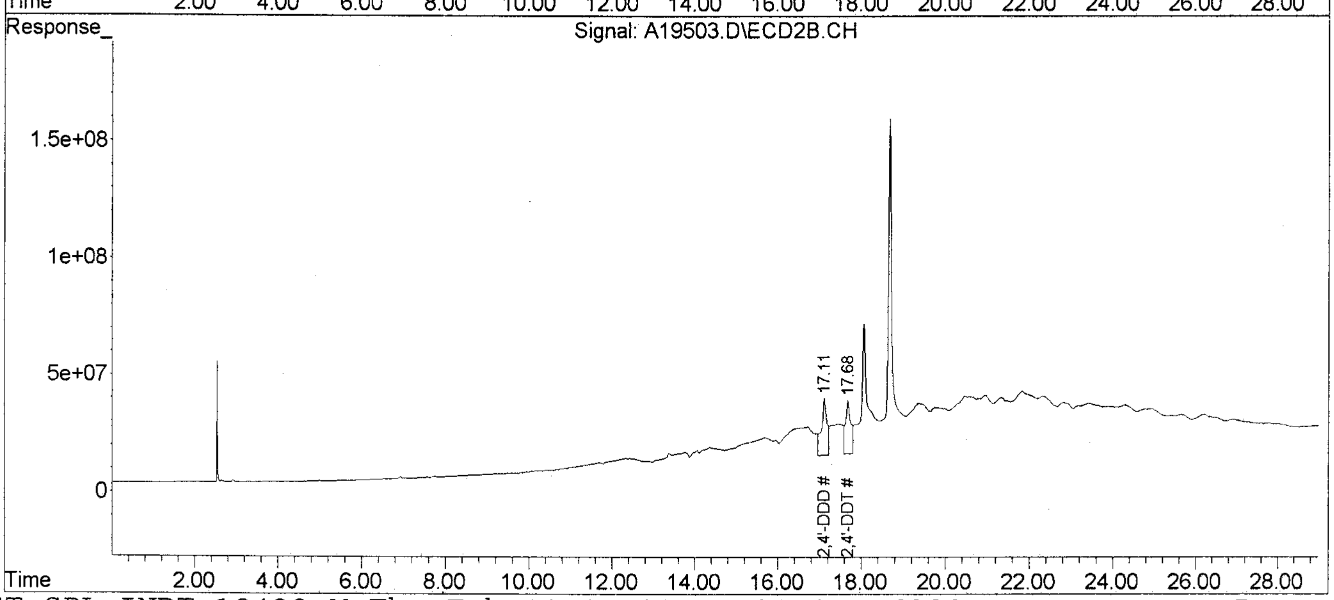
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19503.D(Signal #1)           A19503.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 10/14/09 18:33 (Signal #1); 10/14/09 19:10 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR03DL 100X (Sig #1); JBR03DL 100X (Sig #2)
Misc       : S-2713.03DL 5.2G/5.0ML (Sig #1); S-2713.03DL 5.2G/5.0ML (Sig #2)
ALS Vial   : 14   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:21:23 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D  Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR03DL2

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.03DL2

Sample wt/vol: 5.200 (g/mL) G Lab File ID: A19510

% Moisture: 35 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1000.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	150	U
319-85-7	beta-BHC	150	U
319-86-8	delta-BHC	150	U
58-89-9	gamma-BHC (Lindane)	150	U
76-44-8	Heptachlor	150	U
309-00-2	Aldrin	150	U
1024-57-3	Heptachlor epoxide	150	U
959-98-8	Endosulfan I	150	U
60-57-1	Dieldrin	150	U
72-55-9	4,4'-DDE	150	U
72-20-8	Endrin	300	U
33213-65-9	Endosulfan II	300	U
72-54-8	4,4'-DDD	37000	DP
1031-07-8	Endosulfan sulfate	300	U
50-29-3	4,4'-DDT	93000	DP
72-43-5	Methoxychlor	1500	U
53494-70-5	Endrin ketone	300	U
7421-93-4	Endrin aldehyde	300	U
5103-71-9	alpha-Chlordane	150	U
5103-74-2	gamma-Chlordane	150	U
8001-35-2	Toxaphene	15000	U
53-19-0	2,4'-DDD	15000	DJP
3424-82-6	2,4'-DDE	300	U
789-02-6	2,4'-DDT	8000	DJP
27304-13-8	Oxychlordane	300	U
5103-73-1	cis-Nonachlor	300	U
39765-80-5	Trans-Nonachlor	300	U
118-74-1	Hexachlorobenzene	300	U
87-68-3	Hexachlorobutadiene	300	U
29082-74-4	Octachlorostyrene	300	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19510.D(Signal #1) A19510.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 00:03 (Signal #1); 10/15/09 00:40 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR03DL2 1000X (Sig #1); JBR03DL2 1000X (Sig #2)
Misc : S-2713.03DL2 5.2G/5.0ML (Sig #1); S-2713.03DL2 5.2G/5.0ML (Sig #2)
ALS Vial : 23 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 14:43:15 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
15)	4,4'-DDD	17.84	18.06	592.0E6	318.6E6	20.268	12.465 #
17)	4,4'-DDT	18.53	18.68	1304.6E6	874.2E6	43.051	31.408 #

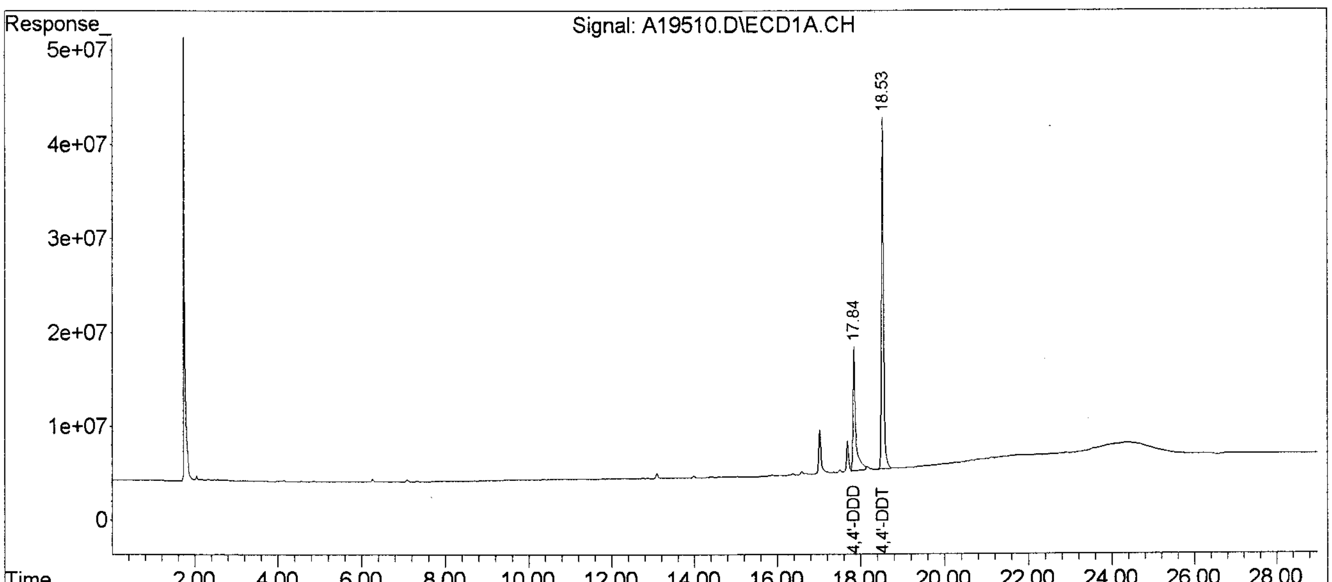
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

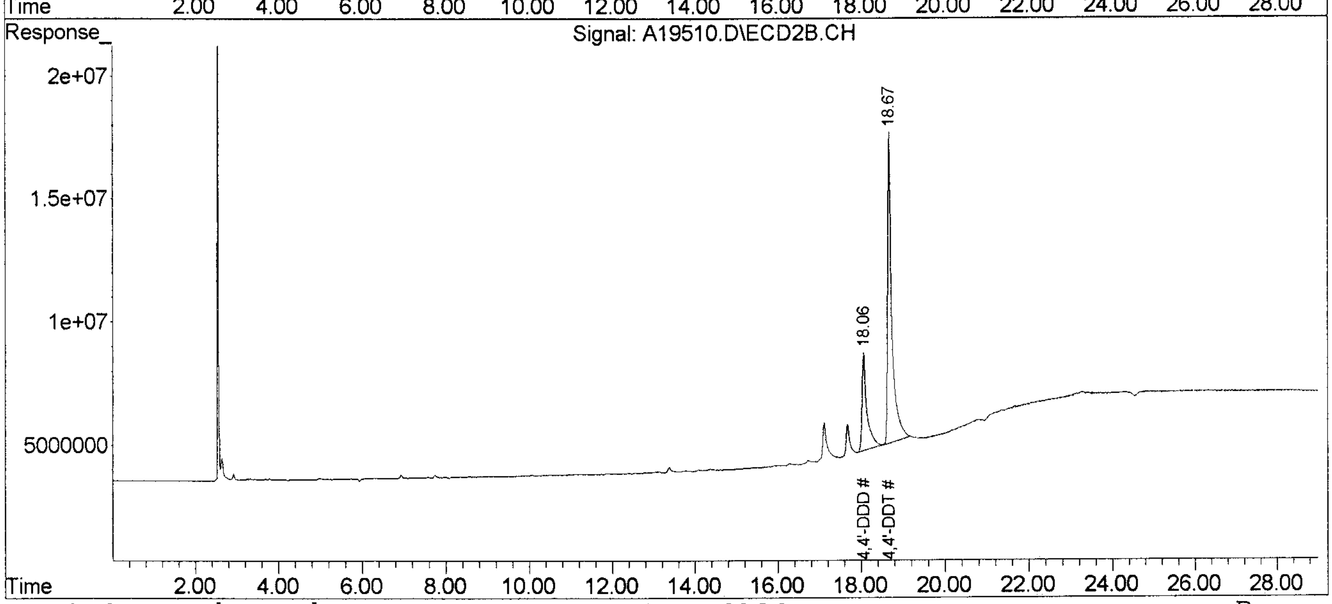
Quantitation Report   (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19510.D(Signal #1)   A19510.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1)   A-6890B(Signal # 2)
Acq On : 10/15/09 00:03 (Signal #1); 10/15/09 00:40 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR03DL2 1000X (Sig #1); JBR03DL2 1000X (Sig #2)
Misc : S-2713.03DL2 5.2G/5.0ML (Sig #1); S-2713.03DL2 5.2G/5.0ML (Sig #2
ALS Vial : 23 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 14:43:15 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2   Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19510.D(Signal #1)           A19510.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 10/15/09 00:03 (Signal #1); 10/15/09 00:40 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR03DL2 1000X (Sig #1); JBR03DL2 1000X (Sig #2)
Misc       : S-2713.03DL2 5.2G/5.0ML (Sig #1); S-2713.03DL2 5.2G/5.0ML (Sig #2)
ALS Vial   : 23   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 14:46:38 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
8)	2,4'-DDD	17.02	17.11	186.8E6	112.8E6	6.794	5.071 #
9)	2,4'-DDT	17.69	17.68	113.6E6	73932061	3.599	2.708

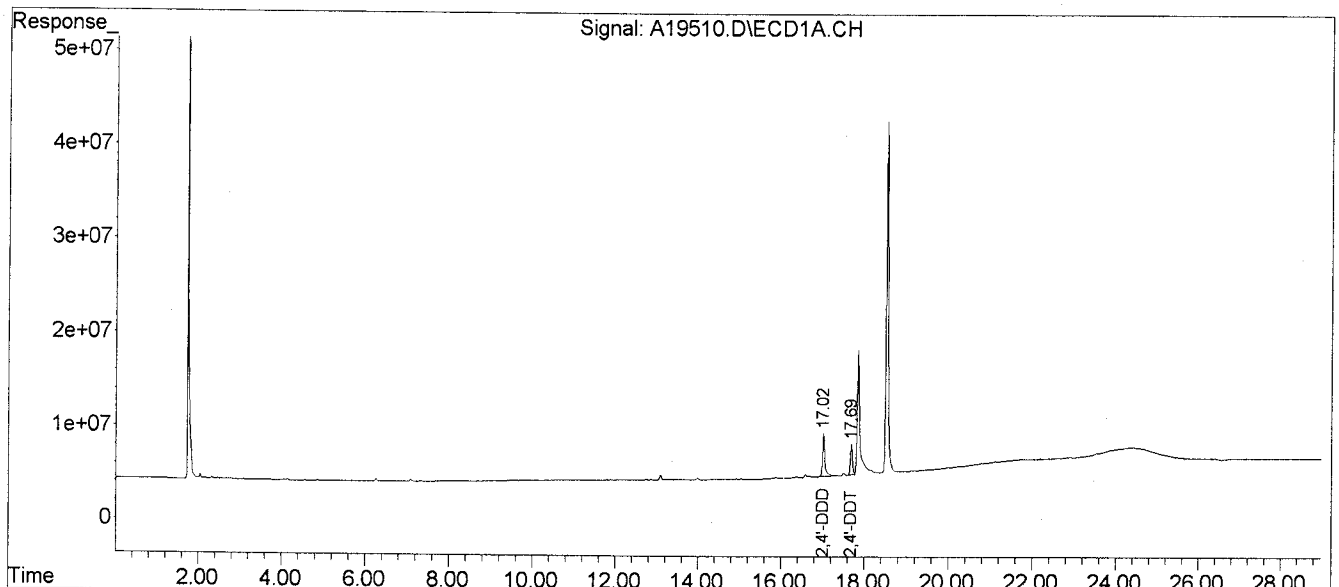
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

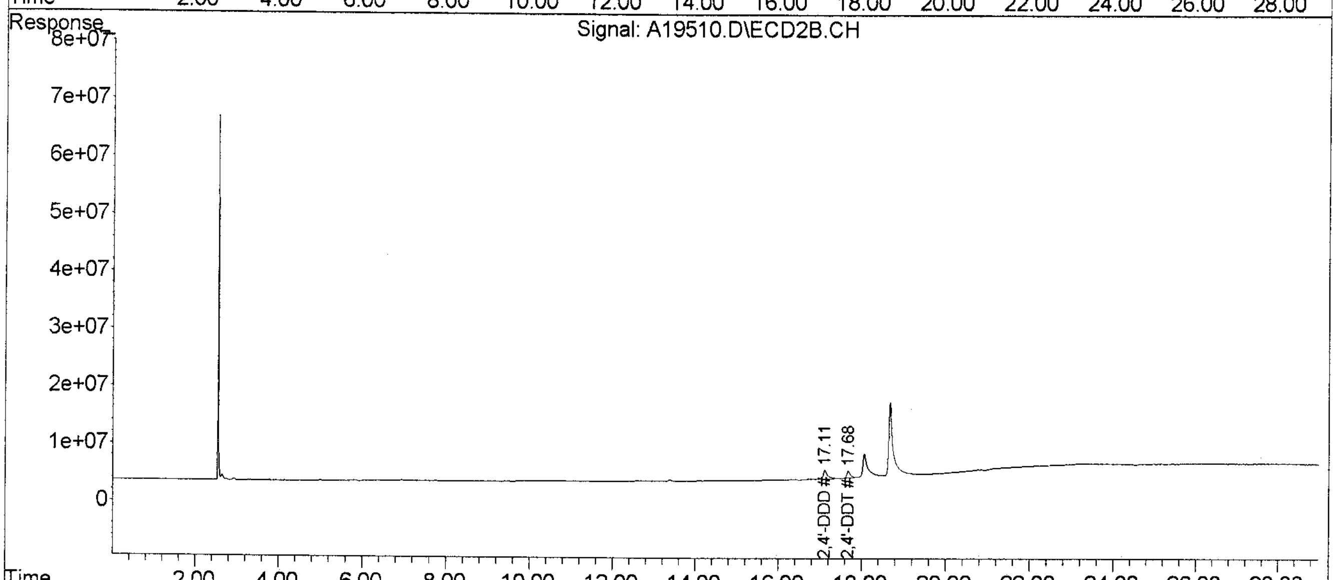
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19510.D(Signal #1)          A19510.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/15/09 00:03 (Signal #1); 10/15/09 00:40 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR03DL2 1000X (Sig #1); JBR03DL2 1000X (Sig #2)
Misc      : S-2713.03DL2 5.2G/5.0ML (Sig #1); S-2713.03DL2 5.2G/5.0ML (Sig #2
ALS Vial  : 23   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 14:46:38 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JBR07

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.04

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19502

% Moisture: 41 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.17	U
319-85-7	beta-BHC	320	P
319-86-8	delta-BHC	0.17	U
58-89-9	gamma-BHC (Lindane)	75	P
76-44-8	Heptachlor	0.17	U
309-00-2	Aldrin	0.17	U
1024-57-3	Heptachlor epoxide	480	EP
959-98-8	Endosulfan I	1200	EP
60-57-1	Dieldrin	0.17	U
72-55-9	4,4'-DDE	2200	EP
72-20-8	Endrin	0.33	U
33213-65-9	Endosulfan II	0.33	U
72-54-8	4,4'-DDD	34000	E
1031-07-8	Endosulfan sulfate	0.33	U
50-29-3	4,4'-DDT	37000	E
72-43-5	Methoxychlor	2600	P
53494-70-5	Endrin ketone	0.33	U
7421-93-4	Endrin aldehyde	0.33	U
5103-71-9	alpha-Chlordane	0.17	U
5103-74-2	gamma-Chlordane	0.17	U
8001-35-2	Toxaphene	17	U
53-19-0	2,4'-DDD	22000	E
3424-82-6	2,4'-DDE	810	E
789-02-6	2,4'-DDT	9600	EP
27304-13-8	Oxychlordane	320	
5103-73-1	cis-Nonachlor	0.33	U
39765-80-5	Trans-Nonachlor	0.33	U
118-74-1	Hexachlorobenzene	380	
87-68-3	Hexachlorobutadiene	110	P
29082-74-4	Octachlorostyrene	0.33	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1) A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07 (Sig #1); JBR07 (Sig #2)
Misc : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial : 13 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 13:19:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	9.50	10.06	3527.7E6	2825.2E6	107.097	94.528
Spiked Amount 60.000			Recovery	=	178.49%	157.55%
22) S Decachlorobiphen	23.55	23.29	18918.5E6	12437.9E6	511.753m	458.008m
Spiked Amount 120.000			Recovery	=	426.46%	381.67%
Target Compounds						
3) Gamma-BHC (Linda	12.21	12.51	1176.5E6	4275.4E6	22.528	100.192 #
4) Beta-BHC	12.51	12.77	1961.8E6	2862.2E6	95.833	160.989 #
8) Heptachlor Epoxi	15.48	15.94	5895.9E6	9002.4E6	145.730	268.254 #
11) Endosulfan I	16.38	16.92	13514.5E6	27212.2E6	366.414	714.173 #
12) 4,4'-DDE	16.61	16.73	54899.0E6	19066.9E6	1466.344	652.116 #
15) 4,4'-DDD	17.82	18.12	319559.4E6	258263.7E6	10940.137	10102.651
17) 4,4'-DDT	18.65	18.75	365457.8E6	310633.9E6	12060.299	11160.953
20) Methoxychlor	20.07	19.80	17360.9E6	10728.5E6	1044.049	773.705 #

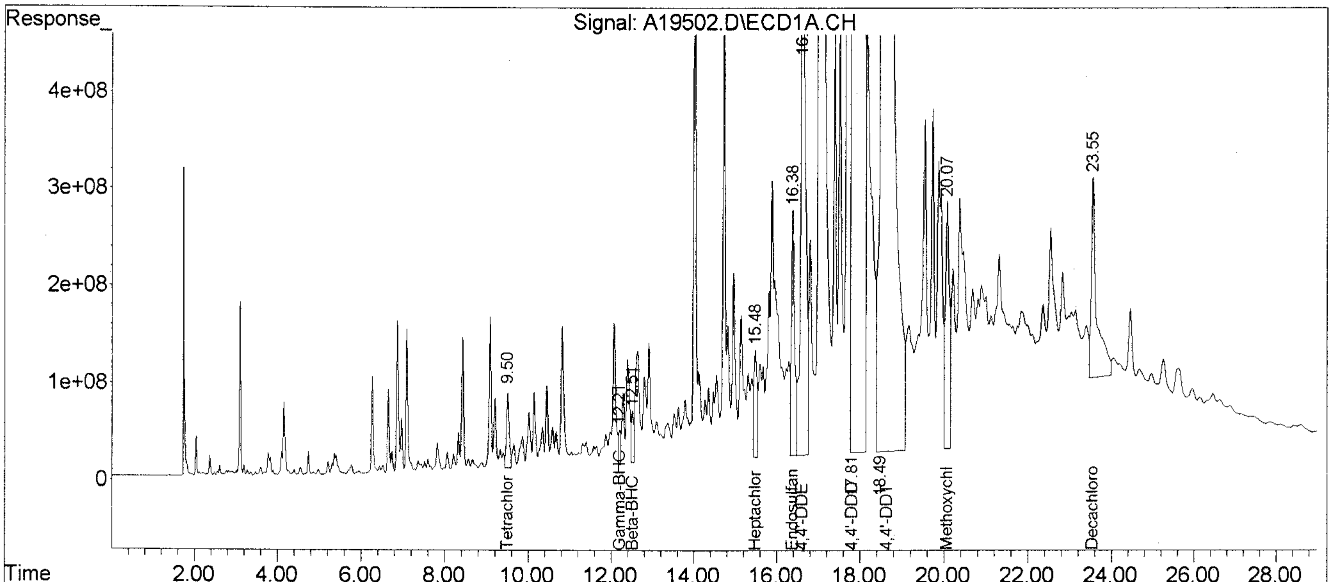
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

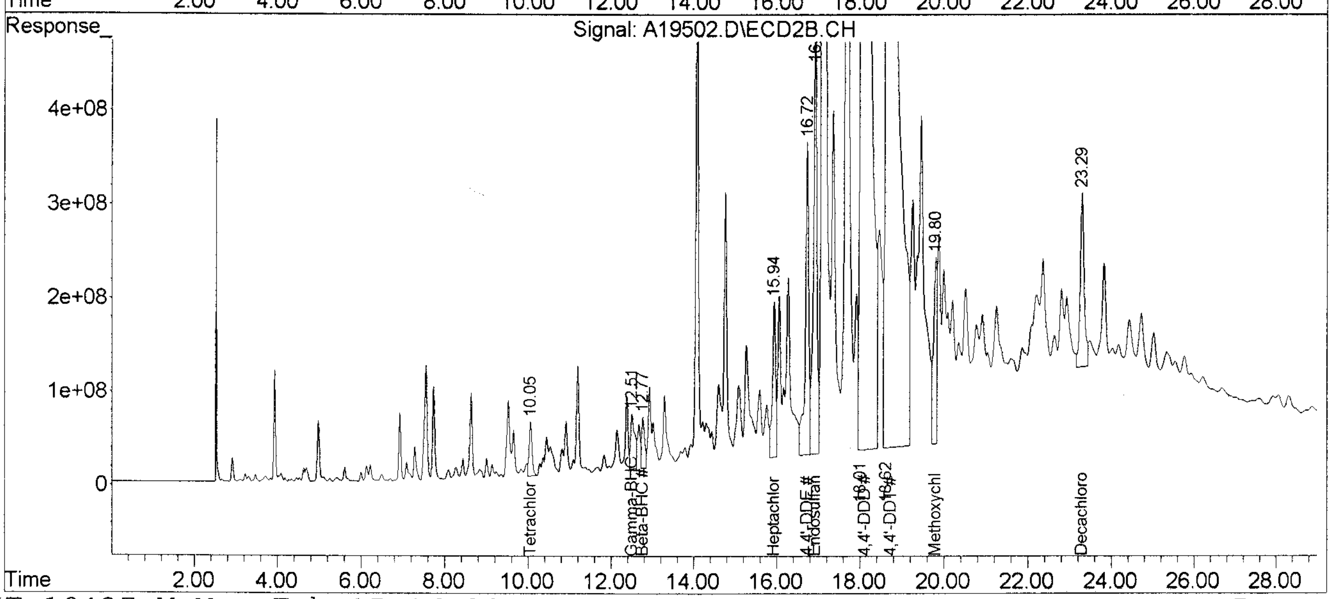
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1)           A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07 (Sig #1); JBR07 (Sig #2)
Misc      : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial  : 13   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 13:19:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D  Signal #2 Info : 30mLn, 0.53mm  I.D.
```



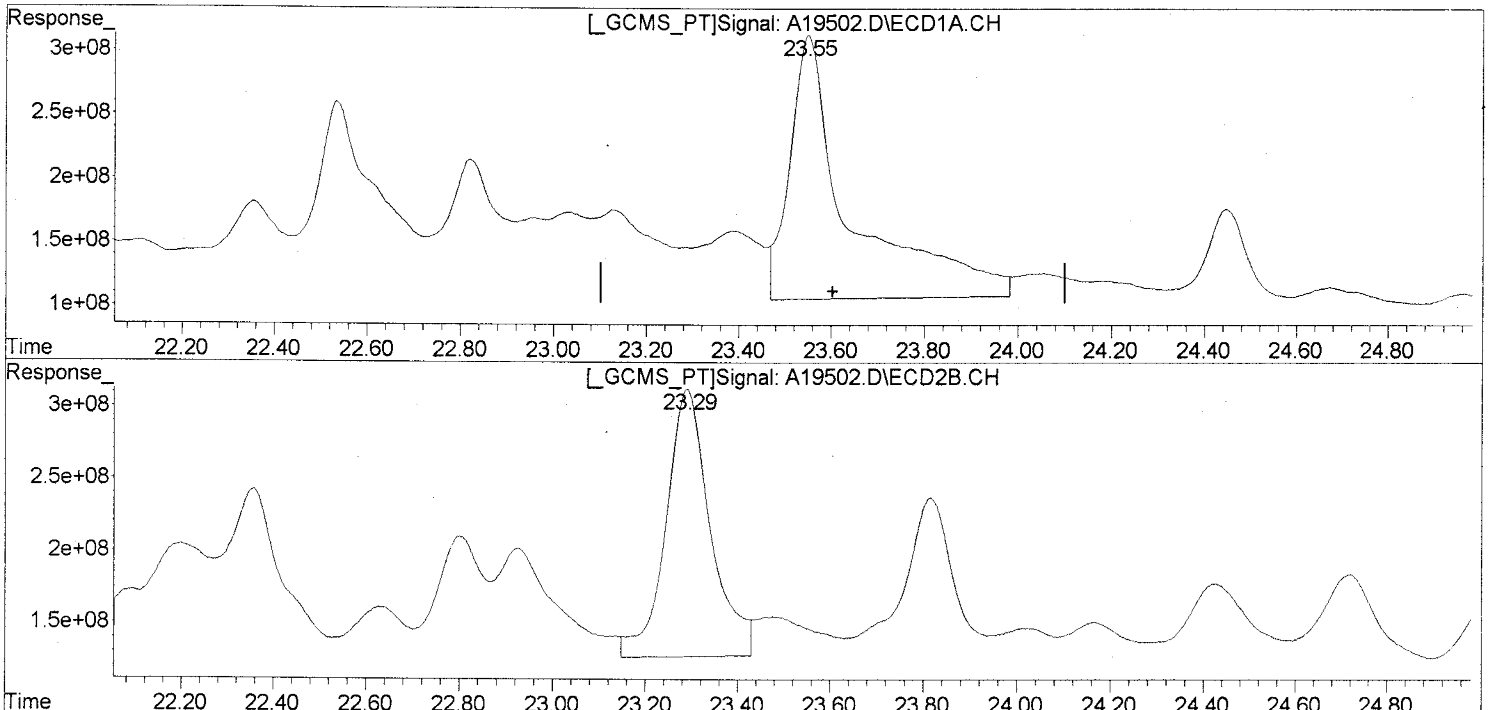


Quantitation Report (Qedit)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1)           A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07 (Sig #1); JBR07 (Sig #2)
Misc      : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial  : 13   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 13:19:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



QEdit

(22) Decachlorobiphenyl (S)
23.55min 511.753ng/mL m
response 18918524513

(22) Decachlorobiphenyl #2 (S)
23.29min 458.008ng/mL m
response 12437858202

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1) A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07 (Sig #1); JBR07 (Sig #2)
Misc : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial : 13 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:31:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	3527.7E6	2825.2E6	80.863	72.379
	Spiked Amount 60.000			Recovery	=	134.77%	120.63%
11) S	Decachlorobiphen	23.55	23.29	19920.6E6	11419.5E6	476.114m	363.643m
	Spiked Amount 120.000			Recovery	=	396.76%	303.04%
	Target Compounds						
2)	Hexachlorobutadi	4.15	4.98	2373.5E6	2377.7E6	32.285	42.191 #
3)	Hexachlorobenzen	10.81	11.19	6983.0E6	5215.0E6	128.709	115.018
5)	Oxychlordane	15.31	15.76	4258.0E6	3823.4E6	97.457	117.302
6)	2,4'-DDE	15.88	15.94	8375.1E6	9002.4E6	242.688m	303.475 #
8)	2,4'-DDD	17.01	17.14	183812.9E6	153238.0E6	6685.417	6890.068
9)	2,4'-DDT	17.70	17.68	91601.0E6	103687.4E6	2901.839	3797.597 #

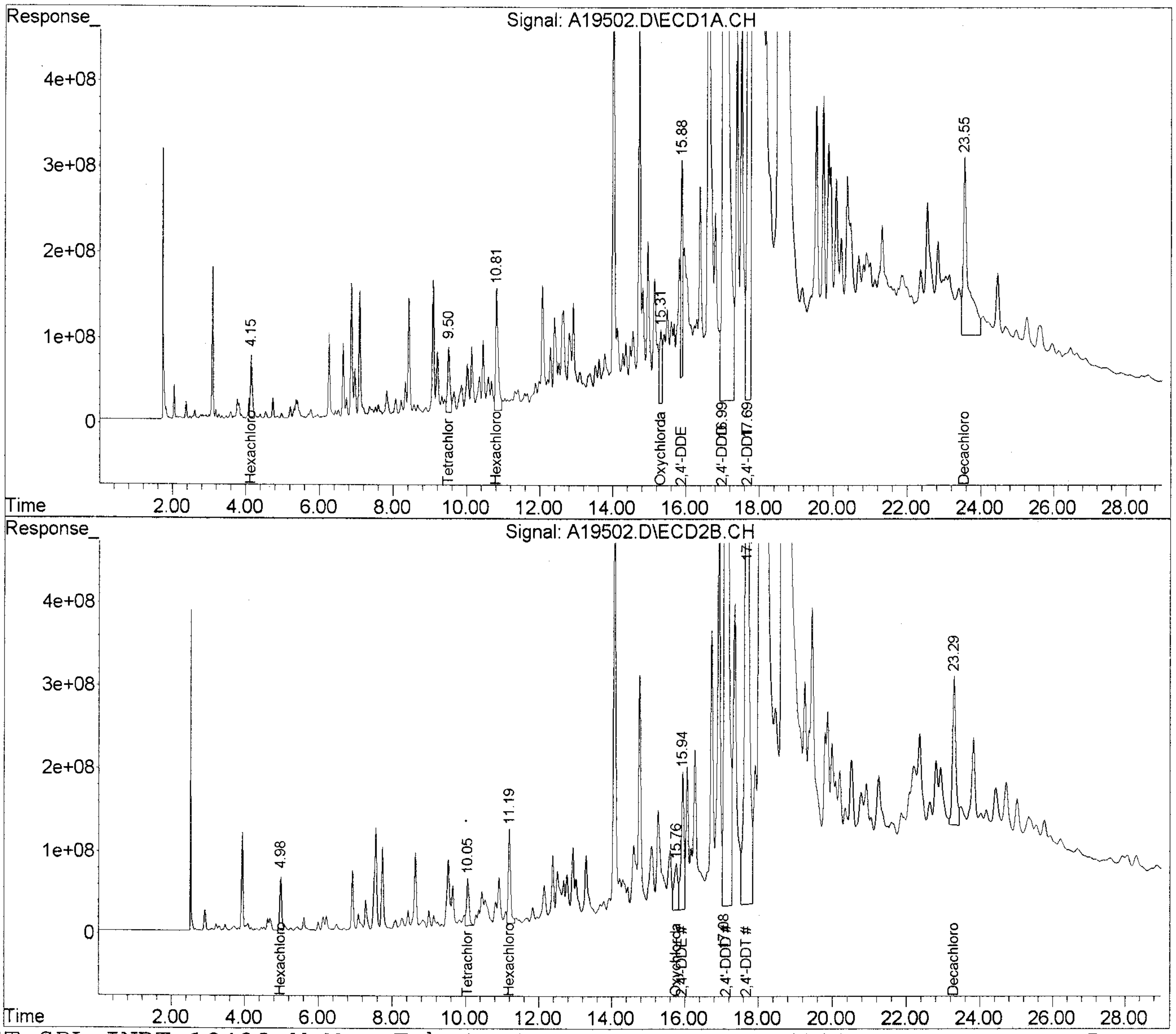
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19502.D(Signal #1)            A19502.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On     : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR07 (Sig #1); JBR07 (Sig #2)
Misc       : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial   : 13   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:31:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

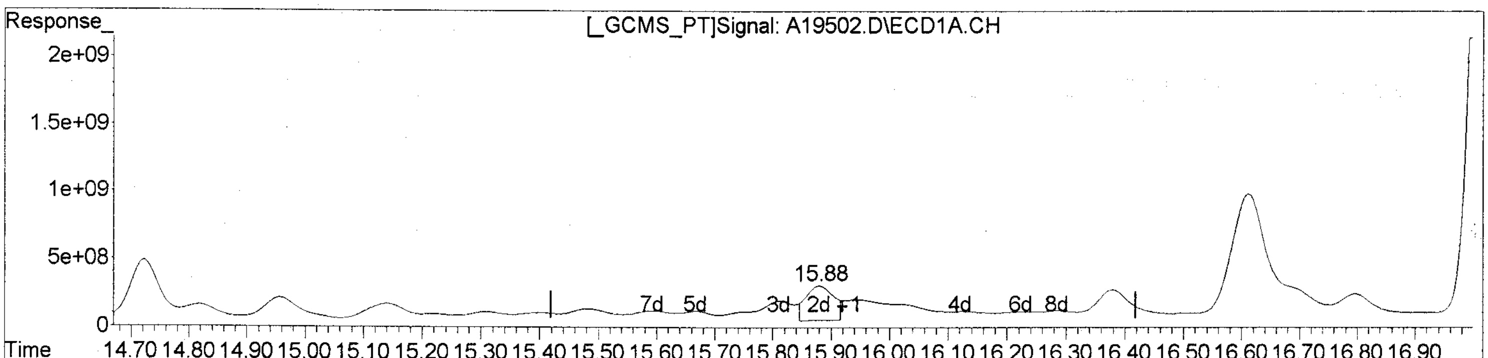


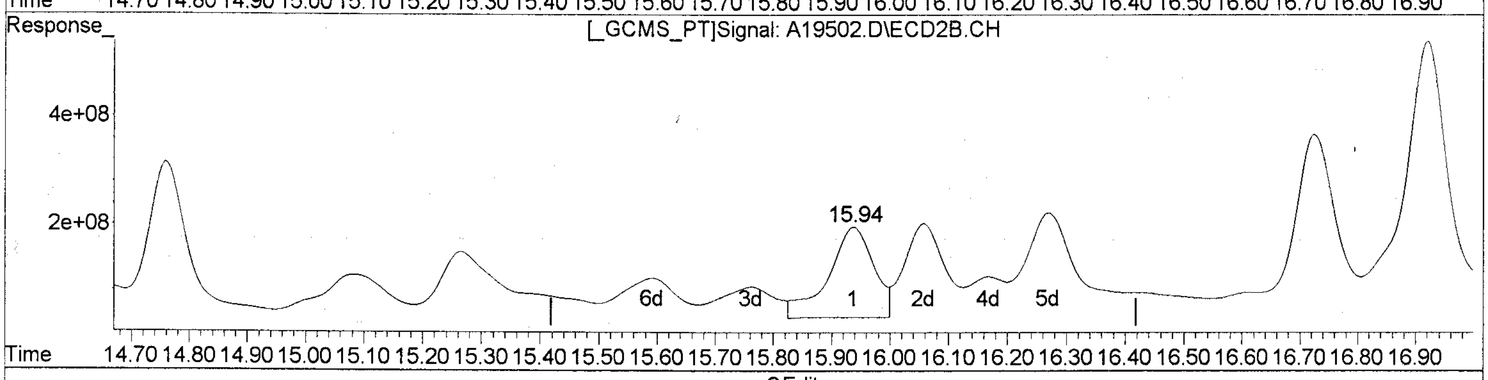
Quantitation Report (Qedit)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1)          A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07 (Sig #1); JBR07 (Sig #2)
Misc      : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial  : 13   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:21:32 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





QEdit

(6) 2,4'-DDE
15.88min 242.688ng/mL m
response 8375095027

(6) 2,4'-DDE #2
15.94min 303.475ng/mL
response 9002354474

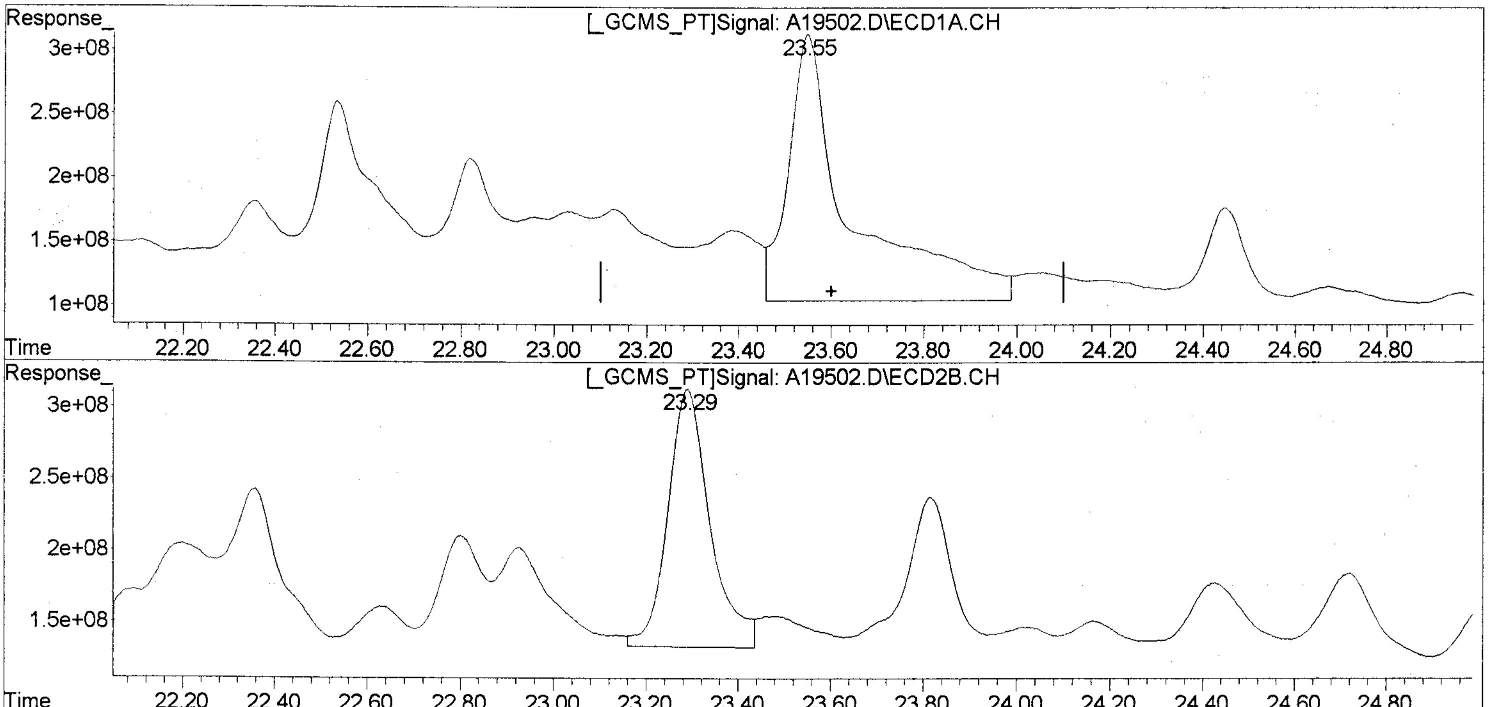
(+) = Expected Retention Time

Quantitation Report (Qedit)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19502.D(Signal #1)          A19502.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/14/09 17:54 (Signal #1); 10/14/09 18:33 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07 (Sig #1); JBR07 (Sig #2)
Misc      : S-2713.04 5.1G/5.0ML (Sig #1); S-2713.04 5.1G/5.0ML (Sig #2)
ALS Vial  : 13   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 13:21:32 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2        Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



QEdit

(11) Decachlorobiphenyl (S)
23.55min 476.114ng/mL m
response 19920594231

(11) Decachlorobiphenyl #2 (S)
23.29min 363.643ng/mL m
response 11419464449

(+) = Expected Retention Time

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR07DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.04DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19504

% Moisture: 41 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	650	DJP
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	950	DJP
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	67000	DE
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	97000	DE
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
53-19-0	2,4'-DDD	22000	D
3424-82-6	2,4'-DDE	300	DJP
789-02-6	2,4'-DDT	6000	DP
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	33	U
29082-74-4	Octachlorostyrene	33	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1) A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc : S-2713.04DL 5.1G/5.0ML (Sig #1); S-2713.04DL 5.1G/5.0ML (Sig #2)
ALS Vial : 15 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:28:37 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	26414208	26370208	0.802	0.882
	Spiked Amount 60.000			Recovery	=	1.34%	1.47%
22) S	Decachlorobiphen	23.55	23.29	139.4E6	601.8E6	3.772	22.159m#
	Spiked Amount 120.000			Recovery	=	3.14%	18.47%
	Target Compounds						
11)	Endosulfan I	16.38	16.92	72682341	231.2E6	1.971	6.067 #
12)	4,4'-DDE	16.61	16.73	339.4E6	83511523	9.066	2.856m#
15)	4,4'-DDD	17.85	18.06	7350.8E6	5178.9E6	251.654	202.586
17)	4,4'-DDT	18.54	18.68	9848.5E6	8088.9E6	325.004	290.630

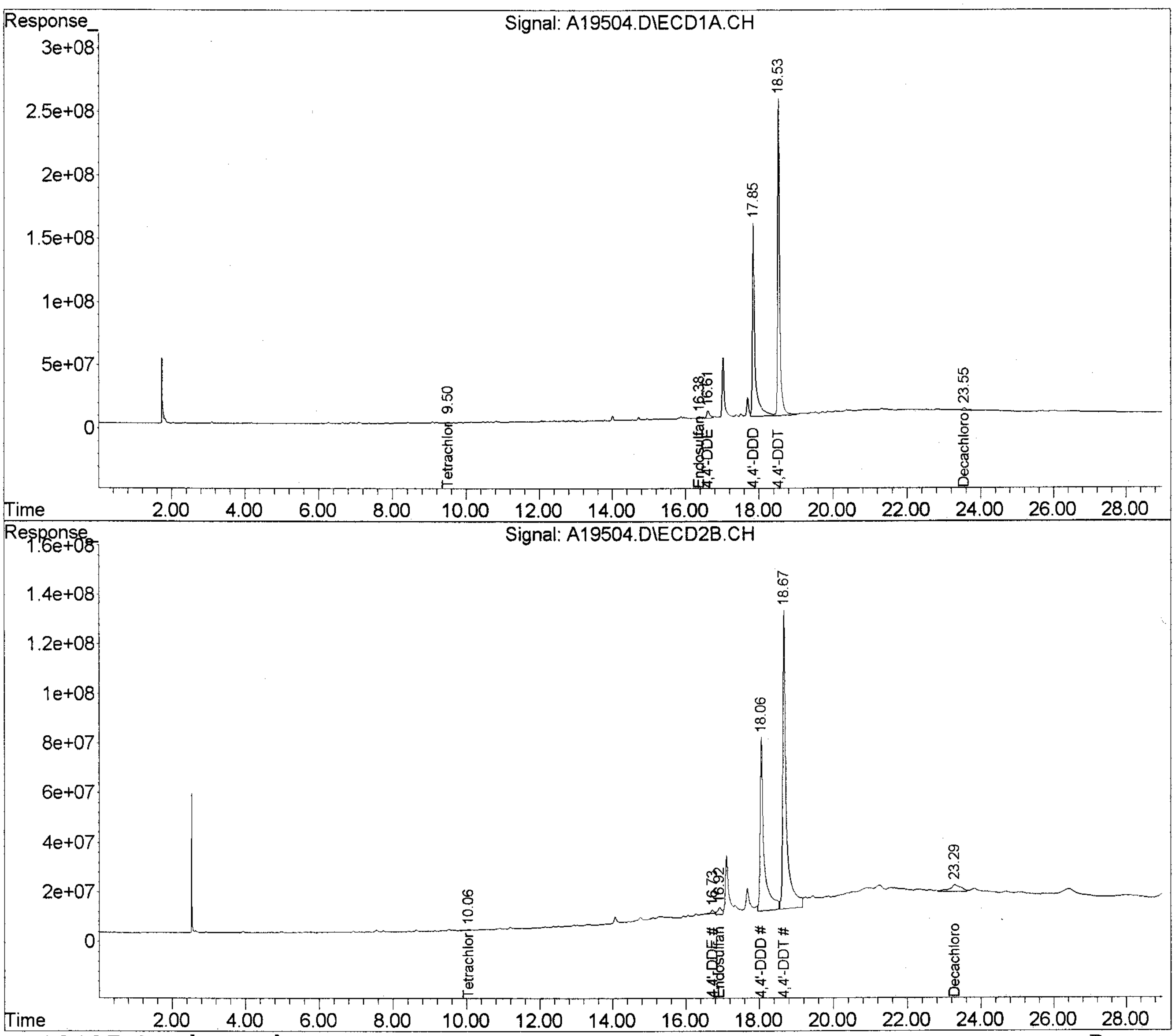
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1) A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc : S-2713.04DL 5.1G/5.0ML (Sig #1); S-2713.04DL 5.1G/5.0ML (Sig #2
ALS Vial : 15 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:28:37 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

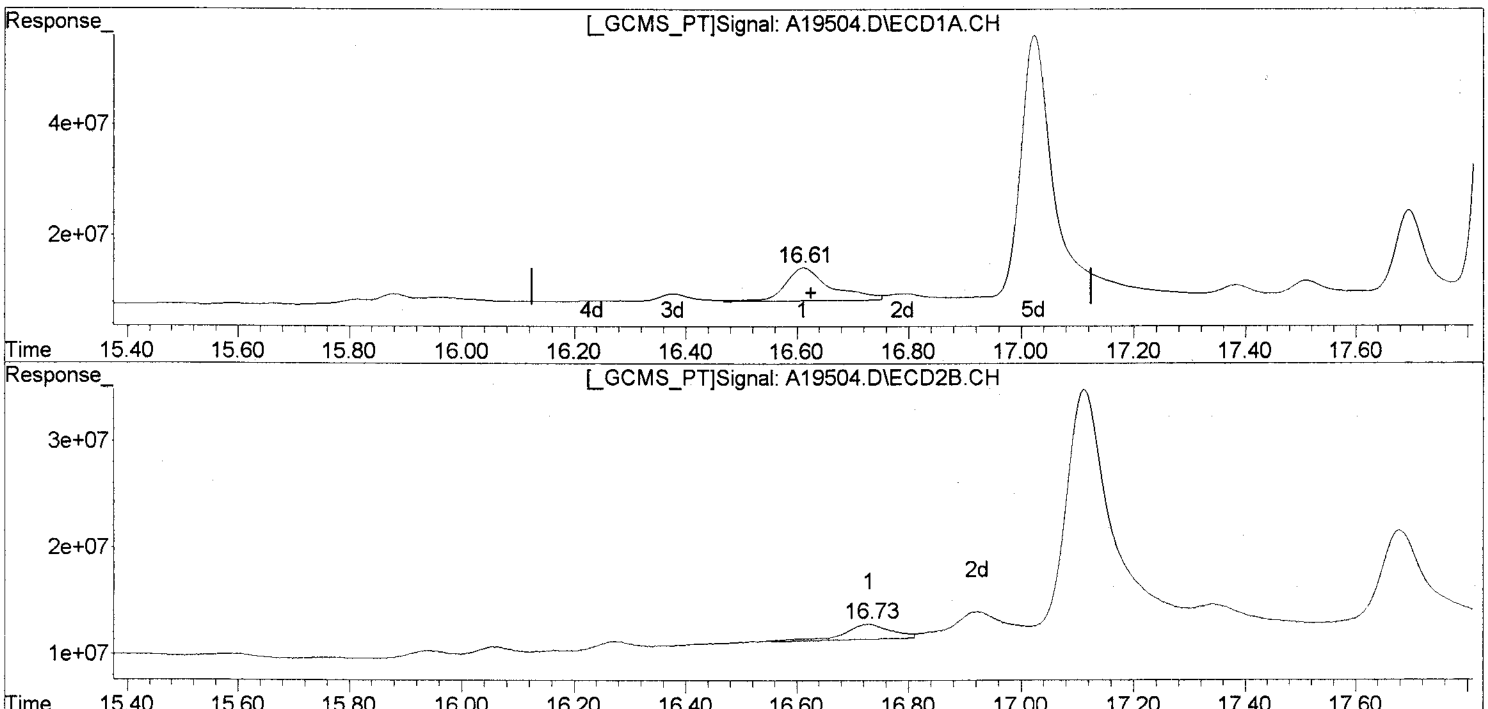


Quantitation Report (Qedit)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1)           A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc      : S-2713.04DL  5.1G/5.0ML (Sig #1); S-2713.04DL  5.1G/5.0ML (Sig #2
ALS Vial  : 15   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:25:27 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



QEdit

(12) 4,4'-DDE
16.61min 9.066ng/mL
response 339443734

(12) 4,4'-DDE #2
16.73min 2.856ng/mL m
response 83511523

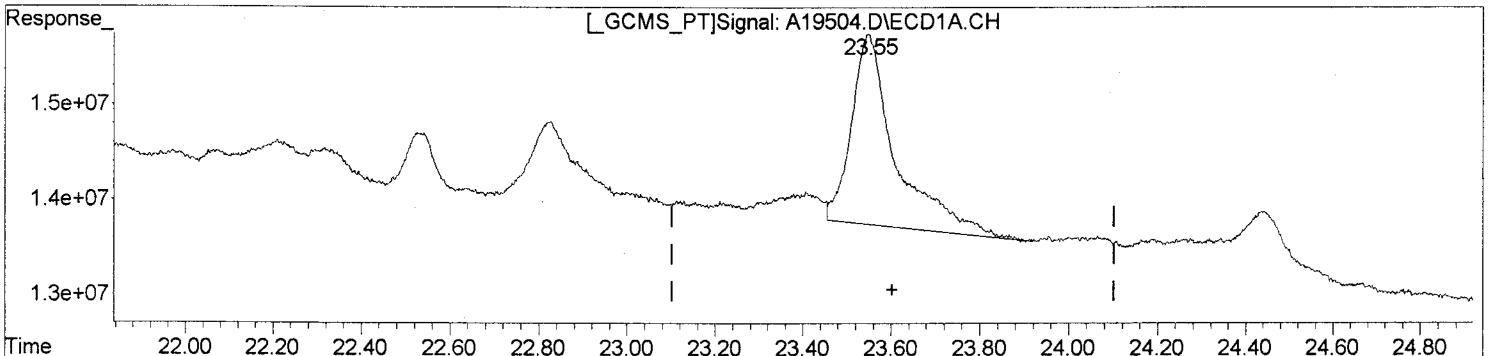
(+) = Expected Retention Time

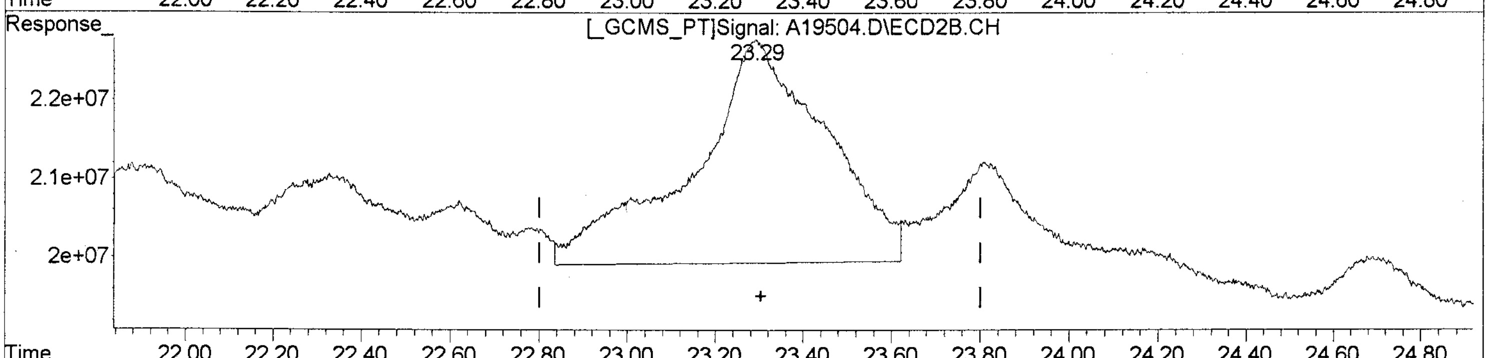
Quantitation Report (Qedit)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1)            A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc      : S-2713.04DL  5.1G/5.0ML (Sig #1); S-2713.04DL  5.1G/5.0ML (Sig #2
ALS Vial  : 15   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:25:27 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





QEdit

(22) Decachlorobiphenyl (S)
23.55min 3.772ng/mL
response 139436170

(22) Decachlorobiphenyl #2 (S)
23.29min 22.159ng/mL m
response 601753214

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1)           A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc      : S-2713.04DL  5.1G/5.0ML (Sig #1); S-2713.04DL  5.1G/5.0ML (Sig #2)
ALS Vial  : 15   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:31:56 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	26512501	26926615	0.608	0.690
	Spiked Amount 60.000			Recovery	=	1.01%	1.15%
11) S	Decachlorobiphen	23.55	23.29	176.1E6	954.8E6	4.208	30.405 #
	Spiked Amount 120.000			Recovery	=	3.51%	25.34%
	Target Compounds						
6)	2,4'-DDE	15.88	15.94	49636397	27075691	1.438m	0.913 #
8)	2,4'-DDD	17.02	17.11	2042.0E6	1470.3E6	74.270	66.110
9)	2,4'-DDT	17.70	17.68	573.9E6	702.6E6	18.181	25.732 #

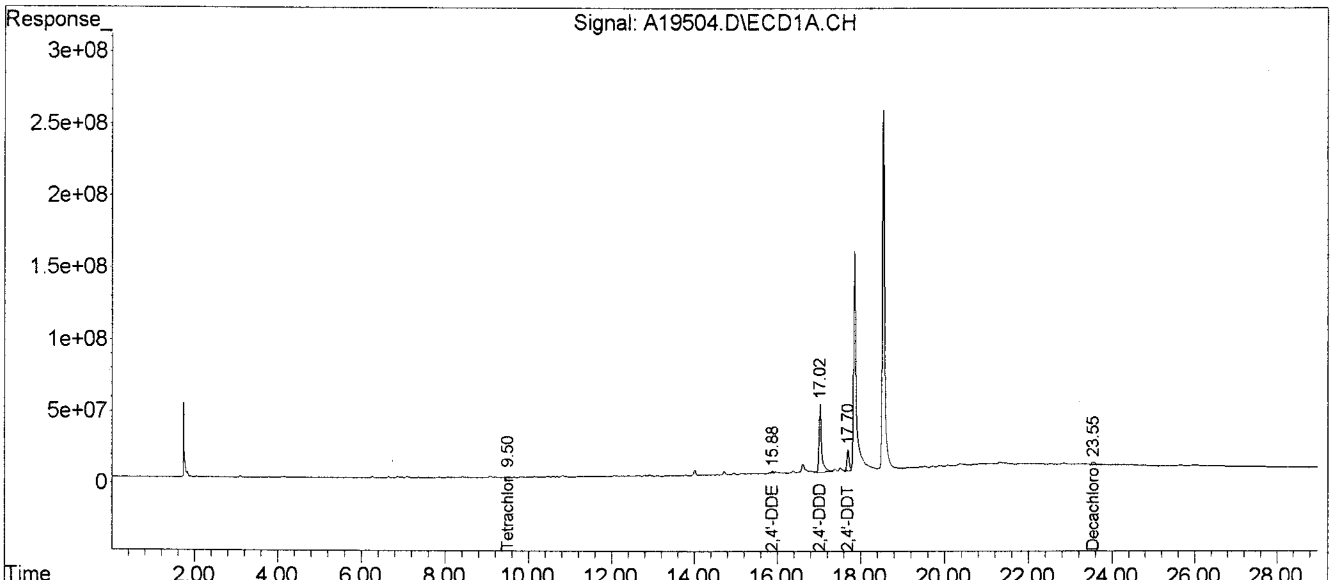
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

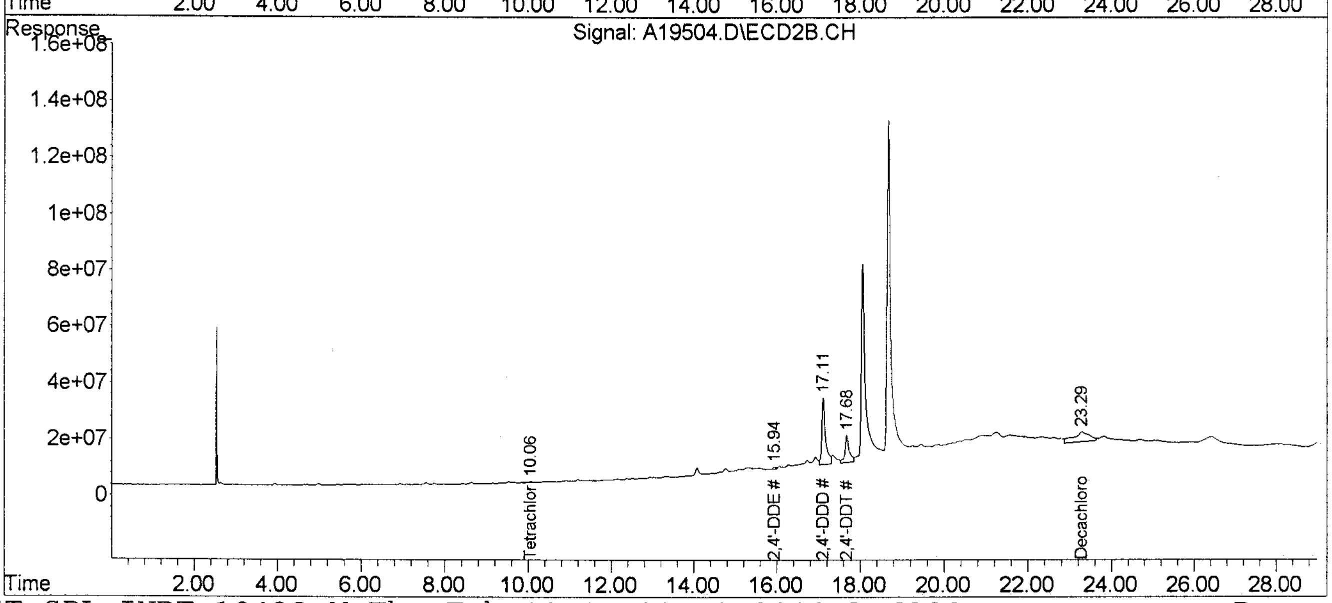
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1)           A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc      : S-2713.04DL  5.1G/5.0ML (Sig #1); S-2713.04DL  5.1G/5.0ML (Sig #2
ALS Vial  : 15   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:31:56 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



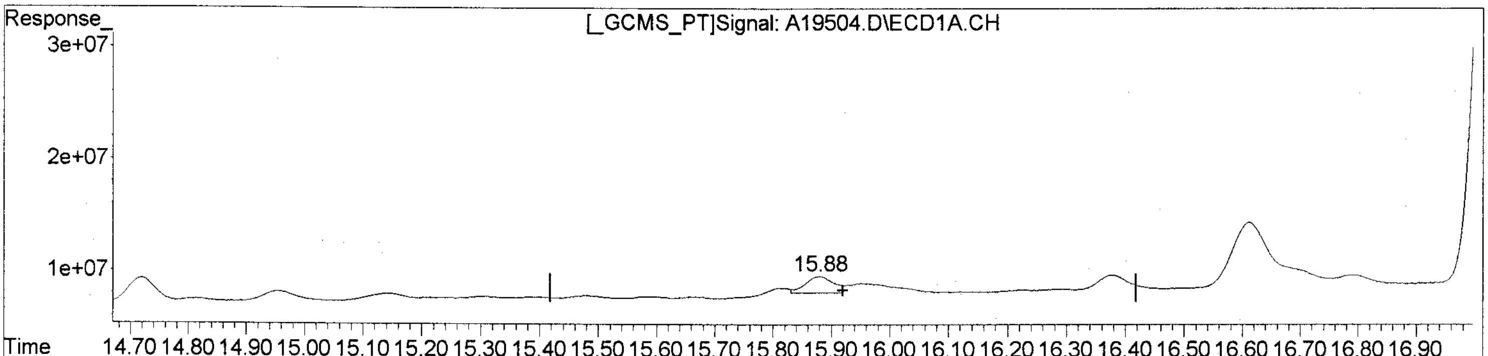


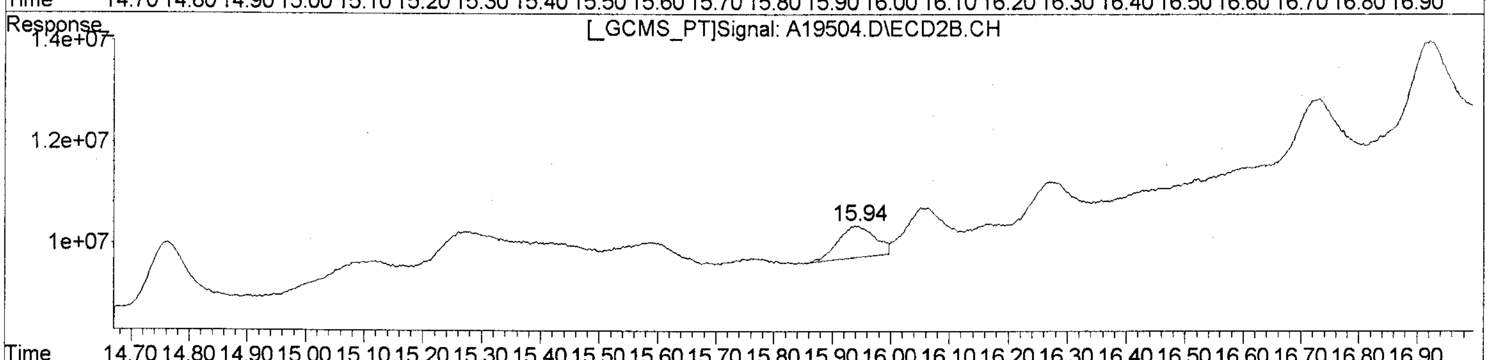
Quantitation Report (Qedit)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19504.D(Signal #1) A19504.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 19:10 (Signal #1); 10/14/09 19:47 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL 100X (Sig #1); JBR07DL 100X (Sig #2)
Misc : S-2713.04DL 5.1G/5.0ML (Sig #1); S-2713.04DL 5.1G/5.0ML (Sig #2
ALS Vial : 15 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:29:50 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





QEdit

(6) 2,4'-DDE
15.88min 1.438ng/mL m
response 49636397

(6) 2,4'-DDE #2
15.94min 0.913ng/mL
response 27075691

(+) = Expected Retention Time

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR07DL2

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.04DL2

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19511

% Moisture: 41 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/10/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1000.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	170	U
319-85-7	beta-BHC	170	U
319-86-8	delta-BHC	170	U
58-89-9	gamma-BHC (Lindane)	170	U
76-44-8	Heptachlor	170	U
309-00-2	Aldrin	170	U
1024-57-3	Heptachlor epoxide	170	U
959-98-8	Endosulfan I	170	U
60-57-1	Dieldrin	170	U
72-55-9	4,4'-DDE	170	U
72-20-8	Endrin	330	U
33213-65-9	Endosulfan II	330	U
72-54-8	4,4'-DDD	62000	DP
1031-07-8	Endosulfan sulfate	330	U
50-29-3	4,4'-DDT	87000	D
72-43-5	Methoxychlor	1700	U
53494-70-5	Endrin ketone	330	U
7421-93-4	Endrin aldehyde	330	U
5103-71-9	alpha-Chlordane	170	U
5103-74-2	gamma-Chlordane	170	U
8001-35-2	Toxaphene	17000	U
53-19-0	2,4'-DDD	23000	DJ
3424-82-6	2,4'-DDE	330	U
789-02-6	2,4'-DDT	6000	DJ
27304-13-8	Oxychlordane	330	U
5103-73-1	cis-Nonachlor	330	U
39765-80-5	Trans-Nonachlor	330	U
118-74-1	Hexachlorobenzene	330	U
87-68-3	Hexachlorobutadiene	330	U
29082-74-4	Octachlorostyrene	330	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19511.D(Signal #1) A19511.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 00:40 (Signal #1); 10/15/09 01:16 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL2 1000X (Sig #1); JBR07DL2 1000X (Sig #2)
Misc : S-2713.04DL2 5.1G/5.0ML (Sig #1); S-2713.04DL2 5.1G/5.0ML (Sig #2)
ALS Vial : 24 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:36:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
15)	4,4'-DDD	17.85	18.06	716.0E6	473.3E6	24.511	18.512
17)	4,4'-DDT	18.53	18.67	959.6E6	728.0E6	31.668	26.156

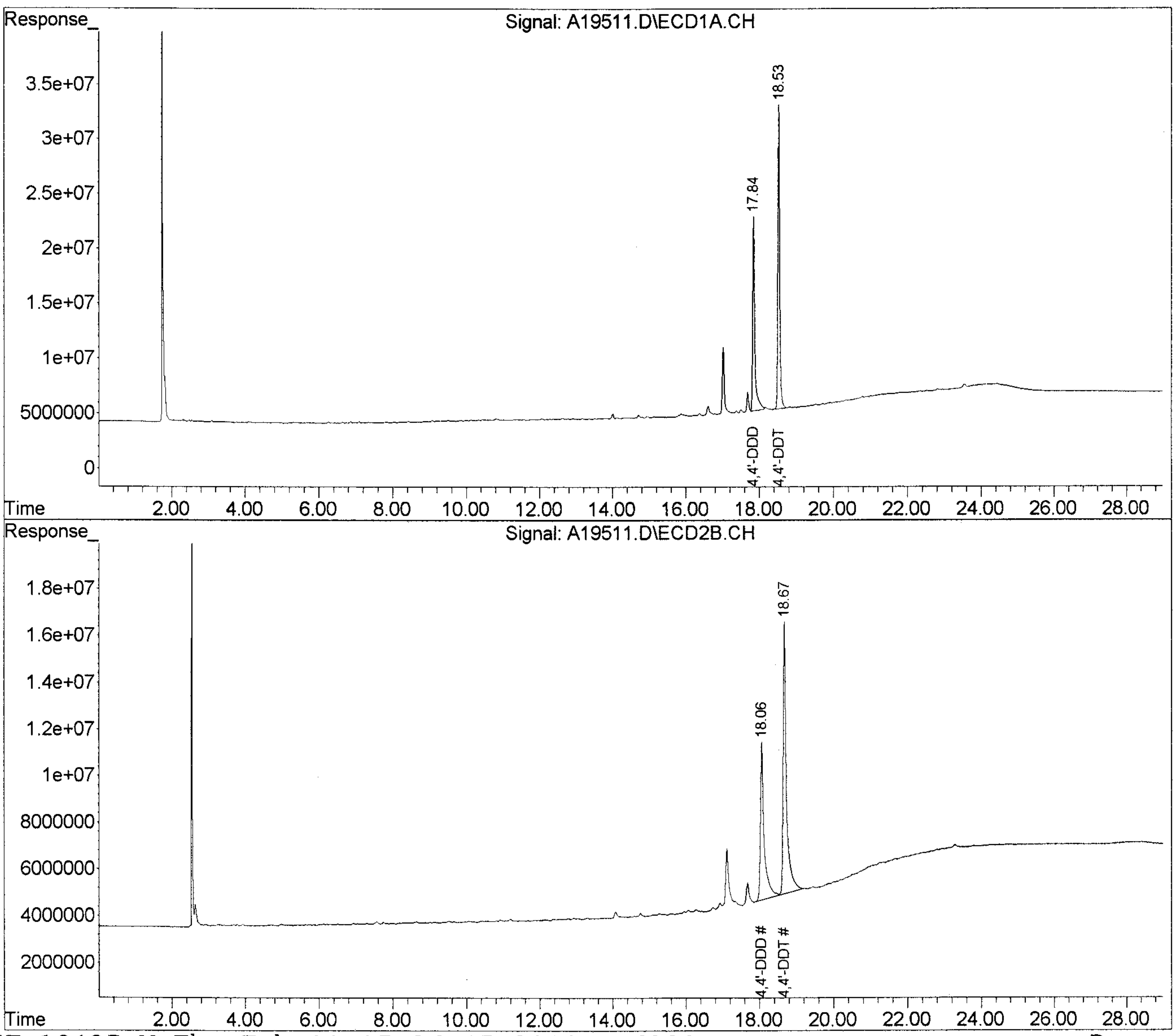
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19511.D(Signal #1)            A19511.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 10/15/09 00:40 (Signal #1); 10/15/09 01:16 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR07DL2 1000X (Sig #1); JBR07DL2 1000X (Sig #2)
Misc      : S-2713.04DL2 5.1G/5.0ML (Sig #1); S-2713.04DL2 5.1G/5.0ML (Sig #2
ALS Vial  : 24   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:36:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D  Signal #2 Info : 30mLn, 0.53mm  I.D.
```



Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19511.D(Signal #1) A19511.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 00:40 (Signal #1); 10/15/09 01:16 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL2 1000X (Sig #1); JBR07DL2 1000X (Sig #2)
Misc : S-2713.04DL2 5.1G/5.0ML (Sig #1); S-2713.04DL2 5.1G/5.0ML (Sig #2)
ALS Vial : 24 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:38:09 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
8)	2,4'-DDD	17.02	17.11	234.6E6	155.6E6	8.534	6.995
9)	2,4'-DDT	17.69	17.68	61219123	48980470	1.939	1.794

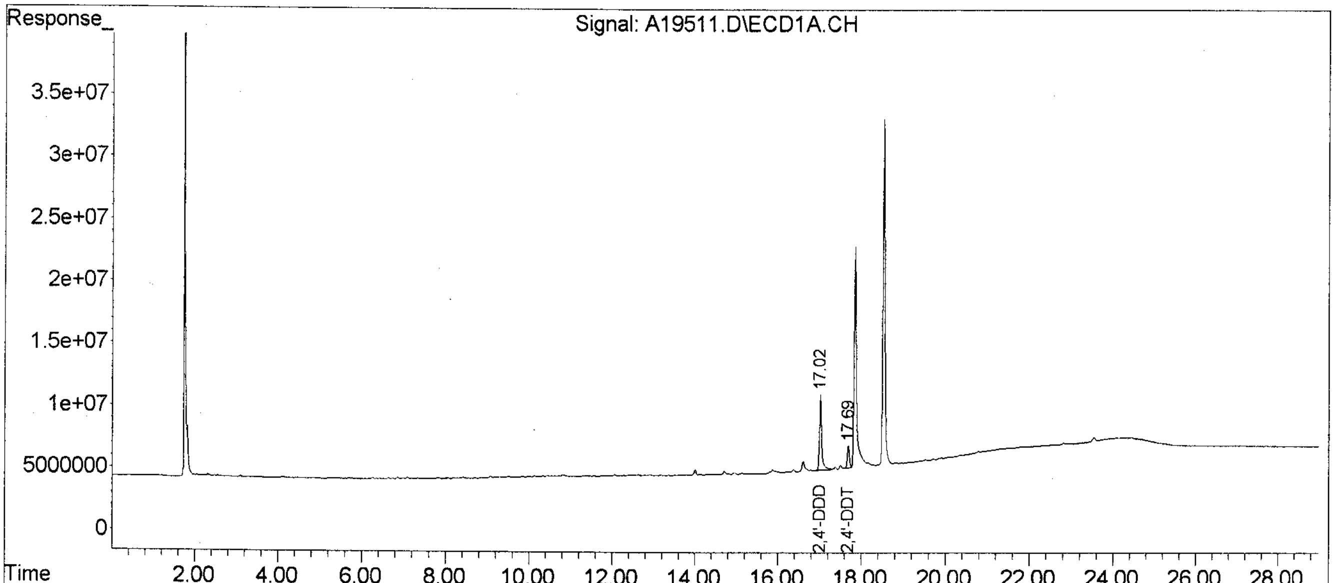
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

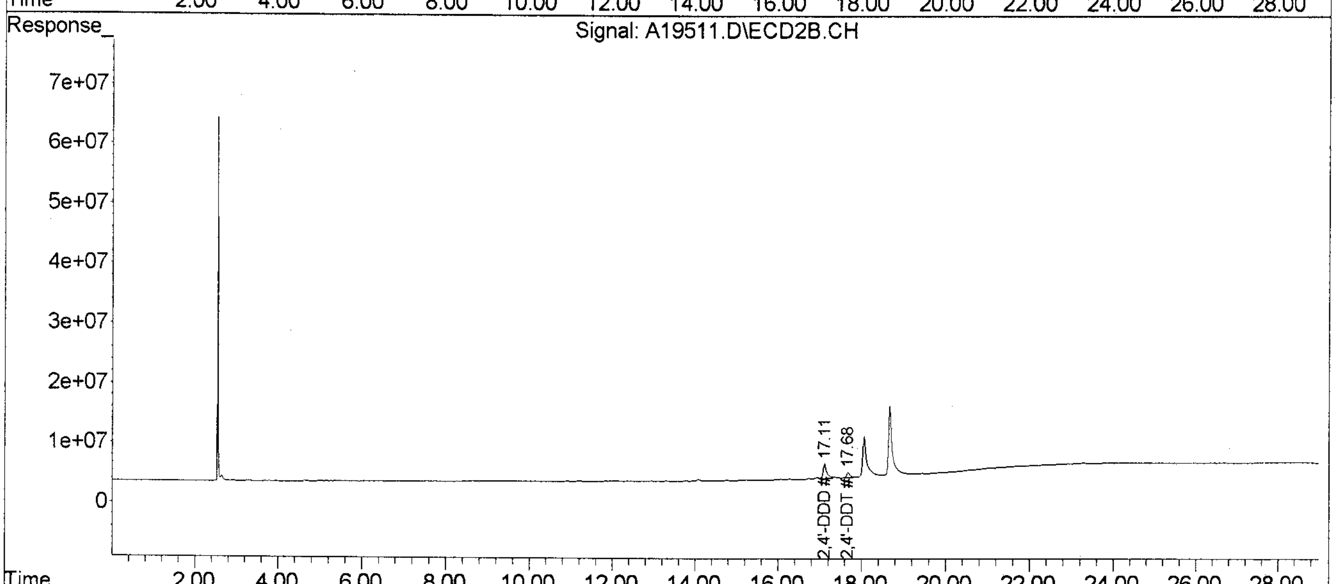
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19511.D(Signal #1) A19511.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 00:40 (Signal #1); 10/15/09 01:16 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR07DL2 1000X (Sig #1); JBR07DL2 1000X (Sig #2)
Misc : S-2713.04DL2 5.1G/5.0ML (Sig #1); S-2713.04DL2 5.1G/5.0ML (Sig #2
ALS Vial : 24 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 15:38:09 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR12

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.05

Sample wt/vol: 60.10 (g/mL) G Lab File ID: A19507

% Moisture: 35 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.15	U
319-85-7	beta-BHC	0.15	U
319-86-8	delta-BHC	0.15	U
58-89-9	gamma-BHC (Lindane)	0.15	U
76-44-8	Heptachlor	0.15	U
309-00-2	Aldrin	0.15	U
1024-57-3	Heptachlor epoxide	0.15	U
959-98-8	Endosulfan I	0.38	
60-57-1	Dieldrin	0.15	U
72-55-9	4,4'-DDE	0.24	JP
72-20-8	Endrin	0.31	U
33213-65-9	Endosulfan II	0.31	U
72-54-8	4,4'-DDD	19	EP
1031-07-8	Endosulfan sulfate	0.31	U
50-29-3	4,4'-DDT	28	EP
72-43-5	Methoxychlor	1.5	U
53494-70-5	Endrin ketone	0.083	J
7421-93-4	Endrin aldehyde	0.31	U
5103-71-9	alpha-Chlordane	0.15	U
5103-74-2	gamma-Chlordane	0.23	P
8001-35-2	Toxaphene	15	U
53-19-0	2,4'-DDD	8.0	E
3424-82-6	2,4'-DDE	0.21	JP
789-02-6	2,4'-DDT	2.6	
27304-13-8	Oxychlordane	0.31	U
5103-73-1	cis-Nonachlor	0.31	U
39765-80-5	Trans-Nonachlor	0.31	U
118-74-1	Hexachlorobenzene	0.22	JP
87-68-3	Hexachlorobutadiene	0.65	
29082-74-4	Octachlorostyrene	0.31	U

Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19507.D(Signal #1)           A19507.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On      : 10/14/09 21:00 (Signal #1); 10/14/09 21:37 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBR12 (Sig #1); JBR12 (Sig #2)
Misc        : S-2713.05 60.1G/1.0ML (Sig #1); S-2713.05 60.1G/1.0ML (Sig #2)
ALS Vial    : 18   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:54:01 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	9.50	10.06	4217.3E6	2993.0E6	128.033	100.144	
	Spiked Amount 60.000				Recovery =	213.39%	166.91%	
22) S	Decachlorobiphen	23.54	23.28	7340.6E6	4327.3E6	198.566	159.349	
	Spiked Amount 120.000				Recovery =	165.47%	132.79%	
	Target Compounds							
9)	Gamma-Chlordane	15.87	16.27	471.9E6	315.1E6	11.476	8.858	
11)	Endosulfan I	16.37	16.92	578.3E6	572.9E6	15.680	15.035	
12)	4,4'-DDE	16.61	16.72	1525.4E6	270.4E6	40.744	9.248	#
15)	4,4'-DDD	17.85	18.06	29329.7E6	18551.8E6	1004.104	725.700	#
17)	4,4'-DDT	18.53	18.67	46824.3E6	30101.6E6	1545.225	1081.539	#
21)	Endrin Ketone	20.54	20.92	124.9E6	122.6E6	3.258	3.932	

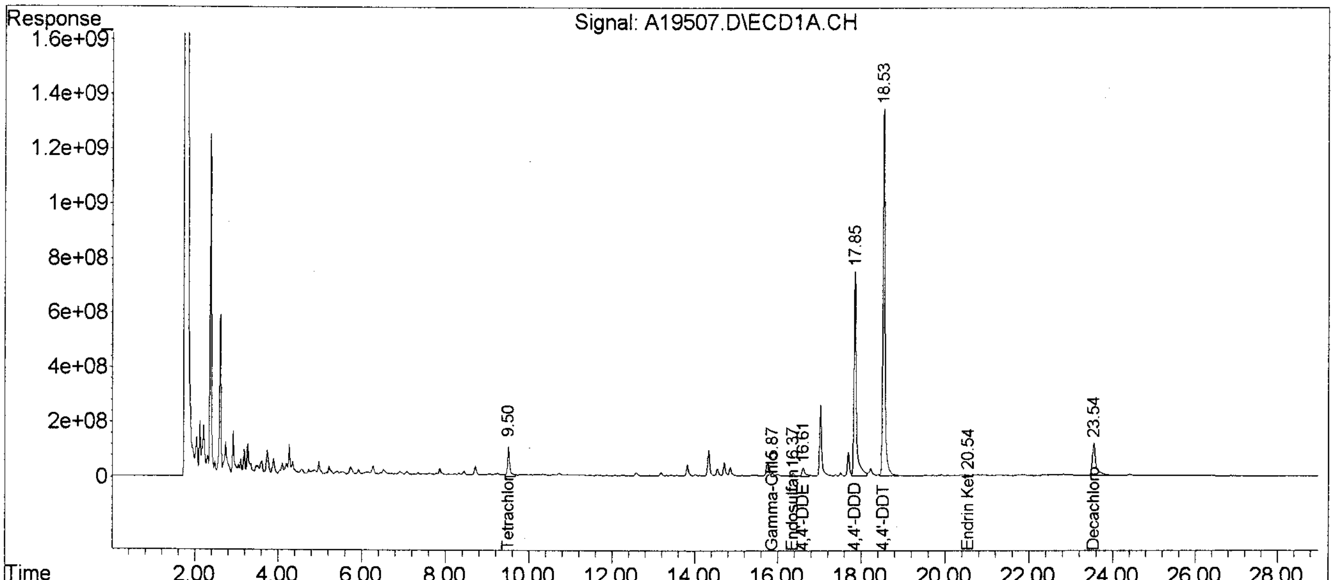
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

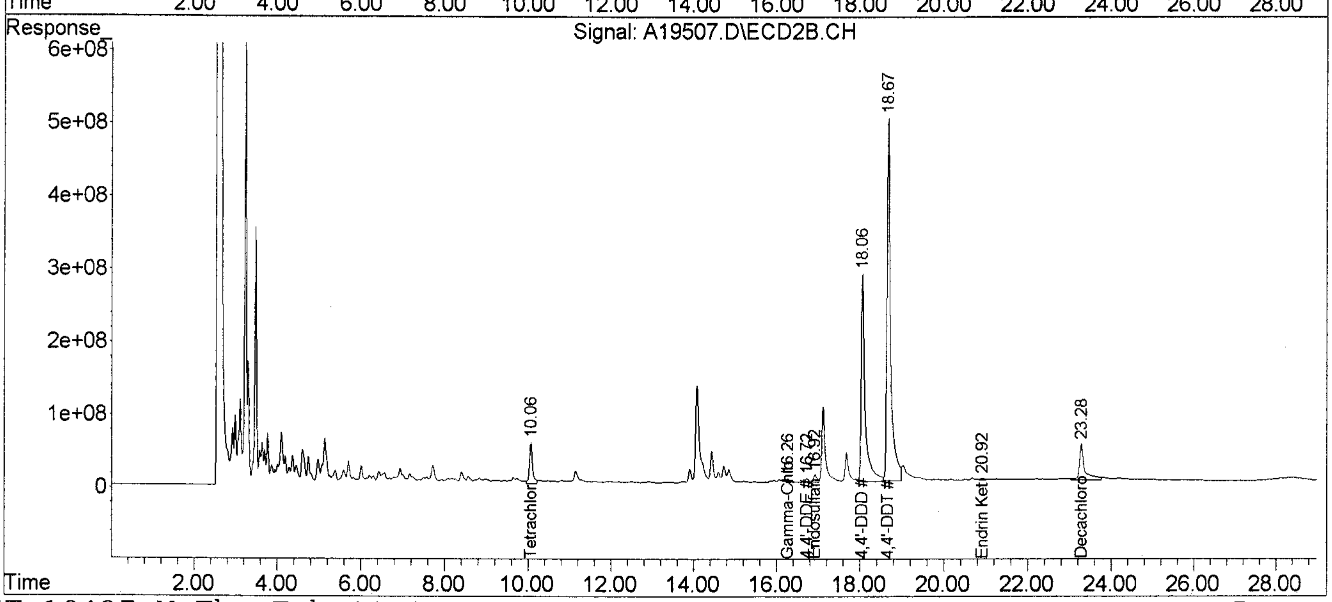
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19507.D(Signal #1) A19507.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 21:00 (Signal #1); 10/14/09 21:37 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12 (Sig #1); JBR12 (Sig #2)
Misc : S-2713.05 60.1G/1.0ML (Sig #1); S-2713.05 60.1G/1.0ML (Sig #2)
ALS Vial : 18 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 15:54:01 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19507.D(Signal #1) A19507.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 21:00 (Signal #1); 10/14/09 21:37 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12 (Sig #1); JBR12 (Sig #2)
Misc : S-2713.05 60.1G/1.0ML (Sig #1); S-2713.05 60.1G/1.0ML (Sig #2)
ALS Vial : 18 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:00:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	4398.6E6	3127.3E6	100.823	80.121
	Spiked Amount 60.000			Recovery	=	168.04%	133.53%
11) S	Decachlorobiphen	23.54	23.28	8241.6E6	5456.7E6	196.980	173.766
	Spiked Amount 120.000			Recovery	=	164.15%	144.80%
	Target Compounds						
2)	Hexachlorobutadi	4.20	4.98	1856.3E6	1711.0E6	25.250	30.361
3)	Hexachlorobenzen	10.85	11.14	458.8E6	1859.1E6	8.456	41.002 #
6)	2,4'-DDE	15.87	15.94	595.2E6	237.7E6	17.248	8.012 #
8)	2,4'-DDD	17.02	17.11	10296.9E6	6964.0E6	374.505	313.124
9)	2,4'-DDT	17.69	17.68	3210.8E6	2937.7E6	101.716	107.595

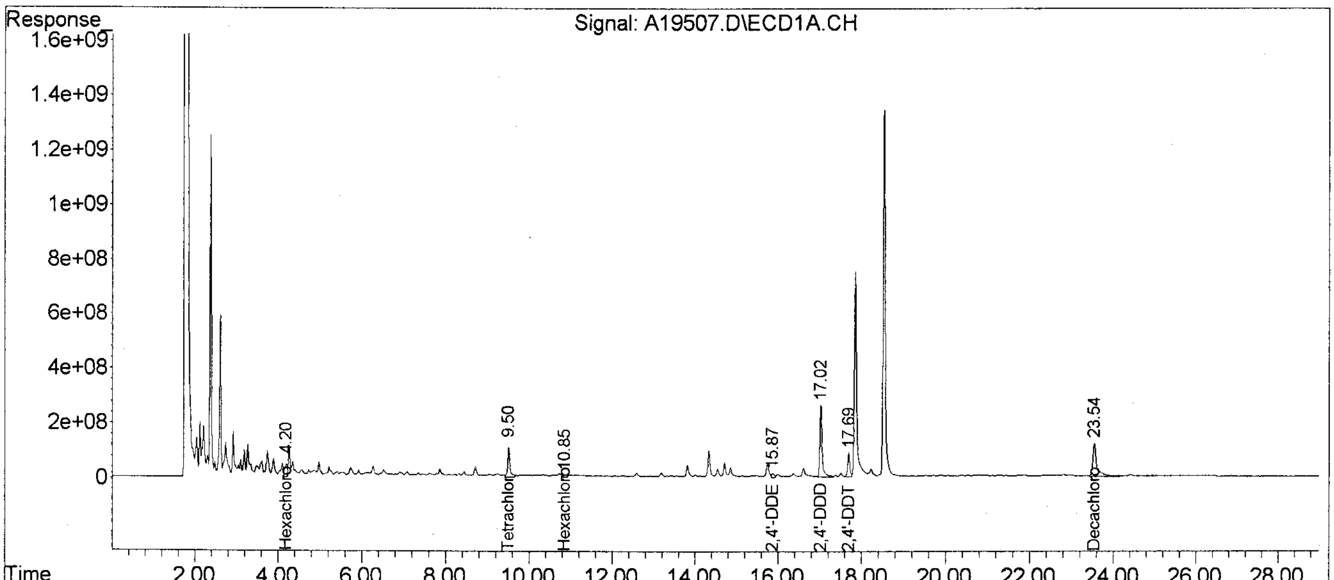
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

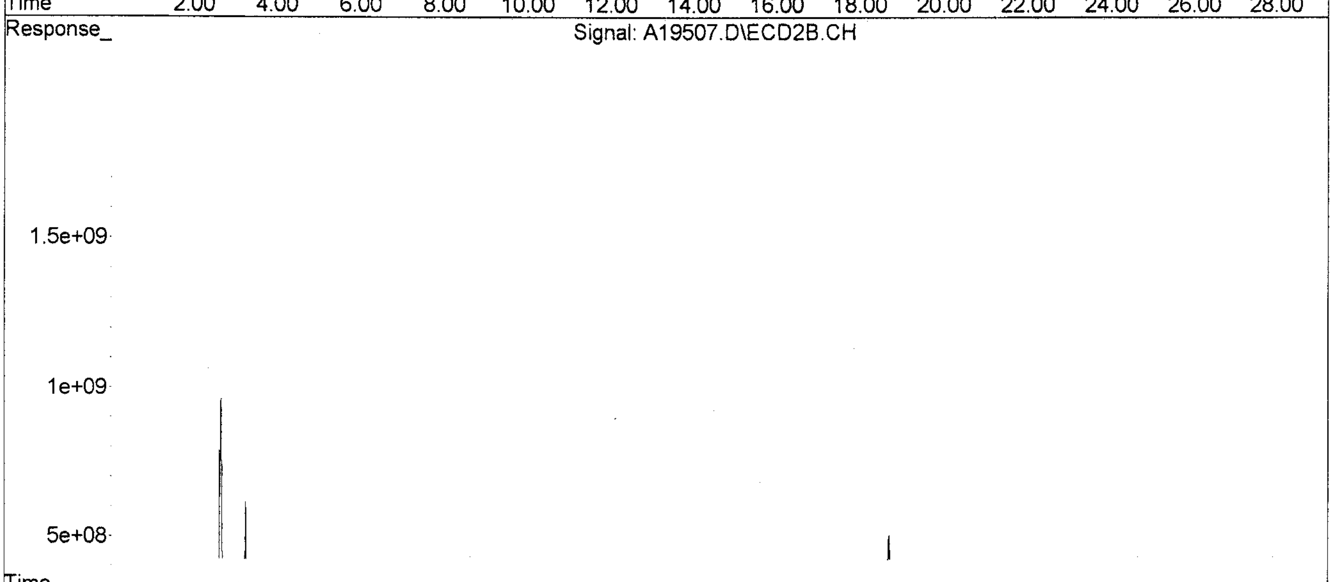
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19507.D(Signal #1) A19507.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 21:00 (Signal #1); 10/14/09 21:37 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12 (Sig #1); JBR12 (Sig #2)
Misc : S-2713.05 60.1G/1.0ML (Sig #1); S-2713.05 60.1G/1.0ML (Sig #2)
ALS Vial : 18 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:00:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR12DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.05DL

Sample wt/vol: 60.10 (g/mL) G Lab File ID: A19533

% Moisture: 35 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	0.22	DJP
72-20-8	Endrin	3.1	U
33213-65-9	Endosulfan II	3.1	U
72-54-8	4,4'-DDD	17	DP
1031-07-8	Endosulfan sulfate	3.1	U
50-29-3	4,4'-DDT	25	D
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	3.1	U
7421-93-4	Endrin aldehyde	3.1	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	150	U
53-19-0	2,4'-DDD	7.5	D
3424-82-6	2,4'-DDE	3.1	U
789-02-6	2,4'-DDT	2.1	DJ
27304-13-8	Oxychlordane	3.1	U
5103-73-1	cis-Nonachlor	3.1	U
39765-80-5	Trans-Nonachlor	3.1	U
118-74-1	Hexachlorobenzene	3.1	U
87-68-3	Hexachlorobutadiene	0.55	DJP
29082-74-4	Octachlorostyrene	3.1	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19533.D(Signal #1) A19533.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 18:27 (Signal #1); 10/15/09 19:03 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12DL 10X (Sig #1); JBR12DL 10X (Sig #2)
Misc : S-2713.05DL 60.1G/1.0ML (Sig #1); S-2713.05DL 60.1G/1.0ML (Sig #2)
ALS Vial : 90 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:06:46 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	9.49	10.05	324.4E6	256.8E6	9.848	8.591
Spiked Amount 60.000			Recovery	=	16.41%	14.32%
22) S Decachlorobiphen	23.52	23.27	788.6E6	373.1E6	21.332	13.738 #
Spiked Amount 120.000			Recovery	=	17.78%	11.45%
Target Compounds						
12) 4,4'-DDE	16.60	16.72	122.6E6	25281683	3.275	0.865 #
15) 4,4'-DDD	17.83	18.05	2447.2E6	1700.0E6	83.781	66.501
17) 4,4'-DDT	18.52	18.66	3534.8E6	2726.0E6	116.650	97.944

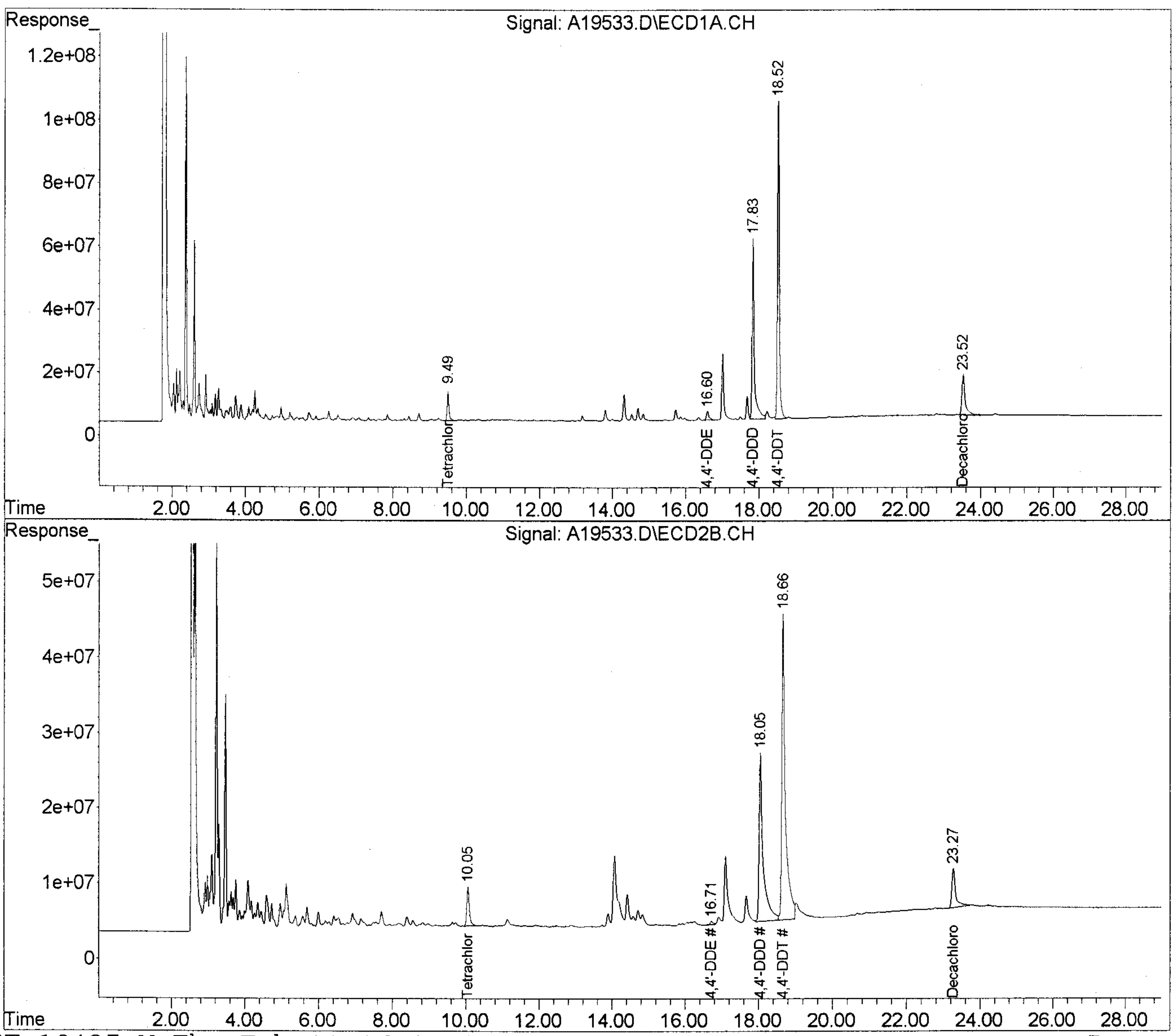
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19533.D(Signal #1) A19533.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 18:27 (Signal #1); 10/15/09 19:03 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12DL 10X (Sig #1); JBR12DL 10X (Sig #2)
Misc : S-2713.05DL 60.1G/1.0ML (Sig #1); S-2713.05DL 60.1G/1.0ML (Sig #2
ALS Vial : 90 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:06:46 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19533.D(Signal #1)           A19533.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/15/09 18:27 (Signal #1); 10/15/09 19:03 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR12DL 10X (Sig #1); JBR12DL 10X (Sig #2)
Misc      : S-2713.05DL 60.1G/1.0ML (Sig #1); S-2713.05DL 60.1G/1.0ML (Sig #2)
ALS Vial  : 90   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:09:16 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	9.49	10.05	347.7E6	267.6E6	7.969	6.855
Spiked Amount 60.000			Recovery	=	13.28%	11.43%
11) S Decachlorobiphen	23.52	23.27	776.6E6	447.5E6	18.562	14.251
Spiked Amount 120.000			Recovery	=	15.47%	11.88%
Target Compounds						
2) Hexachlorobutadi	4.19	4.96	156.5E6	161.2E6	2.129	2.860 #
8) 2,4'-DDD	17.01	17.10	831.4E6	648.4E6	30.238	29.154
9) 2,4'-DDT	17.68	17.67	256.1E6	228.8E6	8.114	8.379

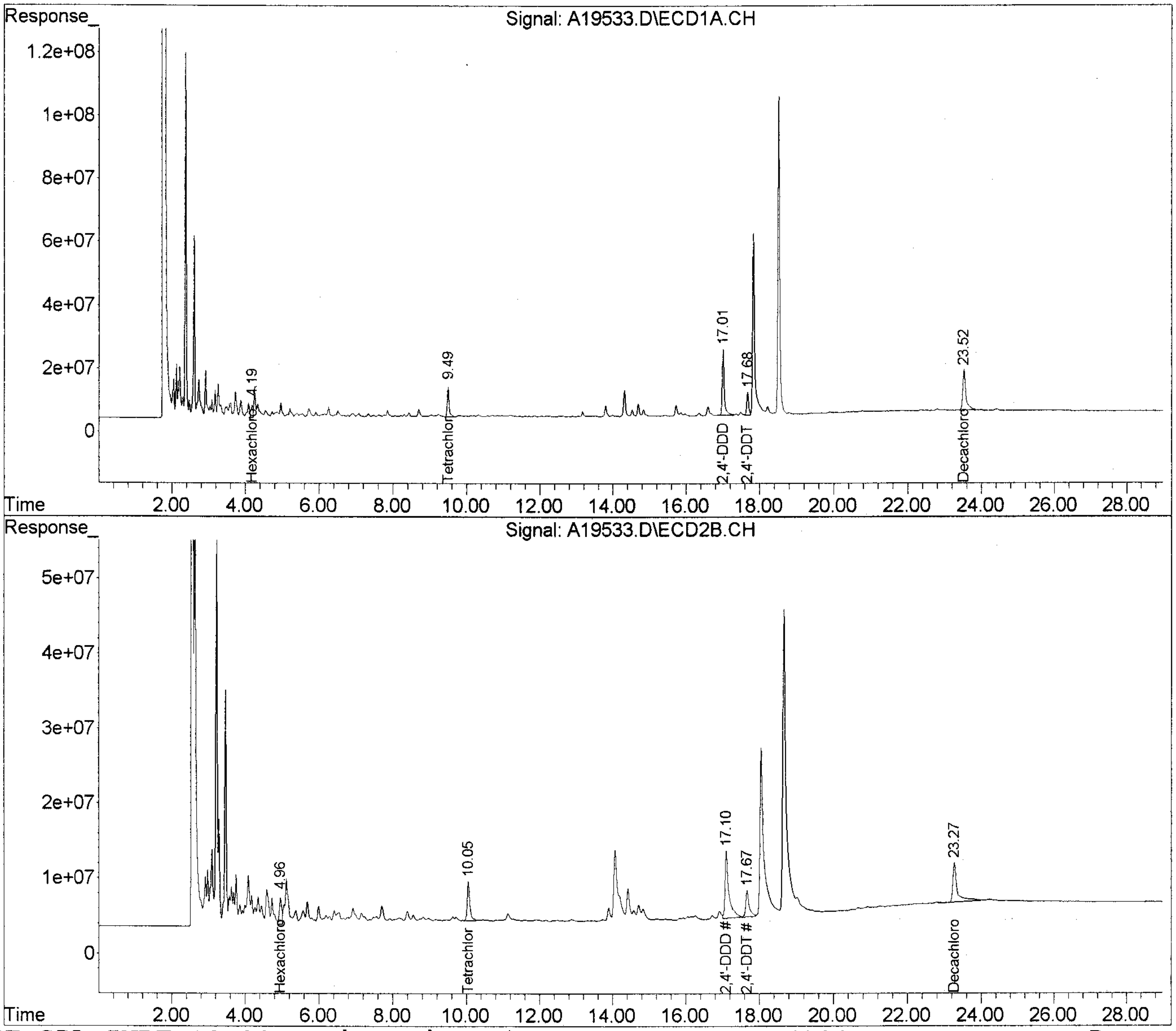
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19533.D(Signal #1) A19533.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 18:27 (Signal #1); 10/15/09 19:03 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR12DL 10X (Sig #1); JBR12DL 10X (Sig #2)
Misc : S-2713.05DL 60.1G/1.0ML (Sig #1); S-2713.05DL 60.1G/1.0ML (Sig #2
ALS Vial : 90 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:09:16 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JBR16

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19508

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.15	U
319-85-7	beta-BHC	0.15	U
319-86-8	delta-BHC	0.15	U
58-89-9	gamma-BHC (Lindane)	0.15	U
76-44-8	Heptachlor	0.15	U
309-00-2	Aldrin	0.15	U
1024-57-3	Heptachlor epoxide	0.072	JP
959-98-8	Endosulfan I	0.18	P
60-57-1	Dieldrin	0.15	U
72-55-9	4,4'-DDE	0.26	P
72-20-8	Endrin	0.29	U
33213-65-9	Endosulfan II	0.29	U
72-54-8	4,4'-DDD	17	E
1031-07-8	Endosulfan sulfate	0.29	U
50-29-3	4,4'-DDT	20	EP
72-43-5	Methoxychlor	1.5	U
53494-70-5	Endrin ketone	0.047	JP
7421-93-4	Endrin aldehyde	0.29	U
5103-71-9	alpha-Chlordane	0.15	U
5103-74-2	gamma-Chlordane	0.31	
8001-35-2	Toxaphene	15	U
53-19-0	2,4'-DDD	7.3	E
3424-82-6	2,4'-DDE	0.26	P
789-02-6	2,4'-DDT	1.6	P
27304-13-8	Oxychlordane	0.29	U
5103-73-1	cis-Nonachlor	0.29	U
39765-80-5	Trans-Nonachlor	0.29	U
118-74-1	Hexachlorobenzene	0.29	U
87-68-3	Hexachlorobutadiene	0.32	P
29082-74-4	Octachlorostyrene	0.29	U

Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19508.D(Signal #1)            A19508.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On      : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBR16 (Sig #1); JBR16 (Sig #2)
Misc        : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial    : 19    Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:31:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	9.51	10.07	2649.0E6	2562.4E6	60.719	65.647	
	Spiked Amount 60.000			Recovery	=	101.20%	109.41%	
11) S	Decachlorobiphen	23.54	23.28	5099.1E6	3280.4E6	121.873	104.463	
	Spiked Amount 120.000			Recovery	=	101.56%	87.05%	
	Target Compounds							
2)	Hexachlorobutadi	4.20	4.97	956.0E6	1326.6E6	13.003	23.541	#
6)	2,4'-DDE	15.88	15.95	752.2E6	310.0E6	21.797	10.449	#
8)	2,4'-DDD	17.02	17.11	8398.3E6	6596.8E6	305.452	296.612	
9)	2,4'-DDT	17.69	17.68	2091.5E6	2478.8E6	66.256	90.787	#

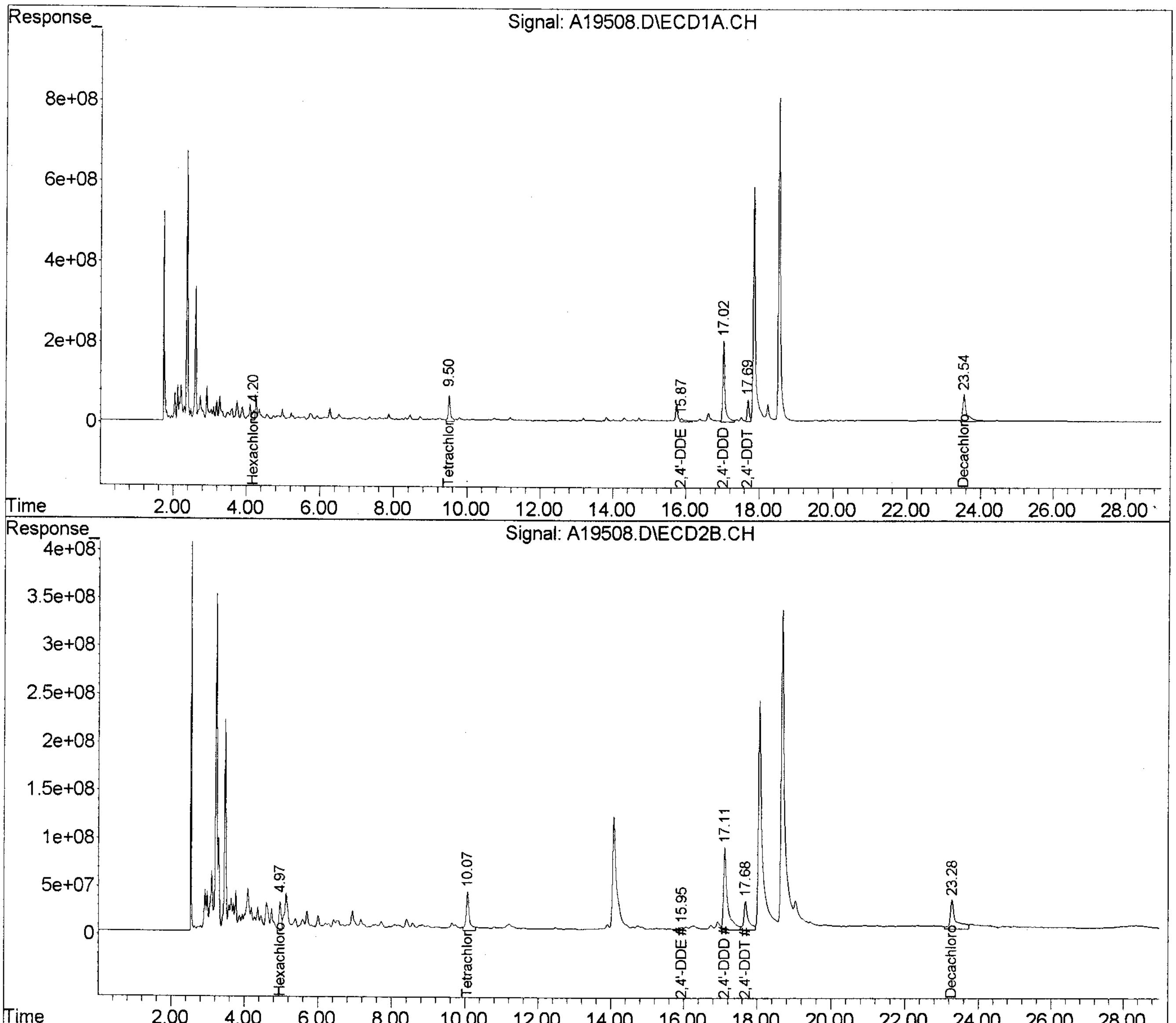
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19508.D(Signal #1)           A19508.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16 (Sig #1); JBR16 (Sig #2)
Misc      : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial  : 19   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:31:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19508.D(Signal #1)           A19508.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16 (Sig #1); JBR16 (Sig #2)
Misc      : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial  : 19   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:26:41 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	9.51	10.07	2559.7E6	2616.8E6	77.709	87.555	
	Spiked Amount 60.000			Recovery	=	129.52%	145.93%	
22) S	Decachlorobiphen	23.54	23.28	4357.5E6	2844.3E6	117.872	104.739	
	Spiked Amount 120.000			Recovery	=	98.23%	87.28%	
	Target Compounds							
8)	Heptachlor Epoxi	15.48	15.95	119.1E6	185.5E6	2.944	5.527	#
9)	Gamma-Chlordane	15.88	16.27	525.7E6	510.8E6	12.784	14.359	
11)	Endosulfan I	16.37	16.92	267.7E6	507.9E6	7.258	13.330	#
12)	4,4'-DDE	16.61	16.73	1042.3E6	316.1E6	27.839	10.810	#
15)	4,4'-DDD	17.85	18.06	25012.0E6	17930.7E6	856.287	701.405	
17)	4,4'-DDT	18.53	18.67	31019.8E6	22693.3E6	1023.669	815.362	
21)	Endrin Ketone	20.66	20.91	73129972	515.3E6	1.907	16.527	#

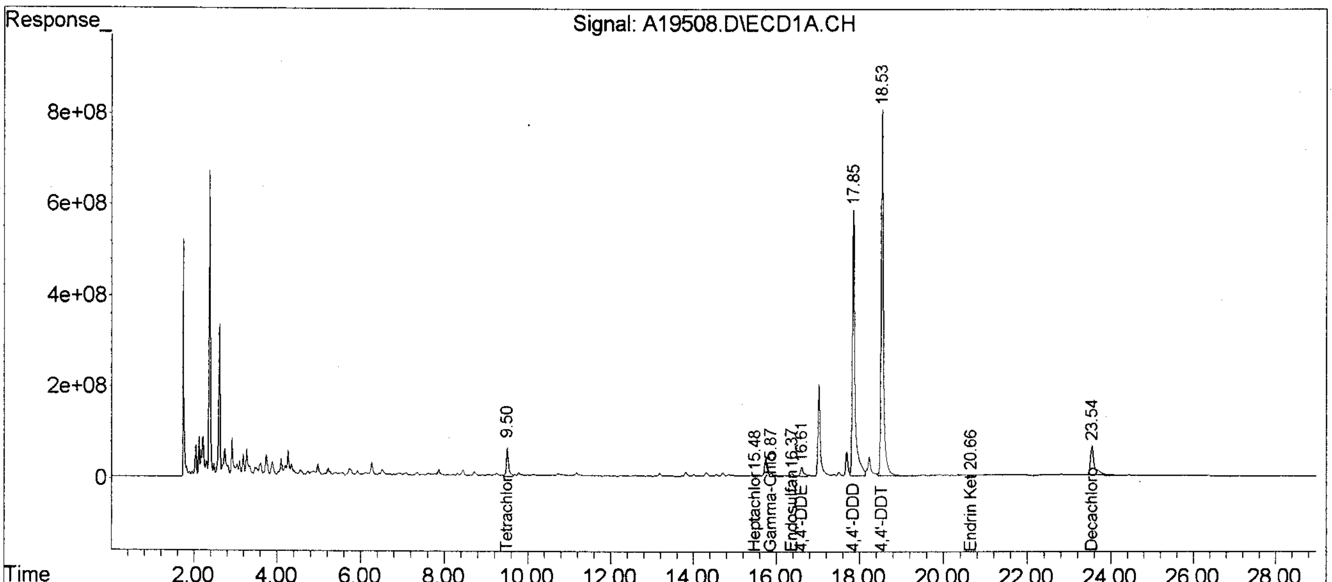
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

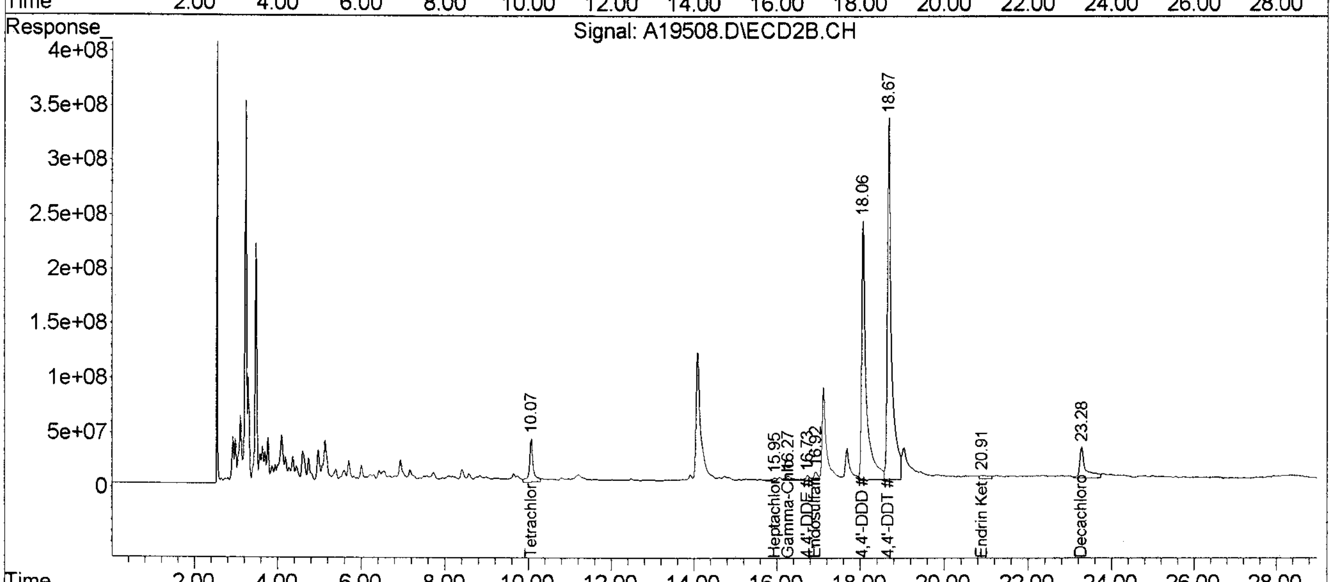
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19508.D(Signal #1)            A19508.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On     : 10/14/09 21:37 (Signal #1); 10/14/09 22:13 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR16 (Sig #1); JBR16 (Sig #2)
Misc       : S-2713.06 60.0G/1.0ML (Sig #1); S-2713.06 60.0G/1.0ML (Sig #2)
ALS Vial   : 19   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:26:41 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR16DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.06DL

Sample wt/vol: 60.00 (g/mL) G Lab File ID: A19519

% Moisture: 32 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/15/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	0.073	DJP
72-20-8	Endrin	2.9	U
33213-65-9	Endosulfan II	2.9	U
72-54-8	4,4'-DDD	12	DP
1031-07-8	Endosulfan sulfate	2.9	U
50-29-3	4,4'-DDT	14	D
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	2.9	U
7421-93-4	Endrin aldehyde	2.9	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	150	U
53-19-0	2,4'-DDD	5.4	D
3424-82-6	2,4'-DDE	0.062	DJP
789-02-6	2,4'-DDT	1.2	DJ
27304-13-8	Oxychlordane	2.9	U
5103-73-1	cis-Nonachlor	2.9	U
39765-80-5	Trans-Nonachlor	2.9	U
118-74-1	Hexachlorobenzene	2.9	U
87-68-3	Hexachlorobutadiene	0.21	DJP
29082-74-4	Octachlorostyrene	2.9	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1)            A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc      : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2)
ALS Vial  : 76   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:36:34 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	187.2E6	158.1E6	4.292	4.051
	Spiked Amount 60.000			Recovery	=	7.15%	6.75%
11) S	Decachlorobiphen	23.53	23.28	455.2E6	254.6E6	10.880	8.109 #
	Spiked Amount 120.000			Recovery	=	9.07%	6.76%
	Target Compounds						
2)	Hexachlorobutadi	4.20	4.97	61640738	115.4E6	0.838	2.047 #
6)	2,4'-DDE	15.87	15.95	38335425	7467988	1.111	0.252 #
8)	2,4'-DDD	17.01	17.11	641.9E6	486.2E6	23.346	21.860
9)	2,4'-DDT	17.68	17.68	157.1E6	136.9E6	4.976	5.015

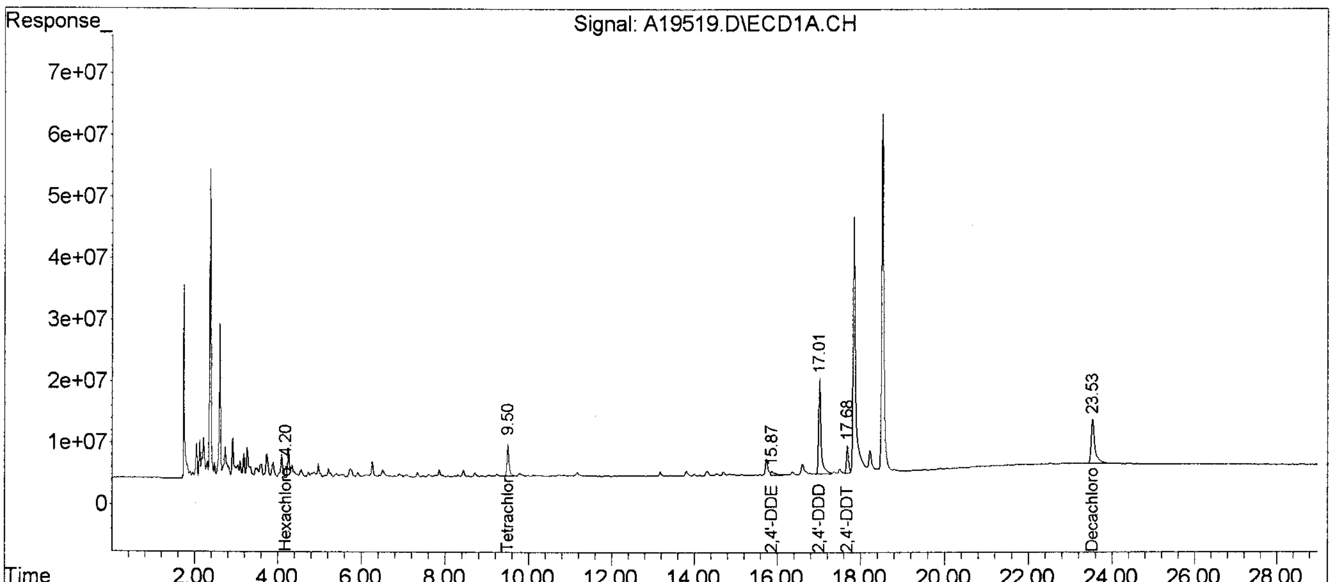
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

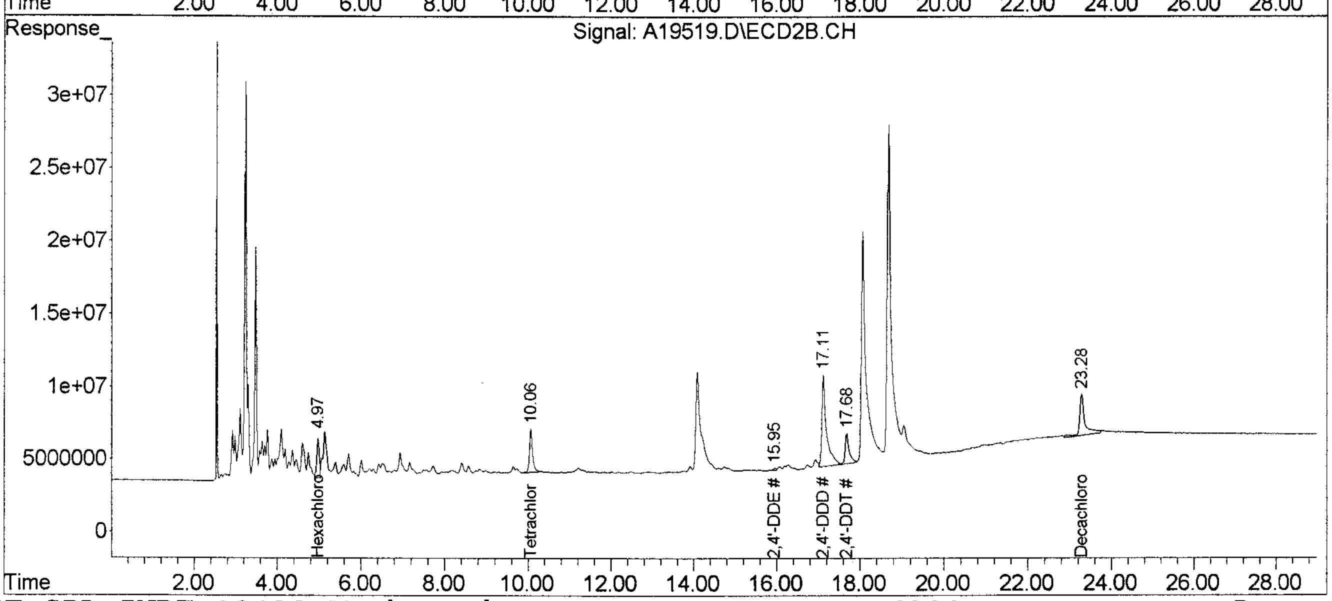
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1)          A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc      : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2
ALS Vial  : 76   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:36:34 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D  Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1) A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2)
ALS Vial : 76 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 09:17:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	185.9E6	167.8E6	5.645	5.615
	Spiked Amount 60.000			Recovery	=	9.41%	9.36%
22) S	Decachlorobiphen	23.53	23.28	458.4E6	253.0E6	12.400	9.318m
	Spiked Amount 120.000			Recovery	=	10.33%	7.76%
	Target Compounds						
12)	4,4'-DDE	16.60	16.73	79351908	8754433	2.119	0.299 #
15)	4,4'-DDD	17.84	18.06	1841.2E6	1264.6E6	63.032	49.470
17)	4,4'-DDT	18.52	18.67	2092.7E6	1626.0E6	69.059	58.421

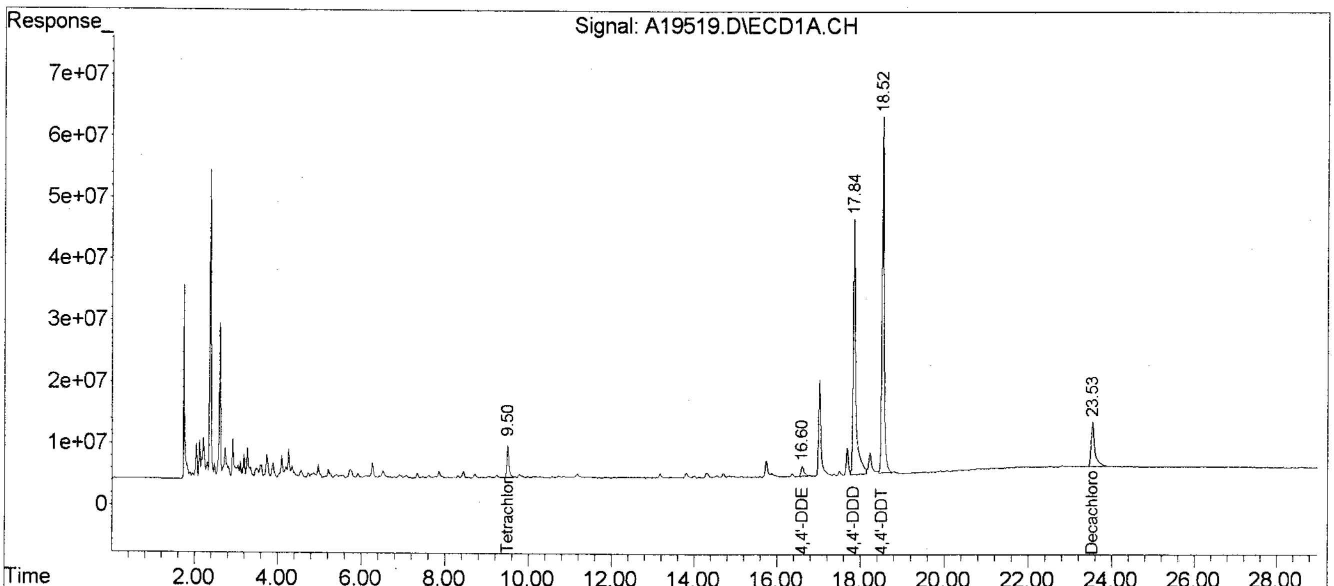
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

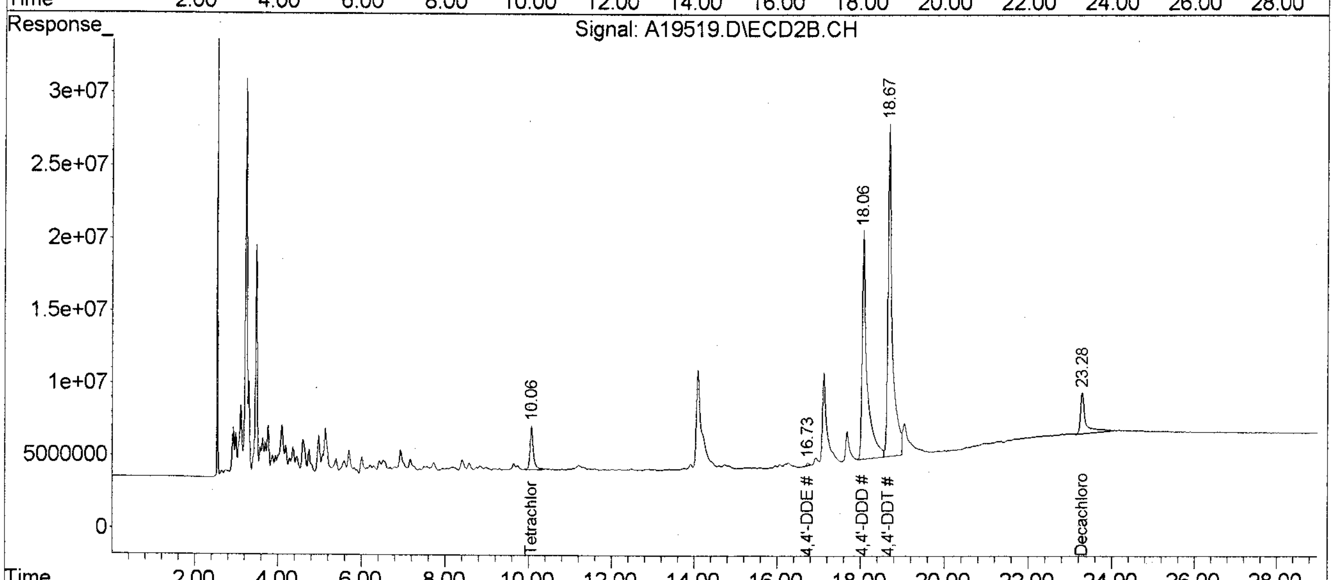
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19519.D(Signal #1) A19519.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2
ALS Vial : 76 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 09:17:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



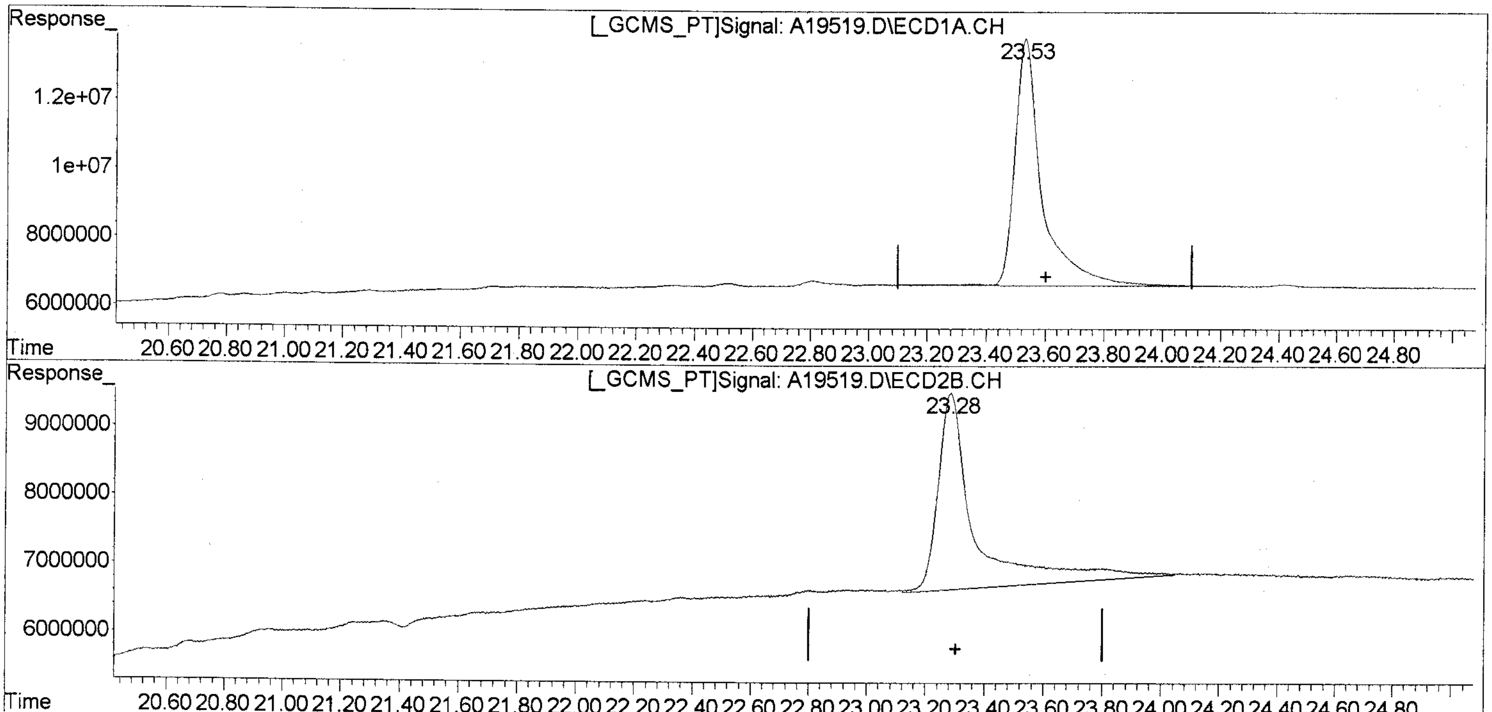


Quantitation Report (Qedit)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19519.D(Signal #1)           A19519.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 10/15/09 09:12 (Signal #1); 10/15/09 09:49 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBR16DL 10X (Sig #1); JBR16DL 10X (Sig #2)
Misc       : S-2713.06DL 60.0G/1.0ML (Sig #1); S-2713.06DL 60.0G/1.0ML (Sig #2
ALS Vial   : 76   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:32:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2        Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



QEdit

(22) Decachlorobiphenyl (S)
23.53min 12.400ng/mL
response 458391240

(22) Decachlorobiphenyl #2 (S)
23.28min 9.318ng/mL m
response 253034457

(+) = Expected Retention Time

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBR20

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBQZ5

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2713.07

Sample wt/vol: 60.20 (g/mL) G Lab File ID: A19509

% Moisture: 27 Decanted: (Y/N) N Date Received: 10/02/2009

Extraction: (Type) SONC Date Extracted: 10/07/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/14/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.14	U
76-44-8	Heptachlor	0.14	U
309-00-2	Aldrin	0.14	U
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	0.14	U
72-55-9	4,4'-DDE	0.14	U
72-20-8	Endrin	0.27	U
33213-65-9	Endosulfan II	0.27	U
72-54-8	4,4'-DDD	0.12	JP
1031-07-8	Endosulfan sulfate	0.27	U
50-29-3	4,4'-DDT	0.13	JP
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.27	U
7421-93-4	Endrin aldehyde	0.27	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	0.063	J
3424-82-6	2,4'-DDE	0.27	U
789-02-6	2,4'-DDT	0.012	JP
27304-13-8	Oxychlordane	0.27	U
5103-73-1	cis-Nonachlor	0.27	U
39765-80-5	Trans-Nonachlor	0.27	U
118-74-1	Hexachlorobenzene	0.27	U
87-68-3	Hexachlorobutadiene	0.050	JP
29082-74-4	Octachlorostyrene	0.27	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19509.D(Signal #1) A19509.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 22:13 (Signal #1); 10/14/09 22:50 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR20 (Sig #1); JBR20 (Sig #2)
Misc : S-2713.07 60.2G/1.0ML (Sig #1); S-2713.07 60.2G/1.0ML (Sig #2)
ALS Vial : 20 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:44:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	9.50	10.06	2170.6E6	1638.6E6	65.896	54.826
Spiked Amount 60.000			Recovery	=	109.83%	91.38%
22) S Decachlorobiphen	23.54	23.28	4287.3E6	2460.5E6	115.972	90.603
Spiked Amount 120.000			Recovery	=	96.64%	75.50%
Target Compounds						
15) 4,4'-DDD	17.84	18.07	205.7E6	137.4E6	7.043	5.374
17) 4,4'-DDT	18.53	18.68	234.7E6	162.2E6	7.745	5.829

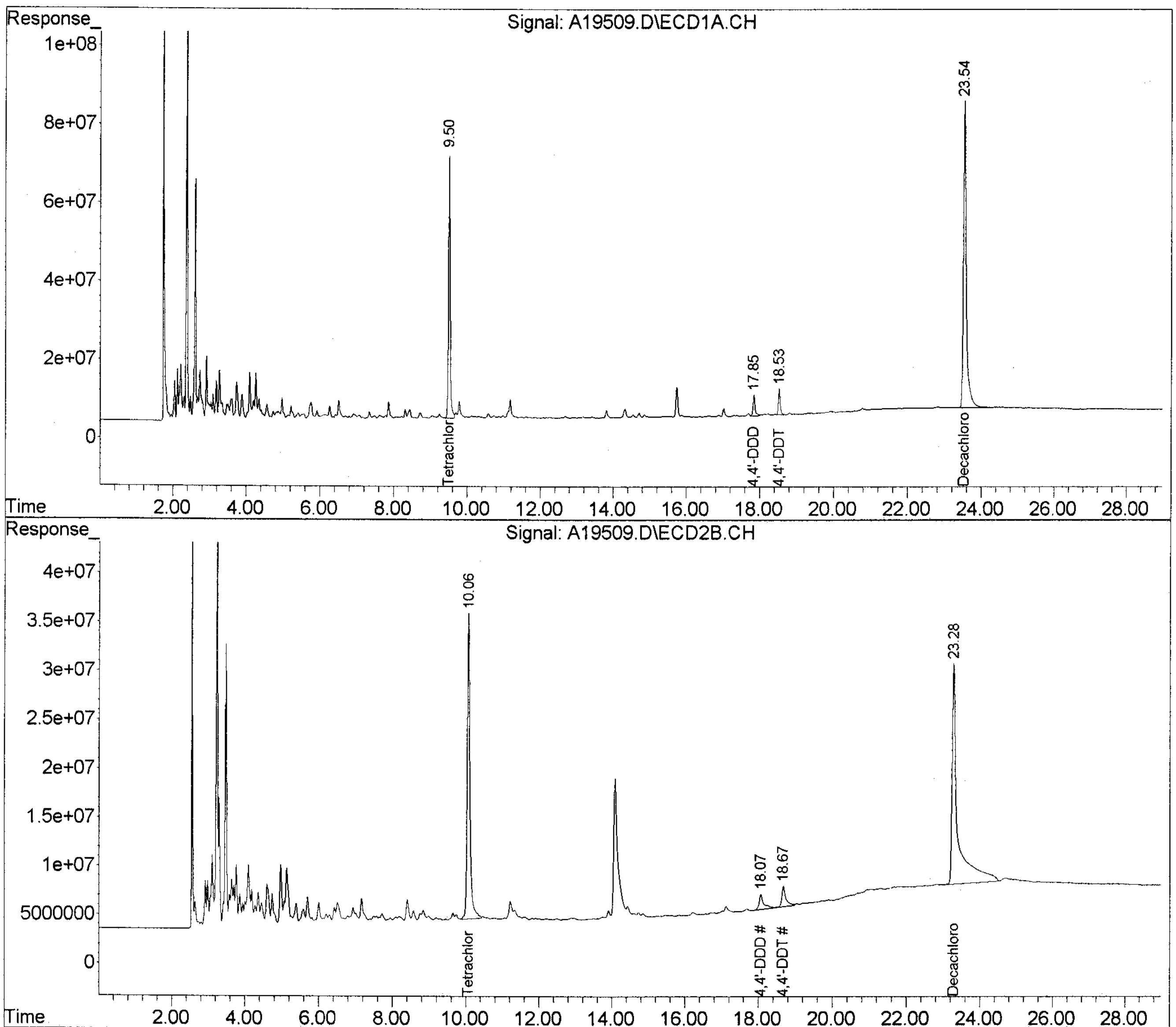
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19509.D(Signal #1)           A19509.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 22:13 (Signal #1); 10/14/09 22:50 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR20 (Sig #1); JBR20 (Sig #2)
Misc      : S-2713.07 60.2G/1.0ML (Sig #1); S-2713.07 60.2G/1.0ML (Sig #2)
ALS Vial  : 20   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 11 16:44:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19427.M
Quant Title  :
QLast Update : Sun Oct 18 17:42:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19509.D(Signal #1)           A19509.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 10/14/09 22:13 (Signal #1); 10/14/09 22:50 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBR20 (Sig #1); JBR20 (Sig #2)
Misc      : S-2713.07 60.2G/1.0ML (Sig #1); S-2713.07 60.2G/1.0ML (Sig #2)
ALS Vial  : 20   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:47:28 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title  :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	9.50	10.06	2142.3E6	1761.5E6	49.106	45.129
	Spiked Amount 60.000			Recovery	=	81.84%	75.22%
11) S	Decachlorobiphen	23.54	23.28	4581.5E6	2631.2E6	109.500	83.790
	Spiked Amount 120.000			Recovery	=	91.25%	69.83%
	Target Compounds						
2)	Hexachlorobutadi	4.20	4.97	162.0E6	257.3E6	2.204	4.566 #
8)	2,4'-DDD	17.02	17.12	79269878	61933934	2.883	2.785
9)	2,4'-DDT	17.69	17.68	22059693	14025926	0.699	0.514 #

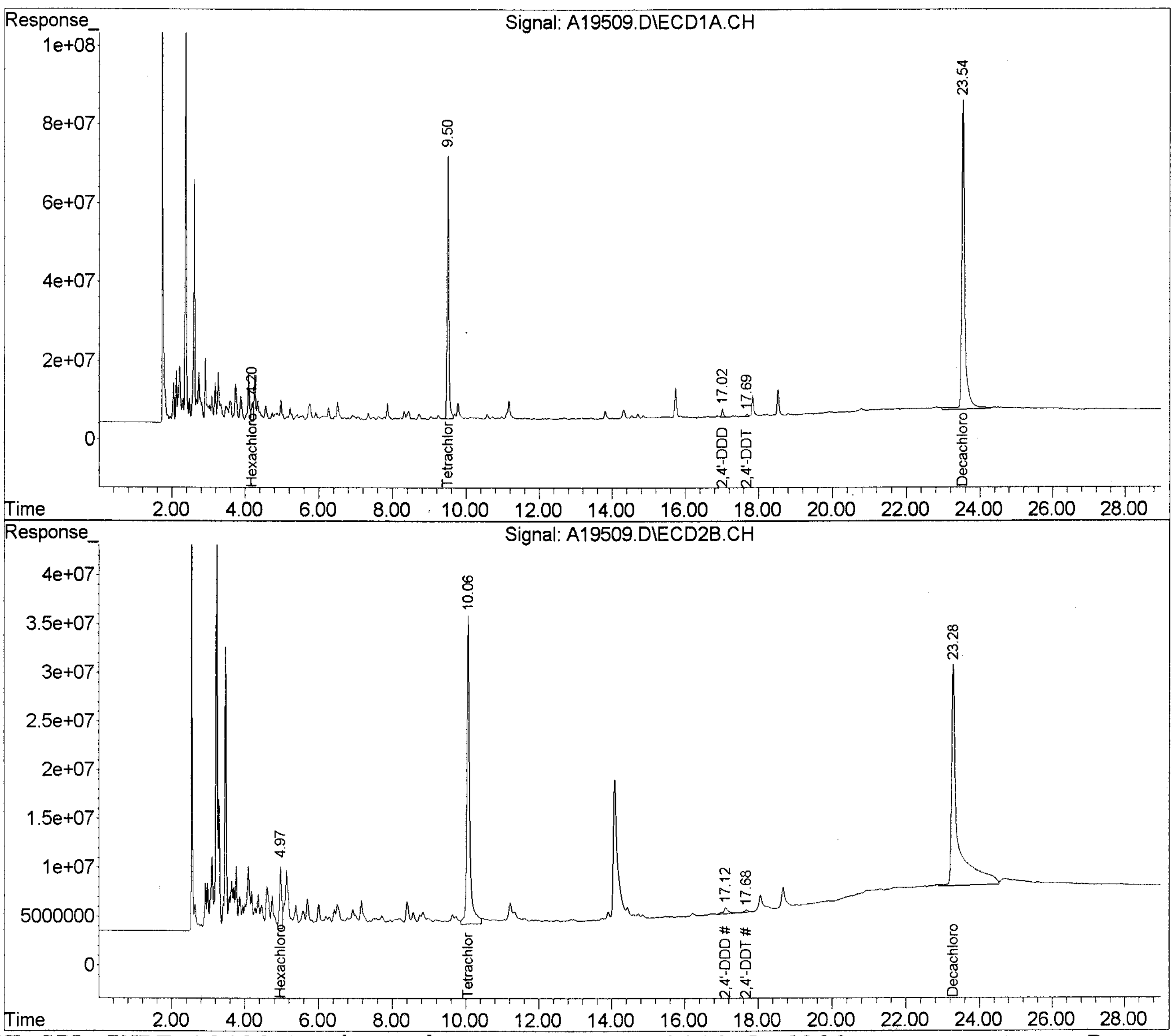
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19509.D(Signal #1) A19509.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 10/14/09 22:13 (Signal #1); 10/14/09 22:50 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBR20 (Sig #1); JBR20 (Sig #2)
Misc : S-2713.07 60.2G/1.0ML (Sig #1); S-2713.07 60.2G/1.0ML (Sig #2)
ALS Vial : 20 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 11 16:47:28 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19432.M
Quant Title :
QLast Update : Sun Oct 18 17:41:55 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



	Initial Results				Re-processed Data of 2/16/10		
Sample no.	**DDT** Units(Ug/KG)	**DDD** Units(Ug/KG)	**DDE** Units(Ug/KG)		**DDT** Units(Ug/KG)	**DDD** Units(Ug/KG)	**DDE** Units(Ug/KG)
JBPJ3	31000	ND	ND		31000	48	110
JBPJ9	33	ND	ND		61	ND	7.45
JBPK0	6200	ND	240		6200	114	240
JBPK3	23300	ND	222		23300	ND	222
JBPK8	350	ND	ND		420	106	32.4
JBPK9	3230	278	247		3230	278	247
JBPL1	490	ND	ND		426	6.9	6.85
JBPL5	1400	200	120		1400	264	181
JBPM0	490	ND	ND		490	28.4	19.7
JBPM4	16	9.2	1.12		16	9.2	1.12
JBPN5	ND	ND	ND		0.036	ND	0.041
JBQ11	910	32	ND		890	62	ND
JBQ16	277	8.3	ND		277	9.8	2.5
JBQ20	2.26	0.66	ND		2.48	0.5	0.054
JBR03	104000	66000	1700		104000	66000	1500
JBR07	93000	84000	3000		93000	84000	1250
JBR12	27.1	24.5	ND		27.6	24.5	0.45
JBR16	15.2	17.4	ND		15.6	17.4	0.52
JBR20	0.13	0.18	ND		0.14	0.18	ND

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01

Sample wt/vol: 5.000 (g/mL) G Lab File ID: A19003

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.17	U
319-85-7	beta-BHC	7.3	JP
319-86-8	delta-BHC	0.17	U
58-89-9	gamma-BHC (Lindane)	0.17	U
76-44-8	Heptachlor	0.17	U
309-00-2	Aldrin	0.17	U
1024-57-3	Heptachlor epoxide	0.17	U
959-98-8	Endosulfan I	22	
60-57-1	Dieldrin	0.17	U
72-55-9	4,4'-DDE	110	P
72-20-8	Endrin	0.33	U
33213-65-9	Endosulfan II	0.33	U
72-54-8	4,4'-DDD	0.33	U
1031-07-8	Endosulfan sulfate	0.33	U
50-29-3	4,4'-DDT	26000	EP
72-43-5	Methoxychlor	1.7	U
53494-70-5	Endrin ketone	0.33	U
7421-93-4	Endrin aldehyde	0.33	U
5103-71-9	alpha-Chlordane	0.17	U
5103-74-2	gamma-Chlordane	20	P
8001-35-2	Toxaphene	17	U
53-19-0	2,4'-DDD	48	P
3424-82-6	2,4'-DDE	0.33	U
789-02-6	2,4'-DDT	12000	EP
27304-13-8	Oxychlordane	0.33	U
5103-73-1	cis-Nonachlor	0.33	U
39765-80-5	Trans-Nonachlor	0.33	U
118-74-1	Hexachlorobenzene	0.33	U
87-68-3	Hexachlorobutadiene	0.33	U
29082-74-4	Octachlorostyrene	0.33	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19003.D(Signal #1)           A19003.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 14:12 (Signal #1); 09/22/09 14:49 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ3 (Sig #1); JBPJ3 (Sig #2)
Misc      : S-2603.01 5.1G/5ML (Sig #1); S-2603.01 5.1G/5ML (Sig #2)
ALS Vial  : 71   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 14:27:47 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.     : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

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	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1472.0E6	1219.4E6	49.168	52.849
	Spiked Amount 60.000			Recovery	=	81.95%	88.08%
11) S	Decachlorobiphen	24.78	22.41	2343.9E6	2095.8E6	103.286	122.811
	Spiked Amount 120.000			Recovery	=	86.07%	102.34%
	Target Compounds						
8)	2,4'-DDD	17.89	16.43	1307.1E6	199.0E6	69.761	14.422 #
9)	2,4'-DDT	18.52	16.99	71721.9E6	59496.0E6	5149.811	3681.807 #

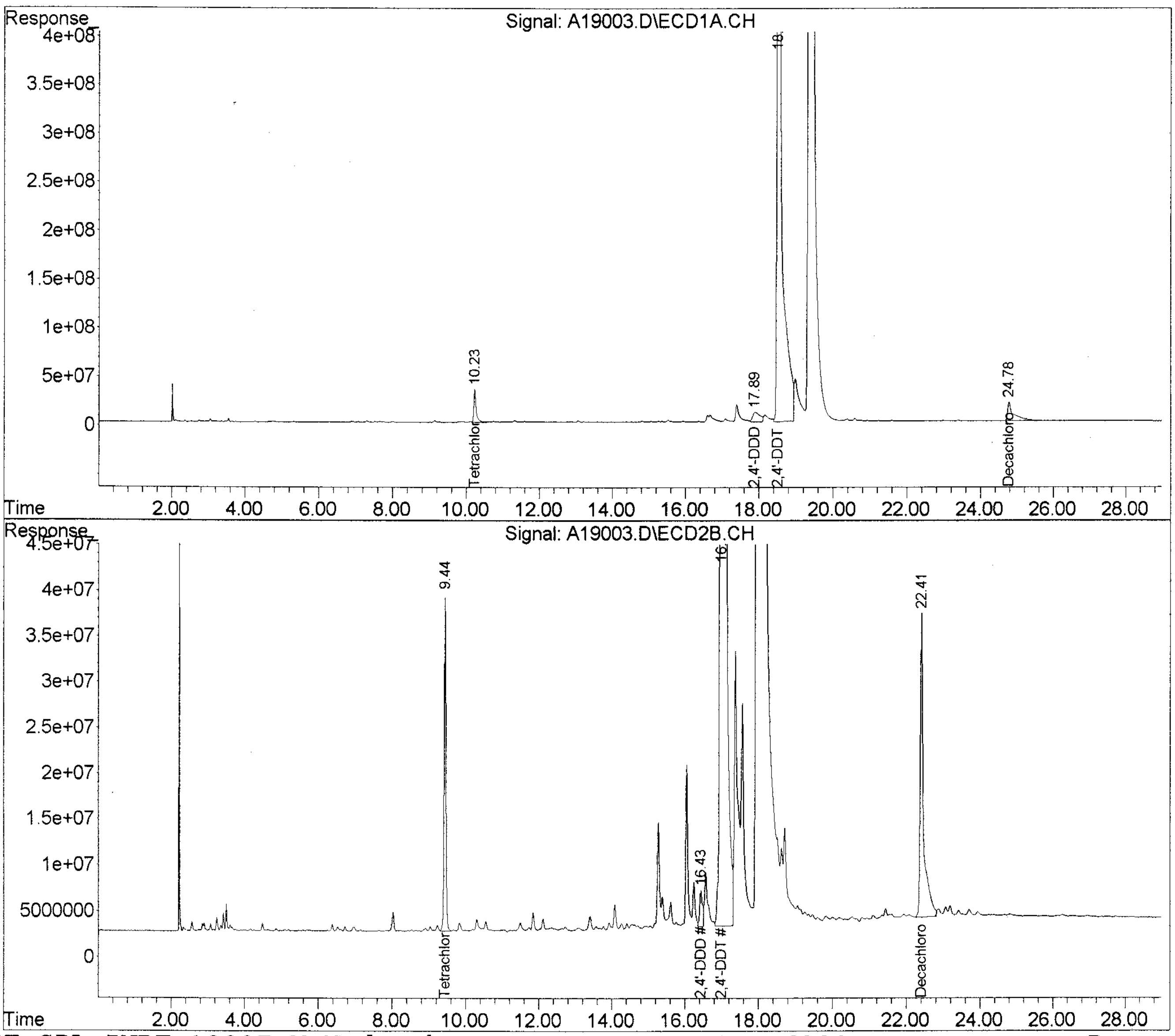
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19003.D(Signal #1) A19003.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 14:12 (Signal #1); 09/22/09 14:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ3 (Sig #1); JBPJ3 (Sig #2)
Misc : S-2603.01 5.1G/5ML (Sig #1); S-2603.01 5.1G/5ML (Sig #2)
ALS Vial : 71 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 14:27:47 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19003.D(Signal #1) A19003.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 14:12 (Signal #1); 09/22/09 14:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ3 (Sig #1); JBPJ3 (Sig #2)
Misc : S-2603.01 5.1G/5ML (Sig #1); S-2603.01 5.1G/5ML (Sig #2)
ALS Vial : 71 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 14:26:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

[initials] 02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1472.0E6	1215.7E6	52.669	56.729	
	Spiked Amount 60.000			Recovery	=	87.78%	94.55%	
22) S	Decachlorobiphen	24.78	22.41	2343.9E6	2079.7E6	99.032	110.071	
	Spiked Amount 120.000			Recovery	=	82.53%	91.73%	
	Target Compounds							
4)	Beta-BHC	13.21	12.11	39049336	44445512	2.201	3.794	#
9)	Gamma-Chlordane	16.67	15.61	599.8E6	158.5E6	19.352	6.030	#
11)	Endosulfan I	17.09	16.24	202.0E6	219.5E6	6.613	7.309	
12)	4,4'-DDE	17.39	16.05	1310.7E6	705.1E6	46.209	32.857	#
17)	4,4'-DDT	19.38	18.00	169364.6E6	149183.3E6	9928.724	7764.099	

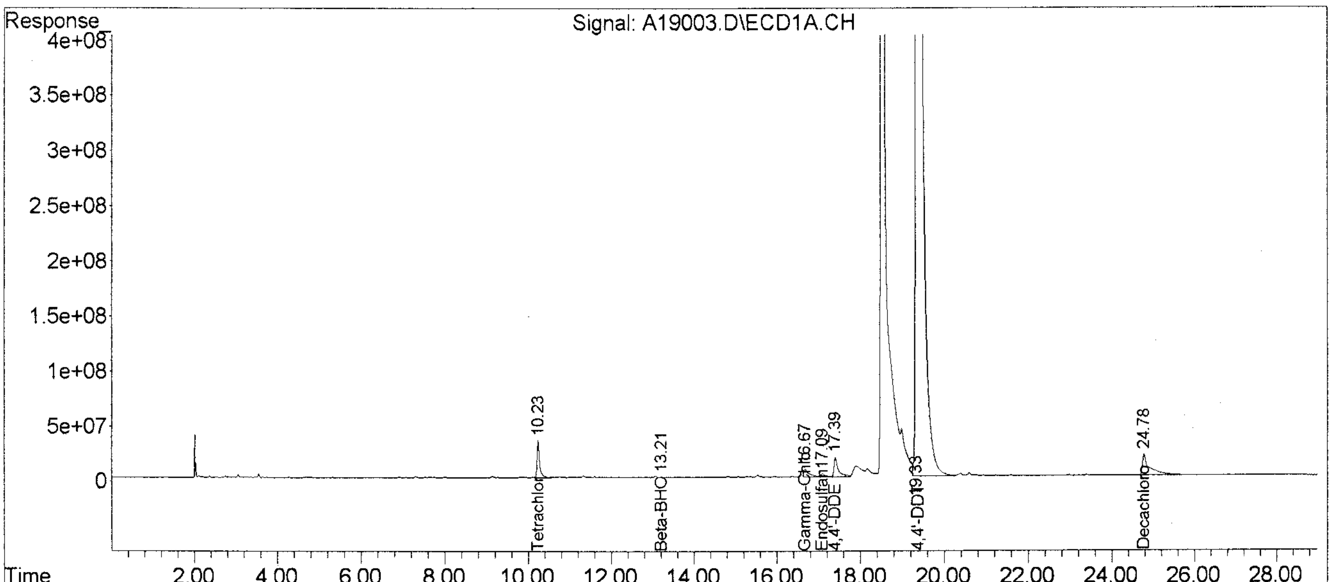
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

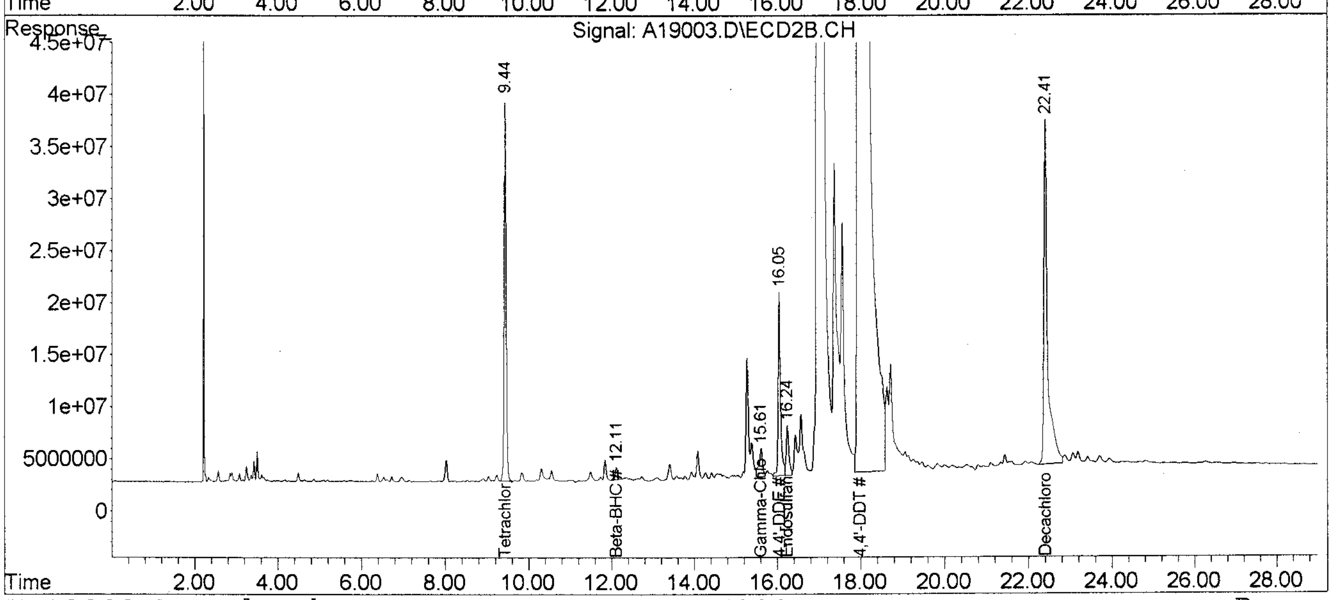
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19003.D(Signal #1) A19003.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 14:12 (Signal #1); 09/22/09 14:49 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ3 (Sig #1); JBPJ3 (Sig #2)
Misc : S-2603.01 5.1G/5ML (Sig #1); S-2603.01 5.1G/5ML (Sig #2)
ALS Vial : 71 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 14:26:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ3DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.01DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19028

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 200.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	33	U
319-85-7	beta-BHC	33	U
319-86-8	delta-BHC	33	U
58-89-9	gamma-BHC (Lindane)	33	U
76-44-8	Heptachlor	33	U
309-00-2	Aldrin	33	U
1024-57-3	Heptachlor epoxide	33	U
959-98-8	Endosulfan I	33	U
60-57-1	Dieldrin	33	U
72-55-9	4,4'-DDE	33	U
72-20-8	Endrin	65	U
33213-65-9	Endosulfan II	65	U
72-54-8	4,4'-DDD	65	U
1031-07-8	Endosulfan sulfate	65	U
50-29-3	4,4'-DDT	21000	DP
72-43-5	Methoxychlor	330	U
53494-70-5	Endrin ketone	65	U
7421-93-4	Endrin aldehyde	65	U
5103-71-9	alpha-Chlordane	33	U
5103-74-2	gamma-Chlordane	33	U
8001-35-2	Toxaphene	3300	U
53-19-0	2,4'-DDD	65	U
3424-82-6	2,4'-DDE	65	U
789-02-6	2,4'-DDT	10000	D
27304-13-8	Oxychlordane	65	U
5103-73-1	cis-Nonachlor	65	U
39765-80-5	Trans-Nonachlor	65	U
118-74-1	Hexachlorobenzene	65	U
87-68-3	Hexachlorobutadiene	65	U
29082-74-4	Octachlorostyrene	65	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19028.D(Signal #1) A19028.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 07:17 (Signal #1); 09/23/09 07:54 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ3DL 200X (Sig #1); JBPJ3DL 200X (Sig #2)
Misc : S-2603.01DL 5.1G/5ML (Sig #1); S-2603.01DL 5.1G/5ML (Sig #2)
ALS Vial : 6 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 14:32:10 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
9)	2,4'-DDT	18.51	16.99	214.9E6	248.4E6	15.431	15.371

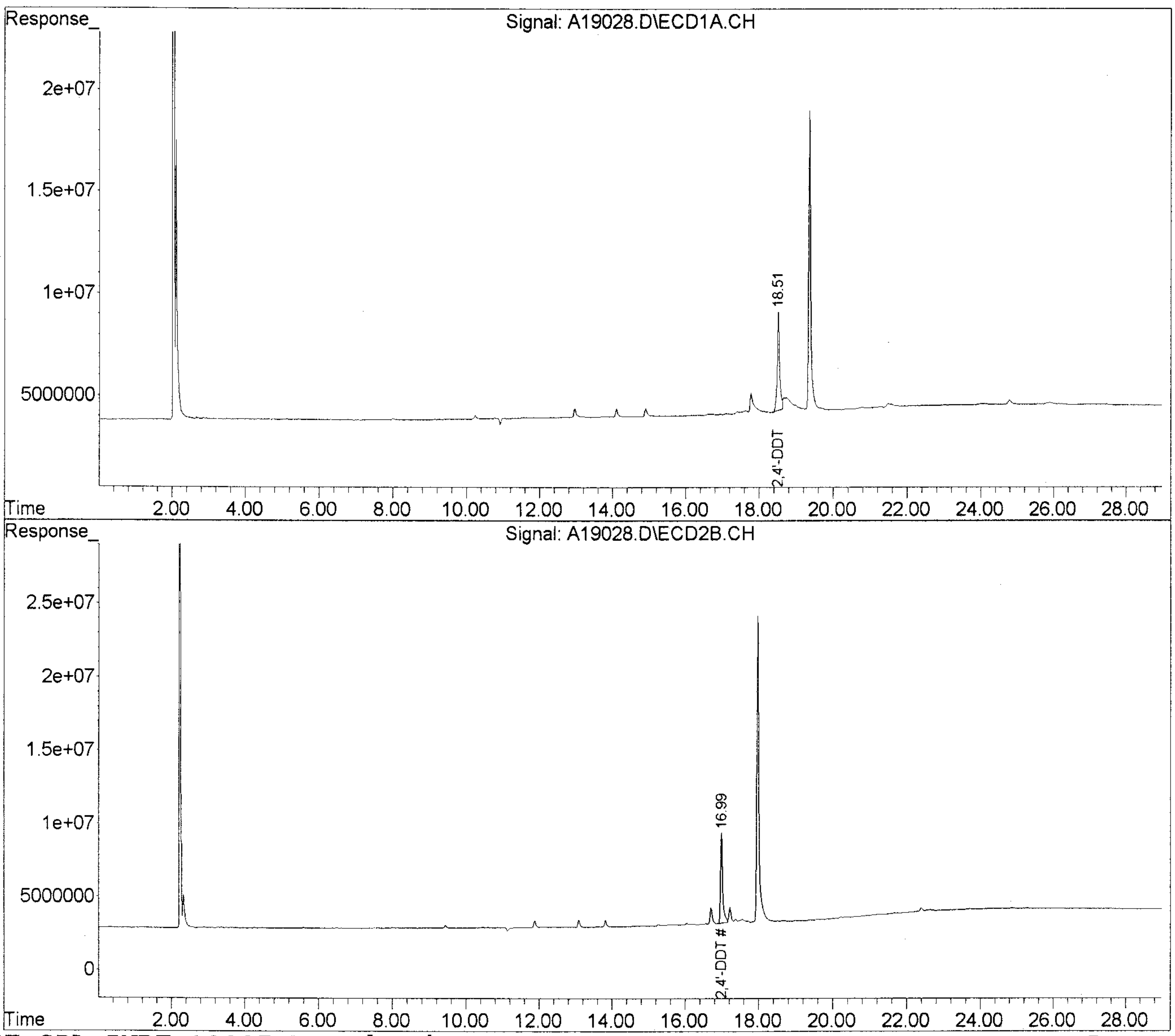
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19028.D(Signal #1)            A19028.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 07:17 (Signal #1); 09/23/09 07:54 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ3DL 200X (Sig #1); JBPJ3DL 200X (Sig #2)
Misc      : S-2603.01DL  5.1G/5ML (Sig #1); S-2603.01DL  5.1G/5ML (Sig #2)
ALS Vial  : 6   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 14:32:10 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19028.D(Signal #1)           A19028.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/23/09 07:17 (Signal #1); 09/23/09 07:54 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ3DL 200X (Sig #1); JBPJ3DL 200X (Sig #2)
Misc      : S-2603.01DL  5.1G/5ML (Sig #1); S-2603.01DL  5.1G/5ML (Sig #2)
ALS Vial  : 6   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 14:30:36 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Oyks 02/17/10

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
17)	4,4'-DDT	19.36	17.97	560.3E6	839.1E6	32.849	43.673 #

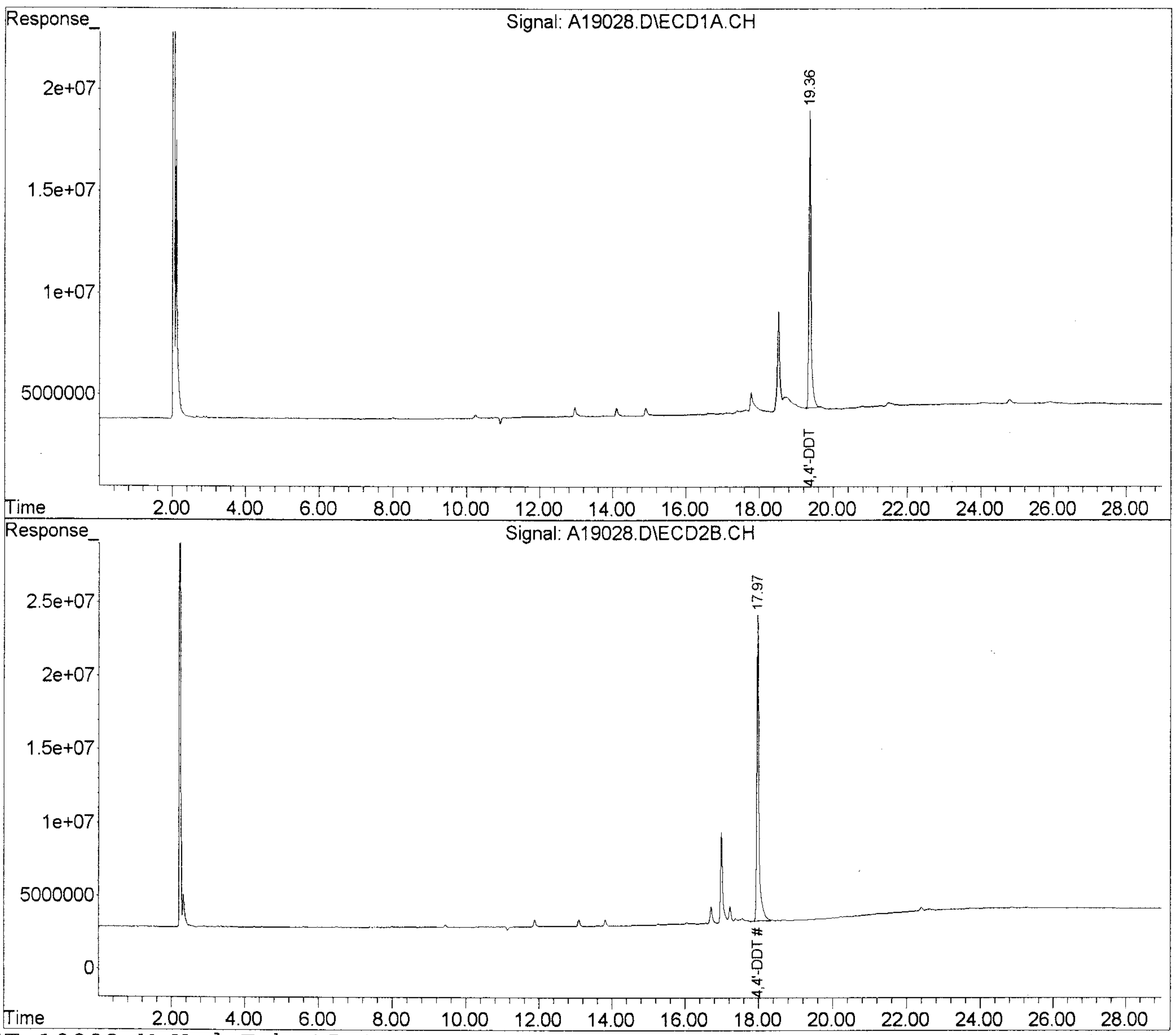
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19028.D(Signal #1)           A19028.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/23/09 07:17 (Signal #1); 09/23/09 07:54 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ3DL 200X (Sig #1); JBPJ3DL 200X (Sig #2)
Misc      : S-2603.01DL  5.1G/5ML (Sig #1); S-2603.01DL  5.1G/5ML (Sig #2)
ALS Vial  : 6   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 14:30:36 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPJ9

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.03

Sample wt/vol: 4.900 (g/mL) G Lab File ID: A19009

% Moisture: 41 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.17	U
319-85-7	beta-BHC	18	P
319-86-8	delta-BHC	0.17	U
58-89-9	gamma-BHC (Lindane)	0.17	U
76-44-8	Heptachlor	0.17	U
309-00-2	Aldrin	0.17	U
1024-57-3	Heptachlor epoxide	0.17	U
959-98-8	Endosulfan I	0.17	U
60-57-1	Dieldrin	8.9	JP
72-55-9	4,4'-DDE	7.1	JP
72-20-8	Endrin	0.35	U
33213-65-9	Endosulfan II	0.35	U
72-54-8	4,4'-DDD	0.35	U
1031-07-8	Endosulfan sulfate	0.35	U
50-29-3	4,4'-DDT	33	JP
72-43-5	Methoxychlor	1.7	U
53494-70-5	Endrin ketone	0.35	U
7421-93-4	Endrin aldehyde	6.0	JP
5103-71-9	alpha-Chlordane	0.17	U
5103-74-2	gamma-Chlordane	23	P
8001-35-2	Toxaphene	17	U
53-19-0	2,4'-DDD	0.35	U
3424-82-6	2,4'-DDE	0.35	U
789-02-6	2,4'-DDT	28	J
27304-13-8	Oxychlordane	0.35	U
5103-73-1	cis-Nonachlor	0.35	U
39765-80-5	Trans-Nonachlor	0.35	U
118-74-1	Hexachlorobenzene	12	J
87-68-3	Hexachlorobutadiene	11	JP
29082-74-4	Octachlorostyrene	8.6	JP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19009.D(Signal #1) A19009.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 18:30 (Signal #1); 09/22/09 19:07 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ9 (Sig #1); JBPJ9 (Sig #2)
Misc : S-2603.03 4.9G/5ML (Sig #1); S-2603.03 4.9G/5ML (Sig #2)
ALS Vial : 78 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:18:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Dulo 02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1561.1E6	1287.6E6	52.147	55.805
	Spiked Amount 60.000			Recovery	=	86.91%	93.01%
11) S	Decachlorobiphen	24.78	22.41	2237.8E6	2246.8E6	98.610	131.661 #
	Spiked Amount 120.000			Recovery	=	82.17%	109.72%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	170.8E6	164.0E6	3.297	4.325 #
3)	Hexachlorobenzen	11.59	10.55	148.7E6	96211252	4.346	3.597
4)	Octachlorostyren	15.52	14.28	246.6E6	90077362	5.646	2.478 #
9)	2,4'-DDT	18.56	17.05	111.8E6	137.6E6	8.025	8.513

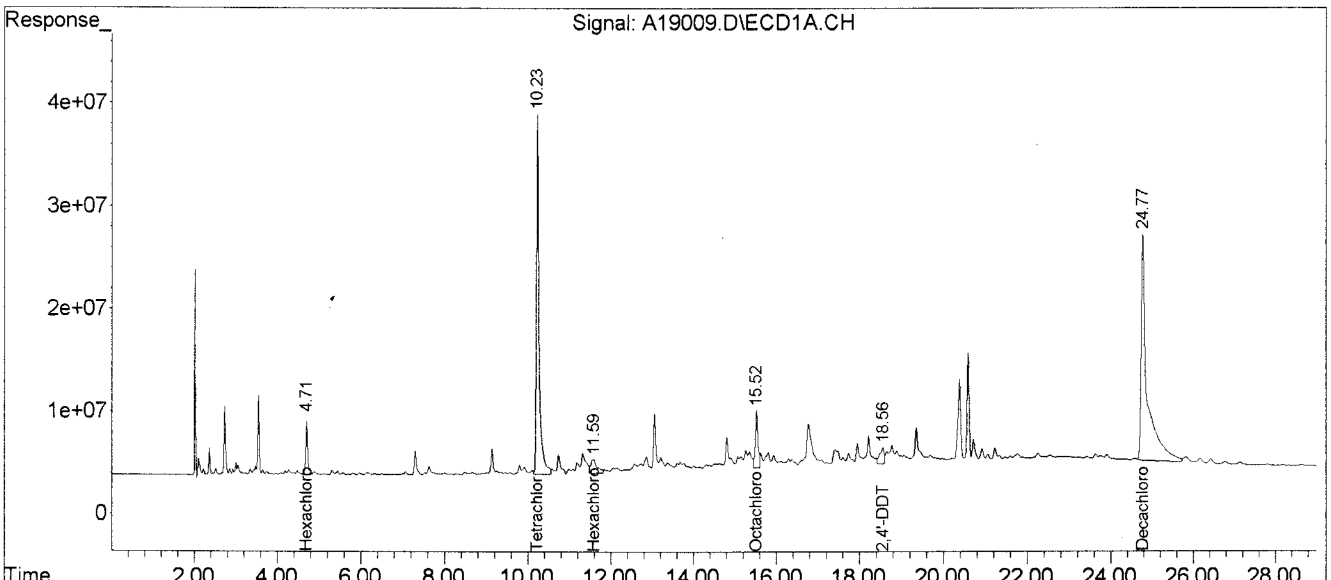
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

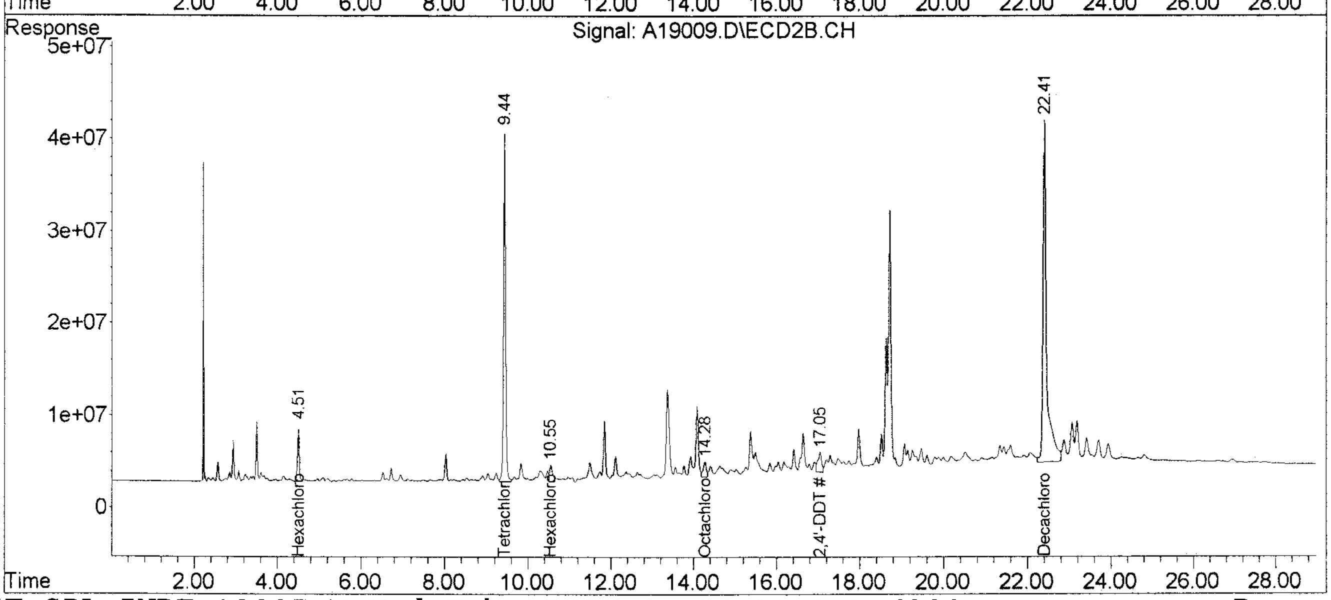
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19009.D(Signal #1)          A19009.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 18:30 (Signal #1); 09/22/09 19:07 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ9 (Sig #1); JBPJ9 (Sig #2)
Misc      : S-2603.03 4.9G/5ML (Sig #1); S-2603.03 4.9G/5ML (Sig #2)
ALS Vial  : 78   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:18:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19009.D(Signal #1)           A19009.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 18:30 (Signal #1); 09/22/09 19:07 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPJ9 (Sig #1); JBPJ9 (Sig #2)
Misc      : S-2603.03 4.9G/5ML (Sig #1); S-2603.03 4.9G/5ML (Sig #2)
ALS Vial  : 78   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:13:11 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

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	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1561.1E6	1253.5E6	55.860	58.492	
	Spiked Amount 60.000			Recovery	=	93.10%	97.49%	
22) S	Decachlorobiphen	24.78	22.41	2237.8E6	2101.3E6	94.549	111.212	
	Spiked Amount 120.000			Recovery	=	78.79%	92.68%	
	Target Compounds							
4)	Beta-BHC	13.20	12.11	93392022	106.2E6	5.264	9.065	#
9)	Gamma-Chlordane	16.76	15.50	385.1E6	171.5E6	12.427	6.529	#
12)	4,4'-DDE	17.42	16.05	93154195	43871701	3.284	2.044	#
13)	Dieldrin	17.73	16.64	79469767	215.7E6	2.572	8.256	#
17)	4,4'-DDT	19.35	17.98	229.7E6	182.5E6	13.467	9.498	#
18)	Endrin Aldehyde	19.68	18.63	43061791	487.1E6	1.725	27.057	#

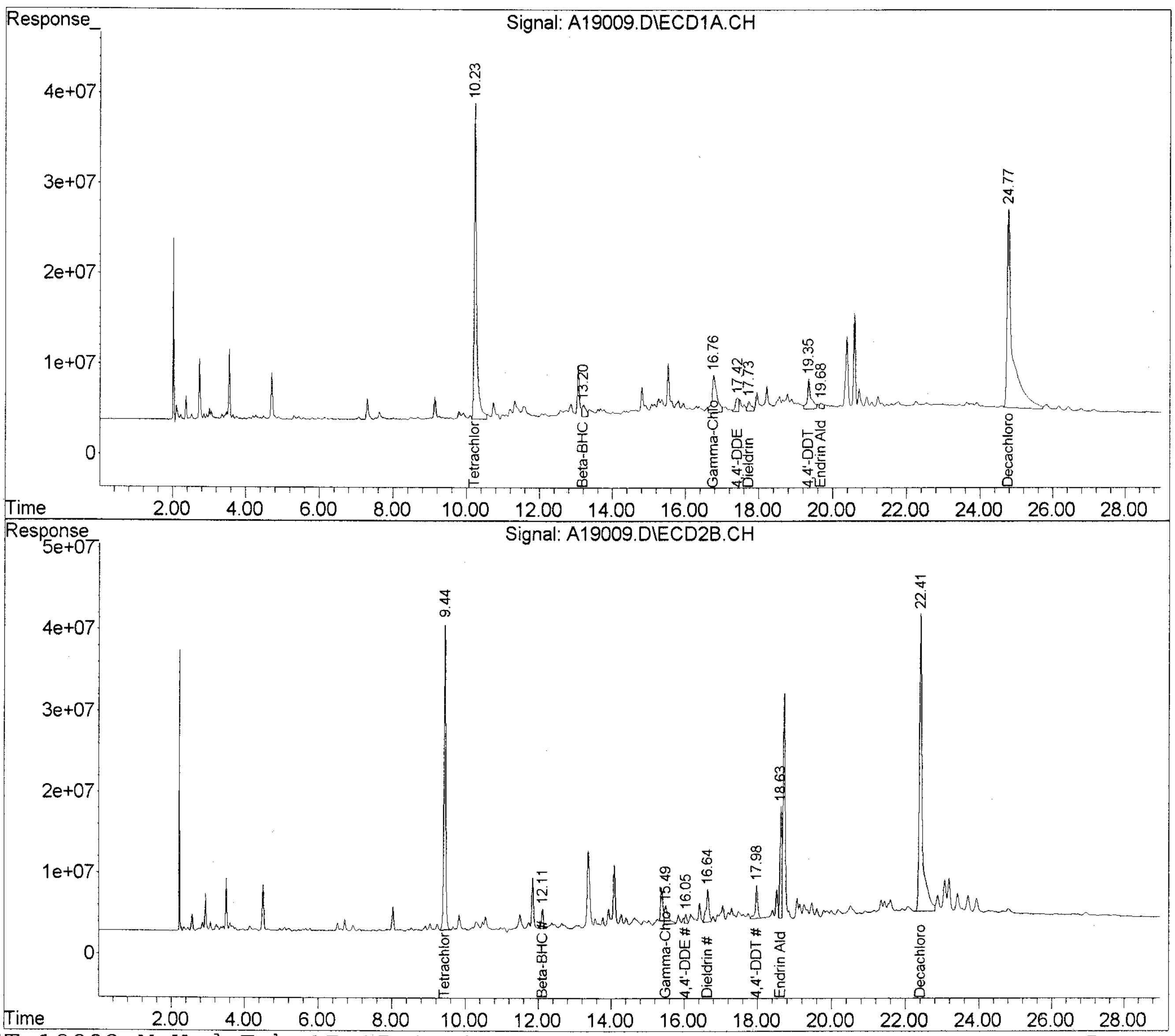
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report   (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19009.D(Signal #1)   A19009.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1)   A-6890B(Signal # 2)
Acq On : 09/22/09 18:30 (Signal #1); 09/22/09 19:07 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPJ9 (Sig #1); JBPJ9 (Sig #2)
Misc : S-2603.03 4.9G/5ML (Sig #1); S-2603.03 4.9G/5ML (Sig #2)
ALS Vial : 78 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:13:11 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2   Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK0

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: 1790.0   SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL   Lab Sample ID: S-2603.04

Sample wt/vol: 5.100 (g/mL) G   Lab File ID: A19010

% Moisture: 40   Decanted: (Y/N) N   Date Received: 08/27/2009

Extraction: (Type) SONC   Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL)   Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL)   GPC Factor: 2.0   Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y   pH: 6.9   Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.16	U
319-85-7	beta-BHC	0.16	U
319-86-8	delta-BHC	0.16	U
58-89-9	gamma-BHC (Lindane)	0.16	U
76-44-8	Heptachlor	0.16	U
309-00-2	Aldrin	0.16	U
1024-57-3	Heptachlor epoxide	0.16	U
959-98-8	Endosulfan I	0.16	U
60-57-1	Dieldrin	0.16	U
72-55-9	4,4'-DDE	130	P
72-20-8	Endrin	0.33	U
33213-65-9	Endosulfan II	0.33	U
72-54-8	4,4'-DDD	100	P
1031-07-8	Endosulfan sulfate	0.33	U
50-29-3	4,4'-DDT	6800	EP
72-43-5	Methoxychlor	1.6	U
53494-70-5	Endrin ketone	0.33	U
7421-93-4	Endrin aldehyde	0.33	U
5103-71-9	alpha-Chlordane	0.16	U
5103-74-2	gamma-Chlordane	0.16	U
8001-35-2	Toxaphene	16	U
53-19-0	2,4'-DDD	14	JP
3424-82-6	2,4'-DDE	110	
789-02-6	2,4'-DDT	1500	EP
27304-13-8	Oxychlordane	0.33	U
5103-73-1	cis-Nonachlor	0.33	U
39765-80-5	Trans-Nonachlor	0.33	U
118-74-1	Hexachlorobenzene	0.33	U
87-68-3	Hexachlorobutadiene	11	J
29082-74-4	Octachlorostyrene	0.33	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19010.D(Signal #1)          A19010.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 19:07 (Signal #1); 09/22/09 19:44 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK0 (Sig #1); JBPK0 (Sig #2)
Misc      : S-2603.04 5.1G/5ML (Sig #1); S-2603.04 5.1G/5ML (Sig #2)
ALS Vial  : 79   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:27:19 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Oulo 02/17/10

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1494.6E6	1049.5E6	49.924	45.484	
	Spiked Amount 60.000			Recovery	=	83.21%	75.81%	
11) S	Decachlorobiphen	24.78	22.41	2266.9E6	1505.4E6	99.892	88.216	
	Spiked Amount 120.000			Recovery	=	83.24%	73.51%	
	Target Compounds							
2)	Hexachlorobutadi	4.71	4.51	179.5E6	130.8E6	3.466	3.451	
6)	2,4'-DDE	16.67	15.28	700.9E6	694.0E6	33.268	38.395	
8)	2,4'-DDD	17.86	16.43	80051940	97491534	4.273	7.064	#
9)	2,4'-DDT	18.51	16.99	8105.0E6	7398.7E6	581.959	457.855	

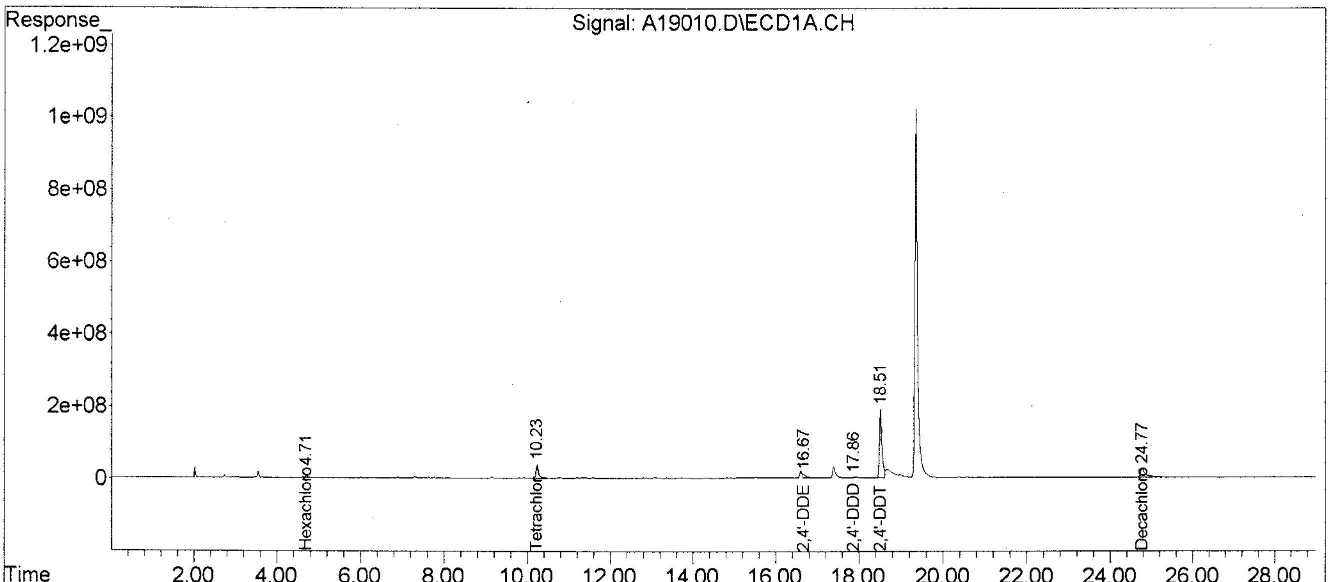
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

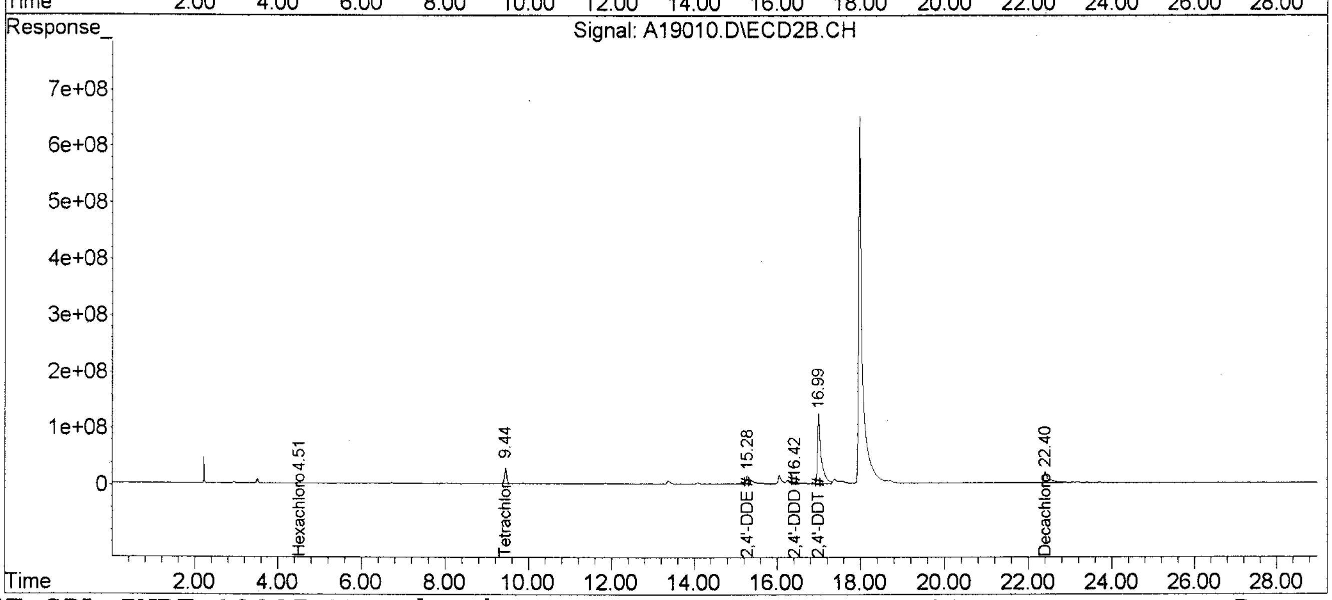
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19010.D(Signal #1) A19010.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:07 (Signal #1); 09/22/09 19:44 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK0 (Sig #1); JBPK0 (Sig #2)
Misc : S-2603.04 5.1G/5ML (Sig #1); S-2603.04 5.1G/5ML (Sig #2)
ALS Vial : 79 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:27:19 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19010.D(Signal #1) A19010.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:07 (Signal #1); 09/22/09 19:44 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK0 (Sig #1); JBPK0 (Sig #2)
Misc : S-2603.04 5.1G/5ML (Sig #1); S-2603.04 5.1G/5ML (Sig #2)
ALS Vial : 79 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:24:00 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

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02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1494.6E6	1046.5E6	53.479	48.833
	Spiked Amount 60.000			Recovery	=	89.13%	81.39%
22) S	Decachlorobiphen	24.78	22.41	2266.9E6	1471.6E6	95.777	77.883
	Spiked Amount 120.000			Recovery	=	79.81%	64.90%
	Target Compounds						
12)	4,4'-DDE	17.39	16.05	1662.5E6	851.2E6	58.610	39.664 #
15)	4,4'-DDD	18.66	17.37	3075.1E6	613.5E6	134.741	30.858 #
17)	4,4'-DDT	19.35	17.98	44760.7E6	39887.6E6	2624.021	2075.911

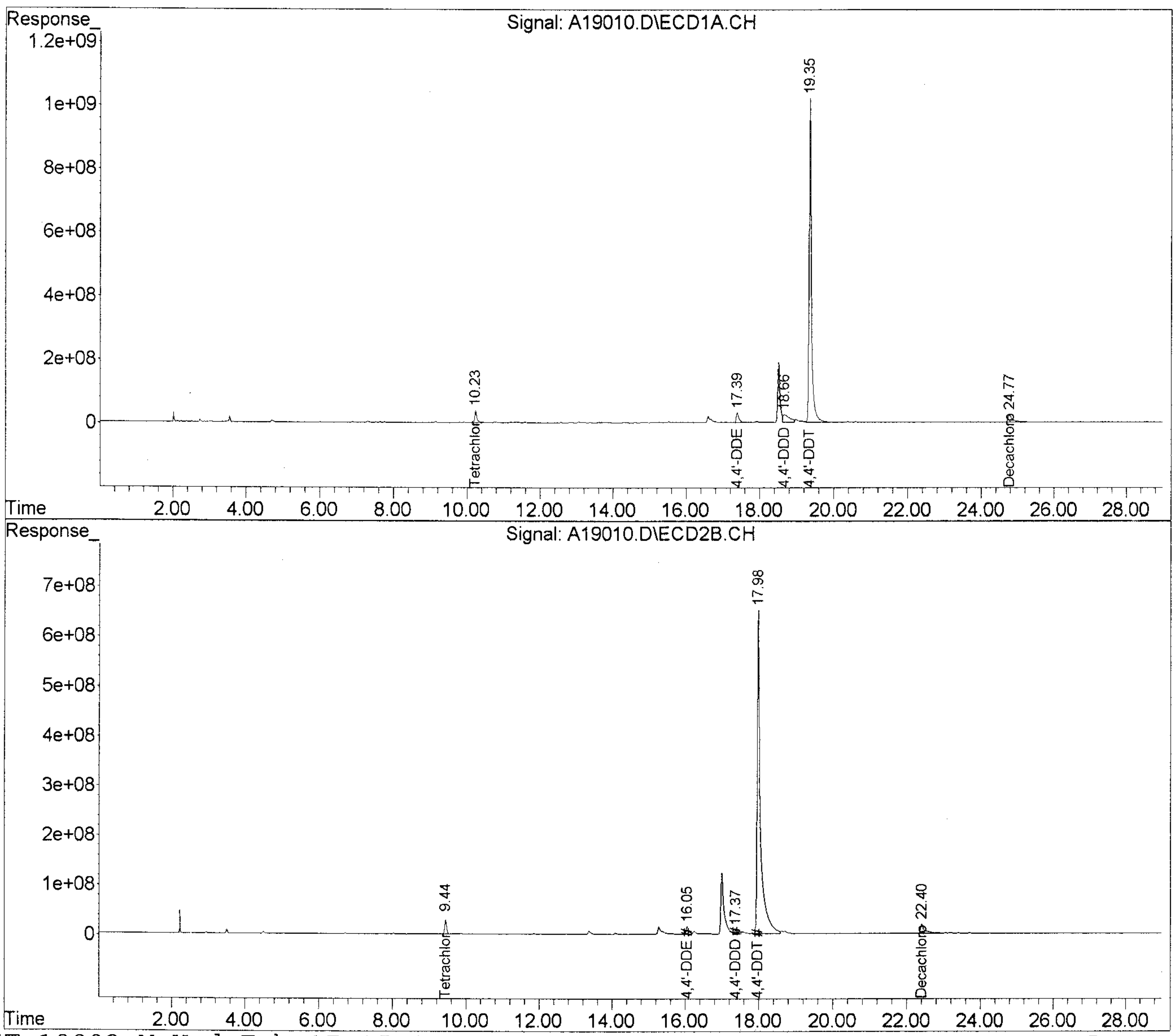
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19010.D(Signal #1) A19010.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:07 (Signal #1); 09/22/09 19:44 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK0 (Sig #1); JBPK0 (Sig #2)
Misc : S-2603.04 5.1G/5ML (Sig #1); S-2603.04 5.1G/5ML (Sig #2)
ALS Vial : 79 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:24:00 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



1G - FORM I PEST

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JBPK0DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.04DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19029

% Moisture: 40 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 100.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	5000	D
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1600	U
53-19-0	2,4'-DDD	33	U
3424-82-6	2,4'-DDE	33	U
789-02-6	2,4'-DDT	1200	DJ
27304-13-8	Oxychlordane	33	U
5103-73-1	cis-Nonachlor	33	U
39765-80-5	Trans-Nonachlor	33	U
118-74-1	Hexachlorobenzene	33	U
87-68-3	Hexachlorobutadiene	33	U
29082-74-4	Octachlorostyrene	33	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19029.D(Signal #1)            A19029.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 07:54 (Signal #1); 09/23/09 08:31 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK0DL 100X (Sig #1); JBPK0DL 100X (Sig #2)
Misc      : S-2603.04DL  5.1G/5ML (Sig #1); S-2603.04DL  5.1G/5ML (Sig #2)
ALS Vial  : 7   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:36:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

10/1/10 02/17/10

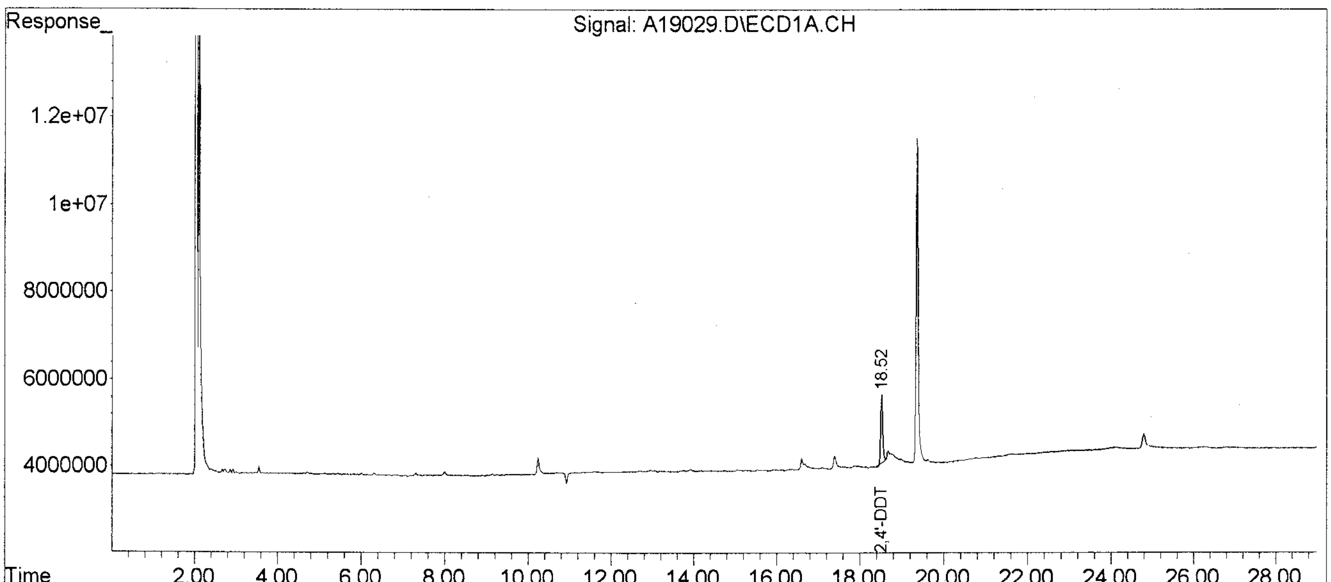
	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
9)	2,4'-DDT	18.52	16.99	52588994	72272621	3.776	4.472

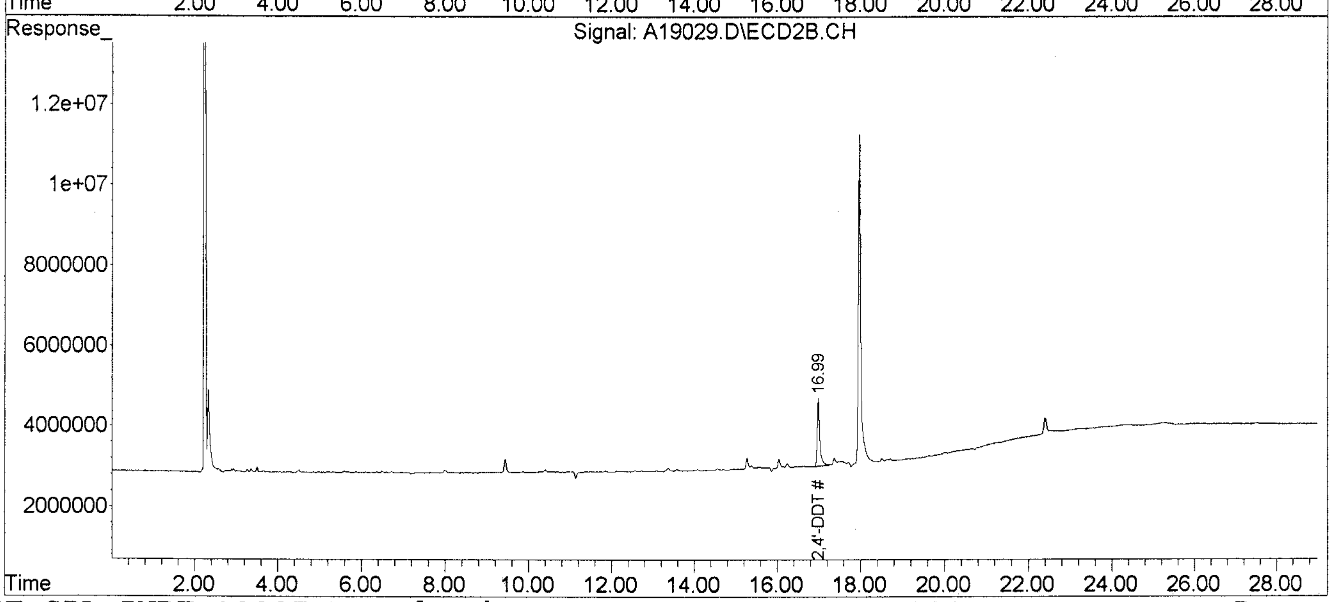
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19029.D(Signal #1) A19029.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 07:54 (Signal #1); 09/23/09 08:31 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK0DL 100X (Sig #1); JBPK0DL 100X (Sig #2)
Misc : S-2603.04DL 5.1G/5ML (Sig #1); S-2603.04DL 5.1G/5ML (Sig #2)
ALS Vial : 7 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:36:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19029.D(Signal #1) A19029.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 07:54 (Signal #1); 09/23/09 08:31 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK0DL 100X (Sig #1); JBPK0DL 100X (Sig #2)
Misc : S-2603.04DL 5.1G/5ML (Sig #1); S-2603.04DL 5.1G/5ML (Sig #2)
ALS Vial : 7 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:34:18 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Ouko 02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
17)	4,4'-DDT	19.36	17.97	260.5E6	327.4E6	15.274	17.040

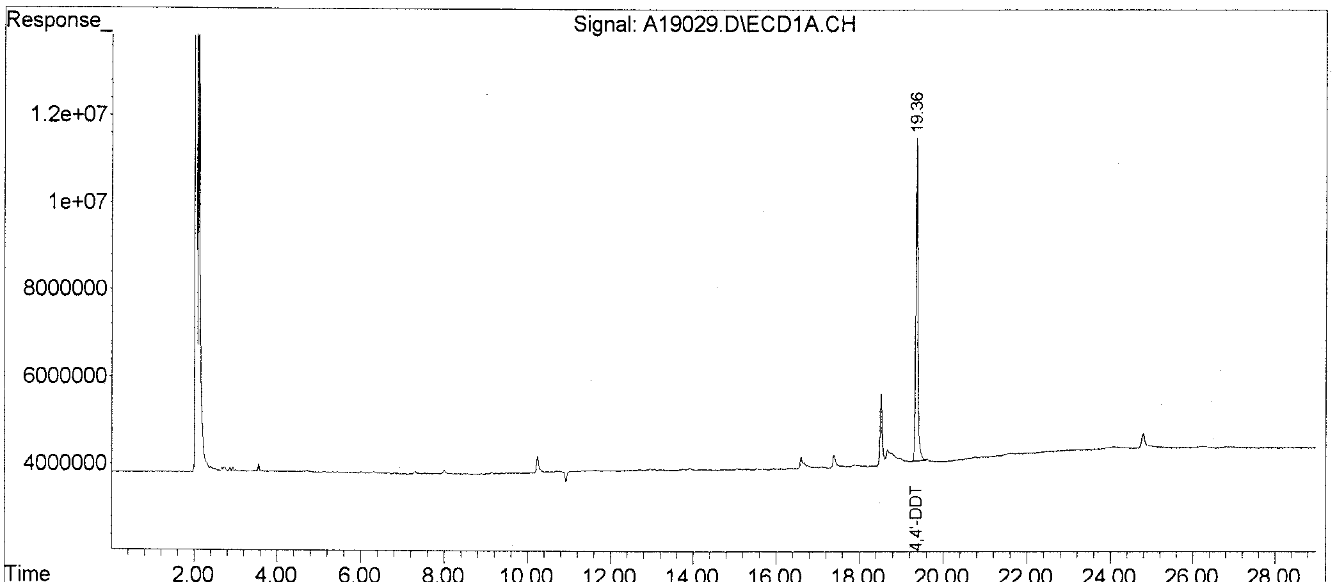
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

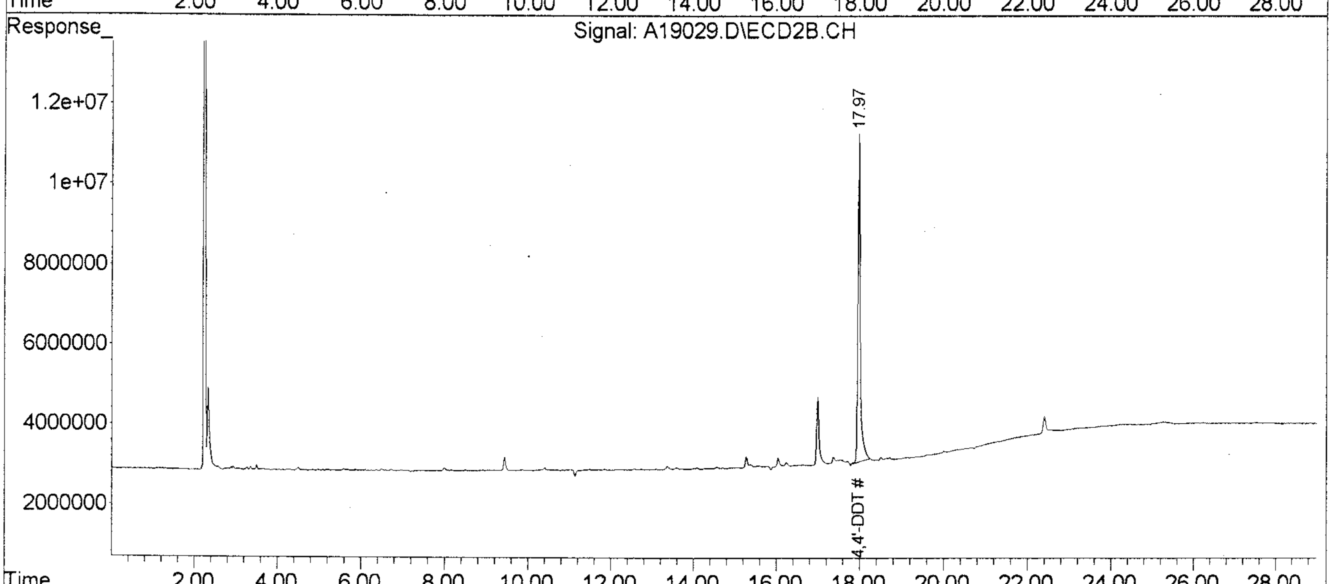
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19029.D(Signal #1)           A19029.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/23/09 07:54 (Signal #1); 09/23/09 08:31 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK0DL 100X (Sig #1); JBPK0DL 100X (Sig #2)
Misc      : S-2603.04DL  5.1G/5ML (Sig #1); S-2603.04DL  5.1G/5ML (Sig #2)
ALS Vial  : 7   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:34:18 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK3

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.05

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19011

% Moisture: 41 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.17	U
319-85-7	beta-BHC	12	J
319-86-8	delta-BHC	0.17	U
58-89-9	gamma-BHC (Lindane)	0.17	U
76-44-8	Heptachlor	0.17	U
309-00-2	Aldrin	0.17	U
1024-57-3	Heptachlor epoxide	0.17	U
959-98-8	Endosulfan I	0.17	U
60-57-1	Dieldrin	0.17	U
72-55-9	4,4'-DDE	190	
72-20-8	Endrin	0.33	U
33213-65-9	Endosulfan II	0.33	U
72-54-8	4,4'-DDD	0.33	U
1031-07-8	Endosulfan sulfate	0.33	U
50-29-3	4,4'-DDT	22000	E
72-43-5	Methoxychlor	1.7	U
53494-70-5	Endrin ketone	0.33	U
7421-93-4	Endrin aldehyde	0.33	U
5103-71-9	alpha-Chlordane	0.17	U
5103-74-2	gamma-Chlordane	0.17	U
8001-35-2	Toxaphene	17	U
53-19-0	2,4'-DDD	0.33	U
3424-82-6	2,4'-DDE	32	JP
789-02-6	2,4'-DDT	7900	EP
27304-13-8	Oxychlordane	0.33	U
5103-73-1	cis-Nonachlor	0.33	U
39765-80-5	Trans-Nonachlor	0.33	U
118-74-1	Hexachlorobenzene	0.33	U
87-68-3	Hexachlorobutadiene	11	J
29082-74-4	Octachlorostyrene	0.33	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19011.D(Signal #1) A19011.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:44 (Signal #1); 09/22/09 20:21 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK3 (Sig #1); JBPK3 (Sig #2)
Misc : S-2603.05 5.1G/5ML (Sig #1); S-2603.05 5.1G/5ML (Sig #2)
ALS Vial : 80 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:46:34 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1621.8E6	1109.9E6	54.174	48.102
	Spiked Amount 60.000			Recovery	=	90.29%	80.17%
11) S	Decachlorobiphen	24.78	22.40	2481.5E6	1553.6E6	109.352	91.042
	Spiked Amount 120.000			Recovery	=	91.13%	75.87%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	186.2E6	126.7E6	3.595	3.342
6)	2,4'-DDE	16.67	15.28	205.0E6	236.6E6	9.730	13.092 #
9)	2,4'-DDT	18.51	16.99	48035.4E6	38575.2E6	3449.059	2387.164 #

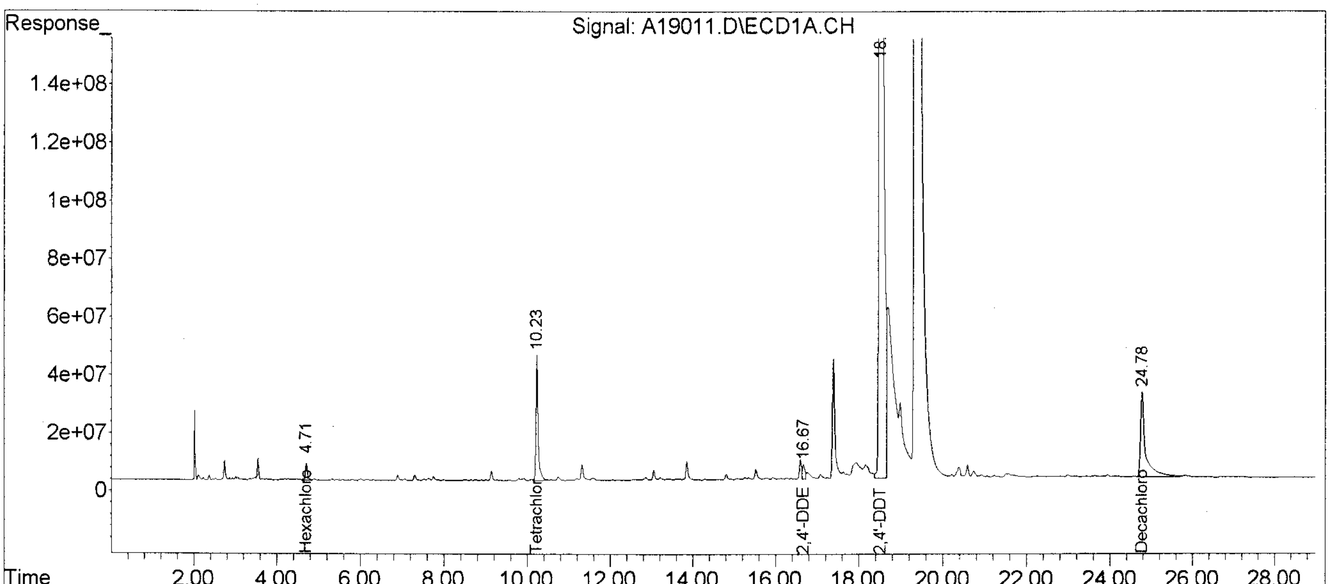
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

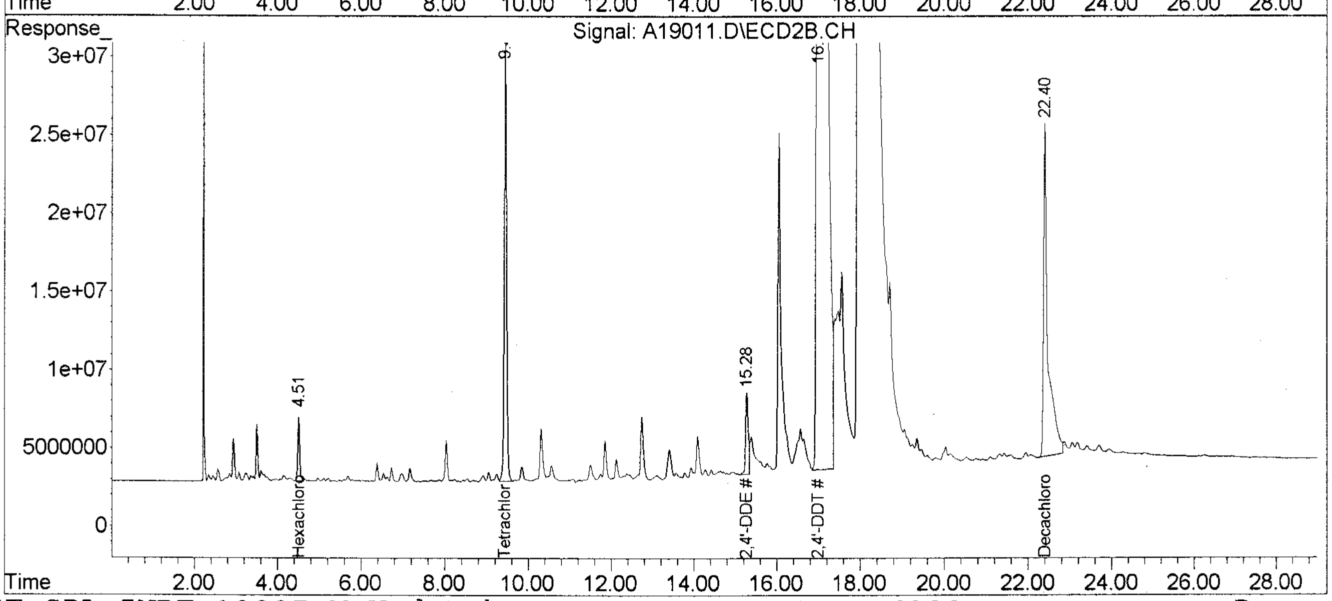
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19011.D(Signal #1)           A19011.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 19:44 (Signal #1); 09/22/09 20:21 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK3 (Sig #1); JBPK3 (Sig #2)
Misc      : S-2603.05 5.1G/5ML (Sig #1); S-2603.05 5.1G/5ML (Sig #2)
ALS Vial  : 80   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:46:34 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19011.D(Signal #1) A19011.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 19:44 (Signal #1); 09/22/09 20:21 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK3 (Sig #1); JBPK3 (Sig #2)
Misc : S-2603.05 5.1G/5ML (Sig #1); S-2603.05 5.1G/5ML (Sig #2)
ALS Vial : 80 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:42:57 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Ochs, 02/17/10

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1621.8E6	1104.8E6	58.032	51.550
	Spiked Amount 60.000			Recovery	=	96.72%	85.92%
22) S	Decachlorobiphen	24.78	22.40	2481.5E6	1517.7E6	104.848	80.325
	Spiked Amount 120.000			Recovery	=	87.37%	66.94%
	Target Compounds						
4)	Beta-BHC	13.20	12.12	65582897	50996676	3.697	4.353
12)	4,4'-DDE	17.38	16.05	1830.4E6	1218.6E6	64.531	56.781
17)	4,4'-DDT	19.37	17.98	125066.7E6	124820.2E6	7331.829	6496.146

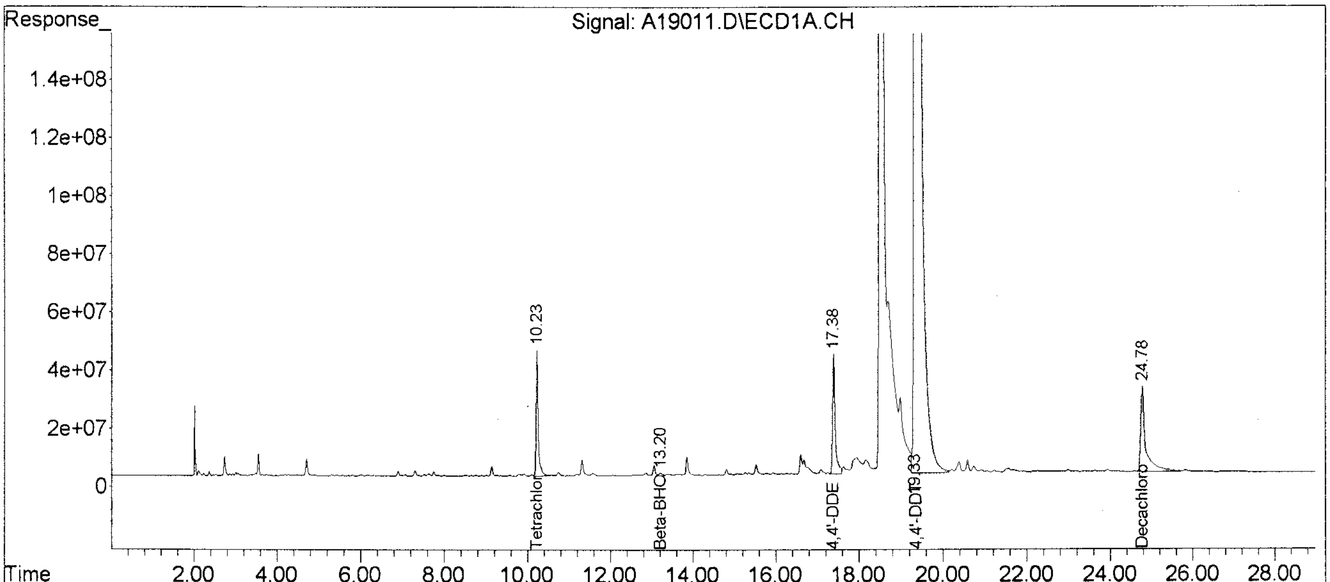
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

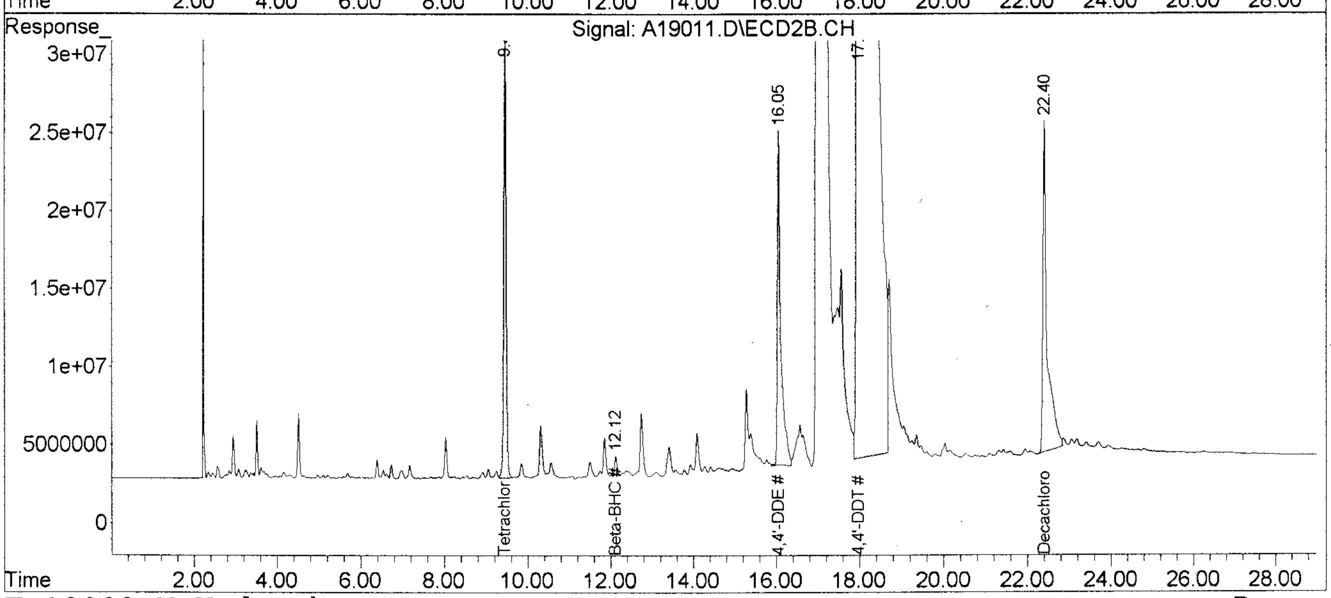
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19011.D(Signal #1)              A19011.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)               A-6890B(Signal # 2)
Acq On    : 09/22/09 19:44 (Signal #1); 09/22/09 20:21 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK3 (Sig #1); JBPK3 (Sig #2)
Misc      : S-2603.05 5.1G/5ML (Sig #1); S-2603.05 5.1G/5ML (Sig #2)
ALS Vial  : 80   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:42:57 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JBPK3DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.05DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19030

% Moisture: 41 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 200.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	33	U
319-85-7	beta-BHC	33	U
319-86-8	delta-BHC	33	U
58-89-9	gamma-BHC (Lindane)	33	U
76-44-8	Heptachlor	33	U
309-00-2	Aldrin	33	U
1024-57-3	Heptachlor epoxide	33	U
959-98-8	Endosulfan I	33	U
60-57-1	Dieldrin	33	U
72-55-9	4,4'-DDE	33	U
72-20-8	Endrin	66	U
33213-65-9	Endosulfan II	66	U
72-54-8	4,4'-DDD	66	U
1031-07-8	Endosulfan sulfate	66	U
50-29-3	4,4'-DDT	16000	D
72-43-5	Methoxychlor	330	U
53494-70-5	Endrin ketone	66	U
7421-93-4	Endrin aldehyde	66	U
5103-71-9	alpha-Chlordane	33	U
5103-74-2	gamma-Chlordane	33	U
8001-35-2	Toxaphene	3300	U
53-19-0	2,4'-DDD	66	U
3424-82-6	2,4'-DDE	66	U
789-02-6	2,4'-DDT	7300	D
27304-13-8	Oxychlordane	66	U
5103-73-1	cis-Nonachlor	66	U
39765-80-5	Trans-Nonachlor	66	U
118-74-1	Hexachlorobenzene	66	U
87-68-3	Hexachlorobutadiene	66	U
29082-74-4	Octachlorostyrene	66	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19030.D(Signal #1) A19030.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 08:31 (Signal #1); 09/23/09 09:07 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK3DL 200X (Sig #1); JBPK3DL 200X (Sig #2)
Misc : S-2603.05DL 5.1G/5ML (Sig #1); S-2603.05DL 5.1G/5ML (Sig #2)
ALS Vial : 8 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:50:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
9)	2,4'-DDT	18.52	16.98	156.0E6	176.9E6	11.198	10.945

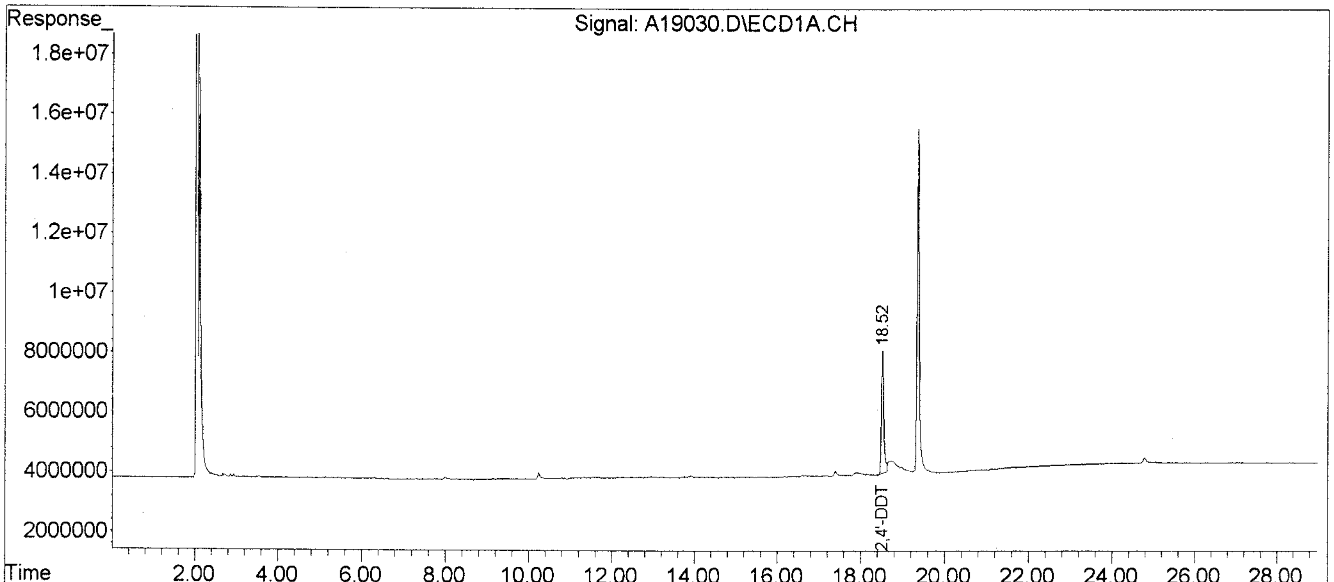
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

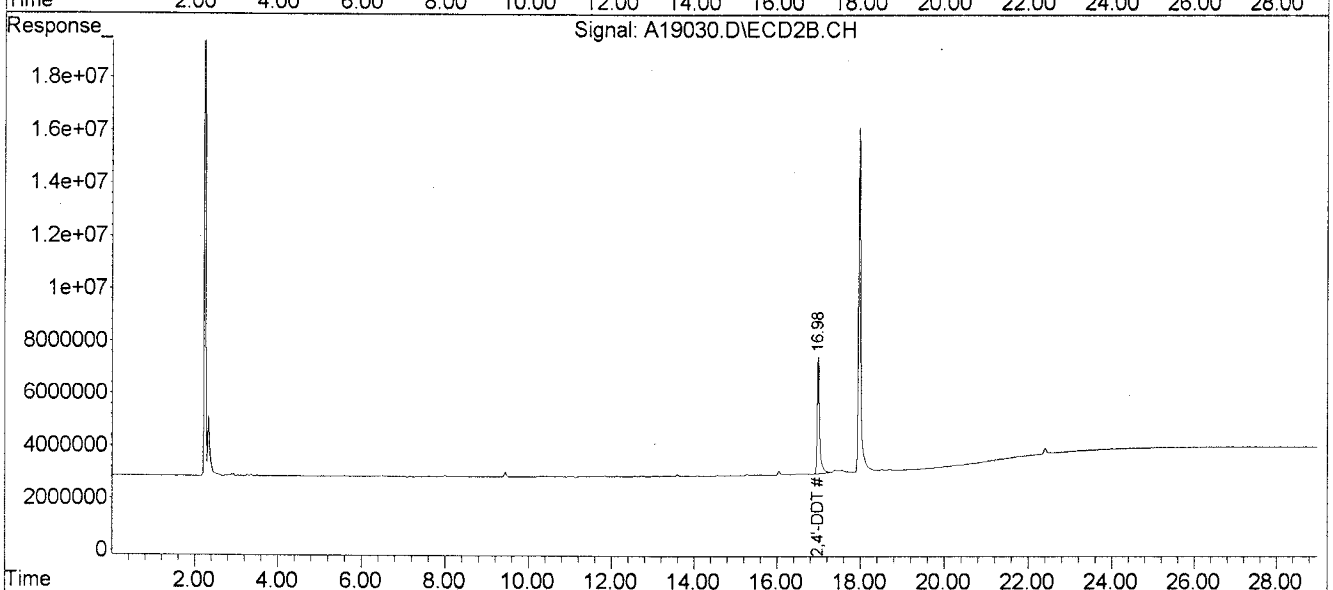
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19030.D(Signal #1)          A19030.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On     : 09/23/09 08:31 (Signal #1); 09/23/09 09:07 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPK3DL 200X (Sig #1); JBPK3DL 200X (Sig #2)
Misc       : S-2603.05DL  5.1G/5ML (Sig #1); S-2603.05DL  5.1G/5ML (Sig #2)
ALS Vial   : 8   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 15:50:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19030.D(Signal #1)            A19030.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 08:31 (Signal #1); 09/23/09 09:07 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK3DL 200X (Sig #1); JBPK3DL 200X (Sig #2)
Misc      : S-2603.05DL  5.1G/5ML (Sig #1); S-2603.05DL  5.1G/5ML (Sig #2)
ALS Vial  : 8   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:48:55 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
17)	4,4'-DDT	19.36	17.97	413.9E6	487.0E6	24.262	25.346

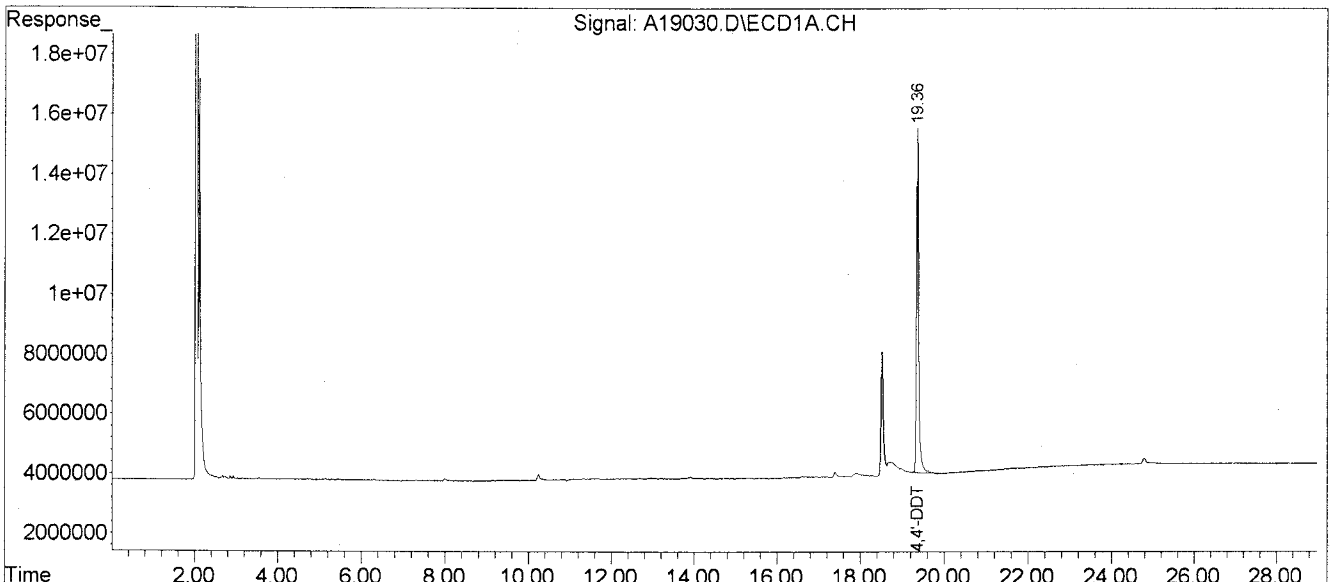
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

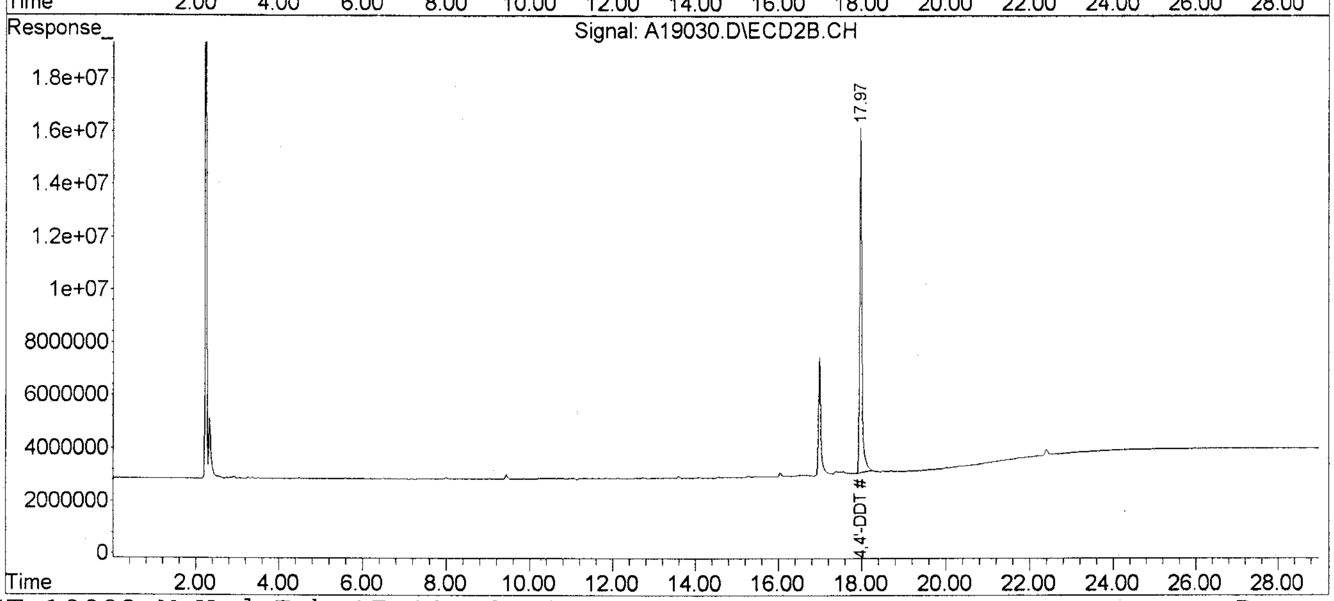
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19030.D(Signal #1)           A19030.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 09/23/09 08:31 (Signal #1); 09/23/09 09:07 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPK3DL 200X (Sig #1); JBPK3DL 200X (Sig #2)
Misc       : S-2603.05DL  5.1G/5ML (Sig #1); S-2603.05DL  5.1G/5ML (Sig #2)
ALS Vial   : 8   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 15:48:55 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK8

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.07

Sample wt/vol: 5.300 (g/mL) G Lab File ID: A19014

% Moisture: 46 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.17	U
319-85-7	beta-BHC	130	P
319-86-8	delta-BHC	0.17	U
58-89-9	gamma-BHC (Lindane)	60	P
76-44-8	Heptachlor	0.17	U
309-00-2	Aldrin	0.17	U
1024-57-3	Heptachlor epoxide	36	P
959-98-8	Endosulfan I	42	
60-57-1	Dieldrin	77	P
72-55-9	4,4'-DDE	32	JP
72-20-8	Endrin	0.35	U
33213-65-9	Endosulfan II	48	P
72-54-8	4,4'-DDD	46	P
1031-07-8	Endosulfan sulfate	0.35	U
50-29-3	4,4'-DDT	160	P
72-43-5	Methoxychlor	1.7	U
53494-70-5	Endrin ketone	29	JP
7421-93-4	Endrin aldehyde	120	P
5103-71-9	alpha-Chlordane	0.17	U
5103-74-2	gamma-Chlordane	0.17	U
8001-35-2	Toxaphene	17	U
53-19-0	2,4'-DDD	60	P
3424-82-6	2,4'-DDE	0.35	U
789-02-6	2,4'-DDT	260	P
27304-13-8	Oxychlordane	56	
5103-73-1	cis-Nonachlor	390	
39765-80-5	Trans-Nonachlor	0.35	U
118-74-1	Hexachlorobenzene	30	JP
87-68-3	Hexachlorobutadiene	28	J
29082-74-4	Octachlorostyrene	67	P

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19014.D(Signal #1)          A19014.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 21:34 (Signal #1); 09/22/09 22:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK8 (Sig #1); JBPK8 (Sig #2)
Misc      : S-2603.07 5.3G/5ML (Sig #1); S-2603.07 5.3G/5ML (Sig #2)
ALS Vial  : 83   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:07:44 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Dcka 02/17/10

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1569.9E6	1353.6E6	52.439	58.664
	Spiked Amount 60.000			Recovery	=	87.40%	97.77%
11) S	Decachlorobiphen	24.77	22.40	4451.6E6	2890.7E6	196.165	169.394
	Spiked Amount 120.000			Recovery	=	163.47%	141.16%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.50	412.8E6	320.0E6	7.971	8.438
3)	Hexachlorobenzen	11.59	10.56	294.6E6	293.9E6	8.608	10.988 #
4)	Octachlorostyren	15.52	14.28	2048.8E6	699.3E6	46.909	19.239 #
5)	Oxychlordane	16.11	15.03	426.7E6	431.9E6	15.933	19.299
8)	2,4'-DDD	17.83	16.42	323.1E6	917.1E6	17.245	66.451 #
9)	2,4'-DDT	18.56	17.05	1355.8E6	1221.0E6	97.349	75.561
10)	cis-Nonachlor	18.64	17.29	369.4E6	430.3E6	110.743m	123.558m

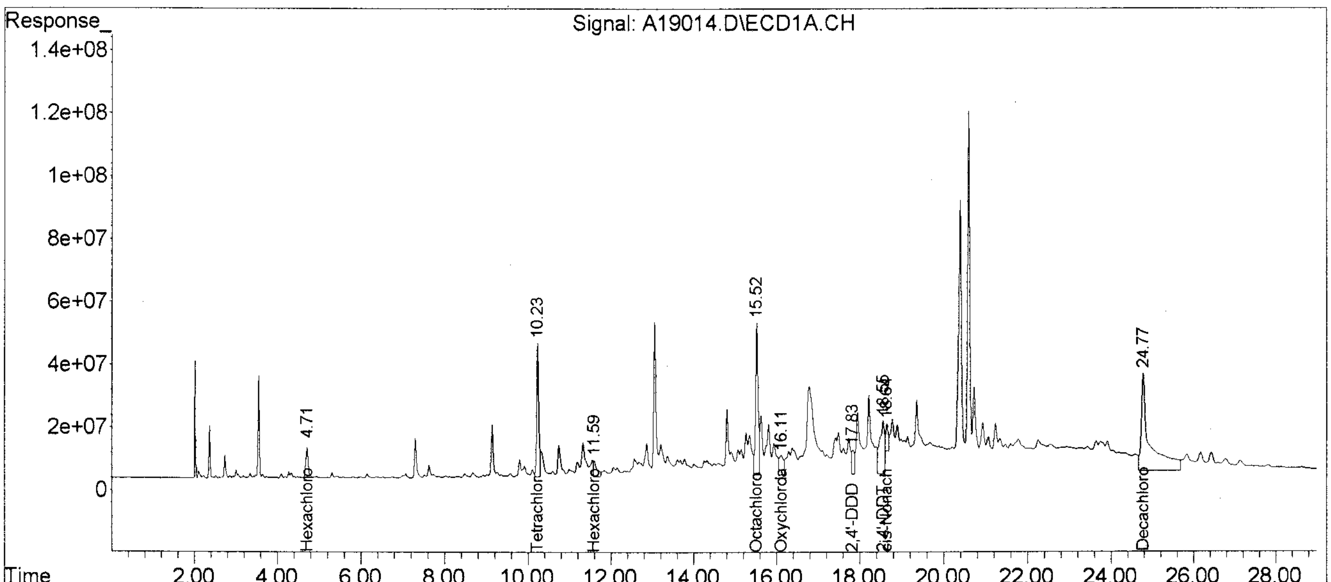
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

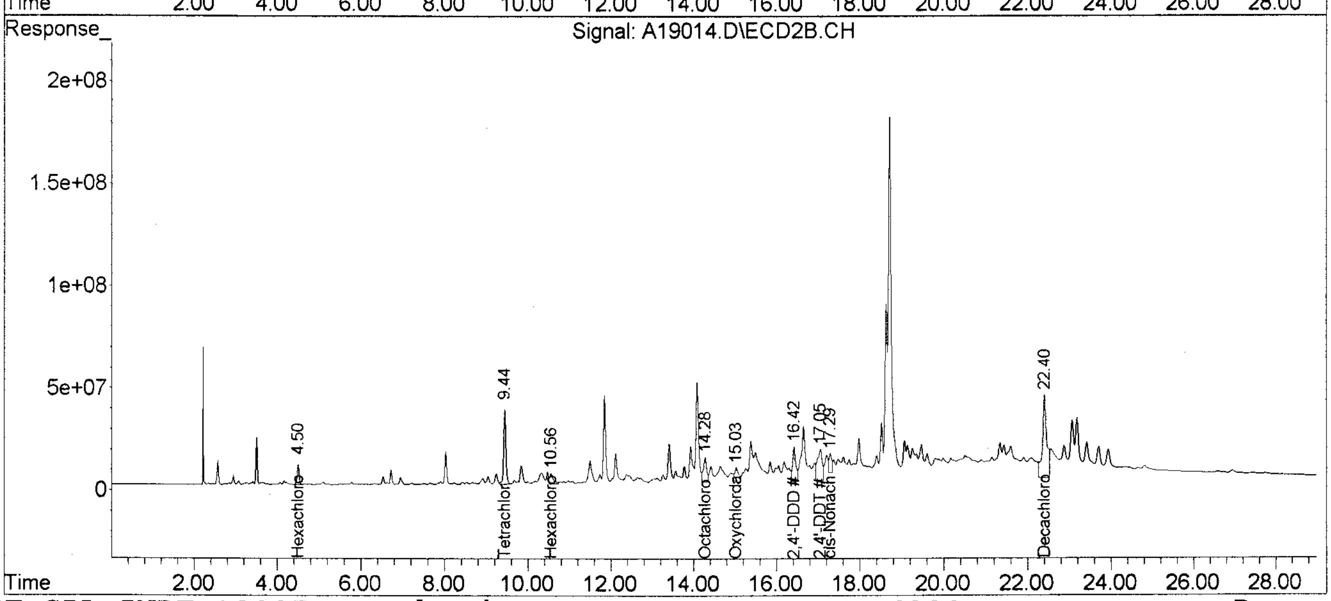
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19014.D(Signal #1)          A19014.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 21:34 (Signal #1); 09/22/09 22:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK8 (Sig #1); JBPK8 (Sig #2)
Misc      : S-2603.07 5.3G/5ML (Sig #1); S-2603.07 5.3G/5ML (Sig #2)
ALS Vial  : 83   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:07:44 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19014.D(Signal #1)          A19014.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 21:34 (Signal #1); 09/22/09 22:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK8 (Sig #1); JBPK8 (Sig #2)
Misc      : S-2603.07 5.3G/5ML (Sig #1); S-2603.07 5.3G/5ML (Sig #2)
ALS Vial  : 83   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:03:18 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Ordo 02/17/10

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1569.9E6	1353.6E6	56.173	63.160
	Spiked Amount 60.000			Recovery	=	93.62%	105.27%
22) S	Decachlorobiphen	24.77	22.40	4451.6E6	1697.8E6	188.086	89.856 #
	Spiked Amount 120.000			Recovery	=	156.74%	74.88%
	Target Compounds						
3)	Gamma-BHC (Linda	12.86	11.85	699.8E6	1607.0E6	17.127	51.601 #
4)	Beta-BHC	13.20	12.11	680.3E6	751.8E6	38.342	64.179 #
8)	Heptachlor Epoxi	16.29	15.26	520.9E6	269.3E6	16.579	10.407 #
11)	Endosulfan I	17.21	16.18	370.7E6	367.8E6	12.137	12.244
12)	4,4'-DDE	17.41	16.05	853.1E6	198.7E6	30.075	9.258 #
13)	Dieldrin	17.73	16.64	685.1E6	1425.1E6	22.172	54.533 #
15)	4,4'-DDD	18.65	17.37	755.3E6	262.1E6	33.096	13.183 #
16)	Endosulfan II	18.89	17.74	906.5E6	304.3E6	31.316	13.800 #
17)	4,4'-DDT	19.35	17.98	2504.5E6	876.3E6	146.820	45.604 #
18)	Endrin Aldehyde	19.67	18.63	845.7E6	2957.6E6	33.869	164.270 #
21)	Endrin Ketone	21.47	20.17	563.6E6	200.8E6	17.669	8.265 #

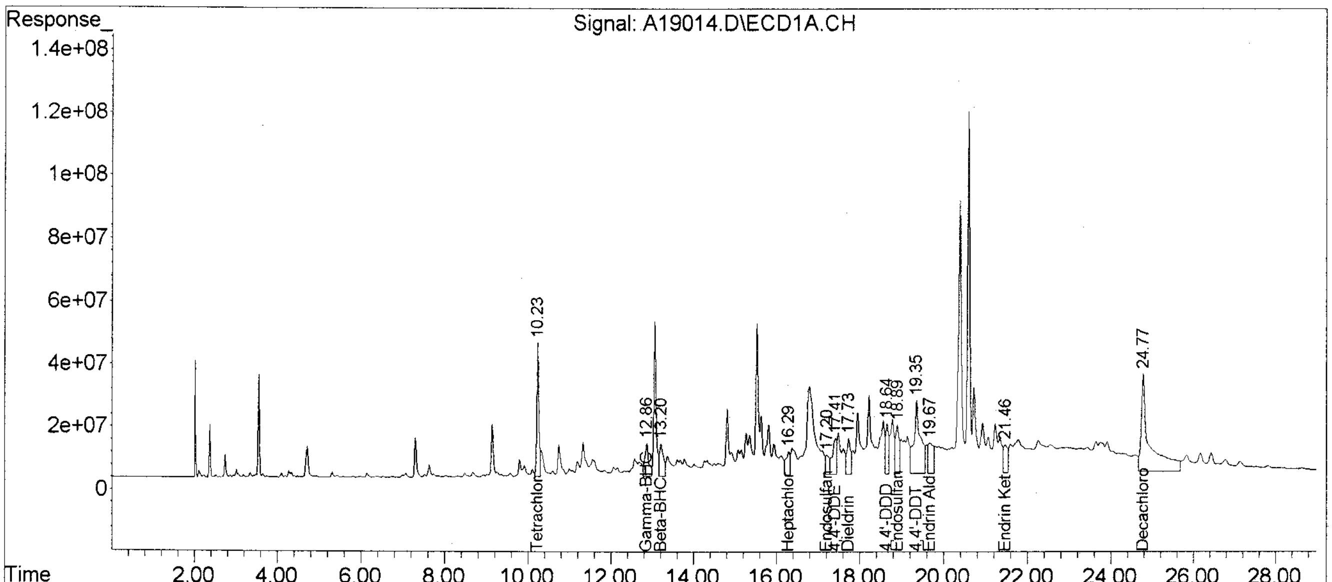
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

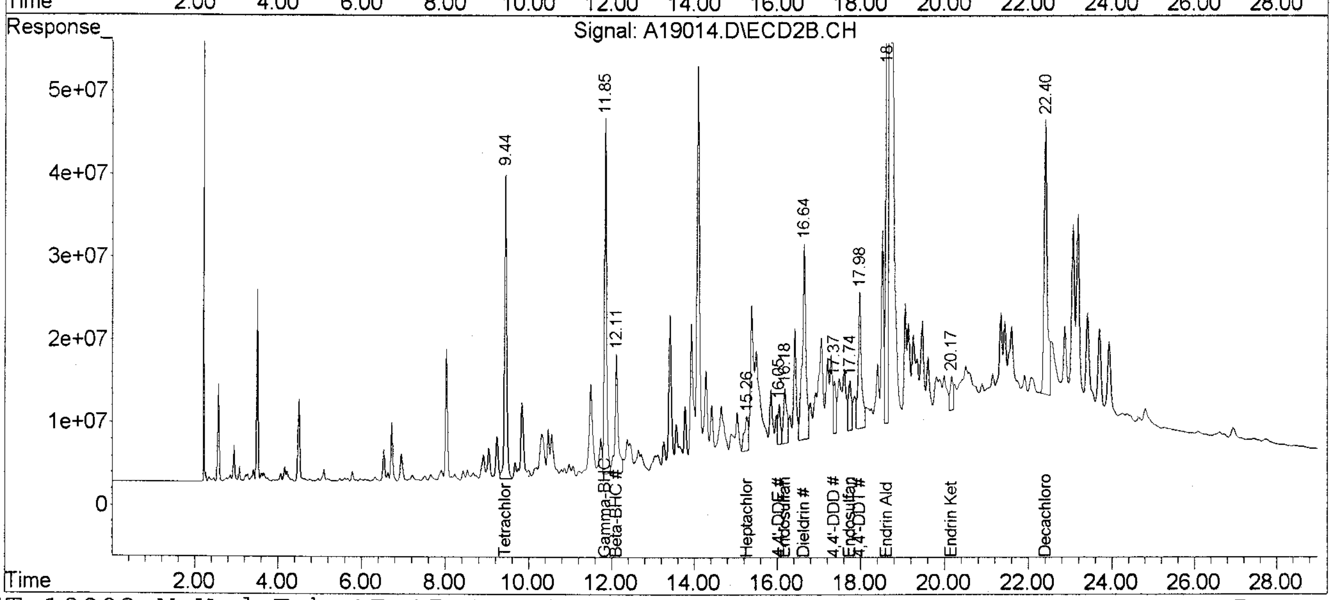
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19014.D(Signal #1)            A19014.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/22/09 21:34 (Signal #1); 09/22/09 22:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK8 (Sig #1); JBPK8 (Sig #2)
Misc      : S-2603.07 5.3G/5ML (Sig #1); S-2603.07 5.3G/5ML (Sig #2)
ALS Vial  : 83   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:03:18 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK9

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.08

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19015

% Moisture: 39 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.16	U
319-85-7	beta-BHC	13	JP
319-86-8	delta-BHC	0.16	U
58-89-9	gamma-BHC (Lindane)	4.7	JP
76-44-8	Heptachlor	0.16	U
309-00-2	Aldrin	0.16	U
1024-57-3	Heptachlor epoxide	0.16	U
959-98-8	Endosulfan I	0.16	U
60-57-1	Dieldrin	0.16	U
72-55-9	4,4'-DDE	180	P
72-20-8	Endrin	0.32	U
33213-65-9	Endosulfan II	0.32	U
72-54-8	4,4'-DDD	240	P
1031-07-8	Endosulfan sulfate	0.32	U
50-29-3	4,4'-DDT	4200	E
72-43-5	Methoxychlor	1.6	U
53494-70-5	Endrin ketone	0.32	U
7421-93-4	Endrin aldehyde	0.32	U
5103-71-9	alpha-Chlordane	0.16	U
5103-74-2	gamma-Chlordane	0.16	U
8001-35-2	Toxaphene	16	U
53-19-0	2,4'-DDD	38	P
3424-82-6	2,4'-DDE	67	P
789-02-6	2,4'-DDT	480	
27304-13-8	Oxychlordane	0.32	U
5103-73-1	cis-Nonachlor	0.32	U
39765-80-5	Trans-Nonachlor	0.32	U
118-74-1	Hexachlorobenzene	6.7	J
87-68-3	Hexachlorobutadiene	12	J
29082-74-4	Octachlorostyrene	6.7	JP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1) A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial : 84 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:34:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1554.8E6	1164.7E6	51.936	50.480
	Spiked Amount 60.000			Recovery	=	86.56%	84.13%
11) S	Decachlorobiphen	24.78	22.40	2320.9E6	2321.9E6	102.276	136.060 #
	Spiked Amount 120.000			Recovery	=	85.23%	113.38%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	188.1E6	156.9E6	3.632	4.139
3)	Hexachlorobenzen	11.60	10.55	83625924	55933240	2.444	2.091
4)	Octachlorostyren	15.52	14.27	270.4E6	76277757	6.190	2.099 #
6)	2,4'-DDE	16.67	15.27	440.9E6	731.5E6	20.929	40.469 #
8)	2,4'-DDD	17.83	16.43	219.5E6	240.6E6	11.717	17.435 #
9)	2,4'-DDT	18.51	16.99	2072.7E6	2424.4E6	148.822	150.028

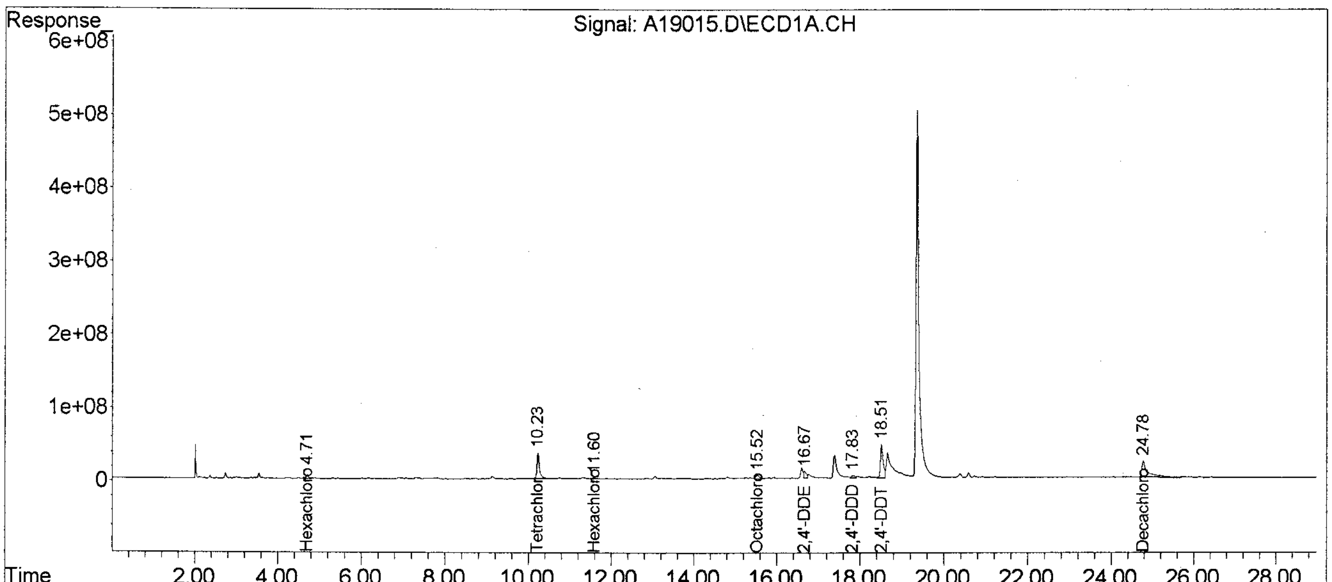
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

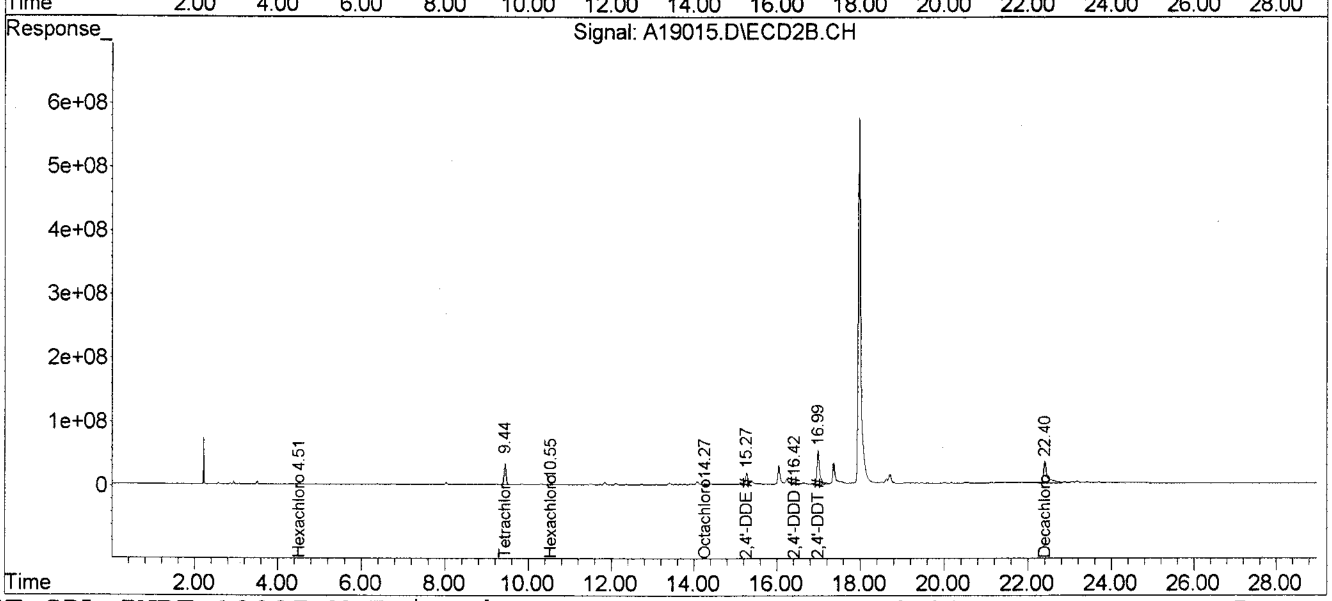
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1) A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial : 84 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:34:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19015.D(Signal #1) A19015.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial : 84 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 09:32:14 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
System Monitoring Compounds							
1) S Tetrachloro-m-xy	10.23	9.44	1554.8E6	1163.6E6	55.634	54.295	
Spiked Amount 60.000			Recovery	=	92.72%	90.49%	
22) S Decachlorobiphen	24.78	22.40	2320.9E6	2044.0E6	98.063	108.182	
Spiked Amount 120.000			Recovery	=	81.72%	90.15%	
Target Compounds							
3) Gamma-BHC (Linda	12.86	11.84	59326656	132.2E6	1.452	4.244	#
4) Beta-BHC	13.20	12.11	73052321	77163447	4.118	6.587	#
12) 4,4'-DDE	17.39	16.05	2003.0E6	1204.6E6	70.615	56.129	
15) 4,4'-DDD	18.66	17.37	3224.9E6	1512.6E6	141.308	76.075	#
17) 4,4'-DDT	19.35	17.98	24781.1E6	25108.0E6	1452.749	1306.720	

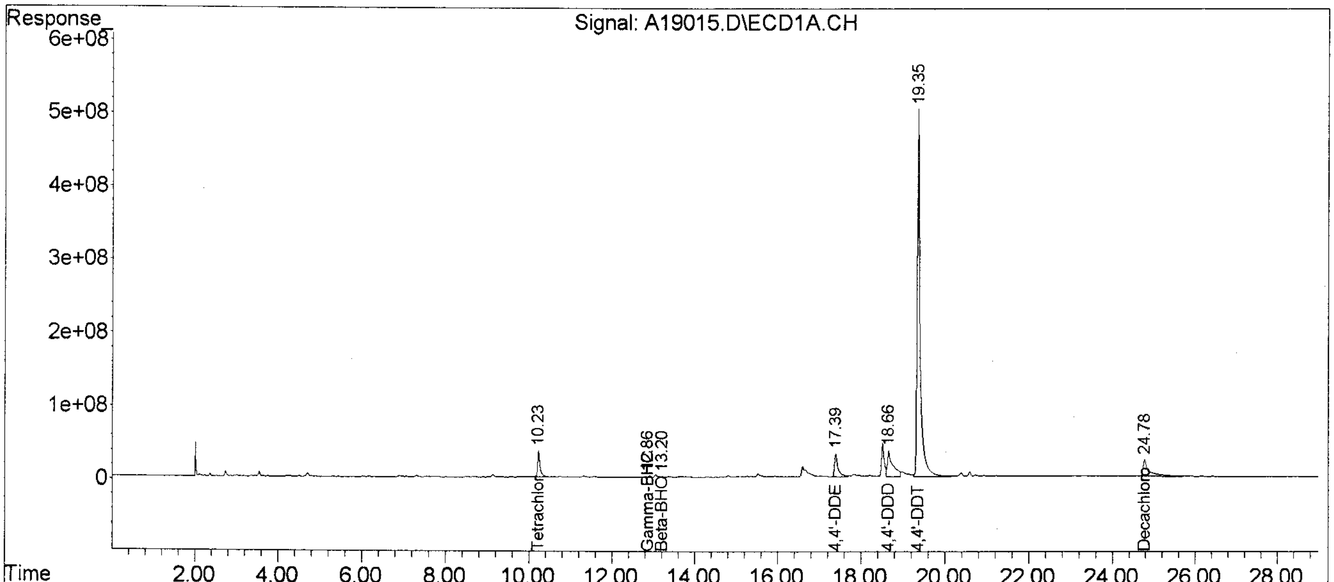
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

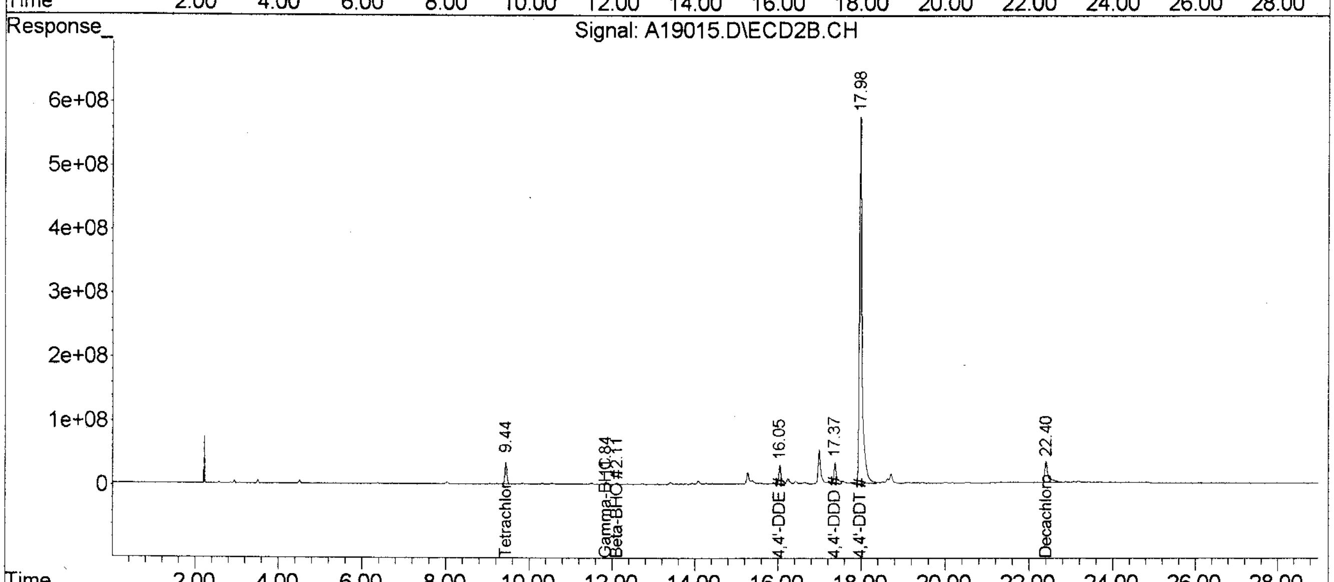
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19015.D(Signal #1)           A19015.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 09/22/09 22:11 (Signal #1); 09/22/09 22:48 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPK9 (Sig #1); JBPK9 (Sig #2)
Misc       : S-2603.08 5.1G/5ML (Sig #1); S-2603.08 5.1G/5ML (Sig #2)
ALS Vial   : 84   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 09:32:14 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPK9DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.08DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19032

% Moisture: 39 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 50.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.0	U
319-85-7	beta-BHC	8.0	U
319-86-8	delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	U
60-57-1	Dieldrin	8.0	U
72-55-9	4,4'-DDE	8.0	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	2900	DP
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
7421-93-4	Endrin aldehyde	16	U
5103-71-9	alpha-Chlordane	8.0	U
5103-74-2	gamma-Chlordane	8.0	U
8001-35-2	Toxaphene	800	U
53-19-0	2,4'-DDD	16	U
3424-82-6	2,4'-DDE	16	U
789-02-6	2,4'-DDT	330	DJP
27304-13-8	Oxychlordane	16	U
5103-73-1	cis-Nonachlor	16	U
39765-80-5	Trans-Nonachlor	16	U
118-74-1	Hexachlorobenzene	16	U
87-68-3	Hexachlorobutadiene	16	U
29082-74-4	Octachlorostyrene	16	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19032.D(Signal #1) A19032.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 09:44 (Signal #1); 09/23/09 10:55 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9DL 50X (Sig #1); JBPK9DL 50X (Sig #2)
Misc : S-2603.08DL 5.1G/5ML (Sig #1); S-2603.08DL 5.1G/5ML (Sig #2)
ALS Vial : 10 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:38:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
	Target Compounds							
9)	2,4'-DDT	18.52	16.99	28444479	47595074	2.042	2.945	#

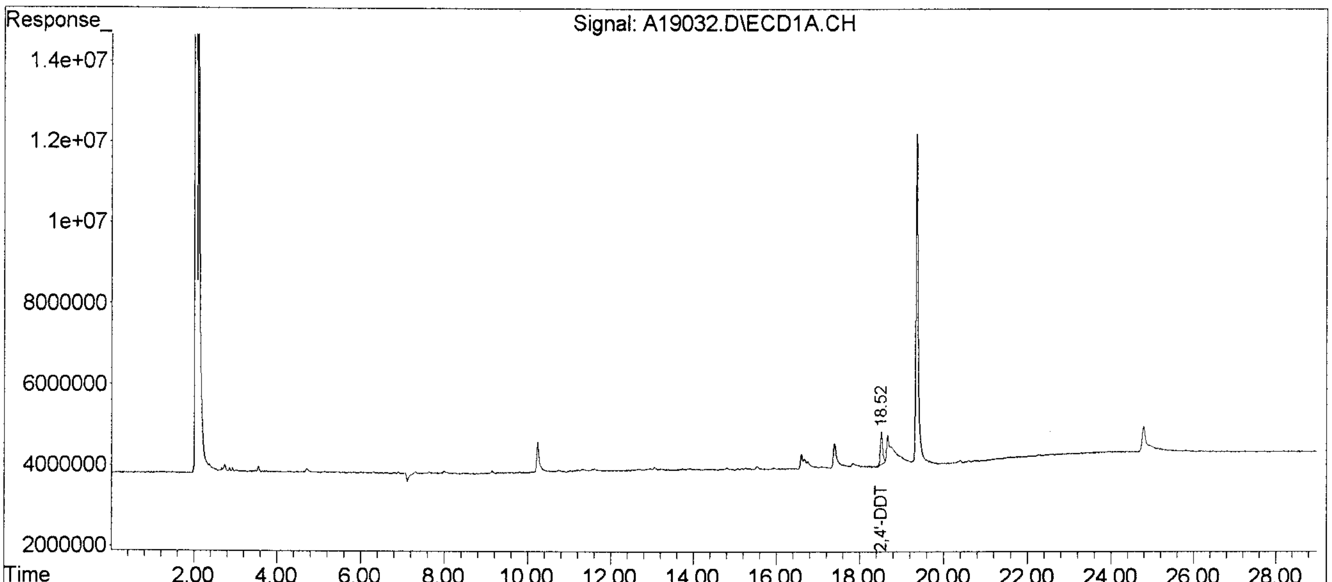
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

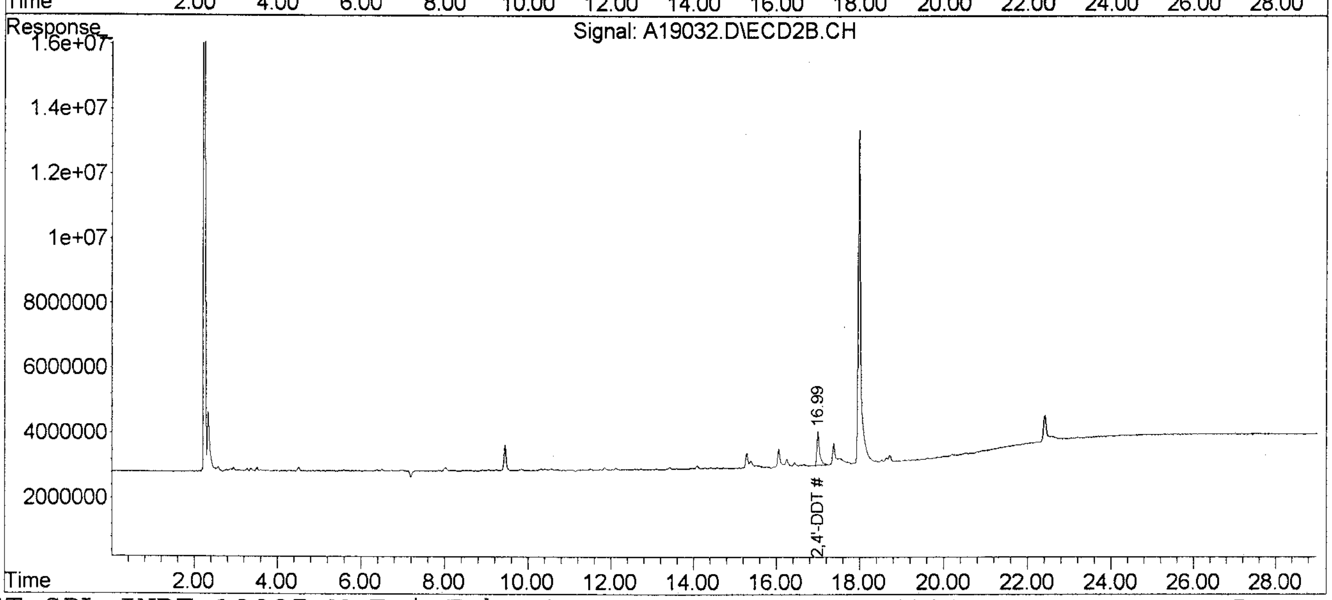
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19032.D(Signal #1)            A19032.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 09:44 (Signal #1); 09/23/09 10:55 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK9DL 50X (Sig #1); JBPK9DL 50X (Sig #2)
Misc      : S-2603.08DL  5.1G/5ML (Sig #1); S-2603.08DL  5.1G/5ML (Sig #2)
ALS Vial  : 10   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:38:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19032.D(Signal #1) A19032.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 09:44 (Signal #1); 09/23/09 10:55 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPK9DL 50X (Sig #1); JBPK9DL 50X (Sig #2)
Misc : S-2603.08DL 5.1G/5ML (Sig #1); S-2603.08DL 5.1G/5ML (Sig #2)
ALS Vial : 10 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:37:21 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
	Target Compounds						
17)	4,4'-DDT	19.36	17.98	310.0E6	438.5E6	18.171	22.823 #

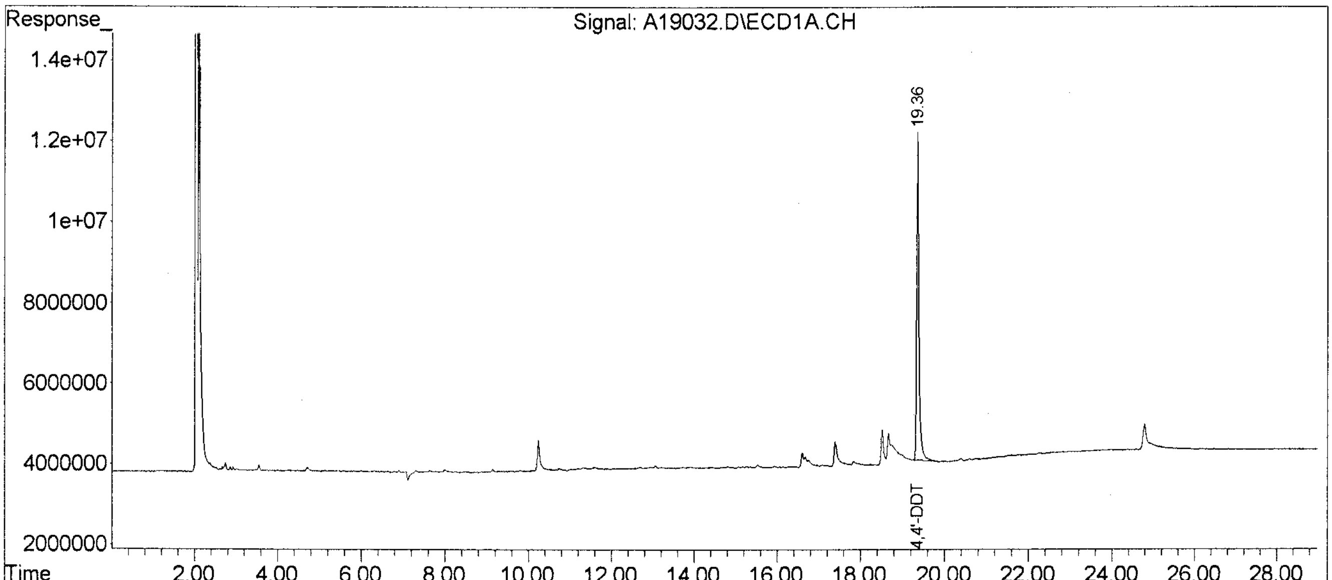
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

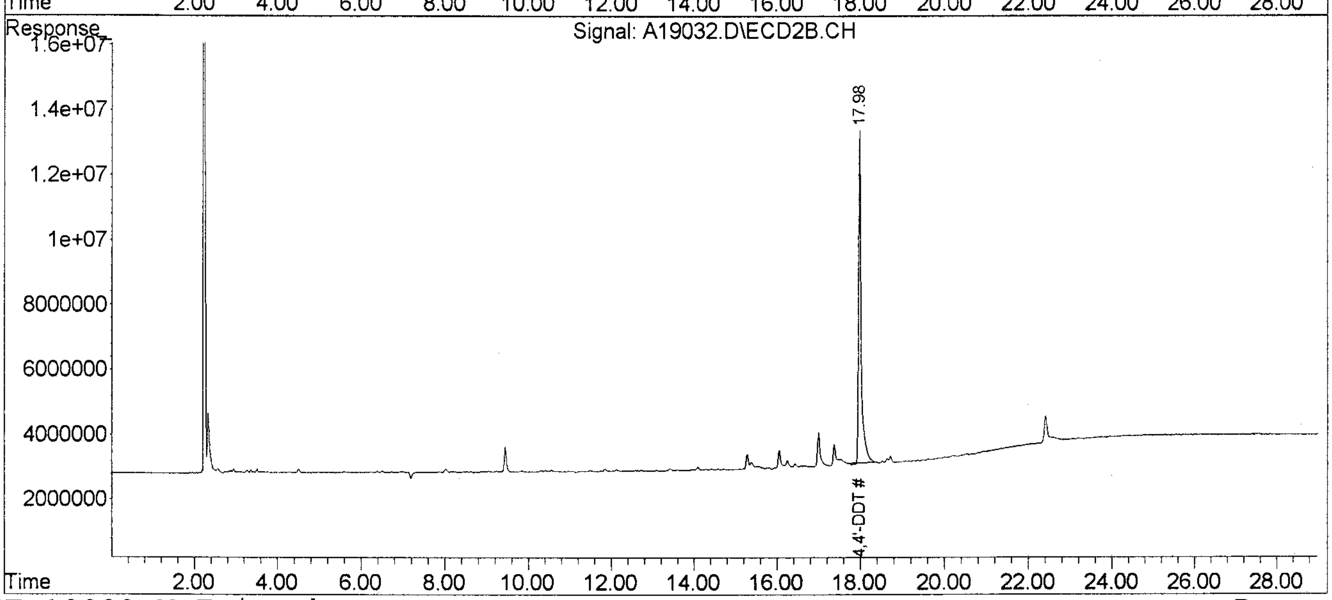
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19032.D(Signal #1)             A19032.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)              A-6890B(Signal # 2)
Acq On    : 09/23/09 09:44 (Signal #1); 09/23/09 10:55 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPK9DL 50X (Sig #1); JBPK9DL 50X (Sig #2)
Misc      : S-2603.08DL  5.1G/5ML (Sig #1); S-2603.08DL  5.1G/5ML (Sig #2)
ALS Vial  : 10   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:37:21 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPL1

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.09

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19016

% Moisture: 23 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.13	U
319-85-7	beta-BHC	0.13	U
319-86-8	delta-BHC	0.13	U
58-89-9	gamma-BHC (Lindane)	0.13	U
76-44-8	Heptachlor	0.13	U
309-00-2	Aldrin	0.13	U
1024-57-3	Heptachlor epoxide	0.13	U
959-98-8	Endosulfan I	0.13	U
60-57-1	Dieldrin	0.13	U
72-55-9	4,4'-DDE	6.6	J
72-20-8	Endrin	0.25	U
33213-65-9	Endosulfan II	0.25	U
72-54-8	4,4'-DDD	5.7	JP
1031-07-8	Endosulfan sulfate	0.25	U
50-29-3	4,4'-DDT	630	E
72-43-5	Methoxychlor	1.3	U
53494-70-5	Endrin ketone	0.25	U
7421-93-4	Endrin aldehyde	0.25	U
5103-71-9	alpha-Chlordane	0.13	U
5103-74-2	gamma-Chlordane	0.13	U
8001-35-2	Toxaphene	13	U
53-19-0	2,4'-DDD	1.2	JP
3424-82-6	2,4'-DDE	0.25	U
789-02-6	2,4'-DDT	130	
27304-13-8	Oxychlordane	0.25	U
5103-73-1	cis-Nonachlor	0.25	U
39765-80-5	Trans-Nonachlor	0.25	U
118-74-1	Hexachlorobenzene	0.25	U
87-68-3	Hexachlorobutadiene	5.6	JP
29082-74-4	Octachlorostyrene	0.25	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19016.D(Signal #1) A19016.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:48 (Signal #1); 09/22/09 23:25 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL1 (Sig #1); JBPL1 (Sig #2)
Misc : S-2603.09 5.1G/5ML (Sig #1); S-2603.09 5.1G/5ML (Sig #2)
ALS Vial : 85 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:51:53 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1527.4E6	1244.9E6	54.653	58.089
	Spiked Amount 60.000			Recovery	=	91.09%	96.81%
22) S	Decachlorobiphen	24.77	22.40	2428.2E6	2073.7E6	102.594	109.752
	Spiked Amount 120.000			Recovery	=	85.50%	91.46%
	Target Compounds						
12)	4,4'-DDE	17.38	16.04	78334194	55978589	2.762	2.608
15)	4,4'-DDD	18.73	17.37	453.6E6	44634633	19.874	2.245 #
17)	4,4'-DDT	19.35	17.98	4196.1E6	5164.9E6	245.990	268.804

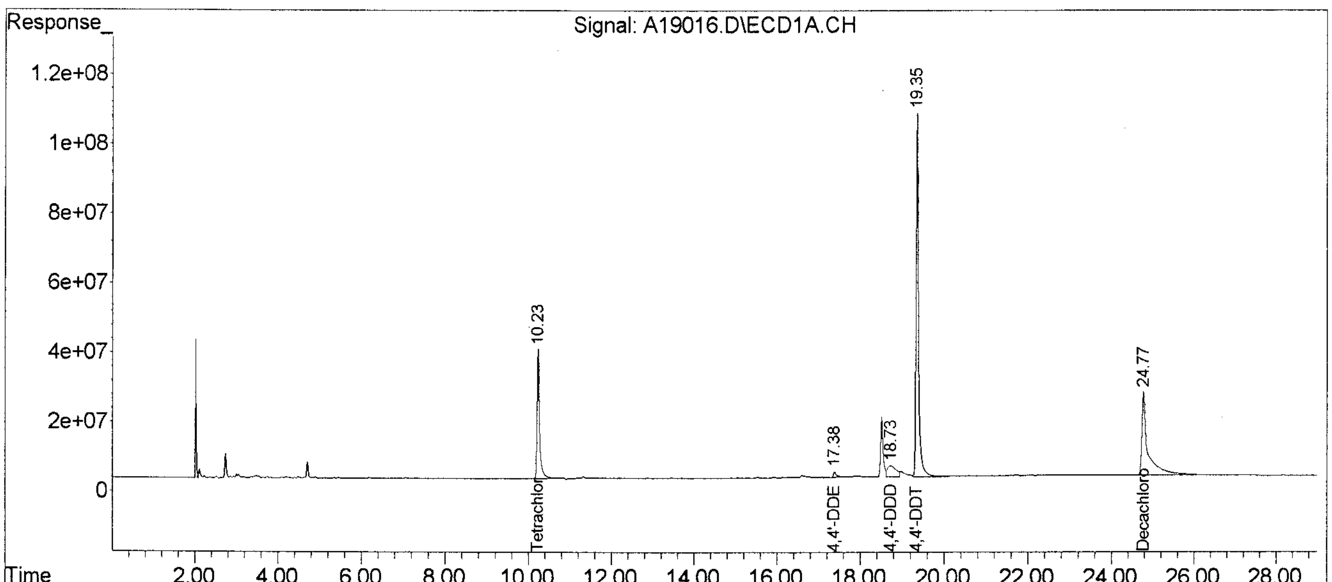
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

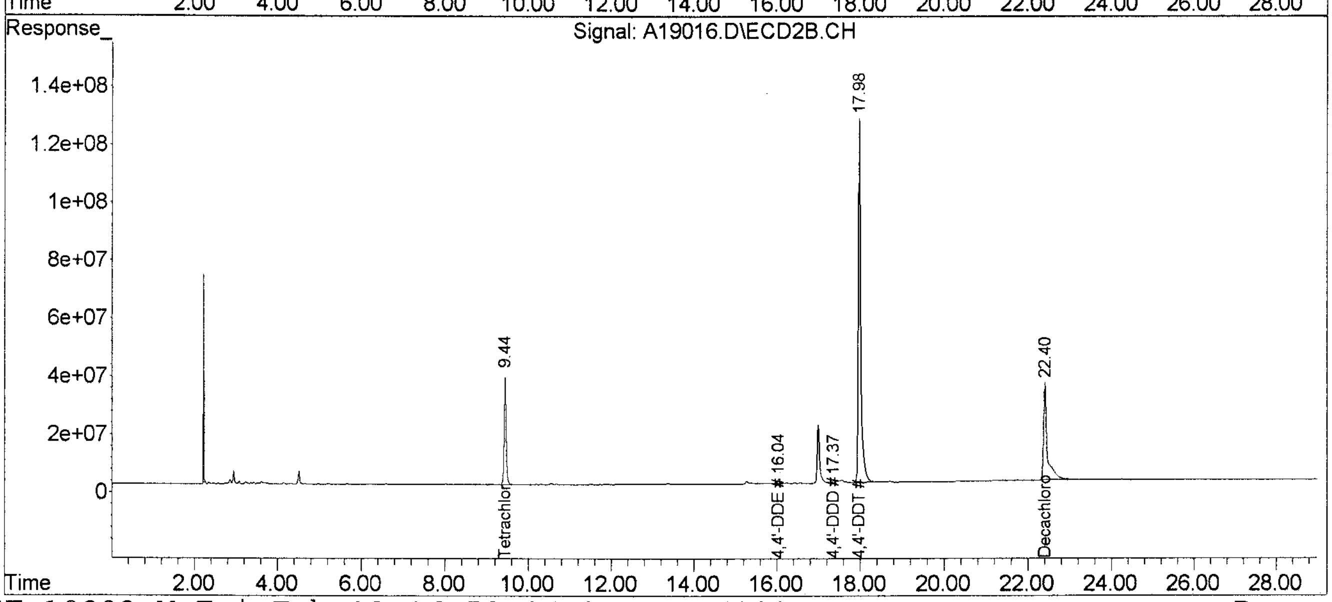
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19016.D(Signal #1)          A19016.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On     : 09/22/09 22:48 (Signal #1); 09/22/09 23:25 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPL1 (Sig #1); JBPL1 (Sig #2)
Misc       : S-2603.09 5.1G/5ML (Sig #1); S-2603.09 5.1G/5ML (Sig #2)
ALS Vial   : 85   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 16:51:53 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase   : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info    : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19016.D(Signal #1) A19016.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 22:48 (Signal #1); 09/22/09 23:25 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL1 (Sig #1); JBPL1 (Sig #2)
Misc : S-2603.09 5.1G/5ML (Sig #1); S-2603.09 5.1G/5ML (Sig #2)
ALS Vial : 85 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:55:15 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1527.4E6	1250.3E6	51.019	54.187
	Spiked Amount 60.000			Recovery	=	85.03%	90.31%
11) S	Decachlorobiphen	24.77	22.40	2428.2E6	2083.5E6	107.001	122.090
	Spiked Amount 120.000			Recovery	=	89.17%	101.74%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	114.7E6	119.2E6	2.215	3.144 #
8)	2,4'-DDD	17.89	16.43	31460578	6235487	1.679	0.452 #
9)	2,4'-DDT	18.51	16.99	707.5E6	849.5E6	50.803	52.572

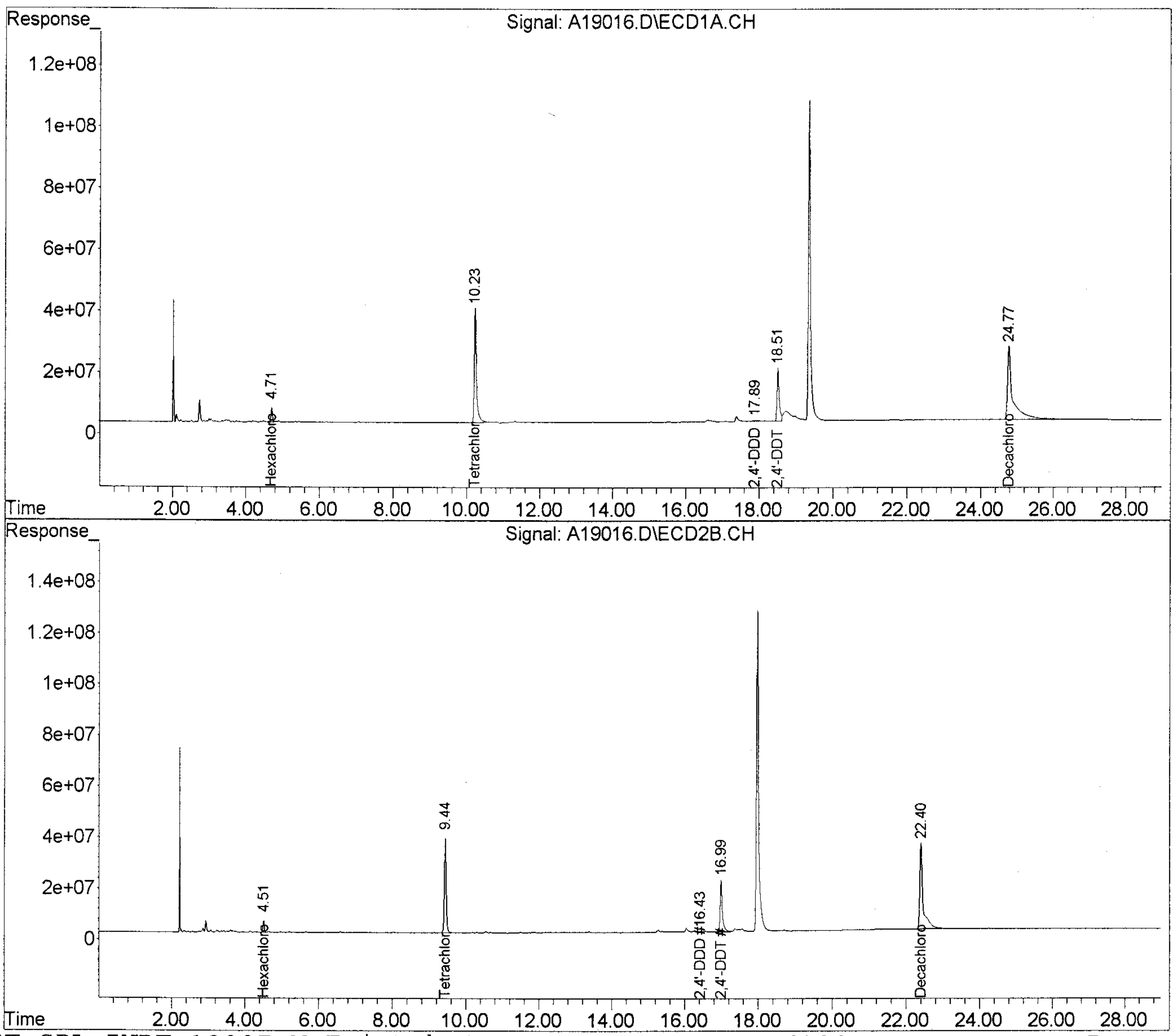
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19016.D(Signal #1)           A19016.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/22/09 22:48 (Signal #1); 09/22/09 23:25 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL1 (Sig #1); JBPL1 (Sig #2)
Misc      : S-2603.09 5.1G/5ML (Sig #1); S-2603.09 5.1G/5ML (Sig #2)
ALS Vial  : 85   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 16:55:15 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPL1DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2603.09DL

Sample wt/vol: 5.100 (g/mL) G Lab File ID: A19033

% Moisture: 23 Decanted: (Y/N) N Date Received: 08/27/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.3	U
319-85-7	beta-BHC	1.3	U
319-86-8	delta-BHC	1.3	U
58-89-9	gamma-BHC (Lindane)	1.3	U
76-44-8	Heptachlor	1.3	U
309-00-2	Aldrin	1.3	U
1024-57-3	Heptachlor epoxide	1.3	U
959-98-8	Endosulfan I	1.3	U
60-57-1	Dieldrin	1.3	U
72-55-9	4,4'-DDE	1.3	U
72-20-8	Endrin	2.5	U
33213-65-9	Endosulfan II	2.5	U
72-54-8	4,4'-DDD	2.5	U
1031-07-8	Endosulfan sulfate	2.5	U
50-29-3	4,4'-DDT	360	D
72-43-5	Methoxychlor	13	U
53494-70-5	Endrin ketone	2.5	U
7421-93-4	Endrin aldehyde	2.5	U
5103-71-9	alpha-Chlordane	1.3	U
5103-74-2	gamma-Chlordane	1.3	U
8001-35-2	Toxaphene	130	U
53-19-0	2,4'-DDD	2.5	U
3424-82-6	2,4'-DDE	2.5	U
789-02-6	2,4'-DDT	66	DJP
27304-13-8	Oxychlordane	2.5	U
5103-73-1	cis-Nonachlor	2.5	U
39765-80-5	Trans-Nonachlor	2.5	U
118-74-1	Hexachlorobenzene	2.5	U
87-68-3	Hexachlorobutadiene	2.5	U
29082-74-4	Octachlorostyrene	2.5	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19033.D(Signal #1) A19033.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 10:55 (Signal #1); 09/23/09 11:32 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL1DL 10X (Sig #1); JBPL1DL 10X (Sig #2)
Misc : S-2603.09DL 5.1G/5ML (Sig #1); S-2603.09DL 5.1G/5ML (Sig #2)
ALS Vial : 11 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 17:06:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.25	9.44	117.4E6	89535412	4.201	4.178
Spiked Amount 60.000			Recovery	=	7.00%	6.96%
22) S Decachlorobiphen	24.80	22.41	197.6E6	99900124	8.347	5.287 #
Spiked Amount 120.000			Recovery	=	6.96%	4.41%
Target Compounds						
17) 4,4'-DDT	19.37	17.98	244.2E6	289.8E6	14.317	15.083

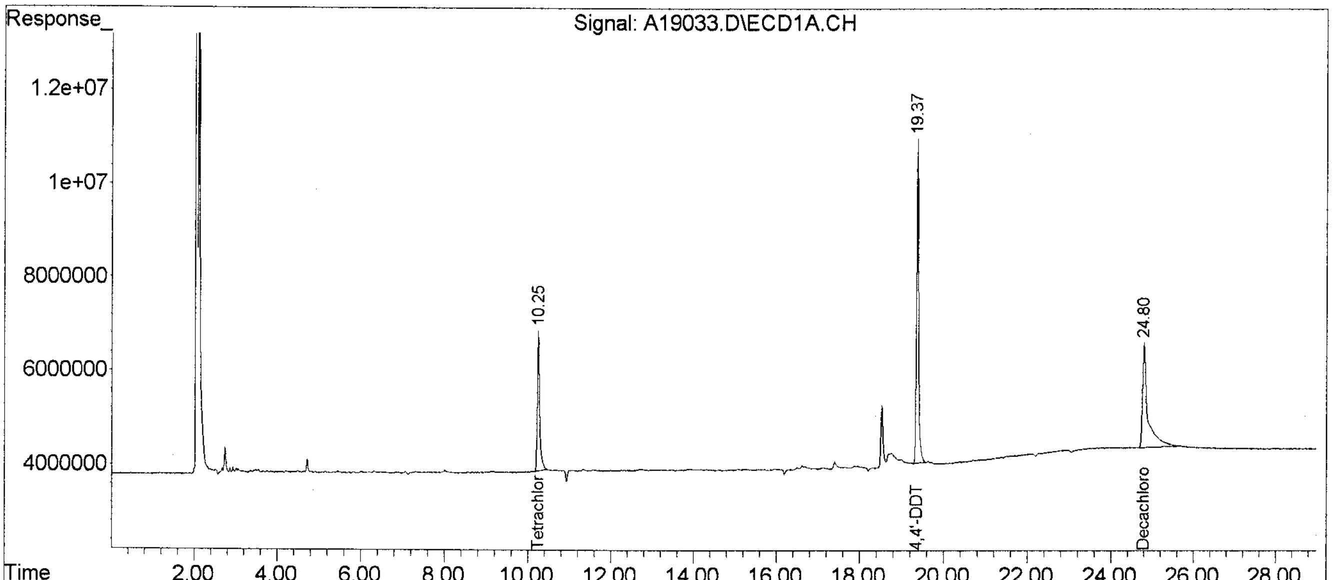
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

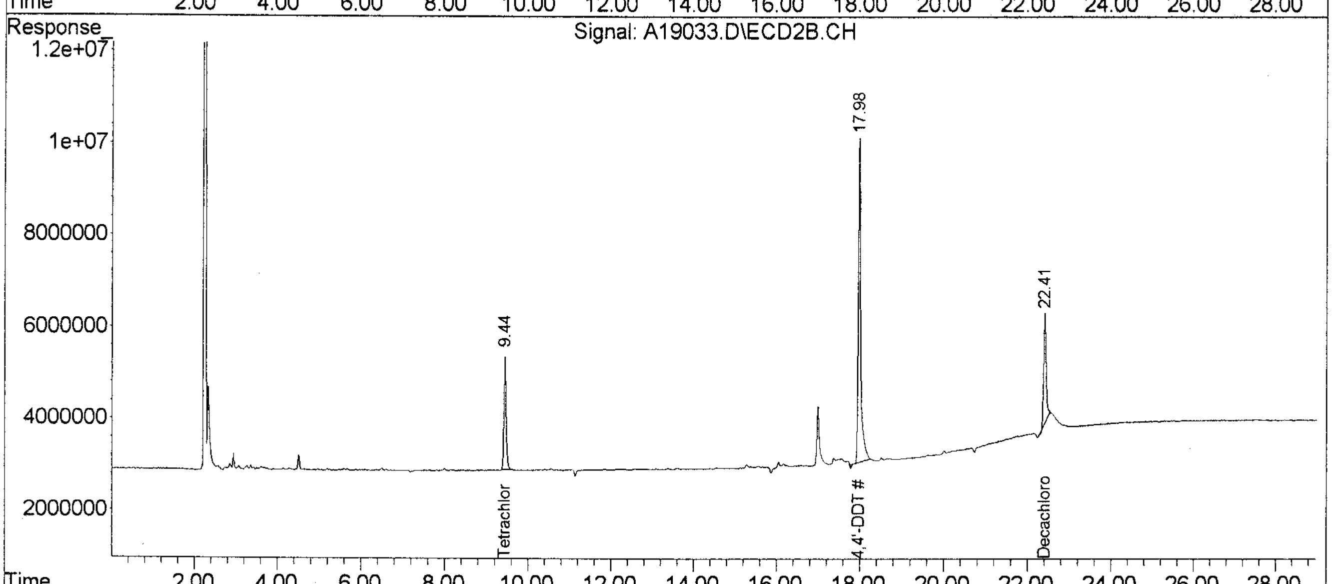
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19033.D(Signal #1)          A19033.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/23/09 10:55 (Signal #1); 09/23/09 11:32 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL1DL 10X (Sig #1); JBPL1DL 10X (Sig #2)
Misc      : S-2603.09DL  5.1G/5ML (Sig #1); S-2603.09DL  5.1G/5ML (Sig #2)
ALS Vial  : 11   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 17:06:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19033.D(Signal #1) A19033.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 10:55 (Signal #1); 09/23/09 11:32 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL1DL 10X (Sig #1); JBPL1DL 10X (Sig #2)
Misc : S-2603.09DL 5.1G/5ML (Sig #1); S-2603.09DL 5.1G/5ML (Sig #2)
ALS Vial : 11 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:07:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.25	9.44	117.4E6	91900692	3.922	3.983
Spiked Amount 60.000			Recovery	=	6.54%	6.64%
11) S Decachlorobiphen	24.80	22.41	197.6E6	168.0E6	8.706	9.847
Spiked Amount 120.000			Recovery	=	7.25%	8.21%
Target Compounds						
9) 2,4'-DDT	18.53	16.99	35914201	56948238	2.579	3.524 #

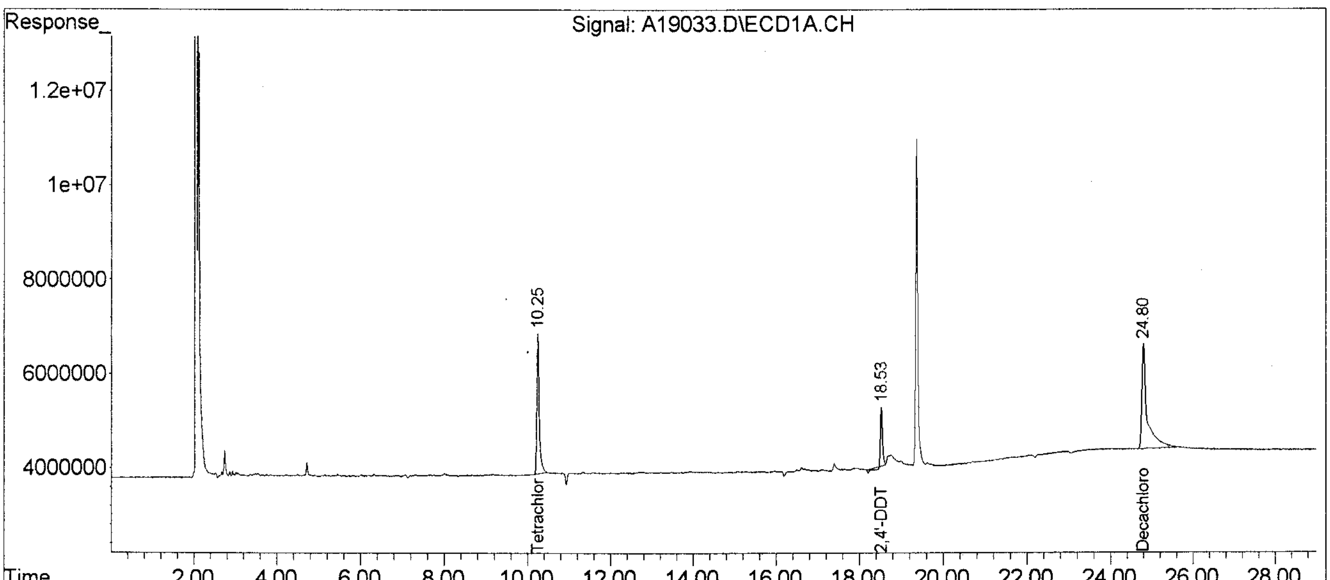
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

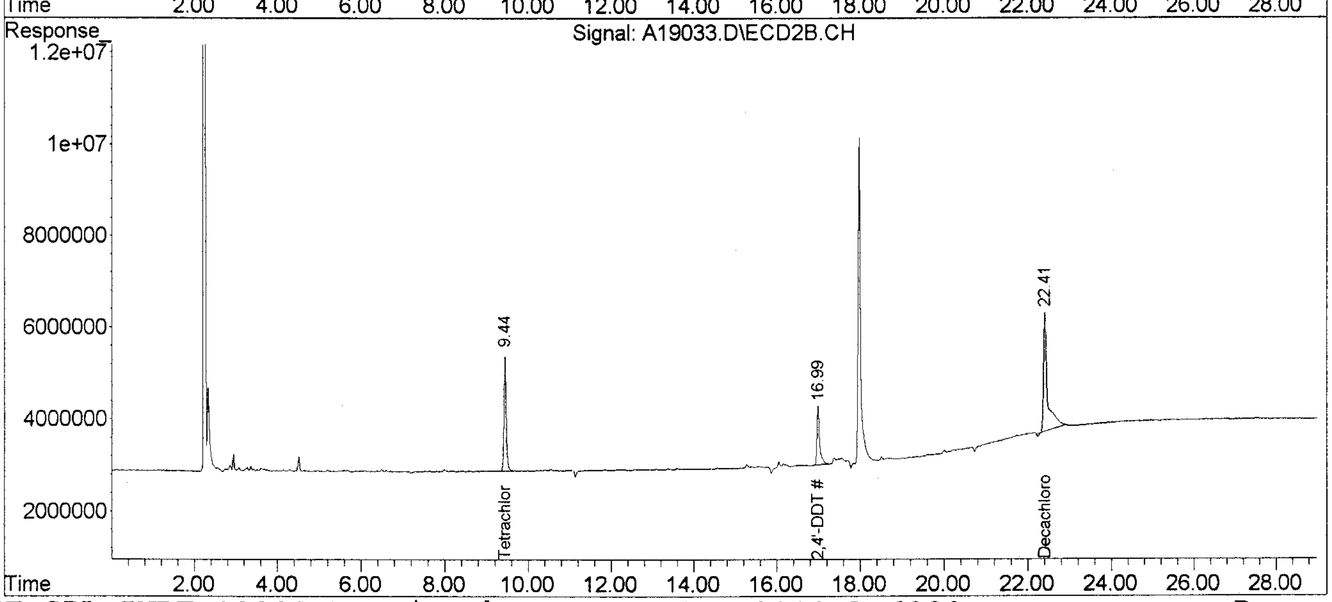
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19033.D(Signal #1) A19033.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 10:55 (Signal #1); 09/23/09 11:32 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL1DL 10X (Sig #1); JBPL1DL 10X (Sig #2)
Misc : S-2603.09DL 5.1G/5ML (Sig #1); S-2603.09DL 5.1G/5ML (Sig #2)
ALS Vial : 11 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:07:51 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPL5

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2617.01

Sample wt/vol: 5.300 (g/mL) G Lab File ID: A19017

% Moisture: 23 Decanted: (Y/N) N Date Received: 09/02/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/22/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.12	U
319-85-7	beta-BHC	99	P
319-86-8	delta-BHC	0.12	U
58-89-9	gamma-BHC (Lindane)	0.12	U
76-44-8	Heptachlor	0.12	U
309-00-2	Aldrin	0.12	U
1024-57-3	Heptachlor epoxide	38	P
959-98-8	Endosulfan I	37	P
60-57-1	Dieldrin	45	P
72-55-9	4,4'-DDE	120	P
72-20-8	Endrin	0.25	U
33213-65-9	Endosulfan II	54	P
72-54-8	4,4'-DDD	200	
1031-07-8	Endosulfan sulfate	0.25	U
50-29-3	4,4'-DDT	1900	EP
72-43-5	Methoxychlor	1.2	U
53494-70-5	Endrin ketone	34	P
7421-93-4	Endrin aldehyde	0.25	U
5103-71-9	alpha-Chlordane	0.12	U
5103-74-2	gamma-Chlordane	0.12	U
8001-35-2	Toxaphene	12	U
53-19-0	2,4'-DDD	64	P
3424-82-6	2,4'-DDE	61	P
789-02-6	2,4'-DDT	200	P
27304-13-8	Oxychlordane	0.25	U
5103-73-1	cis-Nonachlor	0.25	U
39765-80-5	Trans-Nonachlor	0.25	U
118-74-1	Hexachlorobenzene	29	P
87-68-3	Hexachlorobutadiene	21	J
29082-74-4	Octachlorostyrene	50	P

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19017.D(Signal #1)          A19017.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/22/09 23:25 (Signal #1); 09/23/09 00:02 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL5 (Sig #1); JBPL5 (Sig #2)
Misc      : S-2617.01 5.3G/5ML (Sig #1); S-2617.01 5.3G/5ML (Sig #2)
ALS Vial  : 86   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:15:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1511.0E6	1401.2E6	54.064	65.383	
	Spiked Amount 60.000			Recovery	=	90.11%	108.97%	
22) S	Decachlorobiphen	24.78	22.40	3658.9E6	3536.4E6	154.595	187.166	
	Spiked Amount 120.000			Recovery	=	128.83%	155.97%	
	Target Compounds							
4)	Beta-BHC	13.20	12.11	717.6E6	744.4E6	40.447	63.549	#
8)	Heptachlor Epoxi	16.29	15.28	483.5E6	873.6E6	15.387	33.767	#
11)	Endosulfan I	17.21	16.24	457.5E6	1100.6E6	14.979	36.641	#
12)	4,4'-DDE	17.40	16.05	2504.3E6	1091.2E6	88.288	50.847	#
13)	Dieldrin	17.74	16.64	572.6E6	1637.3E6	18.533	62.654	#
15)	4,4'-DDD	18.66	17.37	2158.6E6	1584.2E6	94.585	79.678	
16)	Endosulfan II	18.89	17.74	1000.8E6	482.2E6	34.574	21.869	#
17)	4,4'-DDT	19.35	17.98	17100.1E6	15179.5E6	1002.466	790.002	
21)	Endrin Ketone	21.47	20.17	442.8E6	670.2E6	13.883	27.588	#

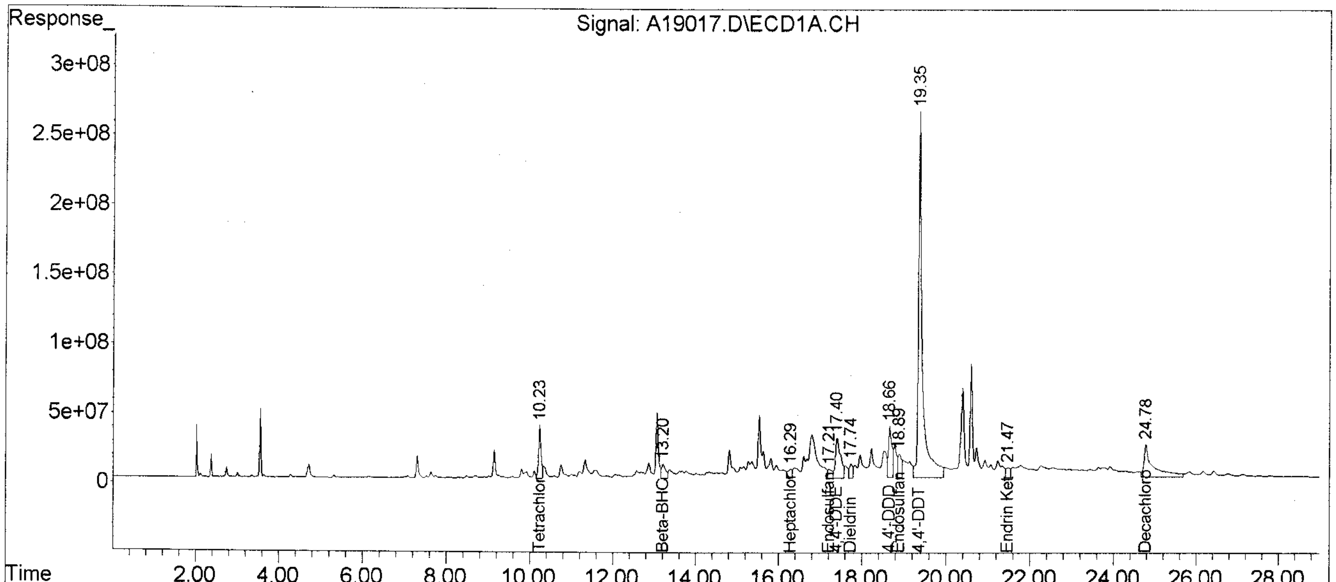
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

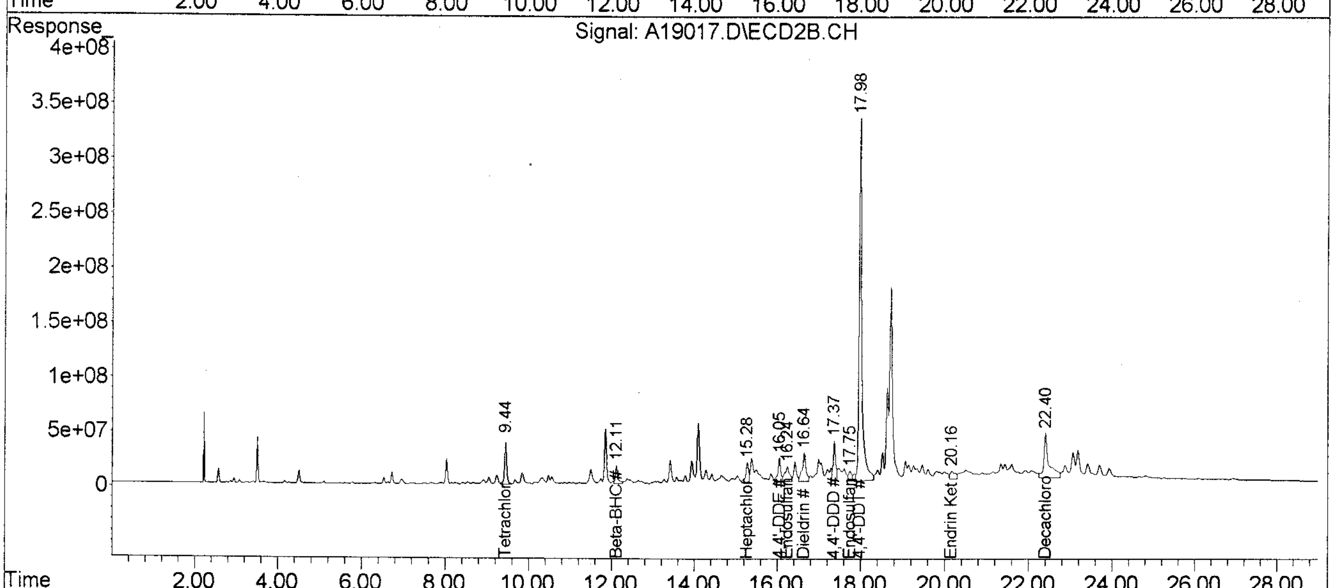
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19017.D(Signal #1) A19017.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 23:25 (Signal #1); 09/23/09 00:02 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL5 (Sig #1); JBPL5 (Sig #2)
Misc : S-2617.01 5.3G/5ML (Sig #1); S-2617.01 5.3G/5ML (Sig #2)
ALS Vial : 86 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:15:26 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19017.D(Signal #1) A19017.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/22/09 23:25 (Signal #1); 09/23/09 00:02 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPL5 (Sig #1); JBPL5 (Sig #2)
Misc : S-2617.01 5.3G/5ML (Sig #1); S-2617.01 5.3G/5ML (Sig #2)
ALS Vial : 86 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:23:23 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1511.0E6	1401.2E6	50.470	60.729	
	Spiked Amount 60.000			Recovery	=	84.12%	101.21%	
11) S	Decachlorobiphen	24.78	22.40	3658.9E6	4709.2E6	161.236	275.959	#
	Spiked Amount 120.000			Recovery	=	134.36%	229.97%	
	Target Compounds							
2)	Hexachlorobutadi	4.72	4.51	436.4E6	363.1E6	8.425	9.576	
3)	Hexachlorobenzen	11.59	10.56	612.4E6	311.3E6	17.896	11.636	#
4)	Octachlorostyren	15.53	14.28	2100.5E6	742.2E6	48.091	20.420	#
6)	2,4'-DDE	16.67	15.28	520.9E6	998.9E6	24.727	55.266	#
8)	2,4'-DDD	17.83	16.42	487.0E6	1009.5E6	25.994	73.142	#
9)	2,4'-DDT	18.52	16.99	1533.4E6	1317.4E6	110.099	81.526	#

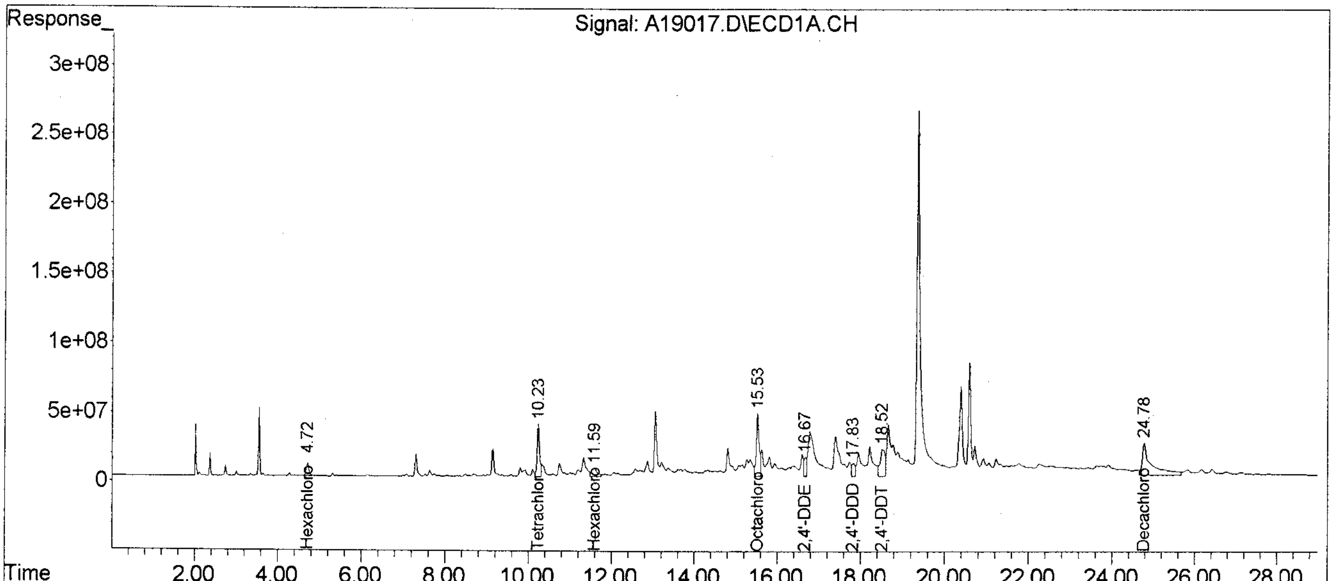
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

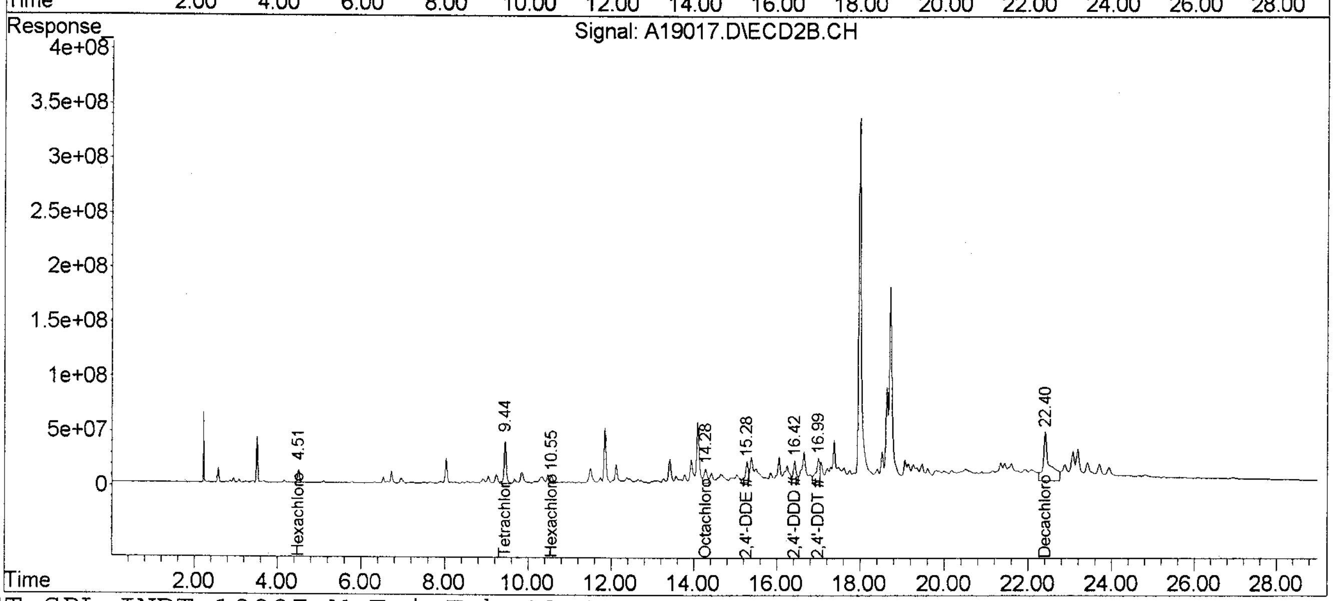
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19017.D(Signal #1)            A19017.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/22/09 23:25 (Signal #1); 09/23/09 00:02 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL5 (Sig #1); JBPL5 (Sig #2)
Misc      : S-2617.01 5.3G/5ML (Sig #1); S-2617.01 5.3G/5ML (Sig #2)
ALS Vial  : 86   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:23:23 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPL5DL

Lab Name: KAP TECHNOLOGIES, INC.   Contract: EPW05032

Lab Code: KAP   Case No.: 38883   Mod. Ref No.: 1790.0   SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL   Lab Sample ID: S-2617.01DL

Sample wt/vol: 5.300 (g/mL) G   Lab File ID: A19037

% Moisture: 23   Decanted: (Y/N) N   Date Received: 09/02/2009

Extraction: (Type) SONC   Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL)   Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL)   GPC Factor: 2.0   Dilution Factor: 50.0

GPC Cleanup: (Y/N) Y   pH: ______   Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	6.1	U
319-85-7	beta-BHC	6.1	U
319-86-8	delta-BHC	6.1	U
58-89-9	gamma-BHC (Lindane)	6.1	U
76-44-8	Heptachlor	6.1	U
309-00-2	Aldrin	6.1	U
1024-57-3	Heptachlor epoxide	6.1	U
959-98-8	Endosulfan I	6.1	U
60-57-1	Dieldrin	6.1	U
72-55-9	4,4'-DDE	6.1	U
72-20-8	Endrin	12	U
33213-65-9	Endosulfan II	12	U
72-54-8	4,4'-DDD	12	U
1031-07-8	Endosulfan sulfate	12	U
50-29-3	4,4'-DDT	1400	D
72-43-5	Methoxychlor	61	U
53494-70-5	Endrin ketone	12	U
7421-93-4	Endrin aldehyde	12	U
5103-71-9	alpha-Chlordane	6.1	U
5103-74-2	gamma-Chlordane	6.1	U
8001-35-2	Toxaphene	610	U
53-19-0	2,4'-DDD	12	U
3424-82-6	2,4'-DDE	12	U
789-02-6	2,4'-DDT	12	U
27304-13-8	Oxychlordane	12	U
5103-73-1	cis-Nonachlor	12	U
39765-80-5	Trans-Nonachlor	12	U
118-74-1	Hexachlorobenzene	12	U
87-68-3	Hexachlorobutadiene	12	U
29082-74-4	Octachlorostyrene	12	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19037.D(Signal #1)           A19037.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/23/09 14:00 (Signal #1); 09/23/09 14:36 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL5DL 50X (Sig #1); JBPL5DL 50X (Sig #2)
Misc      : S-2617.01DL  5.3G/5ML (Sig #1); S-2617.01DL  5.3G/5ML (Sig #2)
ALS Vial  : 16   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 17:26:13 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	25748690	25901937	0.921	1.209	#
	Spiked Amount 60.000				Recovery =	1.54%	2.02%	
22) S	Decachlorobiphen	24.79	22.40	52731126	33634024	2.228	1.780	
	Spiked Amount 120.000				Recovery =	1.86%	1.48%	
	Target Compounds							
17)	4,4'-DDT	19.36	17.98	191.1E6	229.7E6	11.203	11.955	

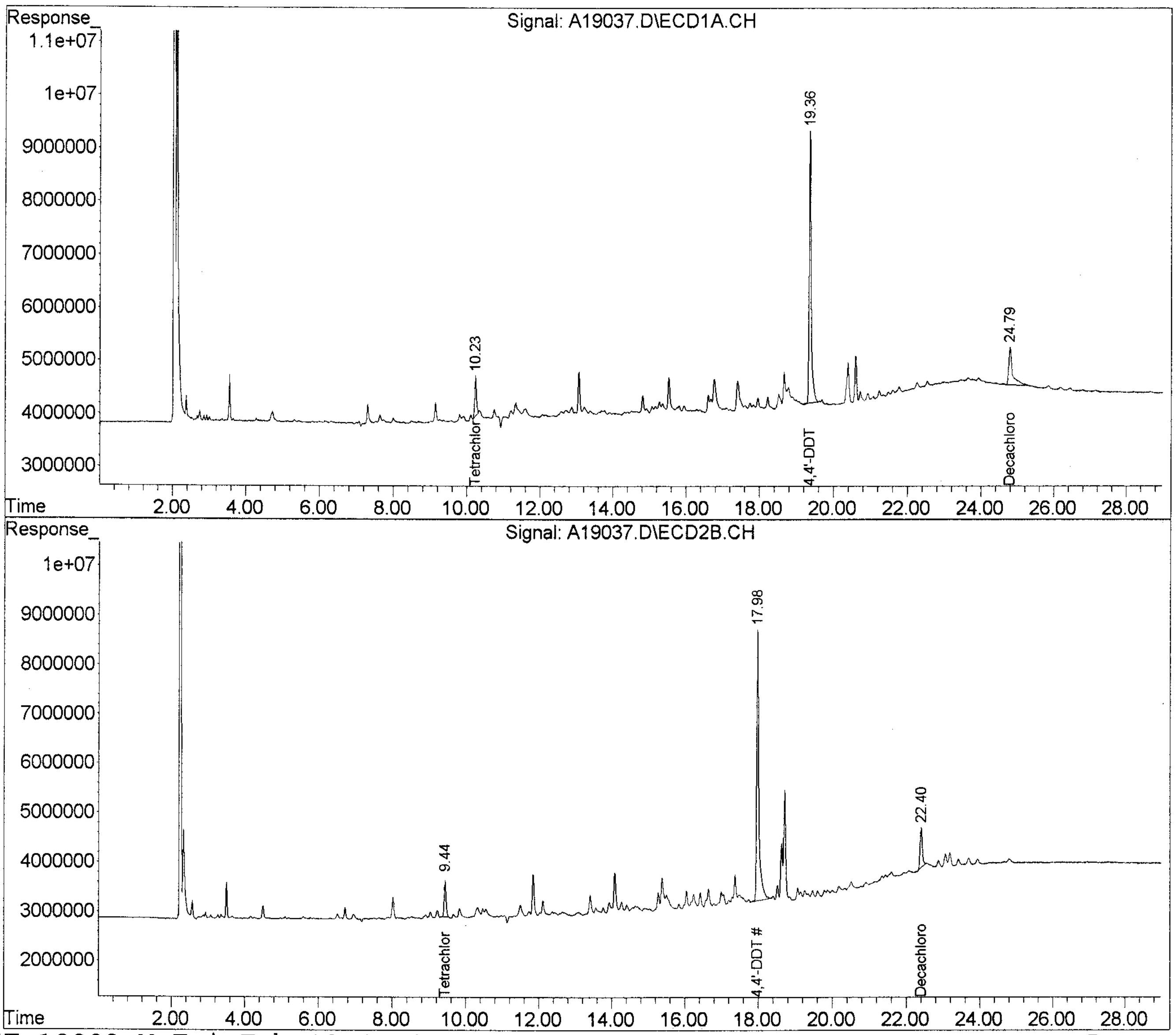
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19037.D(Signal #1)            A19037.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 14:00 (Signal #1); 09/23/09 14:36 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL5DL 50X (Sig #1); JBPL5DL 50X (Sig #2)
Misc      : S-2617.01DL  5.3G/5ML (Sig #1); S-2617.01DL  5.3G/5ML (Sig #2)
ALS Vial  : 16   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 12 17:26:13 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19037.D(Signal #1)            A19037.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/23/09 14:00 (Signal #1); 09/23/09 14:36 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPL5DL 50X (Sig #1); JBPL5DL 50X (Sig #2)
Misc      : S-2617.01DL  5.3G/5ML (Sig #1); S-2617.01DL  5.3G/5ML (Sig #2)
ALS Vial  : 16   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:28:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.23	9.44	25748690	29567462	0.860	1.281 #
Spiked Amount 60.000			Recovery	=	1.43%	2.13%
11) S Decachlorobiphen	24.79	22.40	52731126	48135754	2.324	2.821
Spiked Amount 120.000			Recovery	=	1.94%	2.35%
Target Compounds						

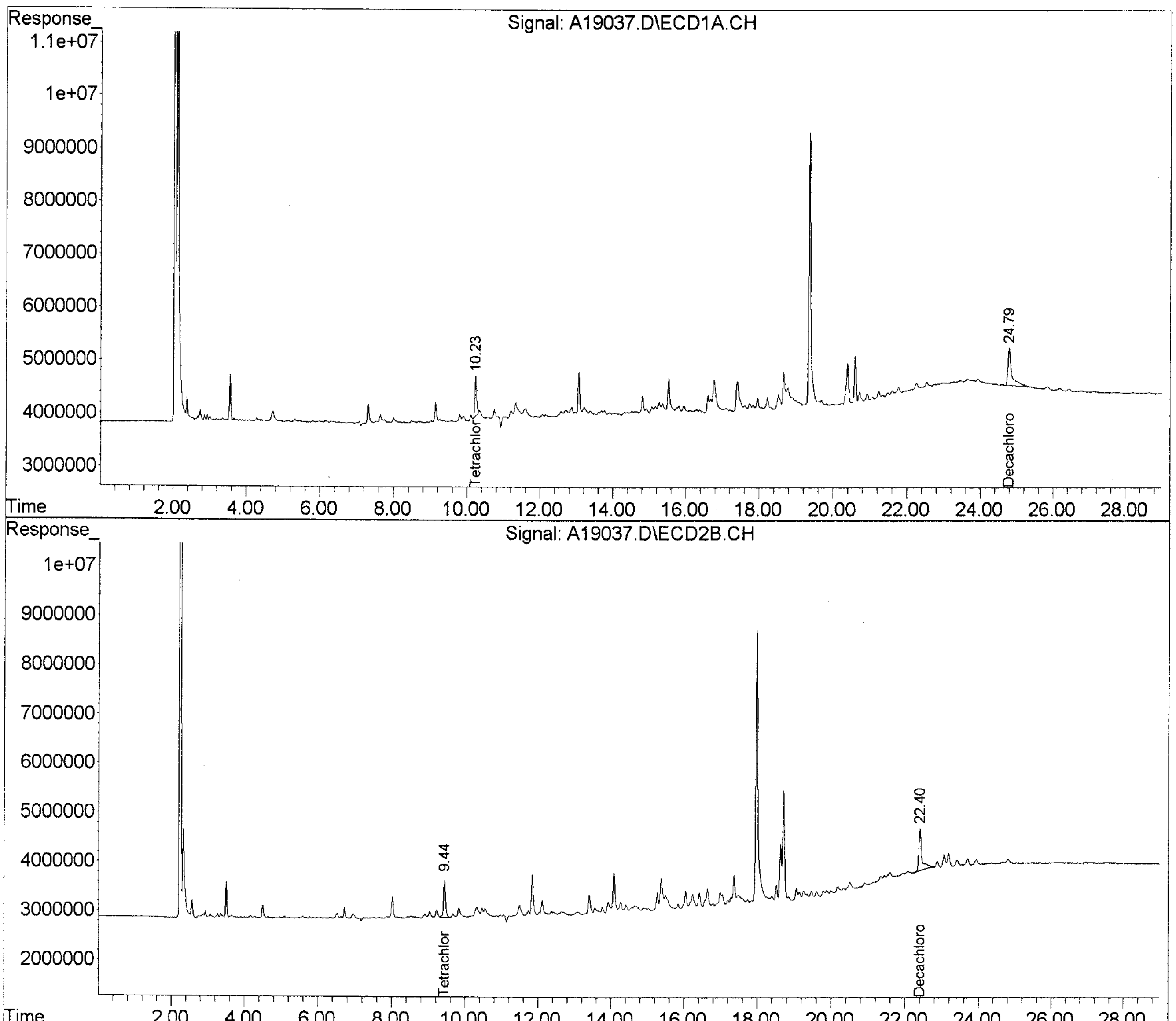
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report   (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19037.D(Signal #1)          A19037.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On     : 09/23/09 14:00 (Signal #1); 09/23/09 14:36 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPL5DL 50X (Sig #1); JBPL5DL 50X (Sig #2)
Misc       : S-2617.01DL  5.3G/5ML (Sig #1); S-2617.01DL  5.3G/5ML (Sig #2)
ALS Vial   : 16   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:28:31 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPM0

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPJ3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2617.04

Sample wt/vol: 5.300 (g/mL) G Lab File ID: A19025

% Moisture: 27 Decanted: (Y/N) N Date Received: 09/02/2009

Extraction: (Type) SONC Date Extracted: 09/05/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/23/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.13	U
319-85-7	beta-BHC	28	P
319-86-8	delta-BHC	0.13	U
58-89-9	gamma-BHC (Lindane)	0.13	U
76-44-8	Heptachlor	0.13	U
309-00-2	Aldrin	0.13	U
1024-57-3	Heptachlor epoxide	7.0	JP
959-98-8	Endosulfan I	4.9	JP
60-57-1	Dieldrin	11	JP
72-55-9	4,4'-DDE	8.7	JP
72-20-8	Endrin	0.26	U
33213-65-9	Endosulfan II	13	JP
72-54-8	4,4'-DDD	21	JP
1031-07-8	Endosulfan sulfate	0.26	U
50-29-3	4,4'-DDT	370	
72-43-5	Methoxychlor	54	JP
53494-70-5	Endrin ketone	3.9	JP
7421-93-4	Endrin aldehyde	24	JP
5103-71-9	alpha-Chlordane	0.13	U
5103-74-2	gamma-Chlordane	0.13	U
8001-35-2	Toxaphene	13	U
53-19-0	2,4'-DDD	7.4	JP
3424-82-6	2,4'-DDE	11	JP
789-02-6	2,4'-DDT	120	
27304-13-8	Oxychlordane	10.	JP
5103-73-1	cis-Nonachlor	0.26	U
39765-80-5	Trans-Nonachlor	0.26	U
118-74-1	Hexachlorobenzene	0.26	U
87-68-3	Hexachlorobutadiene	11	J
29082-74-4	Octachlorostyrene	19	JP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19025.D(Signal #1) A19025.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 05:27 (Signal #1); 09/23/09 06:03 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM0 (Sig #1); JBPM0 (Sig #2)
Misc : S-2617.04 5.3G/5ML (Sig #1); S-2617.04 5.3G/5ML (Sig #2)
ALS Vial : 3 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:24:08 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL	
	System Monitoring Compounds							
1) S	Tetrachloro-m-xy	10.23	9.44	1571.5E6	1333.2E6	56.232	62.211	
	Spiked Amount 60.000			Recovery	=	93.72%	103.69%	
22) S	Decachlorobiphen	24.77	22.40	2259.0E6	2153.9E6	95.445	113.994	
	Spiked Amount 120.000			Recovery	=	79.54%	94.99%	
	Target Compounds							
4)	Beta-BHC	13.20	12.11	192.0E6	197.4E6	10.819	16.853	#
8)	Heptachlor Epoxi	16.29	15.27	84584496	150.8E6	2.692	5.830	#
11)	Endosulfan I	17.20	16.18	57394925	207.4E6	1.879	6.905	#
12)	4,4'-DDE	17.41	16.04	189.9E6	72277034	6.695	3.368	#
13)	Dieldrin	17.73	16.64	133.6E6	502.5E6	4.324	19.229	#
15)	4,4'-DDD	18.65	17.37	269.1E6	159.9E6	11.790	8.043	#
16)	Endosulfan II	18.89	17.74	226.3E6	110.5E6	7.818	5.011	#
17)	4,4'-DDT	19.35	17.98	2768.9E6	2749.1E6	162.322	143.075	
18)	Endrin Aldehyde	19.67	18.63	235.1E6	1105.9E6	9.413	61.425	#
20)	Methoxychlor	20.71	19.06	317.2E6	198.8E6	36.548	20.898	#
21)	Endrin Ketone	21.46	20.17	48411181	121.8E6	1.518	5.013	#

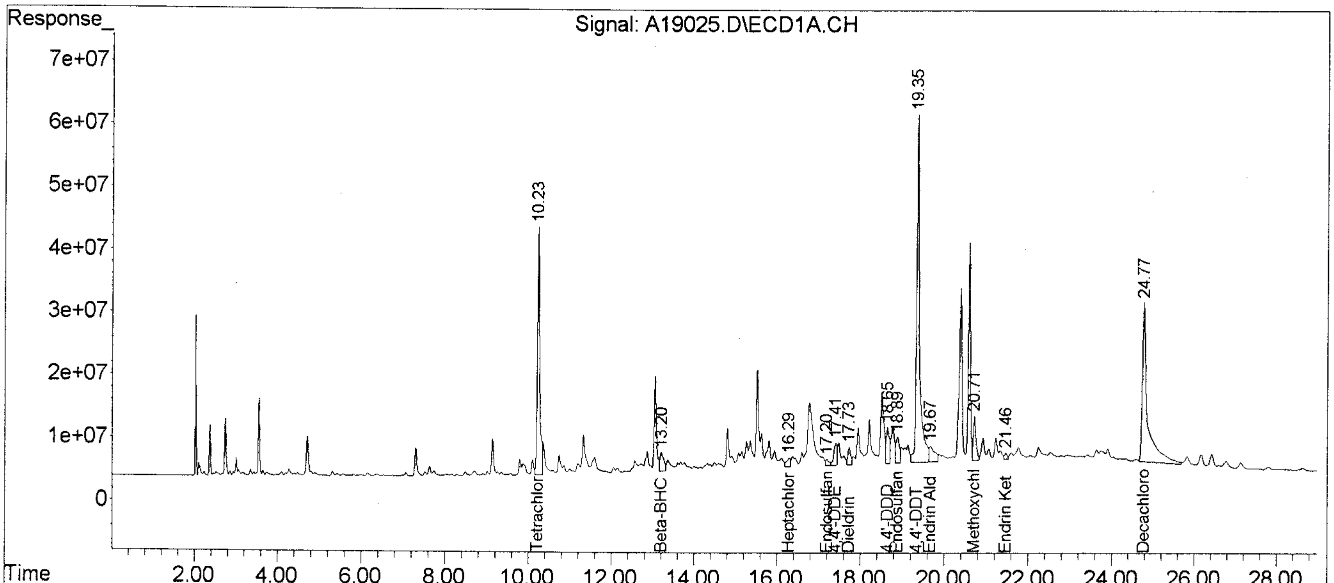
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

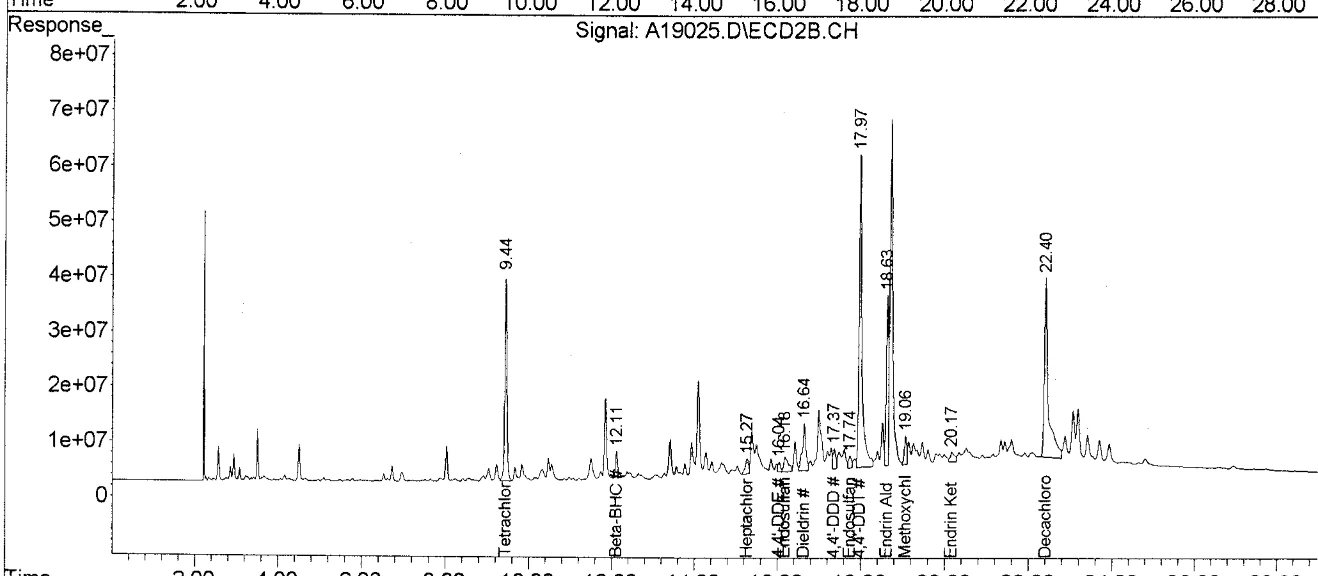
Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19025.D(Signal #1)           A19025.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On      : 09/23/09 05:27 (Signal #1); 09/23/09 06:03 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBPM0 (Sig #1); JBPM0 (Sig #2)
Misc        : S-2617.04 5.3G/5ML (Sig #1); S-2617.04 5.3G/5ML (Sig #2)
ALS Vial    : 3   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 16 10:24:08 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-18982.M
Quant Title  :
QLast Update : Wed Sep 23 13:58:05 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase   : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info    : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19025.D(Signal #1) A19025.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/23/09 05:27 (Signal #1); 09/23/09 06:03 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM0 (Sig #1); JBPM0 (Sig #2)
Misc : S-2617.04 5.3G/5ML (Sig #1); S-2617.04 5.3G/5ML (Sig #2)
ALS Vial : 3 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:45:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.23	9.44	1571.5E6	1344.6E6	52.494	58.276
	Spiked Amount 60.000			Recovery	=	87.49%	97.13%
11) S	Decachlorobiphen	24.77	22.40	2259.0E6	2894.0E6	99.545	169.585 #
	Spiked Amount 120.000			Recovery	=	82.95%	141.32%
	Target Compounds						
2)	Hexachlorobutadi	4.71	4.51	226.1E6	203.4E6	4.365	5.364
4)	Octachlorostyren	15.52	14.28	648.2E6	273.9E6	14.840	7.537 #
5)	Oxychlordane	16.10	15.03	103.3E6	119.9E6	3.858	5.358 #
6)	2,4'-DDE	16.59	15.27	93730530	210.0E6	4.449	11.617 #
8)	2,4'-DDD	17.83	16.42	53287804	321.7E6	2.844	23.306 #
9)	2,4'-DDT	18.51	16.99	642.6E6	916.4E6	46.139	56.713

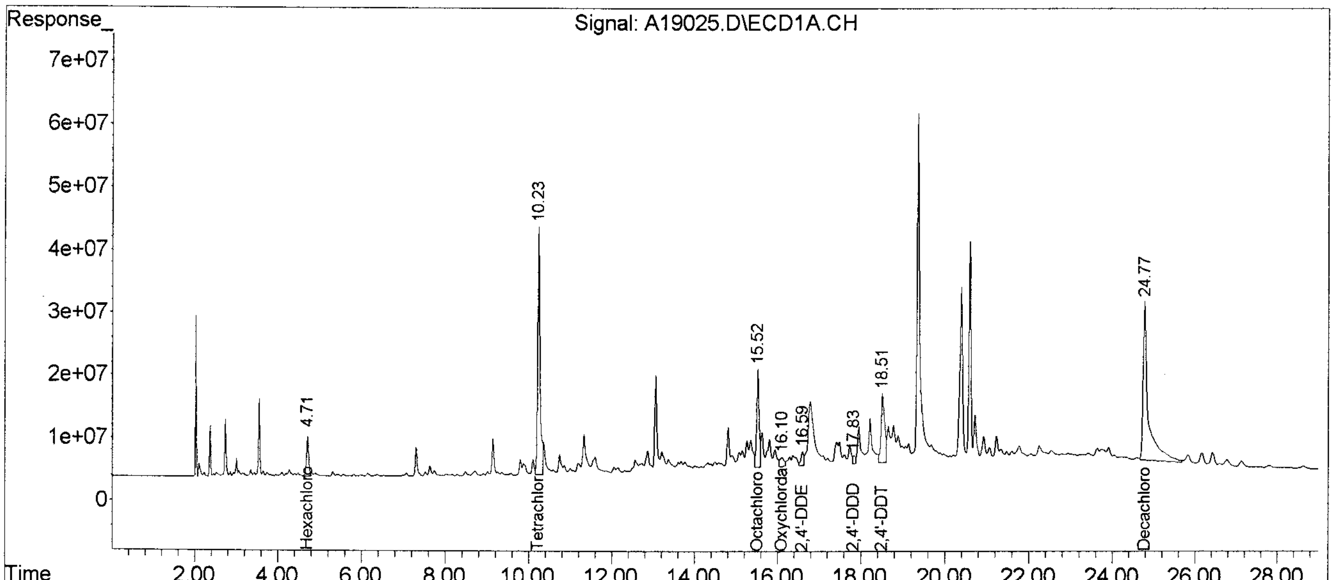
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

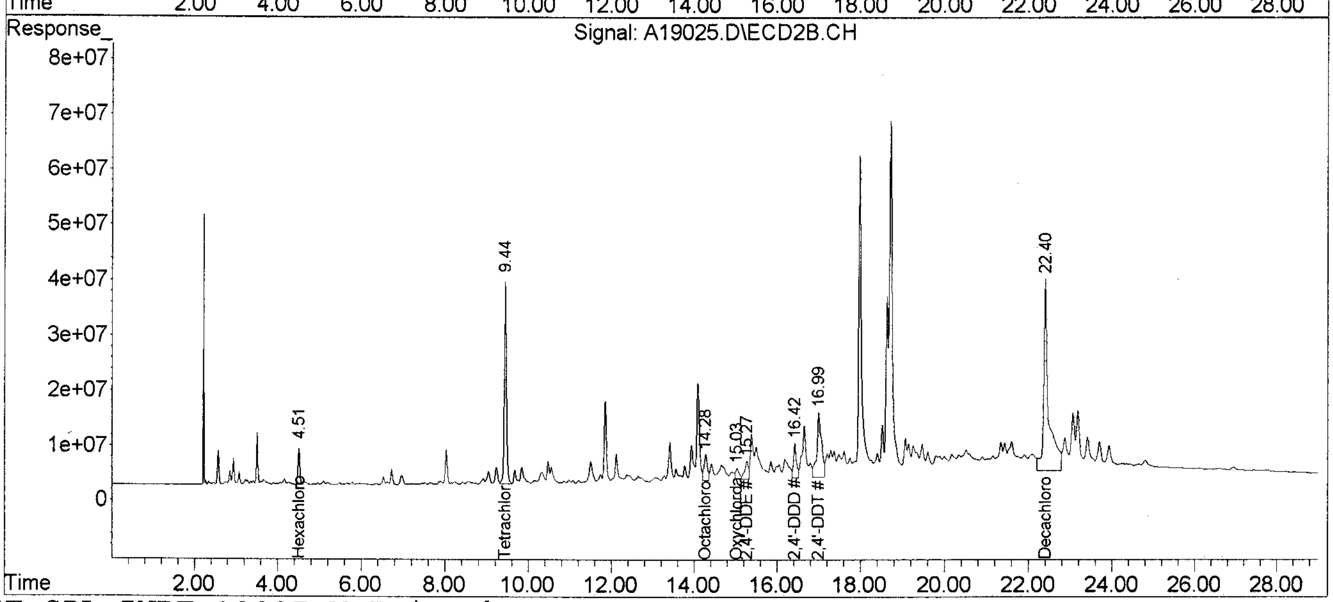
Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19025.D(Signal #1)            A19025.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On      : 09/23/09 05:27 (Signal #1); 09/23/09 06:03 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBPM0 (Sig #1); JBPM0 (Sig #2)
Misc        : S-2617.04 5.3G/5ML (Sig #1); S-2617.04 5.3G/5ML (Sig #2)
ALS Vial    : 3   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 12 17:45:29 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-18987.M
Quant Title  :
QLast Update : Thu Sep 24 11:29:08 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JBPM4

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2623.01

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19143

% Moisture: 50 Decanted: (Y/N) N Date Received: 09/04/2009

Extraction: (Type) SONC Date Extracted: 09/12/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/28/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.20	U
319-85-7	beta-BHC	0.30	P
319-86-8	delta-BHC	0.20	U
58-89-9	gamma-BHC (Lindane)	0.20	U
76-44-8	Heptachlor	0.072	J
309-00-2	Aldrin	0.063	JP
1024-57-3	Heptachlor epoxide	0.21	
959-98-8	Endosulfan I	0.22	P
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.68	P
72-20-8	Endrin	0.40	U
33213-65-9	Endosulfan II	0.40	U
72-54-8	4,4'-DDD	6.1	P
1031-07-8	Endosulfan sulfate	0.084	JP
50-29-3	4,4'-DDT	31	E
72-43-5	Methoxychlor	2.0	U
53494-70-5	Endrin ketone	0.40	U
7421-93-4	Endrin aldehyde	0.33	JP
5103-71-9	alpha-Chlordane	0.20	U
5103-74-2	gamma-Chlordane	0.20	U
8001-35-2	Toxaphene	20	U
53-19-0	2,4'-DDD	3.1	
3424-82-6	2,4'-DDE	0.44	P
789-02-6	2,4'-DDT	4.7	
27304-13-8	Oxychlordane	0.40	U
5103-73-1	cis-Nonachlor	0.40	U
39765-80-5	Trans-Nonachlor	0.40	U
118-74-1	Hexachlorobenzene	0.33	JP
87-68-3	Hexachlorobutadiene	0.28	JP
29082-74-4	Octachlorostyrene	0.15	JP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19143.D(Signal #1) A19143.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 22:38 (Signal #1); 09/28/09 23:14 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM4 (Sig #1); JBPM4 (Sig #2)
Misc : S-2623.01 60.3G/1.0ML (Sig #1); S-2623.01 60.3G/1.0ML (Sig #2)
ALS Vial : 67 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 12:46:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.05	1471.0E6	1153.1E6	50.206	40.064
	Spiked Amount 60.000			Recovery	=	83.68%	66.77%
22) S	Decachlorobiphen	24.75	23.23	2732.3E6	1524.7E6	106.383	67.833 #
	Spiked Amount 120.000			Recovery	=	88.65%	56.53%
	Target Compounds						
4)	Beta-BHC	13.13	12.75	364.7E6	154.8E6	20.243	9.174 #
6)	Heptachlor	14.01	13.70	88540130	92383394	2.173	2.289
7)	Aldrin	14.85	14.42	155.5E6	71801158	4.227	1.889 #
8)	Heptachlor Epoxi	16.22	15.92	243.6E6	221.6E6	7.221	6.454
11)	Endosulfan I	17.12	16.89	201.6E6	561.1E6	6.737	15.160 #
12)	4,4'-DDE	17.34	16.69	1738.6E6	614.5E6	56.509	20.417 #
15)	4,4'-DDD	18.61	18.03	5947.5E6	5121.7E6	238.119	185.338
17)	4,4'-DDT	19.30	18.64	27023.4E6	22098.4E6	1135.874	924.377
18)	Endrin Aldehyde	19.63	19.32	256.3E6	458.6E6	9.912	19.711 #
19)	Endosulfan sulfa	20.16	20.29	167.4E6	62308695	6.461	2.529 #

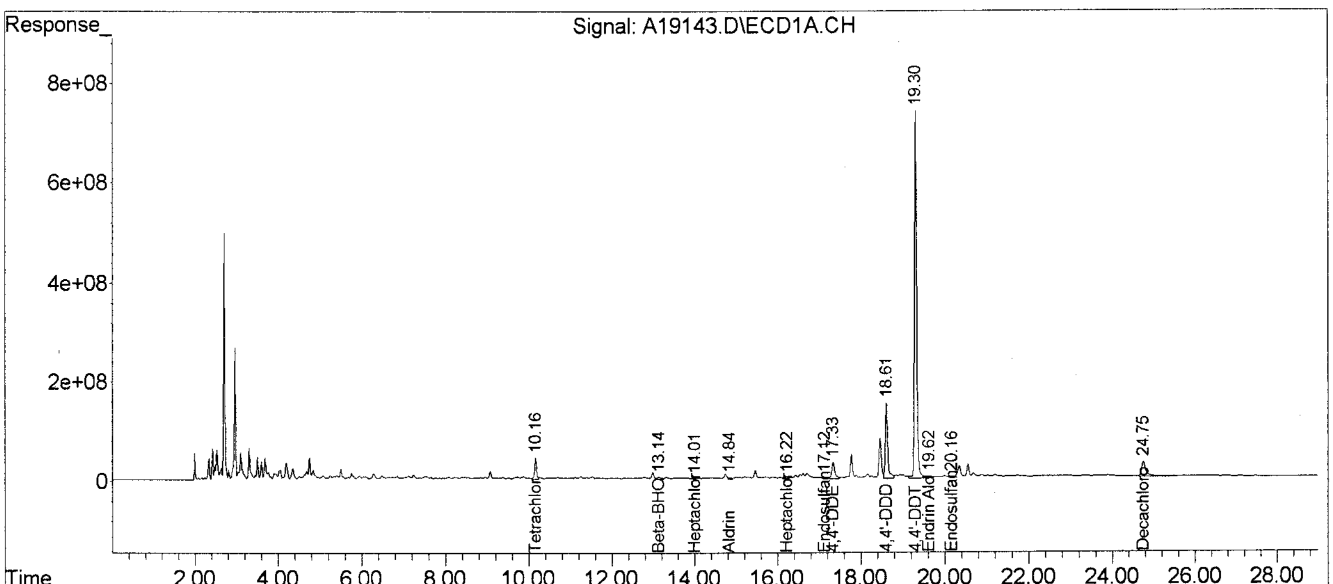
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

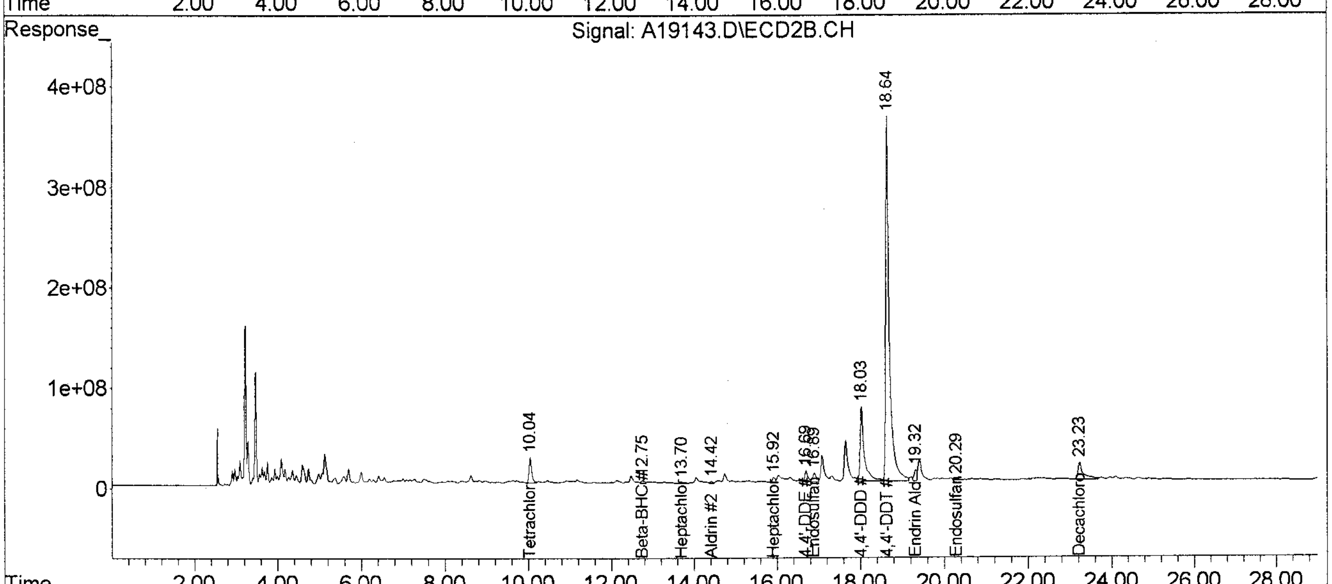
Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19143.D(Signal #1)           A19143.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/28/09 22:38 (Signal #1); 09/28/09 23:14 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPM4 (Sig #1); JBPM4 (Sig #2)
Misc      : S-2623.01  60.3G/1.0ML (Sig #1); S-2623.01  60.3G/1.0ML (Sig #2)
ALS Vial  : 67   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 12:46:33 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19143.D(Signal #1) A19143.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 22:38 (Signal #1); 09/28/09 23:14 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM4 (Sig #1); JBPM4 (Sig #2)
Misc : S-2623.01 60.3G/1.0ML (Sig #1); S-2623.01 60.3G/1.0ML (Sig #2)
ALS Vial : 67 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 12:45:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.05	1471.0E6	1409.0E6	46.075	46.123
	Spiked Amount 60.000			Recovery	=	76.79%	76.87%
11) S	Decachlorobiphen	24.75	23.23	2732.3E6	1943.4E6	111.571	80.036 #
	Spiked Amount 120.000			Recovery	=	92.98%	66.70%
	Target Compounds						
2)	Hexachlorobutadi	4.63	4.98	403.7E6	568.3E6	8.457	16.146 #
3)	Hexachlorobenzen	11.53	11.17	367.8E6	467.6E6	9.856	13.704 #
4)	Octachlorostyren	15.46	14.92	729.1E6	208.7E6	15.692	4.455 #
6)	2,4'-DDE	16.61	15.92	407.4E6	314.5E6	17.262	13.271
8)	2,4'-DDD	17.77	17.08	1774.3E6	1758.8E6	94.076	94.135
9)	2,4'-DDT	18.46	17.65	3147.9E6	2890.9E6	144.961	141.882

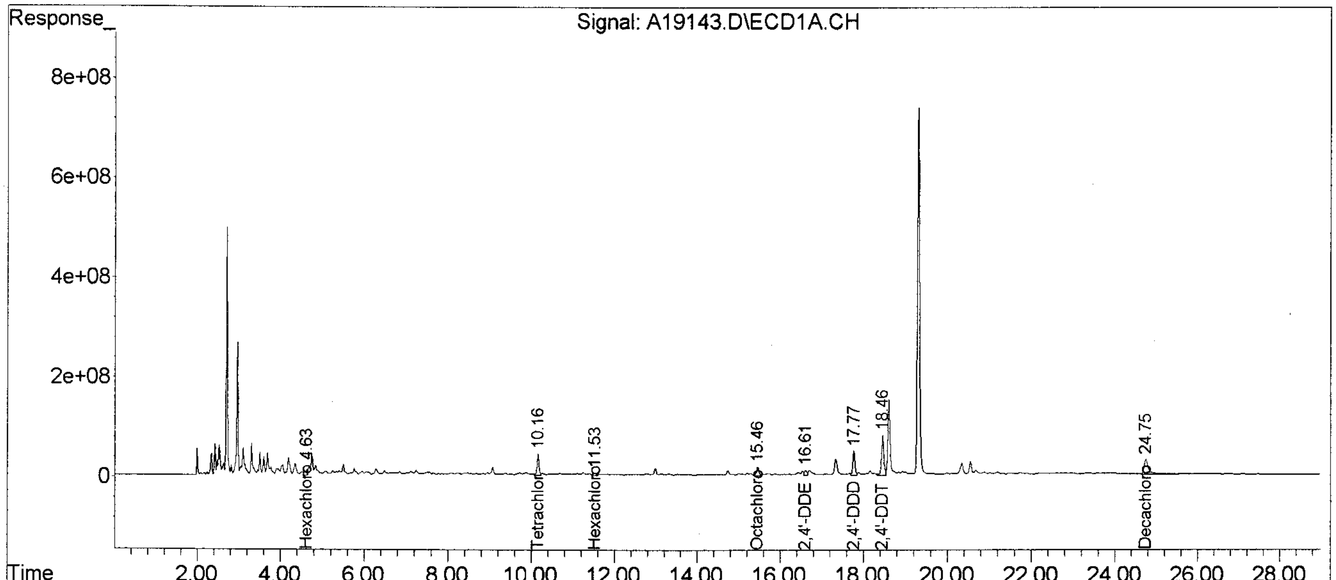
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

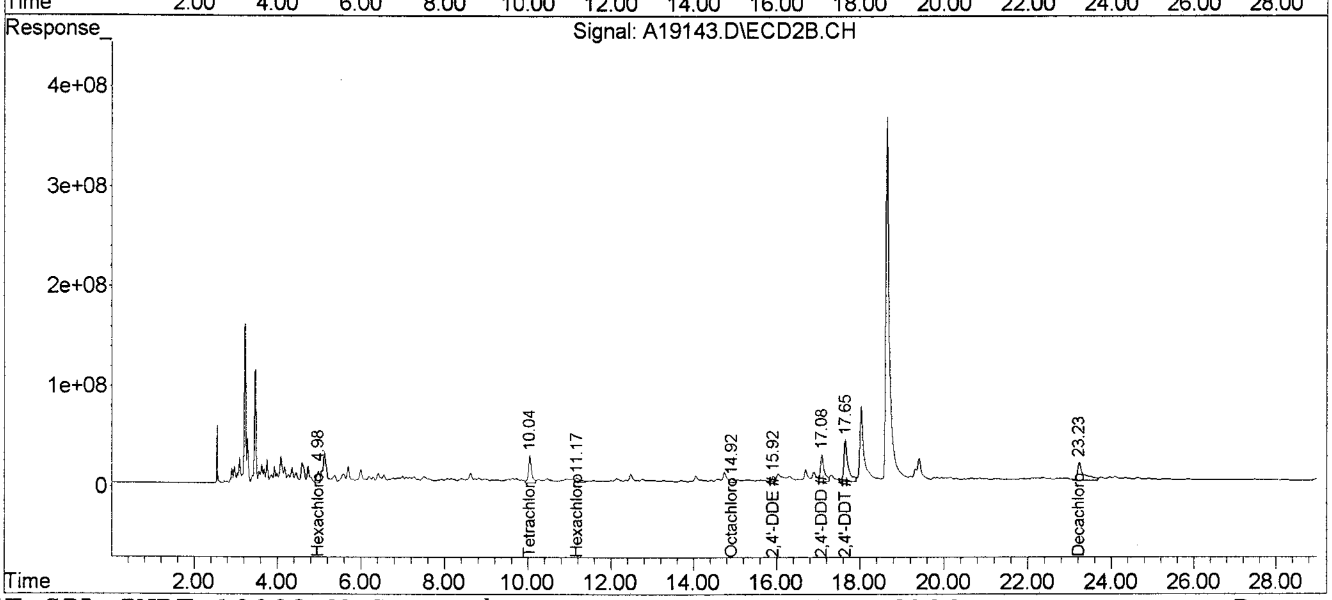
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19143.D(Signal #1)              A19143.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)               A-6890B(Signal # 2)
Acq On     : 09/28/09 22:38 (Signal #1); 09/28/09 23:14 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPM4 (Sig #1); JBPM4 (Sig #2)
Misc       : S-2623.01  60.3G/1.0ML (Sig #1); S-2623.01  60.3G/1.0ML (Sig #2)
ALS Vial   : 67   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 12:45:04 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPM4DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2623.01DL

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19157

% Moisture: 50 Decanted: (Y/N) N Date Received: 09/04/2009

Extraction: (Type) SONC Date Extracted: 09/12/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/29/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	2.0	U
72-55-9	4,4'-DDE	0.26	DJP
72-20-8	Endrin	4.0	U
33213-65-9	Endosulfan II	4.0	U
72-54-8	4,4'-DDD	2.8	DJ
1031-07-8	Endosulfan sulfate	4.0	U
50-29-3	4,4'-DDT	14	D
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	4.0	U
7421-93-4	Endrin aldehyde	4.0	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
53-19-0	2,4'-DDD	1.4	DJ
3424-82-6	2,4'-DDE	0.098	DJP
789-02-6	2,4'-DDT	2.0	DJ
27304-13-8	Oxychlordane	4.0	U
5103-73-1	cis-Nonachlor	4.0	U
39765-80-5	Trans-Nonachlor	4.0	U
118-74-1	Hexachlorobenzene	4.0	U
87-68-3	Hexachlorobutadiene	4.0	U
29082-74-4	Octachlorostyrene	0.11	DJP

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19157.D(Signal #1) A19157.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 08:34 (Signal #1); 09/29/09 09:11 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM4DL 10X (Sig #1); JBPM4DL 10X (Sig #2)
Misc : S-2623.01DL 60.3G/1.0ML (Sig #1); S-2623.01DL 60.3G/1.0ML (Sig # 2)
ALS Vial : 82 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 12:51:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1)	S Tetrachloro-m-xy	10.16	10.05	65603953	60878259	2.239	2.115
	Spiked Amount 60.000			Recovery	=	3.73%	3.53%
22)	S Decachlorobiphen	24.74	23.23	111.5E6	67741165	4.343	3.014 #
	Spiked Amount 120.000			Recovery	=	3.62%	2.51%
	Target Compounds						
12)	4,4'-DDE	17.34	16.69	73260961	23828698	2.381	0.792 #
15)	4,4'-DDD	18.60	18.02	254.9E6	232.3E6	10.204	8.407
17)	4,4'-DDT	19.30	18.64	1045.6E6	1011.8E6	43.951	42.325

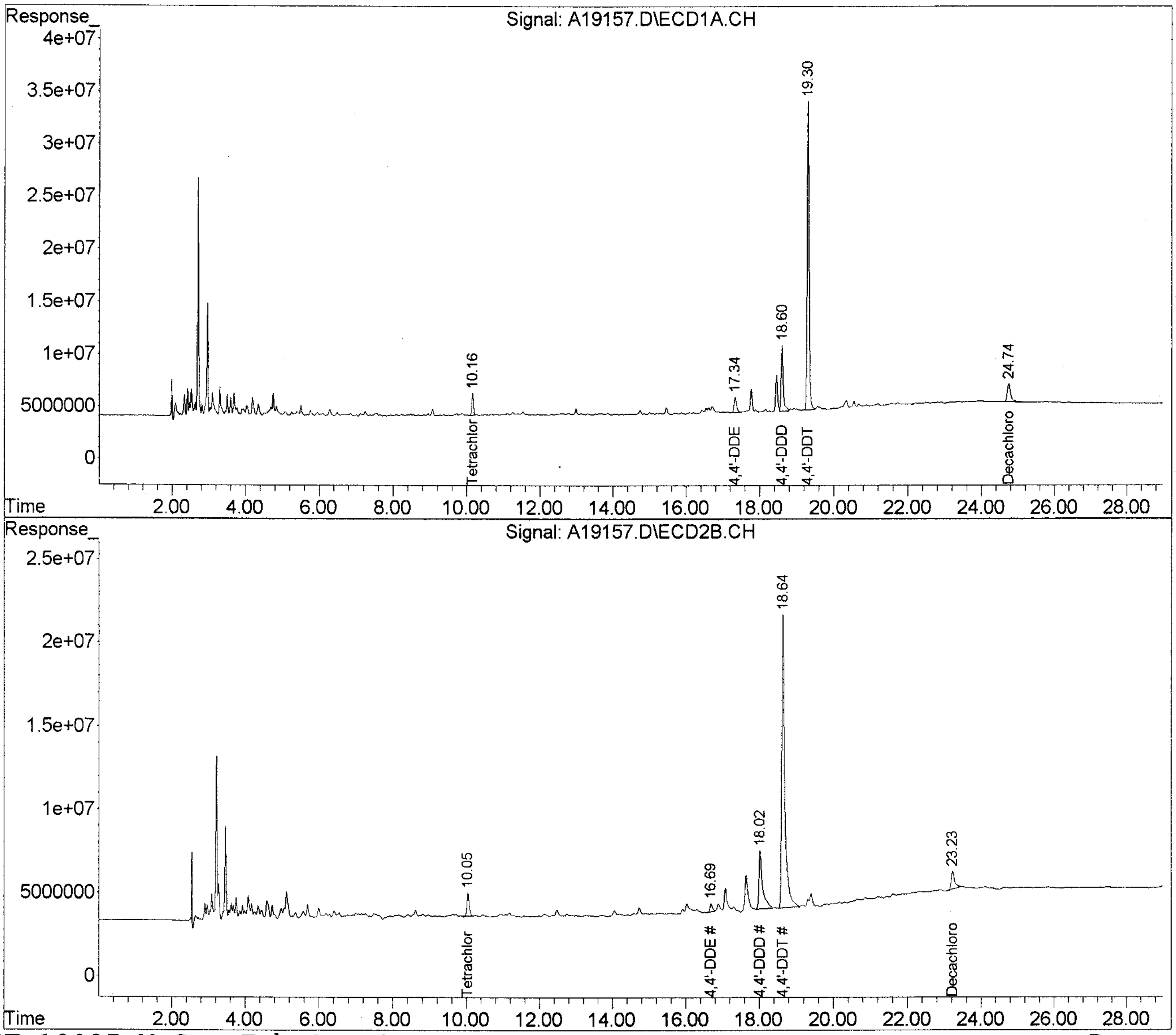
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19157.D(Signal #1)          A19157.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/29/09 08:34 (Signal #1); 09/29/09 09:11 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPM4DL  10X (Sig #1); JBPM4DL  10X (Sig #2)
Misc      : S-2623.01DL  60.3G/1.0ML (Sig #1); S-2623.01DL  60.3G/1.0ML (Sig
ALS Vial  : 82   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 12:51:49 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```



Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19157.D(Signal #1) A19157.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 08:34 (Signal #1); 09/29/09 09:11 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPM4DL 10X (Sig #1); JBPM4DL 10X (Sig #2)
Misc : S-2623.01DL 60.3G/1.0ML (Sig #1); S-2623.01DL 60.3G/1.0ML (Sig # 2)
ALS Vial : 82 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 12:53:39 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.05	65603953	62004664	2.055	2.030
	Spiked Amount 60.000			Recovery	=	3.43%	3.38%
11) S	Decachlorobiphen	24.74	23.23	111.5E6	106.4E6	4.555	4.382
	Spiked Amount 120.000			Recovery	=	3.80%	3.65%
	Target Compounds						
4)	Octachlorostyren	15.46	14.73	26011664	15256848	0.560	0.326 #
6)	2,4'-DDE	16.61	15.91	18327121	6992743	0.777	0.295 #
8)	2,4'-DDD	17.77	17.08	78683322	90671307	4.172	4.853
9)	2,4'-DDT	18.46	17.64	132.9E6	138.3E6	6.121	6.785

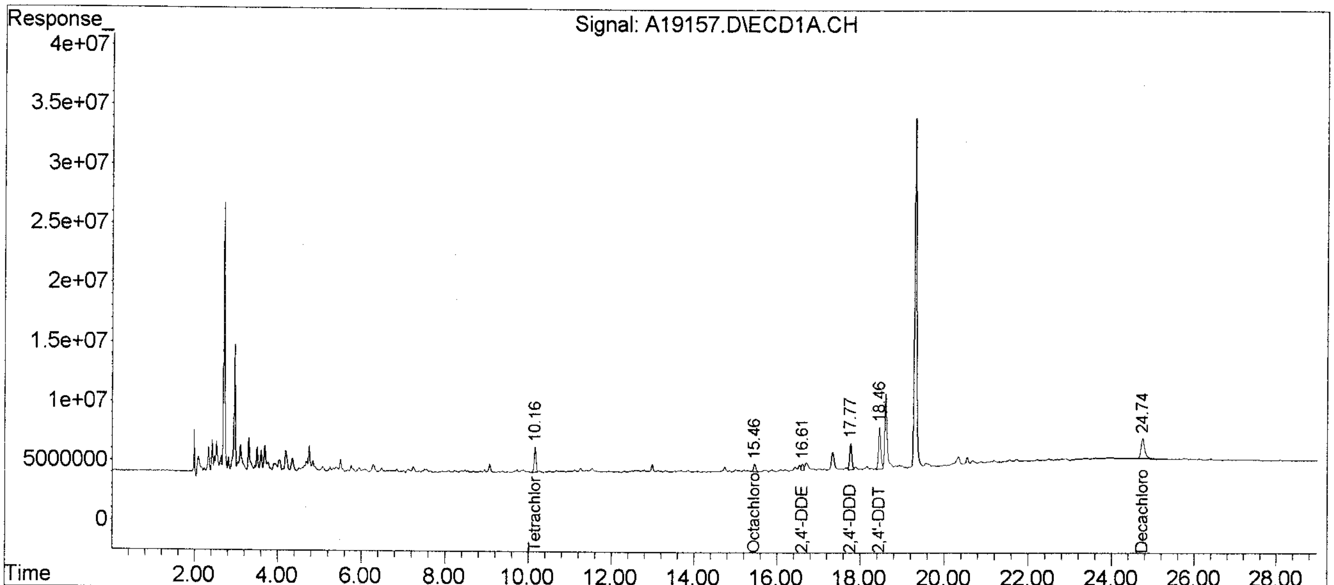
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

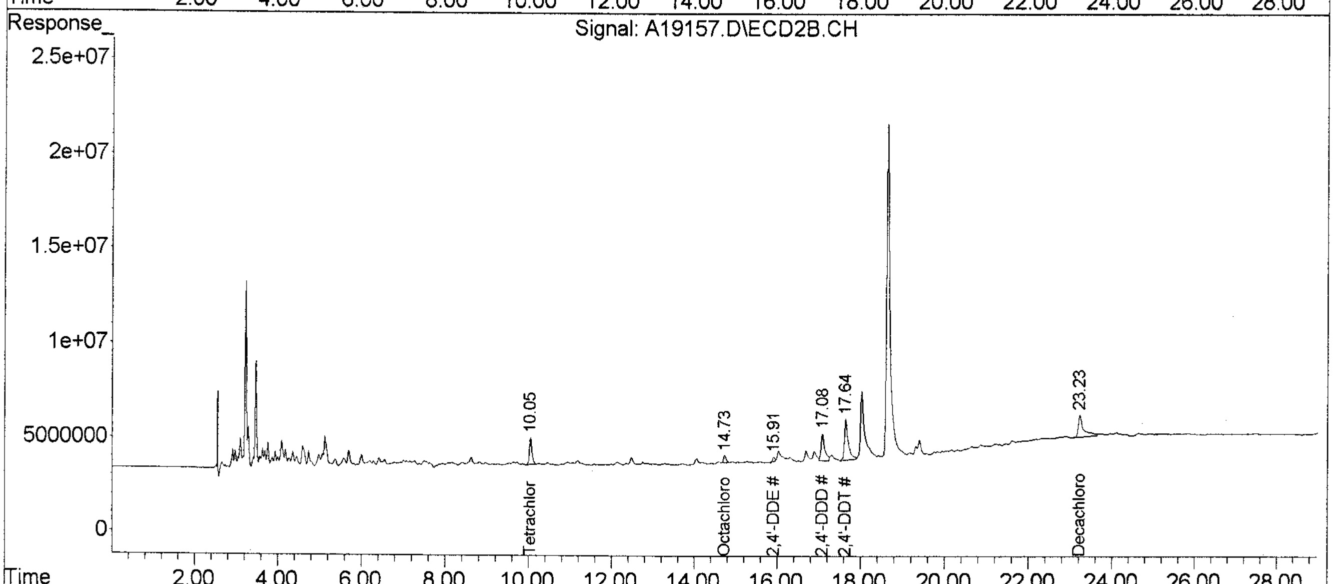
Quantitation Report (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19157.D(Signal #1)            A19157.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On     : 09/29/09 08:34 (Signal #1); 09/29/09 09:11 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPM4DL  10X (Sig #1); JBPM4DL  10X (Sig #2)
Misc       : S-2623.01DL  60.3G/1.0ML (Sig #1); S-2623.01DL  60.3G/1.0ML (Sig
ALS Vial   : 82   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 12:53:39 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase  : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info   : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```





1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBPN5

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2623.05

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19147

% Moisture: 30 Decanted: (Y/N) N Date Received: 09/04/2009

Extraction: (Type) SONC Date Extracted: 09/12/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/29/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.14	U
319-85-7	beta-BHC	0.14	U
319-86-8	delta-BHC	0.14	U
58-89-9	gamma-BHC (Lindane)	0.17	P
76-44-8	Heptachlor	0.14	U
309-00-2	Aldrin	0.14	U
1024-57-3	Heptachlor epoxide	0.14	U
959-98-8	Endosulfan I	0.14	U
60-57-1	Dieldrin	0.14	U
72-55-9	4,4'-DDE	0.041	JP
72-20-8	Endrin	0.28	U
33213-65-9	Endosulfan II	0.28	U
72-54-8	4,4'-DDD	0.28	U
1031-07-8	Endosulfan sulfate	0.093	JP
50-29-3	4,4'-DDT	0.036	JP
72-43-5	Methoxychlor	1.4	U
53494-70-5	Endrin ketone	0.28	U
7421-93-4	Endrin aldehyde	0.28	U
5103-71-9	alpha-Chlordane	0.14	U
5103-74-2	gamma-Chlordane	0.14	U
8001-35-2	Toxaphene	14	U
53-19-0	2,4'-DDD	0.28	U
3424-82-6	2,4'-DDE	0.28	U
789-02-6	2,4'-DDT	0.28	U
27304-13-8	Oxychlordane	0.28	U
5103-73-1	cis-Nonachlor	0.17	JP
39765-80-5	Trans-Nonachlor	0.28	U
118-74-1	Hexachlorobenzene	0.28	U
87-68-3	Hexachlorobutadiene	9.7	E
29082-74-4	Octachlorostyrene	0.28	U

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19147.D(Signal #1) A19147.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 01:04 (Signal #1); 09/29/09 01:41 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPN5 (Sig #1); JBPN5 (Sig #2)
Misc : S-2623.05 60.3G/1.0ML (Sig #1); S-2623.05 60.3G/1.0ML (Sig #2)
ALS Vial : 71 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:06:40 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.04	1405.4E6	1515.6E6	47.965	52.660
	Spiked Amount 60.000			Recovery	=	79.94%	87.77%
22) S	Decachlorobiphen	24.75	23.23	1905.7E6	1214.7E6	74.200	54.042 #
	Spiked Amount 120.000			Recovery	=	61.83%	45.04%
	Target Compounds						
3)	Gamma-BHC (Linda	12.89	12.51	440.6E6	308.4E6	9.900	7.259 #
12)	4,4'-DDE	17.32	16.70	53066989	66299150	1.725	2.203 #
17)	4,4'-DDT	19.31	18.63	95359896	35835773	4.008	1.499 #
19)	Endosulfan sulfa	20.28	20.28	1837.8E6	97116078	70.947	3.942 #

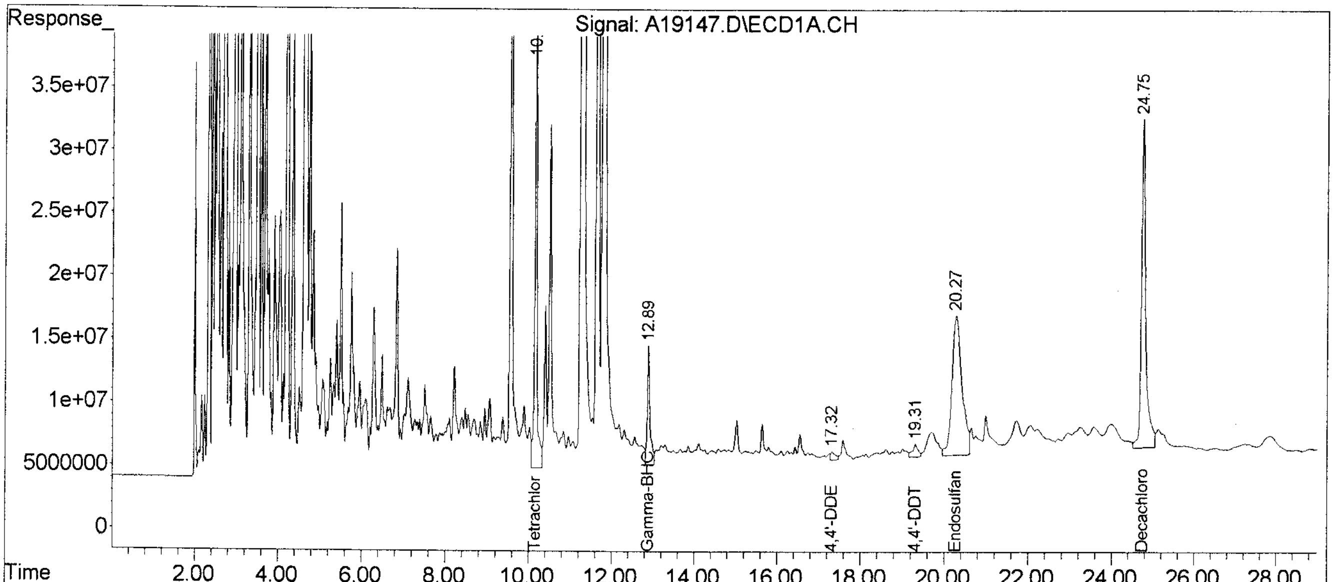
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

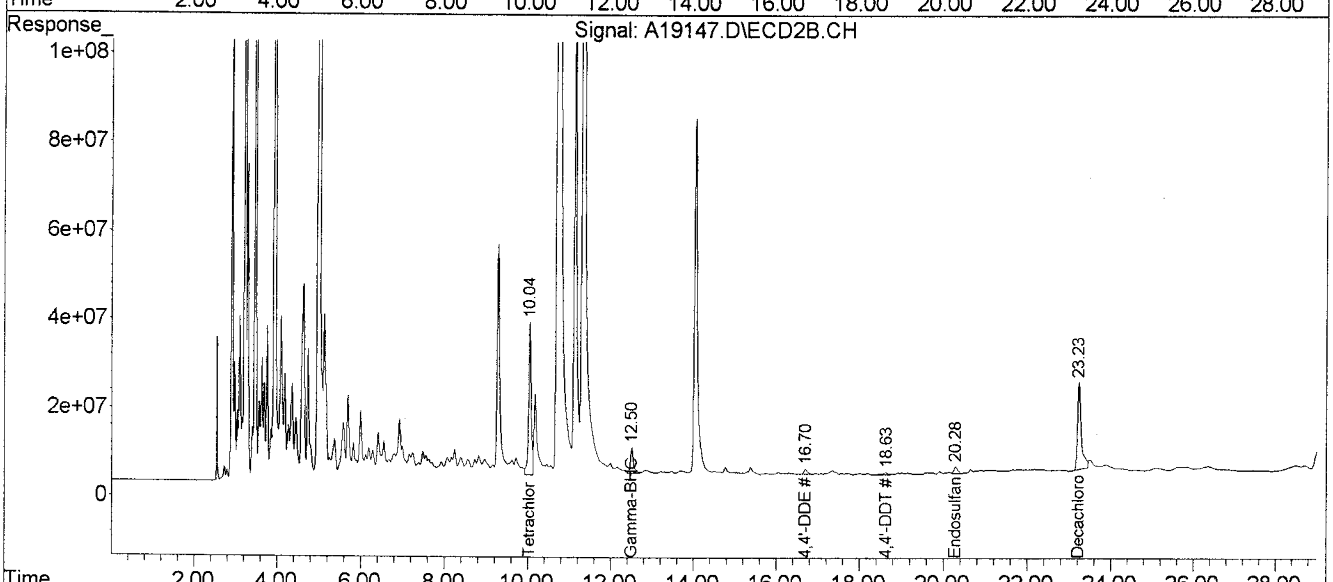
Quantitation Report (QT Reviewed)

```
Data Path   : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File   : A19147.D(Signal #1)           A19147.D(Signal #2)
Signal(s)   : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName    : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On      : 09/29/09 01:04 (Signal #1); 09/29/09 01:41 (Signal #2)
Operator    : KVR(Signal #1)  KVR(Signal #2)
Sample      : JBPN5 (Sig #1); JBPN5 (Sig #2)
Misc        : S-2623.05  60.3G/1.0ML (Sig #1); S-2623.05  60.3G/1.0ML (Sig #2)
ALS Vial    : 71   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:06:40 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2         Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```





Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19147.D(Signal #1)            A19147.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/29/09 01:04 (Signal #1); 09/29/09 01:41 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPN5 (Sig #1); JBPN5 (Sig #2)
Misc      : S-2623.05  60.3G/1.0ML (Sig #1); S-2623.05  60.3G/1.0ML (Sig #2)
ALS Vial  : 71   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:07:39 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.16	10.04	1405.4E6	1578.8E6	44.018	51.680
Spiked Amount 60.000			Recovery	=	73.36%	86.13%
11) S Decachlorobiphen	24.75	23.23	1905.7E6	1411.8E6	77.819	58.144 #
Spiked Amount 120.000			Recovery	=	64.85%	48.45%
Target Compounds						
2) Hexachlorobutadi	4.63	4.99	19490.1E6	17901.6E6	408.254	508.632
10) cis-Nonachlor	18.61	18.02	41274633	22900556	12.234	7.134 #

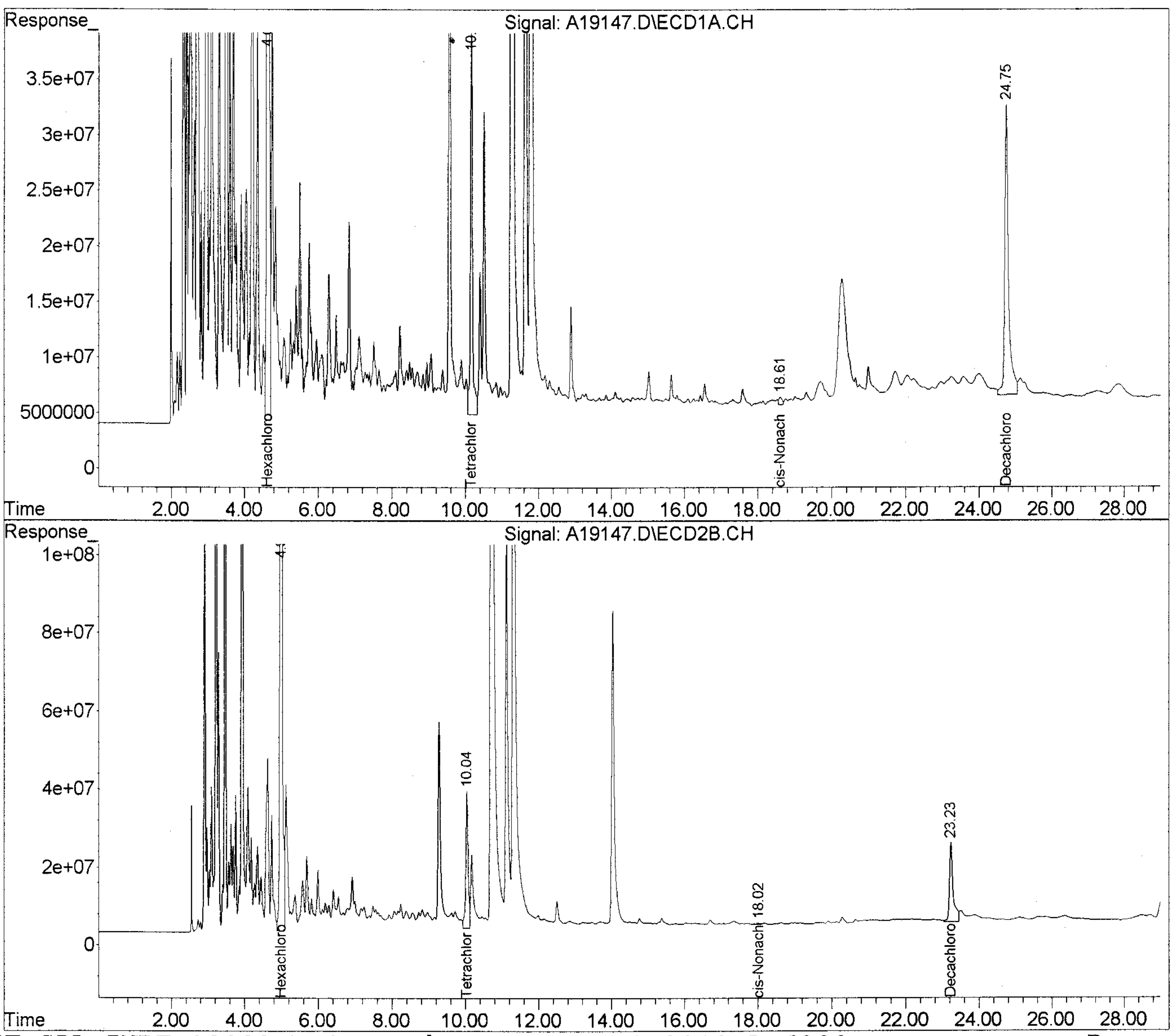
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report   (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19147.D(Signal #1)           A19147.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On     : 09/29/09 01:04 (Signal #1); 09/29/09 01:41 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPN5 (Sig #1); JBPN5 (Sig #2)
Misc       : S-2623.05  60.3G/1.0ML (Sig #1); S-2623.05  60.3G/1.0ML (Sig #2)
ALS Vial   : 71   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:07:39 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JBPN5DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2623.05DL

Sample wt/vol: 60.30 (g/mL) G Lab File ID: A19160

% Moisture: 30 Decanted: (Y/N) N Date Received: 09/04/2009

Extraction: (Type) SONC Date Extracted: 09/12/2009

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/29/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: ______ Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.4	U
319-85-7	beta-BHC	1.4	U
319-86-8	delta-BHC	1.4	U
58-89-9	gamma-BHC (Lindane)	1.4	U
76-44-8	Heptachlor	1.4	U
309-00-2	Aldrin	1.4	U
1024-57-3	Heptachlor epoxide	1.4	U
959-98-8	Endosulfan I	1.4	U
60-57-1	Dieldrin	1.4	U
72-55-9	4,4'-DDE	1.4	U
72-20-8	Endrin	2.8	U
33213-65-9	Endosulfan II	2.8	U
72-54-8	4,4'-DDD	2.8	U
1031-07-8	Endosulfan sulfate	2.8	U
50-29-3	4,4'-DDT	2.8	U
72-43-5	Methoxychlor	14	U
53494-70-5	Endrin ketone	2.8	U
7421-93-4	Endrin aldehyde	2.8	U
5103-71-9	alpha-Chlordane	1.4	U
5103-74-2	gamma-Chlordane	1.4	U
8001-35-2	Toxaphene	140	U
53-19-0	2,4'-DDD	2.8	U
3424-82-6	2,4'-DDE	2.8	U
789-02-6	2,4'-DDT	2.8	U
27304-13-8	Oxychlordane	2.8	U
5103-73-1	cis-Nonachlor	2.8	U
39765-80-5	Trans-Nonachlor	2.8	U
118-74-1	Hexachlorobenzene	2.8	U
87-68-3	Hexachlorobutadiene	5.7	D
29082-74-4	Octachlorostyrene	2.8	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19160.D(Signal #1)           A19160.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)            A-6890B(Signal # 2)
Acq On    : 09/29/09 10:24 (Signal #1); 09/29/09 11:01 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBPN5DL  10X (Sig #1); JBPN5DL  10X (Sig #2)
Misc      : S-2623.05DL  60.3G/1.0ML (Sig #1); S-2623.05DL  60.3G/1.0ML (Sig #
2)
ALS Vial  : 85   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:08:44 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.16	10.04	75045408	74542210	2.561	2.590
Spiked Amount 60.000			Recovery	=	4.27%	4.32%
22) S Decachlorobiphen	24.74	23.23	127.7E6	68273487	4.973	3.037 #
Spiked Amount 120.000			Recovery	=	4.14%	2.53%
Target Compounds						

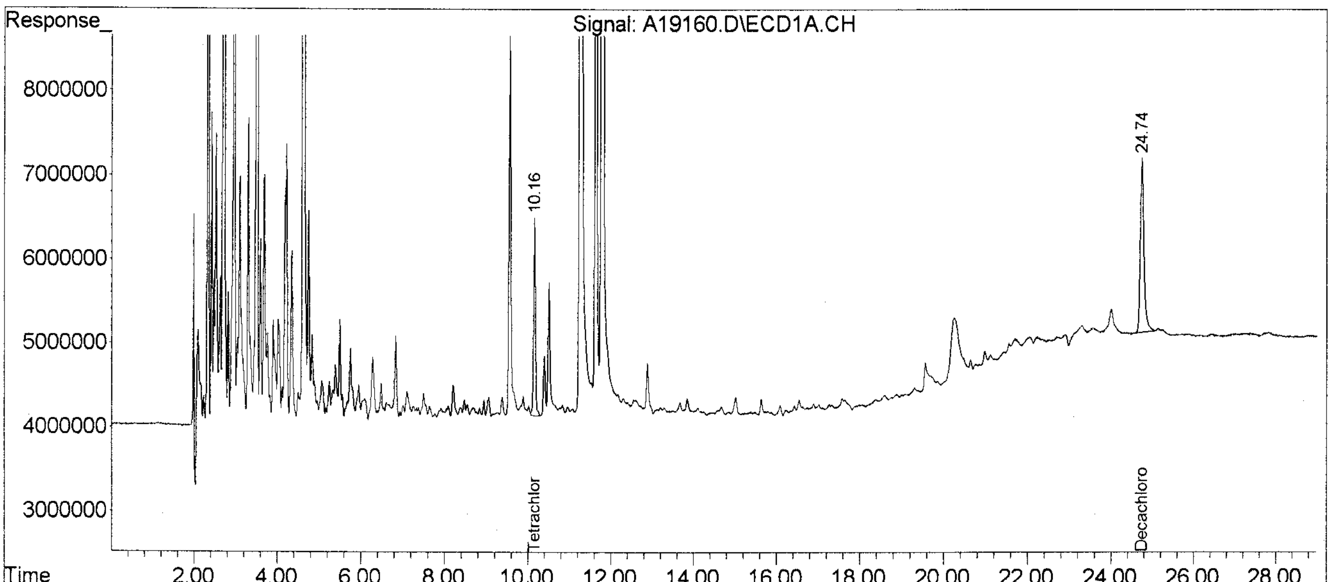
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

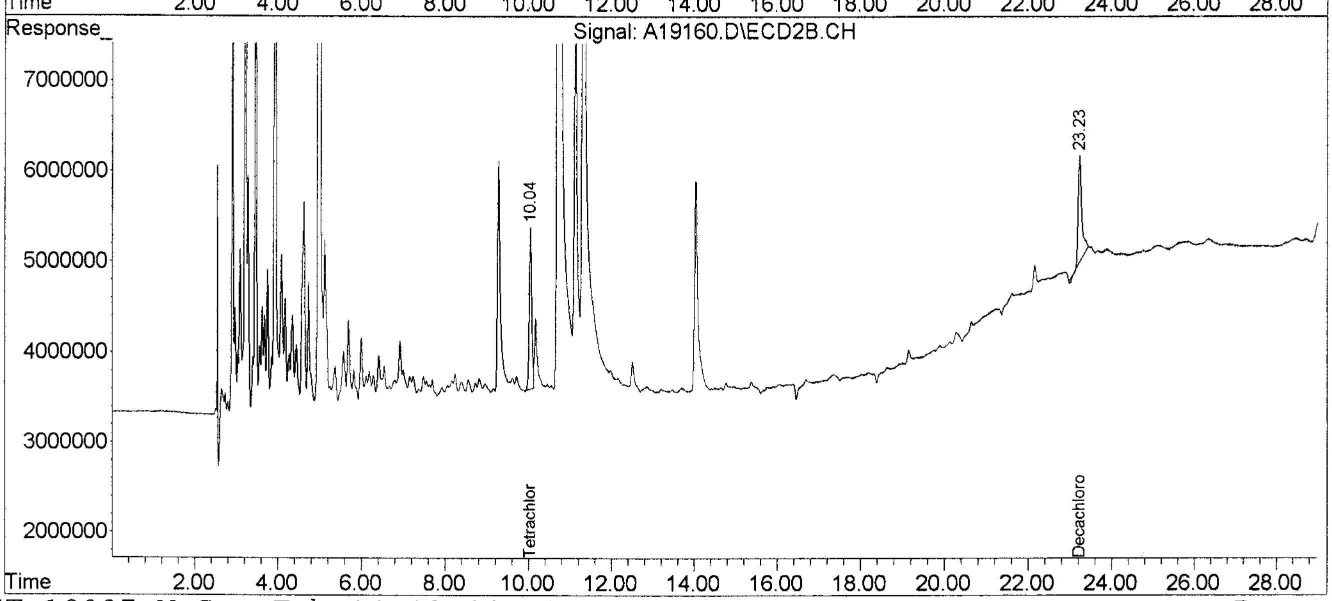
Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19160.D(Signal #1) A19160.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 10:24 (Signal #1); 09/29/09 11:01 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPN5DL 10X (Sig #1); JBPN5DL 10X (Sig #2)
Misc : S-2623.05DL 60.3G/1.0ML (Sig #1); S-2623.05DL 60.3G/1.0ML (Sig
ALS Vial : 85 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:08:44 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.





Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19160.D(Signal #1) A19160.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/29/09 10:24 (Signal #1); 09/29/09 11:01 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBPN5DL 10X (Sig #1); JBPN5DL 10X (Sig #2)
Misc : S-2623.05DL 60.3G/1.0ML (Sig #1); S-2623.05DL 60.3G/1.0ML (Sig #2)
ALS Vial : 85 Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:09:22 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP-1
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.04	75045408	75071520	2.350	2.457
	Spiked Amount 60.000			Recovery	=	3.92%	4.09%
11) S	Decachlorobiphen	24.74	23.23	127.7E6	105.2E6	5.215	4.331
	Spiked Amount 120.000			Recovery	=	4.35%	3.61%
	Target Compounds						
2)	Hexachlorobutadi	4.63	4.99	1138.7E6	926.8E6	23.851	26.333

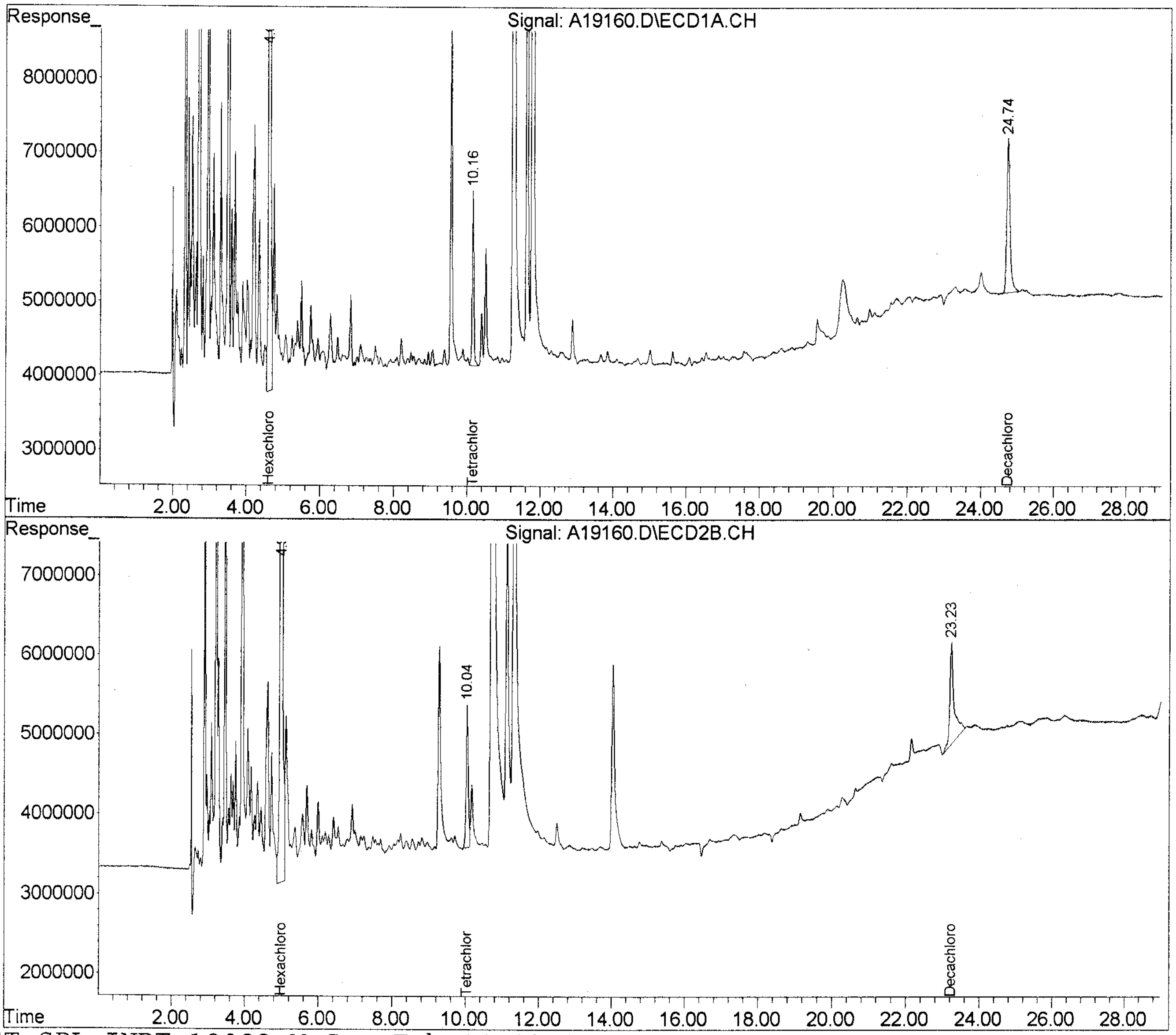
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report   (QT Reviewed)

```
Data Path  : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File  : A19160.D(Signal #1)            A19160.D(Signal #2)
Signal(s)  : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName   : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On     : 09/29/09 10:24 (Signal #1); 09/29/09 11:01 (Signal #2)
Operator   : KVR(Signal #1)  KVR(Signal #2)
Sample     : JBPN5DL  10X (Sig #1); JBPN5DL  10X (Sig #2)
Misc       : S-2623.05DL  60.3G/1.0ML (Sig #1); S-2623.05DL  60.3G/1.0ML (Sig
ALS Vial   : 85   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:09:22 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation    6890 Scale Mode: Large solvent peaks clipped

Volume Inj.       : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```



1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JBQ11

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 38883 Mod. Ref No.: 1790.0 SDG No.: JBPM4

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-2628.04

Sample wt/vol: 5.300 (g/mL) G Lab File ID: A19127

% Moisture: 48 Decanted: (Y/N) N Date Received: 09/11/2009

Extraction: (Type) SONC Date Extracted: 09/13/2009

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 09/28/2009

Injection Volume: 1.0 (uL) GPC Factor: 2.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS No.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.18	U
319-85-7	beta-BHC	0.18	U
319-86-8	delta-BHC	0.18	U
58-89-9	gamma-BHC (Lindane)	0.18	U
76-44-8	Heptachlor	0.18	U
309-00-2	Aldrin	0.18	U
1024-57-3	Heptachlor epoxide	0.18	U
959-98-8	Endosulfan I	0.18	U
60-57-1	Dieldrin	0.18	U
72-55-9	4,4'-DDE	4.9	JP
72-20-8	Endrin	0.36	U
33213-65-9	Endosulfan II	0.36	U
72-54-8	4,4'-DDD	32	JP
1031-07-8	Endosulfan sulfate	0.36	U
50-29-3	4,4'-DDT	1000	E
72-43-5	Methoxychlor	1.8	U
53494-70-5	Endrin ketone	0.36	U
7421-93-4	Endrin aldehyde	0.36	U
5103-71-9	alpha-Chlordane	0.18	U
5103-74-2	gamma-Chlordane	0.18	U
8001-35-2	Toxaphene	18	U
53-19-0	2,4'-DDD	4.4	J
3424-82-6	2,4'-DDE	6.9	JP
789-02-6	2,4'-DDT	180	
27304-13-8	Oxychlordane	0.36	U
5103-73-1	cis-Nonachlor	0.36	U
39765-80-5	Trans-Nonachlor	0.36	U
118-74-1	Hexachlorobenzene	0.36	U
87-68-3	Hexachlorobutadiene	0.36	U
29082-74-4	Octachlorostyrene	0.36	U

Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19127.D(Signal #1)          A19127.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)           A-6890B(Signal # 2)
Acq On    : 09/28/09 12:53 (Signal #1); 09/28/09 13:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ11 (Sig #1); JBQ11 (Sig #2)
Misc      : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial  : 11   Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:13:16 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title  :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm  I.D.
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
System Monitoring Compounds						
1) S Tetrachloro-m-xy	10.16	10.04	1472.1E6	1457.3E6	50.243	50.632
Spiked Amount 60.000			Recovery	=	83.74%	84.39%
22) S Decachlorobiphen	24.75	23.23	1881.4E6	1698.5E6	73.254	75.568
Spiked Amount 120.000			Recovery	=	61.05%	62.97%
Target Compounds						
12) 4,4'-DDE	17.34	16.69	120.9E6	40420434	3.928	1.343 #
15) 4,4'-DDD	18.61	18.03	282.3E6	246.7E6	11.300	8.926
17) 4,4'-DDT	19.31	18.64	7060.1E6	6760.7E6	296.759	282.802

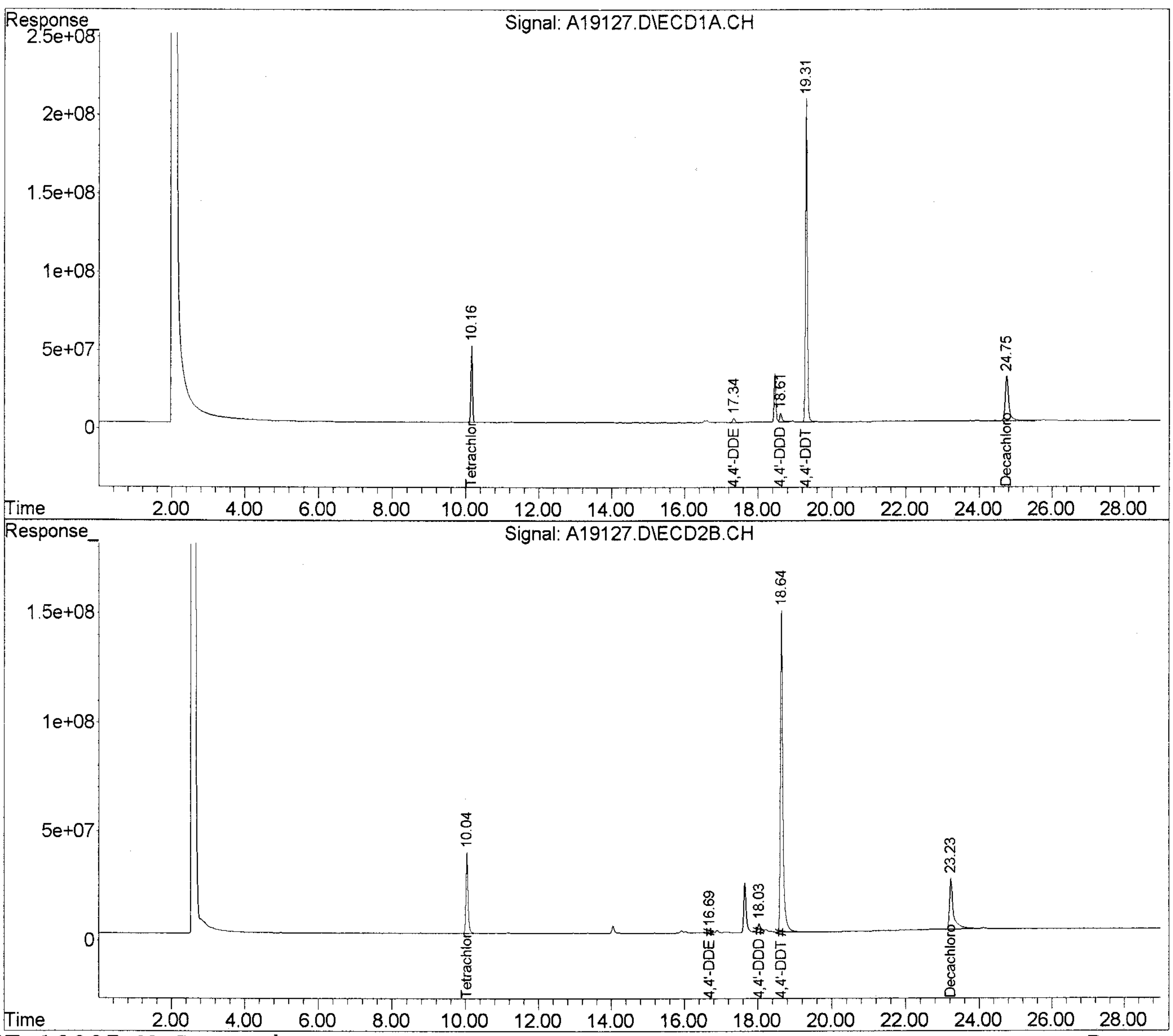
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19127.D(Signal #1) A19127.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
InstName : A-6890A(Signal #1) A-6890B(Signal # 2)
Acq On : 09/28/09 12:53 (Signal #1); 09/28/09 13:30 (Signal #2)
Operator : KVR(Signal #1) KVR(Signal #2)
Sample : JBQ11 (Sig #1); JBQ11 (Sig #2)
Misc : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial : 11 Sample Multiplier: 1

Integration File signal 1: EVENTS.E
Integration File signal 2: EVENTS2.E
Quant Time: Feb 14 13:13:16 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-19087.M
Quant Title :
QLast Update : Wed Sep 30 15:13:37 2009
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1 uL
Signal #1 Phase : Rtx-CLP-2 Signal #2 Phase: Rtx-CLP
Signal #1 Info : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.



Quantitation Report (QT Reviewed)

```
Data Path : C:\MSDChem\1\data\(Signal #1) C:\MSDChem\1\data\(Signal #2)
Data File : A19127.D(Signal #1)            A19127.D(Signal #2)
Signal(s) : Signal #1: ECD1A.CH  Signal #2: ECD2B.CH
InstName  : A-6890A(Signal #1)             A-6890B(Signal # 2)
Acq On    : 09/28/09 12:53 (Signal #1); 09/28/09 13:30 (Signal #2)
Operator  : KVR(Signal #1)  KVR(Signal #2)
Sample    : JBQ11 (Sig #1); JBQ11 (Sig #2)
Misc      : S-2628.04 5.3G/5.0ML (Sig #1); S-2628.04 5.3G/5.0ML (Sig #2)
ALS Vial  : 11   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Feb 14 13:15:14 2010
Quant Method : C:\MSDCHEM\1\METHODS\CPEST-SPL-INDT-19092.M
Quant Title  :
QLast Update : Tue Sep 29 20:48:28 2009
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.      : 1 uL
Signal #1 Phase : Rtx-CLP-2          Signal #2 Phase: Rtx-CLP-1
Signal #1 Info  : 30mLn, 0.53mm I.D Signal #2 Info : 30mLn, 0.53mm I.D.
```

	Compound	RT#1	RT#2	Resp#1	Resp#2	ng/mL	ng/mL
	System Monitoring Compounds						
1) S	Tetrachloro-m-xy	10.16	10.04	1472.1E6	1459.8E6	46.109	47.784
	Spiked Amount 60.000				Recovery =	76.85%	79.64%
11) S	Decachlorobiphen	24.75	23.23	1881.4E6	1771.5E6	76.827	72.960
	Spiked Amount 120.000				Recovery =	64.02%	60.80%
	Target Compounds						
6)	2,4'-DDE	16.61	15.91	59960207	44842309	2.541	1.892 #
8)	2,4'-DDD	17.78	17.08	23014501	22963232	1.220	1.229
9)	2,4'-DDT	18.46	17.65	1062.6E6	1068.1E6	48.934	52.422

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

APPENDIX G

GEOTECHNICAL DATA REPORTS

LOG OF SHELBY TUBE SAMPLE

KLEINFELDER
Bright People. Right Solutions.

Project Name: Arkema Early Action
Project Number: 107510
Sheet: __1___ of _1__

Boring No: ARK-SPT 1 (13-15)	**Sample Extraction Method:** Splitting (due to soft sample)	**Down Pressure (psi) at Sampling:**
Sample Type: Shelby Tube (24 in)	**Location:** NA	**Depth to Groundwater Initial/Time:** **Final/Time:**
Sample Depth: 13 to 15 ft	**Date Begin/End:** NA	**Coordinates (X/Y, Lat/Long):**
Recovery (in): [illegible]	**Field Logged By:** NA	**Coordinate System/Datum:**
Capped Sealed (y/n): YES	**Logged By (Lab)/Checked By:** K Wells	**Angle From Vertical/Bearing:**

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes
0							13ft	
								Disturbed upper 3"
	SILT - Very soft to soft, saturated, dark brown, 5 to 15 percent fine sand.	ML/MH						
2								Wood debris ------
						CU		Surficial stress marks throughout sample, likely discontinuous
4								
	Medium to high plasticity, elastic.							
6								
8								
10								
			PP<.25TSF					
						PERM		Fracture -----------
12							14ft	
	Sporadic bits of wood debris (black/rotted) up to 3/8 inch throughout sample							
14								Fracture -----------
						CU		
16						SV		
						PI		
18								
20								
22						consol		
							15ft	Small wood debris at bottom of sample
24								

Notes

Shelby Tube Photo

NOTES:

Too little quality sample for torvane shear. All pocket pen results less than 0.25 TSF
Sample removed from shelby tube by splitting tube longitudinally

H - Hydrometer Tests
PI - Plasticity Index
SV - Sieve Analysis
CU - Consolidated Undrained Triaxial Comp
UU - Unconsolidated Undrained Triaxial Comp
Consol - Consolidation Test, Time Rate
SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

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LOG OF SHELBY TUBE SAMPLE

Project Name: Arkema Early Action
Project Number: 107510
Sheet: __1___ of _1__

Boring No: ARK-SPT 1 (15-17)	Sample Extraction Method: Splitting (due to soft sample)	Down Pressure (psi) at Sampling:
Sample Type: Shelby Tube (24 in)	Location: NA	Depth to Groundwater Initial/Time: Final/Time:
Sample Depth: 15 to 17 ft	Date Begin/End: NA	Coordinates (X/Y, Lat/Long):
Recovery (in): 24	Field Logged By: NA	Coordinate System/Datum:
Capped Sealed (y/n): YES	Logged By (Lab)/Checked By: K Wells	Angle From Vertical/Bearing:

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes
0							15 ft	
	SILT - Very soft to soft, saturated, dark brown, 5 to 15 percent fine sand.	ML/MH				UU		
2								
4								
	Medium to high plasticity, elastic.							
6								
8						CU		Fracture -----------
	Sporadic bits of wood debris (black/rotted) up to 3/8 inch throughout sample							Wood debris ------
10	Some larger wood pieces observed up to 1 inch							
						SV		
						PI		Possible fine sand seam
12							16 ft	
14						SPG		
16								Wood debris ------
								Fracture -----------
18								Disturbed lower portion of sample. Blocky
			PP = 0.25 TSF					Fracture -----------
20								
22								Sandy at bottom.
							17 ft	
24								

Notes

Shelby Tube Photo

NOTES:
Sample removed from shelby tube by splitting tube longitudinally

H - Hydrometer Tests
PI - Plasticity Index
SV - Sieve Analysis
CU - Consolidated Undrained Triaxial Comp
UU - Unconsolidated Undrained Triaxial Comp
Consol - Consolidation Test, Time Rate
SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

LOG OF SHELBY TUBE SAMPLE

KLEINFELDER
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Project Name: Arkema Early Action
Project Number: 107510
Sheet: __1___ of _1__

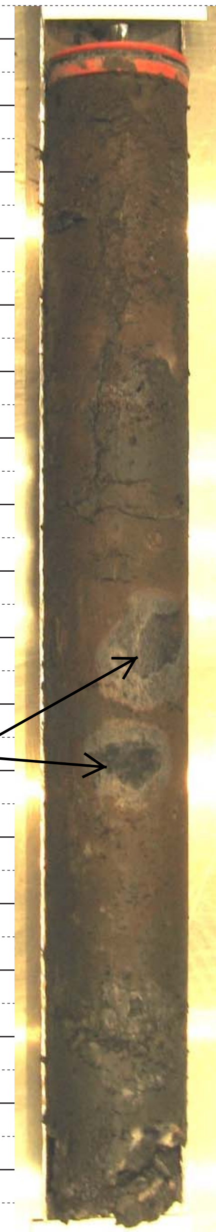
Boring No: ARK-SPT 1 (18.5-20.5)	**Sample Extraction Method:** Splitting (due to soft sample)	**Down Pressure (psi) at Sampling:**
Sample Type: Shelby Tube (24 in)	**Location:** NA	**Depth to Groundwater Initial/Time:** **Final/Time:**
Sample Depth: 18.5 to 20.5 ft	**Date Begin/End:** NA	**Coordinates (X/Y, Lat/Long):**
Recovery (in): 24	**Field Logged By:** NA	**Coordinate System/Datum:**
Capped Sealed (y/n): YES	**Logged By (Lab)/Checked By:** K Wells	**Angle From Vertical/Bearing:**

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes
0								
		ML/MH					18.5	
2								Disturbed upper 3"
	SILT - Very soft to soft, saturated, dark brown, 5 to 15 percent fine sand.							
4								Wood debris ------
			PP<.25TSF					
	Medium to high plasticity, elastic.							
6			TS=0.14TSF					
8								
10								Fracture -----------
12						UU	19.5	
								Fracture -----------
14								Staining
16								
18								
						consol		
20								Fracture -----------
22	Large GRAVEL at bottom of sample							
							20.5	
24								

Notes

Shelby Tube Photo



NOTES:
Sample removed from shelby tube by splitting tube longitudinally

H - Hydrometer Tests
PI - Plasticity Index
SV - Sieve Analysis
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UU - Unconsolidated Undrained Triaxial Comp
Consol - Consolidation Test, Time Rate
SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

LOG OF SHELBY TUBE SAMPLE

KLEINFELDER
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Project Name: Arkema Early Action
Project Number: 107510
Sheet: __1___ of _1__

Boring No: ARK-SPT 2 (20.5-22.5)	**Sample Extraction Method:** Splitting (due to soft sample)	**Down Pressure (psi) at Sampling:**
Sample Type: Shelby Tube (24 in)	**Location:** NA	**Depth to Groundwater Initial/Time:** **Final/Time:**
Sample Depth: 20.5 to 22.5 ft	**Date Begin/End:** NA	**Coordinates (X/Y, Lat/Long):**
Recovery (in): 20.5	**Field Logged By:** NA	**Coordinate System/Datum:**
Capped Sealed (y/n): YES	**Logged By (Lab)/Checked By:** R Goff / K Wells	**Angle From Vertical/Bearing:**

Soil Description & Classification (ASTM D 2488) | **Notes**

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes	Shelby Tube Photo
0	Sandy SILT - Very soft, saturated, dark grey, fine to medium grained sand	ML/MH					20.5		
2	Visible sands in upper 3.75 inch								
								Fracture -----------	
4									
	Medium to high plasticity, elastic.								
6									
						consol			
8								Fracture -----------	
						CU			
10						SPG			
	Occasional bits of wood debris (black/rotted) throughout sample up to 3/8 inch diameter.						21.5		
12									
14						CU			
16						PI SV			
18						H			
20									
22									
24							22.5		

NOTES:
Sample removed from shelby tube by splitting tube longitudinally
Torvane shear not possible (limited sample, very soft)

H - Hydrometer Tests
PI - Plasticity Index
SV - Sieve Analysis
CU - Consolidated Undrained Triaxial Comp
UU - Unconsolidated Undrained Triaxial Comp
Consol - Consolidation Test, Time Rate
SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

LOG OF SHELBY TUBE SAMPLE

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Project Name: Arkema Early Action
Project Number: 107510

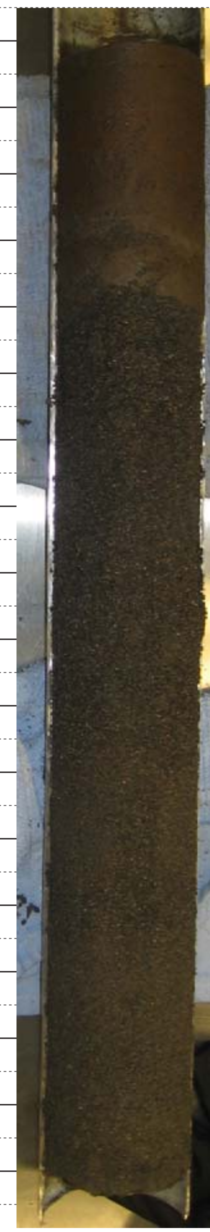
Boring No: ARK-SPT 2 (22.5-24.5)	Sample Extraction Method: Splitting (due to soft sample)	Down Pressure (psi) at Sampling:
Sample Type: Shelby Tube (24 in)	Location: NA	Depth to Groundwater Initial/Time: Final/Time:
Sample Depth: 22.5 to 24.5 ft	Date Begin/End: NA	Coordinates (X/Y, Lat/Long):
Recovery (in): 5	Field Logged By: NA	Coordinate System/Datum:
Capped Sealed (y/n): YES	Logged By (Lab)/Checked By: K Wells	Angle From Vertical/Bearing:

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes
0								
	SILT - Very soft to soft, saturated, dark brown, trace fine sand	ML/MH					22.5	
2							consol	
4								
6	Poorly Graded SAND with SILT (SP-SM), saturated, olive brown, fine to medium grained.							Possible Slough from 5" to 24"
8								
10								
12							23.5	
14								
16								
18								
20								
22							24.5	
24								

Notes

Shelby Tube Photo



NOTES:
Sample removed from shelby tube by splitting tube longitudinally

H - Hydrometer Tests
PI - Plasticity Index
SV - Sieve Analysis
CU - Consolidated Undrained Triaxial Comp
UU - Unconsolidated Undrained Triaxial Comp
Consol - Consolidation Test, Time Rate
SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

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LOG OF SHELBY TUBE SAMPLE

Project Name: Arkema Early Action
Project Number: 107510 **Sheet:** __1___ of _1__

Boring No: ARK-SPT 3 (13-15)	**Sample Extraction Method:** Splitting (due to soft sample)	**Down Pressure (psi) at Sampling:**
Sample Type: Shelby Tube (24 in)	**Location:** NA	**Depth to Groundwater Initial/Time:** **Final/Time:**
Sample Depth: 13 to 15 ft	**Date Begin/End:** NA	**Coordinates (X/Y, Lat/Long):**
Recovery (in): 21.5 NA	**Field Logged By:** NA	**Coordinate System/Datum:**
Capped Sealed (y/n): YES	**Logged By (Lab)/Checked By:** K Wells	**Angle From Vertical/Bearing:**

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes	Shelby Tube Photo
0									
							13 ft		
		ML/MH							
2									
			PP<.25TSF					Disturbed upper 5"	
4	SILT - Very soft to soft, saturated, dark brown, trace fine sand								
6						CU-3 ↓			
8	Medium to high plasticity, elastic.								
10									
							14 ft		
12						PERM			
						PI			
14						SV			
16									
18									
20								Blocky chunks	
								Fractured	
22									
							15 ft		
24									

NOTES:
Sample removed from shelby tube by splitting tube longitudinally
Sample range for Consol Test 2 saved for
future testing.

H - Hydrometer Tests
PI - Plasticity Index
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SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

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LOG OF SHELBY TUBE SAMPLE

Project Name: Arkema Early Action
Project Number: 107510 **Sheet:** __1___ of _1__

Boring No: ARK-SPT 3 (9.5-11.5)	**Sample Extraction Method:** Splitting (due to soft sample)	**Down Pressure (psi) at Sampling:**
Sample Type: Shelby Tube (24 in)	**Location:** NA	**Depth to Groundwater Initial/Time:** **Final/Time:**
Sample Depth: 9.5 to 11.5 ft	**Date Begin/End:** NA	**Coordinates (X/Y, Lat/Long):**
Recovery (in): 22 NA	**Field Logged By:** NA	**Coordinate System/Datum:**
Capped Sealed (y/n): YES	**Logged By (Lab)/Checked By:** K Wells	**Angle From Vertical/Bearing:**

Soil Description & Classification (ASTM D 2488)

Length (in)	Description Soil Type, Particle Size Range, Particle Hardness, Dry Strength, Dilatency, Toughness, Color, Odor, Reaction with HCL, Structure, Cementation	ASTM Symbol	Pocket Pen. (tsf)	Torvane Shear (tsf)	Plasticity	Lab Testing	Depth (ft)	Notes
0								
		ML/MH					9.5	
2								
			PP<.25TSF					
4	SILT - Very soft to soft, saturated, dark brown, trace fine sand Medium to high plasticity, elastic.					CU-2		Disturbed upper 3"
6								
8								
						CU-1		
10	Occasional bits of wood debris (black/rotted) throughout sample up to 3/8 inch diameter.							
12							10.5	
14								
						consol		
16						UU		Fracture -----------
18								
20								
22								
24							11.4	

Notes

Shelby Tube Photo

NOTES:
Sample removed from shelby tube by splitting tube longitudinally
Torvane shear not possible (limited sample, very soft)

H - Hydrometer Tests
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SPG - Specific Gravity Test
Perm - Permeability
Note: Some laboratory testing may not be shown in log above

Soil Boring Field Log Sheet.fh11

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PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL SKS

MOISTURE CONTENT OF SOIL (ASTM D2216)

SAMPLE	SAMPLE SOURCE	WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT %
2592-1	ARK-SPT-1 @ 4.0-5.5'	79.0	39.3	100.9
2592-2	ARK-SPT-1 @ 5.5-7.0'	129.1	49.2	162.2
2592-3	ARK-SPT-1 @ 7.0-8.5'	54.2	17.9	202.5
2592-4	ARK-SPT-1 @ 8.5-10.0'	135.3	76.6	76.7
2592-5	ARK-SPT-1 @ 10.0-11.5'	141.5	73.6	92.3
2592-6	ARK-SPT-1 @ 11.5-13.0'	128.6	70.0	83.6
2592-9	ARK-SPT-1 @ 17.0-18.5'	141.5	77.4	82.8
2592-11	ARK-SPT-1 @ 20.5-22.0'	147.6	105.7	39.7

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PROJECT NAME:	ARCADIS - Arkema Early Action	**PROJECT:**	107510
LOCATION:	Portland, Oregon	**REVIEWED BY:**	S. STEEL SAS
SAMPLE DATE:	October, 2009		

MOISTURE CONTENT OF SOIL (ASTM D2216)

SAMPLE	SAMPLE SOURCE	WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT %
2592-13	ARK-SPT-2 @ 2.0-3.5'	103.1	53.8	91.6
2592-14	ARK-SPT-2 @ 3.5-5.0'	142.6	76.2	87.1
2592-15	ARK-SPT-2 @ 5.0-6.0'	149.7	93.9	59.5
2592-16	ARK-SPT-2 @ 6.0-6.5'	109.9	78.7	39.6
2592-17	ARK-SPT-2 @ 6.5-7.0'	118.6	89.3	32.8
2592-18	ARK-SPT-2 @ 7.0-7.5'	110.1	77.8	41.5
2592-20	ARK-SPT-2 @ 9.5-10.0'	120.2	71.9	67.0
2592-21	ARK-SPT-2 @ 10.0-10.5'	122.9	80.7	52.3
2592-22	ARK-SPT-2 @ 11.0-12.5'	115.5	78.3	47.5
2592-23	ARK-SPT-2 @ 12.5-14.0'	369.9	238.1	55.3
2592-24	ARK-SPT-2 @ 14.0-15.0'	148.0	94.5	56.6
2592-25	ARK-SPT-2 @ 15.0-15.5'	111.4	62.9	76.9
2592-28	ARK-SPT-2 @ 19.0-20.5'	144.5	82.9	74.3
2592-31	ARK-SPT-2 @ 24.5-26.0'	137.6	87.9	56.6
2592-32	ARK-SPT-2 @ 26.0-26.5'	185.1	124.8	48.3
2592-33	ARK-SPT-2 @ 26.5-27.5'	124.1	88.8	39.8
2592-35	ARK-SPT-2 @ 30.0-30.25'	100.5	58.8	71.0
2592-36	ARK-SPT-2 @ 30.25-31.5'	131.0	95.9	36.6
2592-37	ARK-SPT-2 @ 32.5-34.0'	173.0	117.7	47.0
2592-38	ARK-SPT-2 @ 35.0-36.0'	152.8	107.5	42.1

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PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

MOISTURE CONTENT OF SOIL (ASTM D2216)

SAMPLE	SAMPLE SOURCE	WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT %
2592-41	ARK-SPT-3 @ 5.0-6.5'	149.8	72.9	105.5
2592-42	ARK-SPT-3 @ 6.5-8.0'	125.1	70.2	78.3
2592-43	ARK-SPT-3 @ 8.0-9.5'	102.1	34.2	198.6
2592-45	ARK-SPT-3 @ 11.5-13.0'	125.9	63.8	97.3
2592-49	ARK-SPT-3 @ 19.0-20.5'	41.4	19.3	114.7
2592-50	ARK-SPT-3 @ 20.5-22.0'	33.4	21.5	55.0
2592-51	ARK-SPT-3 @ 22.0-22.25'	89.5	57.9	54.7
2592-52	ARK-SPT-3 @ 22.25-23.5'	74.4	52.2	42.4
2592-53	ARK-SPT-3 @ 23.5-25.0'	111.5	97.3	14.6

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PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

MECHANICAL SIEVE ANALYSIS GROUP SYMBOL, USCS (ASTM D-2487)

				ATTERBERG LIMITS				SIEVE SIZES: PERCENT PASSING BY WEIGHT									
								GRAVEL			SAND						Silt or Clay
								Fine			Coarse	Medium		Fine			
Sample	Sample Source	USCS	SPECIFIC GRAVITY	LL	ODLL	PL	PI	3/4"	1/2"	3/8"	#4	#10	#20	#40	#60	#100	#200
2592-2	ARK-SPT-1 @ 5.5-7.0'	OH	-	64	42	33	31	100	100	100	100	99.7	98.5	96.5	93.8	89.9	79.4
2592-7	ARK-SPT-1 @ 13.0-15.0'	OH	2.604	76	53	38	38	100	100	100	99.7	99.6	99.3	99.2	98.9	98.3	94.9
2592-8	ARK-SPT-1 @ 15.0-17.0'	MH/OH	-	81	-	39	42	100	100	100	99.3	98.2	97.3	96.5	95.3	93.4	86.9
2592-10	ARK-SPT-1 @ 18.5-20.5'	MH	-	53	43	36	17	100	100	100	100	100	100	100	99.9	99.9	99.1
2592-14	ARK-SPT-2 @ 3.5-5.0'	OL	-	47	33	34	13	100	100	99.3	99.0	98.3	97.5	95.6	92.2	87.9	77.6
2592-18	ARK-SPT-2 @ 7.0-7.5'	-	-	-	-	-	-	100	100	100	99.8	98.9	96.8	82.4	61.3	47.1	38.9
2592-23	ARK-SPT-2 @ 12.5-14.0'	-	-	-	-	-	-	100	100	100	99.9	99.7	98.1	70.2	24.0	14.5	10.8
2592-29	ARK-SPT-2 @ 20.5-22.5'	OH	-	73	41	32	41	100	100	100	100	99.8	98.6	88.7	73.6	69.8	66.6
2592-29	ARK-SPT-2 @ 20.5-22.5'	-	2.661	-	-	-	-	100	100	100	100	100	99.8	97.2	91.8	89.9	85.6
2592-32	ARK-SPT-2 @ 26.0-26.5'	-	-	-	-	-	-	100	100	98.1	96.8	96.3	95.4	92.1	77.3	56.3	43.7
2592-41	ARK-SPT-3 @ 5.0-6.5'	OH	-	67	46	35	32	100	100	100	99.9	99.6	98.8	95.7	91.6	85.9	69.9
2592-44	ARK-SPT-3 @ 9.5-10.0'	OH	2.658	68	46	33	35	100	100	100	100	100	99.9	99.8	99.3	99.0	94.5
2592-44	ARK-SPT-3 @ 11.0-11.5'	MH/OH	2.700	63	-	36	27	100	100	100	100	100	99.6	99.6	99.4	98.1	88.8
2592-44	ARK-SPT-3 @ 13.0-15.0'	MH/OH	-	63	-	38	25	100	100	100	99.9	99.5	99.3	99.1	98.9	98.7	95.7
2592-50	ARK-SPT-3 @ 20.5-22.0'	-	-	-	-	-	-	100	100	100	99.6	99.5	98.9	94.3	67.1	42.4	28.9
2592-44	ARK-SPT-3 @ 10.0-10.5'	MH/OH	-	69	-	34	35	100	100	100	100	99.9	99.7	99.4	98.2	95.7	87.9

This is a summarized report of the referenced procedures and does not include all reporting requirements. Additional data can be provided at client's request.

9/17/2010

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PROJECT:	ARCADIS - Arkema Early Action	**PROJECT NO:**	107510.00
LOCATION:	Portland, Oregon	**WORK ORDER NO:**	2592
		DATE SAMPLED:	October, 2009
		REVIEWED BY:	S. STEEL

ORGANIC CONTENT BY IGNITION (ASTM D 2974, METHOD C)

SAMPLE:	SPT-1	SPT-2	SPT-3
DEPTH:	8.5 - 10'	20.5 - 22.5'	5 - 6.5'
TARE + DRY SOIL (g):	259.74	308.71	190.75
TARE + ASH (g):	255.58	299.72	188.19
TARE (g):	168.80	163.26	162.83
MASS OVEN DRY SOIL (g):	90.94	145.45	27.92
MASS of ASH (g):	86.78	136.46	25.36
ASH CONTENT (%):	95.4%	93.8%	90.8%
ORGANIC CONTENT (%):	**4.6%**	**6.2%**	**9.2%**

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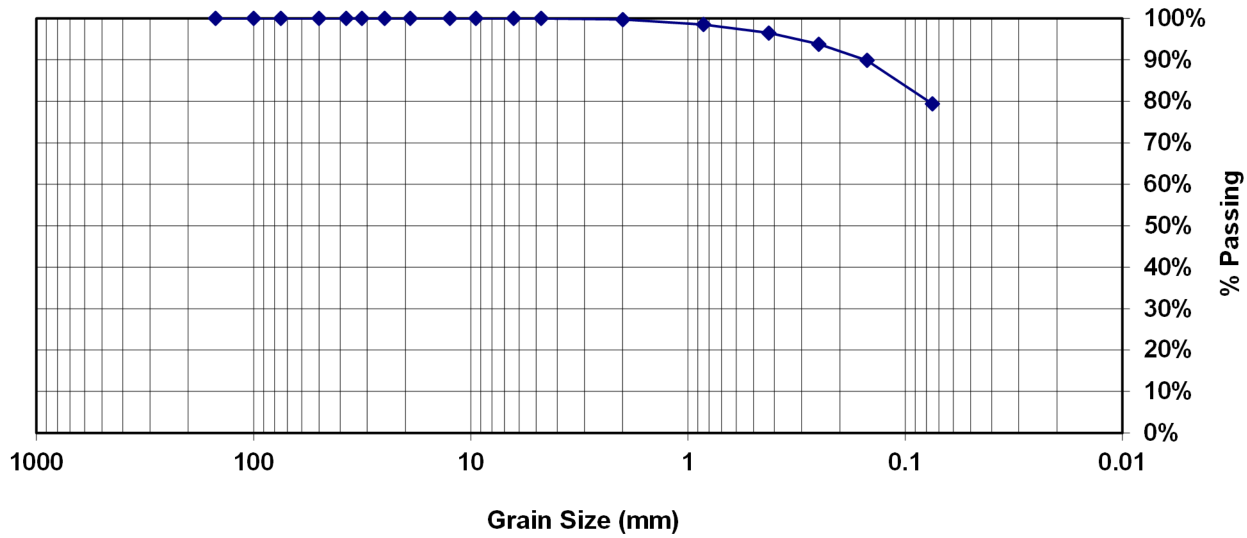
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

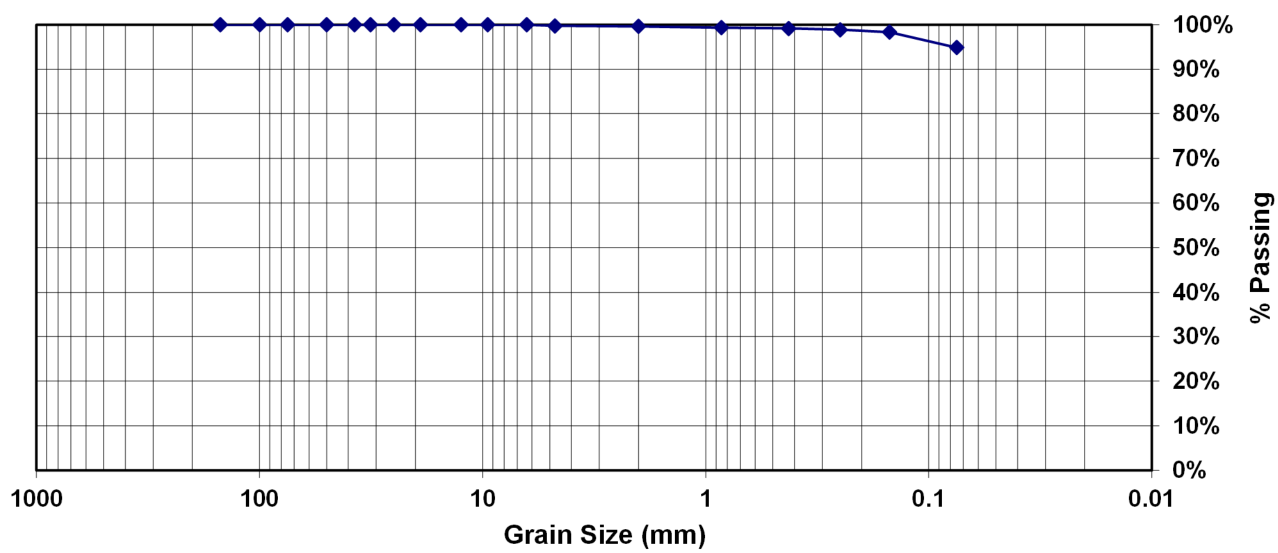
ARK-SPT-1 @ 5.5-7.0'

%PASSING #200	LL	PI	USCS	AASHTO
79.4	64	31	MH	A-7-5(28):



ARK-SPT-1 @ 13.0-15.0'

%PASSING #200	LL	PI	USCS	AASHTO
94.9	76	38	MH	A-7-5(45):



 This is a summarized report of the referenced procedures ad does not include all reporting requirements. Additional data can be provided at client's request. 10/13/2010

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Beaverton, OR
97008
p| 503.644.9447
f| 503.643.1905
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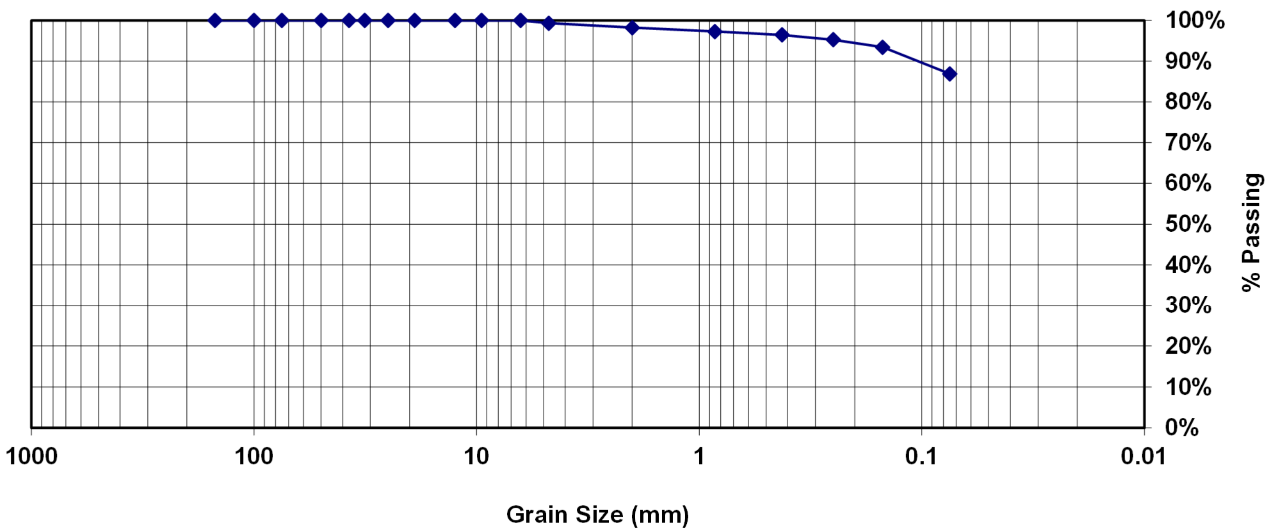
PROJECT NAME:	ARCADIS - Arkema Early Action	**PROJECT:**	107510
LOCATION:	Portland, Oregon	**REVIEWED BY:**	S. STEEL
SAMPLE DATE:	October, 2009		

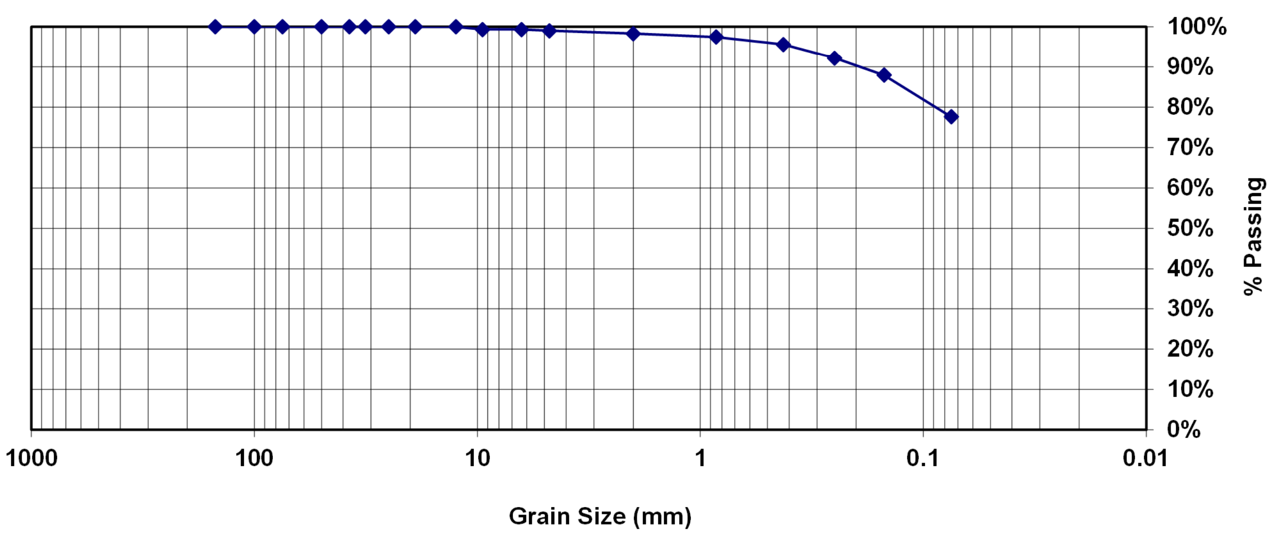
ARK-SPT-1 @ 15.0-17.0'

%PASSING #200	LL	PI	USCS	AASHTO
86.9	81	42	MH	A-7-5(42):



ARK-SPT-2 @ 3.5-5.0'

%PASSING #200	LL	PI	USCS	AASHTO
77.6	47	13	ML	A-7-6(25):



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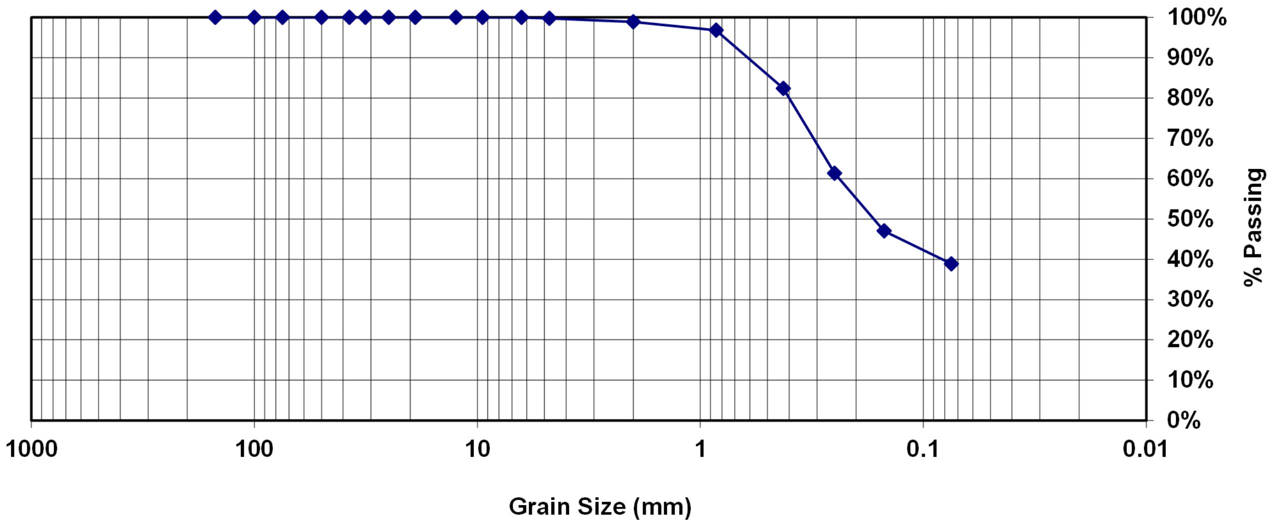
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

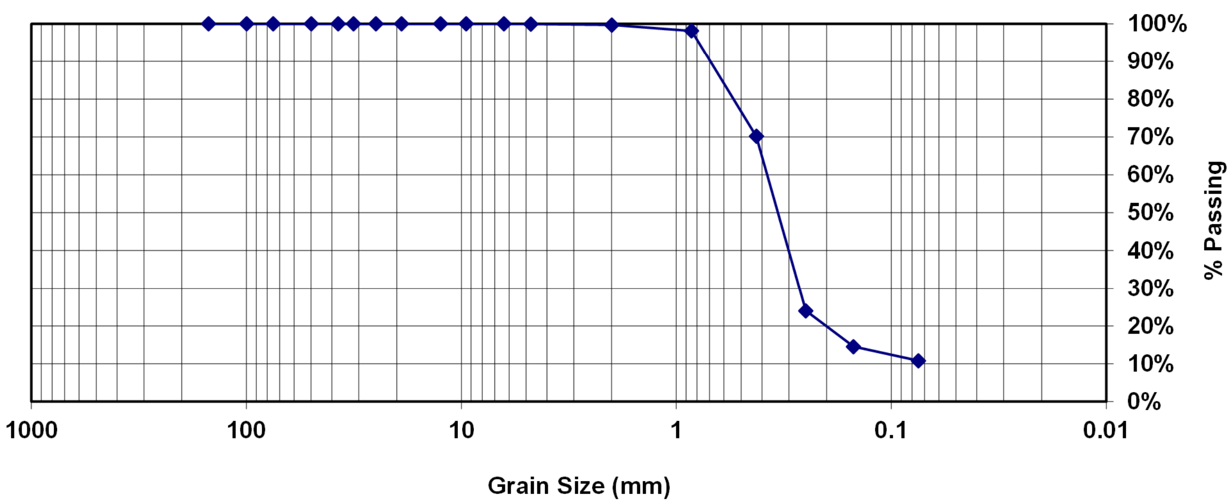
ARK-SPT-2 @ 7.0-7.5'

%PASSING #200
38.9



ARK-SPT-2 @ 12.5-14.0'

%PASSING #200
10.8



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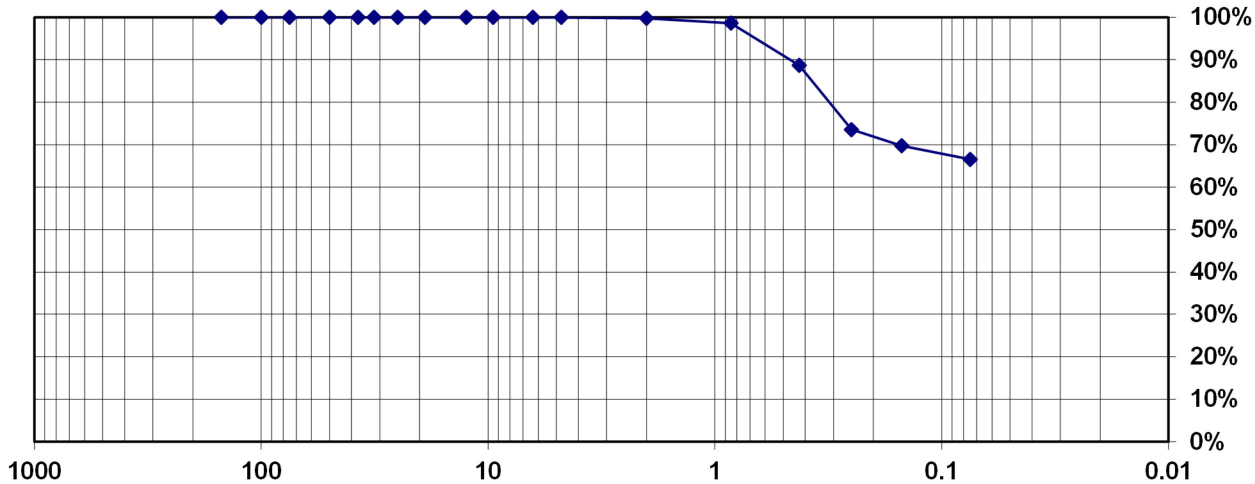
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

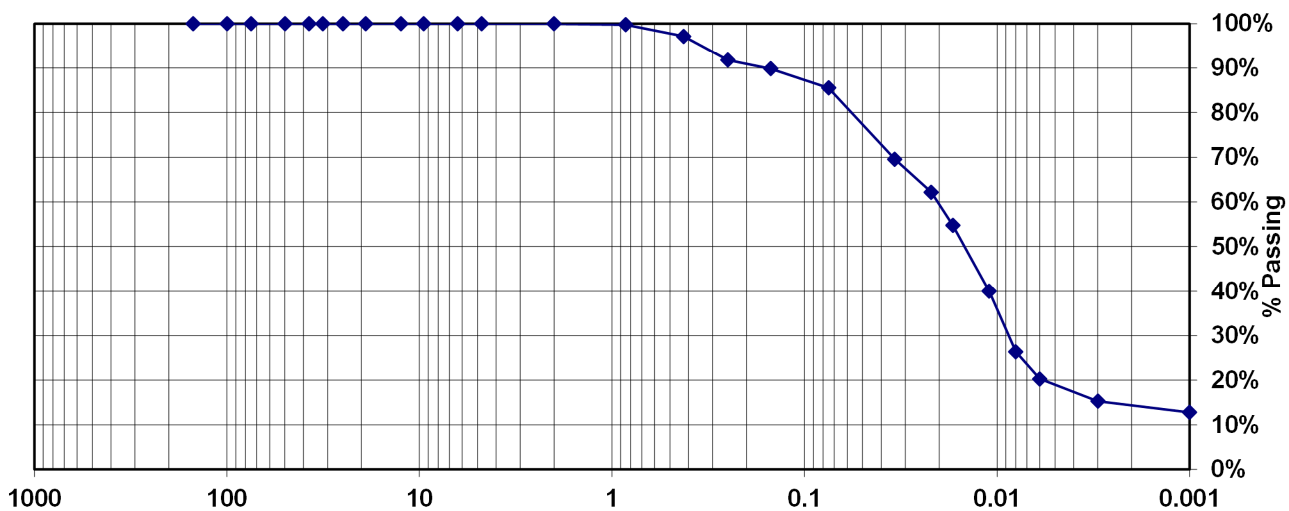
ARK-SPT-2 @ 20.5-22.5'

%PASSING #200	LL	PI	USCS	AASHTO
66.6	73	41	MH	A-7-5(23):



ARK-SPT-2 @ 20.5-22.5'

%PASSING #200
85.6



 This is a summarized report of the referenced procedures ad does not include all reporting requirements. Additional data can be provided at client's request. 10/13/2010

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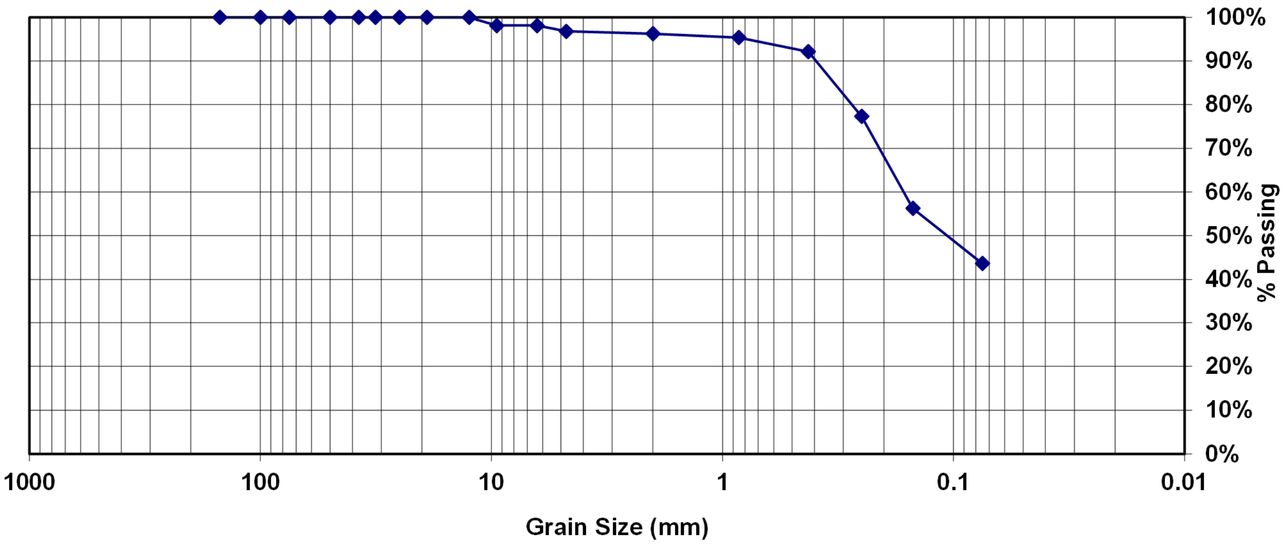
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

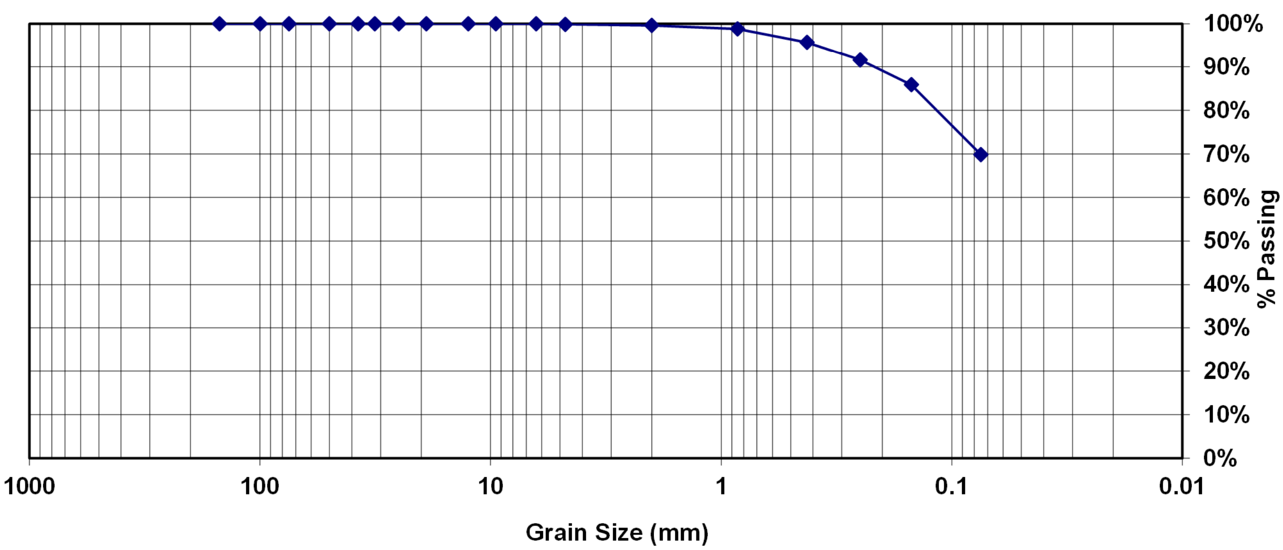
ARK-SPT-2 @ 26.0-26.5'

%PASSING #200
43.7



ARK-SPT-3 @ 5.0-6.5'

%PASSING #200	LL	PI	USCS	AASHTO
69.9	67	32	MH	A-7-5(26):



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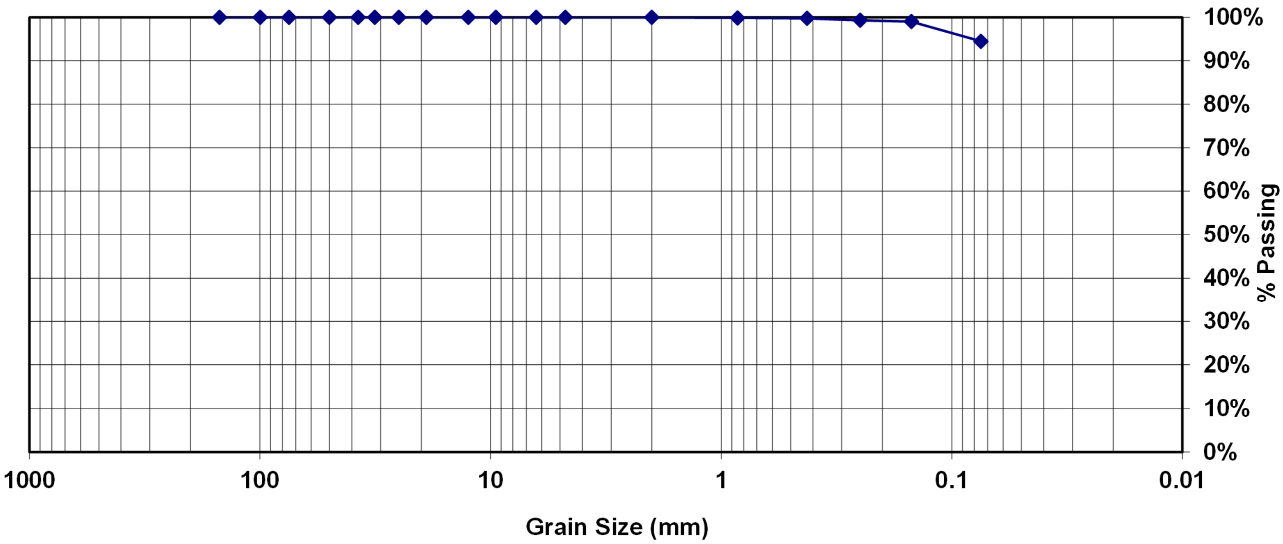
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

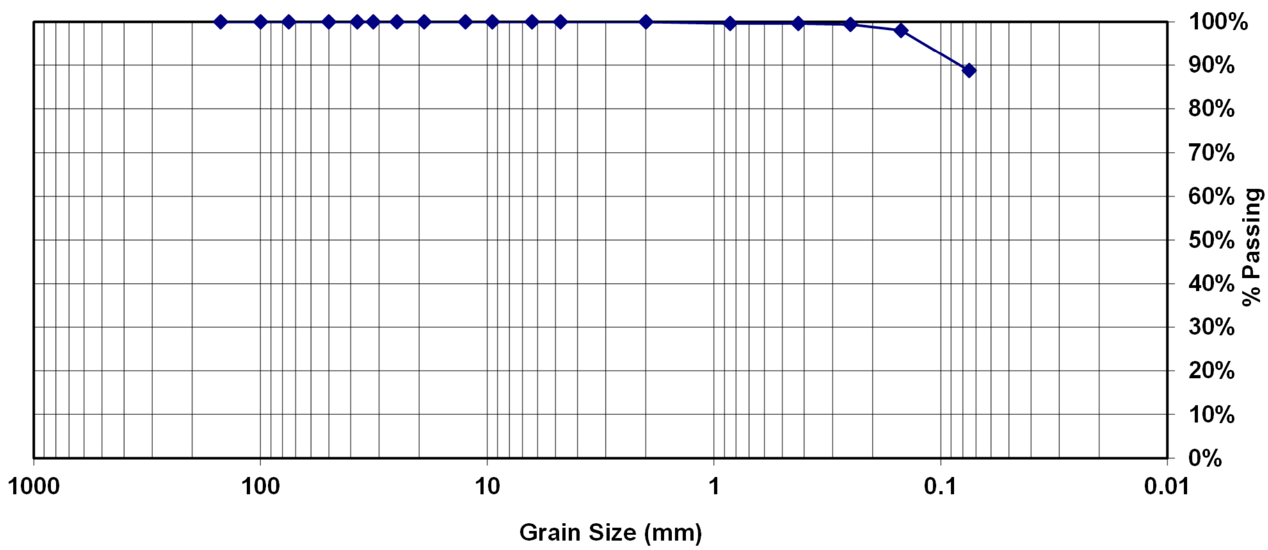
ARK-SPT-3 @ 9.5-10.0'

%PASSING #200	LL	PI	USCS	AASHTO
94.5	68	35	MH	A-7-5(39):



ARK-SPT-3 @ 11.0-11.5'

%PASSING #200	LL	PI	USCS	AASHTO
88.8	63	27	MH	A-7-6(36):



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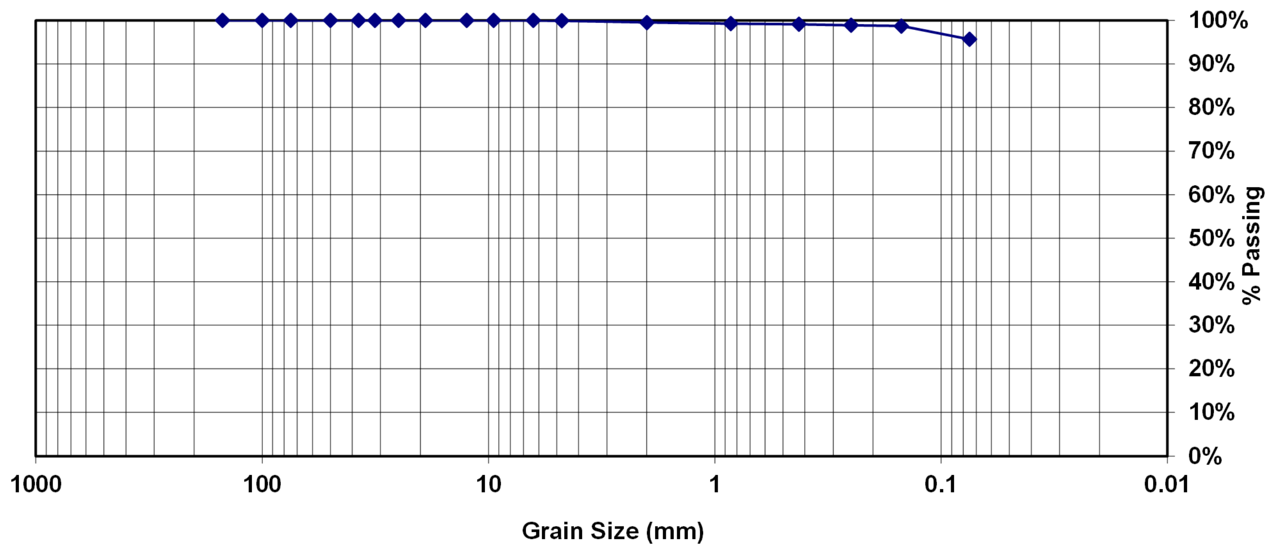
PROJECT NAME: ARCADIS - Arkema Early Action
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009
PROJECT: 107510
REVIEWED BY: S. STEEL

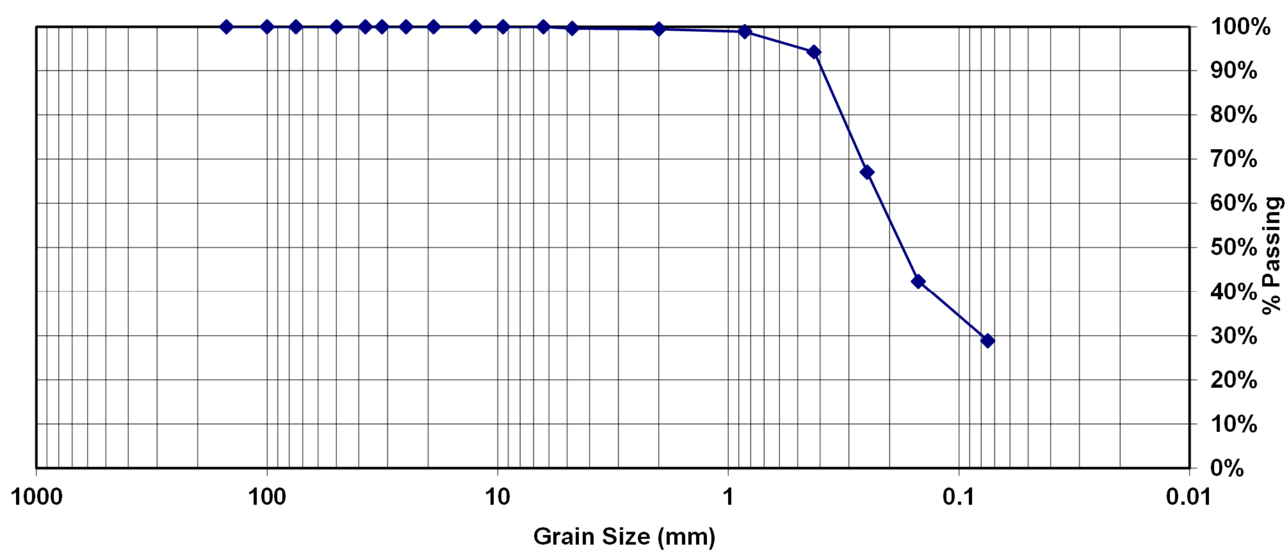
ARK-SPT-3 @ 13.0-15.0'

%PASSING #200	LL	PI	USCS	AASHTO
95.7	63	25	MH	A-7-6(42):



ARK-SPT-3 @ 20.5-22.0'

%PASSING #200
28.9



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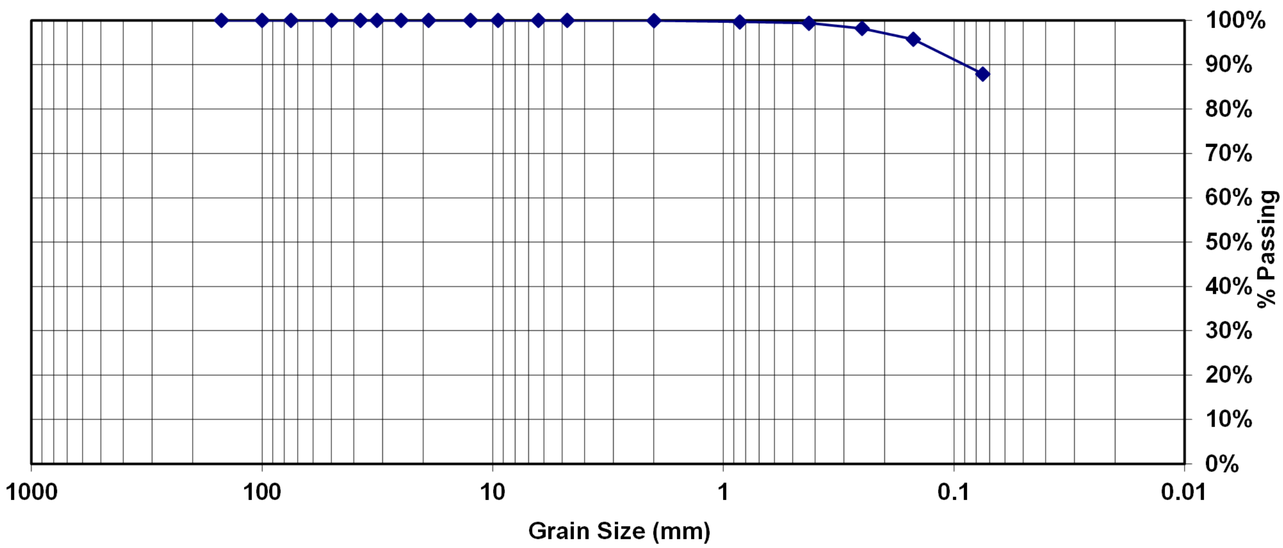
LOCATION: Portland, Oregon
SAMPLE DATE: October, 2009

PROJECT: 107510
REVIEWED BY: S. STEEL

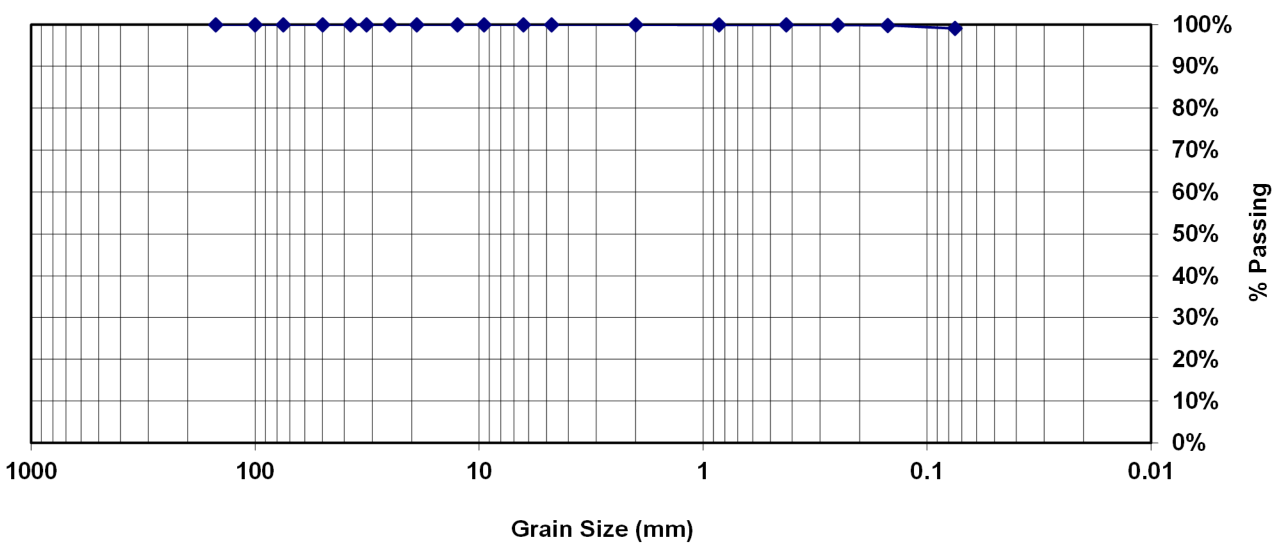
ARK-SPT-3 @ 10.0-10.5'

%PASSING #200	LL	PI	USCS	AASHTO
87.9	69	35	MH	A-7-5(36):



ARK-SPT-1 @ 18.5-20.5'

%PASSING #200	LL	PI	USCS	AASHTO
99.1	53	17	MH	A-7-6(39):



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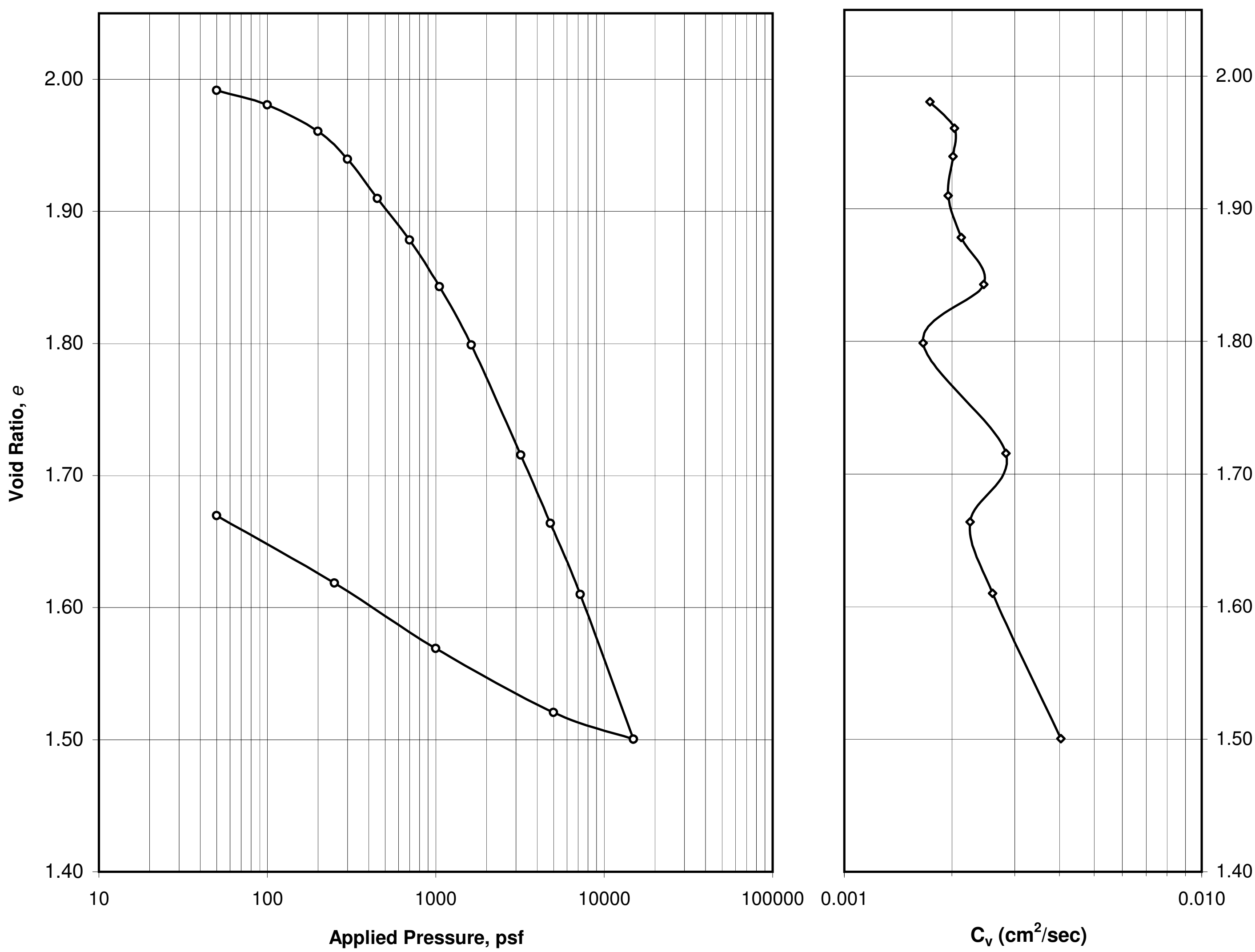

Boring	Sample	Depth (ft)	LL	PL	Spec Grav	Sample Description
SPT-1	SPT-1	13.5	76	38	2.66	Dark Gray SILT (MH)

	Moisture Content (%)	Dry Density (pcf)	Void Ratio	Satruation (%)
INITIAL	72.0	55.5	1.992	96.2
FINAL	48.7	62.2	1.670	100.0

Recompresion Index $Cr^{(1)}$	Compression Index $Cc^{(1)}$	Est[(1)] Preconsolidation Pressure, Po' (pcf)
N/A	N/A	N/A

SAMPLE PREPARATION: Wet Method

(1) Estimated preconsilidation pressure and index values (Cr/Cc) generally based on Casaegrade Method.

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Test Date:	7-Jan-10
Tested By:	RG
Checked By:	SAS
File:	SPT-1@13-15'
Lab No.:	2592
PROJECT NO.:	107510

CONSOLIDATION TEST

Arkema Early Action
Portland, Oregon

LOAD INCREMENT WORK SHEET

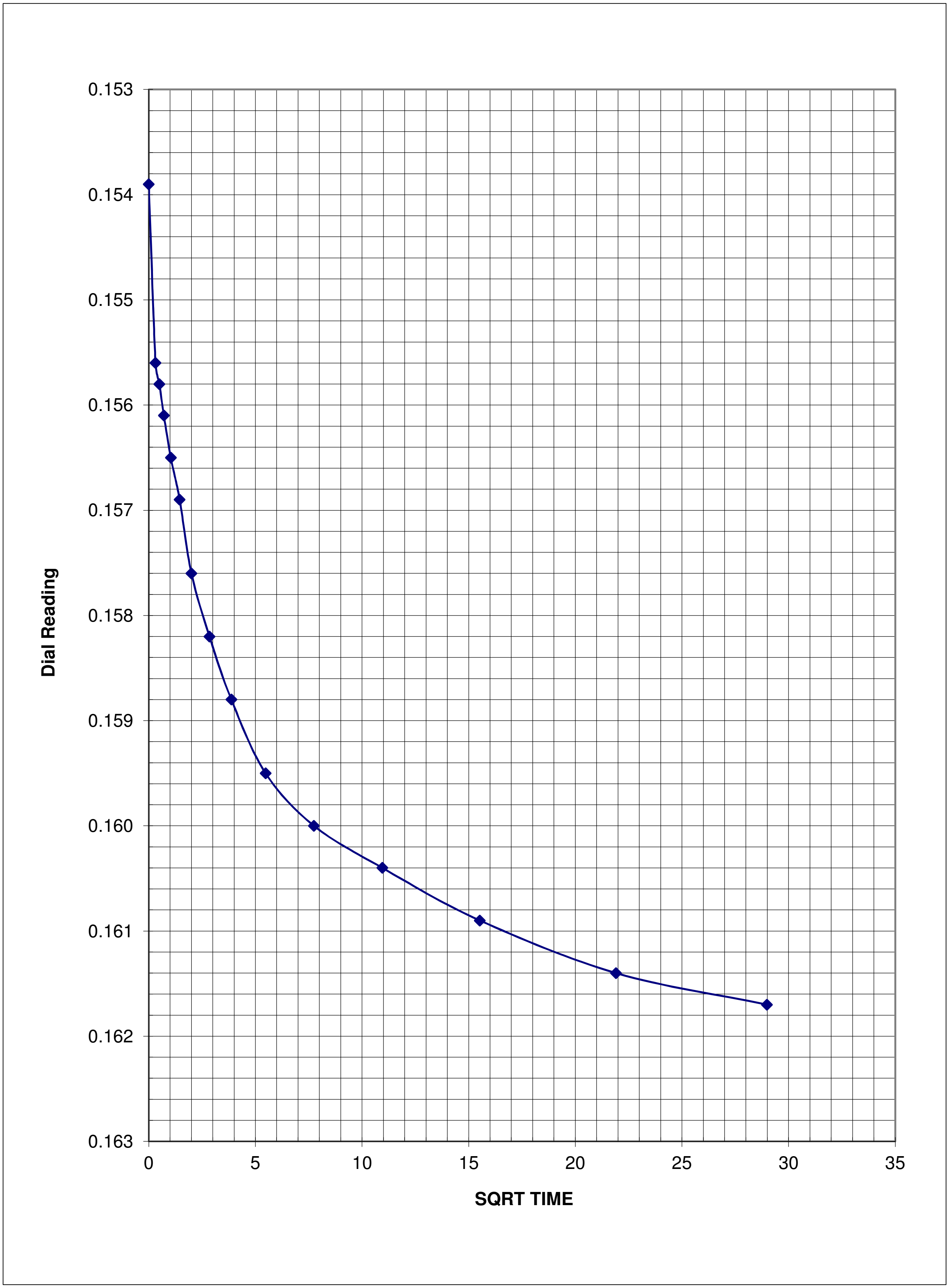
Project: 107510 **Sample:** SPT1
Date: 1/7/2010 **Depth (ft):** 14

Load Increment (psf): 100

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.1539***
6s		0.1	0.32	0.1556
15s		0.25	0.50	0.1558
30s		0.5	0.71	0.1561
1 min		1.07	1.03	0.1565
2 min		2.1	1.45	0.1569
4 min		4	2.00	0.1576
8 min		8.1	2.85	0.1582
15 min		15	3.87	0.1588
30 min		30	5.48	0.1595
1hr		60	7.75	0.1600
2 hr		120	10.95	0.1604
4 hr		241	15.52	0.1609
8 hr		480	21.91	0.1614
16 hr		840	28.98	0.1617
24 hr				

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.1558	0.1561	0.1565
D:4	0.1565	0.1569	0.1576
Delta 1:4	-0.0007	-0.0008	-0.0011
D_o (calc)	0.1551	0.1553	0.1554



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**100**

LOAD INCREMENT WORK SHEET

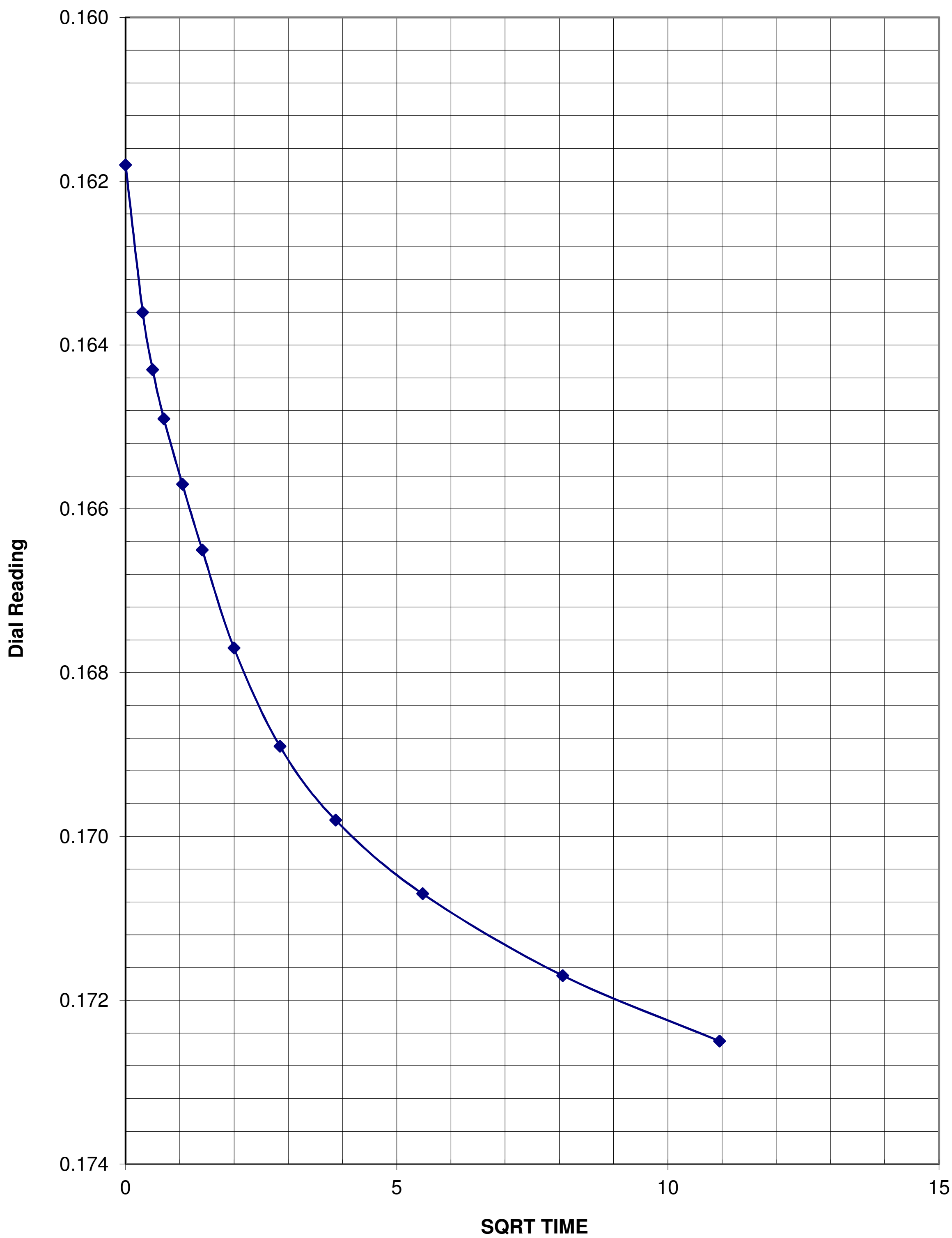
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): 200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.1618***
6s		0.1	0.32	0.1636
15s		0.25	0.50	0.1643
30s		0.5	0.71	0.1649
1 min		1.1	1.05	0.1657
2 min		2	1.41	0.1665
4 min		4	2.00	0.1677
8 min		8.1	2.85	0.1689
15 min		15	3.87	0.1698
30 min		30	5.48	0.1707
1hr		65	8.06	0.1717
2 hr		120	10.95	0.1725
4 hr				
8 hr				
16 hr				
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.1643	0.1649	0.1657
D:4	0.1657	0.1665	0.1677
Delta 1:4	-0.0014	-0.0016	-0.0020
D_o (calc)	0.1629	0.1633	0.1637



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**200**

LOAD INCREMENT WORK SHEET

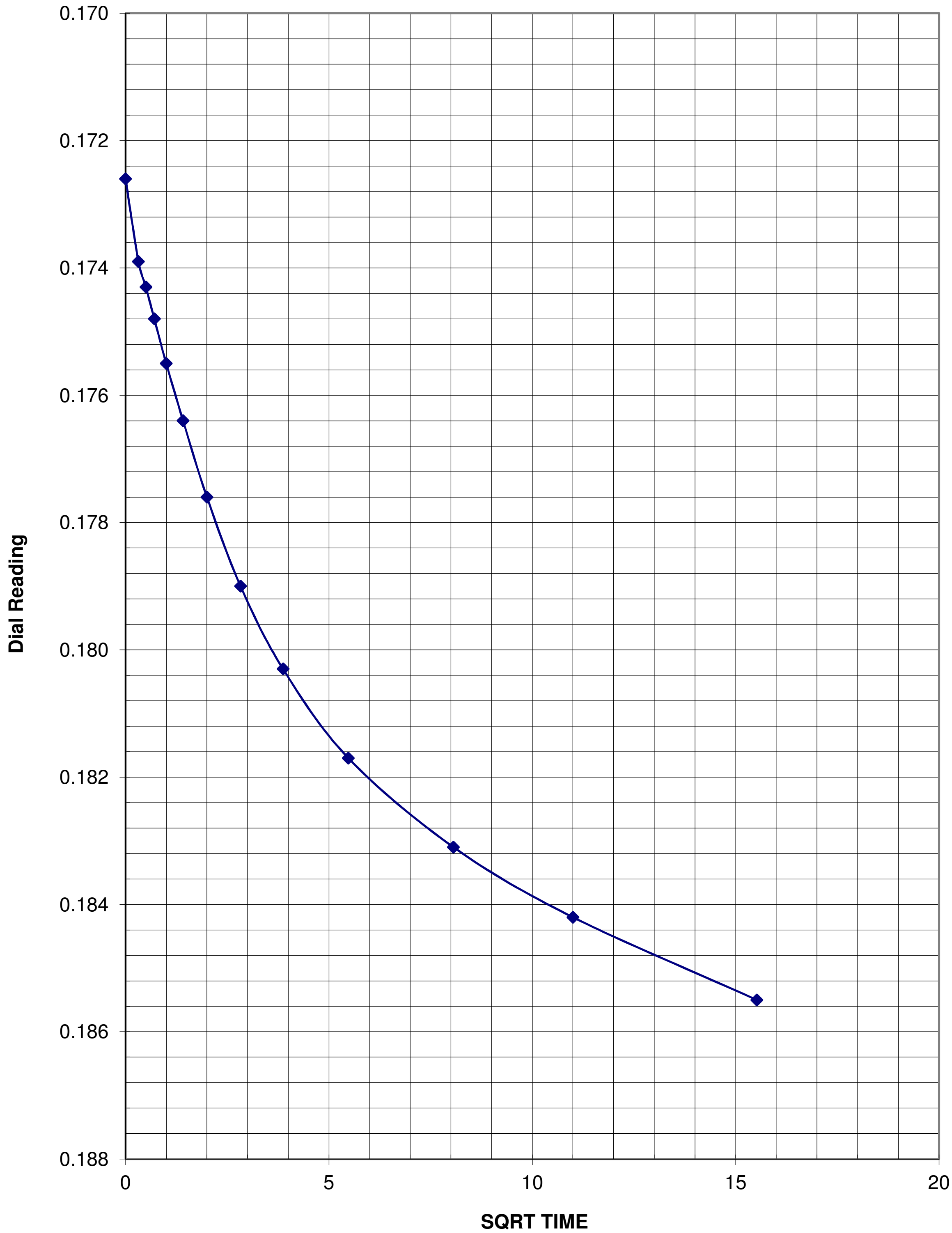
Project: 107510 **Sample:** SPT1
Date: 1/7/2010 **Depth (ft):** 14

Load Increment (psf): 300

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.1726***
6s		0.1	0.32	0.1739
15s		0.25	0.50	0.1743
30s		0.5	0.71	0.1748
1 min		1	1.00	0.1755
2 min		2	1.41	0.1764
4 min		4	2.00	0.1776
8 min		8	2.83	0.1790
15 min		15	3.87	0.1803
30 min		30	5.48	0.1817
1hr		65	8.06	0.1831
2 hr		121	11.00	0.1842
4 hr		241	15.52	0.1855
8 hr				
16 hr				
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.1743	0.1748	0.1755
D:4	0.1755	0.1764	0.1776
Delta 1:4	-0.0012	-0.0016	-0.0021
D_o (calc)	0.1731	0.1732	0.1734



Project: 107510 **Sample:** SPT1
Date: 1/7/2010 **Depth (ft):** 14
Load Increment (psf): 300

LOAD INCREMENT WORK SHEET

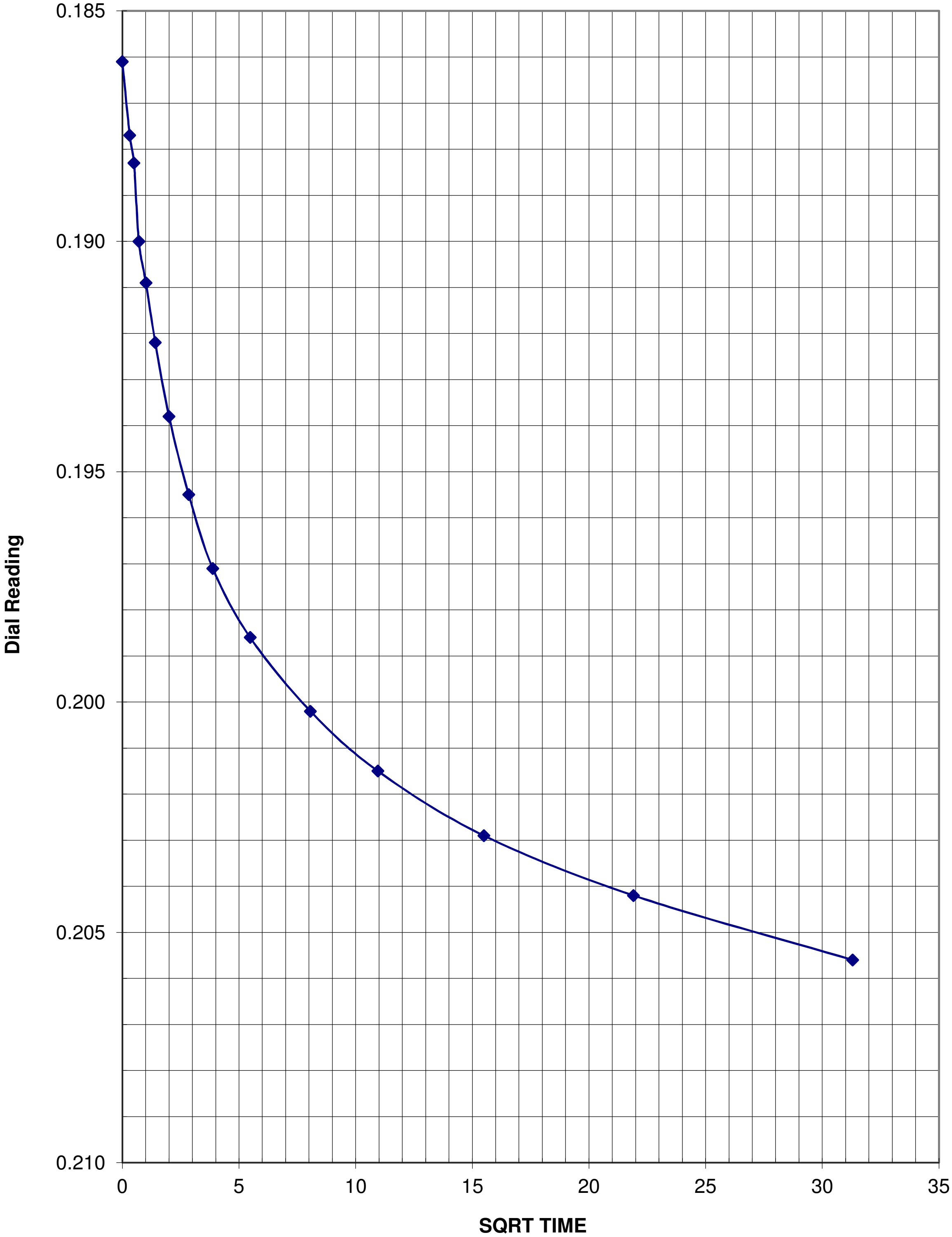
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): **450**

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.1861***
6s		0.1	0.32	0.1877
15s		0.25	0.50	0.1883
30s		0.5	0.71	0.1900
1 min		1.02	1.01	0.1909
2 min		2	1.41	0.1922
4 min		4	2.00	0.1938
8 min		8.1	2.85	0.1955
15 min		15	3.87	0.1971
30 min		30	5.48	0.1986
1hr		65	8.06	0.2002
2 hr		120	10.95	0.2015
4 hr		240	15.49	0.2029
8 hr		480	21.91	0.2042
16 hr		980	31.30	0.2056
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.1883	0.19	0.1909
D:4	0.1909	0.1922	0.1938
Delta 1:4	-0.0026	-0.0022	-0.0029
D_o (calc)	0.1857	0.1878	0.1880



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**450**

LOAD INCREMENT WORK SHEET

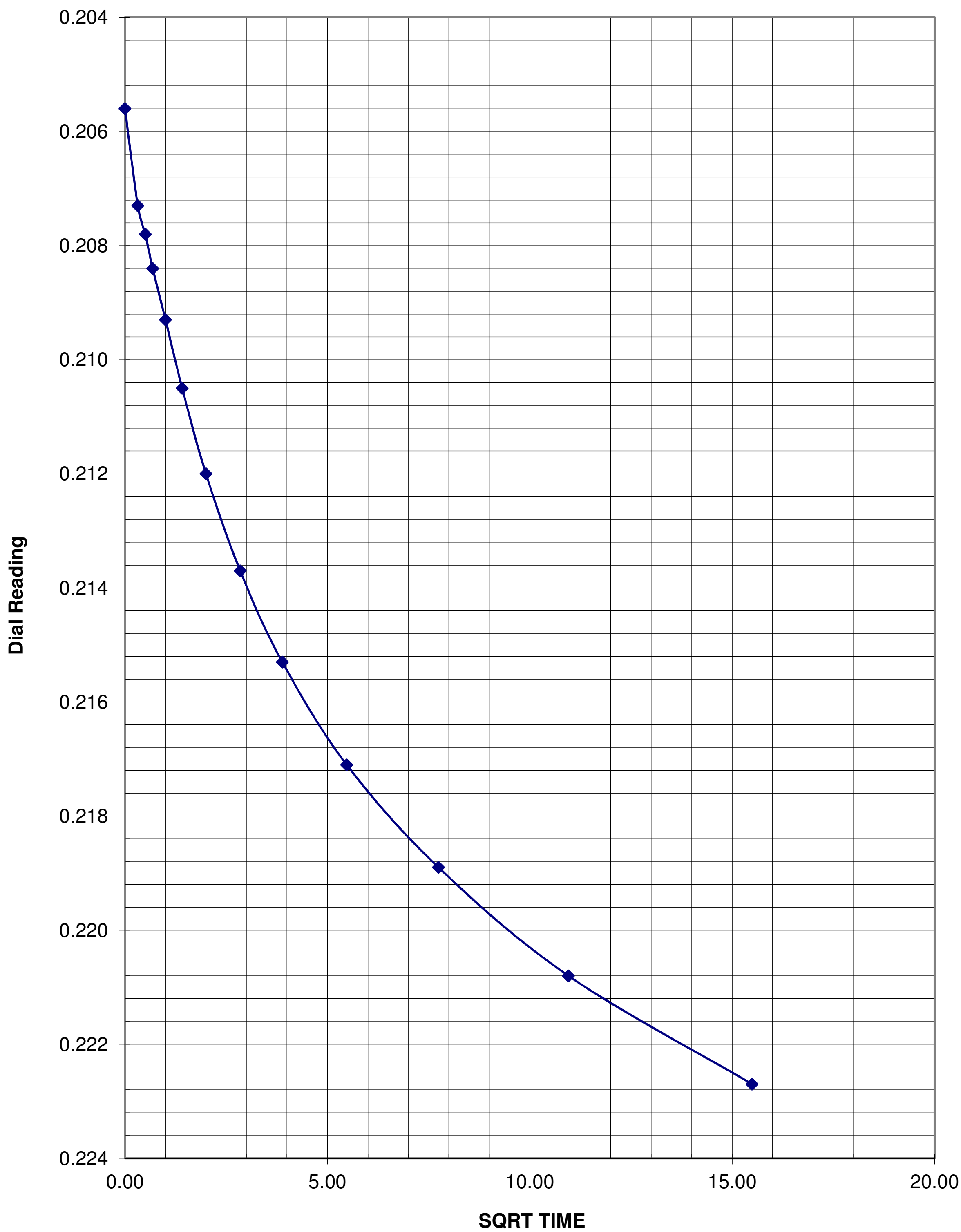
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): 700

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2056***
6s		0.1	0.32	0.2073
15s		0.25	0.50	0.2078
30s		0.47	0.69	0.2084
1 min		1	1.00	0.2093
2 min		2	1.41	0.2105
4 min		4	2.00	0.2120
8 min		8.1	2.85	0.2137
15 min		15.1	3.89	0.2153
30 min		30	5.48	0.2171
1hr		60	7.75	0.2189
2 hr		120	10.95	0.2208
4 hr		240	15.49	0.2227
8 hr				
16 hr				
24 hr				

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.2078	0.2084	0.2093
D:4	0.2093	0.2105	0.2120
Delta 1:4	-0.0015	-0.0021	-0.0027
D_o (calc)	0.2063	0.2063	0.2066



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**700**

LOAD INCREMENT WORK SHEET

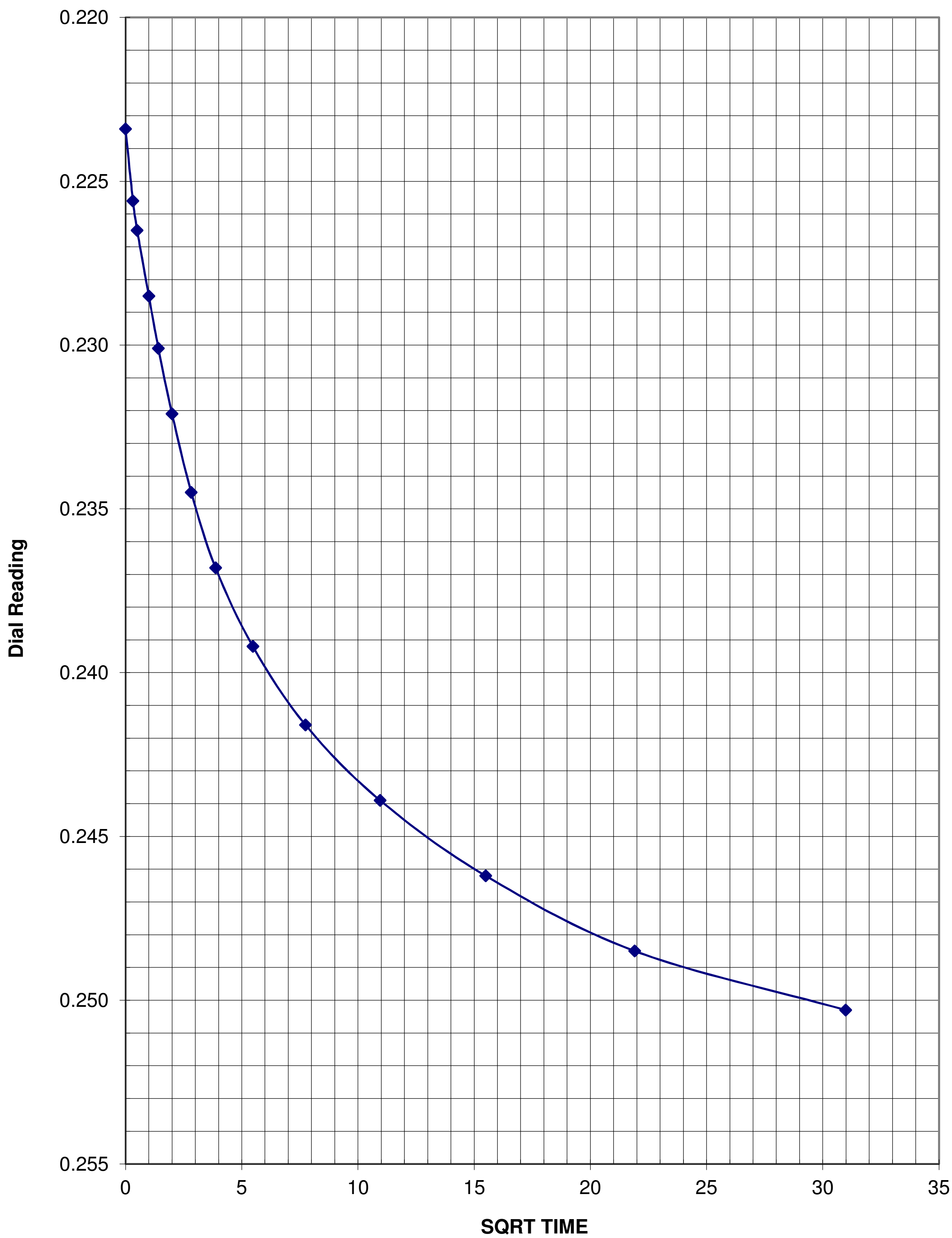
Project: 107510 **Sample:** SPT1
Date: 1/7/2010 **Depth (ft):** 14

Load Increment (psf): 1050

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2234***
6s		0.1	0.32	0.2256
15s		0.25	0.50	0.2265
30s		1	1.00	0.2285
1 min		2	1.41	0.2301
2 min		4	2.00	0.2321
4 min		8	2.83	0.2345
8 min		15	3.87	0.2368
15 min		30	5.48	0.2392
30 min		60	7.75	0.2416
1hr		120	10.95	0.2439
2 hr		240	15.49	0.2462
4 hr		480	21.91	0.2485
8 hr		960	30.98	0.2503
16 hr				
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.2265	0.2285	0.2301
D:4	0.2301	0.2321	0.2345
Delta 1:4	-0.0036	-0.0036	-0.0044
D_o (calc)	0.2229	0.2249	0.2257



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**1050**

LOAD INCREMENT WORK SHEET

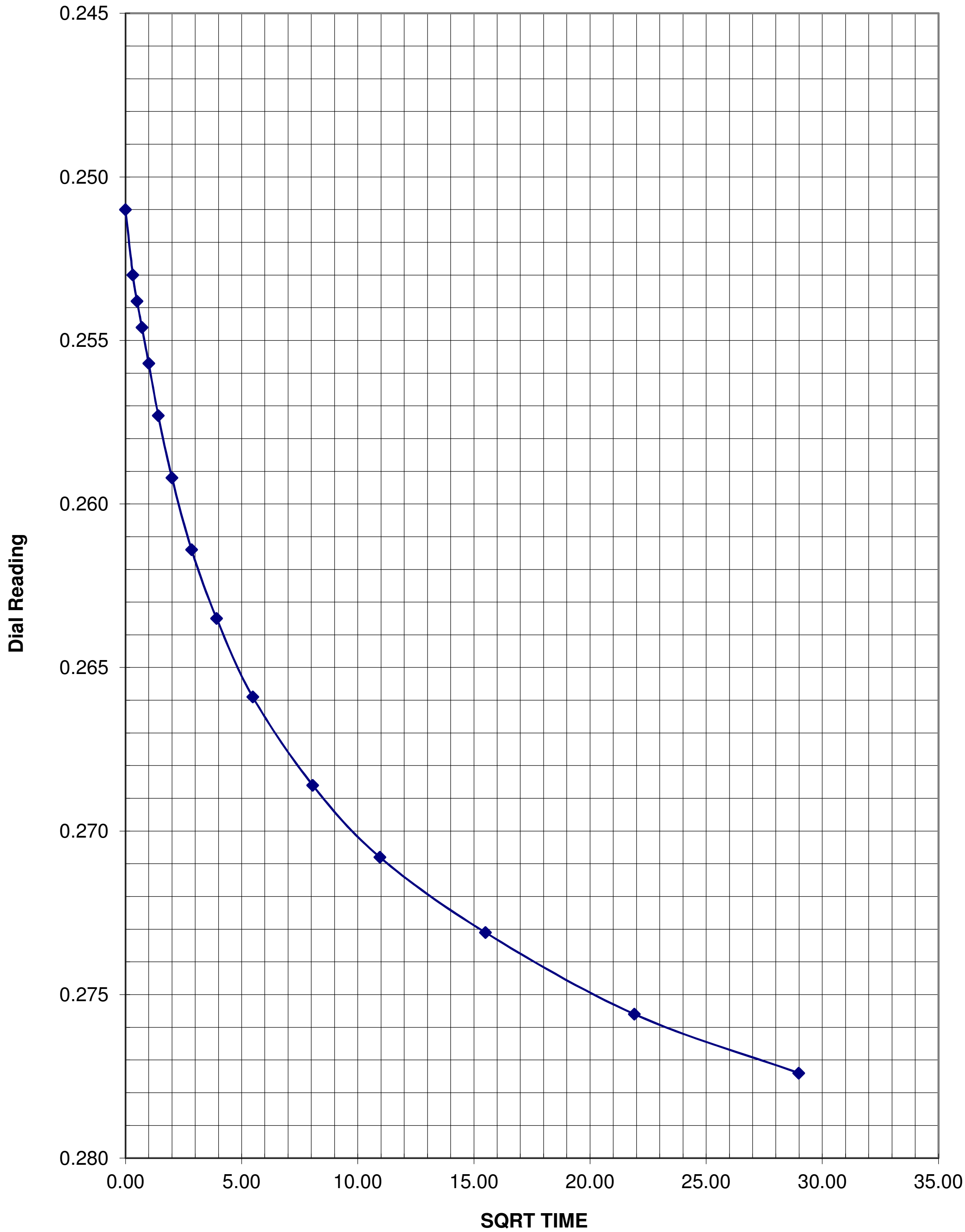
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): 1625

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2510***
6s		0.1	0.32	0.2530
15s		0.25	0.50	0.2538
30s		0.5	0.71	0.2546
1 min		1	1.00	0.2557
2 min		2	1.41	0.2573
4 min		4	2.00	0.2592
8 min		8.1	2.85	0.2614
15 min		15.4	3.92	0.2635
30 min		30	5.48	0.2659
1hr		65	8.06	0.2686
2 hr		120	10.95	0.2708
4 hr		240	15.49	0.2731
8 hr		480	21.91	0.2756
16 hr		840	28.98	0.2774
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.2538	0.2546	0.2557
D:4	0.2557	0.2573	0.2592
Delta 1:4	-0.0019	-0.0027	-0.0035
D_o (calc)	0.2519	0.2519	0.2522



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**1625**

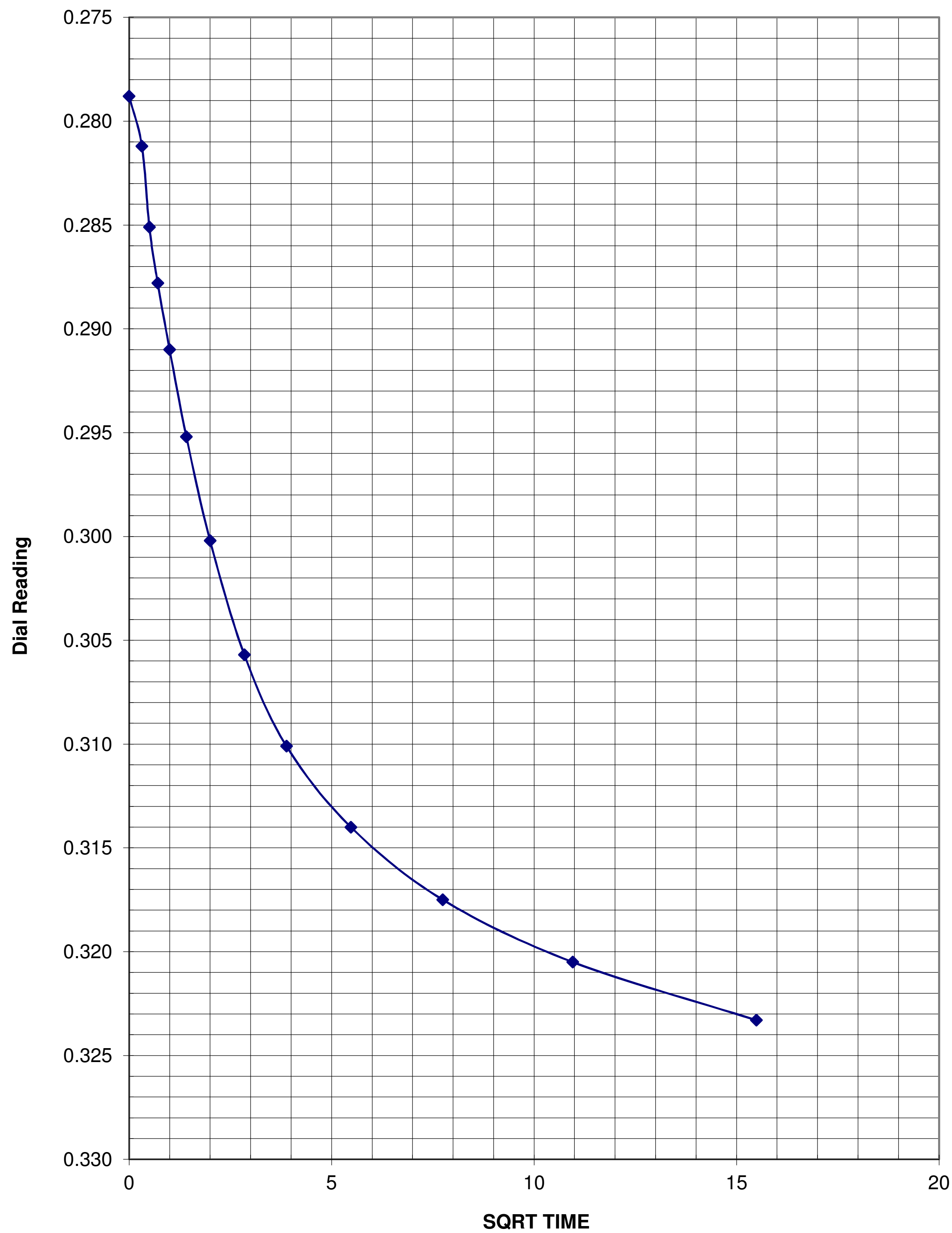
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 1/7/2010 **Depth (ft):** 14

Load Increment (psf): 3200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2788***
6s		0.1	0.32	0.2812
15s		0.25	0.50	0.2851
30s		0.5	0.71	0.2878
1 min		1	1.00	0.2910
2 min		2	1.41	0.2952
4 min		4	2.00	0.3002
8 min		8.1	2.85	0.3057
15 min		15.1	3.89	0.3101
30 min		30	5.48	0.3140
1hr		60	7.75	0.3175
2 hr		120	10.95	0.3205
4 hr		240	15.49	0.3233
8 hr				
16 hr				
24 hr				

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.2851	0.2878	0.2910
D:4	0.2910	0.2952	0.3002
Delta 1:4	-0.0059	-0.0074	-0.0092
D_o (calc)	0.2792	0.2804	0.2818



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**3200**

LOAD INCREMENT WORK SHEET

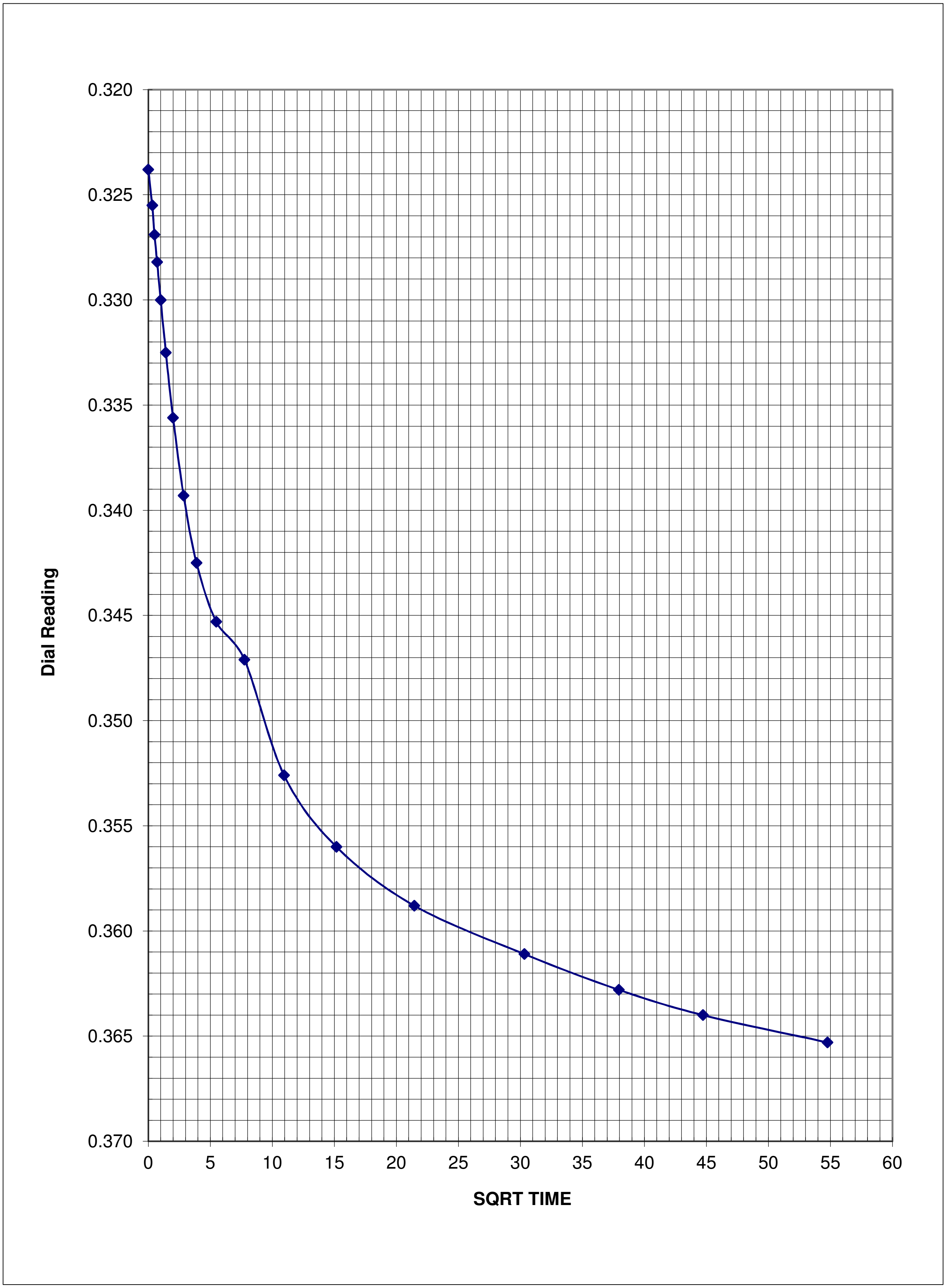
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): **4800**

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.3238***
6s		0.1	0.32	0.3255
15s		0.25	0.50	0.3269
30s		0.5	0.71	0.3282
1 min		1	1.00	0.3300
2 min		2	1.41	0.3325
4 min		4	2.00	0.3356
8 min		8.1	2.85	0.3393
15 min		15.1	3.89	0.3425
30 min		30	5.48	0.3453
1hr		60	7.75	0.3471
2 hr		120	10.95	0.3526
4 hr		230	15.17	0.3560
8 hr		460	21.45	0.3588
16 hr		920	30.33	0.3611
24 hr		1440	37.95	0.3628
		2000	44.72	0.3640
		3000	54.77	0.3653

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.3269	0.3282	0.3300
D:4	0.3300	0.3325	0.3356
Delta 1:4	-0.0031	-0.0043	-0.0056
D_o (calc)	0.3238	0.3239	0.3244



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**4800**

LOAD INCREMENT WORK SHEET

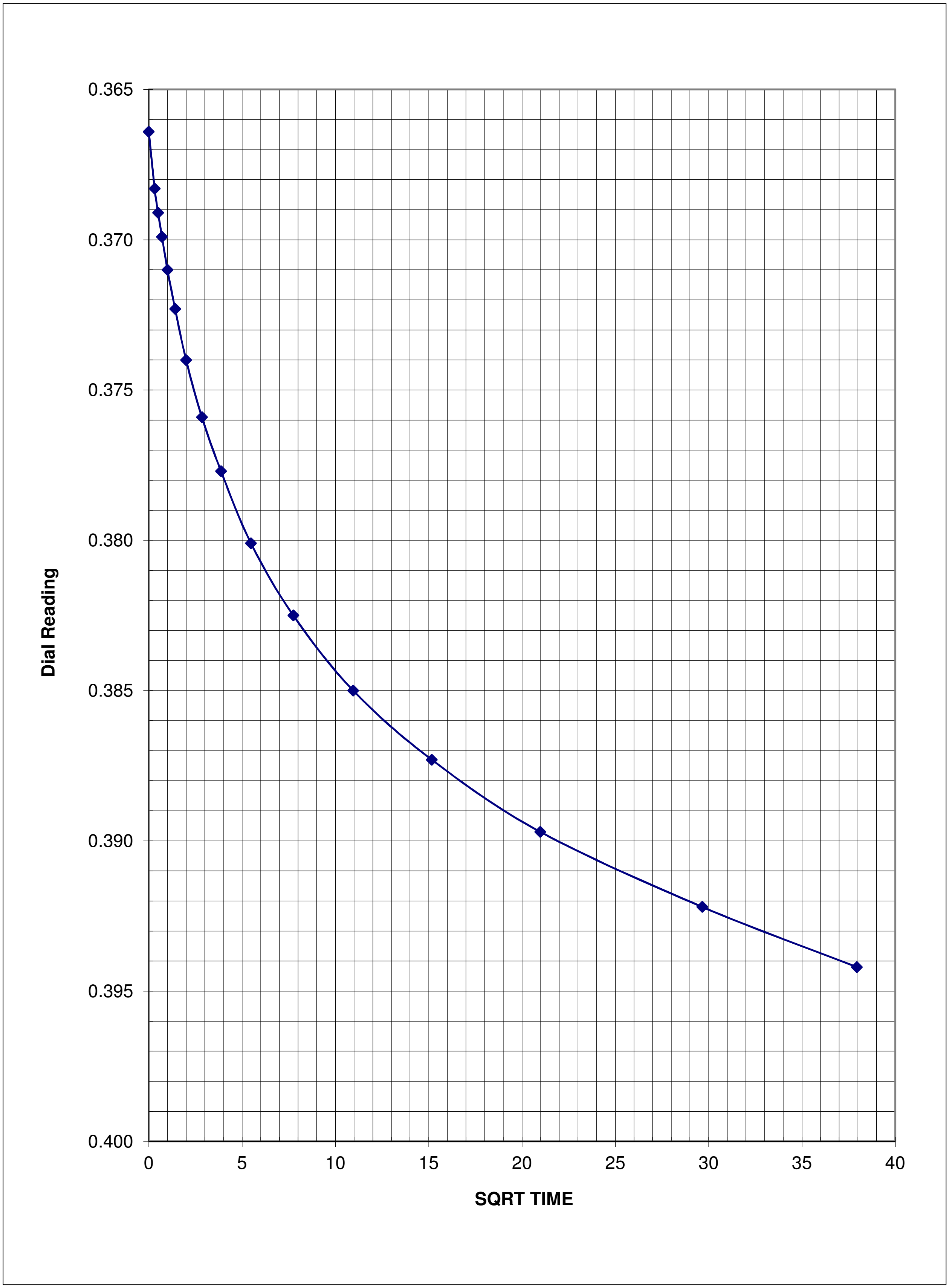
Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**

Load Increment (psf): 7200

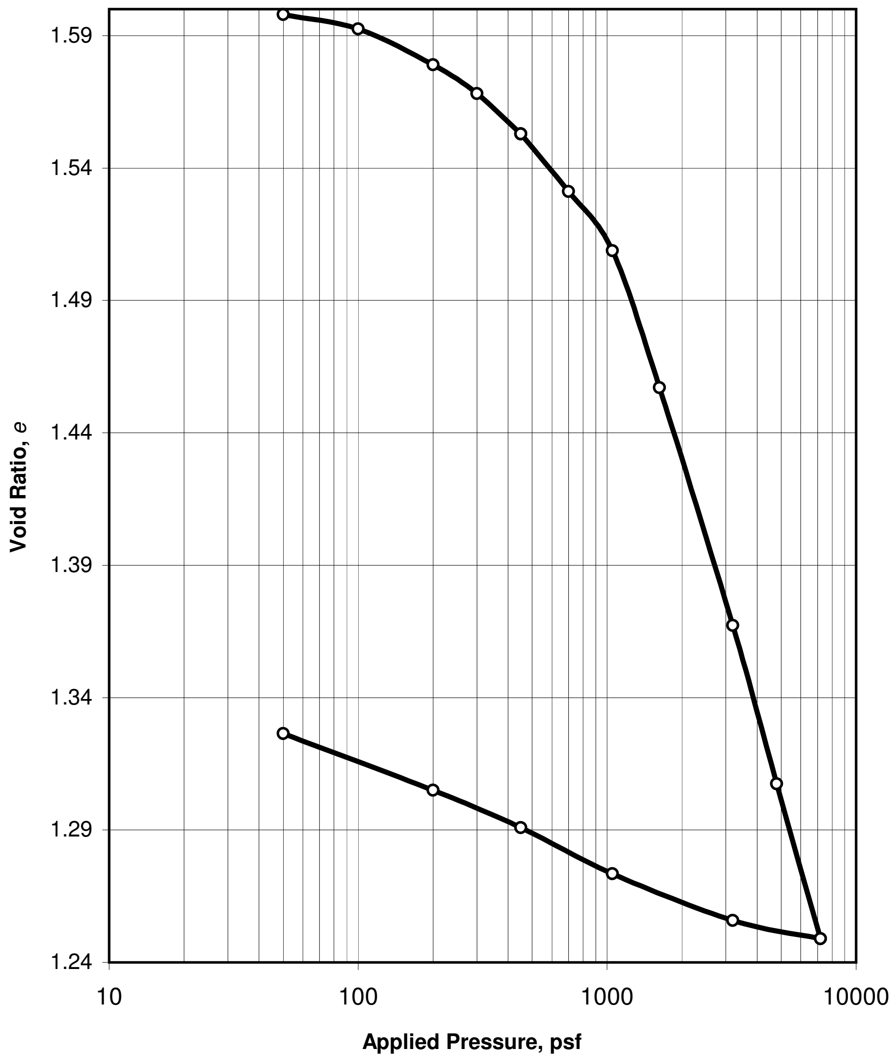
Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.3664***
6s		0.1	0.32	0.3683
15s		0.25	0.50	0.3691
30s		0.5	0.71	0.3699
1 min		1	1.00	0.3710
2 min		2	1.41	0.3723
4 min		4	2.00	0.3740
8 min		8.1	2.85	0.3759
15 min		15	3.87	0.3777
30 min		30	5.48	0.3801
1hr		60	7.75	0.3825
2 hr		120	10.95	0.3850
4 hr		230	15.17	0.3873
8 hr		440	20.98	0.3897
16 hr		880	29.66	0.3922
24 hr		1440	37.95	0.3942

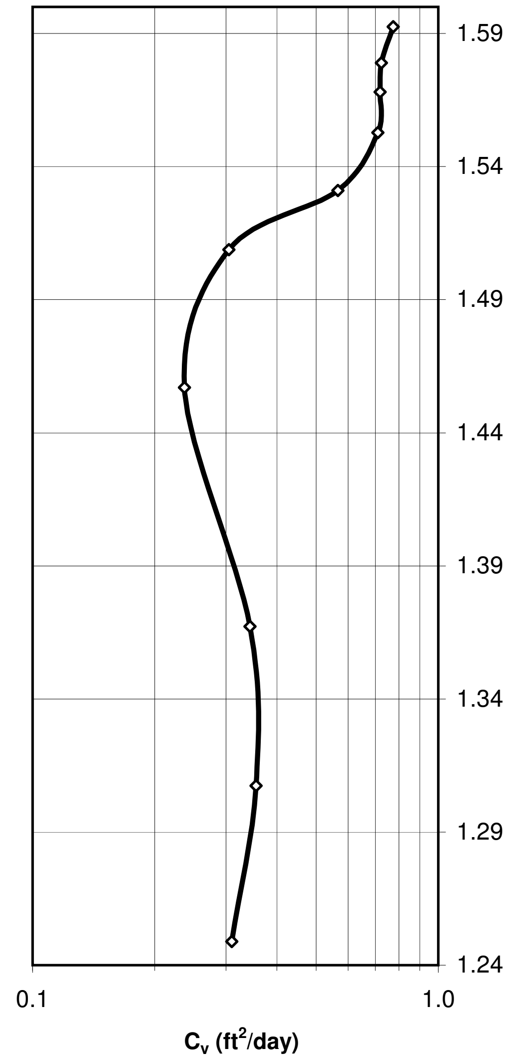
Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3691	0.3699	0.3710
D:4	0.3710	0.3723	0.3740
Delta 1:4	-0.0019	-0.0024	-0.0030
D_o (calc)	0.3672	0.3675	0.3680



Project:	**107510**	**Sample:**	**SPT1**
Date:	**1/7/2010**	**Depth (ft):**	**14**
		Load Increment (psf):	**7200**





Boring	Sample	Depth (ft)	LL	PL	Spec Gravity	Sample Description
SPT-1	18.5-20.5	20	53	36	2.7	Gray SILT (MH)

	Moisture Content (%)	Dry Density (pcf)	Void Ratio	Satruation (%)
INITIAL	64.6	64.9	1.598	109.2
FINAL	48.1	72.4	1.326	--

Recompresion Index $Cr^{(1)}$	Compression Index $Cc^{(1)}$	Est(1) Preconsolidation Pressure, Po' (pcf)
N/A	N/A	N/A

SAMPLE PREPARATION: ☐ Remolded ☑ Intact

(1) Estimated preconsolidation pressure and index values (Cr/Cc) generally based on Casagrande Method.

KLEINFELDER
Bright People. Right Solutions.

Test Date:	8-Mar-10
Tested By:	RPG
Checked By:	SAS
File:	SPT-1@20.0' Consol
Lab No.:	2592

PROJECT NO.: 107510

CONSOLIDATION TEST

Arkema Early Action
Portland, Oregon

LOAD INCREMENT WORK SHEET

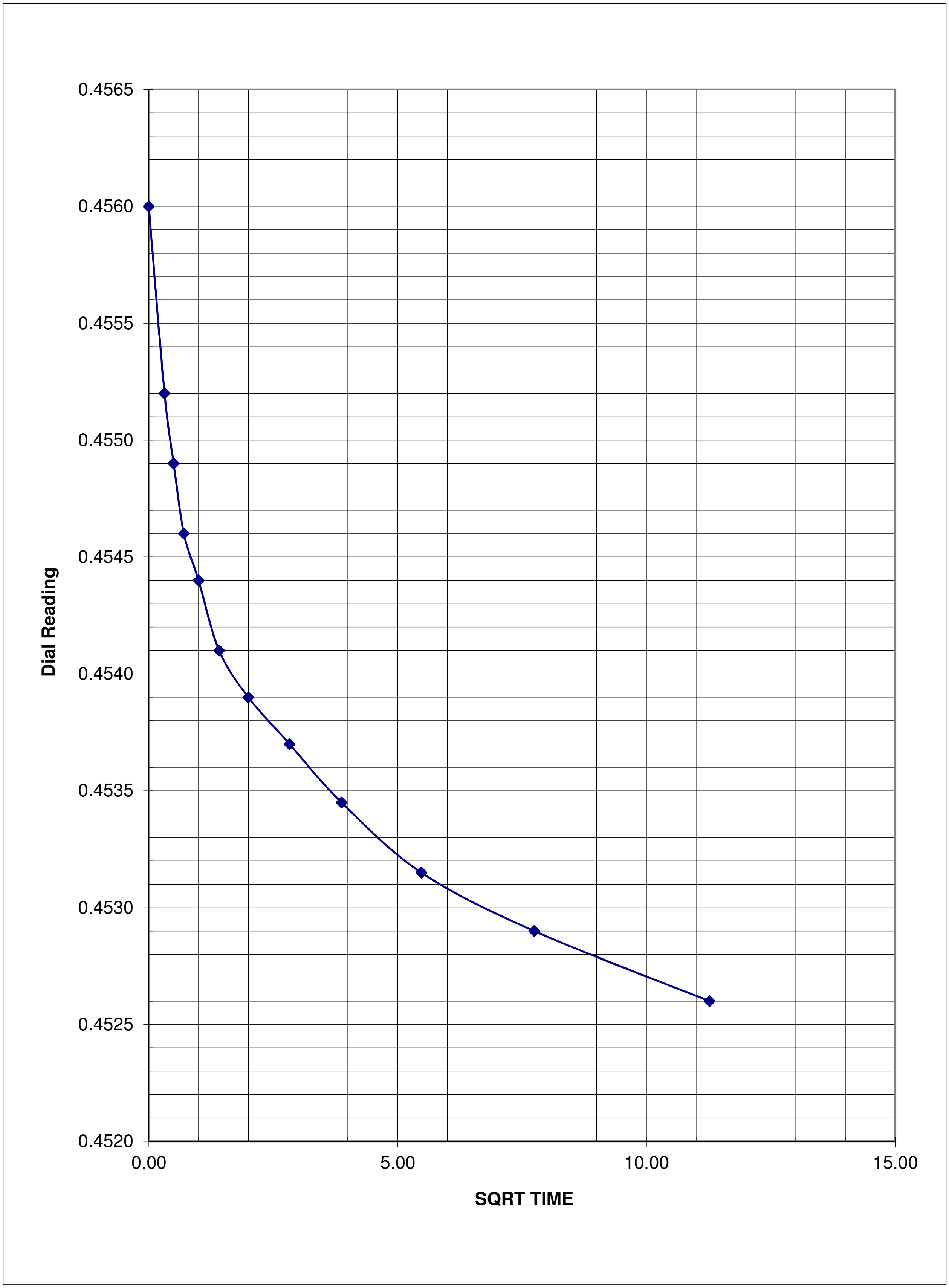
Project: **107510** **Sample:** **SPT1**
Date: **2/26/2010** **Depth (ft):** **20**

Load Increment (psf): 100

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4560***
6s	target	0.1	0.32	0.4552
15s	target	0.25	0.50	0.4549
30s	target	0.5	0.71	0.4546
1 min	target	1	1.00	0.4544
2 min	target	2	1.41	0.4541
4 min	target	4	2.00	0.4539
8 min	target	8	2.83	0.4537
15 min	stop	15	3.87	0.4535
30 min		30	5.48	0.4532
1hr		60	7.75	0.4529
2 hr	2:07	127	11.27	0.4526
4 hr			0.00	
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4549	0.4546	0.4544
D:4	0.4544	0.4541	0.4539
Delta 1:4	0.0005	0.0005	0.0005
D_o (calc)	0.4554	0.4551	0.4549



Project:	**107510**	**Sample:**	**SPT-1**
Date:	**2/26/2010**	**Depth (ft):**	**20**
		Load Increment (psf):	**100**

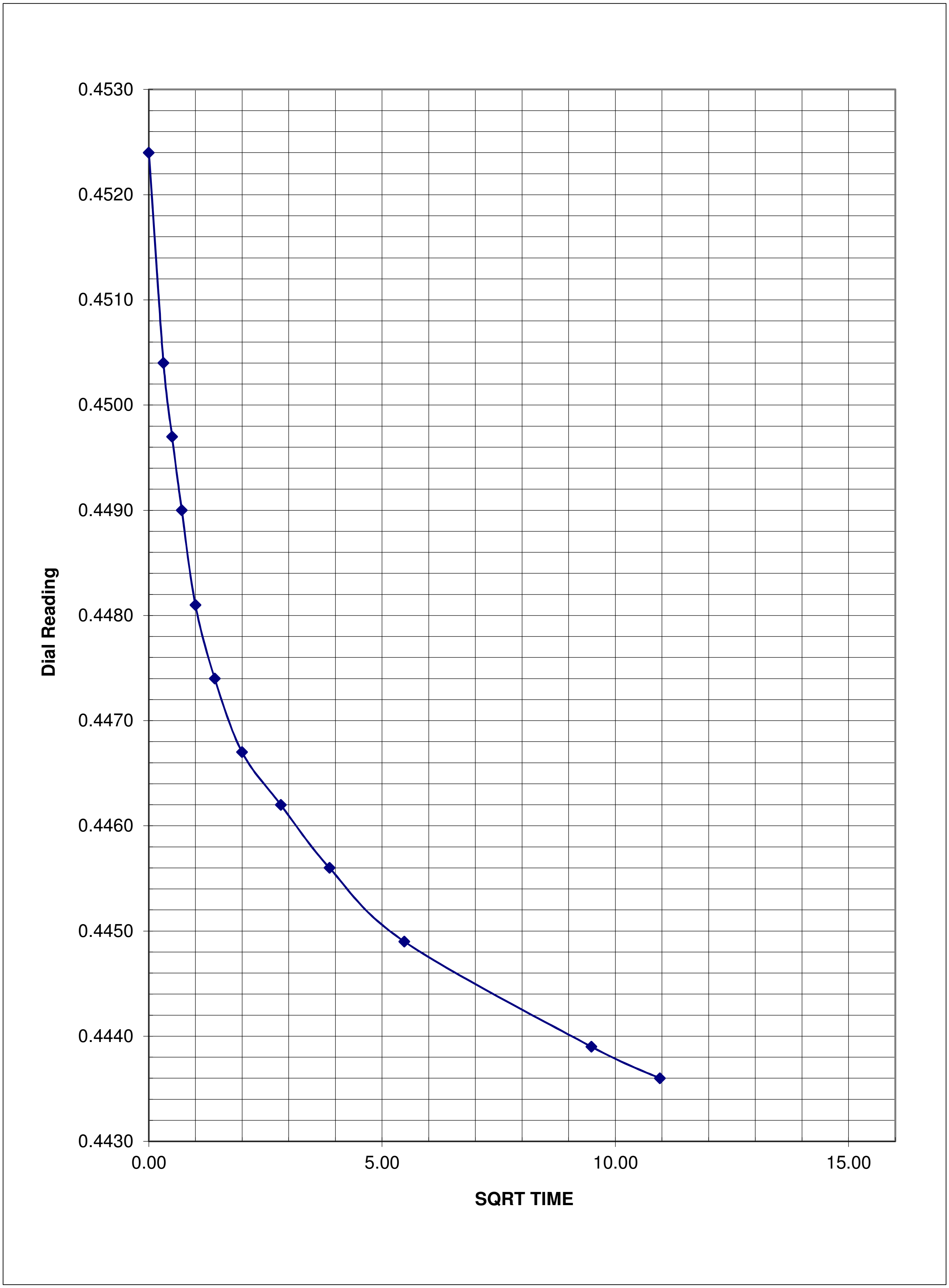
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT-1
Date: 2/26/2010 **Depth (ft):** 20

Load Increment (psf): 200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start	0.0001	0.0001	0.00	***0.4524***
6s	0.1	0.1	0.32	0.4504
15s	0.25	0.25	0.50	0.4497
30s	0.5	0.5	0.71	0.4490
1 min		1	1.00	0.4481
2 min		2	1.41	0.4474
4 min		4	2.00	0.4467
8 min		8	2.83	0.4462
15 min		15	3.87	0.4456
30 min		30	5.48	0.4449
1hr	90	90	9.49	0.4439
2 hr		120	10.95	0.4436
4 hr		240	15.49	
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4497	0.449	0.4481
D:4	0.4481	0.4474	0.4467
Delta 1:4	0.0016	0.0016	0.0014
D_o (calc)	0.4513	0.4506	0.4495



Project: **107510** **Sample:** **SPT-1**

Date: **2/26/2010** **Depth (ft):** **20**

Load Increment (psf): **200**

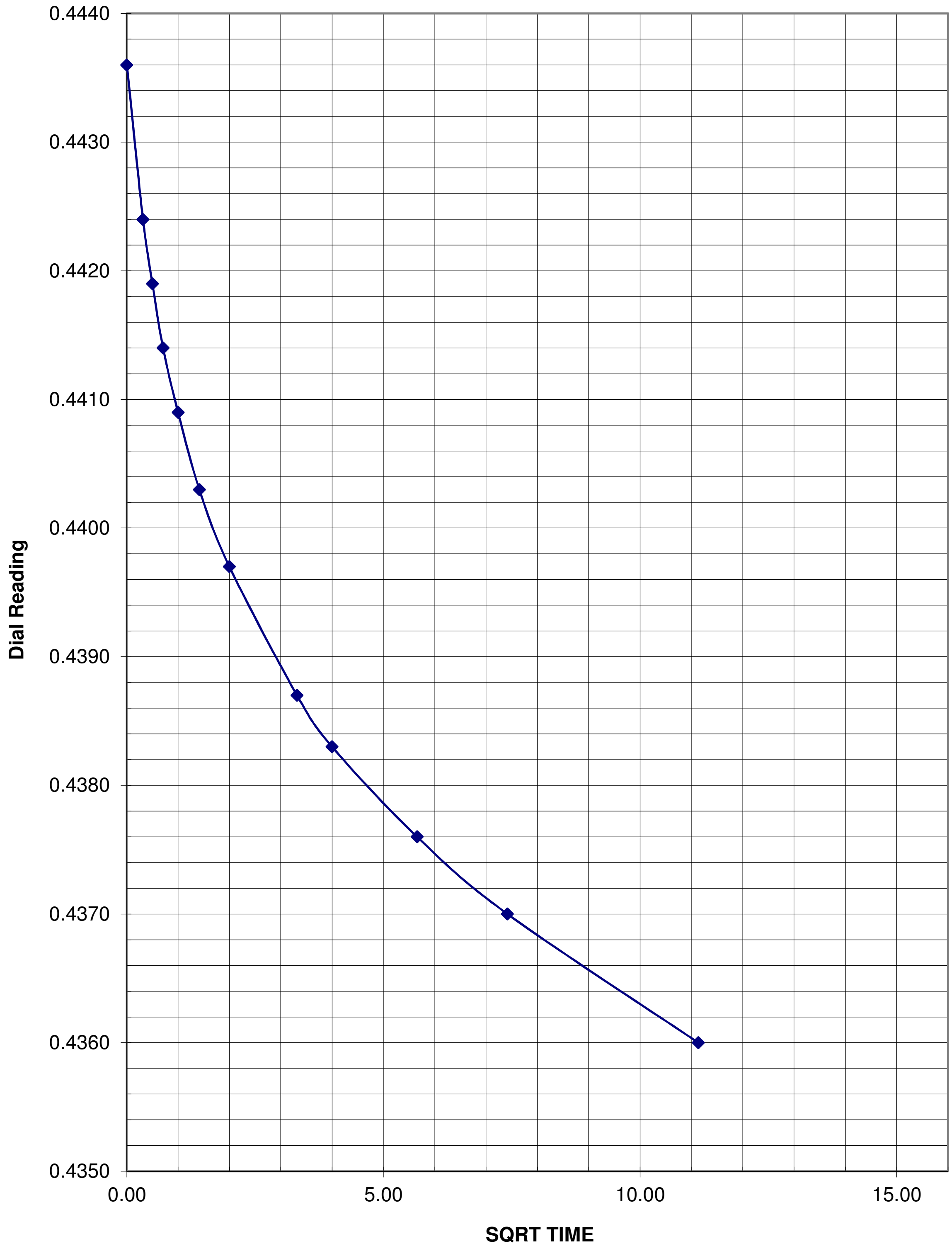
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 2/26/2010 **Depth (ft):** 20

Load Increment (psf): 300

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4436***
6s		0.1	0.32	0.4424
15s		0.25	0.50	0.4419
30s		0.5	0.71	0.4414
1 min		1	1.00	0.4409
2 min		2	1.41	0.4403
4 min		4	2.00	0.4397
8 min	11	11	3.32	0.4387
15 min	16	16	4.00	0.4383
30 min	32	32	5.66	0.4376
1hr	55	55	7.42	0.4370
2 hr	124	124	11.14	0.4360
4 hr		1021	31.95	
8 hr		496	22.27	
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4419	0.4414	0.4409
D:4	0.4409	0.4403	0.4397
Delta 1:4	0.001	0.0011	0.0012
D_o (calc)	0.4429	0.4425	0.4421



Project: 107510 Sample: SPT1
Date: 2/26/2010 Depth (ft): 20
Load Increment (psf): 300

LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1

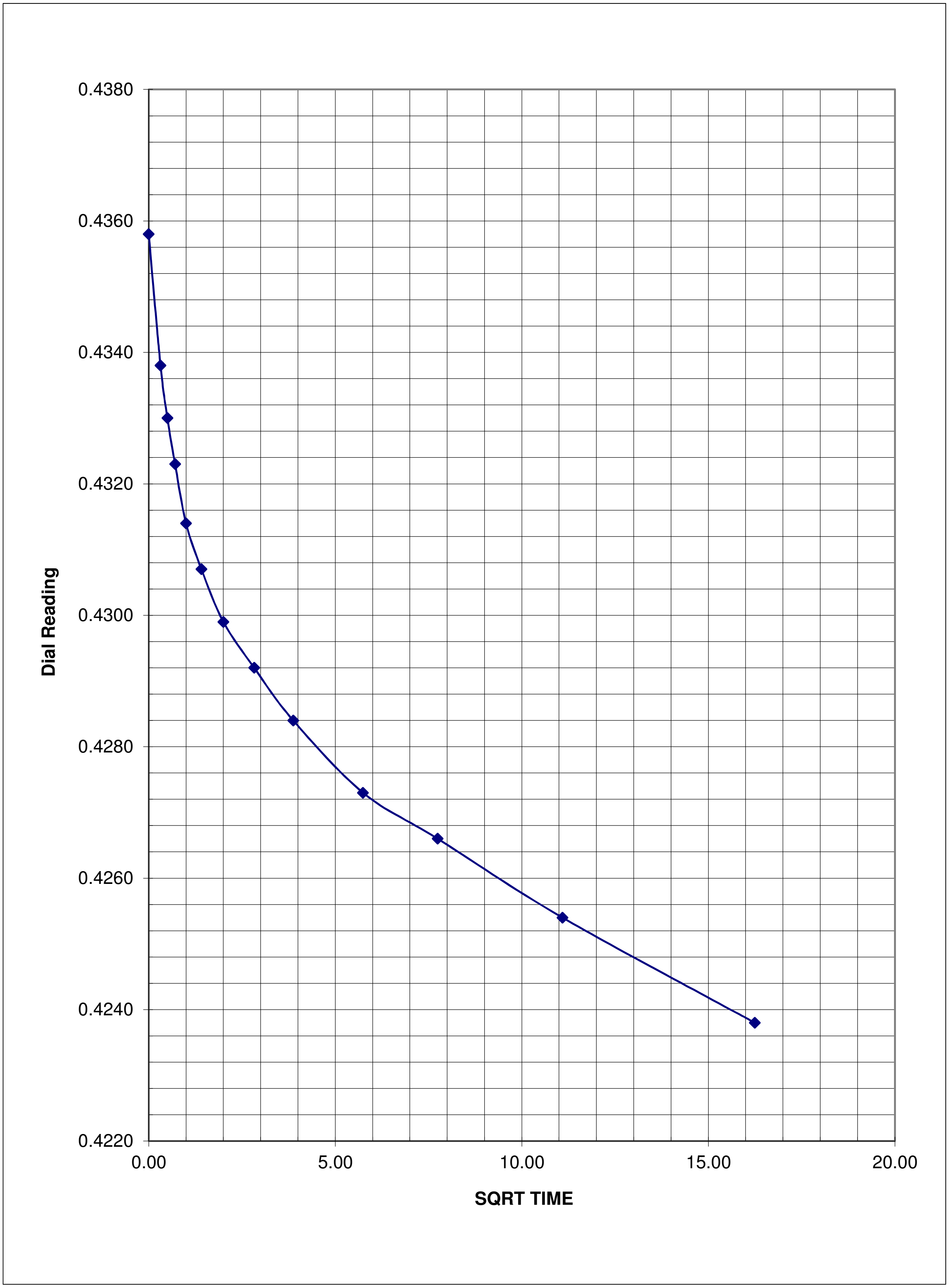
Date: 3/1/2010 **Depth (ft):** 20

Load Increment (psf):	**450**

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4358***
6s		0.1	0.32	0.4338
15s		0.25	0.50	0.4330
30s		0.5	0.71	0.4323
1 min		1	1.00	0.4314
2 min		2	1.41	0.4307
4 min		4	2.00	0.4299
8 min		8	2.83	0.4292
15 min		15	3.87	0.4284
30 min	33	33	5.74	0.4273
1hr		60	7.75	0.4266
2 hr	2:03	123	11.09	0.4254
4 hr	4:24	264	16.25	0.4238
8 hr		336	18.33	
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4330	0.4323	0.4314
D:4	0.4314	0.4307	0.4299
Delta 1:4	0.0016	0.0016	0.0015
D_o (calc)	0.4346	0.4339	0.4329



Project:	**107510**	**Sample:**	**SPT1**
Date:	**3/1/2010**	**Depth (ft):**	**20**
		Load Increment (psf):	**450**

LOAD INCREMENT WORK SHEET

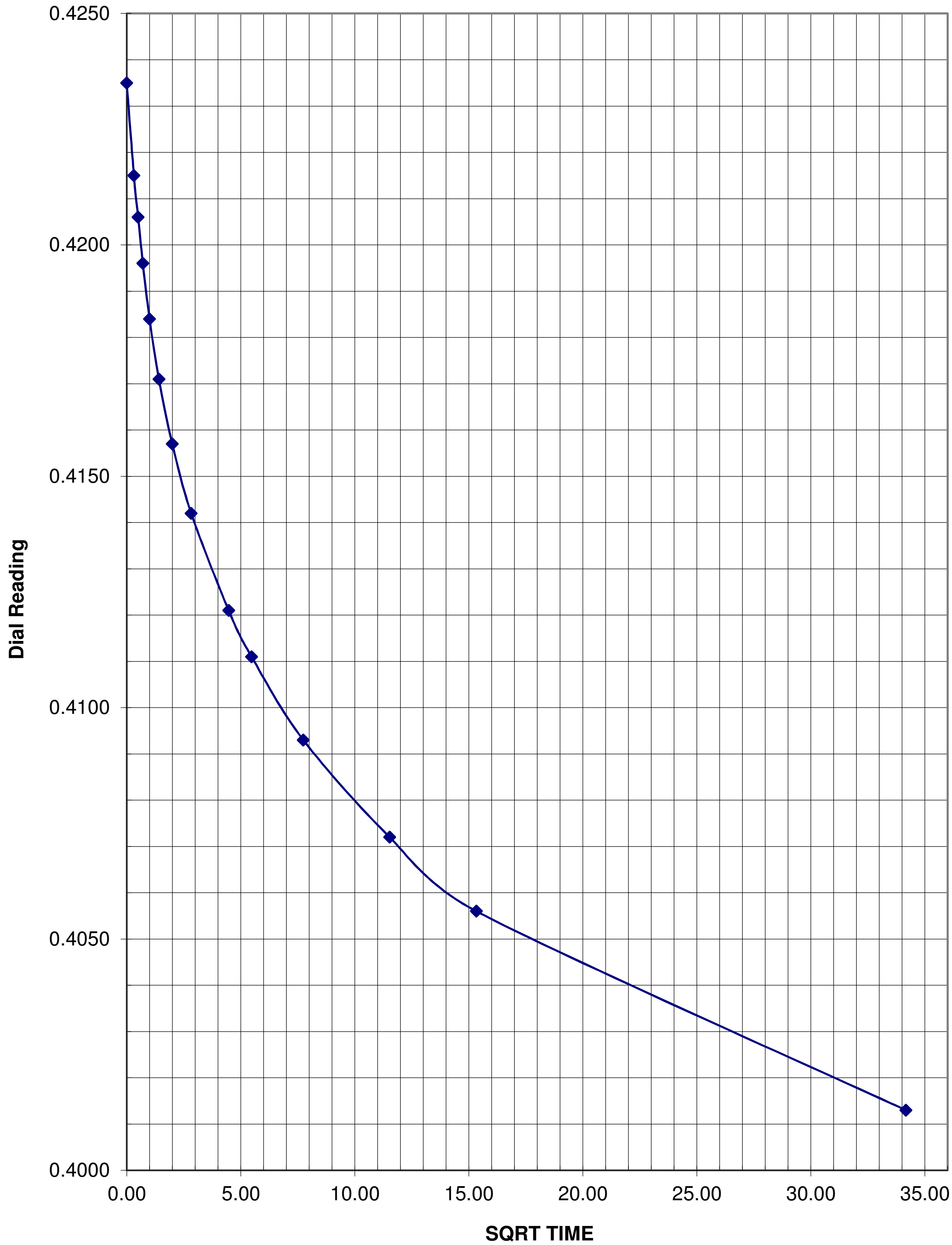
Project: 107510 **Sample:** SPT1
Date: 3/1/2010 **Depth (ft):** 20

Load Increment (psf): 700

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4235***
6s		0.1	0.32	0.4215
15s		0.25	0.50	0.4206
30s		0.5	0.71	0.4196
1 min		1	1.00	0.4184
2 min		2	1.41	0.4171
4 min		4	2.00	0.4157
8 min		8	2.83	0.4142
15 min	20	20	4.47	0.4121
30 min		30	5.48	0.4111
1hr		60	7.75	0.4093
2 hr	2:13	133	11.53	0.4072
4 hr	3:55	235	15.33	0.4056
8 hr	19:28	1168	34.18	0.4013
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.4206	0.4196	0.4184
D:4	0.4184	0.4171	0.4157
Delta 1:4	0.0022	0.0025	0.0027
D_o (calc)	0.4228	0.4221	0.4211



Project:	**107510**	**Sample:**	**SPT-1**
Date:	**3/1/2010**	**Depth (ft):**	**20**
		Load Increment (psf):	**700**

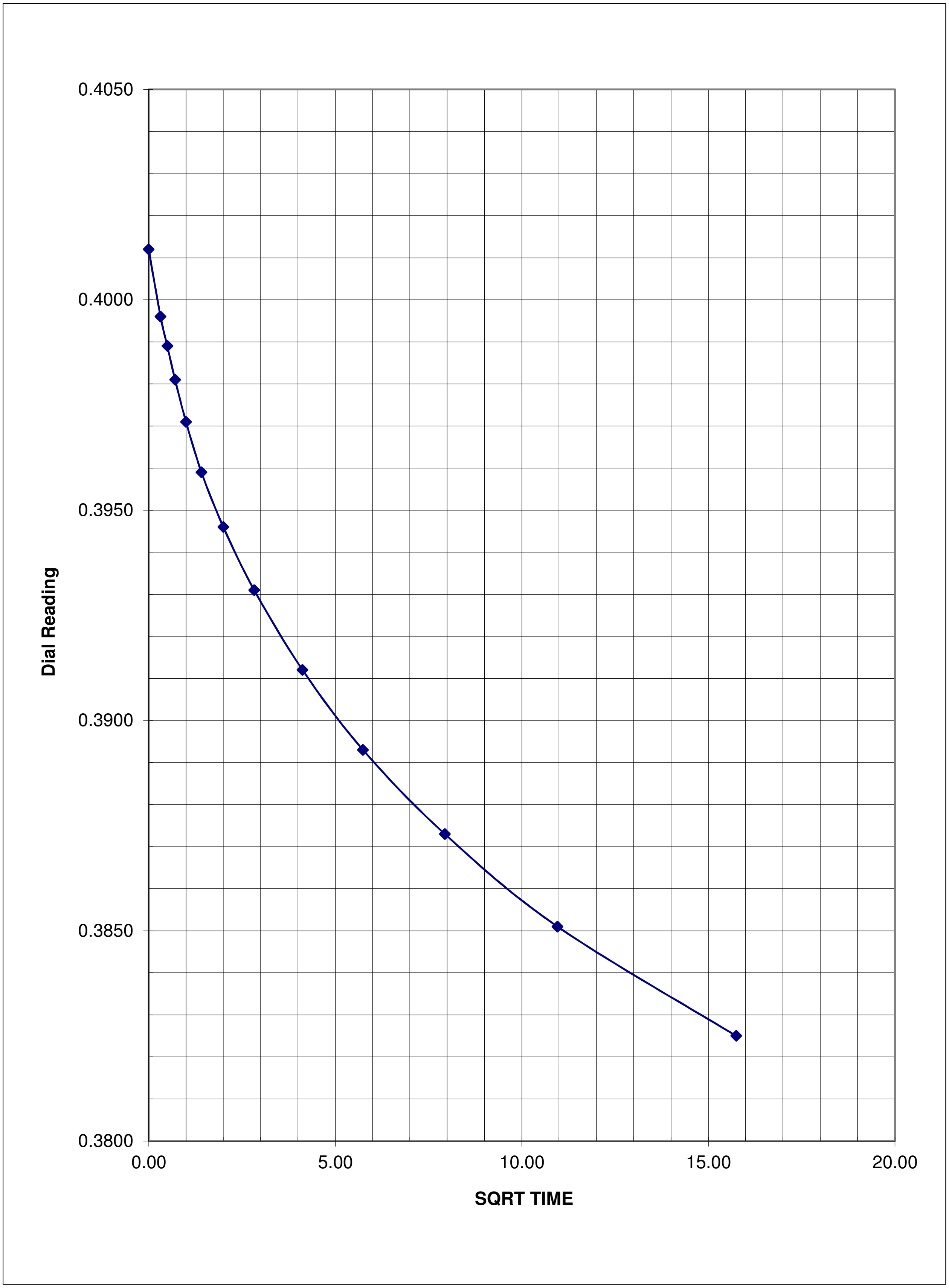
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 3/2/2010 **Depth (ft):** 20

Load Increment (psf): 1050

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4012***
6s		0.1	0.32	0.3996
15s		0.25	0.50	0.3989
30s		0.5	0.71	0.3981
1 min		1	1.00	0.3971
2 min		2	1.41	0.3959
4 min		4	2.00	0.3946
8 min		8	2.83	0.3931
15 min	17	17	4.12	0.3912
30 min	33	33	5.74	0.3893
1hr	63	63	7.94	0.3873
2 hr		120	10.95	0.3851
4 hr	4:08	248	15.75	0.3825
8 hr		453	21.28	
16 hr		1390	37.28	
24 hr		1550	39.37	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3989	0.3981	0.3971
D:4	0.3971	0.3959	0.3946
Delta 1:4	0.0018	0.0022	0.0025
D_o (calc)	0.4007	0.4003	0.3996



Project: 107510 **Sample:** SPT1

Date: 3/2/2010 **Depth (ft):** 20

Load Increment (psf): 1050

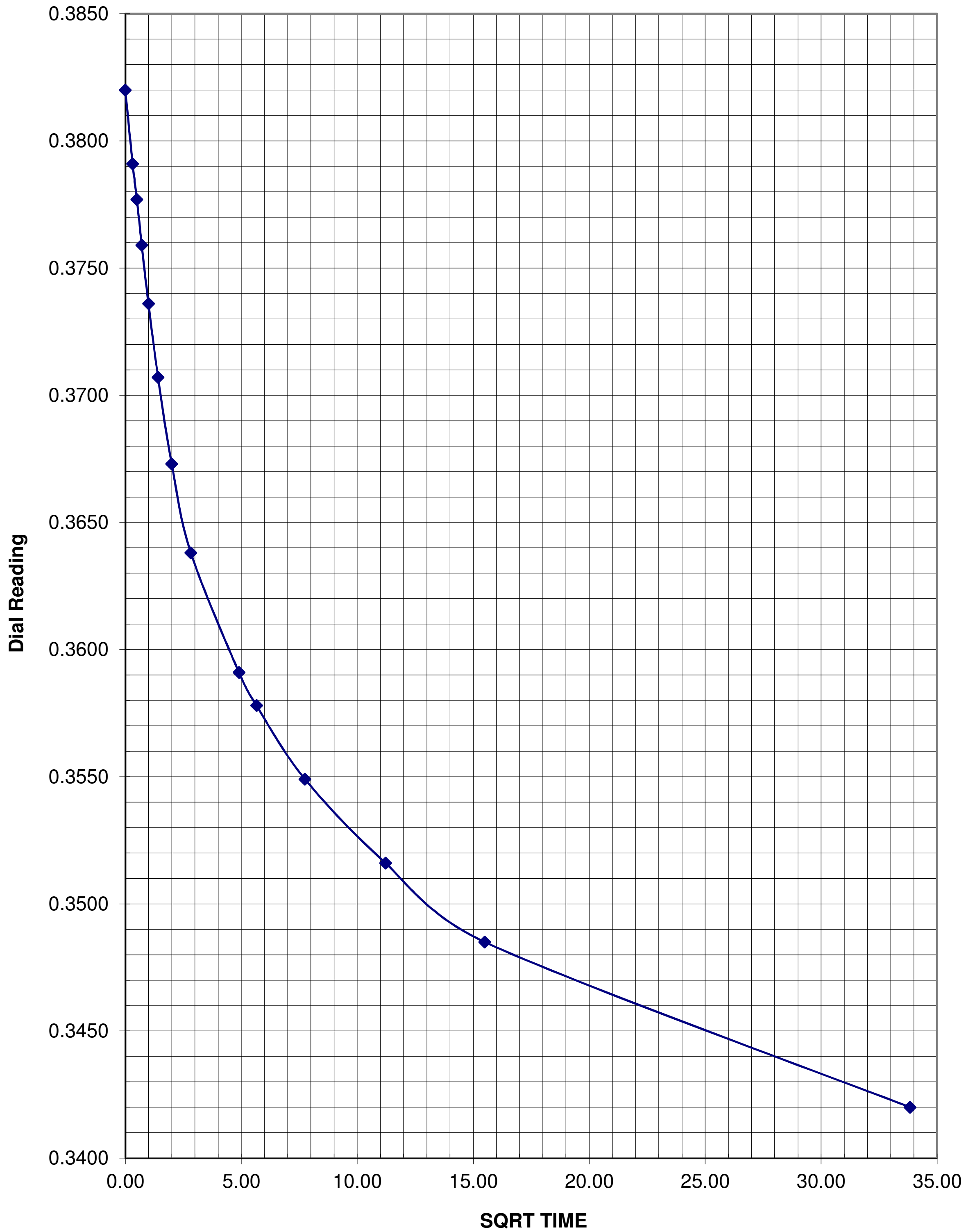
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 3/2/2010 **Depth (ft):** 20

Load Increment (psf): **1625**

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.3820***
6s		0.1	0.32	0.3791
15s		0.25	0.50	0.3777
30s		0.5	0.71	0.3759
1 min		1	1.00	0.3736
2 min		2	1.41	0.3707
4 min		4	2.00	0.3673
8 min		8	2.83	0.3638
15 min	24	24	4.90	0.3591
30 min	32	32	5.66	0.3578
1hr		60	7.75	0.3549
2 hr	2:06	126	11.22	0.3516
4 hr		240	15.49	0.3485
8 hr	19:05	1145	33.84	0.3420
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3777	0.3759	0.3736
D:4	0.3736	0.3707	0.3673
Delta 1:4	0.0041	0.0052	0.0063
D_o (calc)	0.3818	0.3811	0.3799



Project:	**107510**	**Sample:**	**SPT1**
Date:	**3/2/2010**	**Depth (ft):**	**20**

Load Increment (psf): 1625

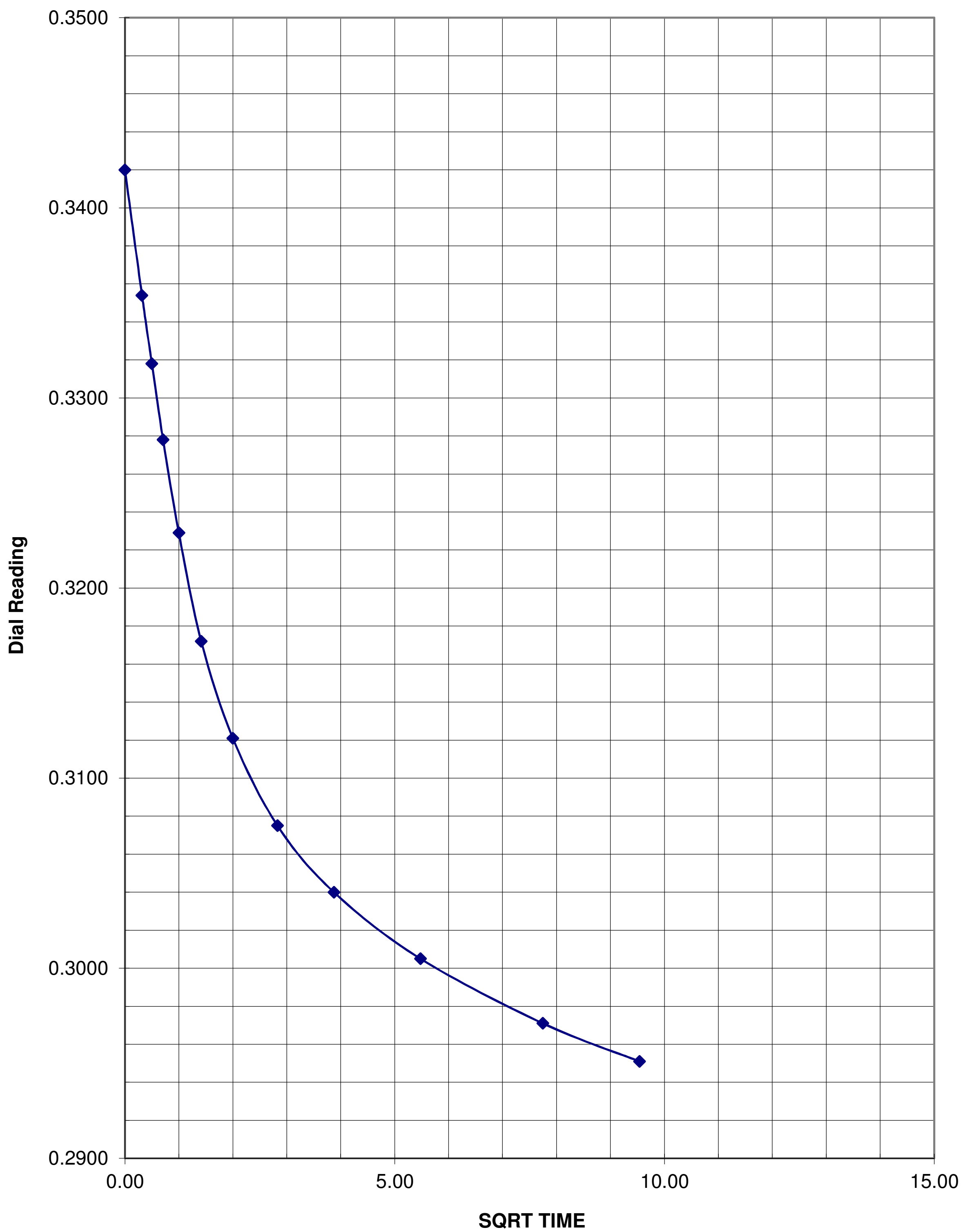
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 3/3/2010 **Depth (ft):** 20

Load Increment (psf): 3200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.3420***
6s		0.1	0.32	0.3354
15s		0.25	0.50	0.3318
30s		0.5	0.71	0.3278
1 min		1	1.00	0.3229
2 min		2	1.41	0.3172
4 min		4	2.00	0.3121
8 min		8	2.83	0.3075
15 min		15	3.87	0.3040
30 min		30	5.48	0.3005
1hr		60	7.75	0.2971
2 hr	1:31	91	9.54	0.2951
4 hr		210	14.49	
8 hr		496	22.27	
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation			
Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.3318	0.3278	0.3229
D:4	0.3229	0.3172	0.3121
Delta 1:4	0.0089	0.0106	0.0108
D_o (calc)	0.3407	0.3384	0.3337



Project: 107510 **Sample:** SPT-1

Date: 3/3/2010 **Depth (ft):** 20

Load Increment (psf): 3200

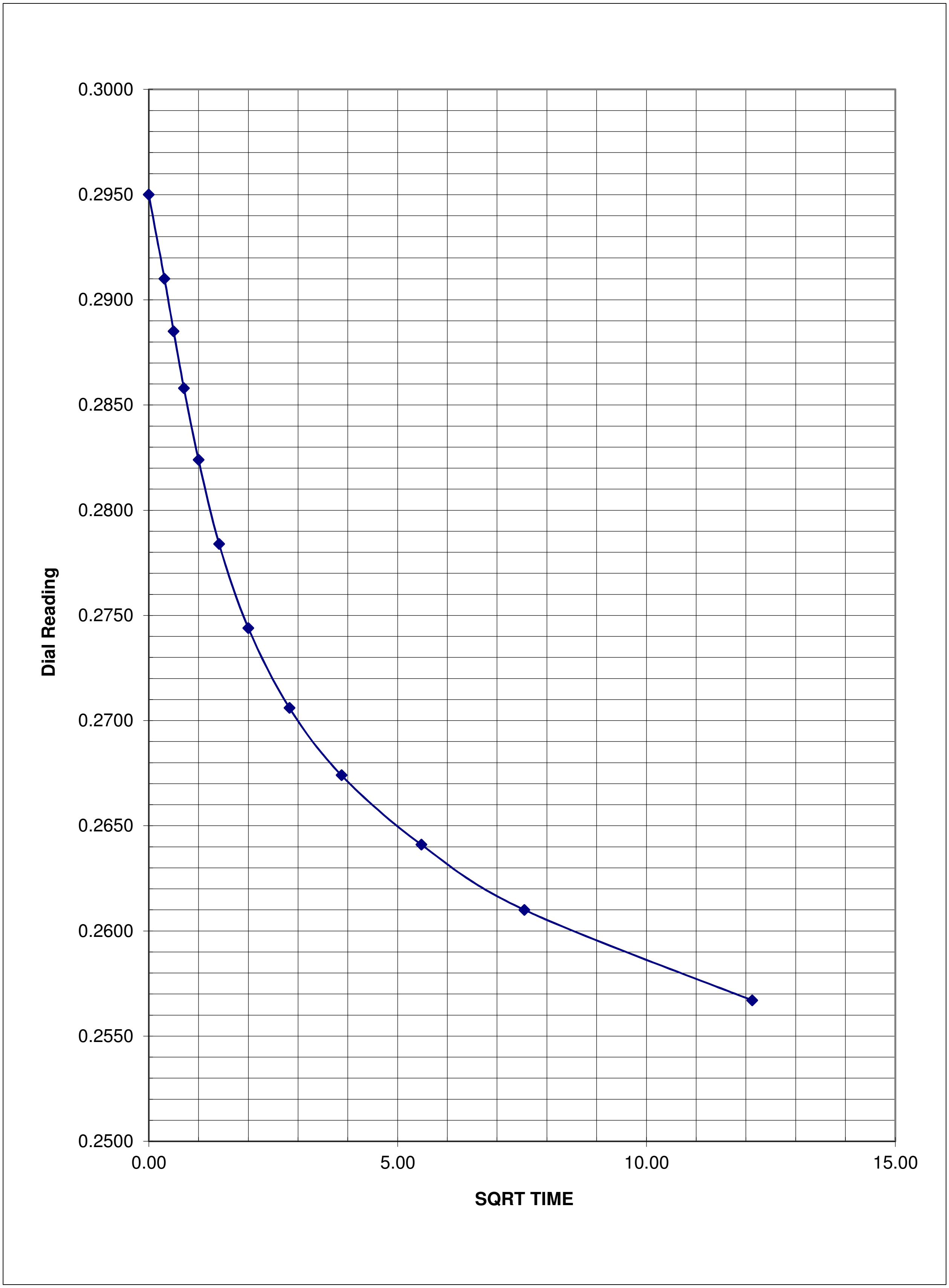
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 3/3/2010 **Depth (ft):** 20

Load Increment (psf): 4800

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.2950***
6s		0.1	0.32	0.2910
15s		0.25	0.50	0.2885
30s		0.5	0.71	0.2858
1 min		1	1.00	0.2824
2 min		2	1.41	0.2784
4 min		4	2.00	0.2744
8 min		8	2.83	0.2706
15 min		15	3.87	0.2674
30 min		30	5.48	0.2641
1hr	57	57	7.55	0.2610
2 hr	2:27	147	12.12	0.2567
4 hr		240	15.49	
8 hr		496	22.27	
16 hr		1359	36.86	
24 hr		1550	39.37	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.2885	0.2858	0.2824
D:4	0.2824	0.2784	0.2744
Delta 1:4	0.0061	0.0074	0.0080
D_o (calc)	0.2946	0.2932	0.2904



Project:	107510	Sample:	SPT-1
Date:	3/3/2010	Depth (ft):	20
		Load Increment (psf):	4800

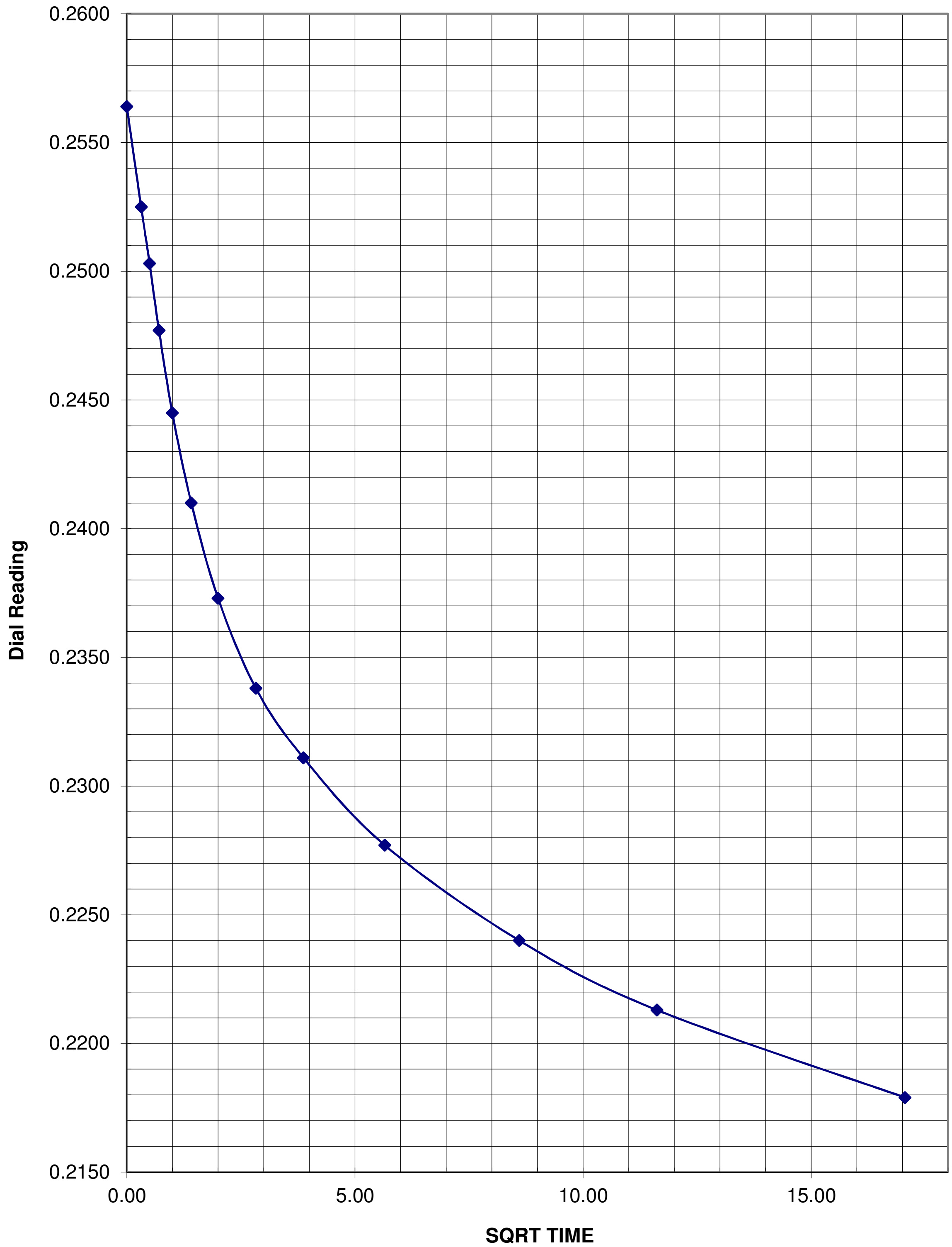
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT1
Date: 3/3/2010 **Depth (ft):** 20

Load Increment (psf): **7200**

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.2564***
6s		0.1	0.32	0.2525
15s		0.25	0.50	0.2503
30s		0.5	0.71	0.2477
1 min		1	1.00	0.2445
2 min		2	1.41	0.2410
4 min		4	2.00	0.2373
8 min		8	2.83	0.2338
15 min		15	3.87	0.2311
30 min	32	32	5.66	0.2277
1hr	1:14	74	8.60	0.2240
2 hr	2:15	135	11.62	0.2213
4 hr	4:51	291	17.06	0.2179
8 hr	18:11	1091	33.03	
16 hr		1359	36.86	
24 hr		1550	39.37	

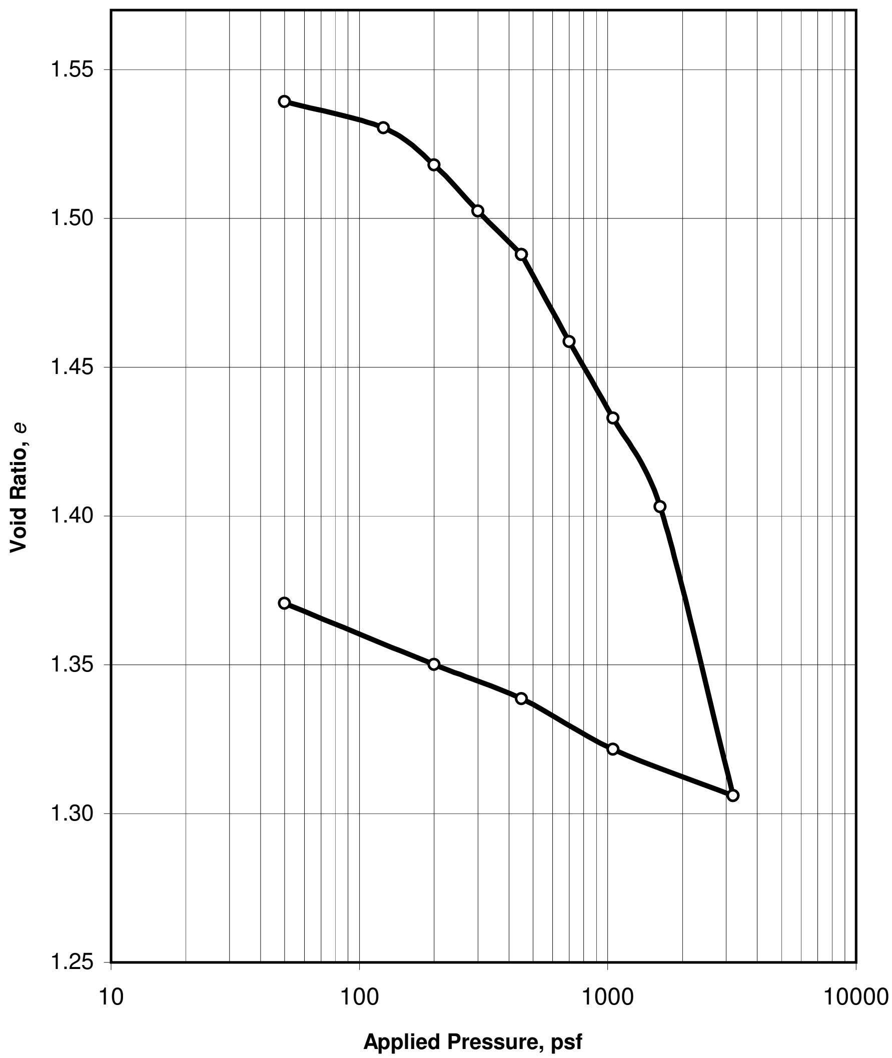
Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.2503	0.2477	0.2445
D:4	0.2445	0.241	0.2373
Delta 1:4	0.0058	0.0067	0.0072
D_o (calc)	0.2561	0.2544	0.2517

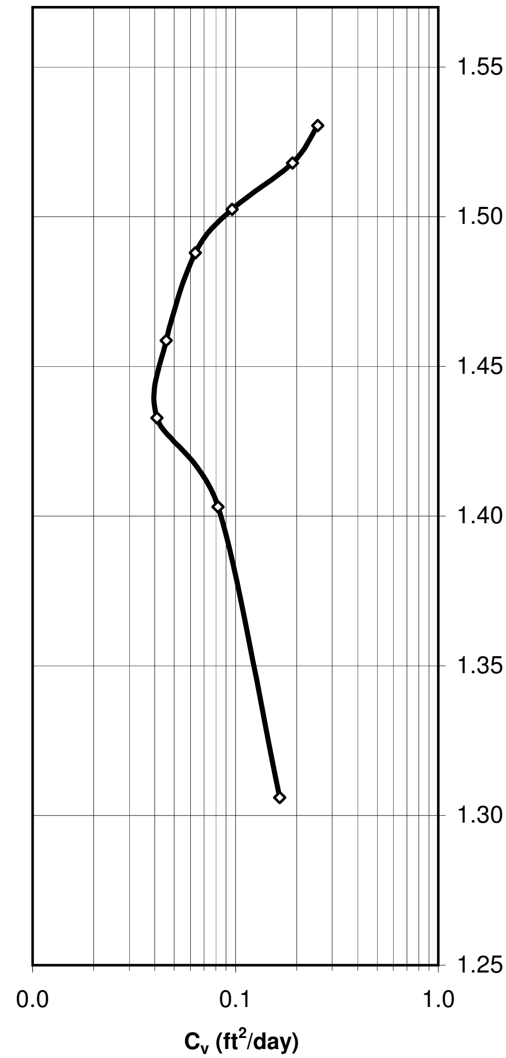


Project: 107510 **Sample:** SPT-1

Date: 3/3/2010 **Depth (ft):** 20

Load Increment (psf): 7200





Boring	Sample	Depth (ft)	LL	PL	Spec Gravity	Sample Description
SPT-2	ARK-SPT-2	22.5-24.5'	73	41	2.661	CH - Fat Clay

	Moisture Content (%)	Dry Density (pcf)	Void Ratio	Satruation (%)
INITIAL	57.1	65.4	1.539	98.7
FINAL	51.6	70.0	1.371	--

Recompresion Index $Cr^{(1)}$	Compression Index $Cc^{(1)}$	Est(1) Preconsolidation Pressure, Po' (pcf)
0.150	0.03	3,900

SAMPLE PREPARATION: ☐ Remolded ☑ Intact

(1) Estimated preconsolidation pressure and index values (Cr/Cc) generally based on Casagrande Method.

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Test Date:	23-Nov-09
Tested By:	RPG
Checked By:	SAS
File:	SPT-2@22.5' Consol
Lab No.:	2592

PROJECT NO.: 107510

CONSOLIDATION TEST

Arkema Early Action
Portland, Oregon

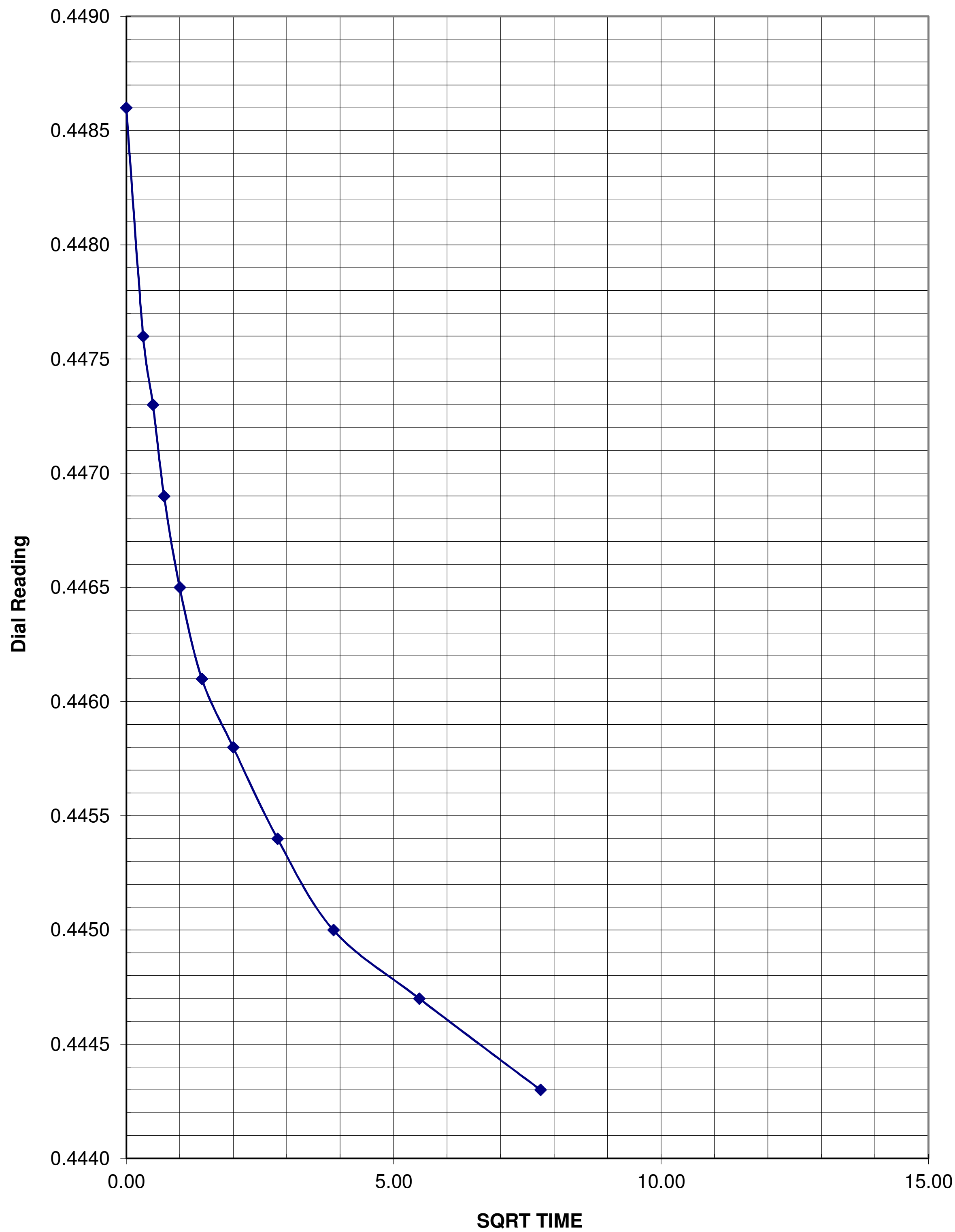
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT2
Date: 11/23/2009 **Depth (ft):** 22.5

Load Increment (psf): 125

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4486***
6s	target	0.1	0.32	0.4476
15s	target	0.25	0.50	0.4473
30s	target	0.5	0.71	0.4469
1 min	target	1	1.00	0.4465
2 min	target	2	1.41	0.4461
4 min	target	4	2.00	0.4458
8 min	target	8	2.83	0.4454
15 min	stop	15	3.87	0.4450
30 min		30	5.48	0.4447
1hr		60	7.75	0.4443
2 hr			0.00	
4 hr			0.00	
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4473	0.4469	0.4465
D:4	0.4465	0.4461	0.4458
Delta 1:4	0.0008	0.0008	0.0007
D_o (calc)	0.4481	0.4477	0.4472



Project: 107510
Date: 11/23/2009

Sample: SPT2
Depth (ft): 22.5
Load Increment (psf): 125

LOAD INCREMENT WORK SHEET

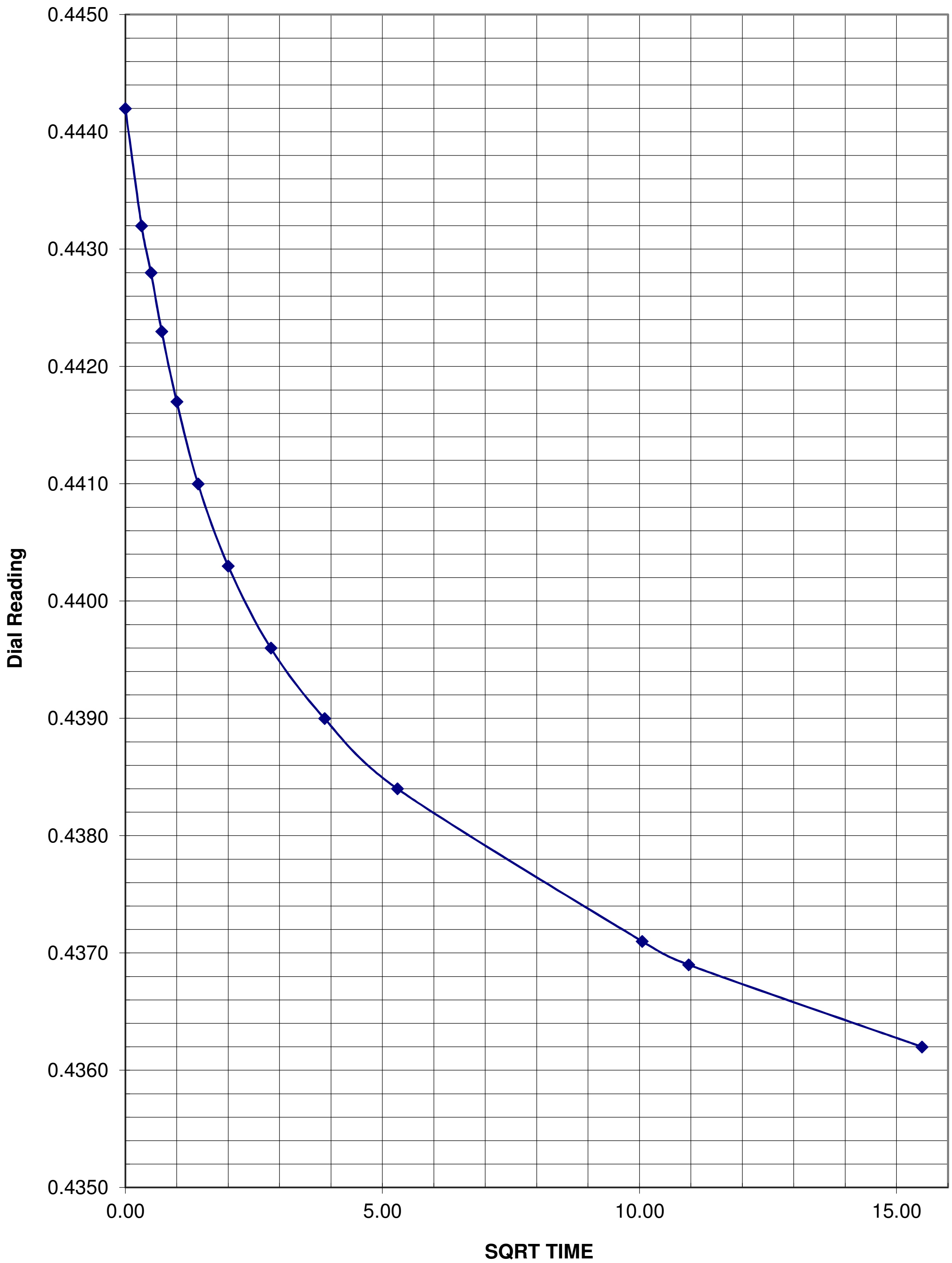
Project: 107510 **Sample:** SPT-2
Date: 11/23/2009 **Depth (ft):** 22.5

Load Increment (psf): 200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start	0.0001	0.0001	0.00	***0.4442***
6s	0.1	0.1	0.32	0.4432
15s	0.25	0.25	0.50	0.4428
30s	0.5	0.5	0.71	0.4423
1 min		1	1.00	0.4417
2 min		2	1.41	0.4410
4 min		4	2.00	0.4403
8 min		8	2.83	0.4396
15 min		15	3.87	0.4390
30 min		28	5.29	0.4384
1hr		101	10.05	0.4371
2 hr		120	10.95	0.4369
4 hr		240	15.49	0.4362
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.4428	0.4423	0.4417
D:4	0.4417	0.441	0.4403
Delta 1:4	0.0011	0.0013	0.0014
D_o (calc)	0.4439	0.4436	0.4431



Project: 107510
Date: 11/23/2009

Sample: SPT-2
Depth (ft): 22.5
Load Increment (psf): 200

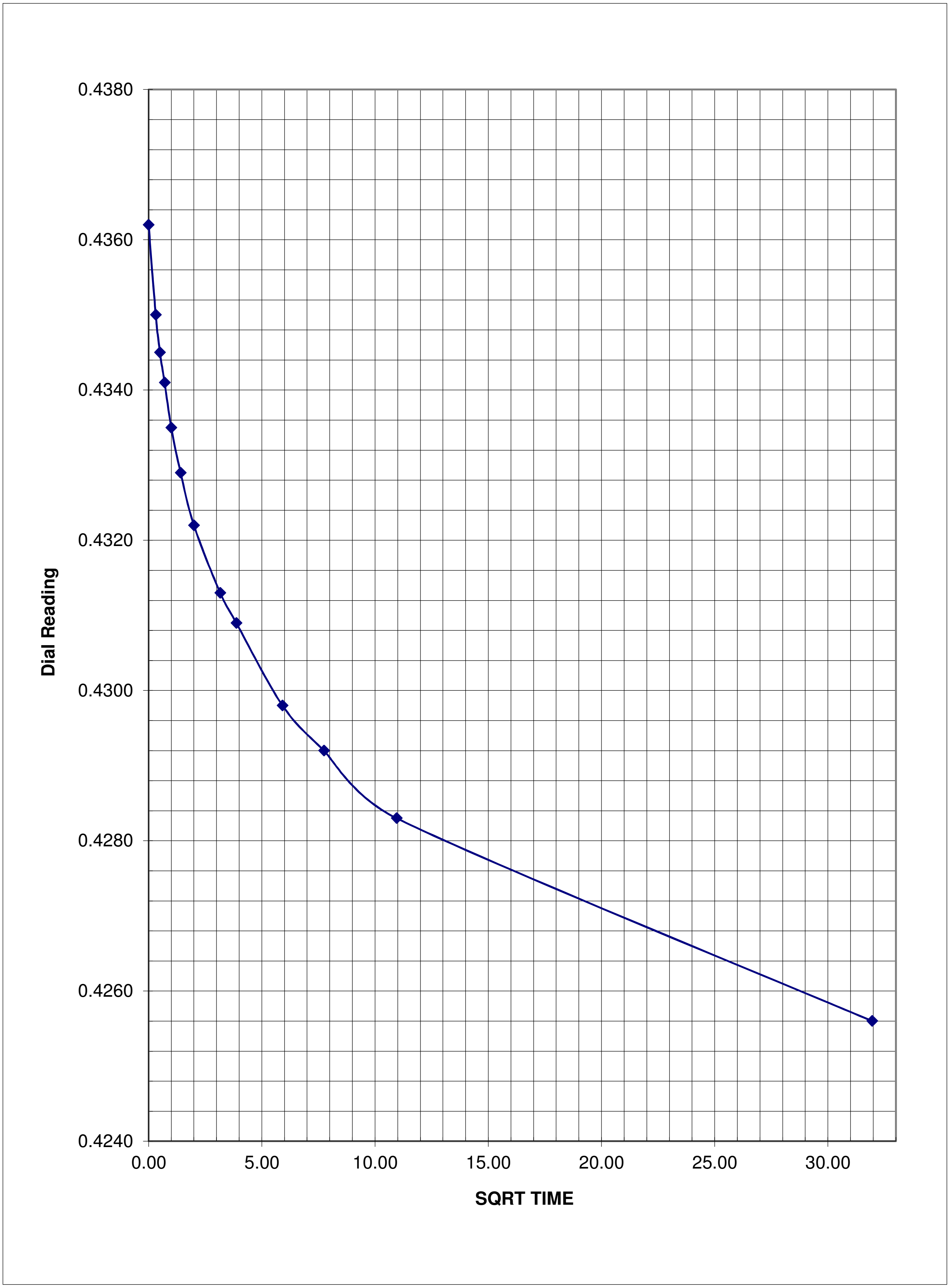
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT2
Date: 11/23/2009 **Depth (ft):** 22.5

Load Increment (psf): 300

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4362***
6s		0.1	0.32	0.4350
15s		0.25	0.50	0.4345
30s		0.5	0.71	0.4341
1 min		1	1.00	0.4335
2 min		2	1.41	0.4329
4 min		4	2.00	0.4322
8 min		10	3.16	0.4313
15 min		15	3.87	0.4309
30 min		35	5.92	0.4298
1hr		60	7.75	0.4292
2 hr		120	10.95	0.4283
4 hr		1021	31.95	0.4256
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4345	0.4341	0.4335
D:4	0.4335	0.4329	0.4322
Delta 1:4	0.001	0.0012	0.0013
D_o (calc)	0.4355	0.4353	0.4348



Project:	**107510**	**Sample:**	**SPT2**
Date:	**11/23/2009**	**Depth (ft):**	**22.5**
		Load Increment (psf):	**300**

LOAD INCREMENT WORK SHEET

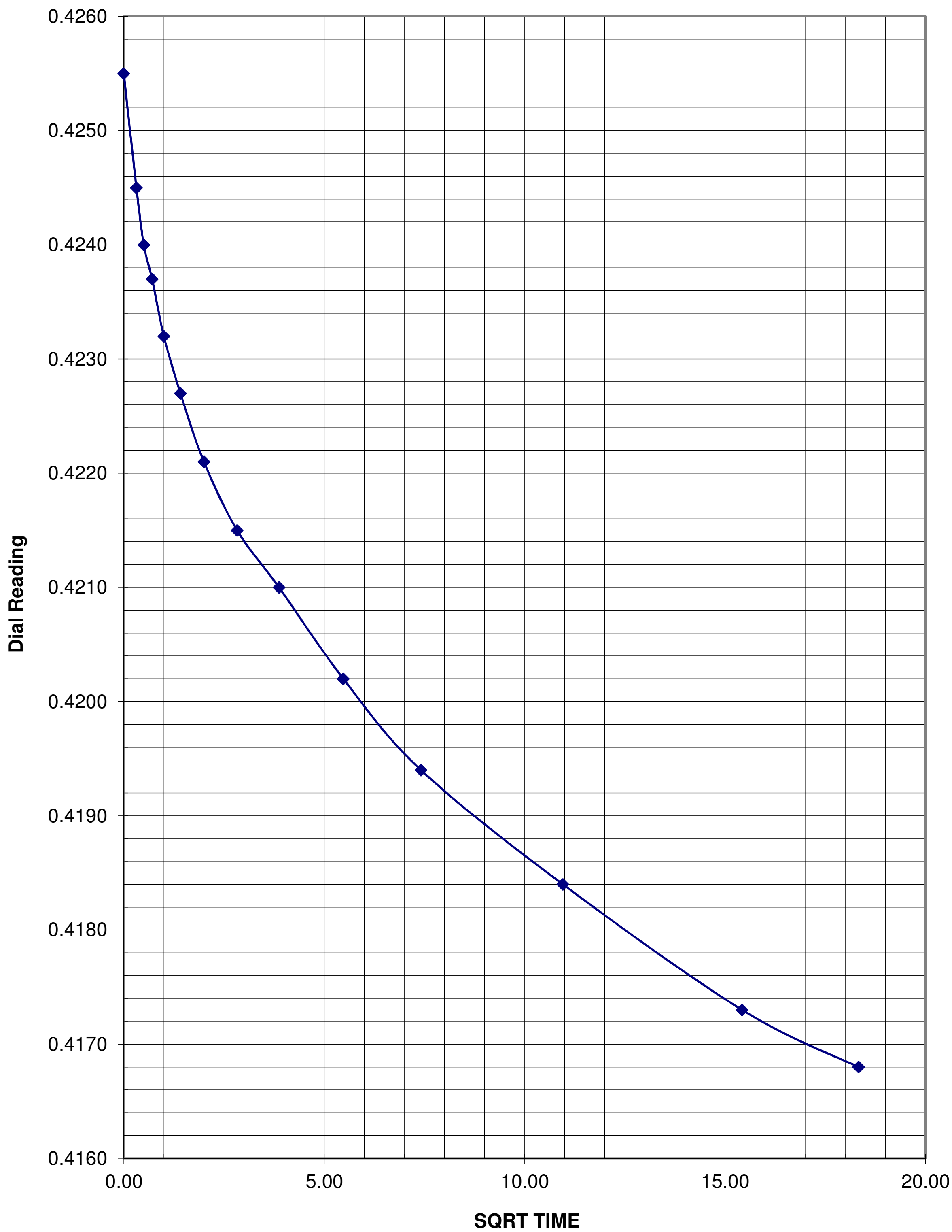
Project: 107510 **Sample:** SPT2
Date: 11/24/2009 **Depth (ft):** 22.5

Load Increment (psf): 450

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4255***
6s		0.1	0.32	0.4245
15s		0.25	0.50	0.4240
30s		0.5	0.71	0.4237
1 min		1	1.00	0.4232
2 min		2	1.41	0.4227
4 min		4	2.00	0.4221
8 min		8	2.83	0.4215
15 min		15	3.87	0.4210
30 min		30	5.48	0.4202
1hr		55	7.42	0.4194
2 hr		120	10.95	0.4184
4 hr		238	15.43	0.4173
8 hr		336	18.33	0.4168
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.4240	0.4237	0.4232
D:4	0.4232	0.4227	0.4221
Delta 1:4	0.0008	0.001	0.0011
D_o (calc)	0.4248	0.4247	0.4243



Project:	**107510**	**Sample:**	**SPT2**
Date:	**11/24/2009**	**Depth (ft):**	**22.5**
		Load Increment (psf):	**450**

LOAD INCREMENT WORK SHEET

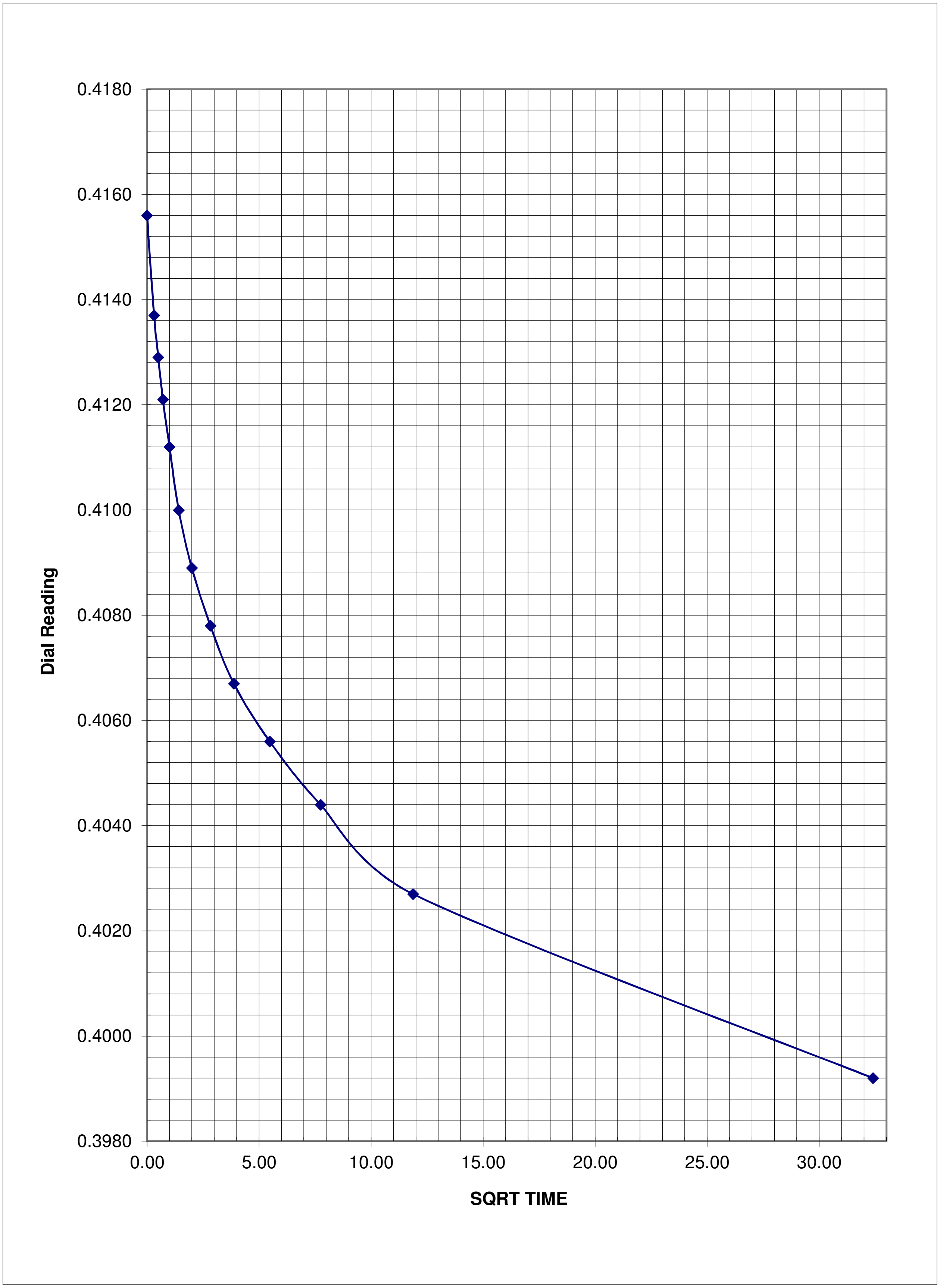
Project: 107510 **Sample:** SPT2
Date: 11/24/2009 **Depth (ft):** 22.5

Load Increment (psf): 700

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.4156***
6s		0.1	0.32	0.4137
15s		0.25	0.50	0.4129
30s		0.5	0.71	0.4121
1 min		1	1.00	0.4112
2 min		2	1.41	0.4100
4 min		4	2.00	0.4089
8 min		8	2.83	0.4078
15 min		15	3.87	0.4067
30 min		30	5.48	0.4056
1hr		60	7.75	0.4044
2 hr		141	11.87	0.4027
4 hr		1050	32.40	0.3992
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.4129	0.4121	0.4112
D:4	0.4112	0.41	0.4089
Delta 1:4	0.0017	0.0021	0.0023
D_o (calc)	0.4146	0.4142	0.4135



Project: 107510
Date: 11/24/2009

Sample: SPT2
Depth (ft): 22.5
Load Increment (psf): 700

LOAD INCREMENT WORK SHEET

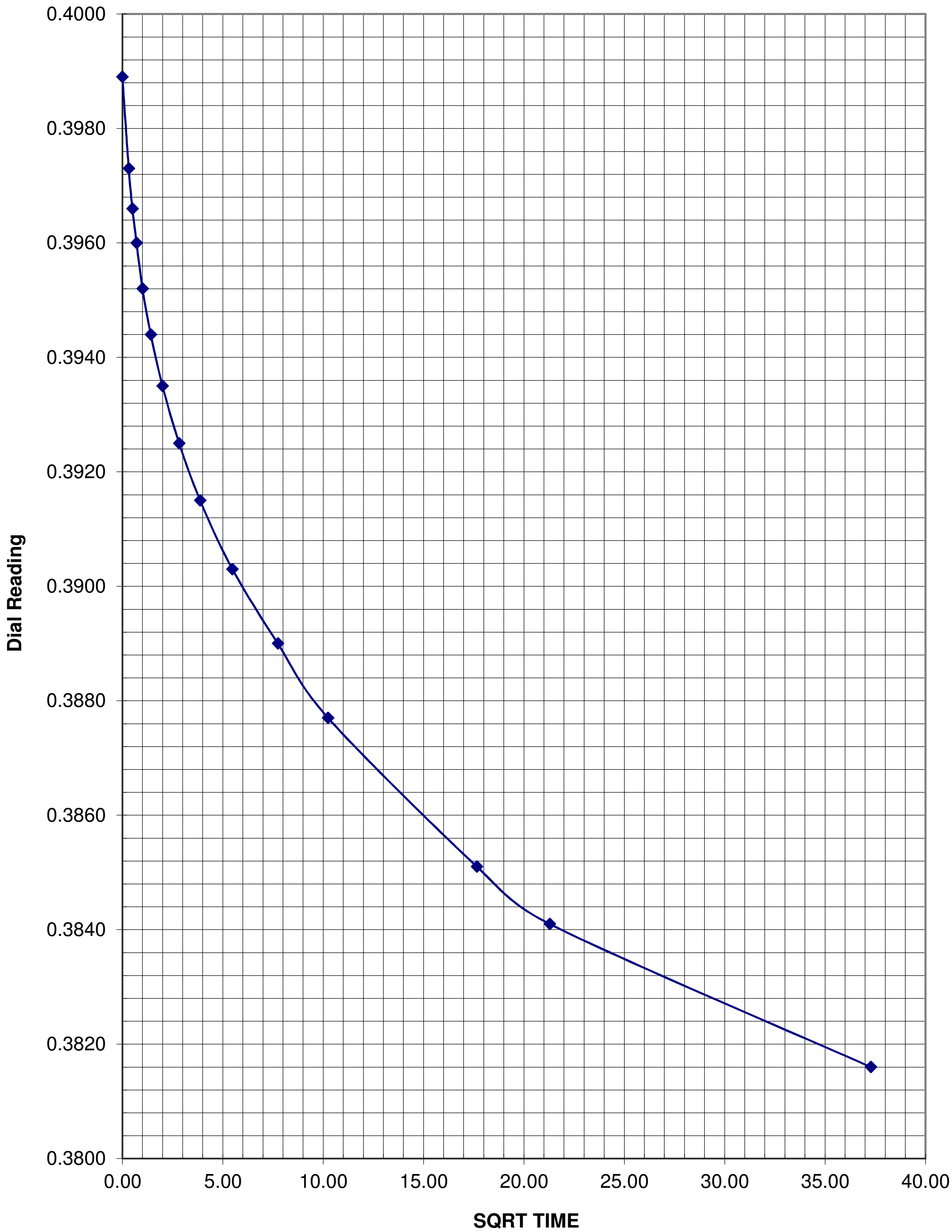
Project: 107510 **Sample:** SPT2
Date: 11/25/2009 **Depth (ft):** 22.5

Load Increment (psf): 1050

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.3989***
6s		0.1	0.32	0.3973
15s		0.25	0.50	0.3966
30s		0.5	0.71	0.3960
1 min		1	1.00	0.3952
2 min		2	1.41	0.3944
4 min		4	2.00	0.3935
8 min		8	2.83	0.3925
15 min		15	3.87	0.3915
30 min		30	5.48	0.3903
1hr		60	7.75	0.3890
2 hr		105	10.25	0.3877
4 hr		312	17.66	0.3851
8 hr		453	21.28	0.3841
16 hr		1390	37.28	0.3816
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.3966	0.396	0.3952
D:4	0.3952	0.3944	0.3935
Delta 1:4	0.0014	0.0016	0.0017
D_o (calc)	0.3980	0.3976	0.3969



Project: 107510
Date: 11/25/2009

Sample: SPT2
Depth (ft): 22.5
Load Increment (psf): 1050

LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT2

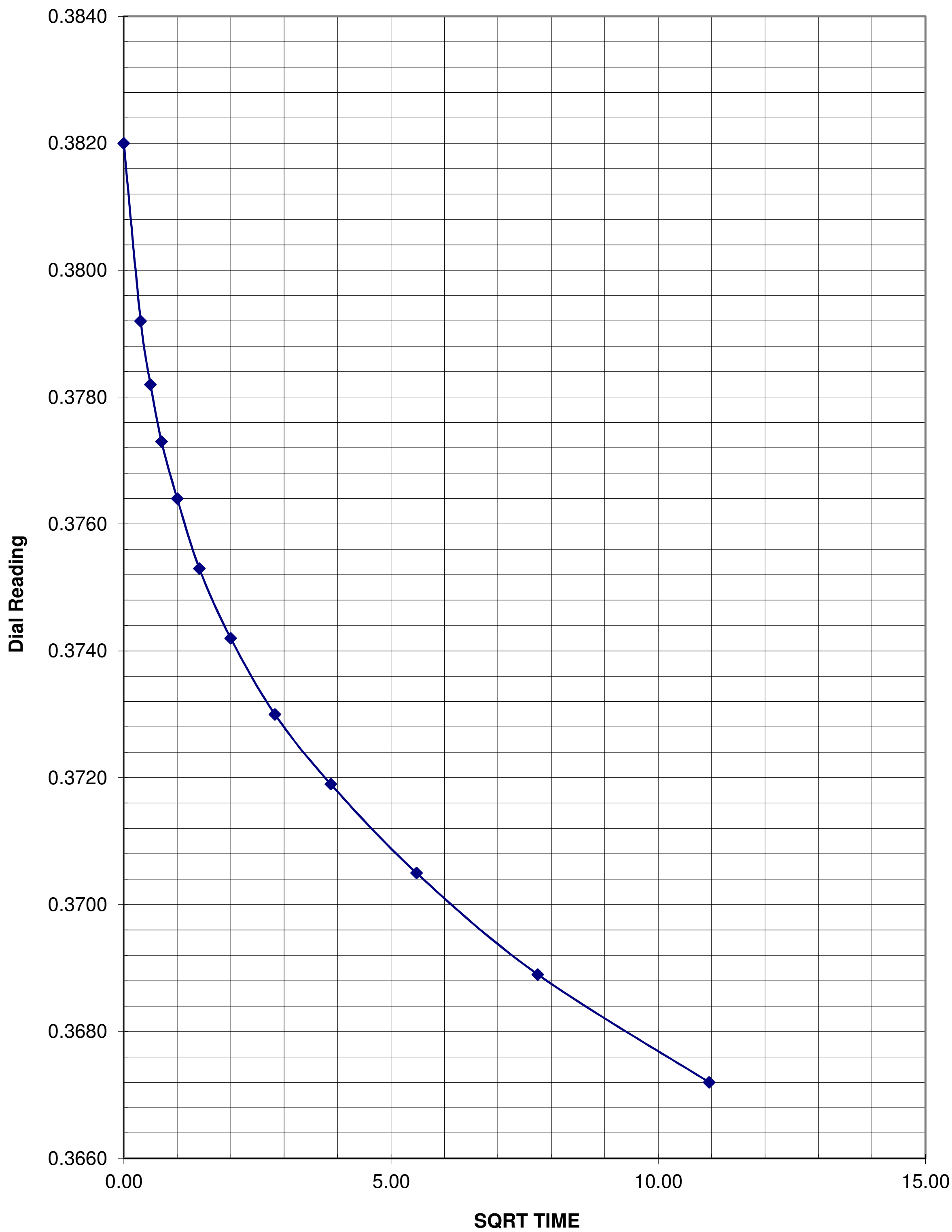
Date: 11/30/2009 **Depth (ft):** 22.5

Load Increment (psf): 1625

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.3820***
6s		0.1	0.32	0.3792
15s		0.25	0.50	0.3782
30s		0.5	0.71	0.3773
1 min		1	1.00	0.3764
2 min		2	1.41	0.3753
4 min		4	2.00	0.3742
8 min		8	2.83	0.3730
15 min		15	3.87	0.3719
30 min		30	5.48	0.3705
1hr		60	7.75	0.3689
2 hr		120	10.95	0.3672
4 hr			0.00	
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.3782	0.3773	0.3764
D:4	0.3764	0.3753	0.3742
Delta 1:4	0.0018	0.002	0.0022
D_o (calc)	0.3800	0.3793	0.3786



Project: 107510
Date: 11/30/2009

Sample: SPT2
Depth (ft): 22.5
Load Increment (psf): 1625

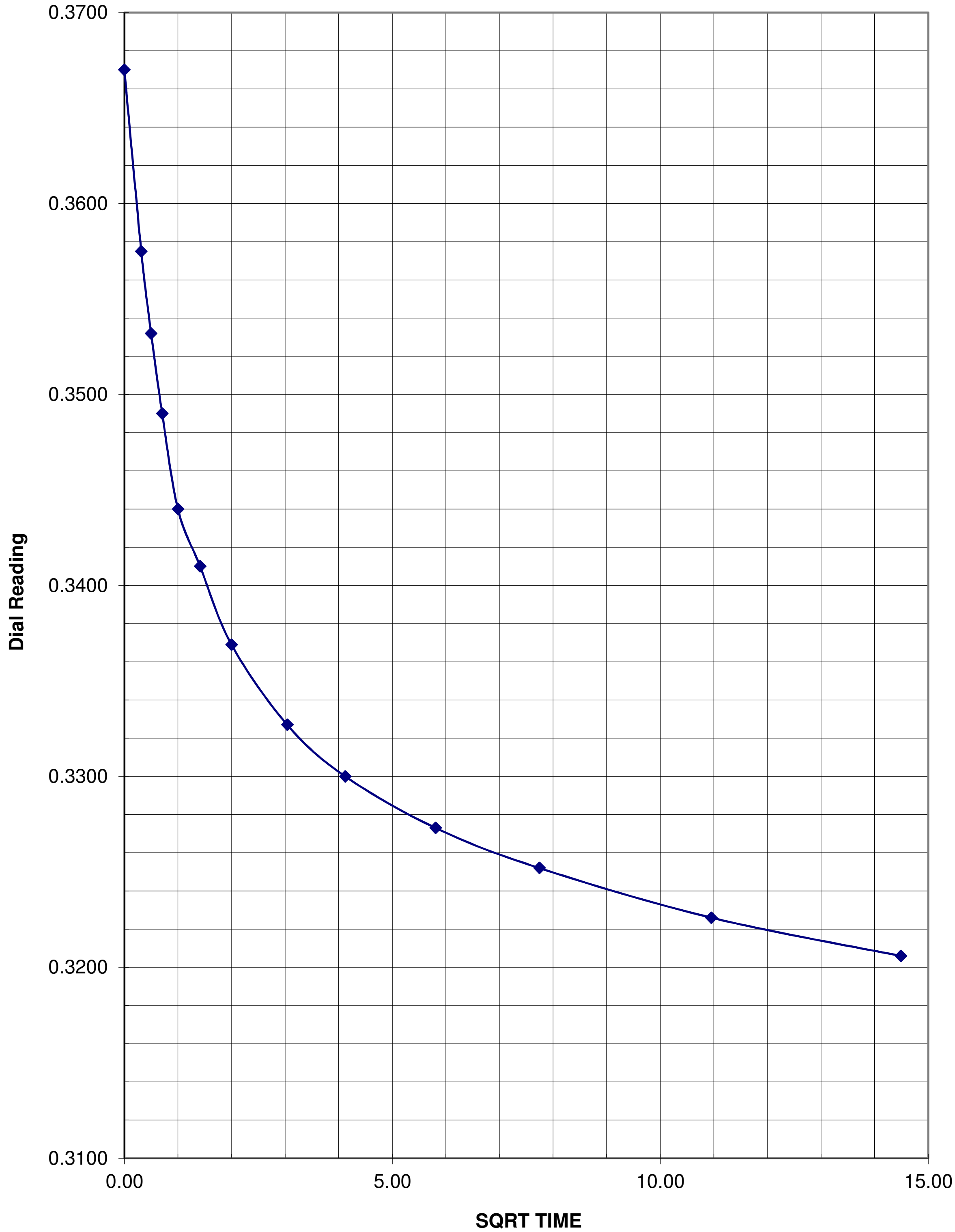
LOAD INCREMENT WORK SHEET

Project: 107510 **Sample:** SPT2
Date: 11/30/2009 **Depth (ft):** 22.5

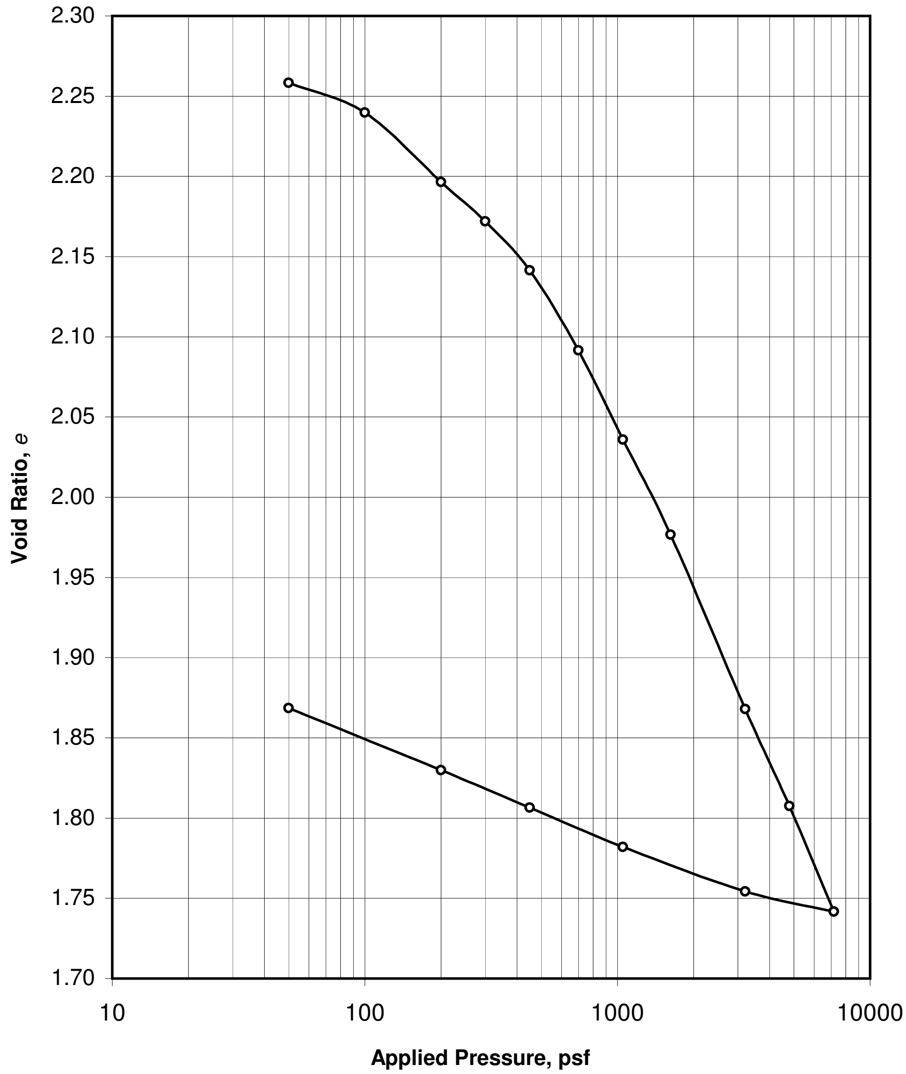
Load Increment (psf): 3200

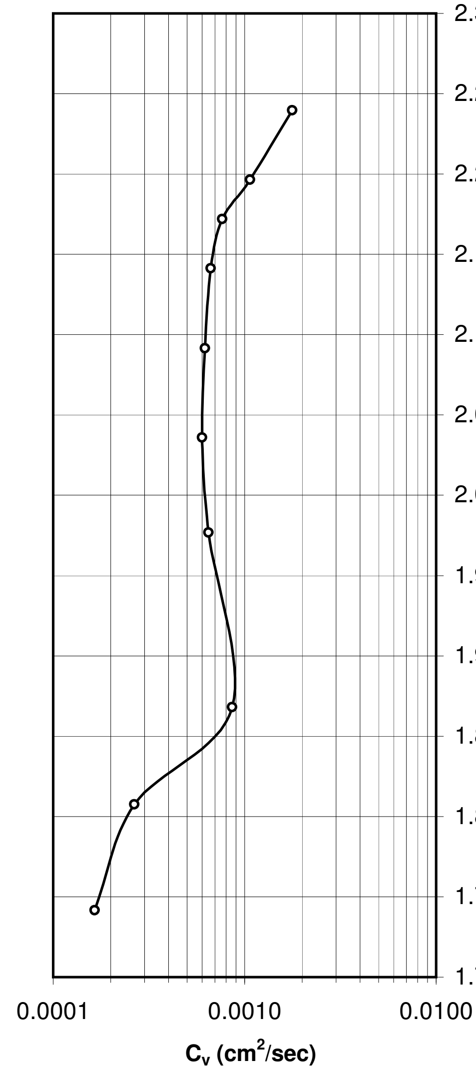
Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.0001	0.00	***0.3670***
6s		0.1	0.32	0.3575
15s		0.25	0.50	0.3532
30s		0.5	0.71	0.3490
1 min		1	1.00	0.3440
2 min		2	1.41	0.3410
4 min		4	2.00	0.3369
8 min	9:15	9.25	3.04	0.3327
15 min	17:00	17	4.12	0.3300
30 min		33.75	5.81	0.3273
1hr		60	7.75	0.3252
2 hr		120	10.95	0.3226
4 hr		210	14.49	0.3206
8 hr			0.00	
16 hr			0.00	
24 hr			0.00	

Log-Time D_o Calculation			
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3532	0.349	0.3440
D:4	0.3440	0.341	0.3369
Delta 1:4	0.0092	0.008	0.0071
D_o (calc)	0.3624	0.3570	0.3511



Project:	107510	Sample:	SPT2
Date:	11/30/2009	Depth (ft):	22.5
		Load Increment (psf):	3200





Boring	Sample	Depth (ft)	LL	PL	Spec Grav	Sample Description
SPT-3	SPT-3	10.9'-11'	63	36	2.7	Dark Brown SILT (MH)

	Moisture Content (%)	Dry Density (pcf)	Void Ratio	Satruation (%)
INITIAL	80.4	51.7	2.258	96.1
FINAL	55.6	58.7	1.869	100.00

Recompresion Index $Cr^{(1)}$	Compression Index $Cc^{(1)}$	Est(1) Preconsolidation Pressure, Po' (pcf)
n/a	n/a	n/a

SAMPLE PREPARATION: Wet Method

(1) Estimated preconsilidation pressure and index values (Cr/Cc) generally based on Casaegrade Method.

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Test Date:	7-Jan-10
Tested By:	RG
Checked By:	SAS
File:	SPT-3@11.0'
Lab No.:	2592

PROJECT NO.: 107510

CONSOLIDATION TEST

Arkema Early Action
Portland, Oregon

LOAD INCREMENT WORK SHEET

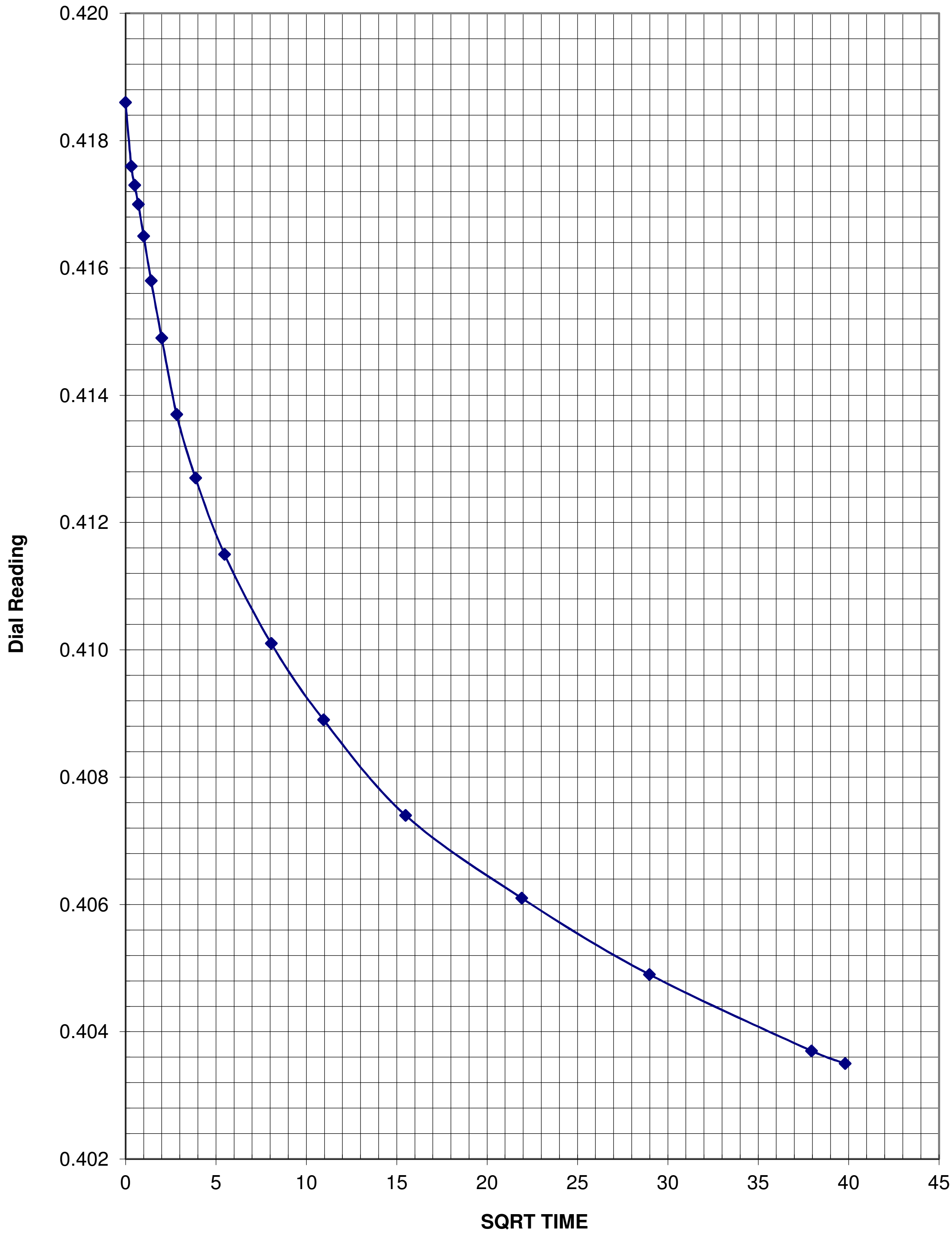
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 100

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.4186***
6s		0.1	0.32	0.4176
15s		0.25	0.50	0.4173
30s		0.5	0.71	0.4170
1 min		1	1.00	0.4165
2 min		2	1.41	0.4158
4 min		4	2.00	0.4149
8 min		8	2.83	0.4137
15 min		15	3.87	0.4127
30 min		30	5.48	0.4115
1hr		65	8.06	0.4101
2 hr		120	10.95	0.4089
4 hr		240	15.49	0.4074
8 hr		480	21.91	0.4061
16 hr		840	28.98	0.4049
24 hr		1440	37.95	0.4037
		1585	39.81	0.4035

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.4173	0.417	0.4165
D:4	0.4165	0.4158	0.4149
Delta 1:4	0.0008	0.0012	0.0016
D_o (calc)	0.4181	0.4182	0.4181



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**100**

LOAD INCREMENT WORK SHEET

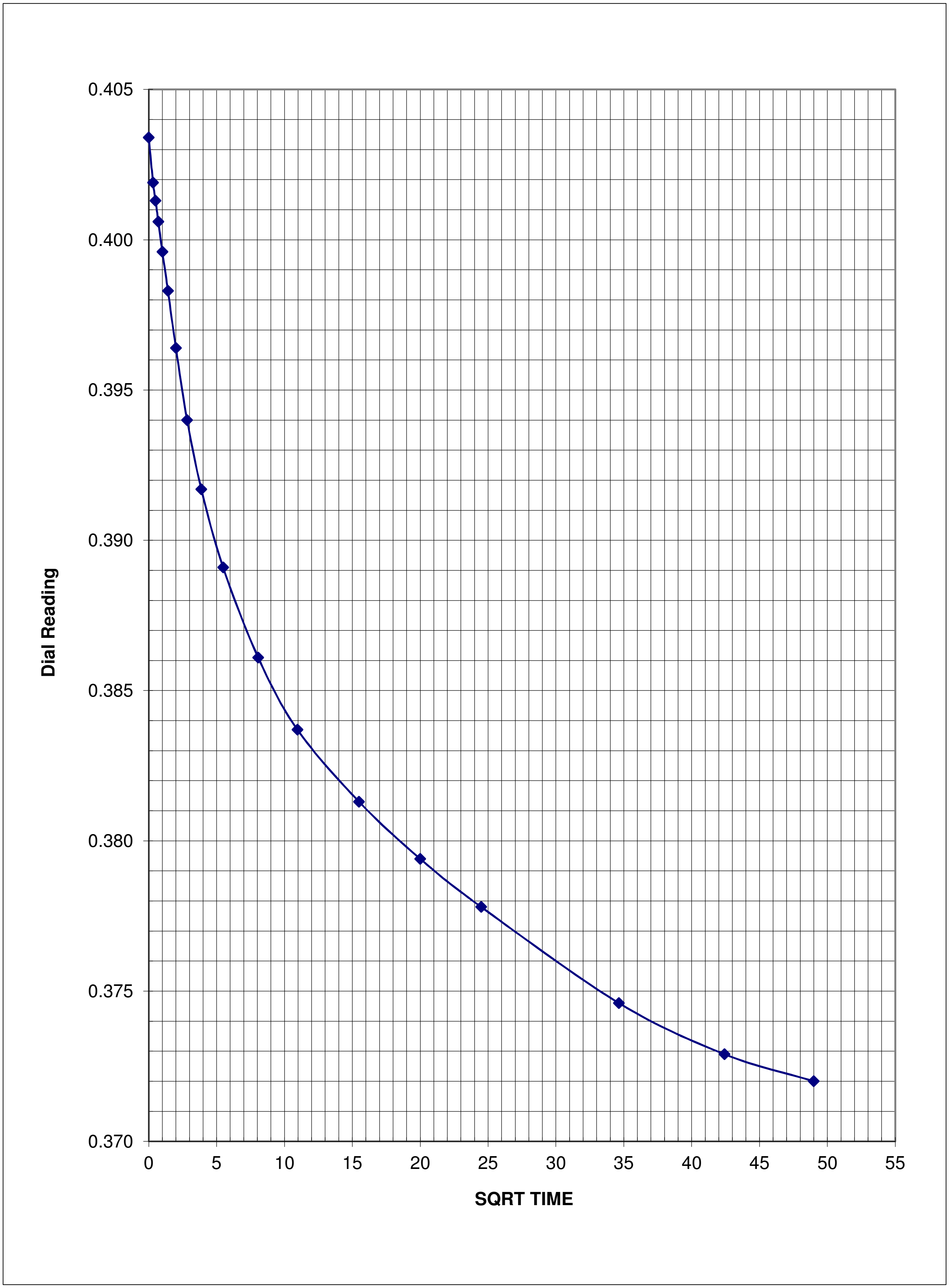
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.4034***
6s		0.1	0.32	0.4019
15s		0.25	0.50	0.4013
30s		0.5	0.71	0.4006
1 min		1	1.00	0.3996
2 min		2	1.41	0.3983
4 min		4	2.00	0.3964
8 min		8	2.83	0.3940
15 min		15	3.87	0.3917
30 min		30	5.48	0.3891
1hr		65	8.06	0.3861
2 hr		120	10.95	0.3837
4 hr		240	15.49	0.3813
8 hr		400	20.00	0.3794
16 hr		600	24.49	0.3778
24 hr		1200	34.64	0.3746
		1800	42.43	0.3729
		2400	48.99	0.3720

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4013	0.4006	0.3996
D:4	0.3996	0.3983	0.3964
Delta 1:4	0.0017	0.0023	0.0032
D_o (calc)	0.4030	0.4029	0.4028



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**200**

LOAD INCREMENT WORK SHEET

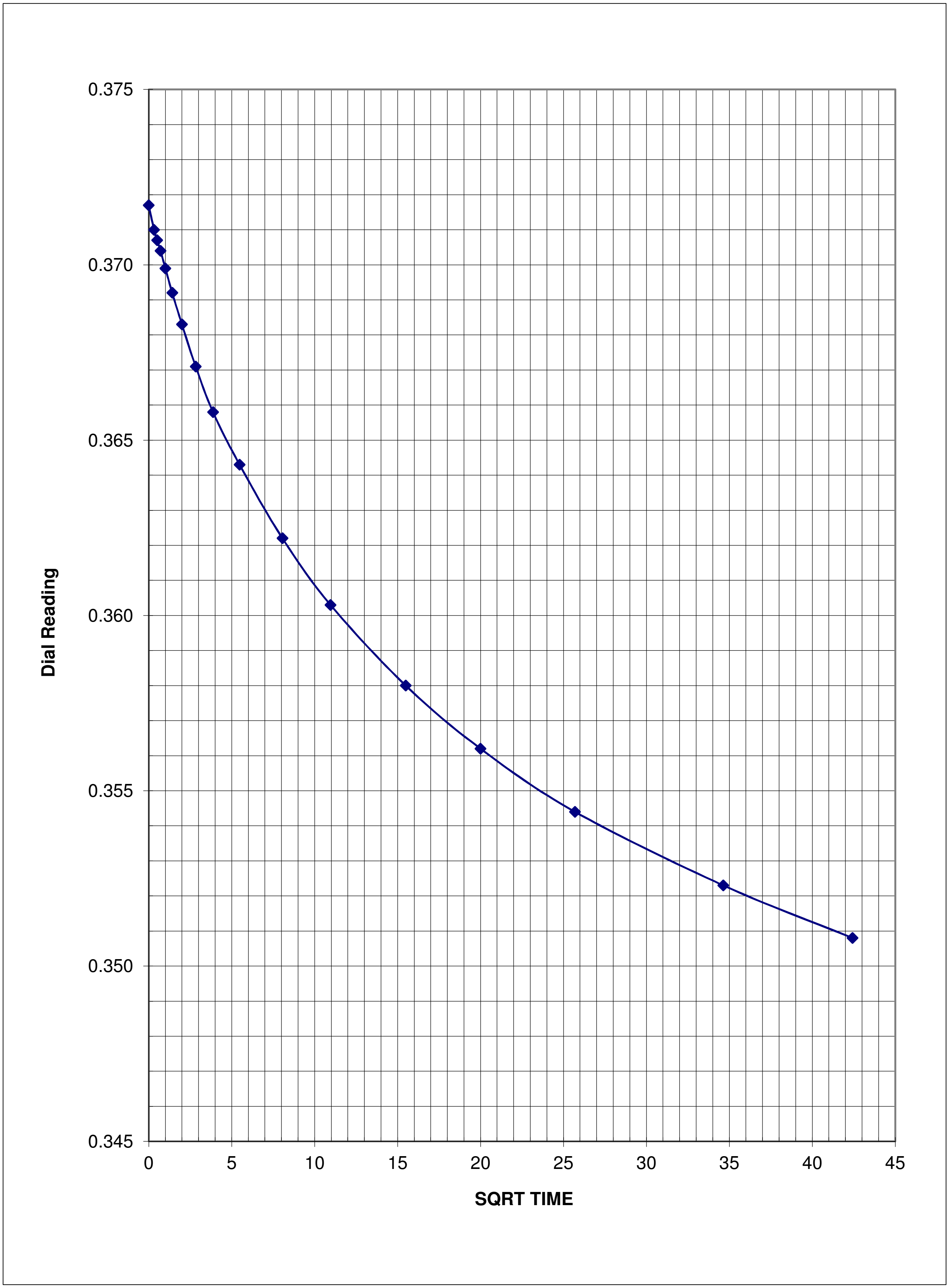
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 300

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.3717***
6s		0.1	0.32	0.3710
15s		0.25	0.50	0.3707
30s		0.5	0.71	0.3704
1 min		1	1.00	0.3699
2 min		2	1.41	0.3692
4 min		4	2.00	0.3683
8 min		8	2.83	0.3671
15 min		15	3.87	0.3658
30 min		30	5.48	0.3643
1hr		65	8.06	0.3622
2 hr		120	10.95	0.3603
4 hr		240	15.49	0.3580
8 hr		400	20.00	0.3562
16 hr		660	25.69	0.3544
24 hr		1200	34.64	0.3523
		1800	42.43	0.3508

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.3707	0.3704	0.3699
D:4	0.3699	0.3692	0.3683
Delta 1:4	0.0008	0.0012	0.0016
D_o (calc)	0.3715	0.3716	0.3715



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**300**

LOAD INCREMENT WORK SHEET

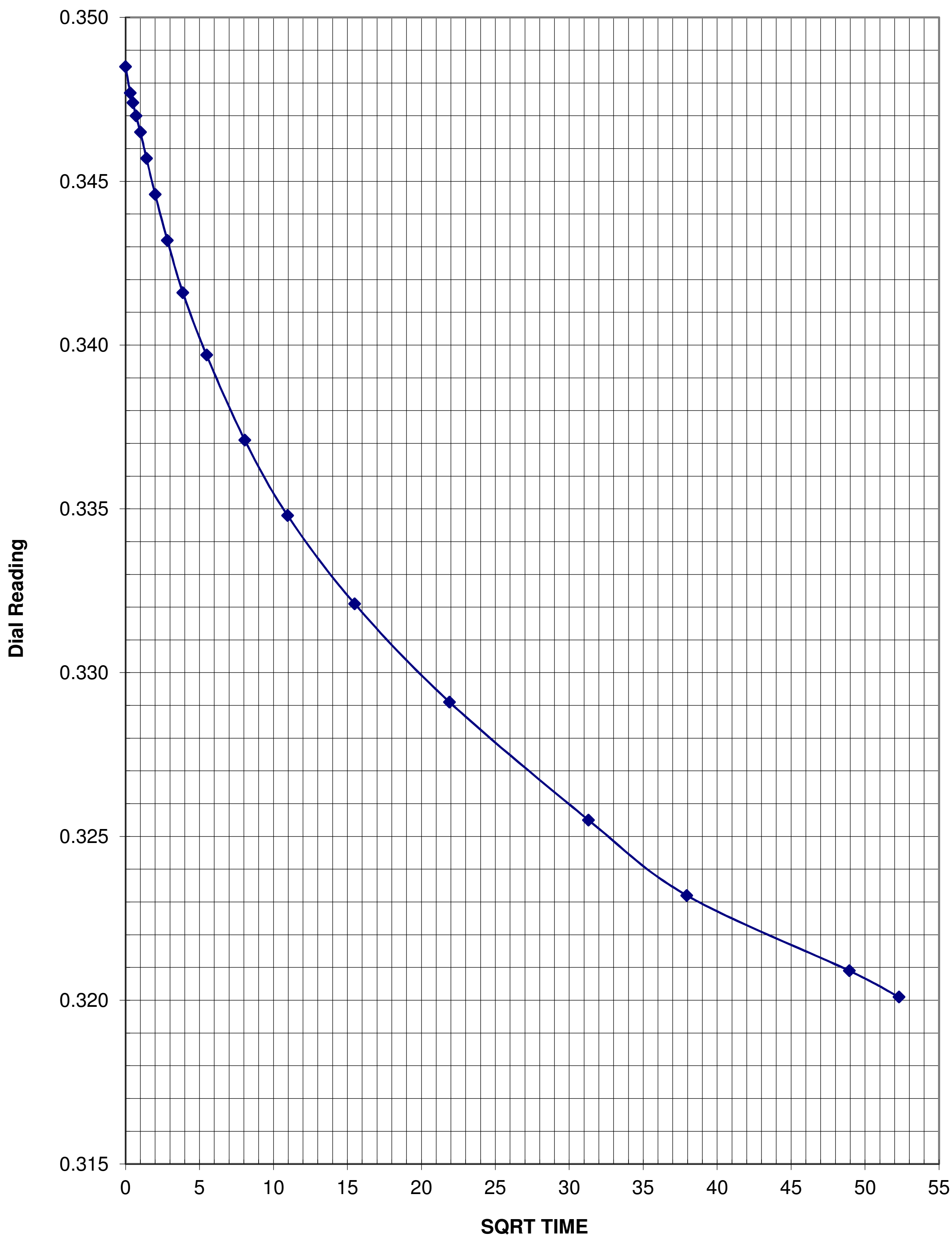
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 450

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.3485***
6s		0.1	0.32	0.3477
15s		0.25	0.50	0.3474
30s		0.5	0.71	0.3470
1 min		1	1.00	0.3465
2 min		2	1.41	0.3457
4 min		4	2.00	0.3446
8 min		8	2.83	0.3432
15 min		15	3.87	0.3416
30 min		30	5.48	0.3397
1hr		65	8.06	0.3371
2 hr		120	10.95	0.3348
4 hr		240	15.49	0.3321
8 hr		480	21.91	0.3291
16 hr		980	31.30	0.3255
24 hr		1440	37.95	0.3232
		2395	48.94	0.3209
		2735	52.30	0.3201

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3474	0.347	0.3465
D:4	0.3465	0.3457	0.3446
Delta 1:4	0.0009	0.0013	0.0019
D_o (calc)	0.3483	0.3483	0.3484



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**450**

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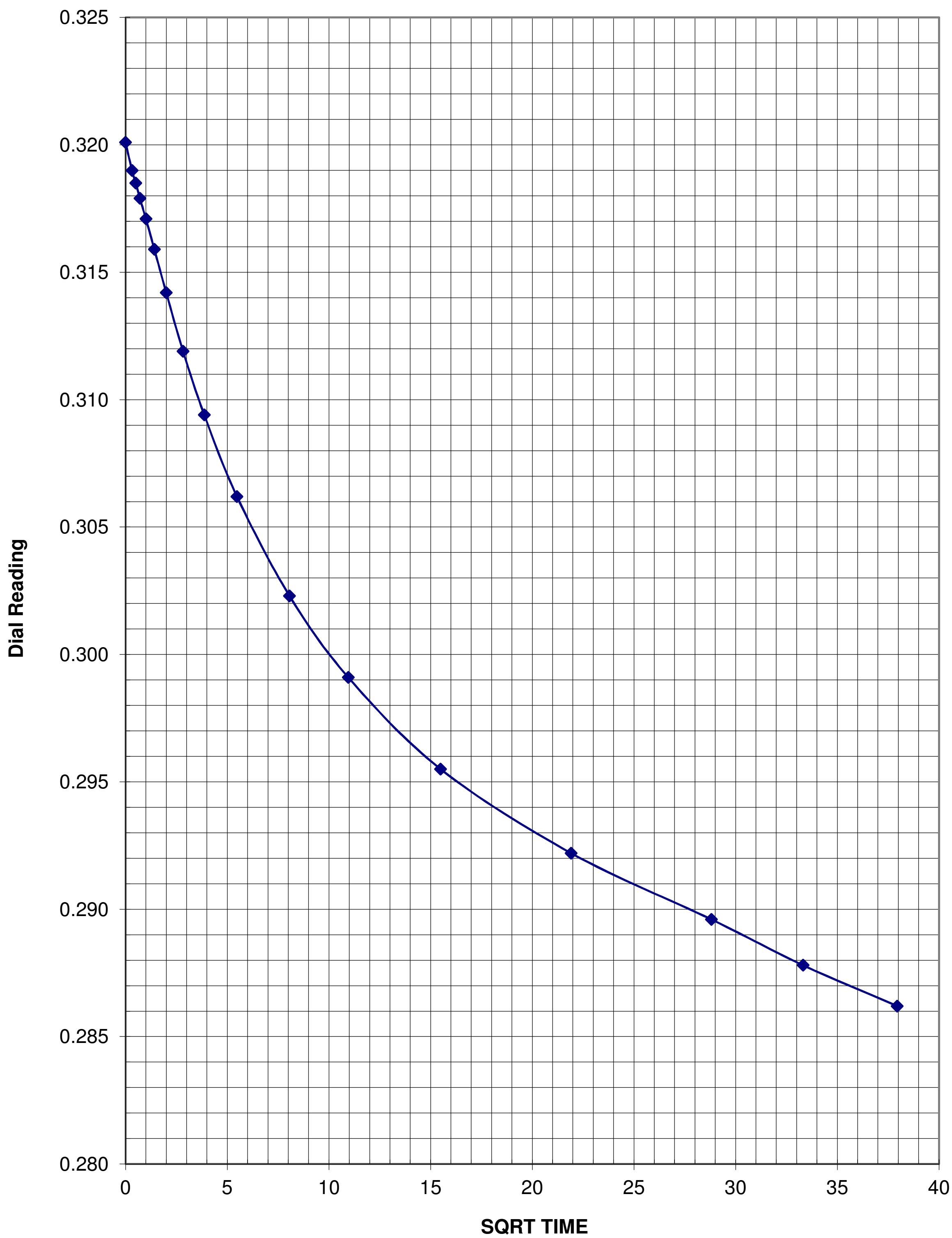
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 700

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.3201***
6s		0.1	0.32	0.3190
15s		0.25	0.50	0.3185
30s		0.5	0.71	0.3179
1 min		1	1.00	0.3171
2 min		2	1.41	0.3159
4 min		4	2.00	0.3142
8 min		8	2.83	0.3119
15 min		15	3.87	0.3094
30 min		30	5.48	0.3062
1hr		65	8.06	0.3023
2 hr		120	10.95	0.2991
4 hr		240	15.49	0.2955
8 hr		480	21.91	0.2922
16 hr		830	28.81	0.2896
24 hr		1110	33.32	0.2878
		1440	37.95	0.2862

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.3185	0.3179	0.3171
D:4	0.3171	0.3159	0.3142
Delta 1:4	0.0014	0.002	0.0029
D_o (calc)	0.3199	0.3199	0.3200



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**700**

LOAD INCREMENT WORK SHEET

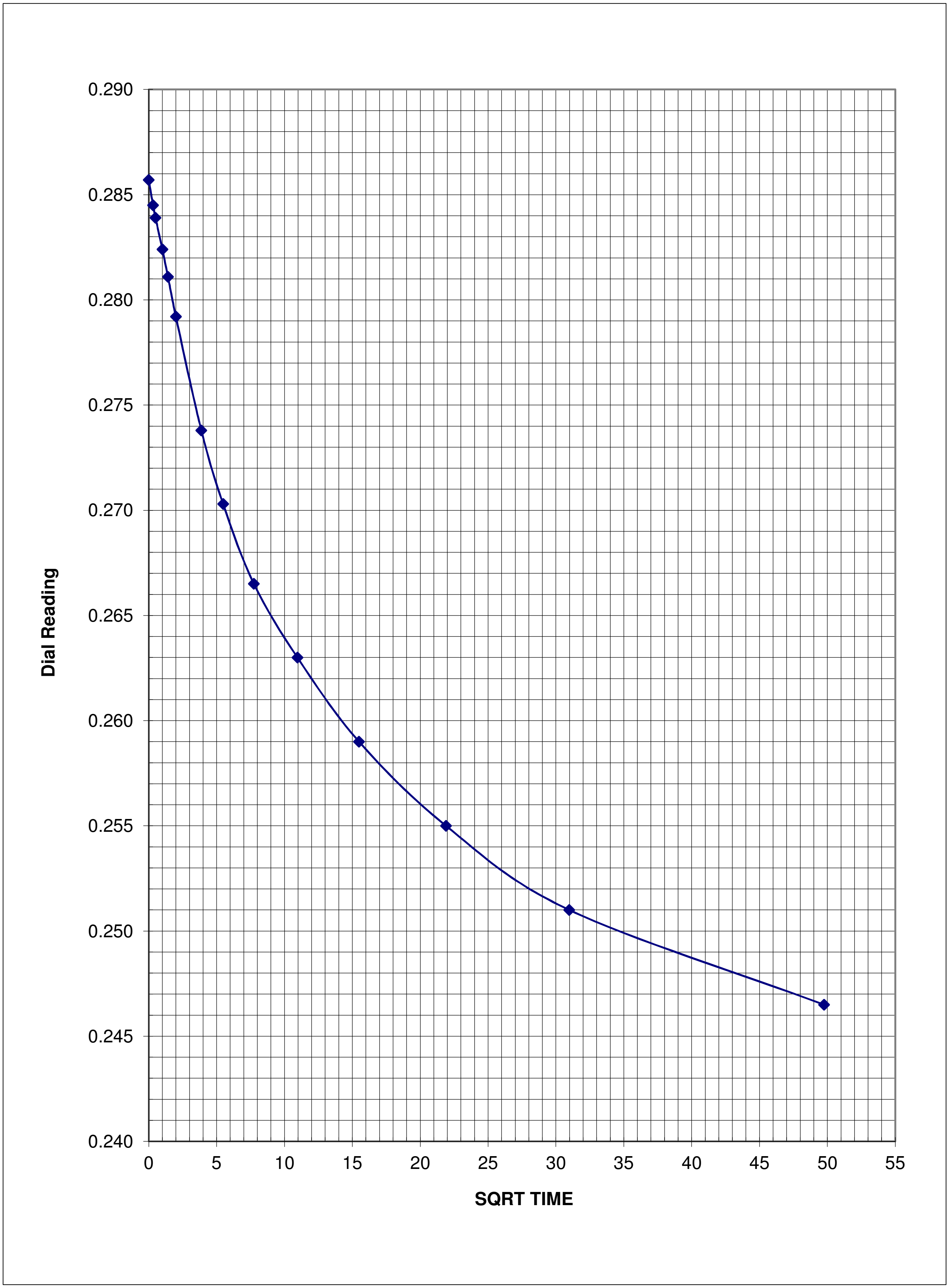
Project: 107510 **Sample:** SPT3
Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 1050

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2857***
6s		0.1	0.32	0.2845
15s		0.25	0.50	0.2839
30s		1	1.00	0.2824
1 min		2	1.41	0.2811
2 min		4	2.00	0.2792
4 min		15	3.87	0.2738
8 min		30	5.48	0.2703
15 min		60	7.75	0.2665
30 min		120	10.95	0.2630
1hr		240	15.49	0.2590
2 hr		480	21.91	0.2550
4 hr		960	30.98	0.2510
8 hr		2475	49.75	0.2465
16 hr				
24 hr				

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.2839	0.2824	0.2811
D:4	0.2811	0.2792	0.2738
Delta 1:4	0.0028	0.0032	0.0073
D_o (calc)	0.2867	0.2856	0.2884



Project: 107510 **Sample:** SPT3

Date: 1/7/2010 **Depth (ft):** 11

Load Increment (psf): 1050

LOAD INCREMENT WORK SHEET

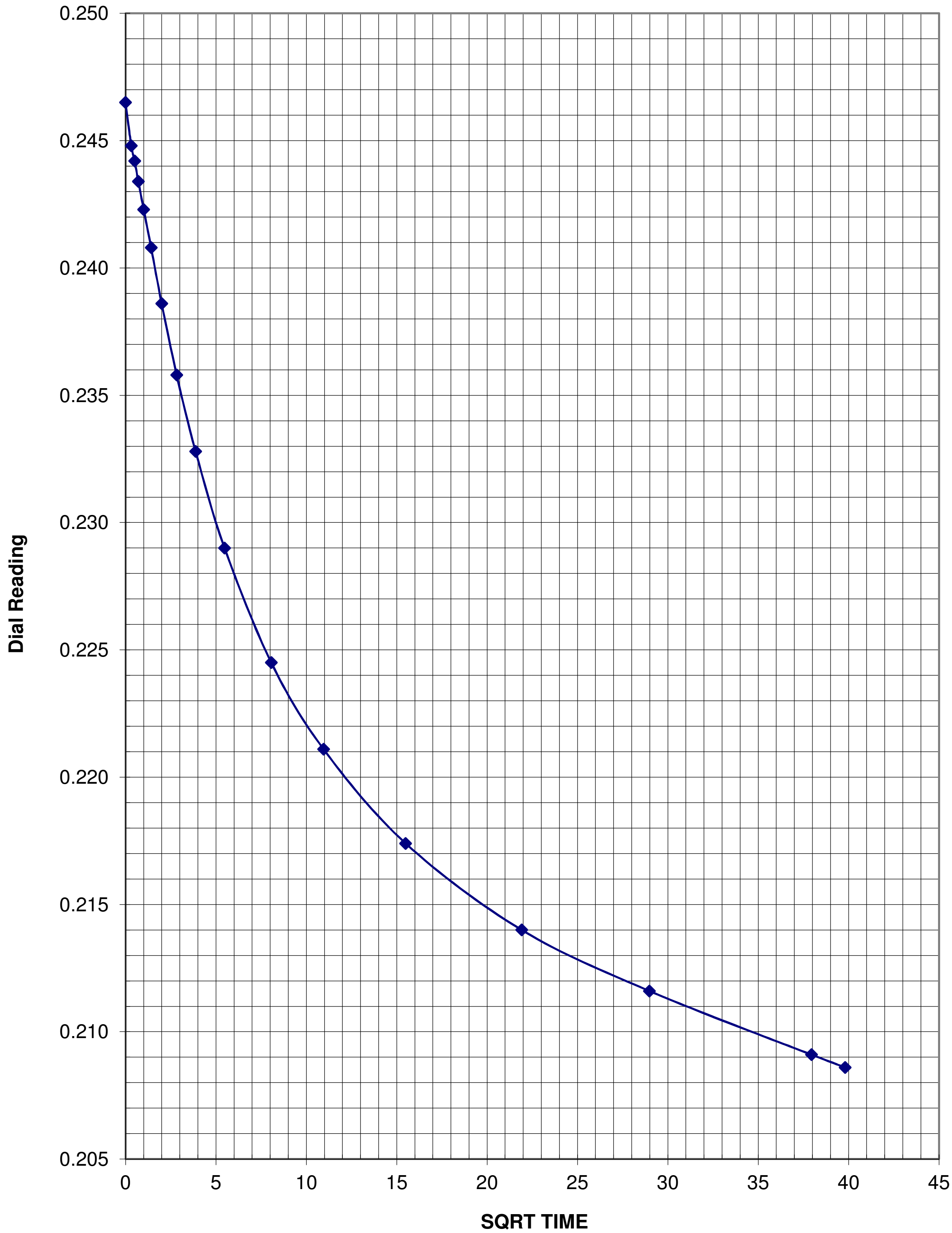
Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**

Load Increment (psf): 1625

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2465***
6s		0.1	0.32	0.2448
15s		0.25	0.50	0.2442
30s		0.5	0.71	0.2434
1 min		1	1.00	0.2423
2 min		2	1.41	0.2408
4 min		4	2.00	0.2386
8 min		8	2.83	0.2358
15 min		15	3.87	0.2328
30 min		30	5.48	0.2290
1hr		65	8.06	0.2245
2 hr		120	10.95	0.2211
4 hr		240	15.49	0.2174
8 hr		480	21.91	0.2140
16 hr		840	28.98	0.2116
24 hr		1440	37.95	0.2091
		1585	39.81	0.2086

Log-Time D_o Calculation

Time Ratio	$(1:4)_{@0.25}$	$(1:4)_{@0.5}$	$(1:4)_{@1.0}$
D:1	0.2442	0.2434	0.2423
D:4	0.2423	0.2408	0.2386
Delta 1:4	0.0019	0.0026	0.0037
D_o (calc)	0.2461	0.2460	0.2460



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**1625**

LOAD INCREMENT WORK SHEET

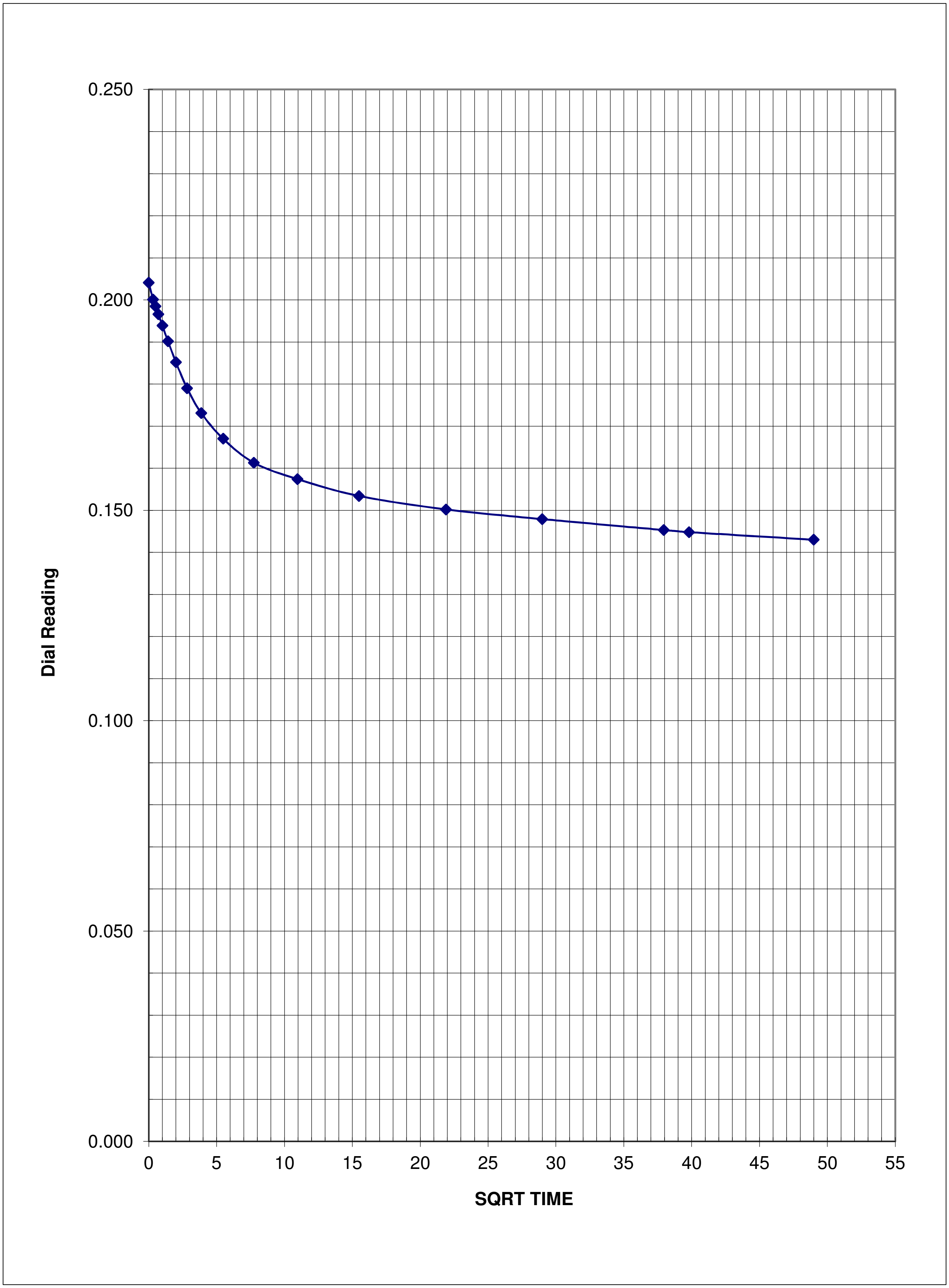
Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**

Load Increment (psf): 3200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.2041***
6s		0.1	0.32	0.2001
15s		0.25	0.50	0.1985
30s		0.5	0.71	0.1966
1 min		1	1.00	0.1939
2 min		2	1.41	0.1902
4 min		4	2.00	0.1852
8 min		8	2.83	0.1790
15 min		15	3.87	0.1731
30 min		30	5.48	0.1670
1hr		60	7.75	0.1613
2 hr		120	10.95	0.1574
4 hr		240	15.49	0.1534
8 hr		480	21.91	0.1502
16 hr		840	28.98	0.1479
24 hr		1440	37.95	0.1453
		1585	39.81	0.1448
		2400	48.99	0.1430

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.1985	0.1966	0.1939
D:4	0.1939	0.1902	0.1852
Delta 1:4	0.0046	0.0064	0.0087
D_o (calc)	0.2031	0.2030	0.2026



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**3200**

LOAD INCREMENT WORK SHEET

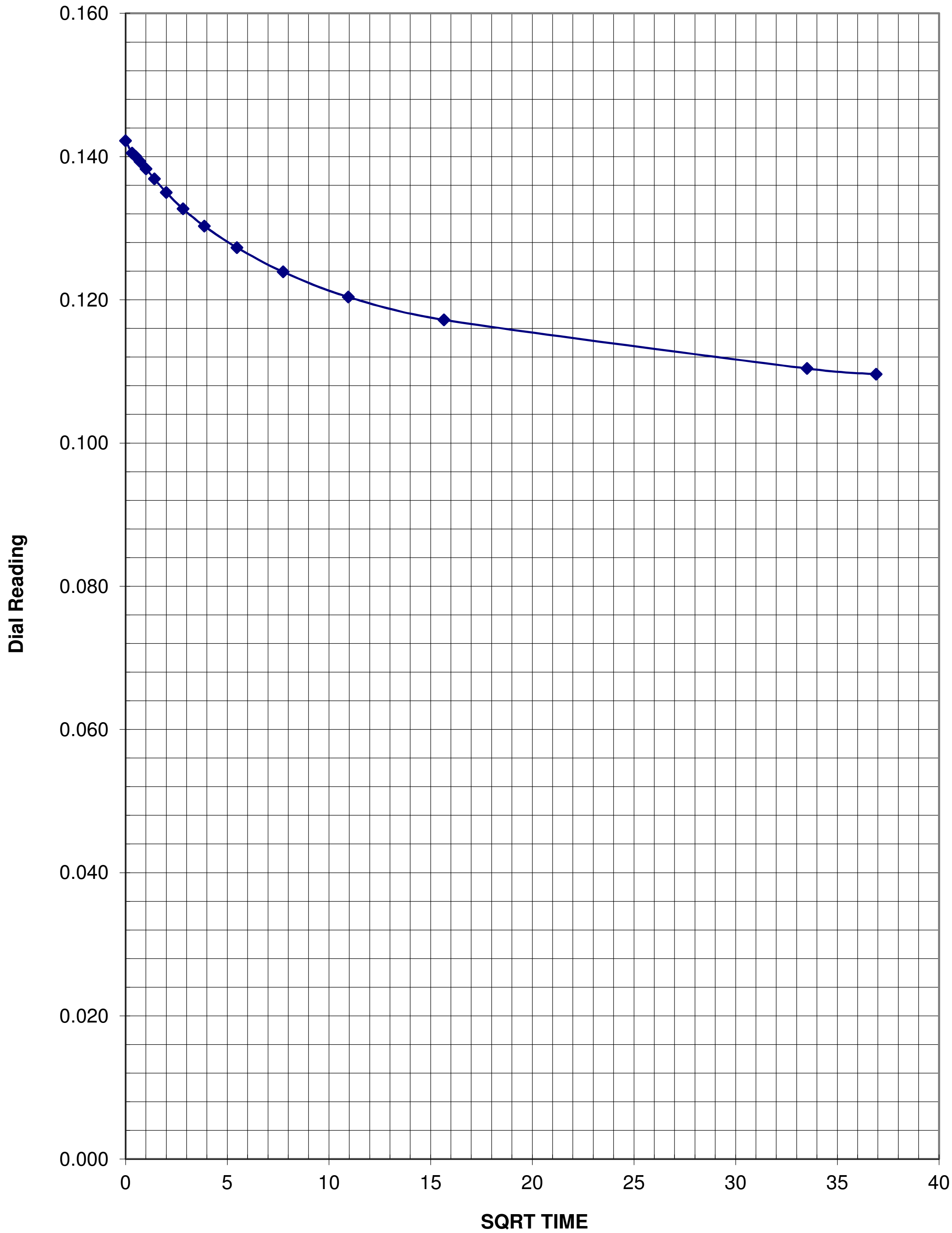
Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**

Load Increment (psf): 4800

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.1422***
6s		0.1	0.32	0.1405
15s		0.25	0.50	0.1400
30s		0.5	0.71	0.1393
1 min		1	1.00	0.1383
2 min		2	1.41	0.1369
4 min		4	2.00	0.1350
8 min		8	2.83	0.1327
15 min		15	3.87	0.1303
30 min		30	5.48	0.1273
1hr		60	7.75	0.1239
2 hr		120	10.95	0.1204
4 hr		245	15.65	0.1172
8 hr		1123	33.51	0.1104
16 hr		1362	36.91	0.1096
24 hr				

Log-Time D_o Calculation

Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.1400	0.1393	0.1383
D:4	0.1383	0.1369	0.1350
Delta 1:4	0.0017	0.0024	0.0033
D_o (calc)	0.1417	0.1417	0.1416



Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**4800**

LOAD INCREMENT WORK SHEET

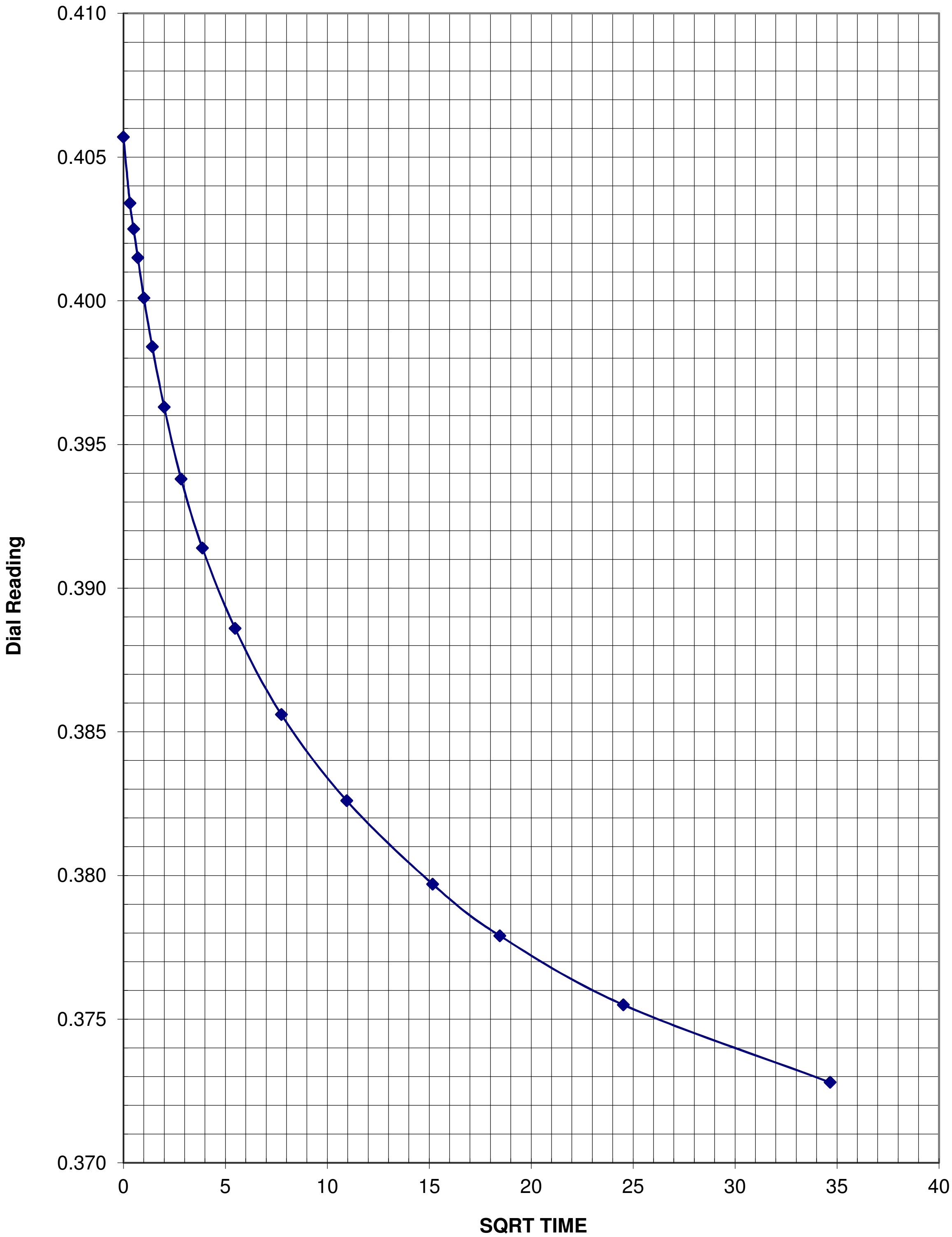
Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**

Load Increment (psf): 7200

Target Time sec/min/hr	Recorded Time	Actual Time (min)	SQRT TIME (min)	Dial Reading
Start		0.01	0.00	***0.4057***
6s		0.1	0.32	0.4034
15s		0.25	0.50	0.4025
30s		0.5	0.71	0.4015
1 min		1	1.00	0.4001
2 min		2	1.41	0.3984
4 min		4	2.00	0.3963
8 min		8	2.83	0.3938
15 min		15	3.87	0.3914
30 min		30	5.48	0.3886
1hr		60	7.75	0.3856
2 hr		120	10.95	0.3826
4 hr		230	15.17	0.3797
8 hr		341	18.47	0.3779
16 hr		601	24.52	0.3755
24 hr		1201	34.66	0.3728

Log-Time D_o Calculation

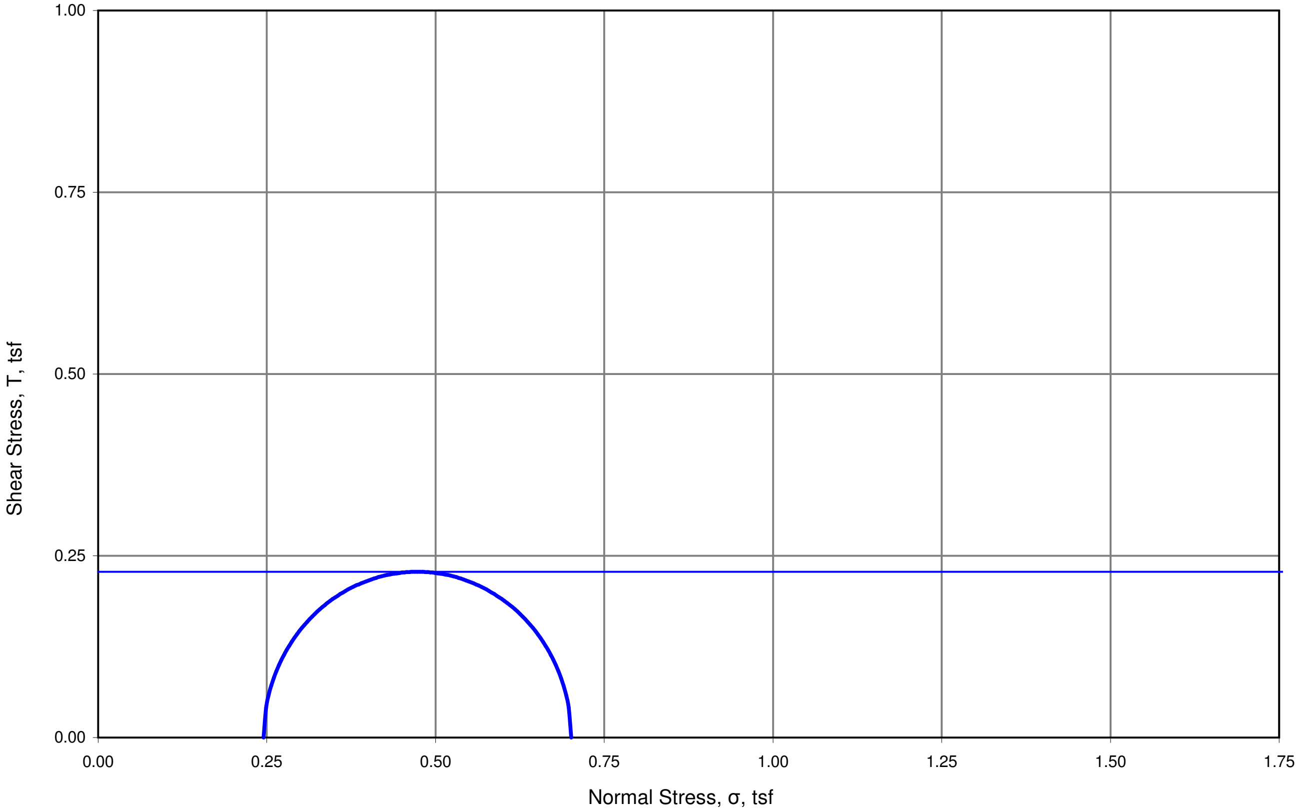
Time Ratio	**$(1:4)_{@0.25}$**	**$(1:4)_{@0.5}$**	**$(1:4)_{@1.0}$**
D:1	0.4025	0.4015	0.4001
D:4	0.4001	0.3984	0.3963
Delta 1:4	0.0024	0.0031	0.0038
D_o (calc)	0.4049	0.4046	0.4039

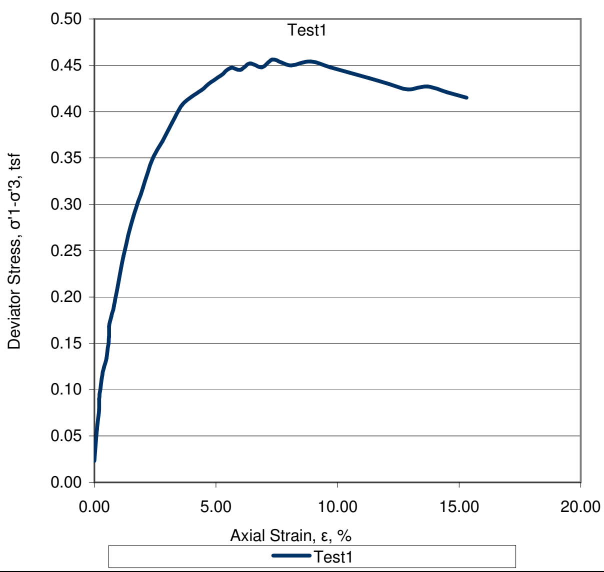


Project:	**107510**	**Sample:**	**SPT3**
Date:	**1/7/2010**	**Depth (ft):**	**11**
		Load Increment (psf):	**7200**

Triaxial Unconsolidated Undrained (UU) Test Report

Total	
c = 0.23	tsf





Initial	Water Content, %	ω_O	81.4
	Dry Density, lbs/ft^3	γ_{d_o}	50.3
	Saturation, %	S_O	95
	Void Ratio	e_O	2.230
Minor Principal Stress, tsf		σ_3	0.25
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.46
Time to $(\sigma_1-\sigma_3)_{max}$, min		t_f	15.0
Deviator Stress at 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.42
Axial Strain at failure, %		ε	7.3
Initial Diameter in		D_O	2.841
Initial Height, in		H_O	6.204
Rate of strain, %/min: 1.0			

Description of Specimen: Dark Gray SILT (MH)				Amount of Material Passing the No. 200, %: 86.9
LL: 81	PL: 39	PI: 42	G_S: 2.60 Measured	Type of Specimens: Undisturbed / Type of Test: ASTM D-2850

Remarks: Membrane correction applied. Scattered wood debris observed in sample.

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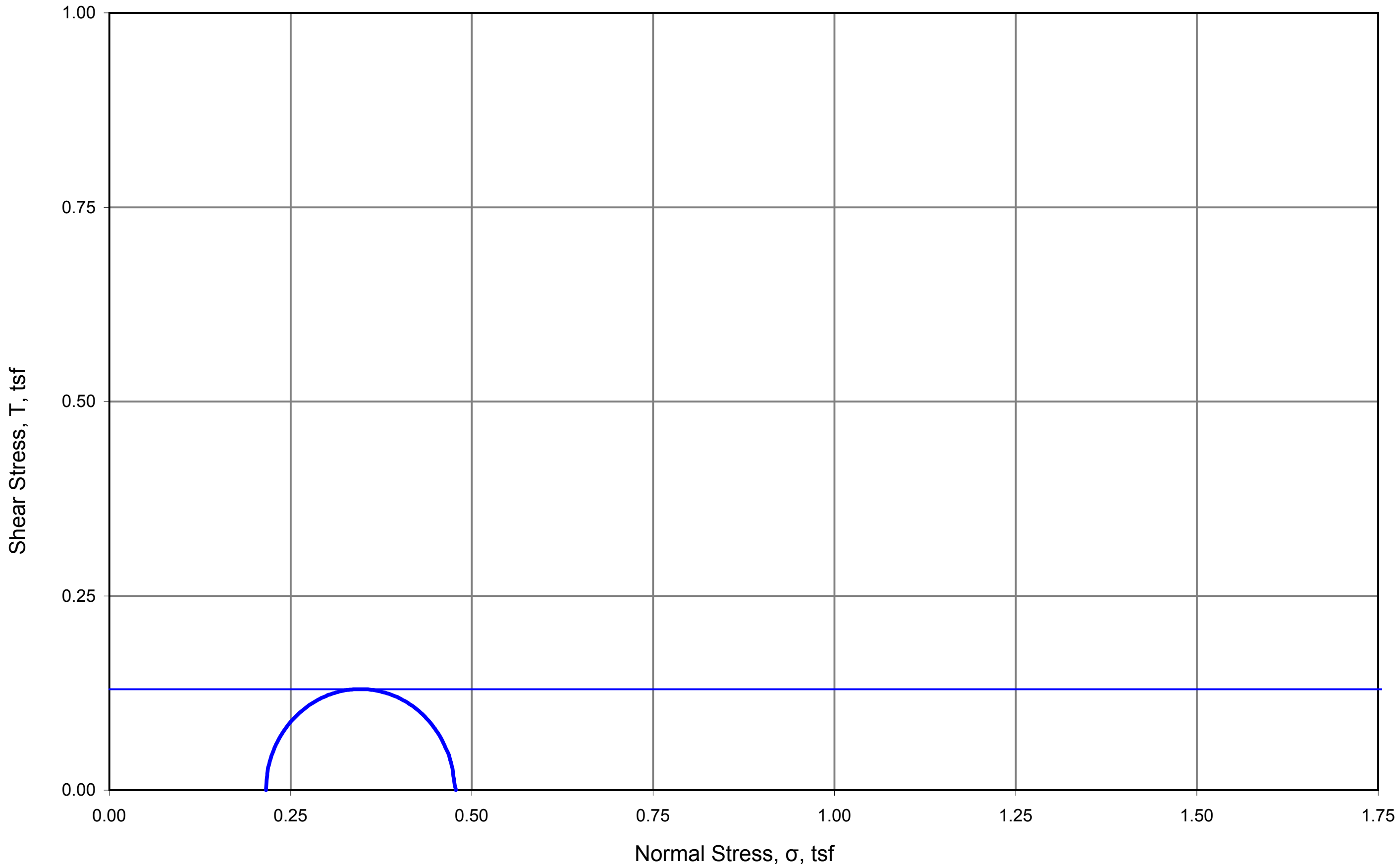
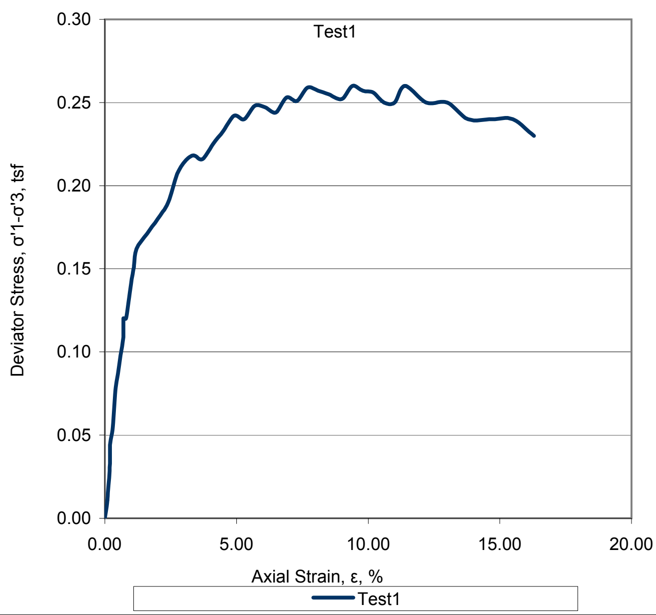
Project No.:	107510
Boring:	SPT-1
Sample:	ARK-SPT-1
Depth, ft:	15-17'
Date:	December 15, 2009

Triaxial Unconsolidated Undrained (UU) Test Report

Total	
c = 0.13	tsf





Initial	Water Content, %	ω_O	57.0
	Dry Density, lbs/ft^3	γ_{d_o}	62.8
	Saturation, %	S_O	93.8
	Void Ratio	e_O	1.582
Minor Principal Stress, tsf		σ_3	0.22
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.26
Time to $(\sigma_1-\sigma_3)_{max}$, min		t_f	15.0
Deviator Stress at 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.24
Axial Strain at failure, %		ε	9.4
Initial Diameter in		D_O	2.870
Initial Height, in		H_O	6.143
Rate of strain, %/min: 1.0			

Description of Specimen: Gray SILT (MH)				Amount of Material Passing the No. 200, %: 98.9
LL: 53	PL: 36	PI: 17	G_S: 2.60 Assumed	Type of Specimens: Undisturbed / Type of Test: ASTM D-2850

Remarks: Membrane correction applied.

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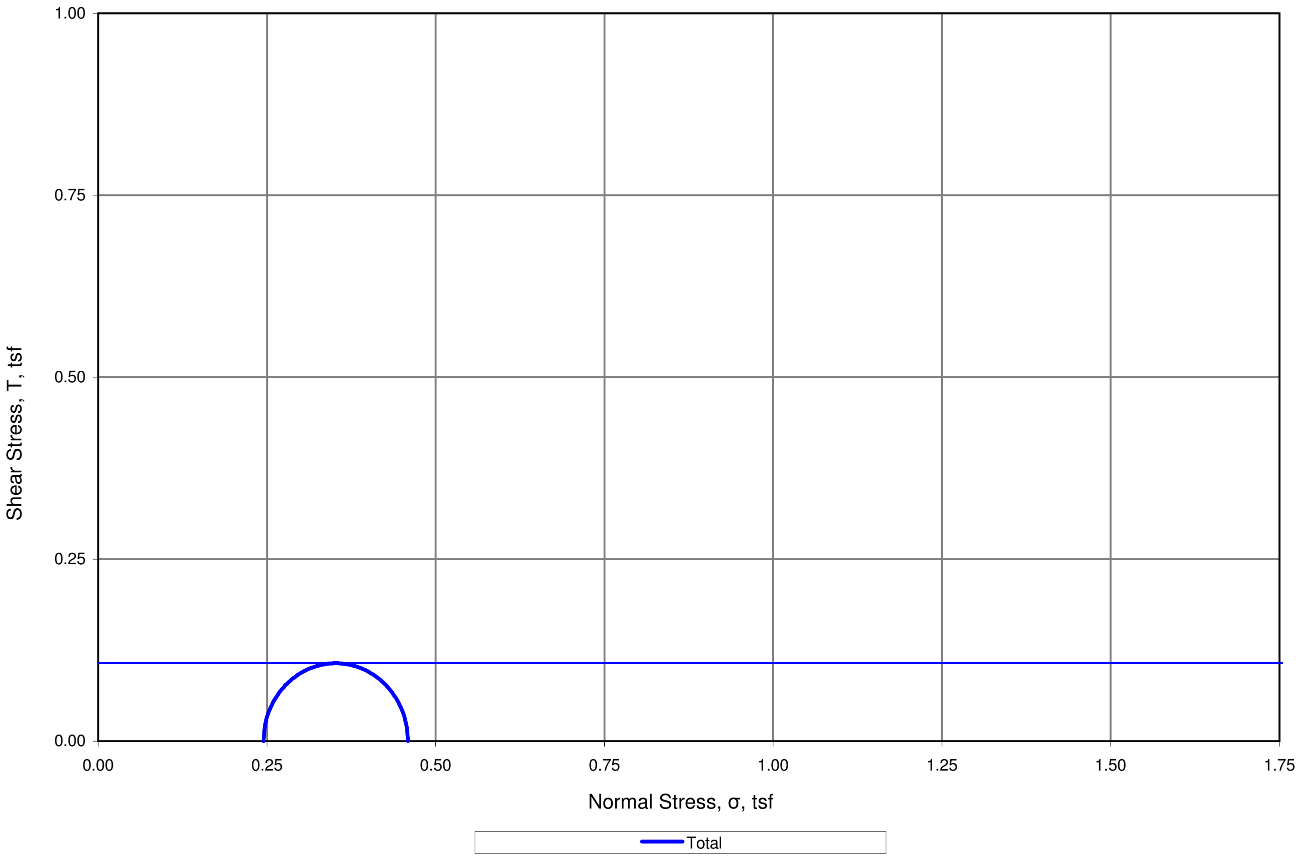
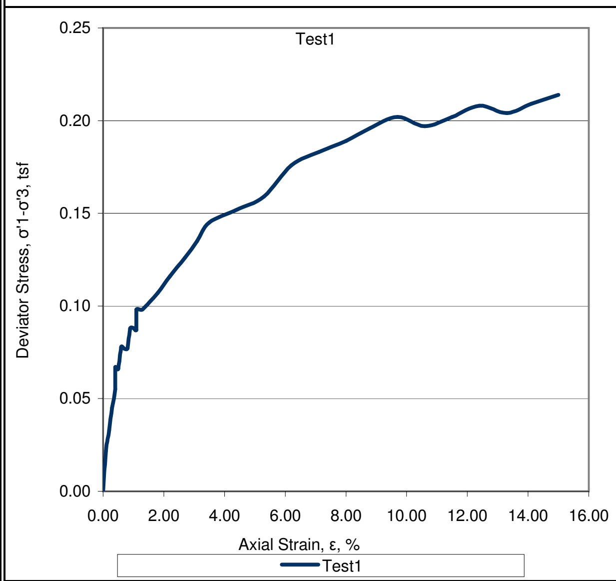
Project No.:	107510
Boring:	SPT-1
Sample:	ARK-SPT-1
Depth, ft:	18-20.5'
Date:	February 25, 2010

Triaxial Unconsolidated Undrained (UU) Test Report

Total	
c = 0.11	tsf





Initial	Water Content, %	ω_O	79.6
	Dry Density, lbs/ft^3	γ_{d_o}	53.4
	Saturation, %	S_O	100.6
	Void Ratio	e_O	2.103
Minor Principal Stress, tsf		σ_3	0.25
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.21
Time to $(\sigma_1-\sigma_3)_{max}$, min		t_f	15.0
Deviator Stress at 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.21
Axial Strain at failure, %		ε	15.0
Initial Diameter in		D_O	2.844
Initial Height, in		H_O	5.660
Rate of strain, %/min: 1.0			

Description of Specimen: Dark Gray SILT (MH)				Amount of Material Passing the No. 200, %: 94.5
LL: 68	PL: 33	PI: 35	G_S: 2.66 Measured	Type of Specimens: Undisturbed — Type of Test: ASTM D-2850
Remarks: Membrane correction applied.				

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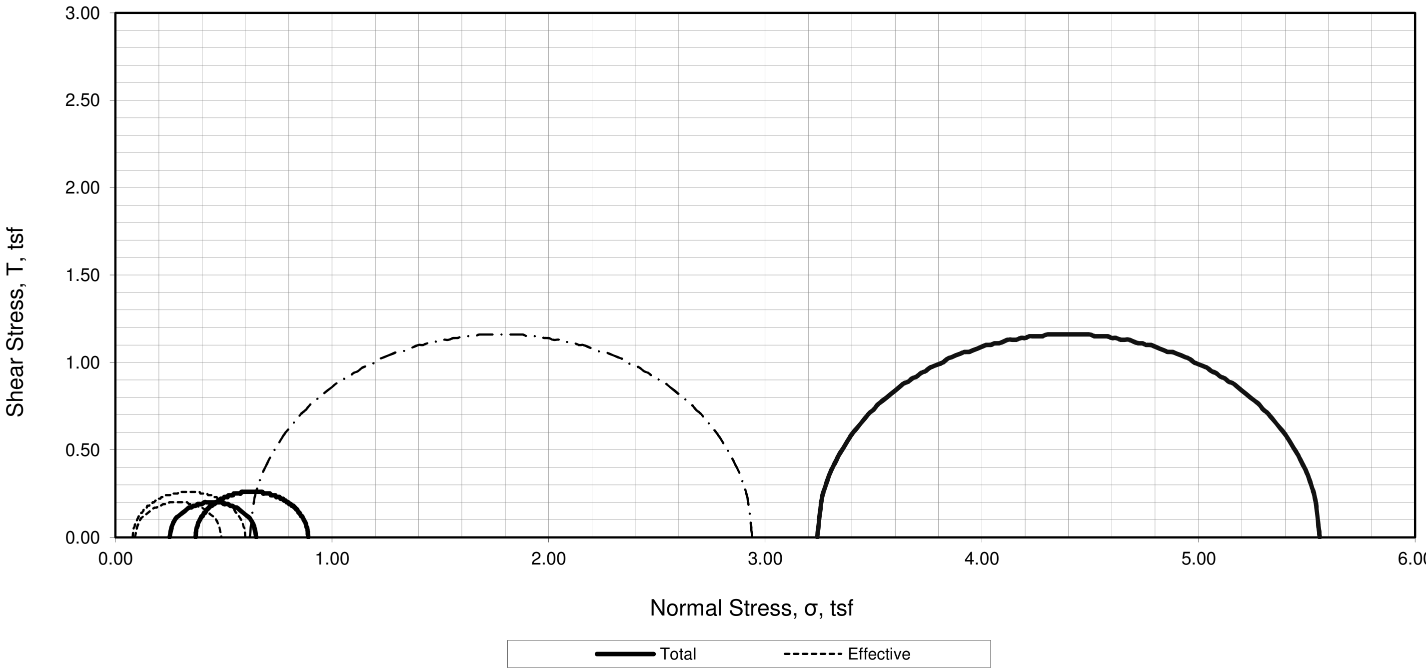
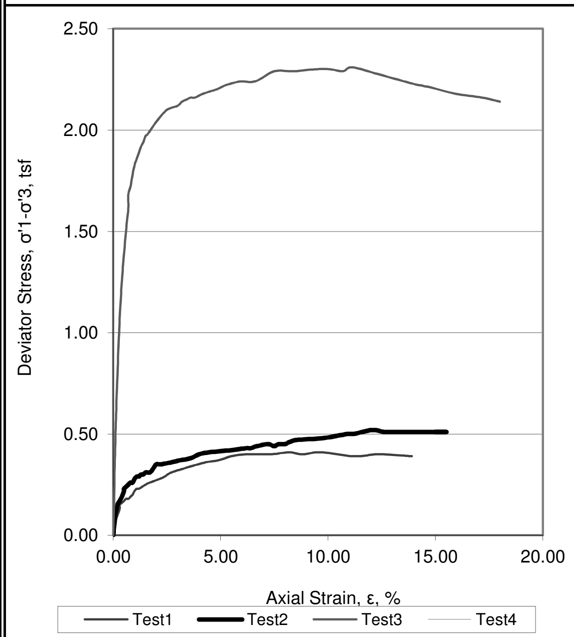
Project No.:	107510
Boring:	SPT-3
Sample:	ARK-SPT-3
Depth, ft:	9.5-11.5'
Date:	December 15, 2009





Specimen No.			1	2	3
Initial	Water Content, %	ω_O	75.8	75.6	71.9
	Dry Density, lbs/ft^3	γ_{d_o}	53.7	53.8	55.5
	Saturation, %	S_O	97.4	97.7	97.3
	Void Ratio	e_O	2.02	2.02	1.92
Before Shear	Water Content, %	ω_f	68.4	66.2	49.7
	Dry Density, lbs/ft^3	γ_{d_c}	55.6	60.1	66.0
	Saturation, %	S_C	100.0	100.0	100.0
	Void Ratio	e_C	1.92	1.70	1.46
	Final Back Pressure, tsf	U_O	2.9	2.9	2.9
Minor Principal Stress, tsf		σ_3	0.25	0.37	3.25
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.40	0.51	2.31
Time to $(\sigma_1-\sigma_3)_{max}$, min		t_f			
Deviator Stress @ 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.39	0.51	2.21
Axial Strain at failure, %		ε	7.0	11.6	11.1
Peak Pore Pressure at failure, tsf		U	3.046	3.168	5.501
Δ Pore Pressure at failure (ΔU), tsf		ΔU	0.166	0.288	2.621

Rate of strain, %/hr: 0.25

Description of Specimen 1: Dark Gray SILT (MH)

Description of Specimen 2: Dark Gray SILT (MH)

Description of Specimen 3: Dark Gray SILT (MH)

Amount of Material Finer than the No. 200, %: 95.0

		1	2	3
Initial Diameter, in	D_O	2.833	2.853	2.855
Initial Height, in	H_O	5.945	5.779	5.905

LL: 76 | PL: 38 | PI: 38 | G_S: 2.60 Measured

Type of Specimens: Undisturbed | Type of Test: ASTM D-4767

Remarks: B Parameter >/= 0.99

Peak Strength selected at maximum effective stress ratio (obliquity)

Scattered wood debris observed in samples

Method of Saturation: Wet Mounted

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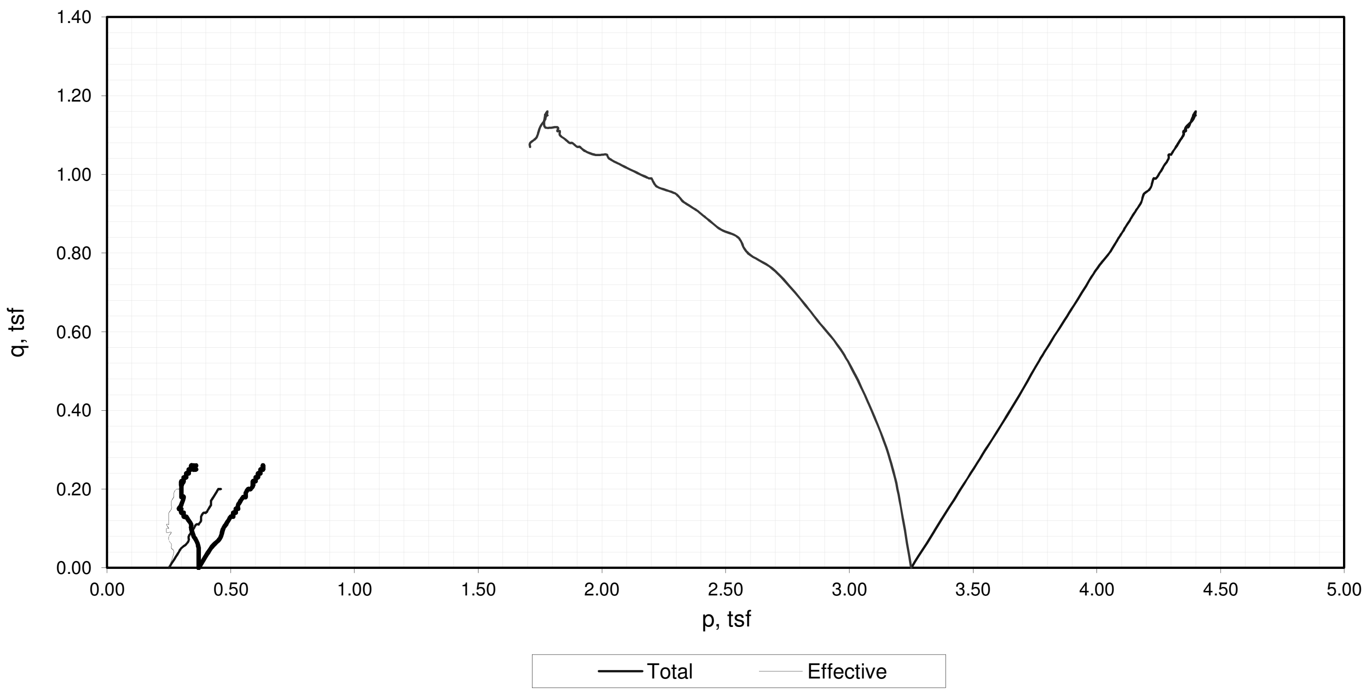
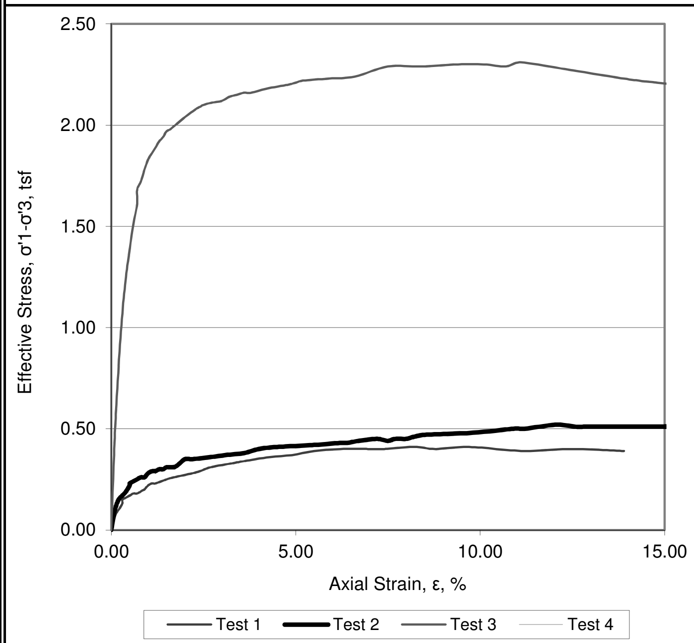
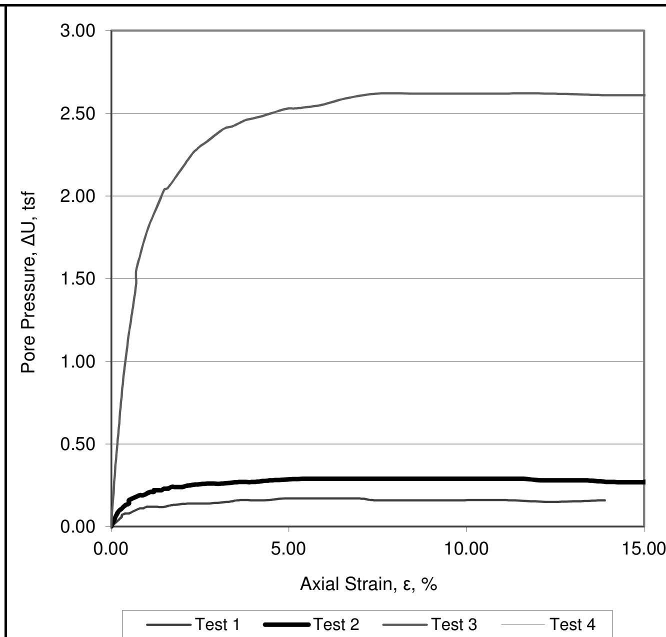
Project Name:	Arkema Early Action
Project Number:	107510
Boring Number:	SPT-1
Sample ID:	ARK-SPT-1
Sample Depth, ft.:	13'-17'
Report Date:	December 15, 2009

Triaxial Compression Test Report - Page 2 of 3

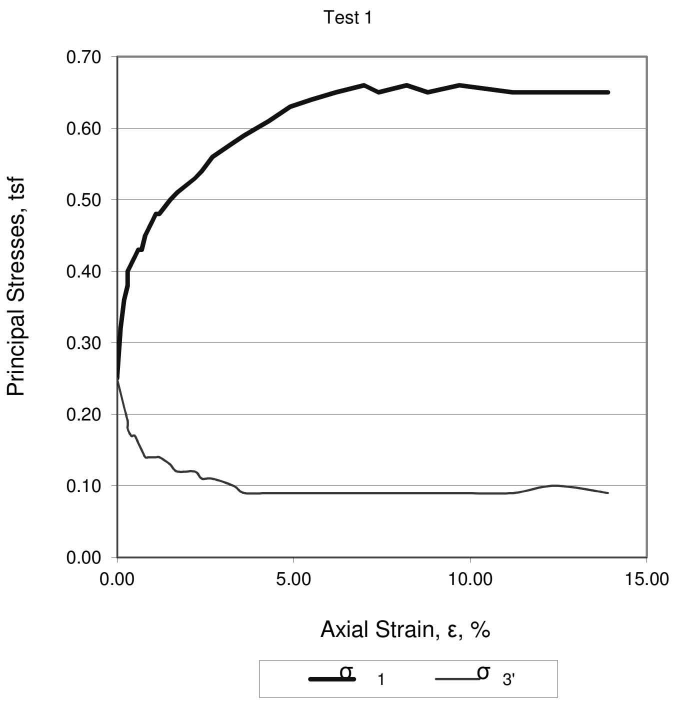


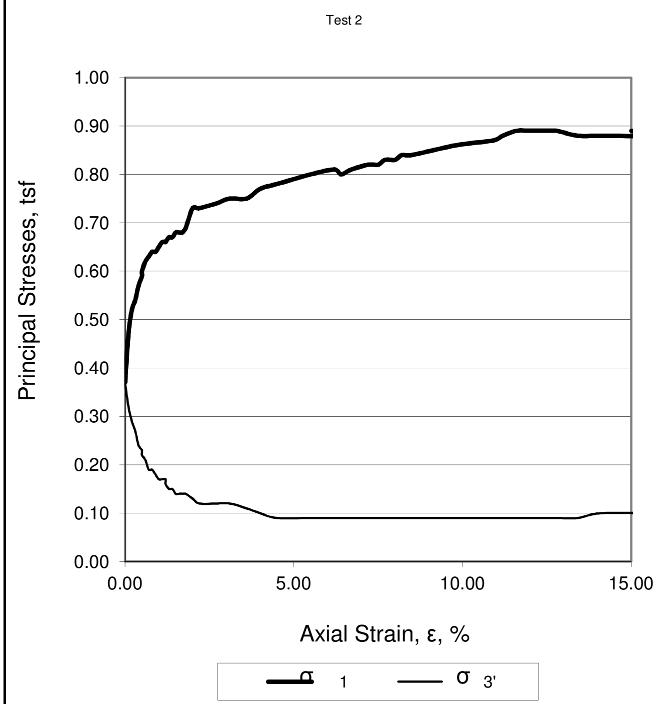


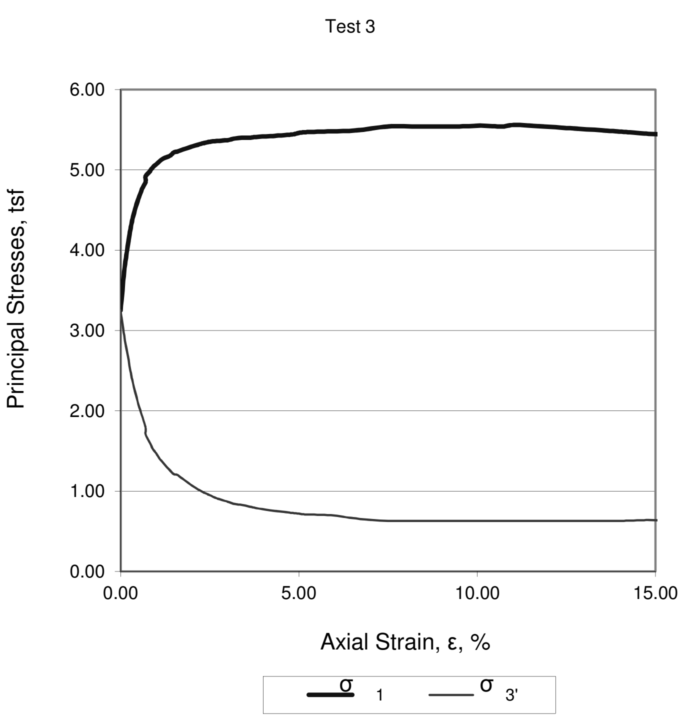


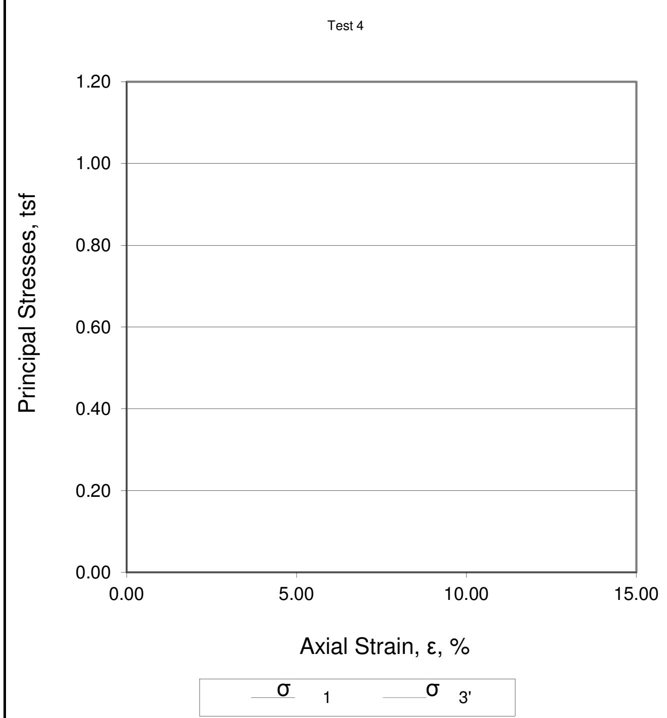
Rate of strain, % / hr: 0.25						
Description of Specimen 1 Dark Gray SILT (MH)						
Description of Specimen 2 Dark Gray SILT (MH)						
Description of Specimen 3 Dark Gray SILT (MH)						
Amount of Material Finer than the No. 200, %	95.0					
LL: 76	PL: 38	PI: 38	G_S: 2.60 Measured	Type of Specimen: Undisturbed		Type of Test: ASTM D-4767
Remarks: B Parameter >/= 0.99						
Peak Strength selected at maximum effective stress ratio (obliquity)						
Scattered wood debris observed in samples						
Method of Saturation: Wet Mounted				Project Name:	Arkema Early Action	
KLEINFELDER Bright People. Right Solutions.	9200 SW Nimbus Ave			Project Number:	107510	
	Beaverton, Oregon			Boring Number:	SPT-1	
	p| 503-644-9447			Sample ID:	ARK-SPT-1	
	f| 916.3643-1701			Sample Depth, ft.:	13'-17'	
	kleinfelder.com			Report Date:	December 15, 2009	

Triaxial Compression Test Report - Page 3 of 3









Rate of strain, % / hr: 0.25	
Description of Specimen 1 Dark Gray SILT (MH)	
Description of Specimen 2 Dark Gray SILT (MH)	
Description of Specimen 3 Dark Gray SILT (MH)	
Amount of Material Finer than the No. 200, % 95.0	
LL: 76 PL: 38 PI: 38 G_S: 2.60 Measured	Type of Specimen: Undisturbed Type of Test: ASTM D-4767
Remarks: B Parameter >/= 0.99	
Peak Strength selected at maximum effective stress ratio (obliquity)	
Scattered wood debris observed in samples	
Method of Saturation: Wet Mounted	Project Name: Arkema Early Action
KLEINFELDER Bright People. Right Solutions. 9200 SW Nimbus Ave Beaverton, Oregon p| 503-644-9447 f| 916.3643-1701 kleinfelder.com	Project Number: 107510
	Boring Number: SPT-1
	Sample ID: ARK-SPT-1
	Sample Depth, ft.: 13'-17'
	Report Date: December 15, 2009

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	5.63		
	Selected Row for Deviator Stress		Selected Deviator Stress	
x	Max Obliquity	5.67	Deviator Stress at Max Obliquity	5.60

Consolidation Pressure(psi/tsf) 3.5 / 0.25

H_O (in) 5.945 D_O (in) 2.833 A_O (in^2) 6.304

H_C (in) 5.827 D_C (in) 2.812 A_C (in^2) 6.209 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress $\sigma_1-\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1-\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1-\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	6.209	0.00	0.000	0.00	40.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	0.00	1.00	0
2		0.0050	0.0050	6.00	0.0010	0.999	6.216	0.97	0.003	0.97	40.30	0.30	3.50	3.20	4.47	4.17	3.99	3.69	0.49	1.30	0
3		0.0100	0.0100	9.00	0.0020	0.998	6.222	1.45	0.007	1.44	40.60	0.60	3.50	2.90	4.94	4.34	4.22	3.62	0.72	1.50	0
4		0.0150	0.0150	11.00	0.0030	0.997	6.228	1.77	0.010	1.76	40.80	0.80	3.50	2.70	5.26	4.46	4.38	3.58	0.88	1.65	0
5		0.0200	0.0200	13.00	0.0030	0.997	6.228	2.09	0.010	2.08	41.00	1.00	3.50	2.50	5.58	4.58	4.54	3.54	1.04	1.83	0
6		0.0250	0.0250	14.00	0.0040	0.996	6.234	2.25	0.014	2.24	41.10	1.10	3.50	2.40	5.74	4.64	4.62	3.52	1.12	1.93	0
7		0.0300	0.0300	15.00	0.0050	0.995	6.241	2.40	0.017	2.38	41.10	1.10	3.50	2.40	5.88	4.78	4.69	3.59	1.19	1.99	0
8		0.0350	0.0350	16.00	0.0060	0.994	6.247	2.56	0.020	2.54	41.30	1.30	3.50	2.20	6.04	4.74	4.77	3.47	1.27	2.15	0
9		0.0400	0.0400	16.00	0.0070	0.993	6.253	2.56	0.024	2.54	41.40	1.40	3.50	2.10	6.04	4.64	4.77	3.37	1.27	2.21	0
10		0.0450	0.0450	17.00	0.0080	0.992	6.259	2.72	0.027	2.69	41.50	1.50	3.50	2.00	6.19	4.69	4.85	3.35	1.35	2.35	0
11		0.0500	0.0500	18.00	0.0090	0.991	6.266	2.87	0.031	2.84	41.50	1.50	3.50	2.00	6.34	4.84	4.92	3.42	1.42	2.42	0
12		0.0550	0.0550	18.00	0.0090	0.991	6.266	2.87	0.031	2.84	41.50	1.50	3.50	2.00	6.34	4.84	4.92	3.42	1.42	2.42	0
13		0.0600	0.0600	19.00	0.0100	0.990	6.272	3.03	0.034	3.00	41.60	1.60	3.50	1.90	6.50	4.90	5.00	3.40	1.50	2.58	0
14		0.0650	0.0650	20.00	0.0110	0.989	6.278	3.19	0.038	3.15	41.60	1.60	3.50	1.90	6.65	5.05	5.08	3.48	1.58	2.66	0
15		0.0700	0.0700	20.00	0.0120	0.988	6.285	3.18	0.041	3.14	41.60	1.60	3.50	1.90	6.64	5.04	5.07	3.47	1.57	2.65	0
16		0.0900	0.0900	22.00	0.0150	0.985	6.304	3.49	0.051	3.44	41.70	1.70	3.50	1.80	6.94	5.24	5.22	3.52	1.72	2.91	0
17		0.1000	0.1000	23.00	0.0170	0.983	6.317	3.64	0.058	3.58	41.80	1.80	3.50	1.70	7.08	5.28	5.29	3.49	1.79	3.11	0
18		0.1300	0.1300	25.00	0.0220	0.978	6.349	3.94	0.075	3.87	41.90	1.90	3.50	1.60	7.37	5.47	5.43	3.53	1.93	3.42	0
19		0.1400	0.1400	26.00	0.0240	0.976	6.362	4.09	0.082	4.01	42.00	2.00	3.50	1.50	7.51	5.51	5.50	3.50	2.00	3.67	0
20		0.1600	0.1600	28.00	0.0270	0.973	6.382	4.39	0.092	4.30	42.00	2.00	3.50	1.50	7.80	5.80	5.65	3.65	2.15	3.87	0
21		0.1900	0.1900	30.00	0.0330	0.967	6.421	4.67	0.113	4.56	42.10	2.10	3.50	1.40	8.06	5.96	5.78	3.68	2.28	4.26	0
22		0.2100	0.2100	31.00	0.0360	0.964	6.441	4.81	0.123	4.69	42.20	2.20	3.50	1.30	8.19	5.99	5.84	3.64	2.34	4.61	0
23		0.2500	0.2500	33.00	0.0430	0.957	6.488	5.09	0.147	4.94	42.20	2.20	3.50	1.30	8.44	6.24	5.97	3.77	2.47	4.80	0
24		0.2850	0.2850	35.00	0.0490	0.951	6.529	5.36	0.167	5.19	42.30	2.30	3.50	1.20	8.69	6.39	6.10	3.80	2.60	5.33	0
25		0.3200	0.3200	37.00	0.0550	0.945	6.571	5.63	0.188	5.44	42.30	2.30	3.50	1.20	8.94	6.64	6.22	3.92	2.72	5.53	0
26		0.3600	0.3600	38.00	0.0620	0.938	6.620	5.74	0.212	5.53	42.30	2.30	3.50	1.20	9.03	6.73	6.26	3.96	2.76	5.61	0
27		0.4100	0.4100	39.00	0.0700	0.930	6.677	5.84	0.239	5.60	42.30	2.30	3.50	1.20	9.10	6.80	6.30	4.00	2.80	5.67	0
28		0.4300	0.4300	39.00	0.0740	0.926	6.706	5.82	0.253	5.57	42.20	2.20	3.50	1.30	9.07	6.87	6.28	4.08	2.78	5.28	0
29		0.4750	0.4750	40.00	0.0820	0.918	6.764	5.91	0.280	5.63	42.20	2.20	3.50	1.30	9.13	6.93	6.32	4.12	2.82	5.33	0
30		0.5100	0.5100	40.00	0.0880	0.912	6.808	5.88	0.300	5.58	42.20	2.20	3.50	1.30	9.08	6.88	6.29	4.09	2.79	5.29	0
31		0.5650	0.5650	41.00	0.0970	0.903	6.876	5.96	0.331	5.63	42.20	2.20	3.50	1.30	9.13	6.93	6.31	4.11	2.81	5.33	0
32		0.6500	0.6500	41.00	0.1120	0.888	6.992	5.86	0.382	5.48	42.20	2.20	3.50	1.30	8.98	6.78	6.24	4.04	2.74	5.21	0
33		0.7200	0.7200	42.00	0.1240	0.876	7.088	5.93	0.423	5.51	42.10	2.10	3.50	1.40	9.01	6.91	6.25	4.15	2.75	4.93	0
34		0.8100	0.8100	43.00	0.1390	0.861	7.212	5.96	0.475	5.49	42.20	2.20	3.50	1.30	8.99	6.79	6.24	4.04	2.74	5.22	0
35				44.00				#VALUE!			42.10	2.10	3.50	1.40		#######					0
36																					0
37																					0
38																					0
39																					

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	7.19	
	Selected Row for Deviator Stress		Selected Deviator Stress
x	Max Obliquity	6.91	Deviator Stress at Max Obliquity 7.09

Consolidation Pressure(psi/tsf) 5.2 / 0.37

H_O (in) 5.779 D_O (in) 2.853 A_O (in^2) 6.392

H_C (in) 5.614 D_C (in) 2.740 A_C (in^2) 5.895

Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	$1-\varepsilon$	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress $\sigma_1-\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1-\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1-\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	5.895	0.00	0.000	0.00	40.00	0.00	5.20	5.20	5.20	5.20	5.20	5.20	0.00	1.00	0
2		0.0050	0.0050	8.00	0.0010	0.999	5.901	1.36	0.004	1.36	40.70	0.70	5.20	4.50	6.56	5.86	5.88	5.18	0.68	1.30	0
3		0.0100	0.0100	12.00	0.0020	0.998	5.906	2.03	0.007	2.02	41.23	1.23	5.20	3.97	7.22	5.99	6.21	4.98	1.01	1.51	0
4		0.0150	0.0150	14.00	0.0030	0.997	5.912	2.37	0.011	2.36	41.50	1.50	5.20	3.70	7.56	6.06	6.38	4.88	1.18	1.64	0
5		0.0200	0.0200	16.00	0.0040	0.996	5.918	2.70	0.014	2.69	41.80	1.80	5.20	3.40	7.89	6.09	6.54	4.74	1.34	1.79	0
6		0.0255	0.0255	18.00	0.0050	0.995	5.924	3.04	0.018	3.02	42.00	2.00	5.20	3.20	8.22	6.22	6.71	4.71	1.51	1.94	0
7		0.0300	0.0300	19.00	0.0050	0.995	5.924	3.21	0.018	3.19	42.20	2.20	5.20	3.00	8.39	6.19	6.80	4.60	1.60	2.06	0
8		0.0350	0.0350	20.00	0.0060	0.994	5.930	3.37	0.021	3.35	42.30	2.30	5.20	2.90	8.55	6.25	6.87	4.57	1.67	2.15	0
9		0.0400	0.0400	21.00	0.0070	0.993	5.936	3.54	0.025	3.52	42.50	2.50	5.20	2.70	8.72	6.22	6.96	4.46	1.76	2.30	0
10		0.0450	0.0450	22.00	0.0080	0.992	5.942	3.70	0.028	3.67	42.60	2.60	5.20	2.60	8.87	6.27	7.04	4.44	1.84	2.41	0
11		0.0500	0.0500	22.00	0.0090	0.991	5.948	3.70	0.032	3.67	42.70	2.70	5.20	2.50	8.87	6.17	7.03	4.33	1.83	2.47	0
12		0.0550	0.0550	23.00	0.0100	0.990	5.954	3.86	0.035	3.83	42.80	2.80	5.20	2.40	9.03	6.23	7.11	4.31	1.91	2.59	0
13		0.0600	0.0600	24.00	0.0110	0.989	5.960	4.03	0.039	3.99	42.90	2.90	5.20	2.30	9.19	6.29	7.20	4.30	2.00	2.74	0
14		0.0650	0.0650	24.00	0.0120	0.988	5.966	4.02	0.042	3.98	42.90	2.90	5.20	2.30	9.18	6.28	7.19	4.29	1.99	2.73	0
15		0.0700	0.0700	24.00	0.0120	0.988	5.966	4.02	0.042	3.98	43.00	3.00	5.20	2.20	9.18	6.18	7.19	4.19	1.99	2.81	0
16		0.0750	0.0750	25.00	0.0130	0.987	5.972	4.19	0.046	4.14	43.10	3.10	5.20	2.10	9.34	6.24	7.27	4.17	2.07	2.97	0
17		0.0800	0.0800	25.00	0.0140	0.986	5.978	4.18	0.049	4.13	43.10	3.10	5.20	2.10	9.33	6.23	7.27	4.17	2.07	2.97	0
18		0.0850	0.0850	26.00	0.0150	0.985	5.984	4.34	0.053	4.29	43.20	3.20	5.20	2.00	9.49	6.29	7.34	4.14	2.14	3.14	0
19		0.0900	0.0900	26.00	0.0160	0.984	5.991	4.34	0.056	4.28	43.20	3.20	5.20	2.00	9.48	6.28	7.34	4.14	2.14	3.14	0
20		0.0950	0.0950	26.00	0.0170	0.983	5.997	4.34	0.060	4.28	43.30	3.30	5.20	1.90	9.48	6.18	7.34	4.04	2.14	3.25	0
21		0.1000	0.1000	27.00	0.0180	0.982	6.003	4.50	0.063	4.44	43.30	3.30	5.20	1.90	9.64	6.34	7.42	4.12	2.22	3.34	0
22		0.1150	0.1150	30.00	0.0200	0.980	6.015	4.99	0.070	4.92	43.40	3.40	5.20	1.80	10.12	6.72	7.66	4.26	2.46	3.73	0
23		0.1250	0.1250	30.00	0.0220	0.978	6.027	4.98	0.077	4.90	43.50	3.50	5.20	1.70	10.10	6.60	7.65	4.15	2.45	3.88	0
24		0.1500	0.1500	31.00	0.0270	0.973	6.058	5.12	0.095	5.03	43.60	3.60	5.20	1.60	10.23	6.63	7.71	4.11	2.51	4.14	0
25		0.1750	0.1750	32.00	0.0310	0.969	6.083	5.26	0.109	5.15	43.60	3.60	5.20	1.60	10.35	6.75	7.78	4.18	2.58	4.22	0
26		0.2000	0.2000	33.00	0.0360	0.964	6.115	5.40	0.126	5.27	43.70	3.70	5.20	1.50	10.47	6.77	7.84	4.14	2.64	4.52	0
27		0.2250	0.2250	35.00	0.0400	0.960	6.140	5.70	0.140	5.56	43.80	3.80	5.20	1.40	10.76	6.96	7.98	4.18	2.78	4.97	0
28		0.2500	0.2500	36.00	0.0450	0.955	6.172	5.83	0.158	5.67	43.90	3.90	5.20	1.30	10.87	6.97	8.04	4.14	2.84	5.36	0
29		0.3100	0.3100	38.00	0.0550	0.945	6.238	6.09	0.193	5.90	44.00	4.00	5.20	1.20	11.10	7.10	8.15	4.15	2.95	5.91	0
30		0.3500	0.3500	39.00	0.0620	0.938	6.284	6.21	0.217	5.99	44.00	4.00	5.20	1.20	11.19	7.19	8.20	4.20	3.00	5.99	0
31		0.3600	0.3600	39.00	0.0640	0.936	6.298	6.19	0.224	5.97	44.00	4.00	5.20	1.20	11.17	7.17	8.18	4.18	2.98	5.97	0
32		0.3750	0.3750	40.00	0.0670	0.933	6.318	6.33	0.235	6.10	44.00	4.00	5.20	1.20	11.30	7.30	8.25	4.25	3.05	6.08	0
33		0.4050	0.4050	41.00	0.0720	0.928	6.352	6.45	0.252	6.20	44.00	4.00	5.20	1.20	11.40	7.40	8.30	4.30	3.10	6.17	0
34		0.4200	0.4200	41.00	0.0750	0.925	6.373	6.43	0.263	6.17	44.00	4.00	5.20	1.20	11.37	7.37	8.28	4.28	3.08	6.14	0
35		0.4300	0.4300	42.00	0.0770	0.923	6.386	6.58	0.270	6.31	44.00	4.00	5.20	1.20	11.51	7.51	8.36	4.36	3.16	6.26	0
36		0.4500	0.4500	42.00	0.0800	0.920	6.407	6.56	0.280	6.28	44.00	4.00	5.20	1.20	11.48	7.48	8.34	4.34	3.14	6.23	0
37		0.4600	0.4600	43.00	0.0820	0.918	6.421	6.70	0.287	6.41	44.00	4.00	5.20	1.20	11.61	7.61	8.41	4.41	3.21	6.34	0
38		0.4800	0.4800	44.00	0.0850	0.915	6.442	6.83	0.298	6.53	44.00	4.00	5.20	1.20	11.73	7.73	8.47	4.47	3.27	6.44	0
39		0.5500	0.5500	46.00	0.0980	0.902	6.535	7.04	0.343	6.70	44.00	4.00	5.20	1.20	11.90	7.90	8.55	4.55	3.35	6.58	0
40		0.6100	0.6100	48.00	0.1090	0.891	6.616	7.26	0.382	6.88	44.00	4.00	5.20	1.20	12.08	8.08	8.64	4.64	3.44	6.73	0
41		0.6300	0.6300	49.00	0.1120	0.888	6.638	7.38	0.392	6.99	44.00	4.00	5.20	1.20	12.19	8.19	8.69	4.69	3.49	6.82	0
42		0.6500	0.6500	50.00	0.1160	0.884	6.668	7.50	0.406	7.09	44.00	4.00	5.20	1.20	12.29	8.29	8.75	4.75	3.55	6.91	0
43		0.6800	0.6800	51.00	0.1210	0.879	6.706	7.61	0.424	7.19	43.90	3.90	5.20	1.30	12.39	8.49	8.79	4.89	3.59	6.53	0
44		0.7100	0.7100	51.00	0.1260	0.874	6.744	7.56	0.441	7.12	43.90	3.90	5.20	1.30	12.32	8.42	8.76	4.86	3.56	6.48	0
45		0.7200	0.7200	51.00	0.1280	0.872	6.760	7.54	0.448	7.09	43.90	3.90	5.20	1.30	12.29	8.39	8.75	4.85	3.55	6.46	0
46		0.7500	0.7500	51.00	0.1340	0.866	6.807	7.49	0.469	7.02	43.90	3.90	5.20	1.30	12.22	8.32	8.71	4.81	3.51	6.40	0
47		0.7900	0.7900	52.00	0.1410	0.859	6.862	7.58	0.494	7.09	43.80	3.80	5.20	1.40	12.29	8.49	8.74	4.94	3.54	6.06	0
48		0.8700	0.8700	53.00	0.1550	0.845	6.976	7.60	0.543	7.06	43.80	3.80	5.20	1.40	12.26	8.46	8.73	4.93	3.53	6.04	0
49		0.8400	0.8400	53.00	0.1500	0.850	6.935	7.64	0.526	7.11	43.80	3.80	5.20	1.40	12.31	8.51	8.76	4.96	3.56	6.08	0

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Axial Loading Data
Triaxial Compression R-bar (CU) Tests

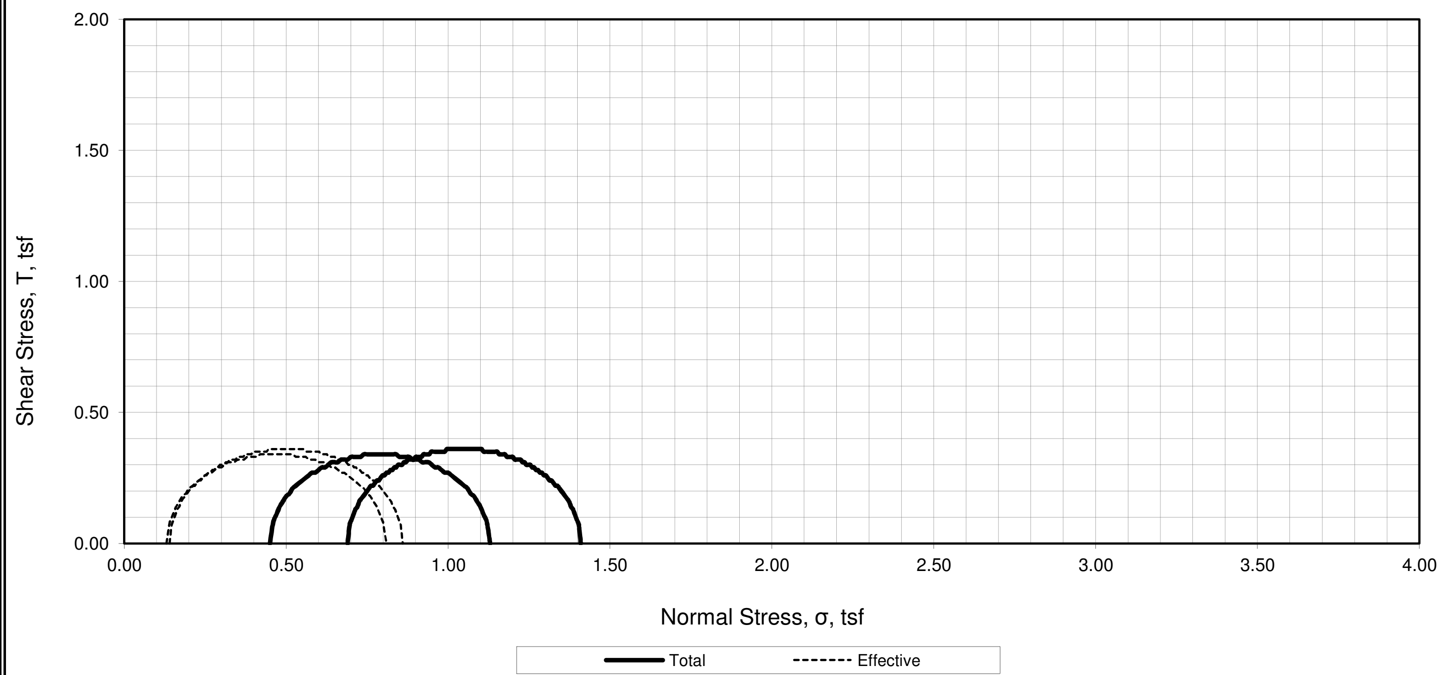
Selected for Calculations (**X**)

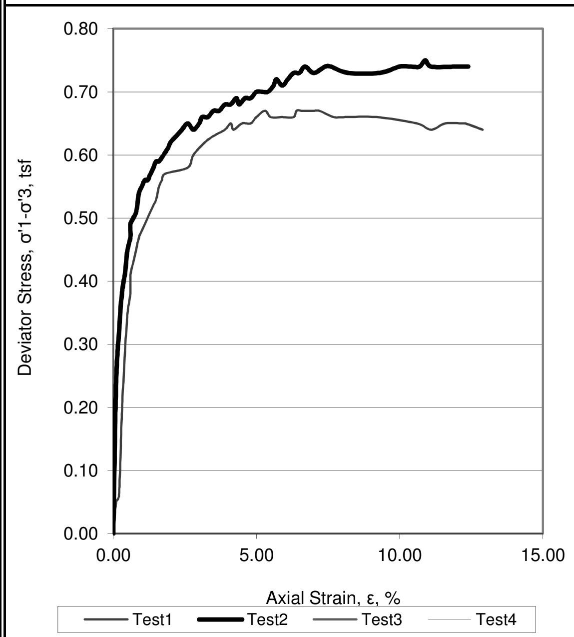
	Max Deviator Stress	32.12		Consolidation Pressure(psi/tsf)	45.1 / 3.25
	Selected Row for Deviator Stress		Selected Deviator Stress	H_O (in) 5.905	D_O (in) 2.855 A_O (in^2) 6.402
x	Max Obliquity	4.69	Deviator Stress at Max Obliquity 32.12	H_C (in) 5.339	D_C (in) 2.755 A_C (in^2) 5.961 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress $\sigma_1-\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1-\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1-\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	5.961	0.00	0.000	0.00	40.00	0.00	45.10	45.10	45.10	45.10	45.10	45.10	0.00	1.00	0
2		0.0050	0.0050	40.00	0.0010	0.999	5.967	6.70	0.003	6.70	44.30	4.30	45.10	40.80	51.80	47.50	48.45	44.15	3.35	1.16	0
3		0.0100	0.0100	67.00	0.0020	0.998	5.973	11.22	0.007	11.21	47.80	7.80	45.10	37.30	56.31	48.51	50.71	42.91	5.61	1.30	0
4		0.0150	0.0150	89.00	0.0030	0.997	5.979	14.89	0.010	14.88	51.20	11.20	45.10	33.90	59.98	48.78	52.54	41.34	7.44	1.44	0
5		0.0200	0.0200	104.00	0.0040	0.996	5.985	17.38	0.014	17.37	53.90	13.90	45.10	31.20	62.47	48.57	53.79	39.89	8.69	1.56	0
6		0.0255	0.0255	116.00	0.0050	0.995	5.991	19.36	0.017	19.34	56.20	16.20	45.10	28.90	64.44	48.24	54.77	38.57	9.67	1.67	0
7		0.0300	0.0300	126.00	0.0060	0.994	5.997	21.01	0.021	20.99	58.20	18.20	45.10	26.90	66.09	47.89	55.60	37.40	10.50	1.78	0
8		0.0350	0.0350	134.00	0.0070	0.993	6.003	22.32	0.024	22.30	60.30	20.30	45.10	24.80	67.40	47.10	56.25	35.95	11.15	1.90	0
9		0.0400	0.0400	140.00	0.0070	0.993	6.003	23.32	0.024	23.30	61.40	21.40	45.10	23.70	68.40	47.00	56.75	35.35	11.65	1.98	0
10		0.0450	0.0450	144.00	0.0080	0.992	6.009	23.96	0.028	23.93	62.60	22.60	45.10	22.50	69.03	46.43	57.07	34.47	11.97	2.06	0
11		0.0500	0.0500	149.00	0.0090	0.991	6.015	24.77	0.031	24.74	63.80	23.80	45.10	21.30	69.84	46.04	57.47	33.67	12.37	2.16	0
12		0.0550	0.0550	153.00	0.0100	0.990	6.022	25.41	0.035	25.38	64.70	24.70	45.10	20.40	70.48	45.78	57.79	33.09	12.69	2.24	0
13		0.0600	0.0600	156.00	0.0110	0.989	6.028	25.88	0.038	25.84	65.60	25.60	45.10	19.50	70.94	45.34	58.02	32.42	12.92	2.33	0
14		0.0650	0.0650	159.00	0.0120	0.988	6.034	26.35	0.042	26.31	66.30	26.30	45.10	18.80	71.41	45.11	58.26	31.96	13.16	2.40	0
15		0.0700	0.0700	161.00	0.0130	0.987	6.040	26.66	0.045	26.62	67.00	27.00	45.10	18.10	71.72	44.72	58.41	31.41	13.31	2.47	0
16		0.0750	0.0750	163.00	0.0140	0.986	6.046	26.96	0.049	26.91	67.70	27.70	45.10	17.40	72.01	44.31	58.56	30.86	13.46	2.55	0
17		0.0800	0.0800	166.00	0.0150	0.985	6.052	27.43	0.052	27.38	68.30	28.30	45.10	16.80	72.48	44.18	58.79	30.49	13.69	2.63	0
18		0.0850	0.0850	167.00	0.0160	0.984	6.058	27.57	0.056	27.51	68.50	28.50	45.10	16.60	72.61	44.11	58.86	30.36	13.76	2.66	0
19		0.1050	0.1050	173.00	0.0200	0.980	6.083	28.44	0.070	28.37	70.20	30.20	45.10	14.90	73.47	43.27	59.29	29.09	14.19	2.90	0
20		0.1250	0.1250	177.00	0.0230	0.977	6.102	29.01	0.080	28.93	71.40	31.40	45.10	13.70	74.03	42.63	59.57	28.17	14.47	3.11	0
21		0.1300	0.1300	178.00	0.0240	0.976	6.108	29.14	0.084	29.06	71.60	31.60	45.10	13.50	74.16	42.56	59.63	28.03	14.53	3.15	0
22		0.1350	0.1350	179.00	0.0250	0.975	6.114	29.28	0.087	29.19	71.90	31.90	45.10	13.20	74.29	42.39	59.70	27.80	14.60	3.21	0
23		0.1450	0.1450	180.00	0.0270	0.973	6.127	29.38	0.094	29.29	72.40	32.40	45.10	12.70	74.39	41.99	59.75	27.35	14.65	3.31	0
24		0.1600	0.1600	182.00	0.0300	0.970	6.146	29.61	0.105	29.51	73.00	33.00	45.10	12.10	74.61	41.61	59.86	26.86	14.76	3.44	0
25		0.1700	0.1700	184.00	0.0320	0.968	6.158	29.88	0.112	29.77	73.50	33.50	45.10	11.60	74.87	41.37	59.99	26.49	14.89	3.57	0
26		0.1800	0.1800	185.00	0.0340	0.966	6.171	29.98	0.118	29.86	73.60	33.60	45.10	11.50	74.96	41.36	60.03	26.43	14.93	3.60	0
27		0.1940	0.1940	186.00	0.0360	0.964	6.184	30.08	0.125	29.96	73.90	33.90	45.10	11.20	75.06	41.16	60.08	26.18	14.98	3.68	0
28		0.2050	0.2050	187.00	0.0380	0.962	6.197	30.18	0.132	30.05	74.10	34.10	45.10	11.00	75.15	41.05	60.13	26.03	15.03	3.73	0
29		0.2250	0.2250	189.00	0.0420	0.958	6.223	30.37	0.146	30.22	74.50	34.50	45.10	10.60	75.32	40.82	60.21	25.71	15.11	3.85	0
30		0.2550	0.2550	192.00	0.0480	0.952	6.262	30.66	0.167	30.49	75.00	35.00	45.10	10.10	75.59	40.59	60.35	25.35	15.25	4.02	0
31		0.2650	0.2650	194.00	0.0500	0.950	6.275	30.92	0.174	30.75	75.10	35.10	45.10	10.00	75.85	40.75	60.48	25.38	15.38	4.08	0
32		0.2800	0.2800	195.00	0.0520	0.948	6.288	31.01	0.181	30.83	75.20	35.20	45.10	9.90	75.93	40.73	60.52	25.32	15.42	4.11	0
33		0.3150	0.3150	198.00	0.0590	0.941	6.335	31.25	0.206	31.04	75.40	35.40	45.10	9.70	76.14	40.74	60.62	25.22	15.52	4.20	0
34		0.3500	0.3500	200.00	0.0660	0.934	6.383	31.33	0.230	31.10	76.00	36.00	45.10	9.10	76.20	40.20	60.65	24.65	15.55	4.42	0
35		0.4000	0.4000	207.00	0.0750	0.925	6.445	32.12	0.261	31.86	76.40	36.40	45.10	8.70	76.96	40.56	61.03	24.63	15.93	4.66	0
36		0.4500	0.4500	209.00	0.0840	0.916	6.508	32.11	0.293	31.82	76.40	36.40	45.10	8.70	76.92	40.52	61.01	24.61	15.91	4.66	0
37		0.5000	0.5000	212.00	0.0940	0.906	6.580	32.22	0.328	31.89	76.40	36.40	45.10	8.70	76.99	40.59	61.05	24.65	15.95	4.67	0
38		0.5400	0.5400	214.00	0.1010	0.899	6.631	32.27	0.352	31.92	76.40	36.40	45.10	8.70	77.02	40.62	61.06	24.66	15.96	4.67	0
39		0.5700	0.5700	215.00	0.1070	0.893	6.676	32.20	0.373	31.83	76.40	36.40	45.10	8.70	76.93	40.53	61.02	24.62	15.92	4.66	0
40		0.5900	0.5900	218.00	0.1110	0.889	6.706	32.51	0.387	32.12	76.40	36.40	45.10	8.70	77.22	40.82	61.16	24.76	16.06	4.69	0
41		0.6500	0.6500	218.00	0.1220	0.878	6.790	32.11	0.425	31.69	76.40	36.40	45.10	8.70	76.79	40.39	60.95	24.55	15.85	4.64	0
42		0.7400	0.7400	218.00	0.1390	0.861	6.924	31.48	0.484	31.00	76.30	36.30	45.10	8.80	76.10	39.80	60.60	24.30	15.50	4.52	0
43		0.7900	0.7900	218.00	0.1480	0.852	6.997	31.16	0.516	30.64	76.20	36.20	45.10	8.90	75.74	39.54	60.42	24.22	15.32	4.44	0
44		0.8500	0.8500	219.00	0.1590	0.841	7.088	30.90	0.554	30.35	76.30	36.30	45.10	8.80	75.45	39.15	60.28	23.98	15.18	4.45	0
45		0.9200	0.9200	220.00	0.1720	0.828	7.200	30.56	0.599	29.96	76.30	36.30	45.10	8.80	75.06	38.76	60.08	23.78	14.98	4.40	0
46		0.9600	0.9600	221.00	0.1800	0.820	7.270	30.40	0.627	29.77	76.30	36.30	45.10	8.80	74.87	38.57	59.99	23.69	14.89	4.38	0

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04





Specimen No.			1	2	3	
Initial	Water Content, %	ω_O	58.4	56.7		
Initial	Dry Density, lbs/ft^3	γ_{d_o}	63.7	64.1		
Initial	Saturation, %	S_O	96.8	94.9		
Initial	Void Ratio	e_O	1.61	1.59		
Before Shear	Water Content, %	ω_f	54.1	50.2		
Before Shear	Dry Density, lbs/ft^3	γ_{d_c}	66.0	67.2		
Before Shear	Saturation, %	S_C	100.0	100.0		
Before Shear	Void Ratio	e_C	1.52	1.47		
Before Shear	Final Back Pressure, tsf	U_O	2.9	2.9		
Minor Principal Stress, tsf		σ_3	0.45	0.69		
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.67	0.71		
Time to $(\sigma_1-\sigma_3)_{max}$, min		t_f				
Deviator Stress @ 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.64	0.74		
Axial Strain at failure, %		ε	7.0	5.9		
Peak Pore Pressure at failure, tsf		U	3.247	3.449		
Δ Pore Pressure at failure (ΔU), tsf		ΔU	0.324	0.547		

Rate of strain, %/hr: 0.25

Description of Specimen 1: Dark Gray Sandy SILT (MH)

Description of Specimen 2: Dark Gray Sandy SILT (MH)

Description of Specimen 3: Dark Gray Sandy SILT (MH)

Amount of Material Finer than the No. 200, %: 66.6

			1	2	3	
Initial Diameter, in		D_O	2.862	2.850		
Initial Height, in		H_O	5.526	5.533		

LL: 73 | PL: 32 | PI: 41 | G_S: 2.66 Measured

Type of Specimens: Undisturbed | Type of Test: ASTM D-4767

Remarks: B Parameter >/= 0.99

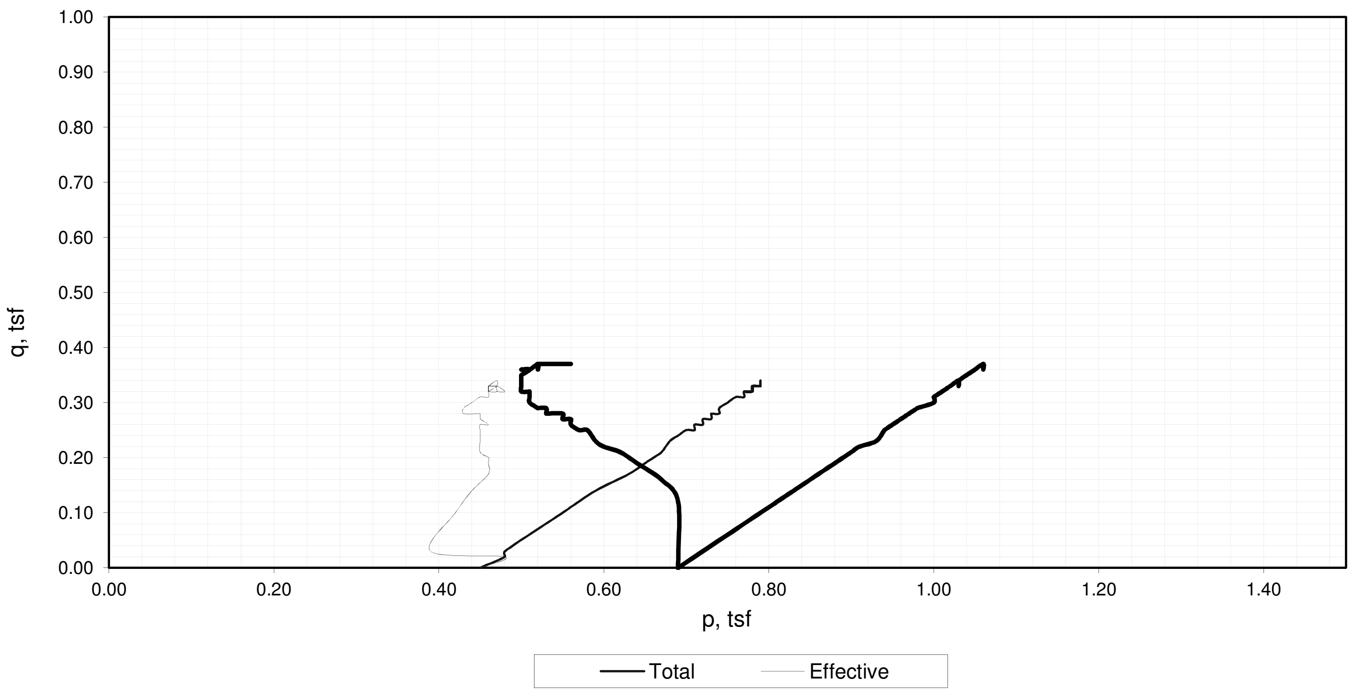
Peak Strength selected at maximum effective stress ratio (obliquity)

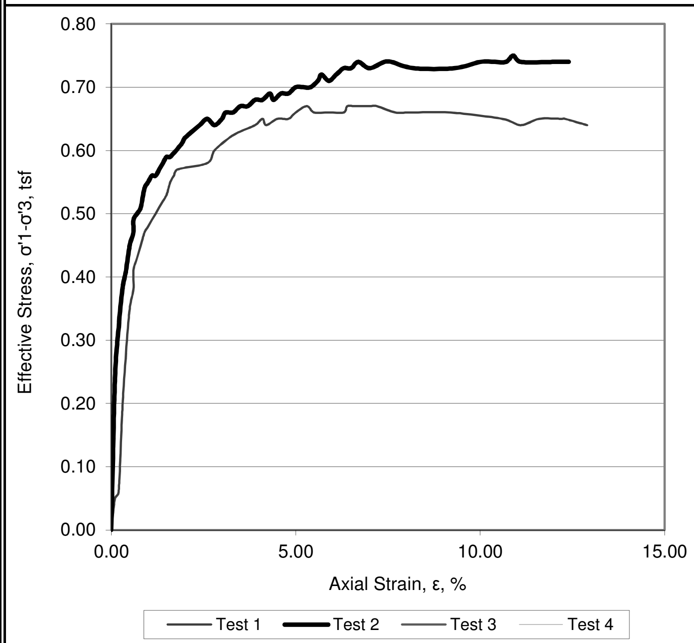
Method of Saturation: Wet Mounted

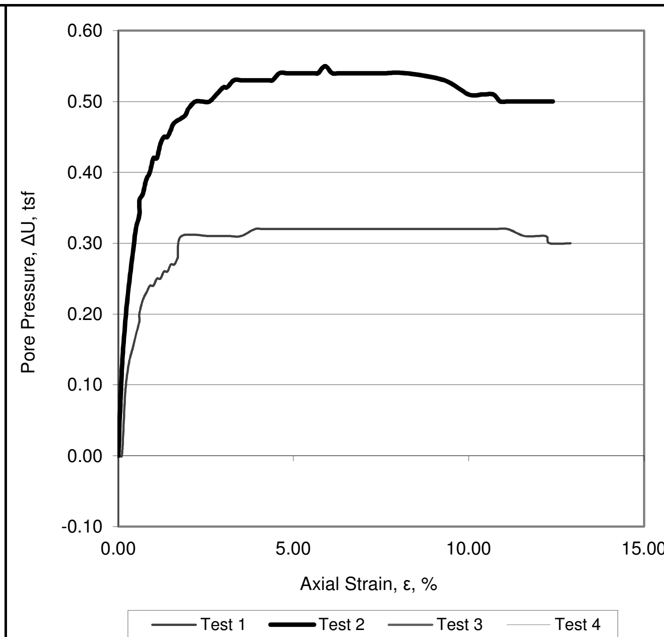
KLEINFELDER
Bright People. Right Solutions.

9200 SW Nimbus Ave
Beaverton, Oregon
p| 503-644-9447
f| 916.3643-1701
kleinfelder.com

Project Name:	Arkema Early Action
Project Number:	107510
Boring Number:	SPT-2
Sample ID:	ARK-SPT-2
Sample Depth, ft.:	20.5-22.5
Report Date:	December 15, 2009



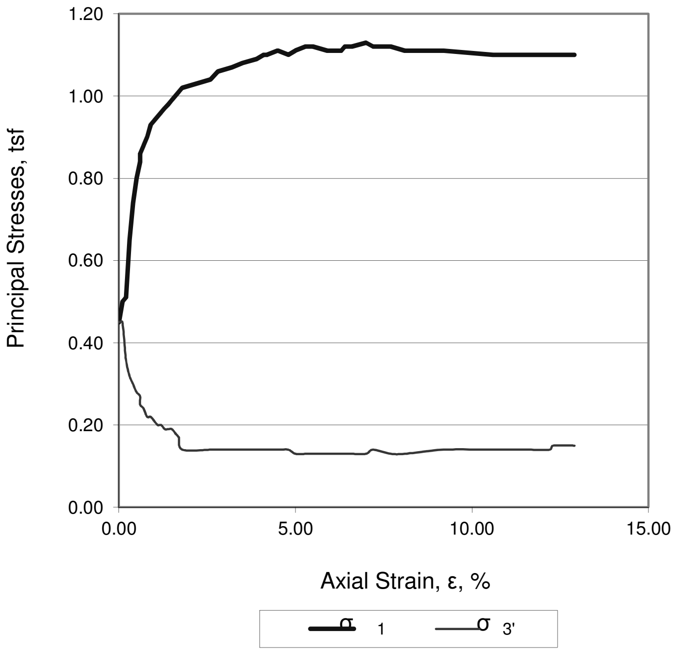




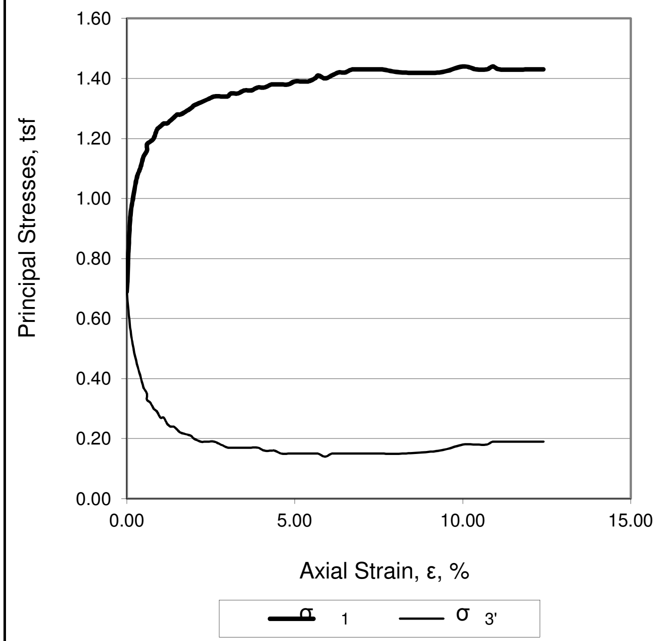
Rate of strain, % / hr: 0.25									
Description of Specimen 1 Dark Gray Sandy SILT (MH)									
Description of Specimen 2 Dark Gray Sandy SILT (MH)									
Description of Specimen 3 Dark Gray Sandy SILT (MH)									
Amount of Material Finer than the No. 200, %	66.6								
LL: 73	PL: 32	PI: 41	G_S: 2.66 Measured	Type of Specimen:	Undisturbed	Type of Test: ASTM D-4767			
Remarks: B Parameter >/= 0.99									
Peak Strength selected at maximum effective stress ratio (obliquity)									
Method of Saturation:	Wet Mounted	Project Name:	Arkema Early Action						
KLEINFELDER Bright People. Right Solutions.	9200 SW Nimbus Ave Beaverton, Oregon p| 503-644-9447 f| 916.3643-1701 kleinfelder.com	Project Number:	107510						
		Boring Number:	SPT-2						
		Sample ID:	ARK-SPT-2						
		Sample Depth, ft.:	20.5-22.5						
		Report Date:	December 15, 2009						

Triaxial Compression Test Report - Page 3 of 3

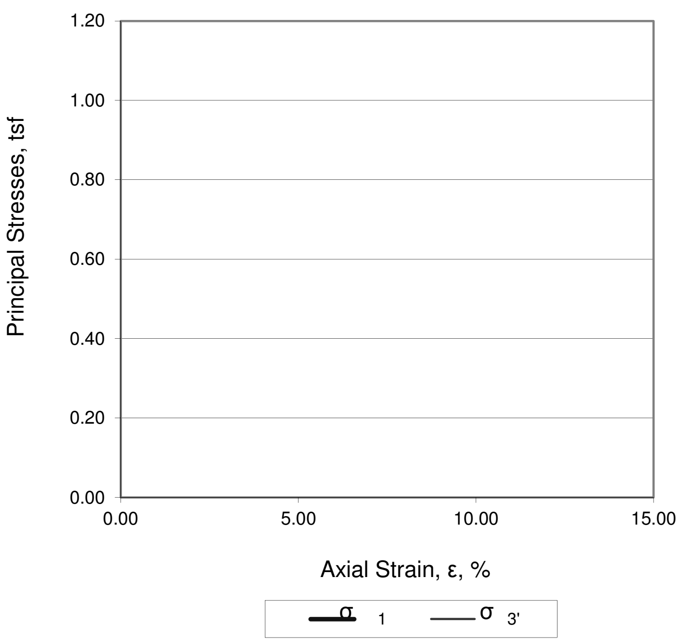
Test 1



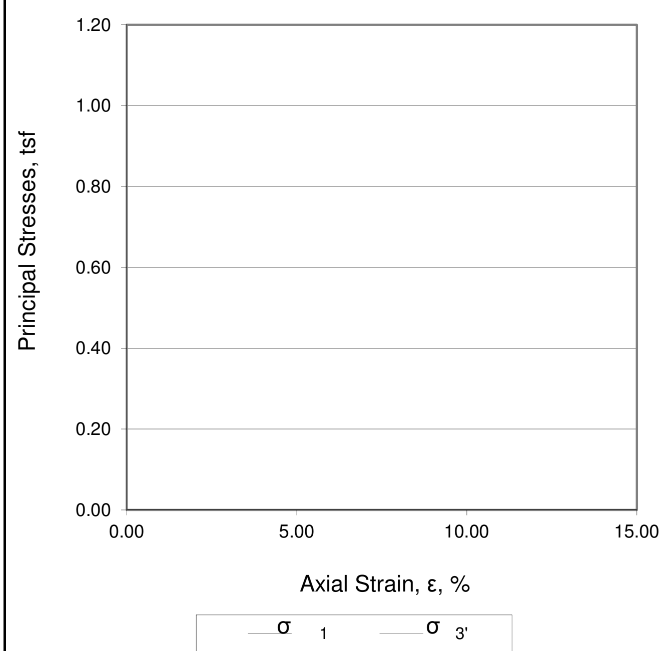
Test 2



Test 3



Test 4



Rate of strain, % / hr: 0.25

Description of Specimen 1	Dark Gray Sandy SILT (MH)
Description of Specimen 2	Dark Gray Sandy SILT (MH)
Description of Specimen 3	Dark Gray Sandy SILT (MH)
Amount of Material Finer than the No. 200, %	66.6

LL: 73	PL: 32	PI: 41	G_S: 2.66 Measured	Type of Specimen: Undisturbed	Type of Test: ASTM D-4767

Remarks: B Parameter >/= 0.99

Peak Strength selected at maximum effective stress ratio (obliquity)

Method of Saturation:	Wet Mounted	Project Name:	Arkema Early Action
KLEINFELDER Bright People. Right Solutions.	9200 SW Nimbus Ave	Project Number:	107510
	Beaverton, Oregon	Boring Number:	SPT-2
	p| 503-644-9447	Sample ID:	ARK-SPT-2
	f| 916.3643-1701	Sample Depth, ft.:	20.5-22.5
	kleinfelder.com	Report Date:	December 15, 2009

Axial Loading Data
Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	9.33		
	Selected Row for Deviator Stress		Selected Deviator Stress	
x	Max Obliquity	6.19	Deviator Stress at Max Obliquity	9.33

Consolidation Pressure(psi/tsf) 6.3 / 0.45

H_O (in) 5.526 D_O (in) 2.862 A_O (in^2) 6.433

H_C (in) 5.429 D_C (in) 2.837 A_C (in^2) 6.319 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress $\sigma_1-\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1-\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1-\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	6.319	0.00	0.000	0.00	40.60	0.00	6.30	6.30	6.30	6.30	6.30	6.30	0.00	1.00	0
2		0.0050	0.0050	4.00	0.0010	0.999	6.326	0.63	0.003	0.63	40.60	0.00	6.30	6.30	6.93	6.93	6.62	6.62	0.32	1.10	0
3		0.0100	0.0100	5.00	0.0020	0.998	6.332	0.79	0.007	0.78	41.90	1.30	6.30	5.00	7.08	5.78	6.69	5.39	0.39	1.16	0
4		0.0150	0.0150	17.00	0.0030	0.997	6.338	2.68	0.010	2.67	42.40	1.80	6.30	4.50	8.97	7.17	7.64	5.84	1.34	1.59	0
5		0.0200	0.0200	25.00	0.0040	0.996	6.345	3.94	0.014	3.93	42.70	2.10	6.30	4.20	10.23	8.13	8.26	6.16	1.96	1.93	0
6		0.0250	0.0250	31.00	0.0050	0.995	6.351	4.88	0.017	4.86	43.00	2.40	6.30	3.90	11.16	8.76	8.73	6.33	2.43	2.25	0
7		0.0300	0.0300	34.00	0.0060	0.994	6.358	5.35	0.020	5.33	43.20	2.60	6.30	3.70	11.63	9.03	8.97	6.37	2.67	2.44	0
8		0.0350	0.0350	36.00	0.0060	0.994	6.358	5.66	0.020	5.64	43.40	2.80	6.30	3.50	11.94	9.14	9.12	6.32	2.82	2.61	0
9		0.0400	0.0400	38.00	0.0070	0.993	6.364	5.97	0.024	5.95	43.60	3.00	6.30	3.30	12.25	9.25	9.27	6.27	2.97	2.80	0
10		0.0450	0.0450	40.00	0.0080	0.992	6.370	6.28	0.027	6.25	43.80	3.20	6.30	3.10	12.55	9.35	9.43	6.23	3.13	3.02	0
11		0.0500	0.0500	42.00	0.0090	0.991	6.377	6.59	0.030	6.56	43.90	3.30	6.30	3.00	12.86	9.56	9.58	6.28	3.28	3.19	0
12		0.0550	0.0550	43.00	0.0100	0.990	6.383	6.74	0.034	6.71	44.00	3.40	6.30	2.90	13.01	9.61	9.65	6.25	3.35	3.31	0
13		0.0600	0.0600	44.00	0.0110	0.989	6.390	6.89	0.037	6.85	44.10	3.50	6.30	2.80	13.15	9.65	9.73	6.23	3.43	3.45	0
14		0.0650	0.0650	45.00	0.0120	0.988	6.396	7.04	0.041	7.00	44.10	3.50	6.30	2.80	13.30	9.80	9.80	6.30	3.50	3.50	0
15		0.0700	0.0700	46.00	0.0130	0.987	6.403	7.18	0.044	7.14	44.20	3.60	6.30	2.70	13.44	9.84	9.87	6.27	3.57	3.64	0
16		0.0750	0.0750	47.00	0.0140	0.986	6.409	7.33	0.047	7.28	44.20	3.60	6.30	2.70	13.58	9.98	9.94	6.34	3.64	3.70	0
17		0.0800	0.0800	48.00	0.0150	0.985	6.416	7.48	0.051	7.43	44.30	3.70	6.30	2.60	13.73	10.03	10.01	6.31	3.71	3.86	0
18		0.0850	0.0850	49.00	0.0160	0.984	6.422	7.63	0.054	7.58	44.40	3.80	6.30	2.50	13.88	10.08	10.09	6.29	3.79	4.03	0
19		0.0900	0.0900	50.00	0.0170	0.983	6.429	7.78	0.058	7.72	44.50	3.90	6.30	2.40	14.02	10.12	10.16	6.26	3.86	4.22	0
20		0.0950	0.0950	50.00	0.0170	0.983	6.429	7.78	0.058	7.72	44.50	3.90	6.30	2.40	14.02	10.12	10.16	6.26	3.86	4.22	0
21		0.1000	0.1000	51.00	0.0180	0.982	6.435	7.93	0.061	7.87	44.90	4.30	6.30	2.00	14.17	9.87	10.23	5.93	3.93	4.93	0
22		0.1400	0.1400	53.00	0.0260	0.974	6.488	8.17	0.088	8.08	44.90	4.30	6.30	2.00	14.38	10.08	10.34	6.04	4.04	5.04	0
23		0.1500	0.1500	55.00	0.0280	0.972	6.501	8.46	0.095	8.37	44.90	4.30	6.30	2.00	14.67	10.37	10.48	6.18	4.18	5.18	0
24		0.1750	0.1750	57.00	0.0320	0.968	6.528	8.73	0.108	8.62	44.90	4.30	6.30	2.00	14.92	10.62	10.61	6.31	4.31	5.31	0
25		0.1900	0.1900	58.00	0.0350	0.965	6.549	8.86	0.118	8.74	44.90	4.30	6.30	2.00	15.04	10.74	10.67	6.37	4.37	5.37	0
26		0.2100	0.2100	59.00	0.0390	0.961	6.576	8.97	0.132	8.84	45.00	4.40	6.30	1.90	15.14	10.74	10.72	6.32	4.42	5.65	0
27		0.2200	0.2200	60.00	0.0410	0.959	6.590	9.10	0.139	8.96	45.00	4.40	6.30	1.90	15.26	10.86	10.78	6.38	4.48	5.72	0
28		0.2300	0.2300	60.00	0.0420	0.958	6.596	9.10	0.142	8.96	45.00	4.40	6.30	1.90	15.26	10.86	10.78	6.38	4.48	5.71	0
29		0.2450	0.2450	61.00	0.0450	0.955	6.617	9.22	0.152	9.07	45.00	4.40	6.30	1.90	15.37	10.97	10.83	6.43	4.53	5.77	0
30		0.2600	0.2600	61.00	0.0480	0.952	6.638	9.19	0.162	9.03	45.00	4.40	6.30	1.90	15.33	10.93	10.81	6.41	4.51	5.75	0
31		0.2700	0.2700	62.00	0.0500	0.950	6.652	9.32	0.169	9.15	45.10	4.50	6.30	1.80	15.45	10.95	10.88	6.38	4.58	6.08	0
32		0.2900	0.2900	63.00	0.0530	0.947	6.673	9.44	0.179	9.26	45.10	4.50	6.30	1.80	15.56	11.06	10.93	6.43	4.63	6.15	0
33		0.3000	0.3000	63.00	0.0550	0.945	6.687	9.42	0.186	9.23	45.10	4.50	6.30	1.80	15.53	11.03	10.92	6.42	4.62	6.13	0
34		0.3200	0.3200	63.00	0.0590	0.941	6.716	9.38	0.200	9.18	45.10	4.50	6.30	1.80	15.48	10.98	10.89	6.39	4.59	6.10	0
35		0.3400	0.3400	63.00	0.0630	0.937	6.744	9.34	0.213	9.13	45.10	4.50	6.30	1.80	15.43	10.93	10.86	6.36	4.56	6.07	0
36		0.3500	0.3500	64.00	0.0640	0.936	6.751	9.48	0.217	9.26	45.10	4.50	6.30	1.80	15.56	11.06	10.93	6.43	4.63	6.15	0
37		0.3600	0.3600	64.00	0.0660	0.934	6.766	9.46	0.223	9.24	45.10	4.50	6.30	1.80	15.54	11.04	10.92	6.42	4.62	6.13	0
38		0.3800	0.3800	65.00	0.0700	0.930	6.795	9.57	0.237	9.33	45.10	4.50	6.30	1.80	15.63	11.13	10.97	6.47	4.67	6.19	0
39		0.3900	0.3900	65.00	0.0720	0.928	6.810	9.54	0.244	9.30	45.00	4.40	6.30	1.90	15.60	11.20	10.95	6.55	4.65	5.89	0
40		0.4200	0.4200	65.00	0.0770	0.923	6.847	9.49	0.261	9.23	45.10	4.50	6.30	1.80	15.53	11.03	10.91	6.41	4.61	6.13	0
41		0.4400	0.4400	65.00	0.0810	0.919	6.876	9.45	0.274	9.18	45.10	4.50	6.30	1.80	15.48	10.98	10.89	6.39	4.59	6.10	0

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Axial Loading Data
Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	9.33				
	Selected Row for Deviator Stress		Selected Deviator Stress			
x	Max Obliquity	6.19	Deviator Stress at Max Obliquity	9.33		

Consolidation Pressure(psi/tsf) 6.3 / 0.45

H_O (in) 5.526 D_O (in) 2.862 A_O (in^2) 6.433

H_C (in) 5.429 D_C (in) 2.837 A_C (in^2) 6.319

Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1\text{-}\varepsilon$ in^2	Deviator Stress $\sigma_1\text{-}\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1\text{-}\sigma_{3)}$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1.\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
42		0.5000	0.5000	66.00	0.0920	0.908	6.960	9.48	0.311	9.17	45.00	4.40	6.30	1.90	15.47	11.07	10.88	6.48	4.58	5.83	0
43		0.5750	0.5750	66.00	0.1060	0.894	7.069	9.34	0.359	8.98	45.00	4.40	6.30	1.90	15.28	10.88	10.79	6.39	4.49	5.73	0
44		0.6000	0.6000	66.00	0.1110	0.889	7.108	9.29	0.376	8.91	45.00	4.40	6.30	1.90	15.21	10.81	10.76	6.36	4.46	5.69	0
45		0.6300	0.6300	67.00	0.1160	0.884	7.149	9.37	0.393	8.98	44.90	4.30	6.30	2.00	15.28	10.98	10.79	6.49	4.49	5.49	0
46		0.6600	0.6600	68.00	0.1220	0.878	7.197	9.45	0.413	9.04	44.90	4.30	6.30	2.00	15.34	11.04	10.82	6.52	4.52	5.52	0
47		0.6700	0.6700	68.00	0.1230	0.877	7.206	9.44	0.416	9.02	44.80	4.20	6.30	2.10	15.32	11.12	10.81	6.61	4.51	5.30	0
48		0.7000	0.7000	68.00	0.1290	0.871	7.255	9.37	0.437	8.93	44.80	4.20	6.30	2.10	15.23	11.03	10.77	6.57	4.47	5.25	0
49																					0
50																					0
51																					0
52																					

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Arkema Early Action ARK-SPT-2 20.5-22.5

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	10.35		
	Selected Row for Deviator Stress		Selected Deviator Stress	
x	Max Obliquity	5.95	Deviator Stress at Max Obliquity	9.91

Consolidation Pressure(psi/tsf) 9.6 / 0.69

H_O (in) 5.533 D_O (in) 2.850 A_O (in^2) 6.380

H_C (in) 5.398 D_C (in) 2.818 A_C (in^2) 6.236 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1\text{-}\varepsilon$ in^2	Deviator Stress $\sigma_1\text{-}\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1\text{-}\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1\text{-}\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	6.236	0.00	0.000	0.00	40.30	0.00	9.60	9.60	9.60	9.60	9.60	9.60	0.00	1.00	0
2		0.0050	0.0050	21.00	0.0010	0.999	6.242	3.36	0.003	3.36	42.00	1.70	9.60	7.90	12.96	11.26	11.28	9.58	1.68	1.43	0
3		0.0100	0.0100	28.00	0.0020	0.998	6.248	4.48	0.007	4.47	42.90	2.60	9.60	7.00	14.07	11.47	11.84	9.24	2.24	1.64	0
4		0.0150	0.0150	33.00	0.0030	0.997	6.254	5.28	0.010	5.27	43.70	3.40	9.60	6.20	14.87	11.47	12.24	8.83	2.64	1.85	0
5		0.0200	0.0200	36.00	0.0040	0.996	6.261	5.75	0.014	5.74	44.20	3.90	9.60	5.70	15.34	11.44	12.47	8.57	2.87	2.01	0
6		0.0255	0.0255	39.00	0.0050	0.995	6.267	6.22	0.017	6.20	44.70	4.40	9.60	5.20	15.80	11.40	12.70	8.30	3.10	2.19	0
7		0.0300	0.0300	41.00	0.0060	0.994	6.273	6.54	0.020	6.52	45.00	4.70	9.60	4.90	16.12	11.42	12.86	8.16	3.26	2.33	0
8		0.0350	0.0350	43.00	0.0060	0.994	6.273	6.85	0.020	6.83	45.30	5.00	9.60	4.60	16.43	11.43	13.02	8.02	3.42	2.48	0
9		0.0400	0.0400	44.00	0.0070	0.993	6.280	7.01	0.024	6.99	45.50	5.20	9.60	4.40	16.59	11.39	13.09	7.89	3.49	2.59	0
10		0.0450	0.0450	45.00	0.0080	0.992	6.286	7.16	0.027	7.13	45.70	5.40	9.60	4.20	16.73	11.33	13.17	7.77	3.57	2.70	0
11		0.0500	0.0500	47.00	0.0090	0.991	6.292	7.47	0.031	7.44	45.90	5.60	9.60	4.00	17.04	11.44	13.32	7.72	3.72	2.86	0
12		0.0550	0.0550	48.00	0.0100	0.990	6.299	7.62	0.034	7.59	46.10	5.80	9.60	3.80	17.19	11.39	13.39	7.59	3.79	3.00	0
13		0.0600	0.0600	49.00	0.0110	0.989	6.305	7.77	0.037	7.73	46.20	5.90	9.60	3.70	17.33	11.43	13.47	7.57	3.87	3.09	0
14		0.0650	0.0650	49.00	0.0120	0.988	6.311	7.76	0.041	7.72	46.40	6.10	9.60	3.50	17.32	11.22	13.46	7.36	3.86	3.21	0
15		0.0700	0.0700	50.00	0.0130	0.987	6.318	7.91	0.044	7.87	46.50	6.20	9.60	3.40	17.47	11.27	13.53	7.33	3.93	3.31	0
16		0.0750	0.0750	51.00	0.0140	0.986	6.324	8.06	0.048	8.01	46.60	6.30	9.60	3.30	17.61	11.31	13.61	7.31	4.01	3.43	0
17		0.0800	0.0800	52.00	0.0150	0.985	6.331	8.21	0.051	8.16	46.70	6.40	9.60	3.20	17.76	11.36	13.68	7.28	4.08	3.55	0
18		0.0850	0.0850	52.00	0.0160	0.984	6.337	8.21	0.055	8.16	46.80	6.50	9.60	3.10	17.76	11.26	13.68	7.18	4.08	3.63	0
19		0.1000	0.1000	54.00	0.0190	0.981	6.356	8.50	0.065	8.44	47.00	6.70	9.60	2.90	18.04	11.34	13.82	7.12	4.22	3.91	0
20		0.1100	0.1100	55.00	0.0200	0.980	6.363	8.64	0.068	8.57	47.10	6.80	9.60	2.80	18.17	11.37	13.89	7.09	4.29	4.06	0
21		0.1200	0.1200	56.00	0.0220	0.978	6.376	8.78	0.075	8.71	47.20	6.90	9.60	2.70	18.31	11.41	13.95	7.05	4.35	4.22	0
22		0.1300	0.1300	57.00	0.0240	0.976	6.389	8.92	0.082	8.84	47.30	7.00	9.60	2.60	18.44	11.44	14.02	7.02	4.42	4.40	0
23		0.1430	0.1430	58.00	0.0260	0.974	6.402	9.06	0.089	8.97	47.30	7.00	9.60	2.60	18.57	11.57	14.09	7.09	4.49	4.45	0
24		0.1500	0.1500	58.00	0.0280	0.972	6.415	9.04	0.095	8.95	47.40	7.10	9.60	2.50	18.55	11.45	14.07	6.97	4.47	4.58	0
25		0.1600	0.1600	59.00	0.0300	0.970	6.429	9.18	0.102	9.08	47.50	7.20	9.60	2.40	18.68	11.48	14.14	6.94	4.54	4.78	0
26		0.1700	0.1700	60.00	0.0310	0.969	6.435	9.32	0.106	9.21	47.50	7.20	9.60	2.40	18.81	11.61	14.21	7.01	4.61	4.84	0
27		0.1800	0.1800	60.00	0.0330	0.967	6.448	9.31	0.112	9.20	47.60	7.30	9.60	2.30	18.80	11.50	14.20	6.90	4.60	5.00	0
28		0.1900	0.1900	61.00	0.0350	0.965	6.462	9.44	0.119	9.32	47.60	7.30	9.60	2.30	18.92	11.62	14.26	6.96	4.66	5.05	0
29		0.2000	0.2000	61.00	0.0370	0.963	6.475	9.42	0.126	9.29	47.60	7.30	9.60	2.30	18.89	11.59	14.25	6.95	4.65	5.04	0
30		0.2100	0.2100	62.00	0.0390	0.961	6.489	9.55	0.133	9.42	47.60	7.30	9.60	2.30	19.02	11.72	14.31	7.01	4.71	5.09	0
31		0.2200	0.2200	62.00	0.0410	0.959	6.502	9.54	0.140	9.40	47.70	7.40	9.60	2.20	19.00	11.60	14.30	6.90	4.70	5.27	0
32		0.2300	0.2300	63.00	0.0430	0.957	6.516	9.67	0.146	9.52	47.70	7.40	9.60	2.20	19.12	11.72	14.36	6.96	4.76	5.33	0
33		0.2400	0.2400	63.00	0.0440	0.956	6.523	9.66	0.150	9.51	47.70	7.40	9.60	2.20	19.11	11.71	14.36	6.95	4.76	5.32	0
34		0.2500	0.2500	64.00	0.0460	0.954	6.536	9.79	0.157	9.63	47.80	7.50	9.60	2.10	19.23	11.73	14.42	6.92	4.82	5.59	0
35		0.2600	0.2600	64.00	0.0480	0.952	6.550	9.77	0.164	9.61	47.80	7.50	9.60	2.10	19.21	11.71	14.40	6.90	4.80	5.57	0
36		0.2700	0.2700	65.00	0.0500	0.950	6.564	9.90	0.170	9.73	47.80	7.50	9.60	2.10	19.33	11.83	14.47	6.97	4.87	5.63	0
37		0.2800	0.2800	65.00	0.0520	0.948	6.578	9.88	0.177	9.70	47.80	7.50	9.60	2.10	19.30	11.80	14.45	6.95	4.85	5.62	0
38		0.2900	0.2900	65.00	0.0540	0.946	6.592	9.86	0.184	9.68	47.80	7.50	9.60	2.10	19.28	11.78	14.44	6.94	4.84	5.61	0
39		0.3000	0.3000	66.00	0.0560	0.944	6.606	9.99	0.191	9.80	47.80	7.50	9.60	2.10	19.40	11.90	14.50	7.00	4.90	5.67	0
40		0.3100	0.3100	67.00	0.0570	0.943	6.613	10.13	0.194	9.94	47.80	7.50	9.60	2.10	19.54	12.04	14.57	7.07	4.97	5.73	0
41		0.3200	0.3200	67.00	0.0590	0.941	6.627	10.11	0.201	9.91	47.90	7.60	9.60	2.00	19.51	11.91	14.55	6.95	4.95	5.95	0
42		0.3300	0.3300	68.00	0.0610	0.939	6.641	10.24	0.208	10.03	47.80	7.50	9.60	2.10	19.63	12.13	14.62	7.12	5.02	5.78	0
43		0.3400	0.3400	69.00	0.0630	0.937	6.655	10.37	0.215	10.16	47.80	7.50	9.60	2.10	19.76	12.26	14.68	7.18	5.08	5.84	0
44		0.3500	0.3500	69.00	0.0650	0.935	6.669	10.35	0.221	10.13	47.80	7.50	9.60	2.10	19.73	12.23	14.66	7.16	5.06	5.82	0
45		0.3600	0.3600	70.00	0.0670	0.933	6.683	10.47	0.228	10.24	47.80	7.50	9.60	2.10	19.84	12.34	14.72	7.22	5.12	5.88	0

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	10.35		
	Selected Row for Deviator Stress		Selected Deviator Stress	
x	Max Obliquity	5.95	Deviator Stress at Max Obliquity	9.91

Consolidation Pressure(psi/tsf) 9.6 / 0.69

H_O (in) 5.533 D_O (in) 2.850 A_O (in^2) 6.380

H_C (in) 5.398 D_C (in) 2.818 A_C (in^2) 6.236

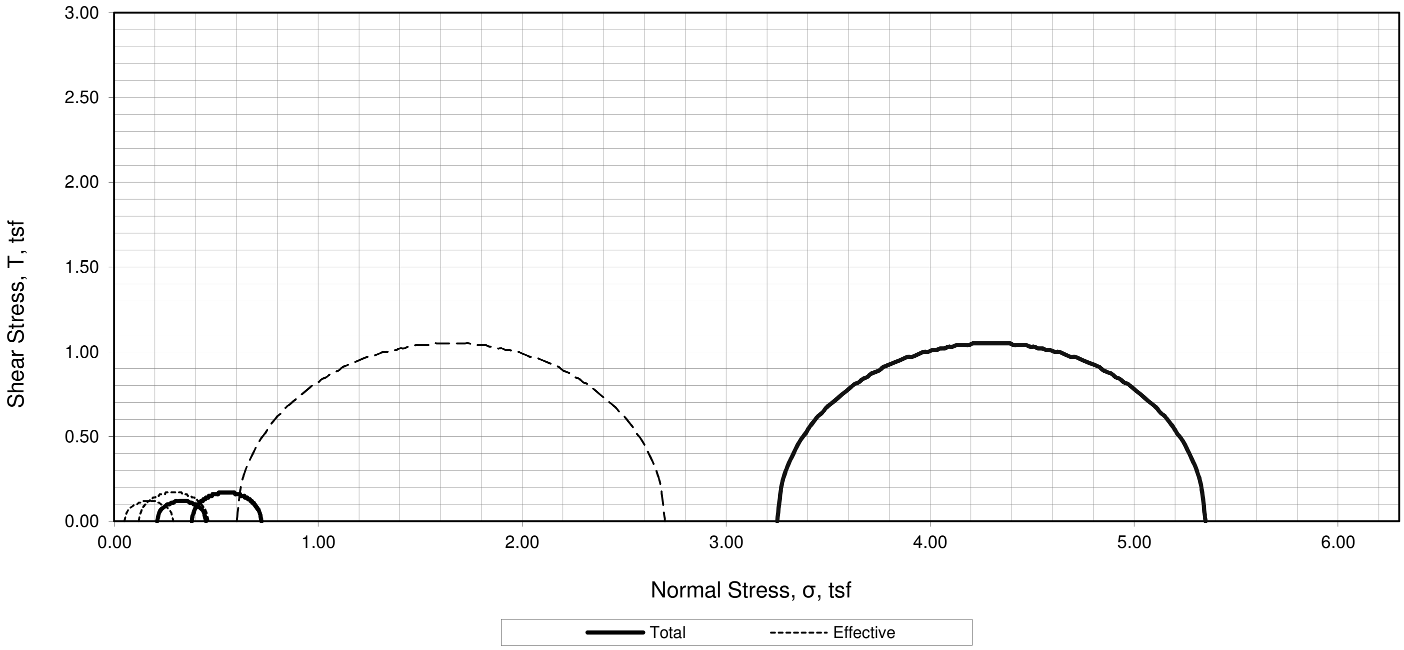
Membrane Thickness: 0.012

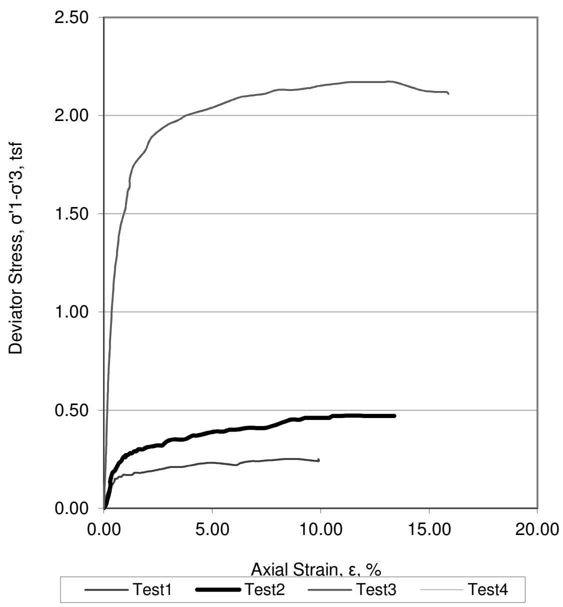
Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	$1-\varepsilon$	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress $\sigma_1-\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1-\sigma_{3)}$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1.\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
46		0.3800	0.3800	70.00	0.0700	0.930	6.705	10.44	0.238	10.20	47.80	7.50	9.60	2.10	19.80	12.30	14.70	7.20	5.10	5.86	0
47		0.4000	0.4000	71.00	0.0740	0.926	6.734	10.54	0.252	10.29	47.80	7.50	9.60	2.10	19.89	12.39	14.74	7.24	5.14	5.90	0
48		0.4100	0.4100	71.00	0.0760	0.924	6.749	10.52	0.259	10.26	47.80	7.50	9.60	2.10	19.86	12.36	14.73	7.23	5.13	5.89	0
49		0.4400	0.4400	71.00	0.0820	0.918	6.793	10.45	0.279	10.17	47.80	7.50	9.60	2.10	19.77	12.27	14.69	7.19	5.09	5.84	0
50		0.5000	0.5000	72.00	0.0930	0.907	6.875	10.47	0.317	10.15	47.70	7.40	9.60	2.20	19.75	12.35	14.68	7.28	5.08	5.62	0
51		0.5400	0.5400	74.00	0.1000	0.900	6.929	10.68	0.341	10.34	47.40	7.10	9.60	2.50	19.94	12.84	14.77	7.67	5.17	5.14	0
52		0.5600	0.5600	74.00	0.1040	0.896	6.959	10.63	0.354	10.28	47.40	7.10	9.60	2.50	19.88	12.78	14.74	7.64	5.14	5.11	0
53		0.5800	0.5800	74.00	0.1070	0.893	6.983	10.60	0.365	10.24	47.40	7.10	9.60	2.50	19.84	12.74	14.72	7.62	5.12	5.09	0
54		0.5900	0.5900	75.00	0.1090	0.891	6.998	10.72	0.371	10.35	47.30	7.00	9.60	2.60	19.95	12.95	14.77	7.77	5.17	4.98	0
55		0.6000	0.6000	75.00	0.1110	0.889	7.014	10.69	0.378	10.31	47.30	7.00	9.60	2.60	19.91	12.91	14.76	7.76	5.16	4.97	0
56		0.6500	0.6500	76.00	0.1200	0.880	7.086	10.73	0.409	10.32	47.30	7.00	9.60	2.60	19.92	12.92	14.76	7.76	5.16	4.97	0
57		0.6700	0.6700	76.00	0.1240	0.876	7.118	10.68	0.422	10.26	47.30	7.00	9.60	2.60	19.86	12.86	14.73	7.73	5.13	4.95	0
58																					0
59																					
60																					

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Triaxial Compression Test Report - Page 1 of 3





Specimen No.			1	2	3	
Initial	Water Content, %	ω_O	71.0	74.3	72.4	
	Dry Density, lbs/ft^3	γ_{d_o}	58.8	55.4	52.7	
	Saturation, %	S_O	100.0	98.7	89.2	
	Void Ratio	e_O	1.85	2.02	2.18	
Before Shear	Water Content, %	ω_f	58.6	58.1	48.9	
	Dry Density, lbs/ft^3	γ_{d_c}	63.1	60.3	65.8	
	Saturation, %	S_C	100.0	100.0	100.0	
	Void Ratio	e_C	1.65	1.77	1.54	
	Final Back Pressure, tsf	U_O	3.6	3.6	2.9	
Minor Principal Stress, tsf		σ_3	0.22	0.38	3.25	
Maximum Deviator Stress, tsf		$(\sigma_1-\sigma_3)_{max}$	0.23	0.34	2.10	
Time to $(\sigma_1\text{-}\sigma_3)_{max}$, min		t_f				
Deviator Stress @ 15% Axial Strain, tsf		$(\sigma_1-\sigma_3)_{15\%}$	0.24	0.47	2.13	
Axial Strain at failure, %		ε	6.3	2.9	6.7	
Peak Pore Pressure at failure, tsf		U	3.758	3.859	5.530	
Δ Pore Pressure at failure (ΔU), tsf		ΔU	0.158	0.259	2.650	

Rate of strain, %/hr: 0.25

Description of Specimen 1: Dark Gray SILT (MH), 10'

Description of Specimen 2: Dark Gray SILT (MH), 11'

Description of Specimen 3: Dark Gray SILT (MH), 14.5'

Amount of Material Finer than the No. 200, %: 88.8

Initial Diameter, in	D_O	2.749	2.833	2.850	
Initial Height, in	H_O	5.684	5.948	5.850	

LL: 63	PL: 38	PI: 25	G_S: 2.68 Measured	Type of Specimens: Undisturbed	Type of Test: ASTM D-4767

Remarks: B Parameter >/= 0.97

Peak Strength selected at maximum effective stress ratio (obliquity)

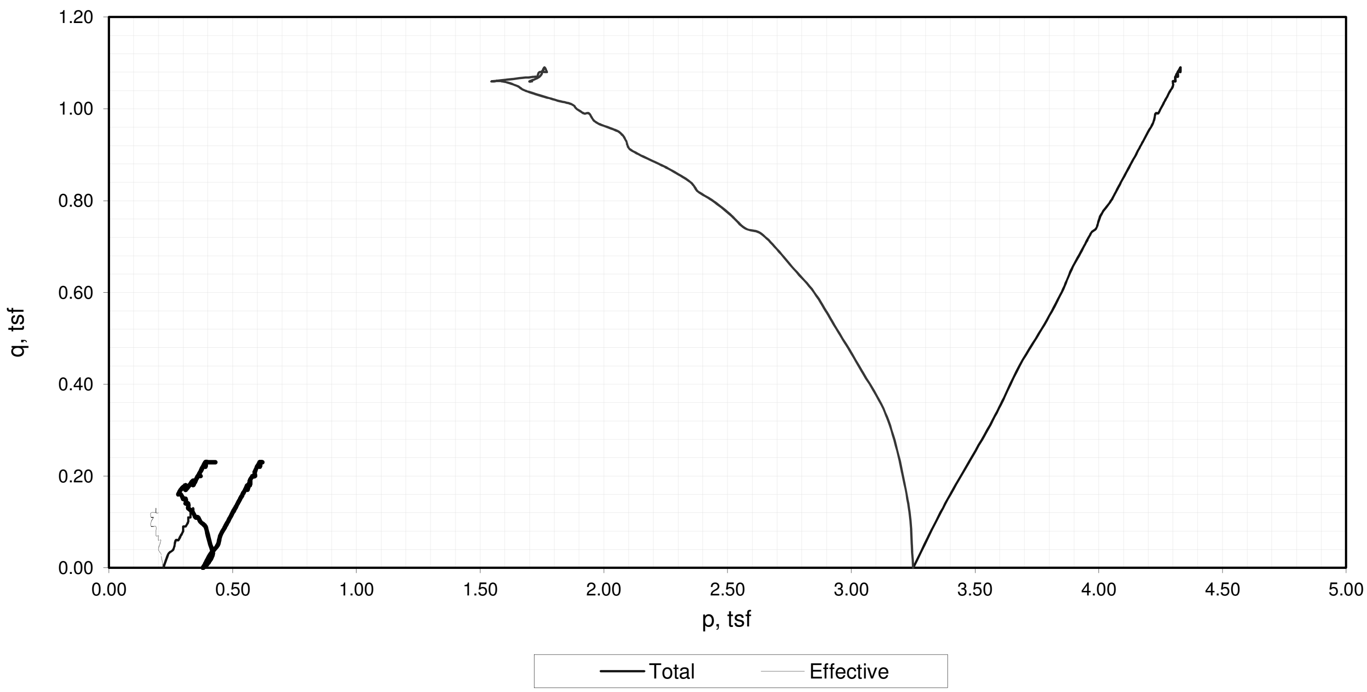
Some scattered wood debris observed in samples

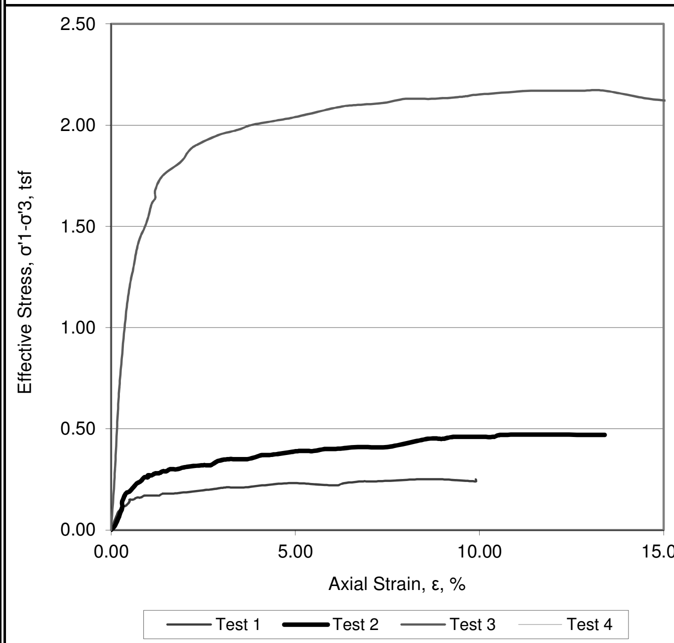
Method of Saturation: Wet Mounted

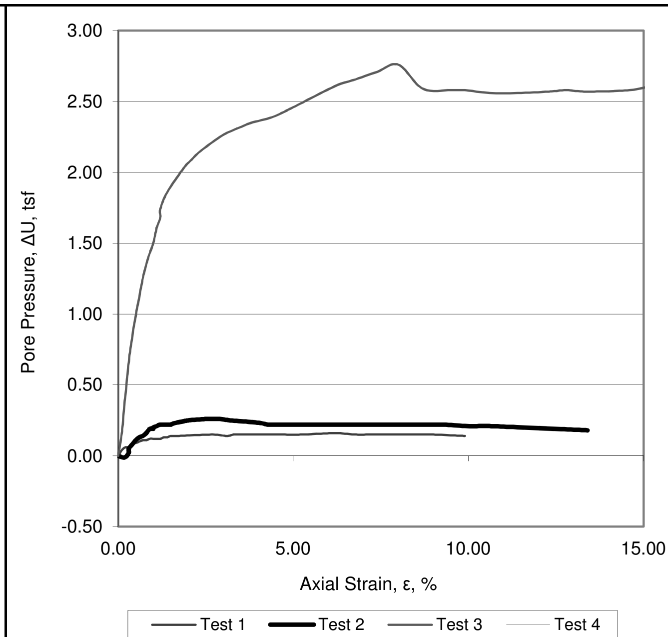
KLEINFELDER
Bright People. Right Solutions.

9200 SW Nimbus Ave
Beaverton, Oregon
p| 503-644-9447
f| 916.3643-1701
kleinfelder.com

Project Name:	Arkema Early Action
Project Number:	107510
Boring Number:	SPT-3
Sample ID:	ARK-SPT-3
Sample Depth, ft.:	9.5-11.5, 13-15
Report Date:	December 15, 2009

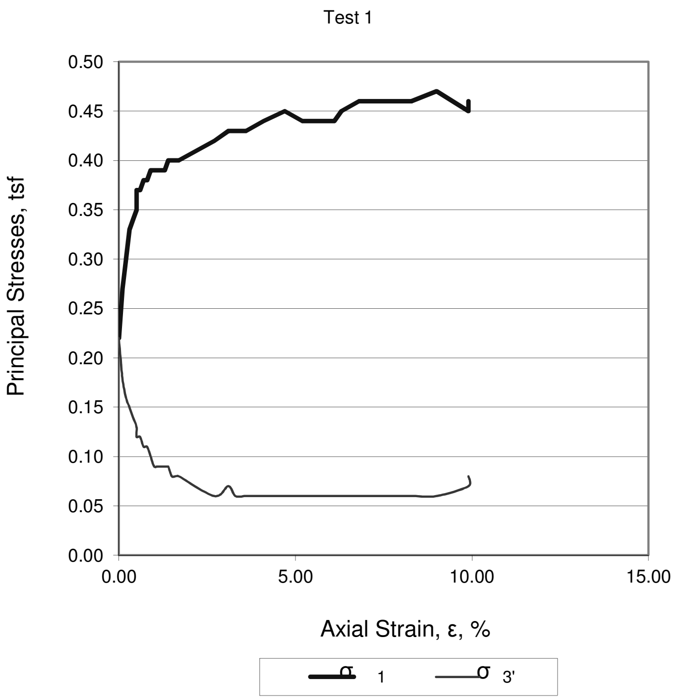


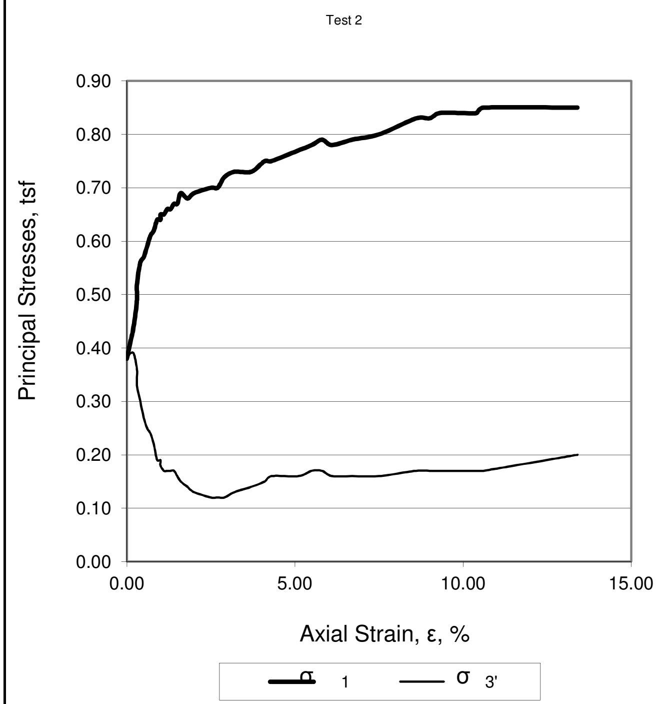


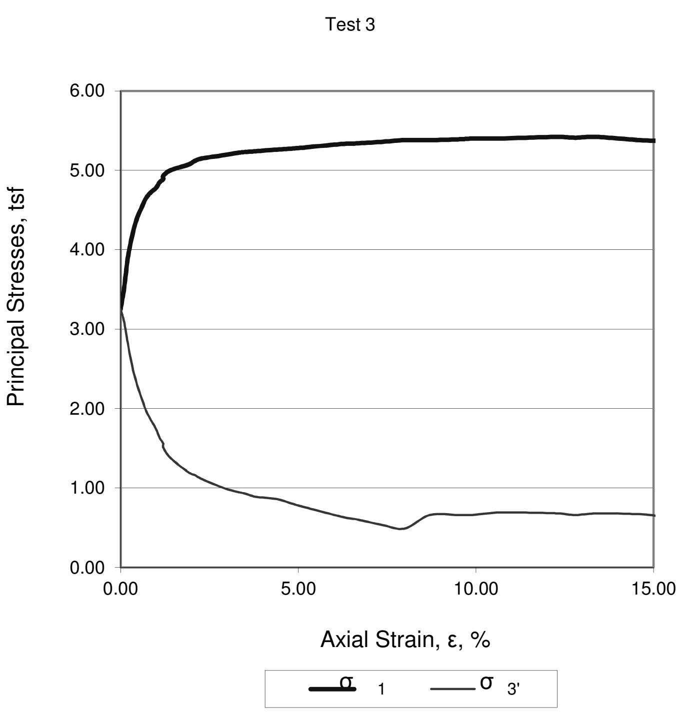


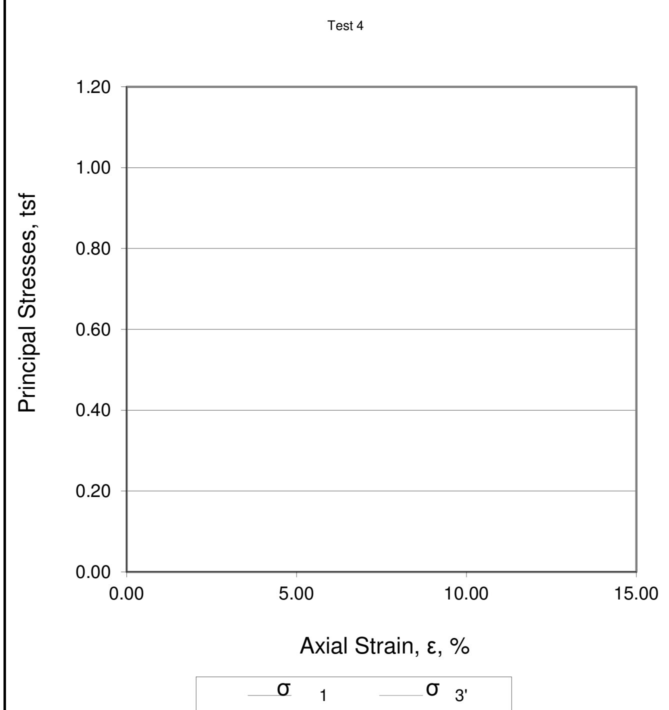
Rate of strain, % / hr: 0.25									
Description of Specimen 1	Dark Gray SILT (MH), 10'								
Description of Specimen 2	Dark Gray SILT (MH), 11'								
Description of Specimen 3	Dark Gray SILT (MH), 14.5'								
Amount of Material Finer than the No. 200, %	88.8								
LL: 63	PL: 38	PI: 25	G_S: 2.68 Measured	Type of Specimen:	Undisturbed	Type of Test: ASTM D-4767			
Remarks: B Parameter >/= 0.97									
Peak Strength selected at maximum effective stress ratio (obliquity)									
Some scattered wood debris observed in samples									
Method of Saturation:	Wet Mounted	Project Name:	Arkema Early Action						
KLEINFELDER Bright People. Right Solutions.	9200 SW Nimbus Ave	Project Number:	107510						
	Beaverton, Oregon	Boring Number:	SPT-3						
	p| 503-644-9447	Sample ID:	ARK-SPT-3						
	f| 916.3643-1701	Sample Depth, ft.:	9.5-11.5, 13-15						
	kleinfelder.com	Report Date:	December 15, 2009						

Triaxial Compression Test Report - Page 3 of 3









Rate of strain, % / hr: 0.25

Description of Specimen 1 Dark Gray SILT (MH), 10'

Description of Specimen 2 Dark Gray SILT (MH), 11'

Description of Specimen 3 Dark Gray SILT (MH), 14.5'

Amount of Material Finer than the No. 200, % 88.8

LL: 63	PL: 38	PI: 25	G_S: 2.68 Measured	Type of Specimen: Undisturbed	Type of Test: ASTM D-4767

Remarks: B Parameter >/= 0.97

Peak Strength selected at maximum effective stress ratio (obliquity)

Some scattered wood debris observed in samples

Method of Saturation: Wet Mounted

9200 SW Nimbus Ave
Beaverton, Oregon
p| 503-644-9447
f| 916.3643-1701
kleinfelder.com

Project Name:	Arkema Early Action
Project Number:	107510
Boring Number:	SPT-3
Sample ID:	ARK-SPT-3
Sample Depth, ft.:	9.5-11.5, 13-15
Report Date:	December 15, 2009

Arkema Early Action ARK-SPT-3 9.5-11.5, 13-15

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	3.52		
	Selected Row for Deviator Stress		Selected Deviator Stress	
x	Max Obliquity	5.04	Deviator Stress at Max Obliquity	3.24

Consolidation Pressure(psi/tsf) 3.0 / 0.22

H_O (in) 5.684 D_O (in) 2.749 A_O (in^2) 5.935

H_C (in) 5.531 D_C (in) 2.690 A_C (in^2) 5.682 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress σ_1-σ_3 = P/A_C lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress ((σ_1-σ_3) - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p (σ_1+σ_3)/2 lbs/in^2	p' (σ'_1+σ'_3)/2 lbs/in^2	q (σ_1-σ_3)/2 lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	5.682	0.00	0.000	0.00	50.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	1.00	0
2		0.0050	0.0050	4.00	0.0010	0.999	5.688	0.70	0.004	0.70	50.50	0.50	3.00	2.50	3.70	3.20	3.35	2.85	0.35	1.28	0
3		0.0100	0.0100	7.00	0.0020	0.998	5.694	1.23	0.007	1.22	50.80	0.80	3.00	2.20	4.22	3.42	3.61	2.81	0.61	1.55	0
4		0.0150	0.0150	9.00	0.0030	0.997	5.699	1.58	0.011	1.57	50.90	0.90	3.00	2.10	4.57	3.67	3.79	2.89	0.79	1.75	0
5		0.0200	0.0200	10.00	0.0040	0.996	5.705	1.75	0.014	1.74	51.10	1.10	3.00	1.90	4.74	3.64	3.87	2.77	0.87	1.91	0
6		0.0250	0.0250	11.00	0.0050	0.995	5.711	1.93	0.018	1.91	51.20	1.20	3.00	1.80	4.91	3.71	3.96	2.76	0.96	2.06	0
7		0.0300	0.0300	12.00	0.0050	0.995	5.711	2.10	0.018	2.08	51.30	1.30	3.00	1.70	5.08	3.78	4.04	2.74	1.04	2.22	0
8		0.0350	0.0350	12.00	0.0060	0.994	5.717	2.10	0.021	2.08	51.40	1.40	3.00	1.60	5.08	3.68	4.04	2.64	1.04	2.30	0
9		0.0400	0.0400	13.00	0.0070	0.993	5.722	2.27	0.025	2.25	51.50	1.50	3.00	1.50	5.25	3.75	4.12	2.62	1.12	2.50	0
10		0.0450	0.0450	13.00	0.0080	0.992	5.728	2.27	0.029	2.24	51.50	1.50	3.00	1.50	5.24	3.74	4.12	2.62	1.12	2.49	0
11		0.0500	0.0500	14.00	0.0090	0.991	5.734	2.44	0.032	2.41	51.60	1.60	3.00	1.40	5.41	3.81	4.20	2.60	1.20	2.72	0
12		0.0550	0.0550	14.00	0.0100	0.990	5.740	2.44	0.036	2.40	51.70	1.70	3.00	1.30	5.40	3.70	4.20	2.50	1.20	2.85	0
13		0.0600	0.0600	14.00	0.0110	0.989	5.746	2.44	0.039	2.40	51.70	1.70	3.00	1.30	5.40	3.70	4.20	2.50	1.20	2.85	0
14		0.0650	0.0650	14.00	0.0120	0.988	5.751	2.43	0.043	2.39	51.70	1.70	3.00	1.30	5.39	3.69	4.19	2.49	1.19	2.84	0
15		0.0700	0.0700	14.00	0.0130	0.987	5.757	2.43	0.046	2.38	51.80	1.80	3.00	1.20	5.38	3.58	4.19	2.39	1.19	2.99	0
16		0.0750	0.0750	15.00	0.0140	0.986	5.763	2.60	0.050	2.55	51.80	1.80	3.00	1.20	5.55	3.75	4.28	2.48	1.28	3.13	0
17		0.0800	0.0800	15.00	0.0140	0.986	5.763	2.60	0.050	2.55	51.80	1.80	3.00	1.20	5.55	3.75	4.28	2.48	1.28	3.13	0
18		0.0850	0.0850	15.00	0.0150	0.985	5.769	2.60	0.054	2.55	51.90	1.90	3.00	1.10	5.55	3.65	4.27	2.37	1.27	3.31	0
19		0.0900	0.0900	15.00	0.0160	0.984	5.775	2.60	0.057	2.54	51.90	1.90	3.00	1.10	5.54	3.64	4.27	2.37	1.27	3.31	0
20		0.0950	0.0950	15.00	0.0170	0.983	5.781	2.59	0.061	2.53	51.90	1.90	3.00	1.10	5.53	3.63	4.26	2.36	1.26	3.30	0
21		0.1500	0.1500	17.00	0.0270	0.973	5.840	2.91	0.096	2.81	52.10	2.10	3.00	0.90	5.81	3.71	4.41	2.31	1.41	4.13	0
22		0.1700	0.1700	18.00	0.0310	0.969	5.864	3.07	0.111	2.96	52.00	2.00	3.00	1.00	5.96	3.96	4.48	2.48	1.48	3.96	0
23		0.1850	0.1850	18.00	0.0330	0.967	5.876	3.06	0.118	2.94	52.10	2.10	3.00	0.90	5.94	3.84	4.47	2.37	1.47	4.27	0
24		0.2000	0.2000	18.00	0.0360	0.964	5.895	3.05	0.128	2.92	52.10	2.10	3.00	0.90	5.92	3.82	4.46	2.36	1.46	4.25	0
25		0.2250	0.2250	19.00	0.0410	0.959	5.925	3.21	0.146	3.06	52.10	2.10	3.00	0.90	6.06	3.96	4.53	2.43	1.53	4.40	0
26		0.2600	0.2600	20.00	0.0470	0.953	5.963	3.35	0.168	3.18	52.10	2.10	3.00	0.90	6.18	4.08	4.59	2.49	1.59	4.54	0
27		0.2850	0.2850	20.00	0.0520	0.948	5.994	3.34	0.186	3.15	52.10	2.10	3.00	0.90	6.15	4.05	4.58	2.48	1.58	4.50	0
28		0.3350	0.3350	20.00	0.0610	0.939	6.051	3.31	0.218	3.09	52.20	2.20	3.00	0.80	6.09	3.89	4.55	2.35	1.55	4.87	0
29		0.3500	0.3500	21.00	0.0630	0.937	6.064	3.46	0.225	3.24	52.20	2.20	3.00	0.80	6.24	4.04	4.62	2.42	1.62	5.04	0
30		0.3750	0.3750	22.00	0.0680	0.932	6.097	3.61	0.243	3.37	52.10	2.10	3.00	0.90	6.37	4.27	4.68	2.58	1.68	4.74	0
31		0.4000	0.4000	22.00	0.0720	0.928	6.123	3.59	0.257	3.33	52.10	2.10	3.00	0.90	6.33	4.23	4.67	2.57	1.67	4.70	0
32		0.4600	0.4600	23.00	0.0830	0.917	6.197	3.71	0.296	3.41	52.10	2.10	3.00	0.90	6.41	4.31	4.71	2.61	1.71	4.79	0
33		0.5000	0.5000	24.00	0.0900	0.910	6.244	3.84	0.321	3.52	52.10	2.10	3.00	0.90	6.52	4.42	4.76	2.66	1.76	4.91	0
34		0.5450	0.5450	23.00	0.0990	0.901	6.307	3.65	0.353	3.30	52.00	2.00	3.00	1.00	6.30	4.30	4.65	2.65	1.65	4.30	0
35		0.5450	0.5450	24.00	0.0990	0.901	6.307	3.81	0.353	3.46	51.90	1.90	3.00	1.10	6.46	4.56	4.73	2.83	1.73	4.14	0
36																					0
37																					0
38																					0
39																					0
40																					0
41																					

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Arkema Early Action ARK-SPT-3 9.5-11.5, 13-15

Axial Loading Data
Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	6.49			
	Selected Row for Deviator Stress		Selected Deviator Stress		
x	Max Obliquity	3.80	Deviator Stress at Max Obliquity	4.76	

Consolidation Pressure(psi/tsf) 5.3 / 0.38

H_O (in) 5.948 D_O (in) 2.833 A_O (in^2) 6.304

H_C (in) 5.748 D_C (in) 2.763 A_C (in^2) 5.997 Membrane Thickness: 0.012

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1-\varepsilon$ in^2	Deviator Stress σ_1-σ_3 = P/A_C lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress ((σ_1-σ_3) - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p (σ_1+σ_3)/2 lbs/in^2	p' (σ'_1+σ'_3)/2 lbs/in^2	q (σ_1-σ_3)/2 lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	5.997	0.00	0.000	0.00	50.00	0.00	5.30	5.30	5.30	5.30	5.30	5.30	0.00	1.00	0
2		0.0050	0.0050	2.00	0.0010	0.999	6.003	0.33	0.003	0.33	49.90	-0.10	5.30	5.40	5.63	5.73	5.47	5.57	0.17	1.06	0
3		0.0100	0.0100	5.00	0.0020	0.998	6.009	0.83	0.007	0.82	49.90	-0.10	5.30	5.40	6.12	6.22	5.71	5.81	0.41	1.15	0
4		0.0150	0.0150	9.00	0.0030	0.997	6.015	1.50	0.010	1.49	50.30	0.30	5.30	5.00	6.79	6.49	6.05	5.75	0.75	1.30	0
5		0.0200	0.0200	12.00	0.0030	0.997	6.015	2.00	0.010	1.99	50.70	0.70	5.30	4.60	7.29	6.59	6.30	5.60	1.00	1.43	0
6		0.0255	0.0255	15.00	0.0040	0.996	6.021	2.49	0.014	2.48	51.10	1.10	5.30	4.20	7.78	6.68	6.54	5.44	1.24	1.59	0
7		0.0300	0.0300	16.00	0.0050	0.995	6.027	2.65	0.017	2.63	51.50	1.50	5.30	3.80	7.93	6.43	6.62	5.12	1.32	1.69	0
8		0.0350	0.0350	18.00	0.0060	0.994	6.033	2.98	0.021	2.96	51.80	1.80	5.30	3.50	8.26	6.46	6.78	4.98	1.48	1.85	0
9		0.0400	0.0400	19.00	0.0070	0.993	6.039	3.15	0.024	3.13	52.00	2.00	5.30	3.30	8.43	6.43	6.86	4.86	1.56	1.95	0
10		0.0450	0.0450	20.00	0.0080	0.992	6.045	3.31	0.028	3.28	52.20	2.20	5.30	3.10	8.58	6.38	6.94	4.74	1.64	2.06	0
11		0.0500	0.0500	22.00	0.0090	0.991	6.051	3.64	0.031	3.61	52.60	2.60	5.30	2.70	8.91	6.31	7.10	4.50	1.80	2.34	0
12		0.0550	0.0550	22.00	0.0100	0.990	6.058	3.63	0.035	3.60	52.70	2.70	5.30	2.60	8.90	6.20	7.10	4.40	1.80	2.38	0
13		0.0600	0.0600	23.00	0.0100	0.990	6.058	3.80	0.035	3.77	52.80	2.80	5.30	2.50	9.07	6.27	7.18	4.38	1.88	2.51	0
14		0.0650	0.0650	23.00	0.0110	0.989	6.064	3.79	0.038	3.75	52.90	2.90	5.30	2.40	9.05	6.15	7.18	4.28	1.88	2.56	0
15		0.0700	0.0700	24.00	0.0120	0.988	6.070	3.95	0.042	3.91	53.00	3.00	5.30	2.30	9.21	6.21	7.25	4.25	1.95	2.70	0
16		0.0750	0.0750	24.00	0.0130	0.987	6.076	3.95	0.045	3.91	53.00	3.00	5.30	2.30	9.21	6.21	7.25	4.25	1.95	2.70	0
17		0.0800	0.0800	25.00	0.0140	0.986	6.082	4.11	0.049	4.06	53.00	3.00	5.30	2.30	9.36	6.36	7.33	4.33	2.03	2.77	0
18		0.0850	0.0850	25.00	0.0150	0.985	6.088	4.11	0.052	4.06	53.10	3.10	5.30	2.20	9.36	6.26	7.33	4.23	2.03	2.84	0
19		0.0900	0.0900	26.00	0.0160	0.984	6.094	4.27	0.056	4.21	53.20	3.20	5.30	2.10	9.51	6.31	7.41	4.21	2.11	3.01	0
20		0.1050	0.1050	26.00	0.0180	0.982	6.107	4.26	0.063	4.20	53.30	3.30	5.30	2.00	9.50	6.20	7.40	4.10	2.10	3.10	0
21		0.1150	0.1150	27.00	0.0200	0.980	6.119	4.41	0.069	4.34	53.50	3.50	5.30	1.80	9.64	6.14	7.47	3.97	2.17	3.41	0
22		0.1450	0.1450	28.00	0.0250	0.975	6.151	4.55	0.087	4.46	53.60	3.60	5.30	1.70	9.76	6.16	7.53	3.93	2.23	3.63	0
23		0.1550	0.1550	28.00	0.0270	0.973	6.163	4.54	0.094	4.45	53.60	3.60	5.30	1.70	9.75	6.15	7.52	3.92	2.22	3.62	0
24		0.1650	0.1650	30.00	0.0290	0.971	6.176	4.86	0.101	4.76	53.60	3.60	5.30	1.70	10.06	6.46	7.68	4.08	2.38	3.80	0
25		0.1850	0.1850	31.00	0.0320	0.968	6.195	5.00	0.111	4.89	53.50	3.50	5.30	1.80	10.19	6.69	7.74	4.24	2.44	3.72	0
26		0.2100	0.2100	31.00	0.0370	0.963	6.227	4.98	0.129	4.85	53.40	3.40	5.30	1.90	10.15	6.75	7.73	4.33	2.43	3.55	0
27		0.2350	0.2350	33.00	0.0410	0.959	6.253	5.28	0.142	5.14	53.20	3.20	5.30	2.10	10.44	7.24	7.87	4.67	2.57	3.45	0
28		0.2500	0.2500	33.00	0.0430	0.957	6.266	5.27	0.149	5.12	53.10	3.10	5.30	2.20	10.42	7.32	7.86	4.76	2.56	3.33	0
29		0.2950	0.2950	35.00	0.0510	0.949	6.319	5.54	0.177	5.36	53.10	3.10	5.30	2.20	10.66	7.56	7.98	4.88	2.68	3.44	0
30		0.3150	0.3150	36.00	0.0550	0.945	6.346	5.67	0.191	5.48	53.00	3.00	5.30	2.30	10.78	7.78	8.04	5.04	2.74	3.38	0
31		0.3350	0.3350	37.00	0.0580	0.942	6.366	5.81	0.202	5.61	53.00	3.00	5.30	2.30	10.91	7.91	8.10	5.10	2.80	3.44	0
32		0.3500	0.3500	37.00	0.0610	0.939	6.387	5.79	0.212	5.58	53.10	3.10	5.30	2.20	10.88	7.78	8.09	4.99	2.79	3.54	0
33		0.3850	0.3850	38.00	0.0670	0.933	6.428	5.91	0.233	5.68	53.10	3.10	5.30	2.20	10.98	7.88	8.14	5.04	2.84	3.58	0
34		0.4300	0.4300	39.00	0.0750	0.925	6.483	6.02	0.261	5.76	53.10	3.10	5.30	2.20	11.06	7.96	8.18	5.08	2.88	3.62	0
35		0.4930	0.4930	43.00	0.0860	0.914	6.561	6.55	0.299	6.25	53.00	3.00	5.30	2.30	11.55	8.55	8.43	5.43	3.13	3.72	0
36		0.5150	0.5150	43.00	0.0900	0.910	6.590	6.53	0.313	6.22	53.00	3.00	5.30	2.30	11.52	8.52	8.41	5.41	3.11	3.70	0
37		0.5350	0.5350	44.00	0.0930	0.907	6.612	6.65	0.323	6.33	53.00	3.00	5.30	2.30	11.63	8.63	8.46	5.46	3.16	3.75	0
38		0.5700	0.5700	45.00	0.0990	0.901	6.656	6.76	0.344	6.42	52.90	2.90	5.30	2.40	11.72	8.82	8.51	5.61	3.21	3.67	0
39		0.5950	0.5950	45.00	0.1040	0.896	6.693	6.72	0.361	6.36	52.90	2.90	5.30	2.40	11.66	8.76	8.48	5.58	3.18	3.65	0
40		0.6100	0.6100	46.00	0.1060	0.894	6.708	6.86	0.368	6.49	52.90	2.90	5.30	2.40	11.79	8.89	8.55	5.65	3.25	3.71	0
41		0.7700	0.7700	48.00	0.1340	0.866	6.925	6.93	0.466	6.46	52.50	2.50	5.30	2.80	11.76	9.26	8.53	6.03	3.23	3.31	0
42																					0
43																					

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Axial Loading Data

Triaxial Compression R-bar (CU) Tests

Selected for Calculations (**X**)

	Max Deviator Stress	30.16			Consolidation Pressure(psi/tsf)	45.1 / 3.25
x	Selected Row for Deviator Stress	26	Selected Deviator Stress	29.11	H_O (in) 5.850	D_O (in) 2.850 A_O (in^2) 6.380
	Max Obliquity	5.35	Deviator Stress at Max Obliquity	29.57	H_C (in) 5.205	D_C (in) 2.703 A_C (in^2) 5.738 Membrane Thickness: 0.024

Selected Row for Ultimate Deviator Stress (Based on Deviator Stress vs. % Axial Strian Graph) Ultimate Deviator Stress

Row Number	Elapsed Time	Dial Indicator Reading 0.0001 in	Cumulative Change (ΔH) 0.0001 in	P Axial Load lbs	Axial Strain $\varepsilon = \Delta H_C/H_C$	1-ε	Corrected Area $A_{Corr} = A_C/1\text{-}\varepsilon$ in^2	Deviator Stress $\sigma_1\text{-}\sigma_3 = P/A_C$ lbs/in^2	Membrane Correction Factor (MF) lbs/in^2	Corrected Deviator Stress $((\sigma_1\text{-}\sigma_3)$ - MF-FC)	Pore Pressure (U) lbs/in^2	Δ Pore Pressure (ΔU) lbs/in^2	σ_3 lbs/in^2	σ_3' lbs/in^2	σ_1 lbs/in^2	σ_1' lbs/in^2	p $(\sigma_1+\sigma_3)/2$ lbs/in^2	p' $(\sigma'_1+\sigma'_3)/2$ lbs/in^2	q $(\sigma_1\text{-}\sigma_3)/2$ lbs/in^2	Obliquity σ_1'/σ_3' lbs/in^2	Filter Strip Correction Factor (FC) lbs/in^2
1		0.0000	0.0000	0.00	0.0000	1.000	5.738	0.00	0.000	0.00	40.00	0.00	45.10	45.10	45.10	45.10	45.10	45.10	0.00	1.00	0
2		0.0050	0.0050	22.00	0.0010	0.999	5.744	3.83	0.007	3.82	42.20	2.20	45.10	42.90	48.92	46.72	47.01	44.81	1.91	1.09	0
3		0.0100	0.0100	51.00	0.0020	0.998	5.750	8.87	0.014	8.86	45.80	5.80	45.10	39.30	53.96	48.16	49.53	43.73	4.43	1.23	0
4		0.0150	0.0150	70.00	0.0030	0.997	5.755	12.16	0.021	12.14	49.10	9.10	45.10	36.00	57.24	48.14	51.17	42.07	6.07	1.34	0
5		0.0200	0.0200	85.00	0.0040	0.996	5.761	14.75	0.028	14.72	51.70	11.70	45.10	33.40	59.82	48.12	52.46	40.76	7.36	1.44	0
6		0.0255	0.0255	96.00	0.0050	0.995	5.767	16.65	0.036	16.61	53.80	13.80	45.10	31.30	61.71	47.91	53.41	39.61	8.31	1.53	0
7		0.0300	0.0300	104.00	0.0060	0.994	5.773	18.01	0.043	17.97	55.60	15.60	45.10	29.50	63.07	47.47	54.09	38.49	8.99	1.61	0
8		0.0350	0.0350	112.00	0.0070	0.993	5.779	19.38	0.050	19.33	57.40	17.40	45.10	27.70	64.43	47.03	54.77	37.37	9.67	1.70	0
9		0.0400	0.0400	117.00	0.0080	0.992	5.784	20.23	0.057	20.17	58.70	18.70	45.10	26.40	65.27	46.57	55.19	36.49	10.09	1.76	0
10		0.0450	0.0450	120.00	0.0090	0.991	5.790	20.73	0.064	20.67	59.80	19.80	45.10	25.30	65.77	45.97	55.44	35.64	10.34	1.82	0
11		0.0500	0.0500	124.00	0.0100	0.990	5.796	21.39	0.071	21.32	60.90	20.90	45.10	24.20	66.42	45.52	55.76	34.86	10.66	1.88	0
12		0.0550	0.0550	130.00	0.0110	0.989	5.802	22.41	0.078	22.33	62.40	22.40	45.10	22.70	67.43	45.03	56.27	33.87	11.17	1.98	0
13		0.0600	0.0600	133.00	0.0120	0.988	5.808	22.90	0.085	22.82	63.40	23.40	45.10	21.70	67.92	44.52	56.51	33.11	11.41	2.05	0
14		0.0650	0.0650	136.00	0.0120	0.988	5.808	23.42	0.085	23.34	64.10	24.10	45.10	21.00	68.44	44.34	56.77	32.67	11.67	2.11	0
15		0.0750	0.0750	142.00	0.0140	0.986	5.820	24.40	0.099	24.30	65.90	25.90	45.10	19.20	69.40	43.50	57.25	31.35	12.15	2.27	0
16		0.1000	0.1000	149.00	0.0190	0.981	5.849	25.47	0.135	25.34	68.40	28.40	45.10	16.70	70.44	42.04	57.77	29.37	12.67	2.52	0
17		0.1100	0.1100	153.00	0.0210	0.979	5.861	26.10	0.149	25.95	69.00	29.00	45.10	16.10	71.05	42.05	58.08	29.08	12.98	2.61	0
18		0.1200	0.1200	156.00	0.0230	0.977	5.873	26.56	0.163	26.40	69.70	29.70	45.10	15.40	71.50	41.80	58.30	28.60	13.20	2.71	0
19		0.1500	0.1500	161.00	0.0290	0.971	5.909	27.25	0.206	27.04	71.20	31.20	45.10	13.90	72.14	40.94	58.62	27.42	13.52	2.95	0
20		0.1700	0.1700	164.00	0.0330	0.967	5.934	27.64	0.234	27.41	71.90	31.90	45.10	13.20	72.51	40.61	58.81	26.91	13.71	3.08	0
21		0.1800	0.1800	165.00	0.0350	0.965	5.946	27.75	0.249	27.50	72.20	32.20	45.10	12.90	72.60	40.40	58.85	26.65	13.75	3.13	0
22		0.2000	0.2000	167.00	0.0380	0.962	5.965	28.00	0.270	27.73	72.70	32.70	45.10	12.40	72.83	40.13	58.97	26.27	13.87	3.24	0
23		0.2300	0.2300	170.00	0.0440	0.956	6.002	28.32	0.313	28.01	73.20	33.20	45.10	11.90	73.11	39.91	59.11	25.91	14.01	3.35	0
24		0.2600	0.2600	173.00	0.0500	0.950	6.040	28.64	0.355	28.29	74.20	34.20	45.10	10.90	73.39	39.19	59.25	25.05	14.15	3.60	0
25		0.3250	0.3250	180.00	0.0620	0.938	6.117	29.43	0.440	28.99	76.20	36.20	45.10	8.90	74.09	37.89	59.60	23.40	14.50	4.26	0
26		0.3500	0.3500	182.00	0.0670	0.933	6.150	29.59	0.476	29.11	76.80	36.80	45.10	8.30	74.21	37.41	59.66	22.86	14.56	4.51	0
27		0.3850	0.3850	185.00	0.0740	0.926	6.197	29.85	0.526	29.32	77.70	37.70	45.10	7.40	74.42	36.72	59.76	22.06	14.66	4.96	0
28		0.4150	0.4150	188.00	0.0800	0.920	6.237	30.14	0.568	29.57	78.30	38.30	45.10	6.80	74.67	36.37	59.89	21.59	14.79	5.35	0
29		0.4550	0.4550	190.00	0.0870	0.913	6.285	30.23	0.618	29.61	76.00	36.00	45.10	9.10	74.71	38.71	59.91	23.91	14.81	4.25	0
30		0.4950	0.4950	193.00	0.0950	0.905	6.340	30.44	0.675	29.77	75.90	35.90	45.10	9.20	74.87	38.97	59.99	24.09	14.89	4.24	0
31		0.5150	0.5150	195.00	0.0990	0.901	6.369	30.62	0.703	29.92	75.90	35.90	45.10	9.20	75.02	39.12	60.06	24.16	14.96	4.25	0
32		0.5500	0.5500	197.00	0.1060	0.894	6.418	30.69	0.753	29.94	75.50	35.50	45.10	9.60	75.04	39.54	60.07	24.57	14.97	4.12	0
33		0.5950	0.5950	200.00	0.1140	0.886	6.476	30.88	0.810	30.07	75.50	35.50	45.10	9.60	75.17	39.67	60.14	24.64	15.04	4.13	0
34		0.6400	0.6400	203.00	0.1230	0.877	6.543	31.03	0.874	30.16	75.70	35.70	45.10	9.40	75.26	39.56	60.18	24.48	15.08	4.21	0
35		0.6650	0.6650	204.00	0.1280	0.872	6.580	31.00	0.909	30.09	75.90	35.90	45.10	9.20	75.19	39.29	60.15	24.25	15.05	4.27	0
36		0.7000	0.7000	206.00	0.1340	0.866	6.626	31.09	0.952	30.14	75.70	35.70	45.10	9.40	75.24	39.54	60.17	24.47	15.07	4.21	0
37		0.7600	0.7600	206.00	0.1460	0.854	6.719	30.66	1.037	29.62	75.80	35.80	45.10	9.30	74.72	38.92	59.91	24.11	14.81	4.18	0
38		0.7950	0.7950	207.00	0.1530	0.847	6.775	30.55	1.087	29.46	76.20	36.20	45.10	8.90	74.56	38.36	59.83	23.63	14.73	4.31	0
39		0.8200	0.8200	208.00	0.1580	0.842	6.815	30.52	1.122	29.40	76.10	36.10	45.10	9.00	74.50	38.40	59.80	23.70	14.70	4.27	0
40		0.8300	0.8300	208.00	0.1590	0.841	6.823	30.49	1.129	29.36	76.00	36.00	45.10	9.10	74.46	38.46	59.78	23.78	14.68	4.23	0
41																					0
42																					0
43																					0
44																					0

Calculations Based on
EM 1110-2-1906 Appendix X
ASTM D 4767-04

Laboratory Test Report

Hydraulic Conductivity - Falling Head Rising Tail (ASTM D 5084, Method C)

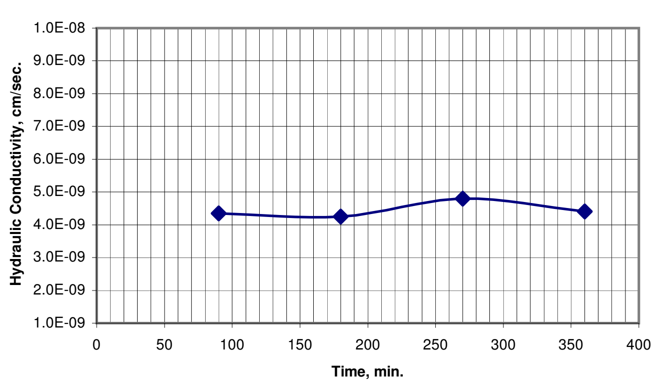
Project Name:	ARCADIS - Arkema Early Action
Project No.:	107510
Boring No.:	SPT-1
Sample No.:	SPT-1
Sample Depth, ft.:	13-15'
Sample Description:	Dark Gray SILT (MH)
Report Date:	February 8, 2010

Water Content, %:		Density, pcf, Initial:		Density, pcf, Final:		Saturation, %:		Specific Gravity:
Initial:	73.7	Wet:	94.5	Wet:	99.0	Initial:	94.9	2.70
Final:	0.0	Dry:	54.4	Dry:	60.0	Final:	97.2	assumed

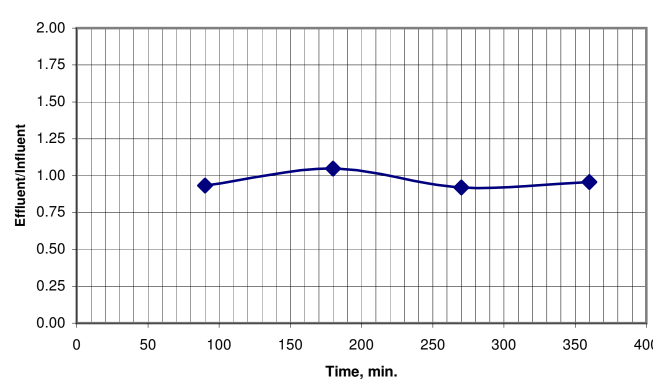
Sample Length, in.		Sample Diameter, in.		Pressures, psi:				Permeant:
Initial:	2.611	Initial:	2.872	Cell:	44.90	Influent:	41.50	
Final:	2.508	Final:	2.790	Confining:	3.40	Effluent:	1.00	Deaired Water

Trial:	1		2		3		4	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time, min.:	0	90	90	180	180	270	270	360
Influent, mL:	12.00	12.44	12.44	12.85	12.85	13.35	13.35	13.80
Effluent, mL:	12.00	11.59	11.59	11.16	11.16	10.70	10.70	10.27
Temp, ^{o}C:	21	21	21	22	22	22	22	22
k @ 20^{o}C, cm/sec.:	4.4E-09		4.2E-09		4.8E-09		4.4E-09	
Dev. From Avg.:	0.98		0.95		1.08		0.99	
DEffluent/DInfluent:	0.93		1.05		0.92		0.96	
Pipette Area, cm^{2}:	0.8814					B-Parameter:	0.98	

Hydraulic Conductivity vs. Time



Effluent/Influent vs. Time



Hydraulic Conductivity @ 20^{o}C, cm/sec:	**4.5E-09**

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Laboratory Test Report

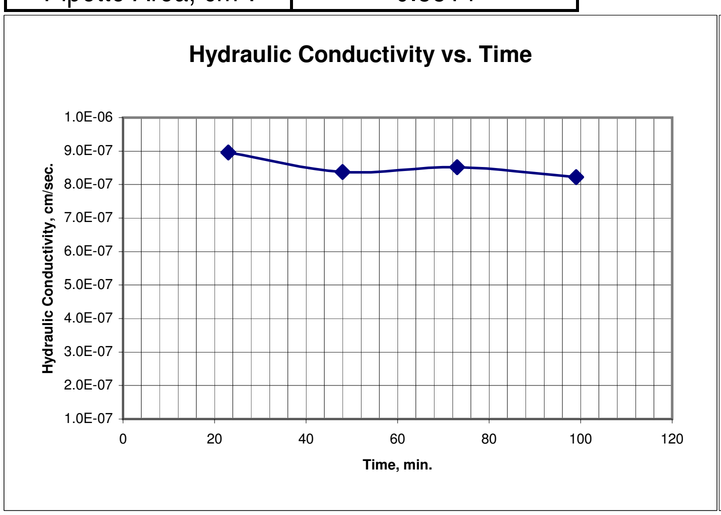
Hydraulic Conductivity - Falling Head Rising Tail (ASTM D 5084, Method C)

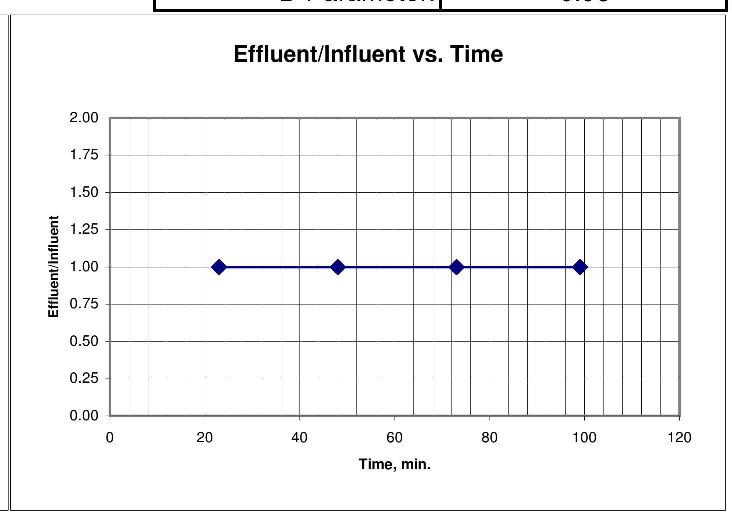
Project Name:	ARCADIS - Arkema Early Action
Project No.:	107510
Boring No.:	SPT-2
Sample No.:	SPT-2
Sample Depth, ft.:	20.5-22.5'
Sample Description:	Dark Gray Sandy SILT (MH)
Report Date:	February 8, 2010

Water Content, %:		Density, pcf, Initial:		Density, pcf, Final:		Saturation, %:		Specific Gravity:
Initial:	45.0	Wet:	104.4	Wet:	105.3	Initial:	90.7	2.70
Final:	0.0	Dry:	72.0	Dry:	69.5	Final:	97.8	assumed

Sample Length, in.		Sample Diameter, in.		Pressures, psi:				Permeant:
Initial:	2.658	Initial:	2.801	Cell:	47.00	Influent:	41.00	
Final:	2.583	Final:	2.772	Confining:	6.00	Effluent:	40.00	Deaired Water

Trial:	1		2		3		4	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time, min.:	0	23	23	48	48	73	73	99
Influent, mL:	12.00	12.50	12.50	13.00	13.00	13.50	13.50	14.00
Effluent, mL:	12.00	11.50	11.50	11.00	11.00	10.50	10.50	10.00
Temp, °C:	19	19	19	19	19	19	19	20
k @ 20°C, cm/sec.:	9.0E-07		8.4E-07		8.5E-07		8.2E-07	
Dev. From Avg.:	1.05		0.98		1.00		0.97	
DEffluent/DInfluent:	1.00		1.00		1.00		1.00	
Pipette Area, cm^2:	0.8814					B-Parameter:	0.98	





Hydraulic Conductivity @ 20°C, cm/sec:	**8.5E-07**

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Laboratory Test Report

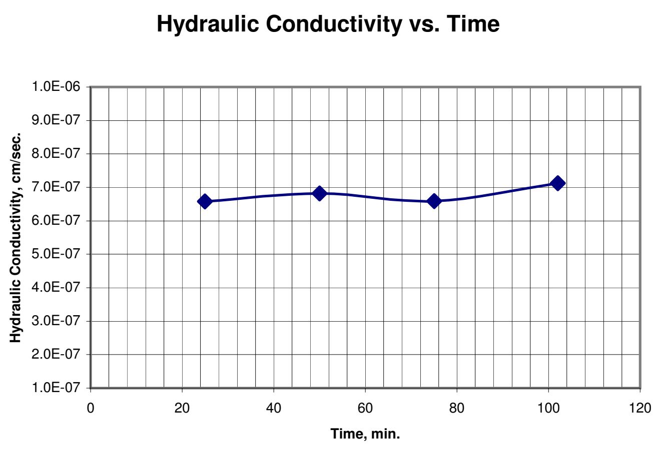
Hydraulic Conductivity - Falling Head Rising Tail (ASTM D 5084, Method C)

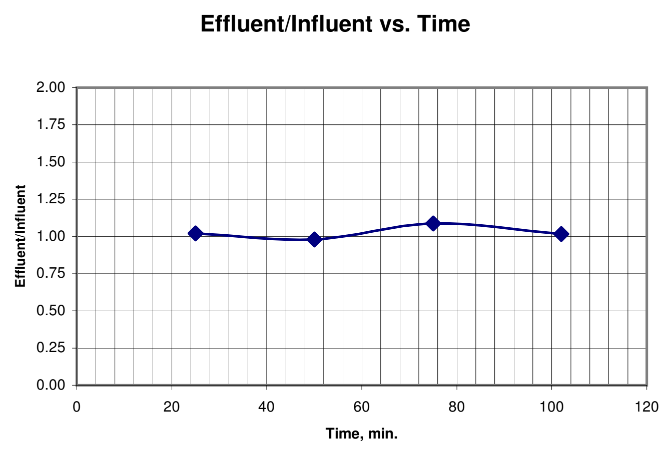
Project Name:	ARCADIS - Arkema Early Action
Project No.:	107510
Boring No.:	SPT-3
Sample No.:	SPT-3
Sample Depth, ft.:	13-15'
Sample Description:	Dark Gray SILT (MH)
Report Date:	February 8, 2010

Water Content, %:		Density, pcf, Initial:		Density, pcf, Final:		Saturation, %:		Specific Gravity:
Initial:	72.4	Wet:	93.5	Wet:	100.6	Initial:	92.9	2.70
Final:	0.0	Dry:	54.2	Dry:	61.7	Final:	98.2	assumed

Sample Length, in.		Sample Diameter, in.		Pressures, psi:				Permeant:
Initial:	2.341	Initial:	2.858	Cell:	52.90	Influent:	50.00	
Final:	2.248	Final:	2.745	Confining:	2.90	Effluent:	49.00	Deaired Water

Trial:	1		2		3		4	
	Start	Finish	Start	Finish	Start	Finish	Start	Finish
Time, min.:	0	25	25	50	50	75	75	102
Influent, mL:	12.00	12.49	12.49	13.00	13.00	13.46	13.46	15.89
Effluent, mL:	12.00	11.50	11.50	11.00	11.00	10.50	10.50	8.03
Temp, °C:	23	23	23	23	23	23	23	23
k @ 20°C, cm/sec.:	6.6E-07		6.8E-07		6.6E-07		7.1E-07	
Dev. From Avg.:	0.97		1.01		0.97		1.05	
DEffluent/DInfluent:	1.02		0.98		1.09		1.02	
Pipette Area, cm^2:	0.8814					B-Parameter:	0.98	





Hydraulic Conductivity @ 20°C, cm/sec:	**6.8E-07**

9200 SW Nimbus Ave., Suite A, Portland, OR 97008 p | 503.644.9447 f | 503.643.1905

POINT LOAD TEST
ASTM D 5731-02/DIAMETRIAL

Project Name:	Arkema Early Action	Date Sampled:	N/A
Project Number:	107510	Sampled By:	Arcadis
Conducted By:	R. Goff	Reviewed By:	
Date:	12/18/2009	Date Reviewed:	
Machine:	ROCTEST		

C= 23 for 2 inch diameter
C= 24.5 for 2.4 inch diameter

Core	Depth (ft.)	Gage (psi)	D_e (inches)	L (inches)	P (lbf)	D_e^2 (in^2)	I_s (psi)	F	$I_{s(50)}$ (psi)	σ_{uc} (psi)
SPT-1	30-31.5'	725	2.41		1215.8	5.81	209.3	1.09	229.21	5616
SPT-1	34-36'	1500	2.41		2515.5	5.81	433.1	1.09	474.23	11619
SPT-1	37-39'	2700	2.41		4527.9	5.81	779.6	1.09	853.61	20913

Sample Description: Basalt, hard to very hard, vesicular to dense, reddish-gray to gray.

$I_{s(50)} = F * I_s$ (psi)

$F = (D / 1.97)^{0.45}$

$\sigma_{uc} = C * I_{s(50)}$ (psi)

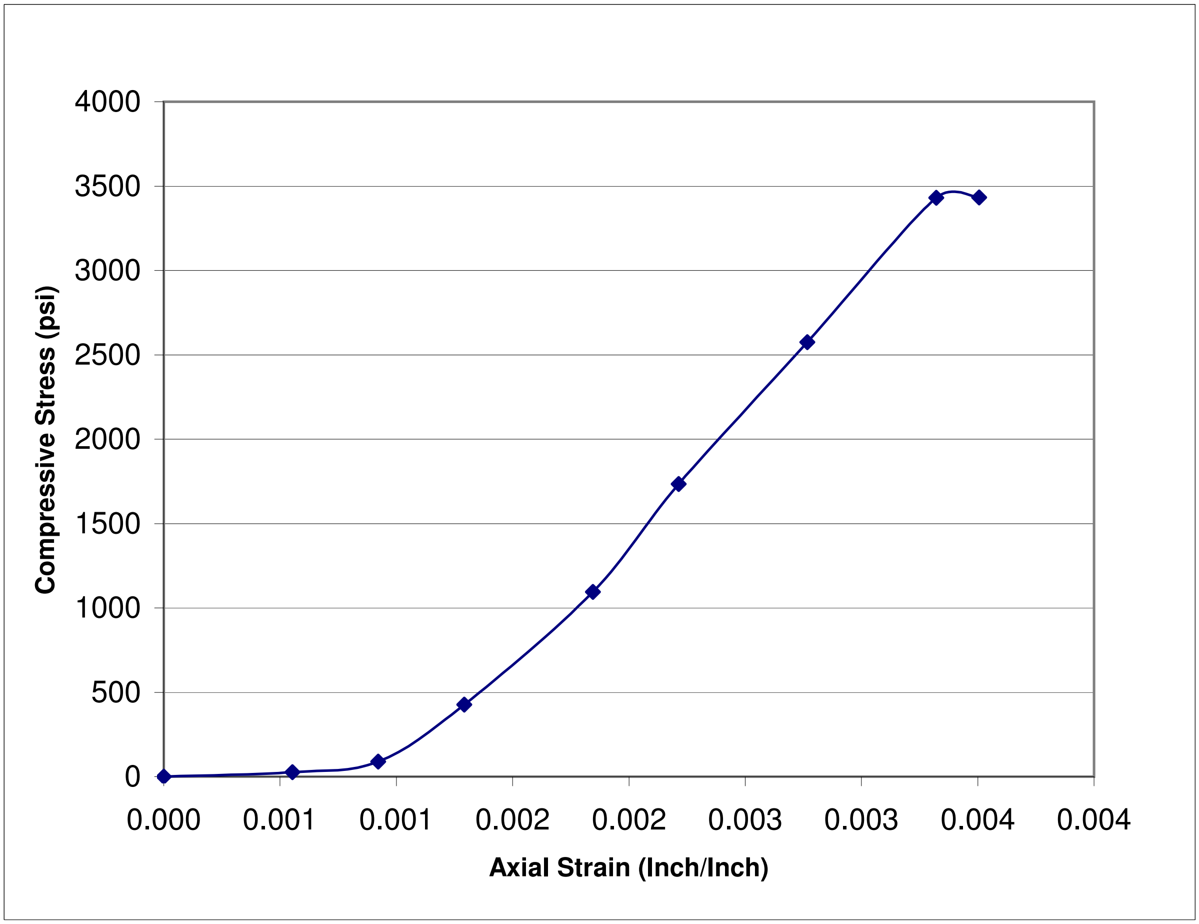
σ_{uc} = uniaxial compressive strength

C = factor that depends on site-specific correlation between σ_{uc} and $I_s(50)$ (23.00 if site-specific correlation is not available)

$I_{s(50)}$ = corrected point load strength index.

Unconfined Compressive Strength Test Results
ASTM D7012-04

PROJECT:	Arkema Early Action	LAB #:	2592
PROJECT NO.:	107510	SAMPLE #:	SPT-1 @ 30'-31.5'
LOCATION:	Portland, Oregon	DESCRIPTION:	Basalt
SAMPLED BY:	ARCADIS	DATE REPORTED:	12/18/2009
DATE SAMPLED:	N/A	TESTED BY:	R. Goff



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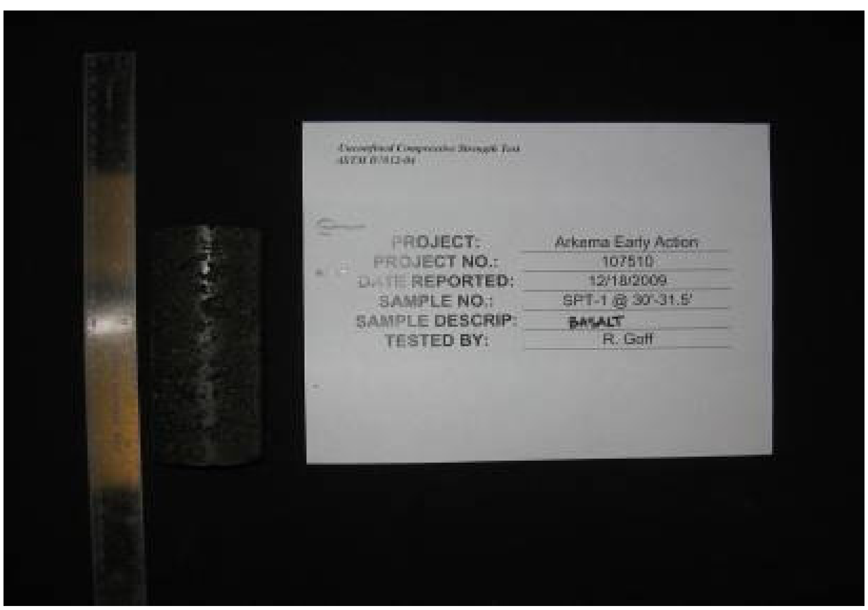
Unconfined Compressive Strength Test Photos
ASTM D 7012-04



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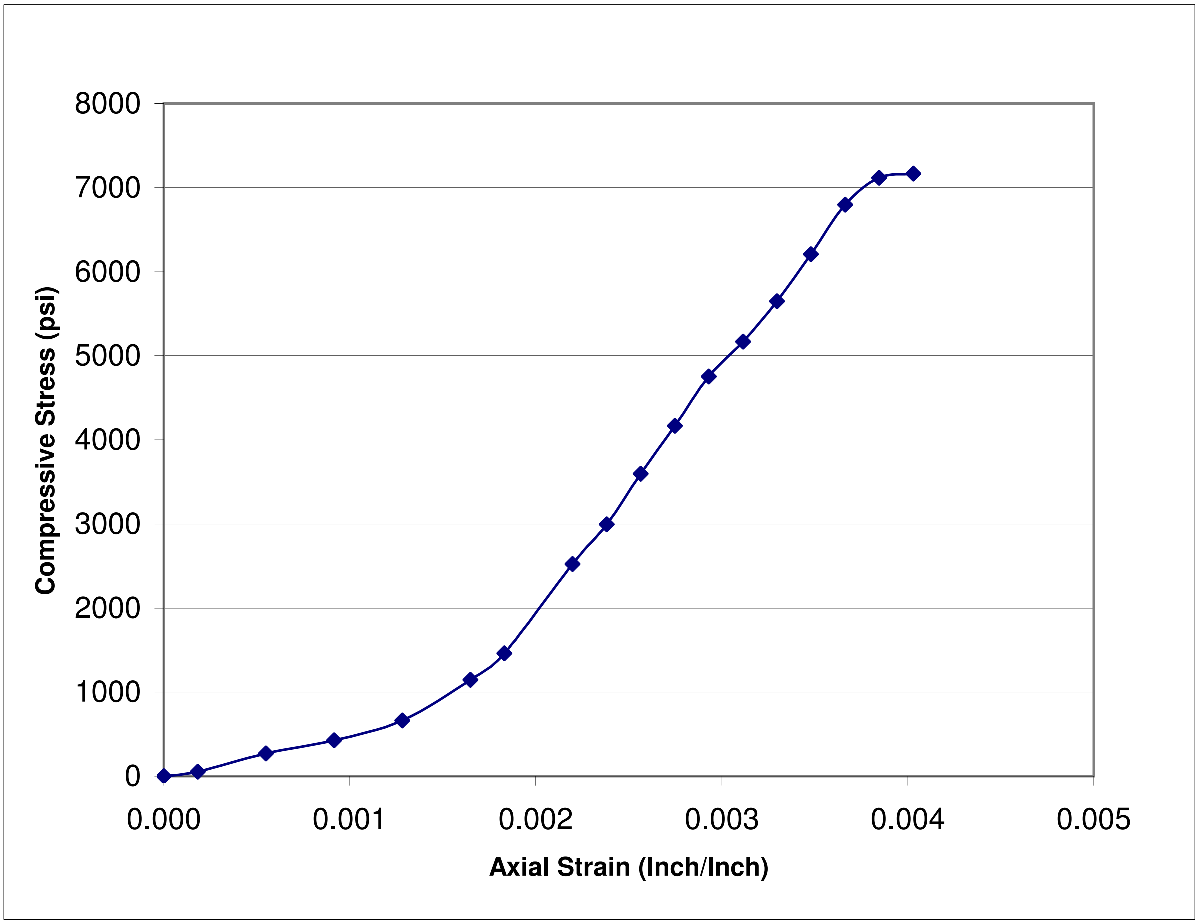
Unconfined Compressive Strength Test Results
ASTM D7012-04

PROJECT:	Arkema Early Action	LAB #:	2592
PROJECT NO.:	107510	SAMPLE #:	SPT-1 @ 34'-36'
LOCATION:	Portland, Oregon	DESCRIPTION:	Basalt
SAMPLED BY:	ARCADIS	DATE REPORTED:	12/18/2009
DATE SAMPLED:	N/A	TESTED BY:	R. Goff



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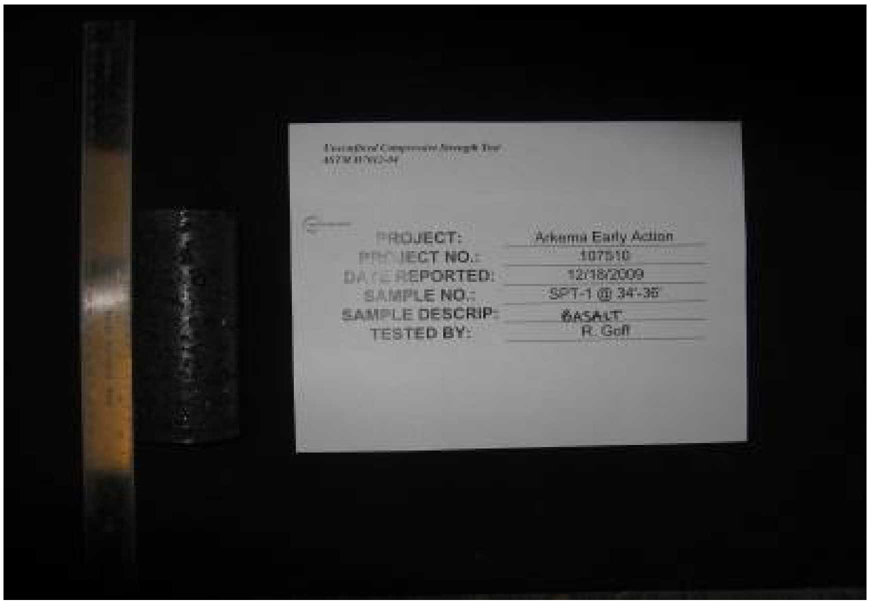
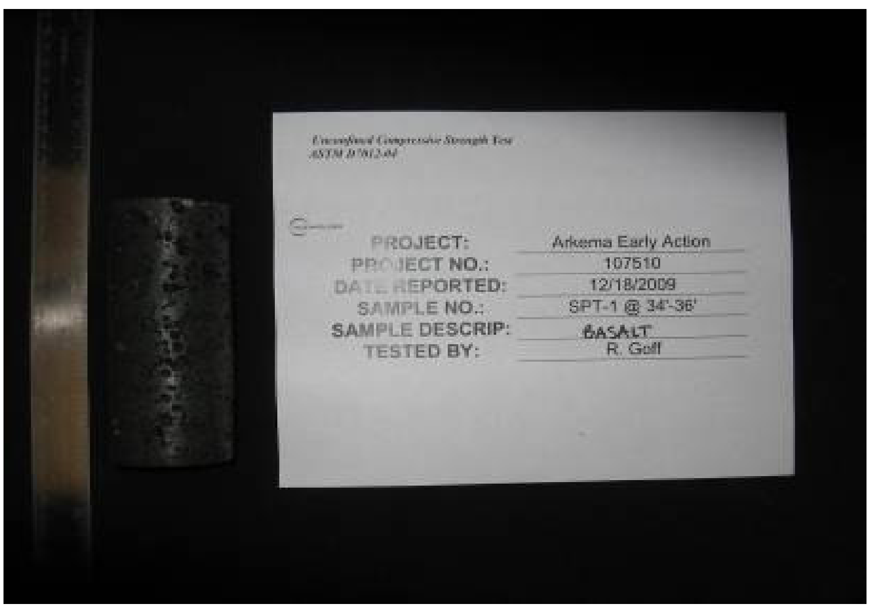
Unconfined Compressive Strength Test Photos
ASTM D 7012-04





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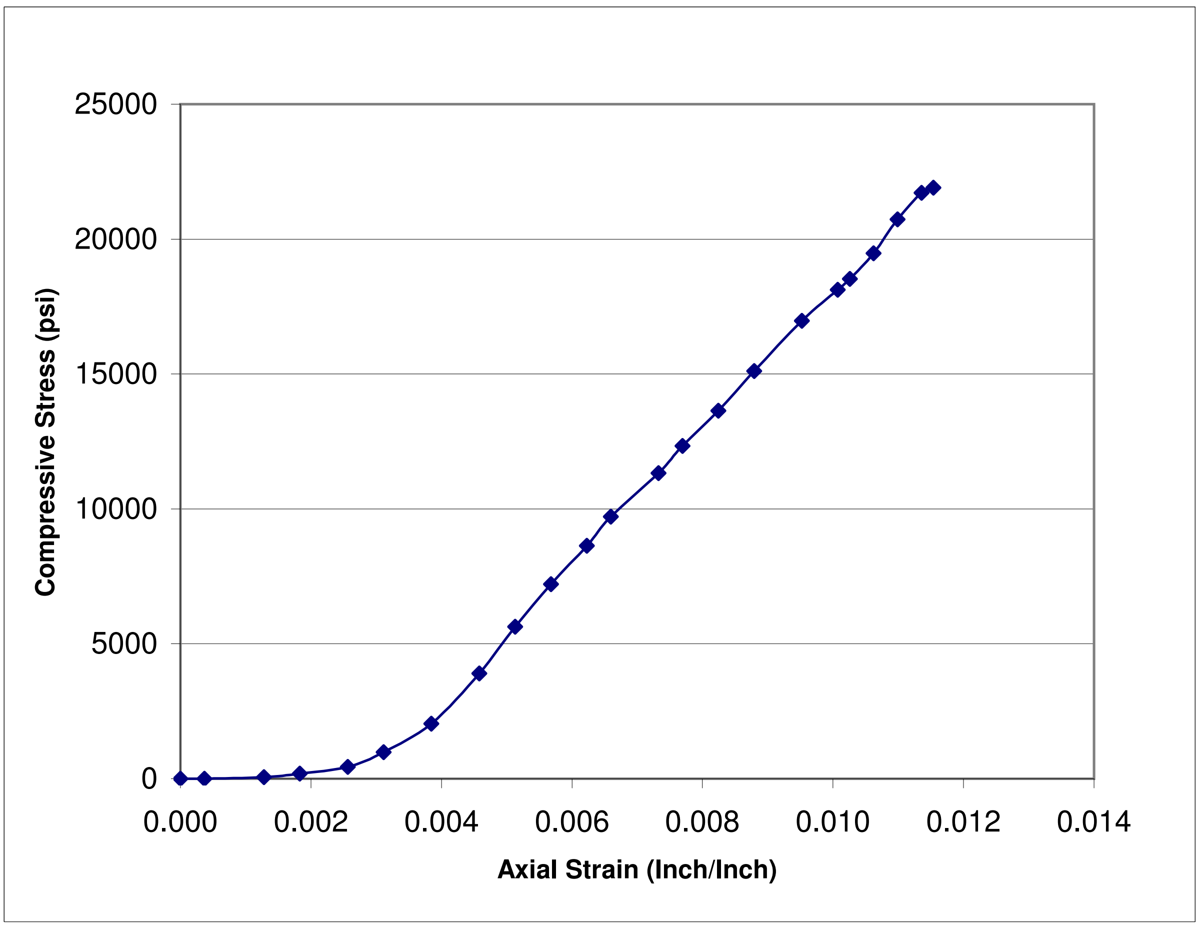
Unconfined Compressive Strength Test Results
ASTM D7012-04

PROJECT:	Arkema Early Action	**LAB #:**	2592
PROJECT NO.:	107510	**SAMPLE #:**	SPT-1 @ 37'-39'
LOCATION:	Portland, Oregon	**DESCRIPTION:**	Basalt
SAMPLED BY:	ARCADIS	**DATE REPORTED:**	12/18/2009
DATE SAMPLED:	N/A	**TESTED BY:**	R. Goff



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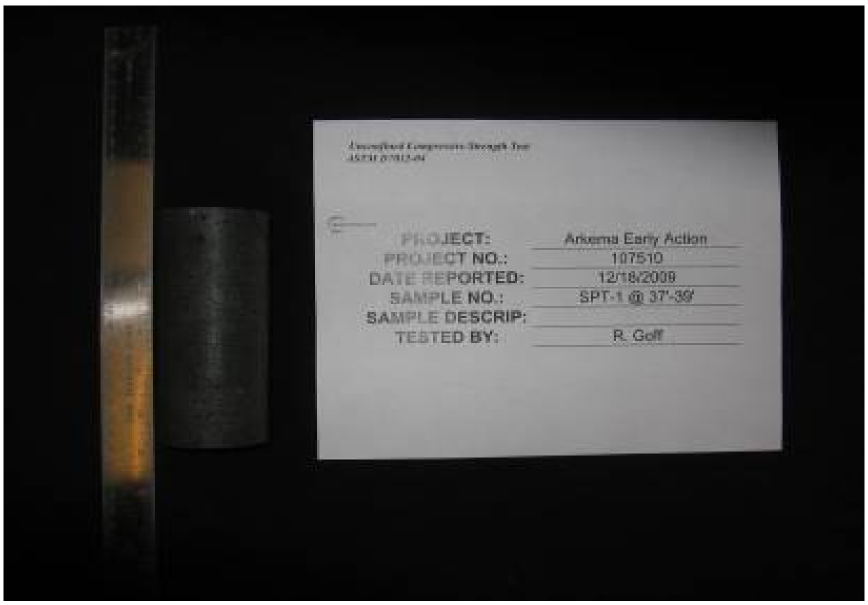
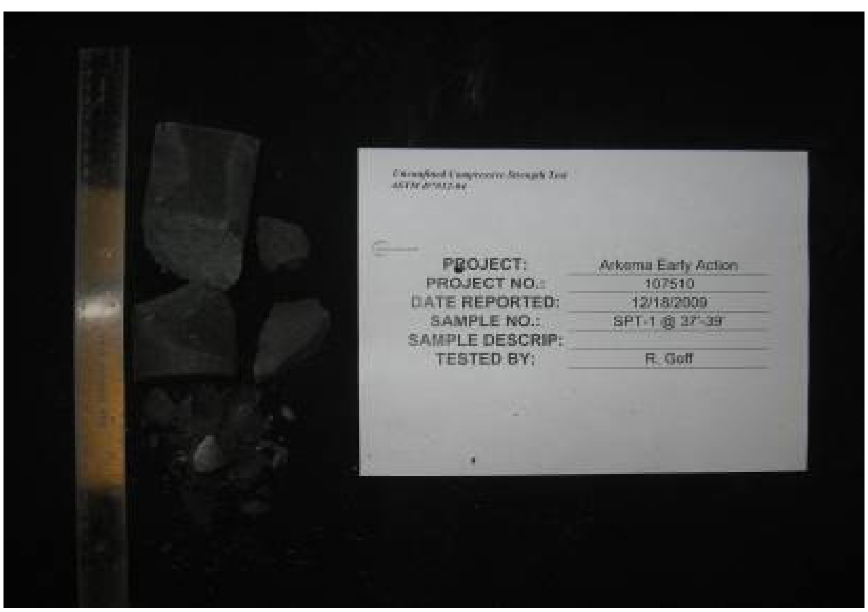
Unconfined Compressive Strength Test Photos
ASTM D 7012-04





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APPENDIX H

SURFACE DEBRIS SURVEY PHOTOGRAPHS

(SEPARATE FILE)

APPENDIX I

EVS MODELS FOR DDX AND TOTAL PCDD/F

(EVS FILES ARE SEPARATE)

APPENDIX I

EVS MODEL DOCUMENTATION

The purpose of this appendix is to provide details of the EVS DDx and PCDD/F models to EPA and CDM (EPA's consultant) in a transparent manner. This appendix describes modifications to the EVS DDx model that have been made by LSS since it was last submitted to EPA July 8, 2010 (Slater 2010b). The PCDD/F model was developed after the DDx model was submitted to EPA on July 8, 2010. The EVS DDx and PDDD/F models were utilized for mass and volume calculations and in defining the proposed final RAA boundary at the site.

Preliminary Horizontal RAA Boundary

The preliminary RAA boundary is used to define the EVS model domain using the Mask Geology module. This RAA boundary is consistent with the final Administrative Order on Consent (AOC) document dated June 27, 2005. The preliminary horizontal RAA boundary is the same for both the DDx and PCDD/F EVS models.

The RAA boundary shapefile (*.shp) is the same file that was provided in the July 8, 2010 submittal to EPA (Slater 2010b).

Geology File

The geology model used a finite difference grid with a 45-degree rotation and a 10-ft X and Y resolution. The model Z resolution is set to 60 in Krig 3D Gridding Options. The geology grid cells are orientated to the direction of river flow. The geology file is the same for both the DDx and PCDD/F EVS models.

The geology multi-file (*.gmf) is the same file that was provided in the July 8, 2010 submittal to EPA (Slater 2010b).

Chemistry Files

The following sections briefly discuss the chemistry files for DDx and PCDD/F.

DDx

The updated DDx groundwater chemistry (*.gwc) file[1] contains the results for 576 sediment samples (462 samples are inside the preliminary RAA boundary), including the 321 newly acquired DDx sediment analytical data from the 2009 EE/CA investigation. A total of 55 non-detected DDx results are included in the data set. The non-detected samples are handled using the "<" LT Multiplier flag because it allows EVS to handle each detection limit separately. An LT multiplier of 1.0 was used in the current EVS model. The previous version of the model had a LT multiplier of 0.5. This change allowed the EVS model to interpolate values at the detection limits rather than half the detection limit. The file specifies a max gap value of 2; the previous file inadvertently contained a value of 15. The long composite samples were not well represented in the previous model with a max gap value of 15 because only one midpoint node represented each composite sample.

The bottom two sample intervals from waste characterization boreholes WB-35 (16-18 ft and 18-20 ft below mudline [bml]), WB-37 (10-12 ft and 12-14 ft bml), WB-39 (14-16 ft and 16-18 ft bml), and WB-43 (14-16 ft and 16-18 ft bml) were analyzed by the lab during the final round of archived sample analysis, and included subintervals of a previously analyzed larger composite interval. These latter data are presented as separate results in the EVS model. The concentration of the remaining portion of the composite sample interval was then calculated for the EVS model using a weighted average.

DDx data from boreholes WB-51 (0-2 ft, 4-6 ft, and 8-10 ft bml), WB-52 (2-4 ft bml), WB-54 (2-4 ft and 4-6 ft bml), WB-64 (4-6 ft bml) were reanalyzed by the lab. The data presented for these samples are the average of the initial and reanalyzed result.

The other Krig 3D Data Processing parameters that changed from the default settings and the previous version of the model are presented in the following table.

DDx Data Processing	Rationale
Pre-Clip Min	Set to 5.48E-06 (mg/kg), one-tenth of the lowest detection limit in the data set
LT Multiplier	1.0 (each individual ND sample with "<" is multiplied by 1.0)
Detection Limit	Is not activated when using the "<" LT multiplier flag.
Post Clip Min	Set to 5.48E-05 (mg/kg), the lowest detection limit

[1] Note that this field contains sediment data rather than groundwater data. The EVS modeling software does not provide an option for sediment samples.

PCDD/F

The total PCDD/F groundwater chemistry (*.gwc) file[2] includes the results for 104 sediment samples (80 samples are inside the preliminary RAA boundary), including the 61 newly acquired PCDD/F sediment analytical data from the 2009 EE/CA investigation. There is one undetected sample in the total PCDD/F data set, however, the "<" LT multiplier flag was not used in this file. The "<" LT multiplier flag was not used because there was only one undetected sample in the PCDD/F data set. A max gap value of 5 was used for PCDD/F EVS model since there were fewer vertical data points than the DDx model. In contrast to the DDx data, a larger max gap was appropriate to better represent the waste characterization composite samples in the smaller data set. A max gap value of 5 better represented the composite waste characterization samples in the PCDD/F model because a smaller max gap value would bias the EVS model (i.e., the waste characterization composite samples would have been represented by too many nodes) relative to the remaining PCDD/F sample data.

The other Krig 3D Data Processing parameters are presented in the following table.

Total PCDD/F Data Processing	Rationale
Pre-Clip Min	Set to 7.80E-02 (pg/g), one-tenth of the lowest value in the data set
Post Clip Min	Set to 7.80E-01 (pg/g),, the lowest value in the data set

Model and File Format

LSS requests that if EPA provides the EVS model with any related comments, the path and file structure be kept consistent with this submittal (i.e., the EPA reviewed model submitted to LSS will be in an EVS [not MVS] application and use the same directory structure outlined below referencing the C drive). The use of a consistent path and file structure will allow for a transparent information exchange and expedited review and understanding of proposed changes, if any.

To copy the EVS models to your computer, place the Integral_Arkema_Data folder, which is in the attached Appendix I EVS Models for DDx and Total PCDD-F folder, onto the C drive (C:\Integral_Arkema_Data). The folder contains the *.V , *.gwc, *.gmf, *.png and shapefiles. The contents of this directory are provided in the following tables.

[2] Note that this field contains sediment data rather than groundwater data. The EVS modeling software does not provide an option for sediment samples.

Files located at C:\Integral_Arkema_Data

File Name	Description
LWG_EL_BAS_06_2010.gmf	Updated geology multi file
DDx_576_AdjustedWWC.gwc	Updated DDx (ppm) groundwater chemistry
PCDD_F_104.gwc	Updated PCDD/F (pg/g) groundwater chemistry
DDx_eeca_dec_2010.v	DDx EVS Application
PCDDF_eeca_dec_2010.v	Total PCDD/F EVS Application

Files located at C:\Integral_Arkema_Data\Shapes

File Name	Description
Docks.shp	Dock structures included for reference
AOC_RAA_bndy.shp	AOC RAA Boundary
ln_sv_prop_e_lin.shp	Site Property boundary

Mass and Volume

All mass and volume estimates were made using the Volumetrics module specifying a soil density of 0.92 g/cc and porosity of 0.65, based on geotechnical data collected during the 2009 EE/CA characterization activities. The previous DDx EVS model used soil density and porosity values of 1.85 g/cm and 0.25, respectively, which are the default values in EVS.

Summing Rules

The following summing rules were used for calculating DDx:

- Sum of all DDx isomers, using ½ the MDL for all undetected results.
- If all DDx isomers are undetected, the DDx sum is equal to the value of the highest MDL.

The following summing rules were used for calculating total PCDD/F:

- Sum of all PCDD/F homologs using ½ the MDL for all undetected results.
- If all PCDD/F homologs are undetected, the PCDD/F sum is equal to the value of the highest MDL.

APPENDIX J

COMMENT RESPONSE SUMMARY

Comment Response Summary for EPA Comments on the Draft Removal Action Area Characterization (RAAC) Report

No.	Comment	LSS Response	EPA Review	Modification to Final RAAC Report
General Comments				
1	The report is inconsistent with the decision rendered by Daniel Opalski in a letter dated May 23, 2008 (Opalski decision) as final resolution of disputes entered by LLS on February 19 and March 27, 2008. In particular, neither the horizontal nor vertical boundaries of the removal action area (RAA) presented by LSS conform to this decision.	**LSS believes the draft RAAC report is consistent with the Opalski decision (Opalski Decision; USEPA 2008a). Opalski's decision with respect to the horizontal RAA boundary was based on the mass removal approach and breakpoint analysis in which approximately 90 percent of the DDx mass would be considered for removal. This is confirmed by the fact that Mr. Opalski requested additional information related to the breakpoint in the mass to volume relationship (the elbow) within the proposed 5 ppm RAA boundary at that time to provide an updated logical breakpoint analysis for the z axis (Loutzenhiser 2008b; additional information is provided below). At the time the dispute negotiations were initiated on February 19, 2008, the breakpoint for DDx was estimated to be within the range of approximately 5 to 10 ppm (Loutzenhiser 2008a), based on the data available at that time. In the April 17, 2008 dispute presentation to the EPA team (which included Mr. Opalski), LSS requested the following:** *"The goal of dredging will be to remove +90 percent of the DDx mass, which equates to a range in concentration of approximately 5 to 10 mg/kg DDx"* (Integral 2008a). At that time in order to help resolve the dispute and move the project forward, LSS agreed to use the 5 ppm DDx RAA boundary as a surrogate for the breakpoint until the EE/CA data were collected and incorporated into the breakpoint analysis. **One of the primary objectives of the 2009 EE/CA investigation was to fill data gaps to further refine the 5 mg/kg preliminary RAA boundary. The EVS model was updated with 321 DDx sediment data points collected as part of the 2009 EE/CA investigation. Based on the updated EVS model containing more than 550 data points, the revised 90 percent DDx breakpoint is now at approximately 75 ppm (see Figure 4-1 of the draft RAAC report; Integral 2010a). The horizontal RAA boundary was expanded in the draft RAAC report to incorporate the horizontal extent of the 36,000 pg/g total PCDD/F boundary. This has been shown in the RAAC report to include approximately 90 percent of the total PCDD/F mass in sediments within the preliminary RAA boundary. Although the Opalski decision did not address a mass-based approach for other COIs such as PCDD/Fs, LSS believes it is appropriate to extend the approach to certain furans (i.e., PCDFs) in evaluating the RAA boundary at the Arkema site.** **Mr. Opalski requested responses to a number of questions and additional information during an April 21, 2008 conference call with representatives from LSS and EPA. The responses were provided to Mr. Opalski in a letter from LSS dated April 25, 2008 (Loutzenhiser 2008b). One of the questions Mr. Opalski asked (question 3) was related to the breakpoint in the mass to volume relationship (the elbow) within the proposed 5 ppm RAA boundary at that time, to provide an updated logical breakpoint analysis for the z axis, since the original analysis was**	Directed Comment – Consistent with EPA's interpretation of the Opalski decision, EPA directs LSS to –define the horizontal extent of the RAA by the 5 ppm isoconcentration contour as depicted for the nominal plume using the EVS model as currently built. EPA further directs LSS to alter this 5 ppm boundary to encompass the three largest "islands" located downstream of Dock 2 that are depicted in the EVS nominal plume as noncontiguous. Finally, EPA directs LSS to define the vertical extent of the RAA using SLVs for DDx and the other identified COI, including PCDD/PCDF (2,3,7,8-PCDF and total dioxin TEQ), hexachlorobenzene, PCBs, total chlordanes, tributyl tin and lindane. SLVs for these COI will be PRGs developed for Portland Harbor. Multiples of SLVs will not be used. The 5 ppm isoconcentration contour vertically will also be used along with SLVs in defining the vertical extent of the RAA. The attached Figure 4-2 from the draft RAAC report, as described in general comment 7, shows the EPA-directed lateral boundary that will be used in defining the RAA. These directed comments are based on a reasonable and appropriate interpretation of the Opalski decision. Part II of the Opalski decision addresses the definition of the RAA boundary, including use of the 5 ppm isoconcentration contour and use of SLVs. First, Mr. Opalski's decision clearly and unambiguously states, "It is notable that between the parties there is agreement that the lateral extent of the removal area will be defined by approximately the 5 ppm DDx contour." EPA notes that 75 ppm cannot be considered "approximately the 5 ppm DDx contour". Second, the decision clearly indicates that mass removal is not the only criterion to be considered in defining the RAA. The decision states "While EPA has agreed that the mass-driven approach proposed by LSS has merit, a mass-driven approach tends to "reward" the circumstance where there is significant mass to begin with (i.e. "only" 10% of a very large amount could still be a very large amount)." Further, the decision states that "The mass and <u>concentration</u> (emphasis added) that will be left behind needs to be considered from the perspective of (1) the continued risk the material poses in a direct and current sense and (2) the long-term management that would be necessary to minimize future risks from either the uncovering of materials left in place or the upward migration of material through cover material." EPA notes that it is not possible to reconcile these statements with an interpretation that the only criterion	The report was modified to conform to the August 31, 2011 Final Decision on Disputes of June 3, 2011 by Daniel Opalski (2011 Opalski Decision). The horizontal removal action boundary based on the 5 mg/kg DDx contour is presented in Section 4 of the report. The vertical RAA boundary will be developed by considering all COIs in evaluating the impacts of dredging and/or taking other removal actions to a range of concentrations vertically. In accordance with the 2011 Opalski Decision and the AOC, this latter analysis will be conducted in the EE/CA.

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		performed over a larger preliminary area. The logical DDx breakpoint at that time was calculated somewhere between the 25 and 10 ppm concentration range in the z axis (Loutzenhiser 2008b). **The Opalski decision states the following in the second paragraph of page 3:** *"Therefore, I find that the EE/CA shall proceed with analyses that consider the implications of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis"* **(USEPA 2008a). In accordance with the Opalski decision, a range of vertical boundaries of the RAA for DDx were considered in the draft RAAC report (see Figures 4-3a and 4-3b of the draft RAAC report; Integral 2010a). The vertical boundaries considered in the draft RAAC report were 0.04 ppm (1,000 x DEQ's bioaccumulative SLV; see the LSS response to specific comment 5 for additional information on the use of the 1,000x multiplier), 5 ppm, 10 ppm, and 75 ppm (the updated mass removal breakpoint for DDx). The evaluation of this range of screening values conforms to the Opalski decision. The proposed vertical RAA boundary is the 75 ppm DDx contour. This vertical boundary was expanded to incorporate the vertical extent of the 36,000 pg/g total PCDD/F boundary, which includes approximately 90 percent of the total PCDD/F mass in sediments within the preliminary RAA boundary at the Arkema site.**	applied to defining the RAA boundary was to be removal of 90% of the DDx mass. Third, the final paragraph of Part II states that "I find that the EE/CA shall proceed with analyses that consider the implications of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis." EPA notes that the decision does not mention that the vertical boundary will be defined to encompass a certain mass of DDx and does indicate directly that concentrations must be considered. Fourth, as LSS indicates above, a main objective of the 2009 EE/CA investigation was "to fill data gaps to <u>further refine the 5 mg/kg preliminary RAA boundary</u>" (emphasis added). No conversation subsequent to the Opalski decision involved better definition of 90 percent of the mass. EPA agreed to use the lateral boundary of 5 ppm and based its review and acceptance of the EE/CA investigation work plan on this premise. Fifth, EPA believes that the interpretation that only SLVs for DDx would be used in defining the RAA cannot be justified. EPA consistently indicated that, once the lateral 5 ppm boundary was defined, SLVs for DDx, and the other COI would be used to help define the vertical boundary. No discussion of mass removal of other COI occurred in the work plan. Other COI must be considered in defining the vertical extent, since, as LSS' most recent analysis indicates, other COI could necessitate that the vertical boundary extend beyond a vertical extent defined solely on DDx concentrations or mass removal. Again, as the Opalski decision indicates, "The mass and <u>concentration</u> (emphasis added) that will be left behind needs to be considered from the perspective of (1) the continued risk the material poses in a direct and current sense and (2) the long-term management that would be necessary to minimize future risks from either the uncovering of materials left in place or the upward migration of material through cover material." This analysis, which is based on risk, cannot be accomplished without consideration of COI other than DDx. The decision is thus clear that COI other than DDx must be considered.	
2	The report presents a great deal of analysis that may be useful during the development of the Engineering Evaluation/Cost Analysis (EE/CA), but is premature at this point in time. For example, much of the discussion regarding the source and character of chlorinated dioxins and furans (PCDD/F) is not relevant to data	**LSS acknowledges that the analysis of PCDD/F data presented in the RAAC report was not required by the Opalski decision (USEPA 2008a). This analysis was presented to provide context regarding the overlap of the majority of DDx and certain furan mass in sediments within the preliminary RAA boundary at the Arkema site.**	Directed Comment – EPA directs LSS to remove all references to source(s) and character of PCDD/F from the RAAC report. These discussions are irrelevant to the objective of defining the RAA, as acknowledged by LSS. Further, other responsible parties (RPs) near Arkema have different interpretations of source attribution. EPA will not entertain resolution of source attribution among RPs in the RAAC report.	Consistent with the 2011 Opalski Decision, the source attribution information for dioxins/furans was removed from the report, and will be included with supporting information in the EE/CA.

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	characterization of the RAA boundary. The content of the report should be limited in scope to defining the RAA as indicated in the Opalski decision and, in so doing, refining the Environmental Visualization System (EVS) model for use in evaluation of alternatives in the EE/CA.			
3	The report presents an incomplete discussion of all considerations related to the definition of the RAA. In particular, the information presented on chemicals of interest (COI) other than DDx (sum of DDT, DDD, and DDE isomers) and PCDD/F is not presented in sufficient detail to justify elimination of these chemicals from the RAA boundary determination.	**LSS will expand upon the discussion of the nature and extent of contamination related to other potentially relevant COIs in the revised RAAC report.** **However, in accordance with the Opalski decision, the discussion pertaining to the vertical RAA boundary will consider a range of DDx concentrations to include the SLVs and the approximate 5 ppm DDx concentration. The SLVs and 5 ppm concentration that the Opalski decision is referring to is DDx, not other COIs. The definition of the RAA boundary based solely on DDx concentrations was also acknowledged by EPA in a letter to Daniel Opalski on April 16, 2008 (second paragraph of p. 7; USEPA 2008b):** *"EPA did determine in its workplan that the removal action area could be defined solely on the basis of DDx, because DDT and its degradation products suggest a removal footprint as large or larger that footprints suggested when considering other sediment contaminants. That is, the work plan considered DDx as the best indicator of PTM, but did not dismiss other contaminants as COI. The use of DDx as the sole basis for defining removal action area (RAA) did eliminate the need to consider other COI for this purpose."* **For the 2009 EE/CA investigation, LSS agreed to analyze an expanded analyte list at selected locations within the RAA in accordance with previous agreements between EPA and LSS to evaluate the concentrations of other chemicals (including harbor-wide chemicals) within the RAA. However the vertical RAA boundary, as stated in the Opalski decision, will be based on the DDx concentration in sediment. As previously noted, the Opalski decision states the following in the second paragraph of page 3:** *"Therefore, I find that the EE/CA shall proceed with analyses that consider the implications of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis"* **(USEPA 2008a). The mass-based approach referred to in the Opalski decision was based solely on DDx concentrations.** **Ultimately, the vertical boundary needs to consider not only any residual concentrations that would be left in place that may require further assessment in the Portland Harbor FS, but also engineering constraints. As noted in the second paragraph of page 3 of the Opalski decision,** *"The EE/CA alternatives analysis shall consider constraints such as the feasible limits of conventional dredging techniques, as well as other appropriate factors, in evaluating various extents of dredging"* **(USEPA 2008a). LSS also notes that the premise for this early action is for a DDx hot spot removal**	Directed Comment - LSS is directed to include SLVs for COI other than DDx in defining the vertical extent of the RAA. Please see EPA review response under general comment 1 for direction on use of SLVs for COI other than DDx.	In accordance with the 2011 Opalski Decision, the vertical RAA boundary will be developed in consideration of all COIs. The vertical extent of the RAA boundary will be evaluated for various removal action alternatives, including the impacts of dredging to a range of COI concentrations vertically. In accordance with the 2011 Opalski Decision and the AOC, this latter analysis will be conducted in the EE/CA.

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		action rather than a final remedy for the entire site.		
4	Screening of COI data is incorrect and/ or incomplete in several instances, which are further discussed in specific comments. This screening is appropriate for an initial evaluation of the nature of contamination. However, please note as discussed in general comment 6 and in several specific comments, that definition of the vertical RAA boundary must recognize preliminary remediation goals (PRGs) developed as part of the harbor-wide process.	**Please see the responses to general comment 6 and specific comments 4 and 15 regarding the screening of COI data.**	Please see EPA review response under general comment 6.	This response is addressed by the response to General Comment 6.
5	The document contains several instances where undocumented and unsupported claims are made. These claims are not relevant to the definition of the RAA, and need to be removed from the document. Instances of such text are pointed out in specific comments.	**LSS will provide documentation to support the claims regarding potential PCDD/F sources presented in the draft RAAC report that are referenced in specific comments 16 and 17. Although the information associated with comments 16 and 17 is not necessary for evaluating the RAA boundary, it is appropriate to provide context to the nature and extent and occurrence of contamination found at the Arkema site. Also, the Arkema site is located in a depositional area of the Willamette River, so it is important for EPA to gain an appreciation of this fact as it pertains to the ongoing deposition of riverwide COIs.**	Directed Comment – EPA directs LSS to remove all reference to potential PCDD/F sources from the RAAC report. Please see also EPA review response under general comment 2.	In accordance with the 2011 Opalski Decision, all references to potential PCDD/F sources were removed from the RAAC report, and will be included with supporting information in the EE/CA.
6	The report must acknowledge the current state of the harbor-wide process, and in particular recognize the focused PRGs against which the harbor-wide remedial actions will be evaluated in the Portland Harbor feasibility study (FS). Hence, the vertical extent of the Arkema RAA should consider the focused PRGs developed for use in the Portland Harbor FS. The logic behind this approach is that the removal action will serve as the final remedy for sediments within the lateral boundary of the RAA. Thus, that action should be consistent with the harbor-wide process, while recognizing that final cleanup goals for Portland Harbor remain to be determined. EPA and LSS have consistently recognized the need to be consistent with harbor-wide RI/FS efforts, and sufficient progress has been made in these efforts to allow PRGs to be used instead of screening level values (SLVs). Overall, the RAA should be defined using Portland Harbor PRGs for COI,	**LSS agrees that the Arkema removal action should be, to the extent practicable, consistent with the harbor-wide process, including the use of focused PRGs being developed for the feasibility study. As noted by EPA, the Portland Harbor PRGs are still in development, but will be more appropriate to use than generic SLVs because the PRGs will ultimately be site-specific values developed for the Lower Willamette River. The Portland Harbor PRGs will be used to create Remedial Action Levels (RALs), which will be presented in the Portland Harbor Feasibility Study later this year. LSS notes that PRGs are not the equivalent of nor substitutes for the RALs.** **As discussed in the response to general comment 1 and consistent with the Opalski decision, the vertical RAA boundary will be based on DDx concentrations in sediments. The sediment PRG for DDx will therefore be considered for delineating the vertical extent of the RAA boundary at the Arkema site. LSS will also consider the PRG for PCDD/F (when available) in evaluating the vertical RAA boundary at the Arkema site (note that there is currently no Portland Harbor focused sediment PCDD/F PRG; please see specific comment 4 for additional information).** **Background concentrations of DDx and PCDD/F in the Lower Willamette River will also be considered in evaluating the vertical RAA boundary because background concentrations will be an important baseline for sediment recontamination analyses. Portland Harbor focused sediment PRGs for the**	Directed Comment – EPA directs LSS to use PRGs from the harbor-wide RI/FS being developed by the LWG in screening of chemicals detected in sediment. PRGs for 2,3,7,8 PCDF, Sum DDD, Sum DDE, Sum DDT and Sum DDx are available as documented in EPA's April 21, 2010 letter to the LWG. EPA agrees that harbor-wide background concentrations are another appropriate source of criteria for chemical screening. These background concentrations can also be considered in defining the vertical extent of the RAA. EPA believes that this direction is consistent with LSS' response above and previous discussions on the need for consistency with the harbor-wide process. Please see EPA review responses under general comment 1 for direction on use of SLVs for COI other than DDx and specific comment 4 for direction on PCDD/F PRGs to be used.	In accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.

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	including DDx, along with 5 parts per million (ppm) DDx for vertical extent within the 5 ppm DDx lateral contour.	**remaining harbor-wide COIs may be considered through the EE/CA process in assessing risks associated with any residual contamination following the removal action.**		
7	The EVS modeling methodology is inconsistent with previous submittals and does not present a valid comparison of characterization before the 2009 EE / CA sampling with the current data set. Further, EPA in previous comments understood that after collection of the 2009 data, the model semivariogram would be calibrated.	**The EVS modeling methodology presented in the draft RAAC report is consistent with the previous version of the model submitted to EPA on July 8, 2010 (Slater 2010a) and subsequent agreements between LSS and EPA. Please see the LSS response to specific comment 21 for additional information.** **LSS has not agreed to custom fit the EVS model semivariogram (please see the LSS response to specific comment 22).**	Directed Comment – LSS will use the final horizontal RAA boundary shown on the attached Figure 4-2 from the draft RAAC report as the area within which EE / CA alternatives will be evaluated. The determination to use the selected final RAA is based on EPA's further evaluation of the EVS model subsequent to the EPA/LSS teleconference held on March 31, 2011. In lieu of a calibrated semivariogram, EPA requested that LSS provide a 4D file of the variogram cloud plot from the EVS expert system to document the quality of LLS' current variogram of the model. In addition, other model documentation was requested including model settings and various plots. LSS declined to provide the cloud plot but did provide other requested model documentation. EPA then instructed its contractor, CDM, to generate the cloud plot and evaluate the cloud plot as well as the other EVS model information. The evaluation concluded the following: The difference between the minimum and maximum plume extents has decreased, particularly in the area between the docks and upstream from the docks. For the area between the docks the nominal plume adequately depicts the horizontal 5 ppm DDx area. In the area downstream from the docks, the minimum and maximum plume extents have also become more closely aligned but significant variability is still apparent. This variability is also present in the generated cloud plot distribution suggesting the model lacks refinement. The variability in the model indicates that the three large noncontiguous areas downstream from the docks are likely connected; hence the 5 ppm DDx lateral contour was drawn by EPA as shown in the attached Figure 4-2 from the draft RAAC report. EPA believes going through a process to calibrate the model semiovariogram will not significantly modify the 5 ppm DDx lateral contour in the downstream area from that which is depicted on the attached Figure 4-2 from the draft RAAC report.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report.
8	The Work Plan Addendum permitted a more limited analysis for COI. Many of the 2009 sediment samples were not analyzed because they were assumed to be within the 5 ppm DDx nominal horizontal and vertical plume (as delineated prior to the 2009 EE/CA investigation). The effort within this report to consider those areas as data gaps and interpret	**A number of the upper interval sediment samples from Table 2-3 of the Field Sampling Plan (FSP; Appendix A to the Work Plan Addendum; Integral 2009) that this comment refers to were analyzed during the analysis of archived sediment samples in 2010 (e.g., WB-30, WB-31, WB-46, and WB-49). The sediment samples that were analyzed are not data gaps and, therefore, footnote "d" on Table 2-3 of the FSP would not apply to them.** **The two boreholes with upper sediment sample intervals that were not analyzed and are covered by footnote "d" on Table 2-3 of the FSP (i.e., WB-32 [0-10 ft] and**	Response is acceptable; EPA agrees WB-32 and WB-48 are covered by footnote "d" on Table 2-3. EPA has directed the definition of the RAA boundary. Please refer to EPA review responses under General Comments 1 and 7.	No additional modifications required. See also response to General Comments 1 and 7.

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	them as not being within the 5 ppm DDx nominal plume is inconsistent with the agreement by which the May 15, 2009 Field Sampling Plan was approved. This agreement is documented in footnote "d" on Table 2-3 of the Field Sampling Plan (Appendix A to the Work Plan Addendum) which reads *"DDx analysis in 2' samples above designated depth interval is not required as it is assumed the upper sediments are within the RAA boundary and will be evaluated in the EE/CA."*	**WB-48 [0-2 ft]) could be considered data gaps, but LSS does not believe they are within the RAA boundary as defined by the Opalski decision. The assumption that these boreholes would be within the RAA boundary was based on the limited amount of data available at the time the FSP was written.**		
9	The proposed final RAA boundary derived from the mass balance calculation cannot be evaluated for accuracy at this time. The mass balance analysis presented in the report is based upon DDx extent and mass calculations derived from a model that was not calibrated as expected. The semivariogram calibration could significantly alter the mass distribution within the model. A mass balance analysis on a final calibrated model may have a 90 percent mass estimate significantly different from the estimate derived from the model version contained in the report. Additional discussion of semivariogram calibration is included in the specific comments.	**LSS believes the mass removal calculations presented in the draft RAAC report are accurate. Please see the LSS response to specific comment 22 for information regarding the calibration of the EVS model.**	Please see EPA review responses to general comments 1 and 7. LSS is now directed to use the 5 ppm isoconcentration contour, modified as indicated in the attached Figure 4-2 from the draft RAAC report, as the lateral boundary for the RAA.	See responses to General Comments 1 and 7. No additional modifications required.
Specific Comments				
1	Section 1.1. The purpose of the document as provided in the text is not incorrect, but lacks the specificity required by the Opalski decision. Relevant text from that decision should either be directly incorporated or paraphrased in this section. Text from the decision is copied for reference: *"there is agreement that the lateral extent of the removal area will (emphasis added) be defined by approximately the 5 ppm DDx contour"* and *"the EE/CA shall proceed with analyses that consider the implication of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis."*	**EPA's suggested language is inconsistent with the Opalski decision (USEPA 2008a). The Opalski decision noted that the removal area would be defined by approximately the 5 ppm DDx contour, which was the approximate 90 percent DDx breakpoint based on the data available at the time of the decision. The 5 ppm DDx value was based on LSS' mass-based approach with data available prior to the 2009 EE/CA investigation. As noted in the response to general comment 1, the updated 90 percent DDx breakpoint, on which the Opalski decision was based, is now approximately 75 ppm with the current and more robust data set. The 5 ppm DDx breakpoint from the Opalski decision was based on a significantly smaller data set. LSS will consider the Portland Harbor focused sediment PRGs for DDx and PCDD/F (when available) in evaluating the vertical extent of the RAA boundary and assessing risk through the EE/CA process (please see the LSS response to general comment 6 for additional information). As previously noted, PRGs are not the equivalent of nor substitutes for the RALs.**	EPA directs LSS to use the language proposed in EPA's general comment 1 for the RAAC report.	Text consistent with the 2011 Opalski Decision was added to Section 1.1 of the report.

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	Appropriate text for this section would be "to provide a proposed final RAA boundary based laterally on the 5 ppm DDx contour and vertically considering this same DDx concentration along with Portland Harbor focused sediment PRGs for COI."			
2	Page 1-2, Section 1.2, second paragraph. The text in this paragraph misrepresents the conclusions of the Opalski decision. Although the decision mentions that a 5 ppm cut-off was determined using mass balance, nowhere in the decision is a "90% mass breakpoint" mentioned. Further, LSS suggests that the "90% mass breakpoint/5 mg/kg" is to be refined "especially at depth." The Opalski decision clearly indicates that the vertical boundary of the RAA will be defined considering a range that includes "at least" SLVs for COI and the 5 ppm cutoff for DDx. Again, nowhere in the decision is a "90% mass breakpoint" mentioned or implied. The decision instead concludes that *"The mass and concentration that will be left behind needs to be considered from the perspective of (1) the continued risk the material poses in a direct and current sense and (2) the long-term management that would be necessary to minimize future risks from either the uncovering of materials left in place or the upward migration of material through cover material."* Clearly, the decision considered it necessary to define the RAA to encompass a large volume of sediment to carry into the EE/CA. The EE/CA will then be developed to *"consider constraints such as the feasible limits of conventional dredging techniques, as well as other appropriate factors, in evaluating various extents of dredging."* The purpose and scope of the RAA Characterization Report must be changed to meet the stated intent of the Opalski decision. EPA notes again that substitution of focused PRGs for Portland Harbor for SLVs is reasonable for defining the vertical extent of the RAA.	**As previously discussed, the mass-removal approach and breakpoint analysis were clearly factored into and were the foundation of the Opalski decision. Please see the response to general comment 1 and specific comment 1 regarding the Opalski decision.** **The Opalski decision made no mention of the necessity "to define the RAA to encompass a large volume of sediment to carry into the EE/CA." The RAA boundary was to be based on a mass removal approach and the associated breakpoint analysis, not the "large volume of sediment" suggested by EPA in this comment. As previously stated, LSS will consider the relevant and appropriate Portland Harbor focused PRGs in evaluating risk through the EE/CA process (please see the LSS response to general comment 6 for additional information).**	Please see EPA review responses under general comments 1 and 7.	Please see LSS responses to General Comments 1 and 7.

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3	Page 3-1, Section 3.1, first paragraph and Table 3-5. The text indicates that a subset of sediment samples was analyzed by Toxicity Characteristic Leaching Procedure (TCLP) procedures. These data are presented in Table 3-5. However, comparison to regulatory standards for TCLP results is not included. This comparison should be added to the table and the text should discuss and interpret the data relative to the regulatory standards.	**LSS notes that this analysis and discussion is not germane to the objectives of the RAAC report (i.e., determining the RAA boundary) and is more appropriate for analysis and discussion in the EE/CA report (i.e., sediment handling and waste disposal).**	Response is acceptable.	No RAAC report modification required.
4	Page 3-1, Section 3.1, third paragraph and Tables 3-6 and 3-7. Screening of sediment data against various criteria is appropriate, but is not done correctly in all instances. First, Region 9 PRGs are obsolete and should not be used. These PRGs were superseded in 2008 by EPA's Regional Screening Levels. In addition, current and future efforts for Arkema in-water issues should recognize the current work completed for the Portland Harbor site as a whole. Focused sediment PRGs for the harbor are available for DDx, PCDD/F and other Arkema sediment COI. One objective of in-water work at Arkema has been consistency with harbor-wide efforts. Thus, current PRGs now being used in the FS for the harbor should also be used for screening for the RAA Characterization Report. Additional comments on this issue were provided by Oregon Department of Environmental Quality (DEQ) and are provided below as part of EPA's comments on the report. Please note again that SLVs discussed in ODEQ comments are appropriate for use in an initial evaluation of the nature of contamination. Portland Harbor PRGs should be used for definition of the vertical boundary of the RAA. **Screening:** Screening of dioxins and furans was absent or incomplete in the report. **Table 3-7:** The dioxin toxicity equivalent TEQ value presented is outdated and the values from DEQ's bioaccumulation guidance should be	**As previously stated, LSS agrees that the Arkema removal action should be, to the extent practicable, consistent with the harbor-wide process, including the use of focused PRGs being developed for the Portland Harbor Superfund site feasibility study. As noted by EPA, the Portland Harbor PRGs are still in development but will be more appropriate to use than generic SLVs because the PRGs are ultimately site-specific values developed for the Lower Willamette River. LSS notes that there is currently no Portland Harbor focused sediment PRG for 2,3,4,7,8-PCDD. The "sediment" PRGs identified for 2,3,4,7,8-PCDD in comment 4 for sandpiper (i.e., 54.1 pg/g), mink (i.e., 56 pg/g), and humans (i.e., 1.06 and 20.5 pg/g) are actually tissue concentrations for the prey of sandpiper and mink, and tissue concentrations for smallmouth bass consumed by humans, and are therefore not applicable as sediment screening values.** **As noted in the response to general comment 6, LSS will consider Portland Harbor sediment PRGs (or other appropriate clean up levels) for DDx and PCDD/F (when available), to evaluate the vertical extent of the RAA boundary at the Arkema site. The Portland Harbor focused sediment PRGs for the remaining harbor-wide COIs may be considered through the EE/CA process to evaluate residual risks associated with any residual contamination following the removal action.**	Please see EPA review responses under general comments 1, 6 and 7. EPA directs LSS to use available harbor-wide PRGs as documented in EPA's April 21, 2010 letter to the LWG. Specifically, EPA directs LSS to use sediment Portland Harbor PRGs available for 2,3,4,7,8 PCDF and Sum DDD, DDE, DDT and DDx as detailed above in EPA's original comment in evaluating the vertical RAA boundary. As noted above, the current 2,3,4,7,8-PCDF PRGs are 54.1 pg/ g for sandpiper, and 56 pg/ g for mink exposure (multi-species diet), and 1.06 pg/g and 20.5 pg/ g for human health fish consumption. Total TEQ estimates for mammals, birds and fish need to be calculated as part of the analysis.	In accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.

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Tables 3-7f and 3-7g, Eco and [human health] HH bioaccumulation sediment screening: The screening does not include dioxins and furans, which are included in DEQ guidance. DEQ guidance includes sediment dioxin and furan screening values for each isomer by receptor (fish, bird, aquatic mammal and human health consumption). Table 1 shows the acceptable risk levels for sediment for different receptors based on Total TEQ. Total TEQ presented in the report ranged up to 24,400 picogram per gram (pg/g).

Table 1: DEQ Acceptable Risk Levels for Total TEQ in sediment (pg/g):
<table>
<tr><td>Sample</td><td>Mammal</td><td>Bird</td><td>Fish</td></tr>
<tr><td>Aquatic Acceptable Risk</td><td>1.4</td><td>3.5</td><td>0.56</td></tr>
<tr><td>Aquatic Hot Spot</td><td>14</td><td>35</td><td>5.6</td></tr>
<tr><td>HH Recreational Accept Risk</td><td></td><td></td><td>0.0091</td></tr>
<tr><td>HH Subsistence Accept. Risk</td><td></td><td></td><td>0.0011</td></tr>
<tr><td>HH Recreational Hot Spot</td><td></td><td></td><td>9.1</td></tr>
<tr><td>HH Subsistence Hot Spot</td><td></td><td></td><td>1.1</td></tr>
</table>

Portland Harbor PRGs: Portland Harbor PRGs are available for the primary dioxin and furan risk drivers in Portland Harbor, including human health consumption, shorebirds, and aquatic mammals. These risk drivers consist primarily of 2,3,4,7,8-pentachlorodibenzofuran, which was selected as the congener to represent</td><td></td><td></td><td></td></tr>
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	dioxin TEQ, although risk results show that 2,3,7,8-TCDF is also a significant contributor. These congeners should be presented in the EE/CA and mapped separately. The maximum detected value of 2,3,4,7,8-PCDF was 28,000 pg/g (mean 2,450 pg/g). The sediment PRGs currently being used in the in-water project are 54.1 pg/g for sandpiper, and 56 pg/g for mink exposure (multi-species diet), and 1.06 pg/g and 20.5 pg/g for human health fish consumption. Selecting the boundary based only on a total PCDD/F concentration of 36,000 pg/g as proposed by Arkema does not appropriately consider TEQ and congener risk. The screening process in Table 3-7f for DDT is not presented consistent with DEQ Guidance for Assessing Bioaccumulative Chemicals in Sediment. Only the 4,4'-DDT isomer is screened and "Total DDT" is defined as the total of only the 4,4'-DDT isomer and not the sum of 2,4'- and 4,4'-DDD, DDE and DDT isomers as was intended in DEQ guidance. This results in a low bias to the screening. As appropriate, values in the RAA characterization report should be re-screened using Total DDX. Further, PRGs for DDX and isomers from the in-water work should be used defining the vertical extent of the RAA and to help ensure consistency with the in-water project. Appropriate PRGs to consider include: • Sum DDD Eco Benthic probable effects concentration (PEC) sediment quality guideline (SQG) 28 microgram per kilogram (ug/kg), • Sum DDE Eco Benthic PEC SQG 31.3 ug/kg, • Sum DDE HH Adult Fish Consumption 8.8 ug/kg 1 RM (based on Small Mouth Bass, low ingestion rate, 10-5 target risk), • Sum DDT Eco Benthic PEC SQG 62.9 ug/kg, and • Total DDX Eco Benthic floating percentile model (FPM) High SQG 218 ug/kg			

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5	Page 3-1, Section 3.1, fourth paragraph. The purpose of the screening in Section 3.1 is stated to *"identify priority areas for the EE/CA removal action."* The term "identify priority areas" is unclear and should be deleted. The Opalski decision clearly states that the areal (lateral) extent of the RAA is to be defined using the approximate 5 ppm DDx contour, not SLVs, and SLVs are to be used in developing the vertical boundary of the RAA. EPA agrees that exceedances of SLVs are an important consideration for evaluating the vertical extent of the RAA. The screening should be corrected as described above, and then used in the analysis of the appropriate depth contour for the RAA.	**See responses to previous comments on the 5 ppm/breakpoint analysis for defining the lateral extent of the RAA. LSS will replace the term "identify priority areas" with "high concentration sediment" in the revised RAAC report and agrees with EPA that SLVs will not be used to define the lateral extent of the RAA boundary. This terminology is consistent with the EE/CA work plan addendum (page vii; Integral 2008b):** *"...EPA and Arkema have agreed on the RAA boundary in which the EE/CA analysis will be conducted, and agree that a non-time critical removal action in that RAA boundary will address a significant amount of high concentration sediment and will significantly reduce risk to human health and the environment".* **The EE/CA work plan addendum also provided guidance on SLVs that will be utilized through the NTCRA process (page vii; Integral 2008b):** *"EPA and Arkema agree to remove the term "Principal Threat Material" in relation to the screening level values (e.g., 1x PEC and 1,000x bioaccumulation SLV). The screening level values will remain in the Work Plan, including both the 1x PEC and 1,000x bioaccumulation SLV, for purposes of evaluating dredging and judging the effectiveness of the removal action in the EE/CA.* **The screening level values agreed in the work plan addendum are therefore limited to the PEC and 1,000x bioaccumulation SLVs. The SLV issue was further refined by the Opalski decision to only include SLVs for DDx (USEPA 2008a):** *"Therefore, I find that the EE/CA shall proceed with analyses that consider the implications of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis."* **The mass-based approach referred to in the Opalski decision was based solely on DDx concentrations. As previously noted, the definition of the RAA boundary based solely on DDx concentrations was also acknowledged by EPA in a letter to Daniel Opalski on April 16, 2008 (USEPA 2008b; please see the LSS response to general comment 3 for additional information). In accordance with the agreements between EPA and LSS presented in the EE/CA work plan addendum and the Opalski decision, the appropriate SLV to be considered in defining the vertical extent of the RAA boundary is 0.035 ppm (i.e., 1,000x DEQ's bioaccumulation SLV). This value was considered for defining the vertical RAA boundary in the draft RAAC report (note that this value was rounded to 0.04 ppm based on more recent DEQ guidance; see Figure 4-3b of the draft RAAC report). As previously noted, LSS will also use the relevant and appropriate focused PRGs with respect to evaluation of effectiveness of the removal action in the revised RAAC report (please see the LSS response to general comment 6 and specific comment 4 for additional information).**	Please see EPA review responses under general comments 1 and 7. EPA directs LSS to use 5 ppm to define the lateral boundary of the RAA, to use available Portland Harbor-wide PRGs in defining the vertical extent of the RAA and to use only SLVs, not multiples of SLVs, in screening of chemicals and in defining the vertical boundary of the RAA.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
6	Page 3-2, Section 3.1.3. Apparently, trans- and cis- nonachlor were not included in the analyte list for pesticides. trans-Nonachlor, an important component of chlordane, was shown to be the risk driver for total chlordane off the	**The pesticides cis-nonachlor and trans-nonachlor were not included in the analyte list presented in the EPA-approved EE/CA QAPP (Integral 2009). At the request of EPA, LSS presented information on total chlordanes in sediments within the preliminary RAA boundary at the Arkema site in a letter dated August 30, 2010 (Slater 2010b). The data provided in the August 30, 2010 letter included total**	EPA directs LSS to consider all COI in defining the vertical extent of the RAA; please see EPA review response under general comment 1 for further details. EPA has and will continue to review LSS' interpretations of available data on chlordane and other COI. Such evaluations are appropriate in determining the importance of SLV exceedances in	In accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the

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	Arkema site in the Lower Willamette Group (LWG) remedial investigation (RI) dataset. Detections of other components of total chlordane were higher in the LWG RI dataset than in the data set developed by LSS, with trans-chlordane detected at concentrations up to 1,000 ug/kg. Without the nonachlor data, total chlordane estimates may be biased low. Uncertainties associated with lack of nonachlor data need to be discussed when evaluating total chlordane data for use in defining the RAA. Data collected previously by the LWG within the 5 ppm horizontal RAA boundary should be incorporated into the LSS data set for definition of the vertical RAA boundary and for further use in the EE/CA.	**chlordane data collected by the LWG. LSS concluded the following in the 3rd paragraph of page 2 of the letter:** *In summary, while there are sporadic detections of total chlordane in sediment at the Arkema site, these detections are consistent with the transport of upstream urban background of total chlordane through the Lower Willamette River. The detections of total chlordane at the Arkema site are outweighed by the majority of sediment samples that do not have any detections of total chlordane. These findings are consistent with the knowledge and conceptual site model that show there are no chlordane sources at the Arkema site because chlordane was never manufactured, handled, or stored at the facility.* **Even though LSS believes the sporadic detections of total chlordane in sediment represent upstream urban background concentrations, a discussion on the uncertainties associated with total chlordane will be provided in the revised RAAC report.**	defining the lower boundary of the RAA.	EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated. Interpretation of chlordane and other data will also be provided in the EE/CA report.
7	Section 3.1.5. The very brief discussion of PCB data ignores the very high detection limits reported for many samples. When compared with the Oregon DEQ screening level in Table 3-7f, some detection limits are up to 1,000 times the SLV of 1.8 ug/kg. These high detection limits need to be recognized and discussed. In Section 4, the possible impact of high detection limits for PCBs should be discussed in terms their effect on defining the vertical extent of contamination. PCBs are singled out in this instance because of the extreme difference between detection limits and SLVs. However, detection limits are not discussed at all for any COI included in Sections 3.1.1 through 3.1.8. This critical deficiency must be addressed appropriately in revisions to the report. Please see specific Comment 19, which indicates that reporting limits, not method detection limits, should be used.	**LSS will add a discussion of detection limits to Sections 3 and 4 of the revised RAAC report. However, LSS notes that the detection limits for total PCBs were below the Oregon DEQ SLV of 1.8 ug/kg in 19 of 34 sediment samples analyzed for PCBs during the 2009 EE/CA investigation (see Figure 3-2 of the draft RAAC report). None of the samples with the low detection limits had detectable PCBs. The samples with the low detection limits were collected from boreholes located upstream, downstream, and within LSS' proposed RAA boundary. Please see the LSS response to specific comment 19 regarding the reporting limits and method detection limits.**	EPA accepts LSS' commitment to incorporating discussion of detection limits for PCBs and other COI into the RAAC report. EPA will review the complete discussion on detection limits to determine if the remainder of LSS' comment can be accepted.	Discussion of detection limits for PCBs and other COI were added to Sections 3 and 4 of the RAAC report.
8	Section 3.1.8. The report concludes that *"the LSS asbestos quantitation is deemed sufficient for assessing asbestos concentrations in sediment in the RAA."* This conclusion is not justified. The asbestos dataset is very limited and the differences between asbestos content reported	**The LSS asbestos analyses were conducted in accordance with the EPA approved EE/CA project QAPP. The data were reviewed and found to be acceptable and usable. The asbestos samples were collected for future waste characterization purposes and were therefore limited to the waste characterization boreholes between Docks 1 and 2. LSS has and always will comply with all federal and state occupational health and safety requirements for worker protection when handling**	EPA encourages LSS to address the discrepancy between split samples analyzed for asbestos by EPA and the LSS. EPA believes that the State of Oregon may have requirements for asbestos removal that will force consideration of the implications for the potential presence of sediments with greater than 1% asbestos content prior to start of any dredging. For example, the State might require certification of companies that do the	LSS has evaluated the data and found that the LSS quantitation is sufficient for assessing sediment asbestos concentrations within the RAA in the EE/CA. Text was added to Section 3.1.8 of the

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	in the EPA and LLS data sets add additional uncertainty. EPA believes that at best the data provide some general information on which to base recommendations for future characterization of dredged sediments during the removal action. It is possible that federal or state occupational health requirements may need to be considered for worker protection when handling sediments with greater than 1% asbestos content.	**sediments at the Arkema site.**	work in the field, or, perhaps a waiver of that requirement. These issues should be addressed during the EE / CA to ensure that costs and ARARs are properly evaluated.	RAAC report to address this comment.
9	Section 3.1.9. As indicated above, the presentation of TCLP results must include an interpretation of the results in consideration of the regulatory standards.	**Please see the LSS response to specific comment 3.**	Response is acceptable.	No RAAC report modifications required.
10	Page 4-1, Section 4, second paragraph. The text refers to Appendix I for rationale for excluding chemicals in delineating the final RAA boundary. However, Appendix I provides limited information and should be eliminated. Appropriate evaluation and rationale must be provided in the text of Section 4 to justify how the RAA vertical boundary is identified. EPA notes that the agreement with LSS expressed in the EPA letters of July 9 and September 8, 2010 was that data for COI other than DDx were sufficient to support the definition of the RAA boundary (and subsequent evaluation in the EE/CA, as appropriate), not that LSS could eliminate these COI from further consideration.	**LSS will incorporate the information from Appendix I for other COIs into Section 4 of the revised RAAC report. As discussed in the response to general comments 1 and 3 and specific comment 5, in accordance with the Opalski decision, the RAA boundary is to be based on DDx concentrations. However, LSS will also consider furan concentrations in evaluating the RAA boundary.**	Please see EPA review responses under general comments 1, 6 and 7 and specific comment 6. EPA is directing LSS in how to define both the lateral and vertical extent of the RAA, and on the use of SLVs for COI other than DDx in defining the vertical boundary of the RAA.	Information for other COIs has been incorporated into Sections 3 and 4 of the report. In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
11	Page 4-1, Section 4, third paragraph. The text states that *"The mass based approach ... focuses on the removal of the majority of the COI mass (i.e., approximately 90% of the DDx mass)."* This interpretation of the Opalski decision is incorrect. The decision never indicates that the RAA would be defined by mass either laterally or vertically, and no indication exists anywhere in the decision that 90 percent of the mass of DDx is the appropriate target for setting the	**LSS believes the draft RAAC report is consistent with the Opalski decision. As previously stated, Opalski's decision with respect to the horizontal RAA boundary was based on a mass removal approach and breakpoint analysis in which approximately 90 percent of the DDx mass would be considered for removal. This is confirmed by the fact that Mr. Opalski requested additional information related to the breakpoint in the mass to volume relationship (the elbow) within the proposed 5 ppm RAA boundary at that time to provide an updated logical breakpoint analysis for the z axis (please see general comment 1 for additional information). At that time in order to help resolve the dispute, LSS agreed to use the 5 ppm DDx RAA boundary as a surrogate for the breakpoint**	Please see EPA review responses under general comments 1 and 7. EPA is directing LSS in how to define the horizontal and vertical extent of the RAA.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels

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	RAA boundary. The decision indicates that the lateral extent of the RAA will be defined by concentration - approximately 5 ppm that was agreed to during discussions of the concentration volume relationship - and that, at a minimum, the vertical extent will be defined through consideration of SLVs and the 5 ppm cutoff. The decision also contemplates that the EE/CA will evaluate residual contamination after the removal action and will consider current and future risks associated with these residuals. The RAA must be defined as indicated in the Opalski decision in order to provide the context for appropriate evaluation of residual risks. In the EE/CA, an appropriately defined RAA can be used as a basis to consider residual risks, technical limitations on dredging, and other factors as appropriate for evaluating and selecting the appropriate removal action.	**until the EE/CA investigation data were collected and incorporated into the breakpoint analysis.** **LSS notes that the term "cutoff" was not mentioned in the Opalski decision with respect to the vertical RAA boundary. The Opalski decision states** *"Therefore, I find that the EE/CA shall proceed with analyses that consider the implications of dredging to a range of concentrations vertically, with that range to include at least the SLVs and the approximate 5 ppm concentration suggested by LSS' mass-based analysis"* **(USEPA 2008a). The mass based approach referred to in the Opalski decision was based solely on DDx concentrations.** **The Opalski decision states the following with respect to risks and long-term management at the site (USEPA 2008a):** *"The mass and concentration that will be left behind needs to be considered from the perspective of (1) the continued risk the material poses in a direct and current sense and (2) the long-term management that would be necessary to minimize future risks from either the uncovering of materials left in place or the upward migration of material through cover material."* **In accordance with the Opalski decision, risks associated with any residual contamination following the removal action will be assessed through the EE/CA process.**		(e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
12	Page 4-2, Section 4.1, second and third paragraphs. The text re-states LSS's erroneous interpretation of the Opalski decision. This issue has been covered in detail in previous general and specific comments. EPA notes that LSS uses an incorrect definition of "breakpoint." A breakpoint is determined by the concentration versus volume relationship, not the other way around as implied by the text. That is, one does not decide that 90 percent of the mass is sufficient, then call the concentration that represents this mass a "breakpoint." This issue is moot for determining the lateral RAA boundary, since a decision has already been made that this boundary will be defined by the approximate 5 ppm DDx contour. EPA notes that in previous agreements and consistent with past LSS analysis, this lateral contour would be defined using DDx data from all depths. EPA has also provided many previous comments on the EVS modeling, along with several comments included below. These comments must be considered when revising the report.	**LSS agrees with EPA's clarification regarding the definition of "breakpoint". The text in Section 4.1 of the revised RAAC report will be changed to the following:** *Based on this data set, the mass-to-volume relationship has changed and the revised DDx breakpoint now occurs between 75 ppm and 100 ppm, which represents approximately 90 percent of the DDx mass.* **As previously noted, LSS disagrees with EPA that the lateral RAA boundary will be defined by the approximate 5 ppm DDx contour. The 5 ppm DDx RAA boundary was based on LSS' breakpoint analysis using a significantly smaller data set than is currently available for the Arkema site (please see the LSS response to general comment 1 for additional information).**	The response to clarifying the issue of defining a breakpoint is acceptable. Please see also EPA review responses under general comments 1 and 7. EPA is directing LSS in how to define the lateral and vertical boundaries of the RAA.	The definition in Section 4.1 was modified per the agreement. In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
13	Page 4-2, footnote 10. The Opalski decision indicates that SLVs are to be used in evaluating the vertical boundary for the RAA. The footnote incorrectly indicates that the decision states that 0.035 milligram per kilogram (mg/kg) would be	**EPA is correct in pointing out that the Opalski decision does not mention specific SLVs or numerical values of the SLVs. This will be clarified in the revised RAAC report. The value of 1,000x the bioaccumulation SLV was utilized in the draft RAAC report in accordance with an agreement between EPA and Arkema provided in the EE/CA work plan addendum (Integral 2008b; please see the LSS**	Please see EPA review responses under general comments 1 and 6 and specific comment 6. EPA is directing LSS on use of SLVs in defining the vertical extent of the RAA.	In accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the

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	used, based on Oregon DEQ guidance. The decision actually makes no mention of specific SLVs and does not list any numeric values. Further, the actual SLV is 0.035 ug/kg. Footnote 12, page 4-3 correctly indicates that the value of 0.035 mg/kg is 1,000 times the 2007 Oregon DEQ SLV based on a subsistence fish consumption scenario. A value of 1,000 times the SLV is irrelevant to the characterization of the RAA.	**response to specific comment 5 for additional information). LSS also notes that EPA's 2007 EE/CA work plan considered values of 1,000x the bioaccumulative SLV for DDx (Parametrix 2007).**		EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
14	Page 4-3, Section 4.1, second paragraph. The report states that *"The distribution of DDx downstream of Dock 2 is consistent with the distribution observed upstream of the Arkema site."* Based on an evaluation of Figure 4-3c, this does not appear to be the case. Sediment concentrations upstream of the dock area are low in comparison to the downstream results and the upstream area does not exhibit pockets of elevated DDx concentrations, as are present downstream.	**The DDx concentrations in shallower sediments upstream of Dock 1 are similar to some of the areas downstream of Dock 2 (note the green shading depicting DDx concentrations ranging between 0.1 and 1 ppm). LSS agrees with EPA's observation and noted in paragraph 2 of page 4-3 of the draft RAAC report that** *"… the discontinuous DDx sediment areas downstream of Dock 2 have a limited vertical extent and are not contiguous."* **LSS will clarify the comparison of sediments upstream of Dock 1 and downstream of Dock 2 in the revised RAAC report.**	Directed Comment - EPA directs LSS to remove all reference to comparisons of DDx upstream and downstream of the docks from the RAAC report, along with any language that discusses possible sources of DDx in sediments offshore of Arkema. Please see also EPA review response under general comment 2.	The references to upstream, downstream, and other sources of DDx were removed from Section 4 of the report.
15	Page 4-3, Section 4.2, second paragraph. The text claims a "breakpoint" for PCDD/F. Figure 4-4, however, actually shows a smooth curve that gradually reaches 100% mass; no breakpoint is evident. Moreover, the concept of using a criterion of 90 percent of PCDD/F mass is clearly outside of the scope of the Opalski decision. This mass percentage is not relevant to the establishment of either the lateral or vertical RAA boundaries. A calculation of mass of PCDD/F represented by the 5 ppm lateral contour for DDx could be informative and might represent a means to objectively assess a concentration-to-mass relationship. Importantly, the evaluation of PCDD/F ignores SLVs (i.e. the screening analysis presented in Section 3 and the Opalski decision). In fact, the analysis does not consider possible risks in any way. The Opalski decision makes it clear that the EE/CA must take such considerations into account. Thus, the PCDD/F analysis should be	**LSS will add additional data points to Figure 4-4 so that the PCDD/F breakpoint is clearly shown in the figure in the revised RAAC report. As previously noted in general comment 1, the analysis of PCDD/F data was presented to provide context regarding the overlap of the majority of DDx and certain Furan mass in sediments within the preliminary RAA boundary at the Arkema site.** **As stated in the response to specific comment 4, there is currently no Portland Harbor focused sediment PRG for 2,3,4,7,8-PCDD, as the focused PRGs presented in the referenced comment are all based on tissue concentrations (i.e., concentrations in prey of sandpiper and mink, and concentrations in smallmouth bass consumed by humans). When available, LSS will consider the Portland Harbor focused sediment PRG for 2,3,4,7,8-PCDF in evaluating the vertical RAA boundary at the Arkema site. As suggested by EPA's comment, background concentrations will also be evaluated for 2,3,4,7,8-PCDD because of its relevance to the removal action recontamination analysis.**	Please see EPA review responses under general comments 1, 6 and 7, which direct LSS in how to define the RAA and specific comment 4 for 2,3,4,7,8 PCDF, Sum DDD, DDE, DDT and DDx PRGs that will be used in evaluating the vertical RAA boundary. In addition, total TEQ equivalents (for mammals, birds and fish) need to be calculated as part of the analysis. For clarification, the reference in paragraph 3 of the comment that it "would be acceptable to use the 2,3,4,7,8-PCDD PRGs for evaluation of the RAA" is in error; this was intended to refer to 2,3,4,7,8-PCDF.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.

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	completely re-done using DEQ TEQ SLVs and Portland Harbor PRGs for 2,3,4,7,8-PCDF. EPA notes that separate calculations and analyses using mammalian, avian and fish toxic equivalency factors (TEFs) will be necessary. For the TEQ comparison, it is unlikely that any constant ratio of total homologue concentrations to TEQ exist, because of the changing congener profiles. Thus, this analysis will require calculating TEQ for each sediment sample. LSS will need to use summing rules for TEQ that were developed and used for the Portland Harbor RI and risk assessments. Once TEQ estimates are calculated, EVS can be used to overlay PCDD/F concentrations within the lateral 5 ppm DDx boundary. The lower boundary for this modeling must consider SLVs or PRGs for PCDD/F. EPA and the LWG developed a set of PRGs for the Portland Harbor FS as documented in EPA's April 21, 2010 letter to the LWG. It would be acceptable to use the 2,3,4,7,8-PCDD PRGs for evaluation of the RAA; other SLVs could be considered in the EE/CA. Still other considerations for the EE/CA could include background estimates for COI in sediments developed by the LWG as part of the ongoing RI/FS.			
16	Page 4-4, Section 4.2, second paragraph. EPA believes most of the discussion in this paragraph is irrelevant to evaluation of the vertical extent of the RAA. Further, much of the discussion is poorly or not justified. For example, “documented aerial deposition of PCDD/F” is not supported with references; neither is “historical discharge of the Rhone Poulenc Agent Orange ... production.” These issues are not of concern for defining the RAA, and likely are irrelevant to EE/CA evaluations. An exception could be upstream background concentrations which have been estimated by the LWG. Overall, as data are presented, EPA finds a strong signature of penta- and hexa-	**LSS will provide documentation to support the claims presented in the draft RAAC report regarding aerial deposition of PCDD/F and historical discharge of Rhone Poulenc Agent Orange and other pesticide/herbicide production process wastes near the railroad bridge. Supporting facts were presented in detail in the report entitled “Evaluation of Historical Source Information and Assessment of Historical Connections to Doane Lake, Doane Creek, and Saltzman Creek, Former Rhone Poulenc Portland Site, ESCI No. 155” (Integral 2010b). Although this information is not necessary for defining the RAA boundary, it is appropriate to provide context to the nature and extent of contamination at the Arkema site.** **Total PCDD/F concentrations are bracketed into four groups on Figure 4-6 (note the size of the pie charts is related to the total PCDD/F concentration). LSS agrees that selected sediment samples downstream of Dock 2 exhibit some degree of PeCDF and HxCDF signatures, but they are different than the homologue signatures observed between Docks 1 and 2. In addition, the total PCDD/F concentrations are generally lower and the proportion of PCDD is higher in**	Directed Comment - EPA directs LSS to remove all reference to source(s) and character of PCDD/F from the RAAC report. Please see also EPA review response under general comment 2.	In accordance with the 2011 Opalski Decision, all source attribution information for PCDD/F was removed from the report, and will be included with supporting information in the EE/CA.

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	PCDF homologues as far downstream of Dock 2. EPA also notes that normalized profiles are informative for some issues, but not others. These profiles would have to be assessed along with concentrations if source identification was an important issue for RAA characterization (it is not). The issue remains that the PCDD/F within the 5 ppm DDx boundary is likely to be important for determining an appropriate RAA vertical boundary.	**sediment samples downstream of Dock 2 than between Docks 1 and 2 (Figure 4-6; Integral 2010a). Therefore, it is appropriate to discuss potential sources to provide context to the data. The discussion related to the PCDD/F homologue plots will be updated to address EPA's comments in the revised RAAC report.**		
17	Page 4-4, Section 4.2, last paragraph. Figures 4-7 and 4-8 do not appear to support the text, which states that these figures "clearly show(s) the PCDD-dominated homologue signature in upgradient and downgradient samples." A typical "background" pattern is exemplified by the profile from G687, located upgradient of Arkema and in the navigation channel. Such a profile can be accepted as typical for sediments unaffected by releases from the former stormwater outfall between Docks 1 and 2. This profile is seldom seen in data from shallow sediment samples collected downstream of Dock 2 and outside the navigation channel. These data suggest moderate to large contributions of PCDFs to total PCDD/F homologues. Such profiles are seen even in the farthest downstream sample locations (e.g. C332). The data do not appear to clearly establish any particular pattern of homologues downstream, but do indicate a source of furans in most samples that is not seen in homologue profiles from "urban background." Another example of incomplete analysis is the conclusion that the homologue profile at WB-65-10-15 is due to some source other than Arkema or "urban background." The report speculates on possible sources, some seemingly implausible (e.g. groundwater discharge from a PCDD/F plume in groundwater migrating beneath the Arkema site, presumably from a non-Arkema related source). Such speculation is	**LSS acknowledges that the homologue signatures upstream and downstream of the Arkema site are not identical, but there is a general dominance of HpCDD and OCDD in sediment samples collected upstream and downstream of the site (Figure 4-8 of the draft RAAC report). The homologue signatures upstream and downstream of the site, however, are generally distinct from the PCDF-dominated signature between Docks 1 and 2 (compare Figures 4-7 and 4-8). EPA is correct in pointing out that the homologue signatures observed in the sediment samples collected between Docks 1 and 2 and downstream of Dock 2 likely represent mixtures from multiple sources. As noted in specific comment 16, LSS believes it is appropriate to discuss potential PCDD/F sources to provide context to the data.**	Directed Comment – EPA requests LSS to remove all reference to source and character of PCDD/F from the RAAC report. Please see also EPA review response under general comment 2.	In accordance with the 2011 Opalski Decision, all source attribution information for PCDD/F was removed from the report, and will be included with supporting information in the EE/CA.

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	irrelevant to the definition of the RAA, is unsupported by any data or references, and ignores an obvious interpretation that furan (and likely dioxin) releases from Arkema could be mixed with releases from other sources, including urban background. This possibility seems the simplest and most likely explanation. The discussion of profiles, if it continues to be included, needs to recognize the likely downstream impact of past Arkema releases. More appropriately, discussion of sources should be eliminated as it plays no role in characterizing the vertical extent of the RAA.			
18	Section 4.3. EPA does not accept the RAA characterization presented in this section. A substantially revised analysis is needed that heeds the Opalski decision, incorporates changes based on comments on EVS modeling, and addresses comments on appropriate screening and use of data in defining lateral and vertical RAA boundaries.	**LSS believes the draft RAA boundary is consistent with the Opalski decision. As previously stated, Opalski's decision with respect to the horizontal RAA boundary was based on a mass removal approach and breakpoint analysis in which approximately 90 percent of the DDx mass would be considered for removal. This is confirmed by the fact that Mr. Opalski requested additional information related to the breakpoint in the mass to volume relationship (the elbow) within the proposed 5 ppm RAA boundary at that time to provide an updated logical breakpoint analysis for the z axis (please see general comment 1 for additional information). LSS agreed to use the 5 ppm DDx RAA boundary as a surrogate for the breakpoint until the EE/CA data were collected and incorporated into the breakpoint analysis.** **As previously stated, in accordance with the agreements between EPA and LSS in the EE/CA work plan addendum and the Opalski decision, the appropriate SLV to be considered in defining the vertical extent of the RAA boundary is 0.035 ppm (i.e., 1,000x DEQ's bioaccumulation SLV). This value was considered for defining the vertical RAA boundary in the draft RAAC report (note that this value was rounded to 0.04 ppm in accordance with recent DEQ guidance; see Figure 4-3b of the draft RAAC report). Please see the LSS responses to general comments 1, 3, 6, and 9 and general comments 15, 21, and 22 for additional information.**	Please see EPA review responses to general comments 1, 6 and 7. EPA is directing LSS in defining the RAA boundary and in how to use SLVs as part of this process.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.
19	Appendix E – Chemistry Data Validation Reports. Environmental Standards performed a full Level 4 data validation for 6 of the 13 laboratory data validation reports. A Level 3 review, a data validation limited to a review of the summary forms, was performed for the remainder of the sample analyses. In general, the validation was found to be thorough. Despite difficulties encountered with the	**All data have been reported in accordance with the approved project QAPP (Arkema Early Action EE/CA Work Plan Addendum, Appendix B: Quality Assurance Project Plan; Integral 2009). The following is stated in Section A7.2, page A-13 of the project QAPP:** *"For all chemical analyses except high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS) analysis of chlorinated dioxins/furans, analyte concentrations for this investigation will be reported to the MDL. Analytes detected at concentrations between the MRL and the MDL will be reported with a J qualifier to indicate that the value is*	Response is acceptable.	No RAAC report modification required.

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	sediment matrix, the laboratory met analytical expectations, with the following caveat. When compounds are not detected, LSS has reported the results to the MDL as "U", for undetected. While it is recognized that the MDLs were required to be assessed in the effort to reach the SLV, EPA feels that using the MDL for the undetected concentration, particularly in sediment samples, is not appropriate. An MDL is a statistically determined value based on multiple analyses of spiked blank matrices and as such, it is not applicable to the concentrations to which compounds can be reliably said to not be present in these samples. LSS should report undetected results at the reporting limit (RL), not the MDL. The MDLs should be retained in a separate column on the data table for reference. Note that EPA expects that any positive detections between the MDL and RL (i.e. estimated or "J"-flagged data) should be used in all analysis. That is, EPA considers estimated data useable and these data should not be eliminated from the analysis based on being below the RL.	*an estimate (i.e., the analyte concentration is below the calibration range). Non-detects will be reported at the MDL."* **Positive detections between the MDL and RL were used in the analyses presented in the draft RAAC report.**		
20	Appendix I - Rational for Excluding Selected Chemicals in Delineating the Proposed Final RAA Boundary. This appendix provides no useful evaluation of data on COI. It should be eliminated, and each COI — lindane, PCBs, total chlordanes, hexachlorobenzene, and tributyl tin — should be evaluated in the report text. If none of these chemicals or chemical groups is to be used in defining the vertical boundary of the RAA, then justification needs to be presented. EPA previously agreed that data for these COI were sufficient to support RAA definition and the EE / CA. The RAA characterization report, in recognition of the requirements of the Opalski decision, must evaluate all of these COI for their utility in defining the RAA. This evaluation may include information previously presented for total chlordanes and lindane. In addition, the	**Please see the LSS response to specific comment 10.**	Please see EPA review response to specific comment 10.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report. Also in accordance with the 2011 Opalski Decision, Portland Harbor sediment PRGs and other appropriate and relevant levels (e.g., RALs) will be used in the EE/CA to evaluate the vertical distribution of DDx and other COIs with respect to the removal action alternatives evaluated.

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	evaluation should include assessment of reporting limits, their relationship to focused PRGs and their possible impact on defining the vertical extent of the RAA. Uncertainties associated with data for all COI need to be recognized in the report.			
21	Appendix J - EVS Models for DDx and Total PCDD/F. The change in the manner in which nondetected samples were handled in the EVS model is inconsistent with the July 8, 2010 model version. While an explanation is provided, it is not justified with a rationale. As noted in the subsection "Summing Rules" on page 4, the summing rules for DDx already use half detection limits for undetected results when combined with detected results. When all DDx isomers are not detected, the full value of the highest MDL is used. As a result, in previous versions of the model, one-half the reported value for non-detects was used so that non-detects would be consistently counted in the model as one-half the value both in sums and separately. As this has been changed, a more specific rationale for the change should be provided. The decision to use a weighted average to adjust the samples in cores WB-35, WB-39 and WB-43 introduces a separate calculation method that is unnecessary. The modeling software can interpret the data if presented exactly as it was collected. Using the modeling software to interpret those overlapping samples allows for a more consistent analysis than adjusting them separately.	**The change in the summing rules that EPA is referring to is the change of the "less than multiplier" (LT multiplier) setting in EVS from 0.5 in the previous version of the model (submitted to EPA on July 8, 2010; Slater 2010a) to 1.0 in the current version. The LT multiplier setting only affects values in which all DDx isomers are undetected. As EPA correctly pointed out in their comment, LSS' summing rules utilize the full value of the highest MDL to represent the DDx sum when all the isomers are undetected. LSS made this change to the EVS model so that the DDx sum for samples where all DDx isomers were undetected would not be underestimated, since a single isomer MDL is representing the sum of all six DDx isomers. However, LSS inadvertently left the LT multiplier setting at 0.5 on the version of the EVS model submitted to EPA in the draft RAAC report. LSS apologizes for this oversight and will change the LT multiplier setting to 1.0 in the EVS model provided in the revised RAAC report.** **The weighted average was calculated for the lower waste characterization composite samples from boreholes WB-35, WB-37, and WB-43 to account for the analysis of subintervals from these composite samples during the first round of archived sample analysis. The weighted average was calculated for the remaining portion of the lower waste characterization composite samples to provide accurate DDx concentrations for the EVS model that will honor the subinterval sample results. The EVS modeling software can interpret the data correctly if it shares identical top and bottom depth values, which is not the case for these sediment samples. The producer of the EVS software does not recommend using the model to average overlapping samples that do not have identical top and bottom intervals.**	Response is acceptable; however, this acceptance of LSS' methodology for these specific core segments is not a general acquiescence to the methodology of estimating concentrations within composite samples based on fractional parts of them. Such an approach is still not considered acceptable except under special circumstances such as these specific core segments where the question of nature and extent is already addressed and their intended purpose is waste characterization.	The LT multiplier setting is 1.0 in the version of the EVS model provided with the final RAAC report.
22	Appendix J - Semivariogram. Item #1 on page 6 of Attachment 2 to the LSS March 23, 2009 response to EPA's March 5, 2009 letter requests calibration of the EVS model and states: *"Definition of the final 5 mg/kg isocontour will be based on 'continuous' sampling of DDx in currently unsampled areas. See attached revised Figure 2-1 for*	**LSS has not agreed to custom fit the EVS model semivariogram. The following is an excerpt from LSS' response to EPA's request for a model semivariogram on p. 6 of the March 23, 2009 letter to EPA (Slater 2009):** *LSS agrees that a rigorous geostatistical analysis should be conducted once the EE/CA data are collected. LSS would add that the process should be transparent and objective. However, LSS does not agree that it should be "done by allowing an axis-anisometric semivariogram and examining the semivariance cloud graphs under various conditions." The latter process*	Please see EPA review response under general comment 7 concerning the EPA directed final RAA boundary.	In accordance with the 2011 Opalski Decision, the horizontal removal action area boundary is based on the 5 mg/kg DDx contour and is presented in Section 4 of the report.

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	proposed sediment sampling locations. The analysis will be based on a rigorous geostatistical evaluation to be completed to find the best-fit semivariogram for the final dataset and thus arrive at the final horizontal boundary (2D RAA)." LSS in part responded: "LSS agrees that a rigorous geostatistical analysis should be conducted once the EE/CA data are collected." LSS proposed using the EVS software alone to do this analysis, but no such analysis was presented in this report. Further, EPA maintains that the calibration of the semivariogram using EVS still requires more than simply running the expert system. As stated in the software's own instructions found in the help section of the "Krig_3D" module: *"For many data sets, the unconstrained analyses will provide a good first cut model of the data, which might be improved by placing some constraints on the procedure. However, in many cases the scientist has additional knowledge of the data which should be appropriately considered in the variogram modeling procedure by constraining certain input parameters"* (CTECH Help System: EVS/MVS Version 9.52 Released 1/19/2011). A rigorous geostatistical analysis requires more than the "first cut model" using the expert system and should include knowledge of the site that impacts conditions. The accepted methodology for calibrating the semivariogram that EPA recommends is Stanford's GSLIB: Geostatistical Software Library (http://www.gslib.com) where the tool (WinGslib) and documentation (http://www.statios.com/Resources/04-variogram.pdf) can be obtained. This specific source and methodology was recommended by the producer of the EVS modeling software in a February 2010 telephone communication between a representative of EPA's contractor, CDM, and C-Tech President Reed Copsey. The source and methodology is further cited in the software's "Kriging References" section.	*is highly operator subjective and is, therefore, not transparent and objective. LSS proposes the exclusive use of the EVS expert algorithms, which are objective and more appropriate than the best-fit semivariogram proposed by EPA. The EVS expert algorithms are objective and limit errors. EVS software documentation states "EVS provides a user-friendly expert system to drive its Kriging modules, lifting the burden of determining optimal semivariogram parameters from the user. With EVS, the user can rely on expert system calculated default values to provide quality answers in minimal time." LSS is certain this is the best option to determine the 5 mg/kg contour in a timely, transparent, and objective manner.* **The EVS software expert system is marketed as a complete geostatistical software package. The quote EPA provided from the EVS help is not applicable to the robust dataset collected at the Arkema site. There are stronger and more applicable statements about the expert system in the EVS software's instructions found in the help section of the "Geostatistics Workbook" (CTECH Help System: EVS/MVS Version 9.52 Released 1/19/2011):** *"MVS/EVS provides a user-friendly expert system to drive its Kriging modules lifting the burden of determining optimal semivariogram parameters from the user. With MVS/EVS, the user can rely on expert system calculated default values to provide quality answers in minimal time...* *Anyone who has ever struggled with trying to fit an appropriate semivariogram to real world data understands how tedious and difficult it truly is. EVS applies the experience and knowledge of a team of experts to that task in the form of expert system algorithms that assess the data and assure the appropriateness of the results."* **EPA's insistence that the calibration of the semivariogram using EVS requires more than simply running the expert system is inconsistent with the EVS software documentation cited above. LSS invested in the EVS-Pro software based on the objective and transparent nature of the expert system and analytically guided site assessment tools. The use of the EVS expert algorithms streamline the modeling process because EPA and LSS do not need to come to an agreement on a custom semivariogram. LSS appreciates EPA's suggestion to use WinGslib, but feels that introduction of additional software to calibrate the EVS model will make the model more subjective and cause significant delays in EPA and LSS coming to an agreement on the final RAA boundary.** **The difference between the volume of the minimum and maximum plume was calculated by LSS. The ratios of the volume of the maximum to minimum 5 ppm and 75 ppm DDx plumes at the 80 percent confidence level are 1.9 and 2.7, respectively. LSS considers these ratios to indicate that the DDx plume is well characterized. Based on the use of the EVS expert algorithms (which are incorporated into the EVS software) and the calculated maximum to minimum plume volume ratio, LSS believes the EVS model is performing well and it is not necessary to custom fit the EVS model semivariogram.**		