US EPA ARCHIVE DOCUMENT

Solutia Inc.
575 Maryville Centre Drive
St. Louis, Missouri 63141

Tel: 314-674-3312
Fax: 314-674-8808

gmrina@solutia.com

February 7, 2012

Mr. Kenneth Bardo - LU-9J
U.S. EPA Region V
Corrective Action Section
77 West Jackson Boulevard
Chicago, IL 60604-3507

VIA FEDEX

Re: Long-Term Monitoring Program
4th Quarter 2011 Data Report
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

Dear Mr. Bardo:

Enclosed please find the Long-Term Monitoring Program 4th Quarter 2011 Data Report for Solutia Inc.'s W. G. Krummrich Plant, Sauget, IL. (The report of the related Supplemental Groundwater Monitoring Program is being submitted separately.)

If you have any questions or comments regarding this report, please contact me at (314) 674-3312 or gmrina@solutia.com

Sincerely,

Gerald M. Rinaldi
Manager, Remediation Services

Enclosure

cc: Distribution List

US EPA ARCHIVE DOCUMENT

DISTRIBUTION LIST

Long-Term Monitoring Program
4th Quarter 2011 Data Report
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

USEPA

Stephanie Linebaugh
USEPA Region 5 - SR6J, 77 West Jackson Boulevard, Chicago, IL 60604

Booz Allen Hamilton

Dan Briller
Booz Allen Hamilton, 8283 Greensboro Drive, McLean, VA 22102

Solutia

Brett Shank 500 Monsanto Avenue, Sauget, IL 62206-1198

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

4TH QUARTER 2011
DATA REPORT

LONG-TERM MONITORING PROGRAM

SOLUTIA INC.
W.G. KRUMMRICH FACILITY
SAUGET, ILLINOIS

Prepared for

Solutia Inc.
575 Maryville Centre Drive
St. Louis, Missouri 63141

January 2012

URS Corporation
1001 Highland Plaza Drive West, Suite 300
St. Louis, MO 63110
(314) 429-0100
Project: 21562682.00004

1.0 INTRODUCTION 1

2.0 FIELD PROCEDURES 2

3.0 LABORATORY PROCEDURES 5

4.0 QUALITY ASSURANCE 5

5.0 OBSERVATIONS 6

6.0 REFERENCES 8

List of Figures

Figure 1 Site Location Map
Figure 2 Long-Term Monitoring Program Well Locations
Figure 3 Potentiometric Surface Map Middle/Deep Hydrogeologic Unit
Figure 4 Benzene and Total Chlorobenzenes Results

List of Tables

Table 1 Monitoring Well Gauging Information
Table 2 Groundwater Analytical Results
Table 3 Monitored Natural Attenuation Results Summary

List of Appendices

Appendix A Groundwater Purging and Sampling Forms
Appendix B Chains-of-Custody
Appendix C Quality Assurance Report
Appendix D Groundwater Analytical Results (with Data Review Reports)
Appendix E Microbial Insights Data Package

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

1.0 INTRODUCTION

This report presents the results of the 4th Quarter 2011 (4Q11) sampling event performed at the Solutia Inc. (Solutia) W.G. Krummrich (WGK) Facility located in Sauget, Illinois (Site). This sampling event was conducted in accordance with the Revised Long-Term Monitoring Program (LTMP) Work Plan (Solutia 2009). The Site location is presented in **Figure 1**.

The LTMP was designed to evaluate the effectiveness of monitored natural attenuation (MNA), including: 1) a clear and meaningful trend of decreasing contaminant mass; 2) data that indirectly demonstrate the types and rates of natural attenuation processes active at the site; and 3) data that directly demonstrate the occurrence of biodegradation processes at the site.

Groundwater Sampling Location and Frequency - As specified in the Revised LTMP Work Plan, groundwater samples will be collected for eight quarters from five monitoring wells downgradient of the Former Chlorobenzene Process Area (CPA-MW-1D through CPA-MW-5D) and five monitoring wells downgradient of the Former Benzene Storage Area (BSA-MW-1S and BSA-MW-2D through BSA-MW-5D) to assess attenuation processes in the American Bottoms aquifer, as impacted groundwater from these source areas migrates toward and discharges to the Mississippi River.

Monitoring wells CPA-MW-1D, 2D, 3D, 4D and 5D are located within the limiting flow lines downgradient of the Former Chlorobenzene Process Area. Monitoring wells BSA-MW-1S, 2D, 3D, 4D and 5D are located within the limiting flow lines downgradient of the Former Benzene Storage Area. Source areas and monitoring well locations are presented in **Figure 2**.

Quarterly sampling under the Long-Term Monitoring Program commenced 3Q08 and a total of fourteen quarters have been completed as of 4Q11.

Groundwater Sampling Parameters - During the 4Q11 groundwater sampling event, groundwater samples were analyzed for benzene, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene using USEPA Method 8260B to demonstrate a trend of decreasing contaminant mass and/or concentrations over time. In accordance with USEPA comments regarding the Long-Term Monitoring Plan, the following constituents were added to the groundwater monitoring parameter list on a semi-annual basis (1st and 3rd Quarters):

- 4-Chloroaniline: CPA-MW-3D, CPA-MW-4D, and CPA-MW-5D
- 2-Chlorophenol: All wells
- 1, 2, 4-Trichlorobenzene: All wells
- 1,4-Dioxane: BSA-MW-2D, BSA-MW-3D, BSA-MW-4D, and BSA-MW-5D

Samples for analysis of MNA parameters were collected from all ten long-term monitoring program wells. Evaluation of the types of active natural attenuation processes at the site is based on the following key geochemical parameters:

- Electron Donors: Organic Carbon (Total and Dissolved)
- Electron Acceptors: Iron (Total and Dissolved)
  Manganese (Total and Dissolved)
  Nitrate
  Sulfate
- Biodegradation Byproducts: Carbon Dioxide
  Chloride
  Methane
- Biodegradation Indicators: Alkalinity

Direct demonstration of the occurrence of biodegradation processes is completed quarterly utilizing Microbial Insights (www.microbe.com) Bio-Trap® Samplers for Phospholipid Fatty Acid (PLFA) Analysis, along with Stable Isotope Probes (SIPs) for benzene or chlorobenzene detection in select wells.

2.0 FIELD PROCEDURES

URS Corporation (URS) conducted 4Q11 sampling activities from November 15 through November 17, 2011. Activities were completed in accordance with procedures outlined in the Revised LTMP Work Plan, including the collection of appropriate quality assurance and quality control (QA/QC) samples. The following section summarizes field investigative procedures:

Groundwater Level Measurements – URS personnel used an electronic oil/water interface probe to measure depth to static groundwater levels and if present, the thickness of non-aqueous phase liquid (NAPL), to 0.01 feet. Depth to groundwater measurements were collected on November 10, 2011 from accessible existing wells (i.e., BSA-, CPA-, GM-, K- , PS-MW- and PMA-series) and piezometers clusters (installed for the Sauget Area 2 RI/FS and WGK CA-750 Environmental Indicator projects) specified in the Revised LTMP Work Plan **(Figure 3**). NAPL was not detected within any of the ten LTMP monitoring wells.

Well gauging information for the 4Q11 event is presented in **Table 1**. As the middle and deep hydrogeologic units are the primary migration pathway for constituents present in groundwater at the WGK Facility, a groundwater potentiometric surface map based on water level data from wells screened in the Middle Hydrogeologic Unit (MHU) and Deep Hydrogeologic Unit (DHU) is presented as **Figure 3**.

Groundwater Sampling – Low-flow sampling techniques were used for groundwater sample collection. At each monitoring well, disposable, low-density polyethylene tubing was attached to a submersible pump, which was then lowered into the well to the middle of the screened interval. Monitoring wells were purged at a rate of 250 to 350 mL/minute to minimize drawdown. If significant drawdown occurred, flow rates were reduced.

US EPA ARCHIVE DOCUMENT

Drawdown was measured periodically throughout purging to ensure that it did not exceed 25% of the distance between the pump intake and the top of the screen. Once the flow rate and drawdown were stable, field measurements were collected approximately every three to five minutes. Purging of a well was considered complete when the following water quality parameters remained stable over three consecutive flow-through cell volumes:

Parameter	Stabilization Guidelines
Dissolved Oxygen (DO)	+/- 10% or +/-0.2 mg/L, whichever is greatest
Oxidation-Reduction Potential (ORP)	+/- 20 mV
pH	+/- 0.2 units
Specific Conductivity	+/- 3%

Sampling commenced upon completion of purging. Prior to sample collection, the flow-through cell was bypassed to allow for collection of uncompromised groundwater. Samples were collected at a flow rate less than or equal to the rate at which stabilization was achieved. Sample containers were filled based on laboratory analysis to be performed, in the following order:

- Volatile Organic Compounds (VOCs)
- Gas Sensitive Parameters (e.g., methane, carbon dioxide)
- General Chemistry (i.e., alkalinity, chloride, total and dissolved iron, total and dissolved manganese, nitrate, sulfate, and total and dissolved organic carbon)
- Field Parameters (i.e., dissolved oxygen, ferrous iron, and oxidation-reduction potential).

Samples collected for ferrous iron, dissolved iron and dissolved manganese analysis were filtered in the field using in-line 0.2 micron disposable filters, represented by a notation of “F (0.2)” in the sample nomenclature.

Quality assurance/quality control (QA/QC) samples consisting of analytical duplicates (AD) and equipment blanks (EB) were collected at a rate of 10% and matrix spike/matrix spike duplicates (MS/MSD) were collected at a rate of 5%. In addition, trip blanks accompanied each shipment containing samples for VOC analysis.

Each investigative or QC sample was labeled immediately following collection. Each sample identification number consisted of the following nomenclature “AAA-MW#-MMYY-QAC” where:

- “**AAA**” denotes "Chlorobenzene Process Area (CPA)" or "Benzene Storage Area (BSA)"and "**MW-#**” denotes "Monitoring Well Number":
- **MMYY –** Month and year of sampling quarter, e.g.: November (4th quarter), 2011 (1111)
- **“QAC”** denotes QA/QC sample
  - **AD –** analytical duplicate
  - **EB –** equipment blank
  - **MS** or **MSD –** Matrix Spike or Matrix Spike Duplicate

US EPA ARCHIVE DOCUMENT

Upon collection and labeling, sample containers were immediately placed inside an iced cooler, packed in such a way as to help prevent breakage and maintain inside temperature at or below approximately 4°C. Field personnel recorded the project identification and number, sample description/location, required analysis, date and time of sample collection, type and matrix of sample, number of sample containers, preservative used (if applicable), analysis requested/comments, and sampler signature/date/time, with permanent ink on the chain-of-custody (COC). Prior to shipment, coolers were sealed between the lid and sides of the cooler with a custody seal, and then shipped to TestAmerica in Savannah, Georgia by means of an overnight delivery service. Field sampling data sheets are included in **Appendix A**, while copies of COCs are included in **Appendix B**.

Field personnel and equipment were decontaminated according to procedures specified in the Revised LTMP Work Plan to ensure the health and safety of those present, maintain sample integrity, and minimize movement of contamination between the work area and off-site locations. Equipment used on-site was decontaminated prior to beginning work, between sampling locations and/or uses, and prior to demobilizing from the site. Non-disposable purging and sampling equipment was decontaminated between each sample acquisition by washing with an Alconox® or equivalent detergent wash, a potable water rinse, and a distilled water rinse. Personnel and small equipment decontamination was performed at the sample locations. Disposable sampling equipment, such as gloves were collected and bagged on a daily basis and managed in accordance with Solutia procedures. Purge water was containerized and handled per Solutia procedures.

Biodegradation Evaluation Sampling - Bio-Trap® samplers and SIPs provided by Microbial Insights, Inc. (Rockford, TN), were utilized in the LTMP to provide information regarding biodegradation potential of the Shallow Hydrogeologic Unit (SHU), the MHU and the DHU. Bio-Trap® samplers are passive sampling tools which, over time, collect microbes across a membrane that serves as the sampling matrix. SIPs are similar passive sampling tools that are analyzed to measure the degradation of a specific contaminant (i.e., benzene and chlorobenzene).

On October 13, 2011, URS field personnel deployed Bio-Trap® samplers in each of the ten LTMP wells for PLFA analysis. A benzene SIP and a chlorobenzene SIP were placed in monitoring wells BSA-MW-2D and CPA-MW-3D, respectively. Bio-Trap® samplers and SIPs were tied to stainless steel line attached to the well cap and lowered to the middle of the well screen.

On November 14, 2011, the Bio-Trap® samplers and SIPs were retrieved from the wells, sealed in Ziploc® bags, labeled with the proper well identification and placed in an iced sample cooler with a signed COC. Sealed sample coolers were sent to Microbial Insights, Inc. for analysis.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

3.0 LABORATORY PROCEDURES

Samples were analyzed by TestAmerica for VOCs and MNA parameters, using the following methodologies:

- VOCs, via USEPA SW-846 Method 8260B
- MNA parameters: alkalinity (310.1), carbon dioxide (310.1), chloride (325.2), total and dissolved iron (6010B), total and dissolved manganese (6010B), dissolved gases (RSK 175), nitrate (353.2), sulfate (375.4), and total and dissolved organic carbon (415.1).

Laboratory results were provided in electronic and hard copy formats.

4.0 QUALITY ASSURANCE

Analytical data were reviewed for quality and completeness, as described in the Revised Long Term Monitoring Work Plan. Data qualifiers were added, as appropriate, and are included on the data tables and the laboratory result pages. The Quality Assurance report is included as **Appendix C**. The laboratory report along with data review and validation reports are included in **Appendix D**.

A total of 13 groundwater samples (ten investigative samples, one field duplicate, one MS/MSD pair and one equipment blank) were prepared and analyzed by TestAmerica Savannah for combinations of VOCs, dissolved gases, metals, and general chemistry. In addition, three trip blanks were included in the coolers that contained samples for VOC analysis and were analyzed for VOCs. The results for the various analyses were submitted as sample delivery group (SDG) KPS067. The samples contained in SDG KPS067 are listed below:

KPS067	
BSA-MW-3D-1111	CPA-MW-5D-1111
CPA-MW-2D-1111	BSA-MW-5D-1111
CPA-MW-2D-1111-AD	CPA-MW-4D-1111
CPA-MW-1D-1111	CPA-MW-4D-1111-EB
BSA-MW-1S-1111	4Q11 LTM Trip Blank #1
BSA-MW-4D-1111	4Q11 LTM Trip Blank #2
BSA-MW-2D-1111	4Q11 LTM Trip Blank #3
CPA-MW-3D-1111	

Evaluation of the groundwater analytical data followed procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA 2008), USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review (USEPA 2010), and the Revised Long-Term Monitoring Program (LTMP) Work Plan (Solutia 2009).

Based on the above mentioned criteria, groundwater results reported for the analyses performed were accepted for their intended use. Acceptable levels of accuracy and precision,

based on MS/MSD, laboratory control sample (LCS), surrogate and field duplicate data were achieved for this SDG to meet the project objectives. Completeness which is defined to be the percentage of analytical results which are judged to be valid, including estimated detect/non-detect (**J**/**UJ**) data was 100 percent.

5.0 OBSERVATIONS

Groundwater analytical detections and MNA results for the 4Q11 LTMP sampling event are presented in **Tables 2** and **3,** respectively. Benzene and chlorobenzenes were reported in samples collected from the LTMP wells during this sampling event. Each of these constituents is discussed below:

Benzene – Benzene was detected in samples collected from nine of the ten wells, at concentrations ranging from 6 µg/L (CPA-MW-4D) to 470,000 µg/L (BSA-MW-1S).

Downgradient of the Former Benzene Storage Area, benzene was detected in the DHU at a concentration of 250,000 µg/L (BSA-MW-2D) and 34 µg/L (BSA-MW-3D). Near the river north of the Sauget Area 2 Groundwater Migration Control System (SA2 GMCS), benzene was detected in the DHU at concentrations of 41 µg/L (BSA-MW-4D).

Benzene was detected at the Former Chlorobenzene Process Area at an estimated concentration of 9,100 µg/L (CPA-MW-1D). Downgradient of the Former Chlorobenzene Storage Area, benzene was detected in the DHU at concentrations of 650/650 µg/L (CPA-MW-2D and duplicate), 30 µg/L (CPA-MW-3D) and 6 µg/L (CPA-MW-4D). Benzene was not detected in the DHU near the river north of SA2 GMCS at monitoring well CPA-MW-5D.

Chlorobenzenes (Total) – Total chlorobenzenes (i.e., sum of chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4, dichlorobenzene) were detected in nine of the ten wells sampled in 4Q11, at concentrations ranging from 155.3 µg/L (CPA-MW-4D) to 42,800 µg/L (CPA-MW-1D).

Downgradient of the Former Chlorobenzene Storage Area, total chlorobenzenes were detected in the DHU at concentrations of 29,510/30,930 µg/L at the North Tank Farm (CPA-MW-2D and duplicate), along with concentrations of 836 µg/L (CPA-MW-3D) and 155.3 µg/L (CPA-MW-4D). Total chlorobenzenes were detected in the DHU near the river north of SA2 GMCS at a concentration of 1,500 µg/L (CPA-MW-5D).

Downgradient of the Former Benzene Storage Area, total chlorobenzenes were detected at a concentrations of 2,600 µg/L (BSA-MW-2D) and 1,170 µg/L (BSA-MW-3D). North of the SA2 GMCS, near the river, total chlorobenzenes were detected in the DHU at concentrations of 1,939 µg/L (BSA-MW-4D) and 312.8 µg/L (BSA-MW-5D).

Figure 4 displays benzene and total chlorobenzenes results from the 4Q11 sampling event.

US EPA ARCHIVE DOCUMENT

Monitored Natural Attenuation – The MNA results for this quarter are presented in **Table 3**. PLFA and SIP laboratory results are included in **Appendix E**.

6.0 REFERENCES

Solutia Inc, 2009. Revised Long Term Monitoring Program Work Plan, Solutia Inc., W.G. Krummrich Facility, Sauget, Illinois, May 2009.

USEPA, 2010. Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review.

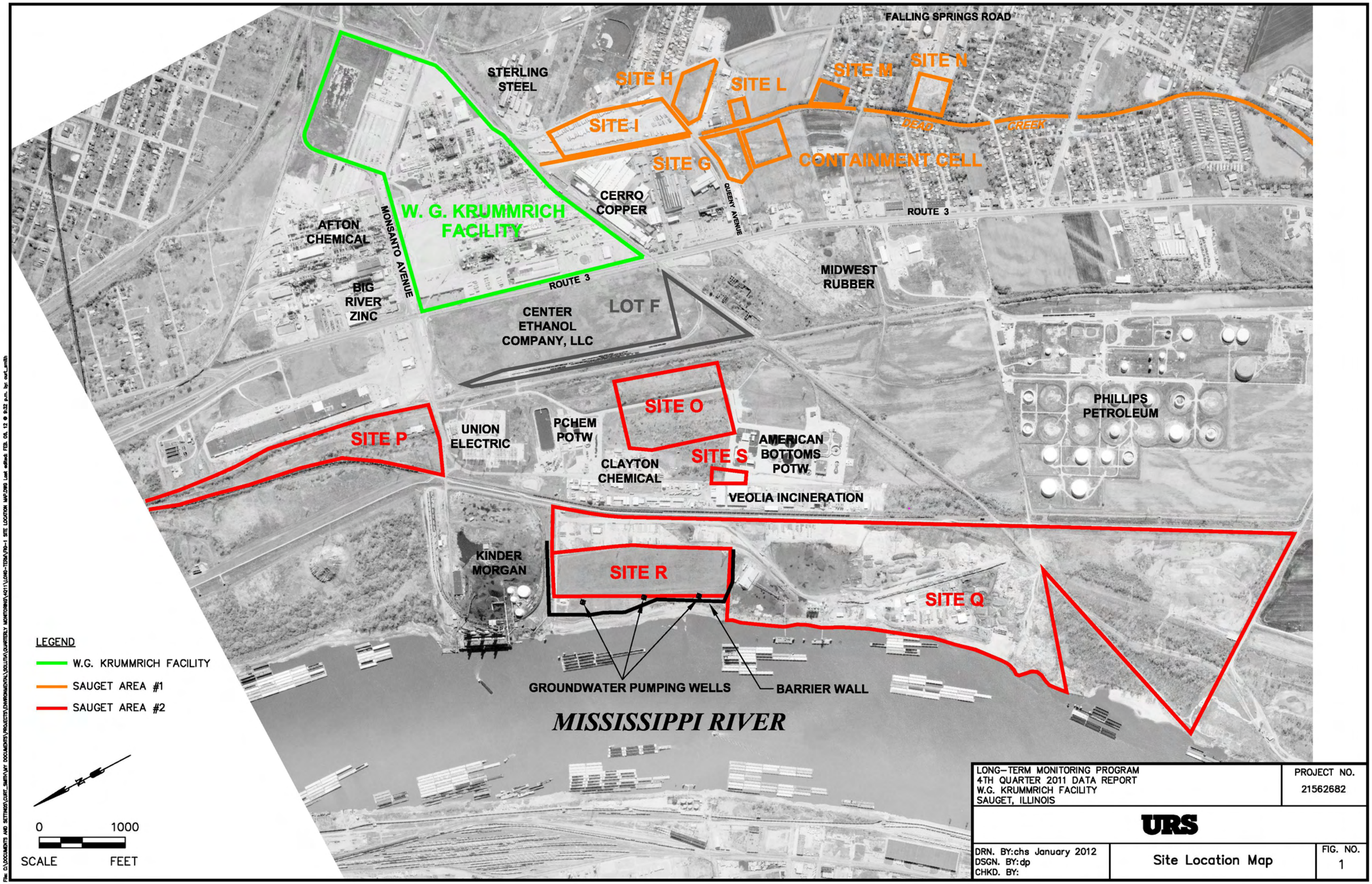
USEPA, 2008. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.

US EPA ARCHIVE DOCUMENT

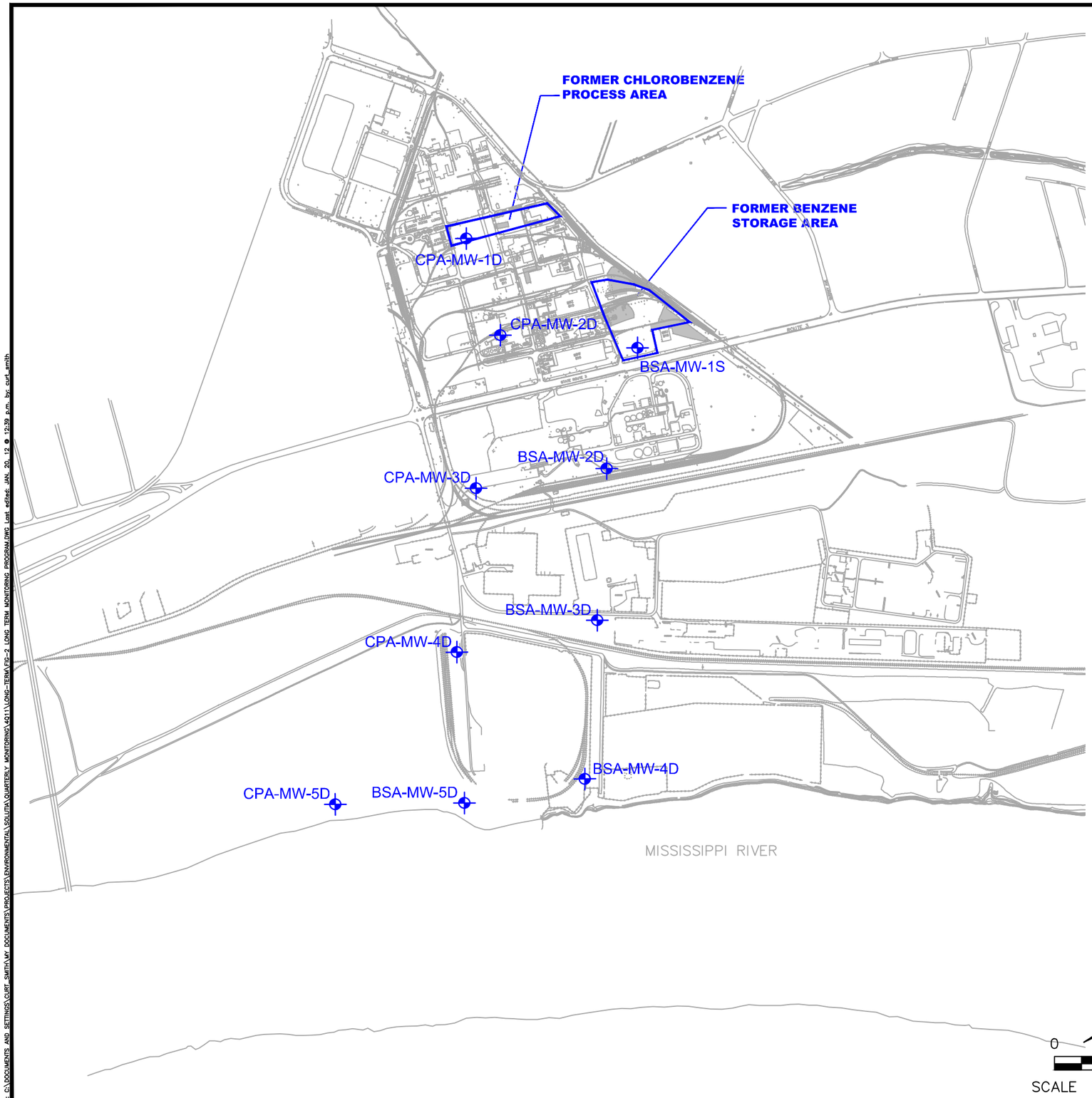
Figures

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT



LONG-TERM MONITORING PROGRAM 4TH QUARTER 2011 DATA REPORT W.G. KRUMMRICH FACILITY SAUGET, ILLINOIS	PROJECT NO. 21562682
URS	
DRN. BY:chs January 2012 DSGN. BY:dp CHKD. BY:	Site Location Map
	FIG. NO. 1



LEGEND

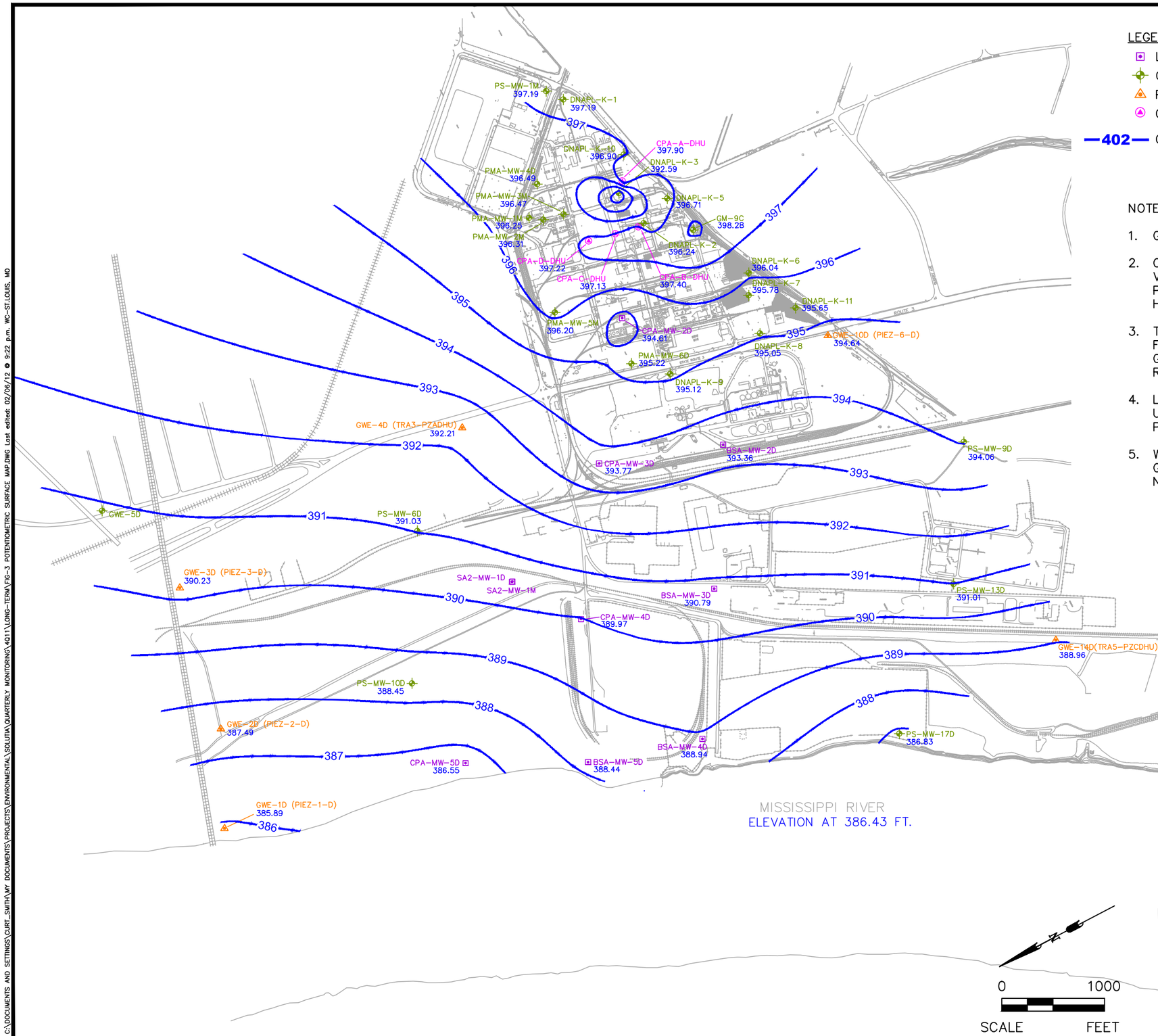
LONG–TERM MONITORING WELL LOCATION

NOTES:

1. REFER TO TABLE 1 FOR MONITORING WELL CONSTRUCTION INFORMATION.

LONG–TERM MONITORING PROGRAM 4TH QUARTER 2011 DATA REPORT W.G. KRUMMRICH FACILITY SAUGET, ILLINOIS	PROJECT NO. 21562682
URS	
DRN. BY:chs January 2012 DSGN. BY:dp CHKD. BY:	Long–Term Monitoring Program Well Locations
	FIG. NO. 2

File: C:\DOCUMENTS AND SETTINGS\CURT_SMITH\MY DOCUMENTS\PROJECTS\ENVIRONMENTAL\SOLUTIA\QUARTERLY MONITORING\4Q11\LONG-TERM FIG-2 LONG TERM MONITORING PROGRAM.DWG Last edited: JAN. 20, 12 @ 12:39 p.m. by: curt_smith



LEGEND

- LONG-TERM MONITORING WELL USED FOR GROUNDWATER CONTOURING
- OTHER MONITORING WELL USED FOR GROUNDWATER CONTOURING
- PIEZOMETER CLUSTER USED FOR GROUNDWATER CONTOURING
- CPA MONITORING WELL USED FOR GROUNDWATER CONTOURING
- —402— GROUNDWATER ELEVATION CONTOUR (FT NAVD)

NOTES:

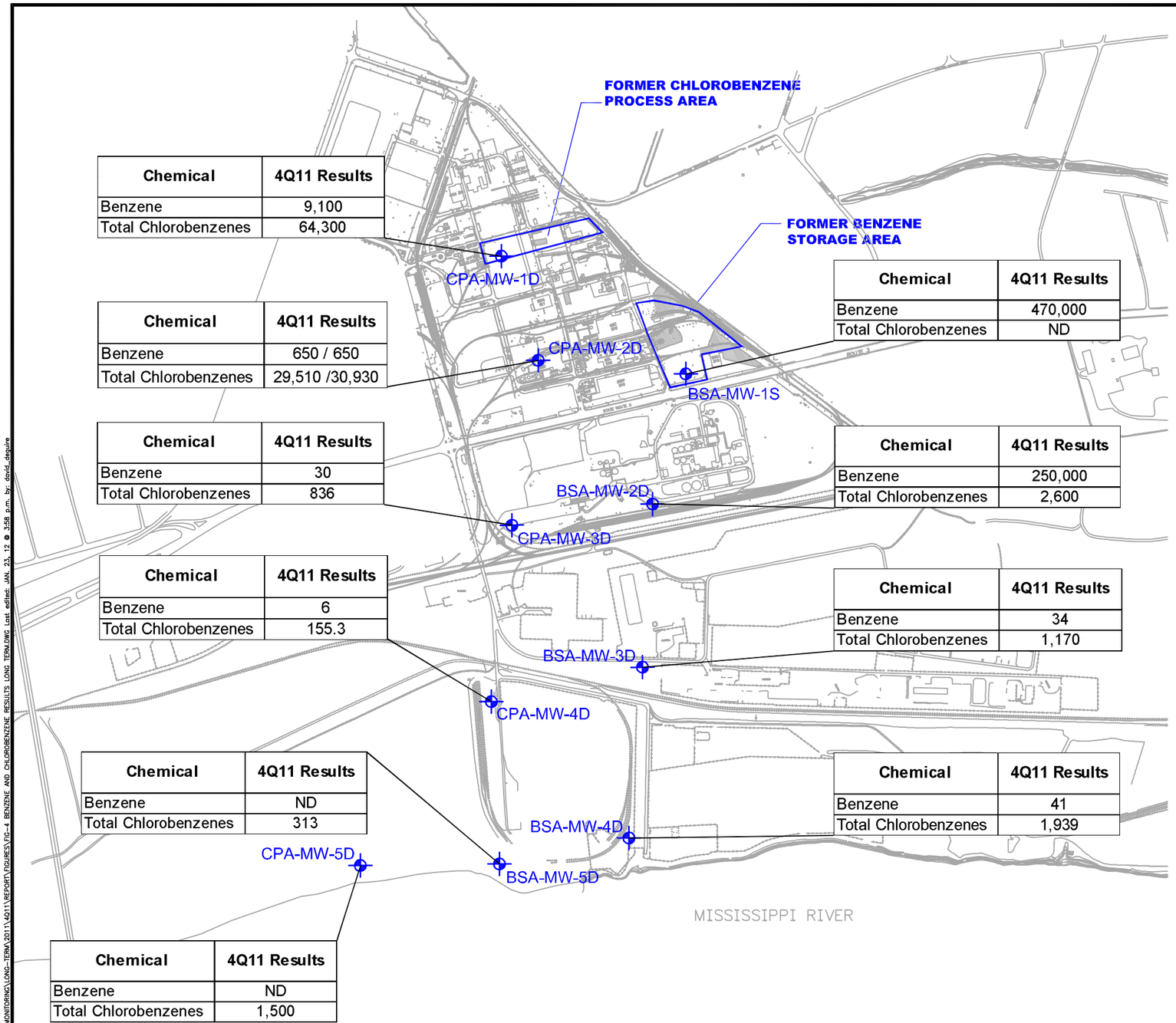
1. GROUNDWATER LEVELS WERE MEASURED NOVEMBER 10, 2011.
2. CONTOURS GENERATED PRIMARILY USING SURFER SOFTWARE VERSION 8. SOME INTERPRETATION WAS DONE USING PROFESSIONAL JUDGMENT AND CONTOUR LINES WERE MODIFIED BY HAND.
3. THE MISSISSIPPI RIVER STAGE ELEVATION PRESENTED ON THE FIGURE IS AN AVERAGE ELEVATION FOR THE TIME OF THE GAUGING EVENT. THE INFORMATION WAS OBTAINED FROM THE SITE R BUBBLER.
4. LOCATIONS WITH WELLS SCREENED IN BOTH THE MHU AND DHU UTILIZED THE DHU WELL FOR DEVELOPMENT OF THE POTENTIOMETRIC SURFACE MAP.
5. WELL GWE-5D WAS NOT INCLUDED IN THE COMPREHENSIVE GAUGING EVENT BECAUSE IT WAS NOT COMPLETED UNTIL NOVEMBER 23, 2011.

0 1000
SCALE FEET

LONG-TERM MONITORING PROGRAM 4TH QUARTER 2011 DATA REPORT W.G. KRUMMRICH FACILITY SAUGET, ILLINOIS	PROJECT NO. 21562682
URS	
DRN. BY:chs January 2012 DSGN. BY:dp CHKD. BY:	Potentiometric Surface Map Middle/Deep Hydrogeologic Unit
	FIG. NO. 3

File: C:\DOCUMENTS AND SETTINGS\CURT.SMITH\MY DOCUMENTS\PROJECTS\ENVIRONMENTAL\SOLUTIA\QUARTERLY MONITORING\4Q11\LONG-TERM\FIG-3 POTENTIOMETRIC SURFACE MAP.DWG Last edited: 02/06/12 @ 9:22 p.m. WC-STLOUIS, MO

US EPA ARCHIVE DOCUMENT



Chemical	4Q11 Results
Benzene	9,100
Total Chlorobenzenes	64,300

Chemical	4Q11 Results
Benzene	650 / 650
Total Chlorobenzenes	29,510 /30,930

Chemical	4Q11 Results
Benzene	30
Total Chlorobenzenes	836

Chemical	4Q11 Results
Benzene	6
Total Chlorobenzenes	155.3

Chemical	4Q11 Results
Benzene	ND
Total Chlorobenzenes	313

Chemical	4Q11 Results
Benzene	ND
Total Chlorobenzenes	1,500

Chemical	4Q11 Results
Benzene	470,000
Total Chlorobenzenes	ND

Chemical	4Q11 Results
Benzene	250,000
Total Chlorobenzenes	2,600

Chemical	4Q11 Results
Benzene	34
Total Chlorobenzenes	1,170

Chemical	4Q11 Results
Benzene	41
Total Chlorobenzenes	1,939

LEGEND

LONG-TERM MONITORING WELL LOCATION

NOTES:

1. TOTAL CHLOROBENZENES RESULTS INCLUDE THE SUM OF MONOCHLOROBENZENE, 1,2-DICHLOROBENZENE, 1,3-DICHLOROBENZENE, AND 1,4-DICHLOROBENZENE.
2. RESULTS SHOWN ARE IN ug/L.
3. ND DENOTES ANALYTE OR ANALYTES NOT DETECTED.
4. MULTIPLE SAMPLE RESULTS INDICATE A DUPLICATE SAMPLE.

0 1000
SCALE FEET

LONG-TERM MONITORING PROGRAM
4TH QUARTER 2011 DATA REPORT
W.G. KRUMMRICH FACILITY
SAUGET, ILLINOIS

PROJECT NO. 21562682

URS

DRN. BY:chs January 2012
DSGN. BY:dp
CHKD. BY:

Benzene and Total Chlorobenzenes Results

FIG. NO. 4

File: P:\ENVIRONMENTAL\SOLUTIA WGK\QUARTERLY MONITORING\LONG-TERM\2011\4Q11\REPORT\FIGURES\FIG-4 BENZENE AND CHLOROBENZENE RESULTS LONG TERM.DWG Last edited: JAN. 23, 12 @ 3:58 p.m. by: david_dejuine

Tables

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

See last page of table for notes.

Table 1
Monitoring Well Gauging Information

Well ID	Construction Details						November 10, 2011		
	Ground Elevation (feet)	Casing Elevation (feet)	Depth to Top of Screen (feet bgs)	Depth to Bottom of Screen (feet bgs)	Top of Screen Elevation (feet)	Bottom of Screen Elevation (feet)	Depth to Water (feet btoc)	NAPL Thickness (feet)	Water Elevation (feet)
Shallow Hydrogeologic Unit (SHU 395-380 feet NAVD 88)									
BSA-MW-1S	409.49	412.31	19.68	24.68	389.81	384.81	16.97	--	395.34
Middle Hydrogeologic Unit (MHU 380-350 feet NAVD 88)									
PMA-MW-1M	410.32	410.08	54.54	59.54	355.78	350.78	13.83	--	396.25
PMA-MW-2M	412.26	411.93	56.87	61.87	355.39	350.39	15.62	--	396.31
PMA-MW-3M	412.36	412.10	57.07	62.07	355.29	350.29	15.63	--	396.47
PMA-MW-5M	411.27	410.97	52.17	57.17	359.10	354.10	14.77	--	396.20
PS-MW-1M	409.37	412.59	37.78	42.78	371.59	366.59	15.40	--	397.19
Deep Hydrogeologic Unit (DHU 350 feet NAVD 88 - Bedrock)									
BSA-MW-2D	412.00	415.13	68.92	73.92	343.08	338.08	21.77	--	393.36
BSA-MW-3D	412.91	415.74	107.02	112.02	305.89	300.89	24.95	--	390.79
BSA-MW-4D	425.00	424.69	118.54	123.54	306.46	301.46	35.75	--	388.94
BSA-MW-5D	420.80	420.49	115.85	120.85	304.95	299.95	32.05	--	388.44
CPA-MW-1D	408.62	408.32	66.12	71.12	342.50	337.50	15.69	--	392.63
CPA-MW-2D	408.51	408.20	99.96	104.96	308.55	303.55	13.59	--	394.61
CPA-MW-3D	410.87	410.67	108.20	113.20	302.67	297.67	16.90	--	393.77
CPA-MW-4D	421.57	421.20	116.44	121.44	305.13	300.13	31.23	--	389.97
CPA-MW-5D	411.03	413.15	107.63	112.63	303.40	298.40	26.60	--	386.55
DNAPL-K-1	413.07	415.56	108.20	123.20	304.87	289.87	18.37	--	397.19
DNAPL-K-2	407.94	407.72	97.63	112.63	310.31	295.31	11.48	--	396.24
DNAPL-K-3	412.13	411.91	104.80	119.80	307.33	292.33	19.32	--	392.59
DNAPL-K-4	409.48	409.15	102.55	117.55	306.93	291.93	16.54	--	392.61
DNAPL-K-5	412.27	411.91	102.15	117.15	310.12	295.12	15.20	--	396.71
DNAPL-K-6	410.43	410.09	102.47	117.47	307.96	292.96	14.05	--	396.04
DNAPL-K-7	408.32	407.72	100.40	115.40	307.92	292.92	11.94	--	395.78
DNAPL-K-8	408.56	411.38	102.65	117.65	305.91	290.91	16.33	--	395.05
DNAPL-K-9	406.45	405.97	97.42	112.42	309.03	294.03	10.85	--	395.12
DNAPL-K-10	413.50	413.25	105.43	120.43	308.07	293.07	16.35	--	396.90
DNAPL-K-11	412.20	411.78	105.46	120.46	306.74	291.74	16.13	--	395.65

US EPA ARCHIVE DOCUMENT

Table 1
Monitoring Well Gauging Information

Well ID	Construction Details						November 10, 2011		
	Ground Elevation (feet)	Casing Elevation (feet)	Depth to Top of Screen (feet bgs)	Depth to Bottom of Screen (feet bgs)	Top of Screen Elevation (feet)	Bottom of Screen Elevation (feet)	Depth to Water (feet btoc)	NAPL Thickness (feet)	Water Elevation (feet)
Deep Hydrogeologic Unit (DHU 350 feet NAVD 88 - Bedrock) (continued)									
GM-9C	409.54	411.21	88.00	108.00	321.54	301.54	12.93	--	398.28
GWE-1D	412.80	415.60	117.00	127.00	295.80	285.80	29.71	--	385.89
GWE-2D	417.45	417.14	127.00	137.00	290.45	280.45	29.65	--	387.49
GWE-3D	415.03	417.66	104.60	114.60	313.06	303.06	27.43	--	390.23
GWE-4D	406.05	405.74	74.00	80.00	332.05	326.05	13.53	--	392.21
GWE-5D*	408.79	408.38	100.43	105.43	307.95	302.95	18.43	--	389.95
GWE-10D	410.15	412.87	102.50	112.50	307.65	297.65	18.23	--	394.64
GWE-14D	420.47	422.90	90.00	96.00	330.47	324.47	33.94	--	388.96
PMA-MW-4D	411.22	410.88	68.84	73.84	342.38	337.38	14.39	--	396.49
PMA-MW-6D	407.63	407.32	96.49	101.49	311.14	306.14	12.10	--	395.22
PS-MW-6	404.11	406.63	102.32	107.32	304.31	299.31	15.60	--	391.03
PS-MW-9D	403.92	403.52	100.40	105.40	303.52	298.52	9.46	--	394.06
PS-MW-10	409.63	412.18	103.78	108.78	308.40	303.40	23.73	--	388.45
PS-MW-13D	405.80	405.53	106.08	111.08	299.72	294.72	14.52	--	391.01
PS-MW-17D	420.22	423.26	121.25	126.25	298.97	293.97	36.43	--	386.83
SA2-MW-1D	403.79	406.03	105.01	115.01	301.02	291.02	23.86	--	382.17

Notes:
* - Measured on 12/2/11
bgs - below ground surface
btoc - Below top of casing
Coordinates--State Plane 1983, Illinois West, NAD 1983.
Elevation based upon North American Vertical Datum (NAVD) 88 datum

US EPA ARCHIVE DOCUMENT

Table 2
Groundwater Analytical Results

		VOC (µg/L)					SVOC (µg/L)			
Sample ID	**Sample Date**	**Benzene**	**Chlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**4-Chloroaniline**	**2-Chlorophenol**	**1,4-Dioxane**	**1,2,4-Trichlorobenzene**
BENZENE STORAGE AREA										
BSA-MW-1S-1111	11/15/2011	**470,000**	<5,000	<5,000	<5,000	<5,000	NA	*	NA	*
BSA-MW-2D-1111	11/16/2011	**250,000**	**2,600**	<2,000	<2,000	<2,000	NA	*	*	*
BSA-MW-3D-1111	11/15/2011	**34**	**850**	**17**	**13**	**290**	NA	*	*	*
BSA-MW-4D-1111	11/16/2011	**41**	**1,900**	<20	<20	**39**	NA	*	*	*
BSA-MW-5D-1111	11/16/2011	<2	**310**	<2	<2	**2.8**	NA	*	*	*
CHLOROBENZENE PROCESS AREA										
CPA-MW-1D-1111	11/15/2011	**9,100**	**18,000**	**14,000**	**1,300**	**9,500**	NA	*	NA	*
CPA-MW-2D-1111	11/15/2011	**650**	**23,000**	<200	**210**	**6,300**	NA	*	NA	*
CPA-MW-2D-1111-AD	11/15/2011	**650**	**24,000**	<200	**230**	**6,700**	NA	*	NA	*
CPA-MW-3D-1111	11/16/2011	**30**	**820**	<5	<5	**16**	*	*	NA	*
CPA-MW-4D-1111	11/17/2011	**6**	**150**	**2.6**	<2	**2.7**	*	*	NA	*
CPA-MW-5D-1111	11/16/2011	<20	**1,500**	<20	<20	<20	*	*	NA	*

Notes:
µg/L = micrograms per liter
< = Result is non-detect, less than the reporting limit given.
* = Indicates samples that are collected semi-annually (1st and 3rd Quarter)
BOLD indicates concentration greater than reporting limit.
AD = Analytical Duplicate
NA = sample not analyzed for select analyte in accordance with Revised LTMP Work Plan

US EPA ARCHIVE DOCUMENT

Table 3
Monitored Natural Attenuation Results Summary

Sample ID	Sample Date	Alkalinity (mg/L)	Carbon Dioxide (mg/L)	Chloride (mg/L)	Dissolved Oxygen (mg/L)	Ethane (ug/L)	Ethylene (ug/L)	Ferrous Iron (mg/L)	Iron (mg/L)	Iron, Dissolved (mg/L)	Manganese (mg/L)	Manganese, Dissolved (mg/L)	Methane (ug/L)	Nitrogen, Nitrate (mg/L)	Sulfate as SO4 (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)	ORP (mV)
Benzene Storage Area																		
BSA-MW-1S-1111	11/15/2011	830	33	250	0.06	<1.1	<1		5.8		0.63		8,200	<0.05	<5		6.6	-170.22
BSA-MW-1S-F(0.2)-1111	11/15/2011							3.12		5.6		0.62				6.2		
BSA-MW-2D-1111	11/16/2011	690	38	100	0.02	12	<1		3.2		0.51		4,500	<0.05	<5		6.3	-200.13
BSA-MW-2D-F(0.2)-1111	11/16/2011							2.72		3.2		0.52				6.3		
BSA-MW-3D-1111	11/15/2011	540	30	120	-0.04	1.8	<1		11		0.58		970	<0.05	96		3.8	-101.82
BSA-MW-3D-F(0.2)-1111	11/15/2011							>3.3		11		0.58				3.7		
BSA-MW-4D-1111	11/16/2011	580	45	110 J	0.06	2.9	<1		8.5		0.68		64	0.071	120		5.7	-142.24
BSA-MW-4D-F(0.2)-1111	11/16/2011							2.18		8.3		0.67				5.7		
BSA-MW-5D-1111	11/16/2011	780	53	290	-0.04	12	<1		13		0.39		5,500	<0.05	<5		5.7	-64.67
BSA-MW-5D-F(0.2)-1111	11/16/2011							2.44		14		0.41				5.9		
Chlorobenzene Process Area																		
CPA-MW-1D-1111	11/15/2011	970	<5	150	-0.01	31	<1		1		0.089		13,000	<0.05	11		19	-218.98
CPA-MW-1D-F(0.2)-1111	11/15/2011							0.0		0.39		0.036				20		
CPA-MW-2D-1111	11/15/2011	580	31	60	0.09	3.5	<1		6.5		0.38		1,300	<0.05	21		11	-141.92
CPA-MW-2D-F(0.2)-1111	11/15/2011							3.18		6.6		0.39				9.8		
CPA-MW-3D-1111	11/16/2011	530	28	130	0.01	4.6	<1		9.3		0.59		1,600	<0.05	53		8	-238.59
CPA-MW-3D-F(0.2)-1111	11/16/2011							2.11		9.6		0.6				7.8		
CPA-MW-4D-1111	11/17/2011	770	47	300	0.02	14	<1		13		0.31		8,500	<0.05	<50		8	-122.95
CPA-MW-4D-F(0.2)-1111	11/17/2011							>3.3		13		0.31				7.8		
CPA-MW-5D-1111	11/16/2011	470	95	320	-0.03	<1.1	<1		48		1.6		12	0.24	670		3.5	-1.67
CPA-MW-5D-F(0.2)-1111	11/16/2011							3.16		49		1.7				4.1		

Notes:
DO and ORP were measured in the field using an In-Situ Inc. TROLL 9500 equipped with a flow-thru cell. Values presented represent final measurements before sampling
Ferrous Iron readings were measured in the field using a colorimeter after the groundwater passed through a 0.2 µm filter
F(0.2) = Sample was filtered utilizing a 0.2 µm filter during sample collection
mg/L = milligrams per liter
mV = millivolts
ug/L = micrograms per liter
< = Result is non-detect, less than the reporting limit given
A blank space indicates sample not analyzed for select analyte

Appendix A

Groundwater Purging and Sampling Forms

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/15/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	31 [ft]
Pump placement from TOC	25 [ft]

Well Information:

Well Id	BSA-MW-1S
Well diameter	2 [in]
Well total depth	27.5 [ft]
Depth to top of screen	22.5 [ft]
Screen length	60 [in]
Depth to Water	17.15 [ft]

Pumping information:

Final pumping rate	300 [mL/min]
Flowcell volume	772.84 [mL]
Calculated Sample Rate	155 [sec]
Sample rate	155 [sec]
Stabilized drawdown	0.08 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1	+/-1	+/-0.2	+/-20
				+/-3 %	+/-10 %	+/-10 %	
Last 5 Readings	9:14:36	63.76	7.27	2078.17	4.82	0.14	-151.70
	9:17:11	63.91	7.27	2087.71	4.63	0.11	-156.19
	9:19:47	64.03	7.27	2093.63	3.89	0.09	-163.25
	9:22:23	64.10	7.27	2097.97	4.20	0.07	-168.29
	9:24:59	64.19	7.27	2102.82	4.37	0.06	-170.22
Variance in last 3 readings	9:19:47	0.11	0.00	5.92	-0.73	-0.02	-7.06
	9:22:23	0.08	0.00	4.34	0.31	-0.01	-5.05
	9:24:59	0.09	0.00	4.86	0.17	-0.01	-1.93

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/16/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	80.55 [ft]
Pump placement from TOC	74.55 [ft]

Well Information:

Well Id	BSA-MW-2D
Well diameter	2 [in]
Well total depth	77.05 [ft]
Depth to top of screen	72.05 [ft]
Screen length	60 [in]
Depth to Water	21.97 [ft]

Pumping information:

Final pumping rate	300 [mL/min]
Flowcell volume	1049.1 [mL]
Calculated Sample Rate	210 [sec]
Sample rate	210 [sec]
Stabilized drawdown	0 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	10:22:47	61.88	7.04	1512.51	5.74	0.18	-203.38
	10:26:17	61.97	7.04	1518.54	5.81	0.08	-200.30
	10:29:49	61.85	7.05	1520.29	6.00	0.04	-198.33
	10:33:21	61.76	7.05	1519.40	6.27	0.02	-200.13
Variance in last 3 readings	10:26:17	0.09	0.01	6.03	0.07	-0.10	3.08
	10:29:49	-0.12	0.00	1.75	0.19	-0.03	1.97
	10:33:21	-0.09	0.00	-0.89	0.26	-0.03	-1.79

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/15/11 | ISI Low-Flow Log

Project Information:

Operator Name	Mike Corbett
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	118.35 [ft]
Pump placement from TOC	0 [ft]

Well Information:

Well Id	BSA-MW-3D
Well diameter	2 [in]
Well total depth	114.85 [ft]
Depth to top of screen	109.85 [ft]
Screen length	60 [in]
Depth to Water	24.78 [ft]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	1259.85 [mL]
Calculated Sample Rate	303 [sec]
Sample rate	303 [sec]
Stabilized drawdown	0 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	13:27:37	63.41	6.93	1543.36	4.89	0.00	-89.63
	13:32:51	63.41	6.94	1552.00	6.02	-0.01	-93.23
	13:38:04	63.39	6.94	1561.38	5.78	-0.02	-96.18
	13:43:19	63.23	6.94	1568.04	8.42	-0.03	-99.17
	13:48:33	63.21	6.95	1510.24	6.01	-0.04	-101.82
Variance in last 3 readings	13:38:04	-0.02	0.00	9.38	-0.24	-0.01	-2.95
	13:43:19	-0.16	0.00	6.66	2.63	-0.01	-2.99
	13:48:33	-0.01	0.01	-57.80	-2.40	-0.01	-2.65

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/16/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	126.73 [ft]
Pump placement from TOC	120.73 [ft]

Well Information:

Well Id	BSA-MW-4D
Well diameter	2 [in]
Well total depth	123.23 [ft]
Depth to top of screen	118.23 [ft]
Screen length	60 [in]
Depth to Water	35.24 [ft]

Pumping information:

Final pumping rate	350 [mL/min]
Flowcell volume	1306.58 [mL]
Calculated Sample Rate	224 [sec]
Sample rate	224 [sec]
Stabilized drawdown	0.01 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1	+/-1	+/-0.2	+/-20
				+/-3 %	+/-10 %	+/-10 %	
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	9:00:24	59.85	6.96	1611.48	1.34	0.61	-123.45
	9:04:09	59.97	6.95	1618.17	-0.04	0.19	-135.77
	9:07:55	59.74	6.95	1618.37	-0.32	0.10	-140.66
	9:11:39	59.77	6.95	1622.52	0.18	0.06	-142.24
Variance in last 3 readings	9:04:09	0.12	-0.01	6.69	-1.37	-0.43	-12.32
	9:07:55	-0.23	0.00	0.20	-0.29	-0.09	-4.88
	9:11:39	0.04	0.00	4.14	0.51	-0.04	-1.58

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/16/11 | ISI Low-Flow Log

Project Information:

Operator Name	Mike Corbett
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	124.04 [ft]
Pump placement from TOC	0 [ft]

Well Information:

Well Id	BSA-MW-5D
Well diameter	2 [in]
Well total depth	120.54 [ft]
Depth to top of screen	115.54 [ft]
Screen length	60 [in]
Depth to Water	31.25 [ft]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	1291.58 [mL]
Calculated Sample Rate	310 [sec]
Sample rate	310 [sec]
Stabilized drawdown	0 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	14:08:20	64.13	6.98	2246.09	8.75	0.03	-26.93
	14:13:41	64.02	6.99	2234.17	21.12	-0.01	-42.68
	14:19:03	64.02	6.99	2220.97	11.76	-0.03	-52.65
	14:24:24	64.07	7.00	2202.41	26.86	-0.04	-59.66
	14:29:45	64.05	7.00	2213.73	1.80	-0.04	-64.67
Variance in last 3 readings	14:19:03	0.00	0.01	-13.20	-9.36	-0.02	-9.97
	14:24:24	0.05	0.01	-18.55	15.09	-0.01	-7.02
	14:29:45	-0.02	0.00	11.31	-25.05	0.00	-5.01

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/15/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	73.32 [ft]
Pump placement from TOC	67.32 [ft]

Well Information:

Well Id	CPA-MW-1D
Well diameter	2 [in]
Well total depth	70.82 [ft]
Depth to top of screen	65.82 [ft]
Screen length	60 [in]
Depth to Water	15.74 [ft]

Pumping information:

Final pumping rate	300 [mL/min]
Flowcell volume	1008.79 [mL]
Calculated Sample Rate	202 [sec]
Sample rate	202 [sec]
Stabilized drawdown	0.03 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	13:00:22	64.00	8.68	1900.96	8.13	0.08	-186.01
	13:03:47	63.96	8.76	2000.08	9.71	0.04	-197.34
	13:07:10	64.02	8.83	2042.23	16.42	0.02	-205.77
	13:10:34	64.05	8.87	2067.10	6.27	0.01	-210.21
	13:13:57	64.02	8.91	2078.42	14.87	-0.01	-218.98
Variance in last 3 readings	13:07:10	0.06	0.07	42.16	6.71	-0.03	-8.42
	13:10:34	0.03	0.04	24.87	-10.15	-0.01	-4.45
	13:13:57	-0.03	0.04	11.32	8.60	-0.01	-8.77

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/15/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	108.15 [ft]
Pump placement from TOC	102.15 [ft]

Well Information:

Well Id	CPA-MW-2D
Well diameter	2 [in]
Well total depth	104.65 [ft]
Depth to top of screen	99.65 [ft]
Screen length	60 [in]
Depth to Water	13.72 [ft]

Pumping information:

Final pumping rate	350 [mL/min]
Flowcell volume	1202.98 [mL]
Calculated Sample Rate	207 [sec]
Sample rate	207 [sec]
Stabilized drawdown	0.01 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	11:32:23	66.60	6.97	1174.59	46.57	0.39	-129.53
	11:35:51	66.39	6.97	1229.21	24.63	0.19	-136.45
	11:39:19	66.30	6.97	1260.28	12.13	0.14	-139.32
	11:42:47	66.22	6.97	1277.84	7.98	0.11	-140.38
	11:46:16	66.20	6.97	1280.68	4.45	0.09	-141.92
Variance in last 3 readings	11:39:19	-0.09	0.00	31.07	-12.50	-0.05	-2.86
	11:42:47	-0.08	0.00	17.56	-4.15	-0.03	-1.07
	11:46:16	-0.03	0.00	2.84	-3.53	-0.02	-1.54

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/16/11 | ISI Low-Flow Log

Project Information:

Operator Name	N MCNURLEN
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	116.5 [ft]
Pump placement from TOC	110.5 [ft]

Well Information:

Well Id	CPA-MW-3D
Well diameter	16.97 [in]
Well total depth	113 [ft]
Depth to top of screen	108 [ft]
Screen length	60 [in]
Depth to Water	16 [ft]

Pumping information:

Final pumping rate	350 [mL/min]
Flowcell volume	1249.54 [mL]
Calculated Sample Rate	215 [sec]
Sample rate	215 [sec]
Stabilized drawdown	0.01 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	13:57:36	62.93	7.01	1514.76	5.18	0.10	-197.83
	14:01:13	62.90	7.02	1519.22	3.94	0.06	-212.06
	14:04:50	62.87	7.02	1527.66	4.16	0.04	-225.14
	14:08:27	62.90	7.02	1528.48	4.46	0.02	-232.48
	14:12:04	62.93	7.02	1531.70	5.21	0.01	-238.59
Variance in last 3 readings	14:04:50	-0.04	0.00	8.44	0.21	-0.02	-13.07
	14:08:27	0.03	0.00	0.82	0.30	-0.02	-7.35
	14:12:04	0.03	0.00	3.22	0.75	-0.02	-6.11

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/17/11 | ISI Low-Flow Log

Project Information:

Operator Name	Mike Corbett
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	124.57 [ft]
Pump placement from TOC	0 [ft]

Well Information:

Well Id	CPA-MW-4D
Well diameter	2 [in]
Well total depth	121.07 [ft]
Depth to top of screen	116.07 [ft]
Screen length	60 [in]
Depth to Water	31.06 [ft]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	1294.53 [mL]
Calculated Sample Rate	311 [sec]
Sample rate	311 [sec]
Stabilized drawdown	0 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	13:06:54	64.44	6.98	2357.90	2.43	0.02	-89.30
	13:12:18	64.79	6.99	2357.01	3.80	0.02	-102.00
	13:17:39	64.69	6.99	2343.04	11.11	0.01	-110.93
	13:23:03	64.88	7.00	2342.63	30.89	0.01	-117.64
	13:28:24	64.59	7.01	2332.16	1.74	0.02	-122.95
Variance in last 3 readings	13:17:39	-0.10	0.01	-13.97	7.31	0.00	-8.93
	13:23:03	0.19	0.01	-0.40	19.78	-0.01	-6.71
	13:28:24	-0.29	0.01	-10.47	-29.15	0.01	-5.30

Notes:

US EPA ARCHIVE DOCUMENT

In-Situ Inc.

Troll 9000 | Low-Flow System
11/16/11 | ISI Low-Flow Log

Project Information:

Operator Name	Mike Corbett
Company Name	URS Corporation
Project Name	Solutia WGK
Site Name	Quarterly Groundwater Sampling - LTM

Pump Information:

Pump Model/Type	Proactive SS Monsoon
Tubing Type	LDPE
Tubing Diameter	0.19 [in]
Tubing Length	118.25 [ft]
Pump placement from TOC	112.25 [ft]

Well Information:

Well Id	CPA-MW-5D
Well diameter	2 [in]
Well total depth	114.75 [ft]
Depth to top of screen	109.75 [ft]
Screen length	60 [in]
Depth to Water	25.57 [ft]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	1259.3 [mL]
Calculated Sample Rate	303 [sec]
Sample rate	303 [sec]
Stabilized drawdown	0 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.2 +/-10 %	+/-20
Last 5 Readings	10:44:04	59.14	6.55	2829.10	0.64	0.02	33.54
	10:49:19	59.22	6.56	2837.87	1.65	0.00	21.26
	10:54:33	59.27	6.56	2847.13	4.05	-0.02	11.67
	10:59:47	59.42	6.57	2856.66	4.52	-0.03	4.31
	11:05:01	59.42	6.57	2850.71	11.85	-0.03	-1.67
Variance in last 3 readings	10:54:33	0.06	0.01	9.27	2.40	-0.02	-9.59
	10:59:47	0.15	0.00	9.52	0.47	-0.01	-7.36
	11:05:01	0.00	0.00	-5.95	7.34	-0.01	-5.99

Notes:

US EPA ARCHIVE DOCUMENT

Appendix B

Chains-of-Custody

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/14/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: FedEx	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562703.00003
St. Louis, MO 63110	Calendar (C) or Work Days (W)			SDG No.
(314) 429-0100 Phone	TAT if different from Below Standard			
(314) 429-0462 FAX	☒ 2 weeks			
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date (11/15/11 ★)	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
BSA-MW-3D-1111	11/14/11	1410	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-3D-F(0.2)-1111		1410	G	Water	2	X								1	1	
CPA-MW-2D-1111		1250	G	W	12		3	1	1	1	3	2	1			
CPA-MW-2D-F(0.2)-1111		1250	G	W	2	X								1	1	
CPA-MW-2D-1111 ~~DUP~~ AD ★ LG 11/16/11		1250	G	W	3		3									★ Correct ID per URS request LGulizia 11/16/11
CPA-MW-1D-1111		1420	G	W	12		3	1	1	1	3	2	1			
CPA-MW-1D-F(0.2)-1111		1420	G	W	2	X								1	1	
BSA-MW-1S-1111		1030	G	W	12		3	1	1	1	3	2	1			★ Corrected sampling date per client info. LG 11/17/11
BSA-MW-1S-F(0.2)-1111	↓	1030	G	W	2	X								1	1	
4Q11 LTM Trip Blank # 1				Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B ☐ Unknown ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ■ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

680-0001754
1.8°C
680-74408

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/14/11 1630	[signature]	TA	11/14/11 1630
[signature]	TA	11/14/11 1645	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA SAV	Date/Time: 11/16/11 1017

US EPA ARCHIVE DOCUMENT

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/16/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier:	___ of ___ COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~
St. Louis, MO 63110	Calendar (C) or Work Days (W)			SDG No.
(314) 429-0100 Phone	TAT if different from Below (Standard)			
(314) 429-0462 FAX	☐ 2 weeks			
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
BSA-MW-4D -1111	11/16/11	1015	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-4D -F(0.2)-1111	11/16/11	1015	G	Water	2	X								1	1	
BSA-MW-2D-1111	11/16/11	1135	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-2D-F(0.2)-1111	11/16/11	1135	G	Water	2	X							NA	1	1	
CPA-MW-3D-1111	11/16/11	1515	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-3D-F(0.2)-1111	11/16/11	1515	G	Water	2	X								1	1	
NM ~~TB-2~~ NM	~~11/16/11~~	~~0000~~	~~—~~	~~Water~~	~~2~~		~~2~~									
4Q11 LTM Trip Blank #2	11/16/11	0000	G	Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☒

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ■ *Disposal By Lab* ☐ *Archive For* ___ *Months*

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/16/11 1645	[signature]	TA	11/16/11 1645
[signature]	TA	11/16/11 1730			
			[signature]	TASN	11/17/11

600-74457
3.5/3.6°C

US EPA ARCHIVE DOCUMENT

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/16/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: Fed Ex	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~ nc
St. Louis, MO 63110	Calendar (C) or Work Days (W) C			
(314) 429-0100 Phone	TAT if different from Below Standard			SDG No.
(314) 429-0462 FAX	☒ 2 weeks			
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-MW-5D -1111	11/16/11	1110	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-5D -F(0.2)-1111	↓	1110	G	Water	2	X								1	1	
BSA-MW-5D-1111		1445	G	W	12		3	1	1	1	3	2	1			
BSA-MW-5D-F(0.2)-1111	↓	1445	G	W	2	X								1	1	
CPA-MW-5D-1111-MS		1110	G	W	3		3									
CPA-MW-5D-1111-MSD	↓	1110	G	W	3		3									
4Q11 LTM Trip Blank # 3	11/16/11	—	—	Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ■ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: Level 4 Data Package

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/16/11 1635	[signature]	TA	11/16/11 1635
[signature]	TA	11/16/11 1730	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA SN	Date/Time: 11/17/11

680-74457
3.8°/3.6°C

US EPA ARCHIVE DOCUMENT

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/17/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: FedEx	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~
St. Louis, MO 63110	Calendar (C) or Work Days (W) C			
(314) 429-0100 Phone	TAT if different from Below Standard			
(314) 429-0462 FAX	☒ 2 weeks			SDG No.
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-MW-4D -1111	11/17/11	1345	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-4D -F(0.2)-1111	11/17/11	1345	G	Water	2	X								1	1	
4Q11 LTM Trip Blank #4	11/17/11	—	—	Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ■ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

680-74529
3.1°C

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/17/11 1600	[signature]	TA	11/17/11 1600
[signature]	TA	11/17/11 1820	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA SW	Date/Time: 11/18/11 0943

Appendix C

Quality Assurance Report

US EPA ARCHIVE DOCUMENT

QUALITY ASSURANCE REPORT

Solutia Inc.
W.G. Krummrich Facility
Sauget, Illinois

Long-Term Monitoring Program
4th Quarter 2011 Data Report

Prepared for

Solutia Inc.
575 Maryville Centre Drive
St. Louis, MO 63141

January 2012

URS

URS Corporation
1001 Highland Plaza Drive West, Suite 300
St. Louis, MO 63110
(314) 429-0100
Project # 21562682.00004

US EPA ARCHIVE DOCUMENT

1.0 INTRODUCTION 1
2.0 RECEIPT CONDITION AND SAMPLE HOLDING TIMES.....3
3.0 TRIP BLANKS, LABORATORY METHOD BLANK AND EQUIPMENT BLANK SAMPLES.4
4.0 SURROGATE SPIKE RECOVERIES.....4
5.0 LABORATORY CONTROL SAMPLE RECOVERIES 4
6.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) SAMPLES.....4
7.0 FIELD DUPLICATE RESULTS.....5
8.0 INTERNAL STANDARD RESPONSES.....5
9.0 RESULTS REPORTED FROM DILUTIONS 6

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

1.0 INTRODUCTION

This Quality Assurance Report presents the findings of a review of analytical data for groundwater samples collected in November of 2011 at the Solutia W.G. Krummrich plant as part of the 4th Quarter 2011 Long-Term Monitoring Program. The samples were collected by URS Corporation personnel and analyzed by TestAmerica Laboratories located in Savannah, Georgia using USEPA methods, Standard methods and USEPA SW-846 methodologies. Groundwater samples were tested for volatile organic compounds (VOCs), metals, dissolved gasses, and general chemistry.

One hundred percent of the data were subjected to a data quality review (Level III validation). The Level III data reviews were performed in order to confirm that the analytical data provided by TestAmerica were acceptable in quality for their intended use.

A total of 13 groundwater samples (ten investigative samples, one field duplicate pair, one MS/MSD pair, and one equipment blank) were analyzed by Test America. In addition, four trip blank sets were included in the coolers that contained groundwater samples for VOC analysis and were analyzed for VOCs by USEPA SW-846 Method 8260B. These samples were analyzed as one Sample Delivery Group (SDG) KPS067 utilizing the following USEPA SW-846 Methods:

- Method 8260B for VOCs (Benzene, Chlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene and 1,4-Dichlorobenzene)
- Method 6010B for total and dissolved iron and manganese

Samples were also analyzed for MNA parameters by the following methods:

- Method RSK-175 for Dissolved Gasses (Ethane, Ethylene, and Methane)
- USEPA Method 310.1 for Alkalinity and Free Carbon Dioxide
- USEPA Method 325.2 for Chloride
- USEPA Method 353.2 for Nitrogen, Nitrate
- USEPA Method 375.4 for Sulfate
- USEPA Method 415.1 for Total and Dissolved Organic Carbon

Samples were reviewed following procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, 2008, USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review, 2010 and the Revised Long-Term Monitoring Program (LTMP) Work Plan (Solutia 2009).

The above guidelines provided the criteria to review the data. Additional quantitative criteria are given in the analytical methods. Qualifiers assigned by the data reviewer have been applied to the laboratory report. The qualifiers indicate data that did not meet acceptance criteria and corrective

actions were not successful or not performed. The various qualifiers are explained in **Tables 1** and **2** below:

TABLE 1 Laboratory Data Qualifiers

Lab Qualifier	Definition
U	Analyte was not detected at or above the reporting limit.
*	LCS, LCSD, MS, MSD, MD or surrogate exceeds the control limits.
E	Result exceeded the calibration range, secondary dilution required.
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Spike recovery exceeds upper or lower control limits.
F	MS, MSD or RPD exceeds upper or lower control limits.
P	The difference between the results of the two GC columns is greater than 40%
H	Sample was prepped or analyzed beyond the specified holding time.
B	Compound was found in the blank and sample.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

TABLE 2 URS Data Qualifiers

	Definition
U	The analyte was analyzed for but was not detected.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Based on the criteria outlined, it is recommended that the results reported for these analyses are accepted for their intended use. Acceptable levels of accuracy, precision, and representativeness (based on MS/MSD, LCS, surrogate compounds and field duplicate results) were achieved for this data set, except where noted in this report. In addition, analytical completeness, defined as the percentage of analytical results that are judged to be valid, including estimated detect/non-detect (**J**/**UJ**) data was 100 percent, which meets the completeness goal of 95 percent.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

The data review included evaluation of the following criteria:

Organics

- Receipt condition and sample holding times
- Laboratory method blanks, field equipment blanks and trip blank samples
- Surrogate spike recoveries
- Laboratory control sample (LCS) recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) sample recoveries and relative percent difference (RPD) values
- Field duplicate results
- Results reported from dilutions
- Internal standard responses

Inorganics/General chemistry

- Receipt condition and sample holding times
- Laboratory method blank and field equipment blank samples
- LCS recoveries
- MS/MSD sample recoveries and matrix duplicate RPD values
- Field duplicate and laboratory duplicate results
- Results reported from dilutions

The following sections present the results of the data review.

2.0 RECEIPT CONDITION AND SAMPLE HOLDING TIMES

Sample holding time requirements for the analyses performed are presented in the methods and/or in the data review guidelines. Review of the sample collection, extraction and analysis dates involved comparing the chain-of-custody and the laboratory data summary forms for accuracy, consistency, and holding time compliance.

The cooler receipt form indicated that one of four coolers was received by the laboratory at 1.8°C which is outside the 4°C ± 2°C criteria. The samples were received in good condition; therefore no qualification of data was required. One unpreserved vial for sample BSA-MW-5D-0811 was received broken. The remaining unbroken vials contained sufficient sample to complete all requested analysis. Additionally, although the cooler receipt form notes insufficient

sample volume was received for MS/MSD analysis, sample CPA-MW-5D-1111contained sufficient sample volume to complete requested analysis. The pH was adjusted in sample CPA-MW-1D-1111 and CPA-MW-1D-F(0.2)-1111 upon sample receipt prior to sample analysis; no qualification of data was required. Samples collected on 11/15/11 were originally incorrectly labeled on the COC as being collected on 11/14/11. Additionally, sample CPA-MW-2D-1111-AD was originally listed as CPA-MW-2D-1111-Dup. URS contacted the laboratory; data were reported using the correct sample IDs.

3.0 TRIP BLANKS, LABORATORY METHOD BLANK AND EQUIPMENT BLANK SAMPLES

Trip blank samples are used to assess VOC cross contamination of samples during shipment to the laboratory. Trip blanks were submitted with each cooler shipped containing samples for VOC analyses for a total of four trip blank sample sets. Trip blank samples were non-detect.

Laboratory method blank samples evaluate the existence and magnitude of contamination problems resulting from laboratory activities. Laboratory method blank samples were analyzed at the method prescribed frequencies. Method blank samples were non-detect.

Equipment blank samples are used to assess the effectiveness of equipment decontamination procedures. The equipment blank sample was non-detect.

4.0 SURROGATE SPIKE RECOVERIES

Surrogate compounds are used to evaluate overall laboratory performance for sample preparation efficiency on a per sample basis. Samples analyzed for VOCs were spiked with surrogate compounds during sample preparation. USEPA National Functional Guidelines for Superfund Organic Methods Data Review state how data is qualified, if surrogate spike recoveries do not meet acceptance criteria.

Groundwater surrogate recoveries were within evaluation criteria. No qualification of data was required.

5.0 LABORATORY CONTROL SAMPLE RECOVERIES

Groundwater laboratory control samples (LCS) are analyzed with each analytical batch to assess the accuracy of the analytical process. LCS recoveries were within evaluation criteria.

6.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) SAMPLES

MS/MSD samples are analyzed to assess the accuracy and precision of the analytical process on an analytical sample in a particular matrix. MS/MSD samples were required to be collected at a frequency of one per 20 investigative samples in accordance with the work plan. URS Corporation submitted one MS/MSD sample set for 10 investigative samples meeting the work plan frequency requirement. Although not requested for MS/MSD analysis, the laboratory spiked

US EPA ARCHIVE DOCUMENT

and analyzed samples CPA-MW-4D-1111, BSA-MW-4D-1111, and BSA-MW-3D-F(0.2)-1111 for various parameters as discussed further in the data review in **Appendix D**.

Groundwater samples spiked and analyzed as MS/MSDs and their respective recoveries were within evaluation criteria with the exception summarized in the following table:

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery (%)	RPD	MS/MSD/ RPD Criteria
BSA-MW-4D-1111	General chemistry	Chloride	87/**80**	2	85-115/30
CPA-MW-4D-1111	Metals	Iron	NA/NA	2	75-125/20

Analytical data that required qualification based on MS/MSD data are included in the table below. Iron MS/MSD recoveries in sample CPA-MW-4D-1111 could not be evaluated because the sample concentrations were greater than four times (4X) the matrix spike concentration.

Sample ID	Parameter	Analyte	Qualification
BSA-MW-4D-1111	General chemistry	Chloride	**J**

7.0 FIELD DUPLICATE RESULTS

Field duplicate results are used to evaluate precision of the entire data collection activity, including sampling, analysis and site heterogeneity. When results for both duplicate and sample values are greater than five times the practical quantitation limit (PQL), satisfactory precision is indicated by an RPD less than or equal to 25 percent for aqueous samples. Where one or both of the results of a field duplicate pair are reported at less than five times the PQL, satisfactory precision is indicated if the field duplicate results agree within 2 times the quantitation limit. Field duplicate results that do not meet these criteria may indicate unsatisfactory precision of the results.

One pair of field duplicate samples was collected for the nine investigative groundwater samples. This satisfies the requirement in the work plan (one per 10 investigative samples or 10 percent). Groundwater field duplicate RPDs were within evaluation criteria.

8.0 INTERNAL STANDARD RESPONSES

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent for VOCs.

The internal standards area responses for VOCs were verified for the data review. VOC IS responses met the criteria as described above for all groundwater samples. No qualification of data was required.

US EPA ARCHIVE DOCUMENT

9.0 RESULTS REPORTED FROM DILUTIONS

VOC, chloride, and sulfate results for groundwater samples were diluted when high levels of target analytes were present. The diluted sample results for these analytes were reported for the associated samples.

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

Appendix D

Groundwater Analytical Results

(with Data Review Reports)

SDG KPS067

Results of Samples from Monitoring Wells:

BSA-MW-1S
BSA-MW-2D
BSA-MW-3D
BSA-MW-4D
BSA-MW-5D
CPA-MW-1D
CPA-MW-2D
CPA-MW-3D
CPA-MW-4D
CPA-MW-5D

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

4Q 2011 LTM Data Review

Laboratory SDG: KPS067

Data Reviewer: Melissa Mansker

Peer Reviewer: Elizabeth Kunkel

Date Reviewed: 12/21/2011

Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008. USEPA National Functional Guidelines for Superfund Inorganic Data Review 2010

Work Plan: Revised Long-Term Monitoring Program (LTMP) Work Plan (Solutia 2009)

Sample Identification	
BSA-MW-3D-1111	BSA-MW-3D-F(0.2)-1111
CPA-MW-2D-1111	CPA-MW-2D-F(0.2)-1111
CPA-MW-2D-1111-AD	CPA-MW-1D-1111
CPA-MW-1D-F(0.2)-1111	BSA-MW-1S-1111
BSA-MW-1S-F(0.2)-1111	4Q11 LTM Trip Blank #1
BSA-MW-4D-1111	BSA-MW-4D-F(0.2)-1111
BSA-MW-2D-1111	BSA-MW-2D-F(0.2)-1111
CPA-MW-3D-1111	CPA-MW-3D-F(0.2)-1111
CPA-MW-5D-1111	CPA-MW-5D-F(0.2)-1111
BSA-MW-5D-1111	BSA-MW-5D-F(0.2)-1111
4Q11LTM Trip Blank #2	4Q11LTM Trip Blank #3
CPA-MW-4D-1111	CPA-MW-4D-F(0.2)-1111
4Q11 LTM Trip Blank #4	CPA-MW-4D-1111-EB

1.0 Data Package Completeness

Were all items delivered as specified in the QAPP and COC as appropriate?

No, equipment blank CPA-MW-4D-1111-EB was not listed on the COC; CPA-MW-4D-111-EB was logged in properly by the laboratory using the sample container label ID and was analyzed for VOCs.

2.0 Laboratory Case Narrative \ Cooler Receipt Form

Were problems noted in the laboratory case narrative or cooler receipt form?

Yes, the laboratory case narrative indicated chloride MS/MSD recoveries in sample BSA-MW-4D-1111 were outside evaluation criteria. Although not indicated in the laboratory case narrative, iron MS/MSD recoveries in sample CPA-MW-4D-1111 were outside evaluation criteria. Samples were diluted due to high levels of target analytes. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated that one of four coolers was received by the laboratory at 1.8℃ which is outside the 4℃ ± 2℃ criteria. The samples were received in good condition; therefore no qualification of data was required. One unpreserved vial for

sample BSA-MW-5D-0811 was received broken. The remaining unbroken vials contained sufficient sample volume to complete all requested analysis. Additionally, although the cooler receipt form notes insufficient sample volume was received for MS/MSD analysis, sample CPA-MW-5D-1111 contained sufficient sample volume to complete the requested analysis. The pH was adjusted in sample CPA-MW-1D-1111 and CPA-MW-1D-F(0.2)-1111 upon sample receipt prior to sample analysis; no qualification of data was required. Samples collected on 11/15/11 were originally incorrectly labeled on the COC as being collected on 11/14/11. Additionally, sample CPA-MW-2D-1111-AD was originally listed as CPA-MW-2D-1111-Dup. URS contacted the laboratory; data were reported using the correct sample IDs.

3.0 Holding Times

Were samples extracted/analyzed within applicable limits?

Yes

4.0 Blank Contamination

Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?

No

5.0 Laboratory Control Sample

Were LCS recoveries within evaluation criteria?

Yes

6.0 Surrogate Recoveries

Were surrogate recoveries within evaluation criteria?

Yes

7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

Were MS/MSD samples collected as part of this SDG?

Yes, sample CPA-MW-5D-1111 was spiked and analyzed for VOCs. Although not requested for MS/MSD analysis, sample CPA-MW-4D-1111 was spiked and analyzed for metals and sulfate. In addition, sample BSA-MW-4D-1111 was spiked and analyzed for chloride; sample BSA-MW-3D-F(0.2)-1111 was spiked and analyzed for dissolved organic carbon.

Were MS/MSD recoveries within evaluation criteria?

No

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/ RPD Criteria
BSA-MW-4D-1111	General chemistry	Chloride	87/**80**	2	85-115/30
CPA-MW-4D-1111	Metals	Iron	NA/NA	2	75-125/20

Analytical data that required qualification based on MS/MSD data are included in the table below. Iron MS/MSD recoveries in sample CPA-MW-4D-1111 could not be evaluated because the sample concentrations were greater than four times (4X) the

US EPA ARCHIVE DOCUMENT

matrix spike concentration.

Sample ID	Parameter	Analyte	Qualification
BSA-MW-4D-1111	General chemistry	Chloride	**J**

8.0 Internal Standard (IS) Recoveries

Were internal standard area recoveries within evaluation criteria?

Yes

9.0 Laboratory Duplicate Results

Were laboratory duplicate samples collected as part of this SDG?

Yes, samples CPA-MW-2D-1111, BSA-MW-3D-1111 and CPA-MW-4D-1111 were duplicated and analyzed for alkalinity. Sample CPA-MW-4D-1111 was duplicated and analyzed for nitrogen. Sample BSA-MW-1S-1111 was duplicated and analyzed for sulfate. Sample CPA-MW-4D-F(0.2)1111 was duplicated and analyzed for dissolved organic carbon. Sample BSA-MW-1S-1111 was duplicated and analyzed for total organic carbon.

Were laboratory duplicate sample RPDs within criteria?

Yes

10.0 Field Duplicate Results

Were field duplicate samples collected as part of this SDG?

Yes

Field ID	Field Duplicate ID
CPA-MW-2D-1111	CPA-MW-2D-1111-AD

Were field duplicates within evaluation criteria?

Yes

10.0 Sample Dilutions

For samples that were diluted and nondetect, were undiluted results also reported?

Not applicable; analytes were detected in samples that were diluted.

11.0 Additional Qualifications

Were additional qualifications applied?

No

US EPA ARCHIVE DOCUMENT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-74408-1
TestAmerica Sample Delivery Group: KPS067
Client Project/Site: WGK LTM - GW 4Q11 - NOV 2011

For:
Solutia Inc.
575 Maryville Centre Dr.
Saint Louis, Missouri 63141

Attn: Mr. Jerry Rinaldi

Lidya Gulizia

Authorized for release by:
12/20/2011 5:50:10 PM

Lidya Gulizia
Project Manager II
lidya.gulizia@testamericainc.com

cc: Bob Billman

Reviewed on 12/21/2011

US EPA ARCHIVE DOCUMENT

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Case Narrative 3
Sample Summary 4
Method Summary 5
Definitions 6
Client Sample Results 7
Surrogate Summary 33
QC Sample Results 34
QC Association 51
Chronicle 58
Chain of Custody 65
Receipt Checklists 69
Certification Summary 72

US EPA ARCHIVE DOCUMENT

DEC 21 2011

Job ID: 680-74408-1

3

Laboratory: TestAmerica Savannah

Narrative

Job Narrative
680-74408-1 / SDG KPS067

Receipt
One or more containers for the following sample(s) was received broken or leaking: BSA-MW-5D-1111 (680-74457-9). Vial -9L (unpreserved) was received broken. Sufficient sample was received to proceed with analysis.

The sampling date on the chain-of-custody (COC) record for samples logged under job 74408 was corrected by the client following receipt. The sampling date was noted as 11/14/11, however, the correct sampling date was revised to 11/15/11.

All other samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

GC VOA
Method(s) RSK-175: Manual integration was performed on the following sample(s): (LCS 680-221214/2), (LCSD 680-221214/3).

No other analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

General Chemistry
Method(s) 325.2: The matrix spike duplicate (MSD) recoveries for batch 222364 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 353.2: The matrix spike duplicate (MSD) recoveries for batch 221783 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 375.4: The following sample(s) was diluted due to the nature of the sample matrix: CPA-MW-4D-1111 (680-74529-1). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

Comments
No additional comments.

DEC 21 2011

TestAmerica Savannah

Sample Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-74408-1	BSA-MW-3D-1111	Water	11/15/11 14:10	11/16/11 10:17
680-74408-2	BSA-MW-3D-F(0.2)-1111	Water	11/15/11 14:10	11/16/11 10:17
680-74408-3	CPA-MW-2D-1111	Water	11/15/11 12:50	11/16/11 10:17
680-74408-4	CPA-MW-2D-F(0.2)-1111	Water	11/15/11 12:50	11/16/11 10:17
680-74408-5	CPA-MW-2D-1111-AD	Water	11/15/11 12:50	11/16/11 10:17
680-74408-6	CPA-MW-1D-1111	Water	11/15/11 14:20	11/16/11 10:17
680-74408-7	CPA-MW-1D-F(0.2)-1111	Water	11/15/11 14:20	11/16/11 10:17
680-74408-8	BSA-MW-1S-1111	Water	11/15/11 10:30	11/16/11 10:17
680-74408-9	BSA-MW-1S-F(0.2)-1111	Water	11/15/11 10:30	11/16/11 10:17
680-74408-10	4Q11 LTM Trip Blank #1	Water	11/15/11 00:00	11/16/11 10:17
680-74457-1	BSA-MW-4D-1111	Water	11/16/11 10:15	11/17/11 09:22
680-74457-2	BSA-MW-4D-F(0.2)-1111	Water	11/16/11 10:15	11/17/11 09:22
680-74457-3	BSA-MW-2D-1111	Water	11/16/11 11:35	11/17/11 09:22
680-74457-4	BSA-MW-2D-F(0.2)-1111	Water	11/16/11 11:35	11/17/11 09:22
680-74457-5	CPA-MW-3D-1111	Water	11/16/11 15:15	11/17/11 09:22
680-74457-6	CPA-MW-3D-F(0.2)-1111	Water	11/16/11 15:15	11/17/11 09:22
680-74457-7	CPA-MW-5D-1111	Water	11/16/11 11:10	11/17/11 09:22
680-74457-8	CPA-MW-5D-F(0.2)-1111	Water	11/16/11 11:10	11/17/11 09:22
680-74457-9	BSA-MW-5D-1111	Water	11/16/11 14:44	11/17/11 09:22
680-74457-10	BSA-MW-5D-F(0.2)-1111	Water	11/18/11 14:45	11/17/11 09:22
680-74457-11	4Q11LTM Trip Blank #2	Water	11/16/11 00:00	11/17/11 09:22
680-74457-12	4Q11LTM Trip Blank #3	Water	11/16/11 00:00	11/17/11 09:22
680-74529-1	CPA-MW-4D-1111	Water	11/17/11 13:45	11/18/11 09:32
680-74529-2	CPA-MW-4D-F(0.2)-1111	Water	11/17/11 13:45	11/18/11 09:32
680-74529-3	4Q11 LTM Trip Blank #4	Water	11/17/11 00:00	11/18/11 09:32
680-74529-4	CPA-MW-4D-1111-EB	Water	11/17/11 12:10	11/18/11 09:32

DEC 21 2011

TestAmerica Savannah

Method Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
6010B	Metals (ICP)	SW846	TAL SAV
310.1	Alkalinity	MCAWW	TAL SAV
325.2	Chloride	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
375.4	Sulfate	MCAWW	TAL SAV
415.1	TOC	MCAWW	TAL SAV
415.1	DOC	MCAWW	TAL SAV

5

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

DEC 21 2011

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-3D-1111

Date Collected: 11/15/11 14:10
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	34		10		ug/L			11/28/11 12:19	10
Chlorobenzene	850		10		ug/L			11/28/11 12:19	10
1,2-Dichlorobenzene	17		10		ug/L			11/28/11 12:19	10
1,3-Dichlorobenzene	13		10		ug/L			11/28/11 12:19	10
1,4-Dichlorobenzene	290		10		ug/L			11/28/11 12:19	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*101*		*70 - 130*		*11/28/11 12:19*	*10*
Dibromofluoromethane	*99*		*70 - 130*		*11/28/11 12:19*	*10*
Toluene-d8 (Surr)	*103*		*70 - 130*		*11/28/11 12:19*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.8		1.1		ug/L			11/16/11 18:18	1
Ethylene	1.0	U	1.0		ug/L			11/16/11 16:18	1
Methane	970		0.58		ug/L			11/16/11 16:16	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	11		0.050		mg/L		11/17/11 08:45	11/23/11 02:31	1
Manganese	0.58		0.010		mg/L		11/17/11 08:45	11/23/11 02:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	120		2.0		mg/L			11/16/11 17:22	2
Nitrate as N	0.050	U	0.050		mg/L			11/16/11 15:00	1
Sulfate	96		25		mg/L			12/06/11 16:12	5
Total Organic Carbon	3.8		1.0		mg/L			11/17/11 21:45	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	540		5.0		mg/L			11/16/11 22:03	1
Carbon Dioxide, Free	30		5.0		mg/L			11/16/11 22:03	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-3D-F(0.2)-1111
Date Collected: 11/15/11 14:10
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-2
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	11		0.050		mg/L		11/17/11 08:45	11/23/11 02:36	1
Manganese, Dissolved	0.58		0.010		mg/L		11/17/11 08:45	11/23/11 02:36	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	3.7		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-2D-1111
Date Collected: 11/15/11 12:50
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-3
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	650		200		ug/L			11/28/11 12:48	200
Chlorobenzene	23000		200		ug/L			11/28/11 12:48	200
1,2-Dichlorobenzene	200	U	200		ug/L			11/28/11 12:48	200
1,3-Dichlorobenzene	210		200		ug/L			11/28/11 12:48	200
1,4-Dichlorobenzene	6300		200		ug/L			11/28/11 12:48	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/28/11 12:48*	*200*
Dibromofluoromethane	*97*		*70 - 130*		*11/28/11 12:48*	*200*
Toluene-d8 (Surr)	*108*		*70 - 130*		*11/28/11 12:48*	*200*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	3.5		1.1		ug/L			11/16/11 18:31	1
Ethylene	1.0	U	1.0		ug/L			11/16/11 18:31	1
Methane	1300		0.58		ug/L			11/16/11 18:31	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	6.5		0.050		mg/L		11/17/11 08:45	11/23/11 02:41	1
Manganese	0.38		0.010		mg/L		11/17/11 08:45	11/23/11 02:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	60		1.0		mg/L			11/16/11 17:03	1
Nitrate as N	0.050	U	0.050		mg/L			11/16/11 15:01	1
Sulfate	21		5.0		mg/L			12/06/11 15:46	1
Total Organic Carbon	11		1.0		mg/L			11/17/11 22:00	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	580		5.0		mg/L			11/16/11 19:33	1
Carbon Dioxide, Free	31		5.0		mg/L			11/16/11 19:33	1

DEC 21 2011

TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-2D-F(0.2)-1111
Date Collected: 11/15/11 12:50
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-4
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	6.6		0.050		mg/L		11/17/11 08:45	11/23/11 02:57	1
Manganese, Dissolved	0.39		0.010		mg/L		11/17/11 08:45	11/23/11 02:57	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	9.8		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-2D-1111-AD

Lab Sample ID: 680-74408-5

Date Collected: 11/15/11 12:50
Date Received: 11/16/11 10:17

Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	650		200		ug/L			11/28/11 13:18	200
Chlorobenzene	24000		200		ug/L			11/28/11 13:18	200
1,2-Dichlorobenzene	200	U	200		ug/L			11/28/11 13:18	200
1,3-Dichlorobenzene	230		200		ug/L			11/28/11 13:18	200
1,4-Dichlorobenzene	6700		200		ug/L			11/28/11 13:18	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*101*		*70 - 130*		*11/28/11 13:18*	*200*
Dibromofluoromethane	*97*		*70 - 130*		*11/28/11 13:18*	*200*
Toluene-d8 (Surr)	*105*		*70 - 130*		*11/28/11 13:18*	*200*

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-1D-1111
Date Collected: 11/15/11 14:20
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-6
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	9100		200		ug/L			11/28/11 13:47	200
Chlorobenzene	18000		200		ug/L			11/28/11 13:47	200
1,2-Dichlorobenzene	14000		200		ug/L			11/28/11 13:47	200
1,3-Dichlorobenzene	1300		200		ug/L			11/28/11 13:47	200
1,4-Dichlorobenzene	9500		200		ug/L			11/28/11 13:47	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/28/11 13:47*	*200*
Dibromofluoromethane	*100*		*70 - 130*		*11/28/11 13:47*	*200*
Toluene-d8 (Surr)	*105*		*70 - 130*		*11/28/11 13:47*	*200*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	31		1.1		ug/L			11/16/11 18:44	1
Ethylene	1.0	U	1.0		ug/L			11/16/11 18:44	1
Methane	13000		0.58		ug/L			11/16/11 18:44	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.0		0.050		mg/L		11/17/11 08:45	11/23/11 03:02	1
Manganese	0.089		0.010		mg/L		11/17/11 08:45	11/23/11 03:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	150		2.0		mg/L			11/16/11 17:22	2
Nitrate as N	0.050	U	0.050		mg/L			11/16/11 15:04	1
Sulfate	11		5.0		mg/L			12/06/11 15:48	1
Total Organic Carbon	19		1.0		mg/L			11/17/11 22:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	970		5.0		mg/L			11/16/11 21:47	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			11/16/11 21:47	1

DEC 21 2011

TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-1D-F(0.2)-1111
Date Collected: 11/15/11 14:20
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-7
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.39		0.050		mg/L		11/17/11 08:45	11/23/11 03:07	1
Manganese, Dissolved	0.036		0.010		mg/L		11/17/11 08:45	11/23/11 03:07	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	20		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-1S-1111
Date Collected: 11/15/11 10:30
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-8
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**470000**		5000		ug/L			11/28/11 14:17	5000
Chlorobenzene	5000	U	5000		ug/L			11/28/11 14:17	5000
1,2-Dichlorobenzene	5000	U	5000		ug/L			11/28/11 14:17	5000
1,3-Dichlorobenzene	5000	U	5000		ug/L			11/28/11 14:17	5000
1,4-Dichlorobenzene	5000	U	5000		ug/L			11/28/11 14:17	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/28/11 14:17*	*5000*
Dibromofluoromethane	*101*		*70 - 130*		*11/28/11 14:17*	*5000*
Toluene-d8 (Surr)	*106*		*70 - 130*		*11/28/11 14:17*	*5000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			11/16/11 18:57	1
Ethylene	1.0	U	1.0		ug/L			11/16/11 18:57	1
Methane	**8200**		0.58		ug/L			11/16/11 18:57	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**5.8**		0.050		mg/L		11/17/11 08:45	11/23/11 03:12	1
Manganese	**0.63**		0.010		mg/L		11/17/11 08:45	11/23/11 03:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**250**		5.0		mg/L			11/18/11 17:20	5
Nitrate as N	0.050	U	0.050		mg/L			11/18/11 15:06	1
Sulfate	5.0	U	5.0		mg/L			12/06/11 15:48	1
Total Organic Carbon	**6.6**		1.0		mg/L			11/17/11 22:28	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**830**		5.0		mg/L			11/16/11 21:33	1
Carbon Dioxide, Free	**33**		5.0		mg/L			11/16/11 21:33	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-1S-F(0.2)-1111

Lab Sample ID: 680-74408-9

Date Collected: 11/15/11 10:30
Date Received: 11/16/11 10:17

Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	5.6		0.050		mg/L		11/17/11 08:45	11/23/11 03:18	1
Manganese, Dissolved	0.62		0.010		mg/L		11/17/11 08:45	11/23/11 03:18	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	6.2		1.0		mg/L			11/22/11 10:59	1

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: 4Q11 LTM Trip Blank #1
Date Collected: 11/15/11 00:00
Date Received: 11/16/11 10:17

Lab Sample ID: 680-74408-10
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/28/11 11:49	1
Chlorobenzene	1.0	U	1.0		ug/L			11/28/11 11:49	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 11:49	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 11:49	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 11:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/28/11 11:49*	*1*
Dibromofluoromethane	*99*		*70 - 130*		*11/28/11 11:49*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*		*11/28/11 11:49*	*1*

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-4D-1111

Lab Sample ID: 680-74457-1

Date Collected: 11/16/11 10:15
Date Received: 11/17/11 09:22

Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	41		20		ug/L			11/29/11 02:32	20
Chlorobenzene	1900		20		ug/L			11/29/11 02:32	20
1,2-Dichlorobenzene	20	U	20		ug/L			11/29/11 02:32	20
1,3-Dichlorobenzene	20	U	20		ug/L			11/29/11 02:32	20
1,4-Dichlorobenzene	39		20		ug/L			11/29/11 02:32	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/29/11 02:32*	*20*
Dibromofluoromethane	*94*		*70 - 130*		*11/29/11 02:32*	*20*
Toluene-d8 (Surr)	*104*		*70 - 130*		*11/29/11 02:32*	*20*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	2.9		1.1		ug/L			11/30/11 19:01	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 19:01	1
Methane	64		0.58		ug/L			11/30/11 19:01	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	8.5		0.050		mg/L		11/22/11 08:44	11/23/11 01:28	1
Manganese	0.68		0.010		mg/L		11/22/11 08:44	11/23/11 01:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110	J	2.0		mg/L			12/01/11 13:07	2
Nitrate as N	0.071		0.050		mg/L			11/17/11 17:03	1
Sulfate	120		25		mg/L			12/06/11 16:12	5
Total Organic Carbon	5.7		1.0		mg/L			11/29/11 14:58	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	580		5.0		mg/L			11/17/11 18:59	1
Carbon Dioxide, Free	45		5.0		mg/L			11/17/11 18:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-4D-F(0.2)-1111
Date Collected: 11/16/11 10:15
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-2
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	8.3		0.050		mg/L		11/22/11 08:44	11/23/11 01:33	1
Manganese, Dissolved	0.67		0.010		mg/L		11/22/11 08:44	11/23/11 01:33	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	5.7		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-2D-1111
Date Collected: 11/16/11 11:35
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-3
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	250000		2000		ug/L			11/29/11 03:01	2000
Chlorobenzene	2600		2000		ug/L			11/29/11 03:01	2000
1,2-Dichlorobenzene	2000	U	2000		ug/L			11/29/11 03:01	2000
1,3-Dichlorobenzene	2000	U	2000		ug/L			11/29/11 03:01	2000
1,4-Dichlorobenzene	2000	U	2000		ug/L			11/29/11 03:01	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/29/11 03:01*	*2000*
Dibromofluoromethane	*97*		*70 - 130*		*11/29/11 03:01*	*2000*
Toluene-d8 (Surr)	*107*		*70 - 130*		*11/29/11 03:01*	*2000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	12		1.1		ug/L			11/30/11 19:14	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 19:14	1
Methane	4500		0.58		ug/L			11/30/11 19:14	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	3.2		0.050		mg/L		11/22/11 08:44	11/23/11 01:39	1
Manganese	0.51		0.010		mg/L		11/22/11 08:44	11/23/11 01:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		2.0		mg/L			12/01/11 13:07	2
Nitrate as N	0.050	U	0.050		mg/L			11/17/11 17:04	1
Sulfate	5.0	U	5.0		mg/L			12/06/11 15:54	1
Total Organic Carbon	6.3		1.0		mg/L			11/29/11 15:12	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	590		5.0		mg/L			11/17/11 19:41	1
Carbon Dioxide, Free	38		5.0		mg/L			11/17/11 19:41	1

DEC 21 2011

TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-2D-F(0.2)-1111

Lab Sample ID: 680-74457-4

Date Collected: 11/16/11 11:35
Date Received: 11/17/11 09:22

Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	3.2		0.050		mg/L		11/28/11 09:14	12/01/11 05:44	1
Manganese, Dissolved	0.52		0.010		mg/L		11/28/11 09:14	12/01/11 05:44	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	6.3		1.0		mg/L			11/22/11 10:59	1

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-3D-1111
Date Collected: 11/16/11 15:15
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-5
Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	30		5.0		ug/L			11/29/11 03:30	5
Chlorobenzene	820		5.0		ug/L			11/29/11 03:30	5
1,2-Dichlorobenzene	5.0	U	5.0		ug/L			11/29/11 03:30	5
1,3-Dichlorobenzene	5.0	U	5.0		ug/L			11/29/11 03:30	5
1,4-Dichlorobenzene	16		5.0		ug/L			11/29/11 03:30	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*100*		*70 - 130*		*11/29/11 03:30*	*5*
Dibromofluoromethane	*92*		*70 - 130*		*11/29/11 03:30*	*5*
Toluene-d8 (Surr)	*107*		*70 - 130*		*11/29/11 03:30*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	4.6		1.1		ug/L			11/30/11 19:27	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 19:27	1
Methane	1600		0.58		ug/L			11/30/11 19:27	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9.3		0.050		mg/L		11/28/11 09:14	12/01/11 06:10	1
Manganese	0.59		0.010		mg/L		11/28/11 09:14	12/01/11 06:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130		2.0		mg/L			12/01/11 13:10	2
Nitrate as N	0.050	U	0.050		mg/L			11/17/11 17:08	1
Sulfate	53		10		mg/L			12/06/11 16:14	2
Total Organic Carbon	8.0		1.0		mg/L			11/29/11 15:27	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	530		5.0		mg/L			11/17/11 19:29	1
Carbon Dioxide, Free	28		5.0		mg/L			11/17/11 19:29	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-3D-F(0.2)-1111
Date Collected: 11/16/11 15:15
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-6
Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	9.6		0.050		mg/L		11/28/11 09:14	12/01/11 06:15	1
Manganese, Dissolved	0.60		0.010		mg/L		11/28/11 09:14	12/01/11 06:15	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	7.8		1.0		mg/L			11/22/11 10:59	1

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-5D-1111

Lab Sample ID: 680-74457-7

Date Collected: 11/16/11 11:10
Date Received: 11/17/11 09:22

Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	20	U	20		ug/L			11/29/11 04:00	20
Chlorobenzene	1500		20		ug/L			11/29/11 04:00	20
1,2-Dichlorobenzene	20	U	20		ug/L			11/29/11 04:00	20
1,3-Dichlorobenzene	20	U	20		ug/L			11/29/11 04:00	20
1,4-Dichlorobenzene	20	U	20		ug/L			11/29/11 04:00	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/29/11 04:00*	*20*
Dibromofluoromethane	*92*		*70 - 130*		*11/29/11 04:00*	*20*
Toluene-d8 (Surr)	*106*		*70 - 130*		*11/29/11 04:00*	*20*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			11/30/11 19:40	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 19:40	1
Methane	12		0.58		ug/L			11/30/11 19:40	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	48		0.050		mg/L		11/28/11 09:14	12/01/11 06:20	1
Manganese	1.6		0.010		mg/L		11/28/11 09:14	12/01/11 06:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	320		5.0		mg/L			12/01/11 13:10	5
Nitrate as N	0.24		0.050		mg/L			11/17/11 17:09	1
Sulfate	670		100		mg/L			12/06/11 16:36	20
Total Organic Carbon	3.5		1.0		mg/L			11/29/11 15:43	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	470		5.0		mg/L			11/17/11 19:20	1
Carbon Dioxide, Free	95		5.0		mg/L			11/17/11 19:20	1

DEC 21 2011
TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-5D-F(0.2)-1111
Date Collected: 11/16/11 11:10
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-8
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	49		0.050		mg/L		11/28/11 09:14	12/01/11 06:25	1
Manganese, Dissolved	1.7		0.010		mg/L		11/28/11 09:14	12/01/11 06:25	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	4.1		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011
TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-5D-1111

Lab Sample ID: 680-74457-9

Date Collected: 11/16/11 14:44
Date Received: 11/17/11 09:22

Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.0	U	2.0		ug/L			11/30/11 02:29	2
Chlorobenzene	310		2.0		ug/L			11/30/11 02:29	2
1,2-Dichlorobenzene	2.0	U	2.0		ug/L			11/30/11 02:29	2
1,3-Dichlorobenzene	2.0	U	2.0		ug/L			11/30/11 02:29	2
1,4-Dichlorobenzene	2.8		2.0		ug/L			11/30/11 02:29	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*105*		*70 - 130*		*11/30/11 02:29*	*2*
Dibromofluoromethane	*90*		*70 - 130*		*11/30/11 02:29*	*2*
Toluene-d8 (Surr)	*106*		*70 - 130*		*11/30/11 02:29*	*2*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	12		1.1		ug/L			11/30/11 19:53	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 19:53	1
Methane	5500		0.58		ug/L			11/30/11 19:53	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	13		0.050		mg/L		11/28/11 09:14	12/01/11 06:30	1
Manganese	0.39		0.010		mg/L		11/28/11 09:14	12/01/11 06:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	290		5.0		mg/L			12/01/11 13:10	5
Nitrate as N	0.050	U	0.050		mg/L			11/17/11 17:10	1
Sulfate	5.0	U	5.0		mg/L			12/06/11 15:55	1
Total Organic Carbon	5.7		1.0		mg/L			11/29/11 15:57	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	780		5.0		mg/L			11/17/11 19:10	1
Carbon Dioxide, Free	53		5.0		mg/L			11/17/11 19:10	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-5D-F(0.2)-1111
Date Collected: 11/16/11 14:45
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-10
Matrix: Water

7

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	14		0.050		mg/L		11/28/11 09:14	12/01/11 06:36	1
Manganese, Dissolved	0.41		0.010		mg/L		11/28/11 09:14	12/01/11 06:36	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	5.9		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: 4Q11LTM Trip Blank #2
Date Collected: 11/16/11 00:00
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/28/11 23:36	1
Chlorobenzene	1.0	U	1.0		ug/L			11/28/11 23:36	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 23:36	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 23:36	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 23:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*101*		*70 - 130*		*11/28/11 23:36*	*1*
Dibromofluoromethane	*96*		*70 - 130*		*11/28/11 23:36*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*		*11/28/11 23:36*	*1*

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: 4Q11LTM Trip Blank #3
Date Collected: 11/16/11 00:00
Date Received: 11/17/11 09:22

Lab Sample ID: 680-74457-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/29/11 00:05	1
Chlorobenzene	1.0	U	1.0		ug/L			11/29/11 00:05	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 00:05	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 00:05	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/29/11 00:05*	*1*
Dibromofluoromethane	*96*		*70 - 130*		*11/29/11 00:05*	*1*
Toluene-d8 (Surr)	*103*		*70 - 130*		*11/29/11 00:05*	*1*

7

DEC 21 2011

TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-4D-1111

Lab Sample ID: 680-74529-1

Date Collected: 11/17/11 13:45
Date Received: 11/18/11 09:32

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**6.0**		2.0		ug/L			11/30/11 14:08	2
Chlorobenzene	**150**		2.0		ug/L			11/30/11 14:08	2
1,2-Dichlorobenzene	**2.6**		2.0		ug/L			11/30/11 14:08	2
1,3-Dichlorobenzene	2.0	U	2.0		ug/L			11/30/11 14:08	2
1,4-Dichlorobenzene	**2.7**		2.0		ug/L			11/30/11 14:08	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*70 - 130*		*11/30/11 14:08*	*2*
Dibromofluoromethane	*95*		*70 - 130*		*11/30/11 14:08*	*2*
Toluene-d8 (Surr)	*103*		*70 - 130*		*11/30/11 14:08*	*2*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	**14**		1.1		ug/L			11/30/11 20:44	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 20:44	1
Methane	**8500**		0.58		ug/L			11/30/11 20:44	1

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**13**		0.050		mg/L		11/28/11 09:56	11/29/11 22:01	1
Manganese	**0.31**		0.010		mg/L		11/28/11 09:56	11/29/11 22:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**300**		5.0		mg/L			12/01/11 13:10	5
Nitrate as N	0.050	U	0.050		mg/L			11/18/11 15:16	1
Sulfate	50	U	50		mg/L			12/08/11 13:07	10
Total Organic Carbon	**8.0**		1.0		mg/L			11/29/11 16:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**770**		5.0		mg/L			11/19/11 17:02	1
Carbon Dioxide, Free	**47**		5.0		mg/L			11/19/11 17:02	1

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-4D-F(0.2)-1111

Lab Sample ID: 680-74529-2

Date Collected: 11/17/11 13:45
Date Received: 11/18/11 09:32

Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	13		0.050		mg/L		11/28/11 09:56	11/29/11 22:23	1
Manganese, Dissolved	0.31		0.010		mg/L		11/28/11 09:56	11/29/11 22:23	1

7

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	7.8		1.0		mg/L			11/22/11 10:59	1

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: 4Q11 LTM Trip Blank #4
Date Collected: 11/17/11 00:00
Date Received: 11/18/11 09:32

Lab Sample ID: 680-74529-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/21/11 15:01	1
Chlorobenzene	1.0	U	1.0		ug/L			11/21/11 15:01	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 15:01	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 15:01	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*104*		*70 - 130*		*11/21/11 15:01*	*1*
Dibromofluoromethane	*99*		*70 - 130*		*11/21/11 15:01*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*11/21/11 15:01*	*1*

7

DEC 21 2011

TestAmerica Savannah

Client Sample Results

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-4D-1111-EB

Lab Sample ID: 680-74529-4

Date Collected: 11/17/11 12:10
Date Received: 11/18/11 09:32

Matrix: Water

7

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/30/11 12:26	1
Chlorobenzene	1.0	U	1.0		ug/L			11/30/11 12:26	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 12:26	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 12:26	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*98*		*70 - 130*		*11/30/11 12:26*	*1*
Dibromofluoromethane	*98*		*70 - 130*		*11/30/11 12:26*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*		*11/30/11 12:26*	*1*

DEC 21 2011

TestAmerica Savannah

Surrogate Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	BFB (70-130)	DBFM (70-130)	TOL (70-130)
680-74408-1	BSA-MW-3D-1111	101	99	103
680-74408-3	CPA-MW-2D-1111	102	97	106
660-74408-5	CPA-MW-2D-1111-AD	101	97	105
660-74408-6	CPA-MW-1D-1111	102	100	105
680-74408-8	BSA-MW-1S-1111	103	101	106
680-74408-10	4Q11 LTM Trip Blank #1	103	99	104
680-74457-1	BSA-MW-4D-1111	103	94	104
880-74457-3	BSA-MW-2D-1111	102	97	107
860-74457-5	CPA-MW-3D-1111	100	92	107
680-74457-7	CPA-MW-5D-1111	103	92	106
880-74457-7 MS	CPA-MW-5D-1111	104	99	105
680-74457-7 MSD	CPA-MW-5D-1111	103	99	106
680-74457-9	BSA-MW-5D-1111	105	90	106
680-74457-11	4Q11LTM Trip Blank #2	101	96	104
680-74457-12	4Q11LTM Trip Blank #3	103	96	103
680-74529-1	CPA-MW-4D-1111	103	95	103
680-74529-3	4Q11 LTM Trip Blank #4	104	99	101
680-74529-4	CPA-MW-4D-1111-EB	98	98	104
LCS 880-221574/3	Lab Control Sample	98	100	100
LCS 680-221987/3	Lab Control Sample	101	107	102
LCS 680-222080/3	Lab Control Sample	101	104	101
LCS 680-222233/3	Lab Control Sample	101	107	103
LCS 680-222244/3	Lab Control Sample	100	101	101
LCS 680-222253/5	Lab Control Sample	101	103	103
LCSD 680-221574/4	Lab Control Sample Dup	98	101	99
LCSD 880-221987/4	Lab Control Sample Dup	99	100	101
LCSD 680-222080/4	Lab Control Sample Dup	102	103	103
LCSD 680-222233/4	Lab Control Sample Dup	101	102	102
LCSD 680-222244/4	Lab Control Sample Dup	101	99	100
LCSD 680-222253/6	Lab Control Sample Dup	99	104	100
MB 680-221574/6	Method Blank	101	99	99
MB 680-221987/6	Method Blank	102	97	104
MB 680-222080/6	Method Blank	102	96	106
MB 680-222233/6	Method Blank	102	95	105
MB 680-222244/6	Method Blank	102	94	103
MB 680-222253/8	Method Blank	103	96	105

Surrogate Legend

BFB = 4-Bromofluorobenzene
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)

8

DEC 21 2011

TestAmerica Savannah

US EPA ARCHIVE DOCUMENT

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-221574/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221574

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/21/11 13:33	1
Chlorobenzene	1.0	U	1.0		ug/L			11/21/11 13:33	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 13:33	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 13:33	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/21/11 13:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*101*		*70 - 130*		*11/21/11 13:33*	*1*
Dibromofluoromethane	*99*		*70 - 130*		*11/21/11 13:33*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*11/21/11 13:33*	*1*

9

Lab Sample ID: LCS 680-221574/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221574

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.3		ug/L		97	70 - 130
Chlorobenzene	50.0	48.6		ug/L		97	70 - 130
1,2-Dichlorobenzene	50.0	49.8		ug/L		100	70 - 130
1,3-Dichlorobenzene	50.0	49.7		ug/L		99	70 - 130
1,4-Dichlorobenzene	50.0	49.4		ug/L		99	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*70 - 130*
Dibromofluoromethane	*100*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

Lab Sample ID: LCSD 680-221574/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221574

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	48.5		ug/L		97	70 - 130	1	30
Chlorobenzene	50.0	49.1		ug/L		98	70 - 130	1	30
1,2-Dichlorobenzene	50.0	50.6		ug/L		101	70 - 130	2	30
1,3-Dichlorobenzene	50.0	50.3		ug/L		101	70 - 130	1	30
1,4-Dichlorobenzene	50.0	50.1		ug/L		100	70 - 130	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*70 - 130*
Dibromofluoromethane	*101*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

Lab Sample ID: MB 680-221987/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221987

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/28/11 09:57	1

DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-221987/6
Matrix: Water
Analysis Batch: 221987

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	1.0	U	1.0		ug/L			11/28/11 09:57	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 09:57	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 09:57	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 09:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/28/11 09:57*	*1*
Dibromofluoromethane	*97*		*70 - 130*		*11/28/11 09:57*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*		*11/28/11 09:57*	*1*

9

Lab Sample ID: LCS 680-221987/3
Matrix: Water
Analysis Batch: 221987

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.3		ug/L		97	70 - 130
Chlorobenzene	50.0	50.6		ug/L		101	70 - 130
1,2-Dichlorobenzene	50.0	50.7		ug/L		101	70 - 130
1,3-Dichlorobenzene	50.0	51.0		ug/L		102	70 - 130
1,4-Dichlorobenzene	50.0	51.1		ug/L		102	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*70 - 130*
Dibromofluoromethane	*107*		*70 - 130*
Toluene-d8 (Surr)	*102*		*70 - 130*

Lab Sample ID: LCSD 680-221987/4
Matrix: Water
Analysis Batch: 221987

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	49.1		ug/L		98	70 - 130	2	30
Chlorobenzene	50.0	49.8		ug/L		100	70 - 130	2	30
1,2-Dichlorobenzene	50.0	50.1		ug/L		100	70 - 130	1	30
1,3-Dichlorobenzene	50.0	50.2		ug/L		100	70 - 130	2	30
1,4-Dichlorobenzene	50.0	50.9		ug/L		102	70 - 130	0	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*70 - 130*
Dibromofluoromethane	*100*		*70 - 130*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: MB 680-222080/6
Matrix: Water
Analysis Batch: 222080

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/28/11 22:08	1
Chlorobenzene	1.0	U	1.0		ug/L			11/28/11 22:08	1

DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-222080/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 22:08	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 22:08	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/28/11 22:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/28/11 22:08*	*1*
Dibromofluoromethane	*96*		*70 - 130*		*11/28/11 22:08*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*		*11/28/11 22:08*	*1*

9

Lab Sample ID: LCS 680-222080/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.7		ug/L		93	70 - 130
Chlorobenzene	50.0	50.4		ug/L		101	70 - 130
1,2-Dichlorobenzene	50.0	50.7		ug/L		101	70 - 130
1,3-Dichlorobenzene	50.0	50.7		ug/L		101	70 - 130
1,4-Dichlorobenzene	50.0	50.1		ug/L		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*70 - 130*
Dibromofluoromethane	*104*		*70 - 130*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 680-222080/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	48.7		ug/L		97	70 - 130	4	30
Chlorobenzene	50.0	52.3		ug/L		105	70 - 130	4	30
1,2-Dichlorobenzene	50.0	53.4		ug/L		107	70 - 130	5	30
1,3-Dichlorobenzene	50.0	53.2		ug/L		106	70 - 130	5	30
1,4-Dichlorobenzene	50.0	53.4		ug/L		107	70 - 130	6	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*102*		*70 - 130*
Dibromofluoromethane	*103*		*70 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*

Lab Sample ID: 680-74457-7 MS — **Client Sample ID: CPA-MW-5D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20	U	1000	967		ug/L		97	70 - 130
Chlorobenzene	1500		1000	2350		ug/L		83	70 - 130
1,2-Dichlorobenzene	20	U	1000	1070		ug/L		107	70 - 130

DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-74457-7 MS — **Client Sample ID: CPA-MW-5D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	20	U	1000	1040		ug/L		104	70 - 130
1,4-Dichlorobenzene	20	U	1000	1040		ug/L		104	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*104*		*70 - 130*
Dibromofluoromethane	*99*		*70 - 130*
Toluene-d8 (Surr)	*105*		*70 - 130*

Lab Sample ID: 680-74457-7 MSD — **Client Sample ID: CPA-MW-5D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222080

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20	U	1000	977		ug/L		98	70 - 130	1	30
Chlorobenzene	1500		1000	2350		ug/L		83	70 - 130	0	30
1,2-Dichlorobenzene	20	U	1000	1090		ug/L		109	70 - 130	2	30
1,3-Dichlorobenzene	20	U	1000	1040		ug/L		104	70 - 130	1	30
1,4-Dichlorobenzene	20	U	1000	1060		ug/L		106	70 - 130	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*103*		*70 - 130*
Dibromofluoromethane	*99*		*70 - 130*
Toluene-d8 (Surr)	*106*		*70 - 130*

Lab Sample ID: MB 680-222233/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222233

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/29/11 22:36	1
Chlorobenzene	1.0	U	1.0		ug/L			11/29/11 22:36	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 22:36	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 22:36	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/29/11 22:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/29/11 22:36*	*1*
Dibromofluoromethane	*95*		*70 - 130*		*11/29/11 22:36*	*1*
Toluene-d8 (Surr)	*105*		*70 - 130*		*11/29/11 22:36*	*1*

Lab Sample ID: LCS 680-222233/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222233

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	50.4		ug/L		101	70 - 130
Chlorobenzene	50.0	51.8		ug/L		104	70 - 130
1,2-Dichlorobenzene	50.0	52.1		ug/L		104	70 - 130
1,3-Dichlorobenzene	50.0	51.5		ug/L		103	70 - 130

DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-222233/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222233

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	50.0	51.6		ug/L		103	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*70 - 130*
Dibromofluoromethane	*107*		*70 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*

9

Lab Sample ID: LCSD 680-222233/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222233

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	48.7		ug/L		97	70 - 130	3	30
Chlorobenzene	50.0	51.2		ug/L		102	70 - 130	1	30
1,2-Dichlorobenzene	50.0	51.1		ug/L		102	70 - 130	2	30
1,3-Dichlorobenzene	50.0	51.0		ug/L		102	70 - 130	1	30
1,4-Dichlorobenzene	50.0	50.4		ug/L		101	70 - 130	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*70 - 130*
Dibromofluoromethane	*102*		*70 - 130*
Toluene-d8 (Surr)	*102*		*70 - 130*

Lab Sample ID: MB 680-222244/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222244

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/30/11 10:45	1
Chlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:45	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:45	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:45	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*70 - 130*		*11/30/11 10:45*	*1*
Dibromofluoromethane	*94*		*70 - 130*		*11/30/11 10:45*	*1*
Toluene-d8 (Surr)	*103*		*70 - 130*		*11/30/11 10:45*	*1*

Lab Sample ID: LCS 680-222244/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	49.6		ug/L		99	70 - 130
Chlorobenzene	50.0	47.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	50.0	48.9		ug/L		98	70 - 130
1,3-Dichlorobenzene	50.0	48.5		ug/L		97	70 - 130
1,4-Dichlorobenzene	50.0	48.8		ug/L		98	70 - 130

DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-222244/3
Matrix: Water
Analysis Batch: 222244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	100		70 - 130
Dibromofluoromethane	101		70 - 130
Toluene-d8 (Surr)	101		70 - 130

Lab Sample ID: LCSD 680-222244/4
Matrix: Water
Analysis Batch: 222244

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

9

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	49.0		ug/L		98	70 - 130	1	30
Chlorobenzene	50.0	48.4		ug/L		97	70 - 130	1	30
1,2-Dichlorobenzene	50.0	48.9		ug/L		98	70 - 130	0	30
1,3-Dichlorobenzene	50.0	48.2		ug/L		96	70 - 130	0	30
1,4-Dichlorobenzene	50.0	48.3		ug/L		97	70 - 130	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	101		70 - 130
Dibromofluoromethane	99		70 - 130
Toluene-d8 (Surr)	100		70 - 130

Lab Sample ID: MB 680-222253/8
Matrix: Water
Analysis Batch: 222253

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			11/30/11 10:31	1
Chlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:31	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:31	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:31	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			11/30/11 10:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	103		70 - 130		11/30/11 10:31	1
Dibromofluoromethane	96		70 - 130		11/30/11 10:31	1
Toluene-d8 (Surr)	105		70 - 130		11/30/11 10:31	1

Lab Sample ID: LCS 680-222253/5
Matrix: Water
Analysis Batch: 222253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	49.9		ug/L		100	70 - 130
Chlorobenzene	50.0	50.7		ug/L		101	70 - 130
1,2-Dichlorobenzene	50.0	49.8		ug/L		100	70 - 130
1,3-Dichlorobenzene	50.0	50.3		ug/L		101	70 - 130
1,4-Dichlorobenzene	50.0	50.6		ug/L		101	70 - 130

TestAmerica Savannah
DEC 21 2011

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-222253/5
Matrix: Water
Analysis Batch: 222253

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*70 - 130*
Dibromofluoromethane	*103*		*70 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*

Lab Sample ID: LCSD 680-222253/6
Matrix: Water
Analysis Batch: 222253

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	48.5		ug/L		97	70 - 130	3	30
Chlorobenzene	50.0	48.5		ug/L		97	70 - 130	4	30
1,2-Dichlorobenzene	50.0	48.0		ug/L		96	70 - 130	4	30
1,3-Dichlorobenzene	50.0	48.3		ug/L		97	70 - 130	4	30
1,4-Dichlorobenzene	50.0	47.6		ug/L		95	70 - 130	6	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*70 - 130*
Dibromofluoromethane	*104*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

9

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-221209/4
Matrix: Water
Analysis Batch: 221209

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			11/16/11 16:15	1
Ethylene	1.0	U	1.0		ug/L			11/16/11 16:15	1
Methane	0.58	U	0.58		ug/L			11/16/11 16:15	1

Lab Sample ID: LCS 680-221209/2
Matrix: Water
Analysis Batch: 221209

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	282	309		ug/L		109	75 - 125
Ethylene	271	302		ug/L		112	75 - 125
Methane	153	172		ug/L		112	75 - 125

Lab Sample ID: LCSD 680-221209/3
Matrix: Water
Analysis Batch: 221209

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	282	311		ug/L		110	75 - 125	1	30
Ethylene	271	300		ug/L		111	75 - 125	1	30
Methane	153	175		ug/L		114	75 - 125	2	30

DEC 21 2011

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: MB 680-221214/4
Matrix: Water
Analysis Batch: 221214

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.58	U	0.58		ug/L			11/16/11 16:15	1

Lab Sample ID: LCS 680-221214/2
Matrix: Water
Analysis Batch: 221214

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	1910	2100		ug/L		110	75 - 125

Lab Sample ID: LCSD 680-221214/3
Matrix: Water
Analysis Batch: 221214

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	1910	2030		ug/L		106	75 - 125	4	30

Lab Sample ID: MB 680-222315/2
Matrix: Water
Analysis Batch: 222315

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			11/30/11 17:38	1
Ethylene	1.0	U	1.0		ug/L			11/30/11 17:38	1
Methane	0.58	U	0.58		ug/L			11/30/11 17:38	1

Lab Sample ID: LCS 680-222315/3
Matrix: Water
Analysis Batch: 222315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	282	329		ug/L		117	75 - 125
Ethylene	271	317		ug/L		117	75 - 125
Methane	153	185		ug/L		121	75 - 125

Lab Sample ID: LCSD 680-222315/4
Matrix: Water
Analysis Batch: 222315

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	282	309		ug/L		109	75 - 125	6	30
Ethylene	271	301		ug/L		111	75 - 125	5	30
Methane	153	173		ug/L		113	75 - 125	7	30

Lab Sample ID: MB 680-222317/2
Matrix: Water
Analysis Batch: 222317

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.58	U	0.58		ug/L			11/30/11 17:38	1

TestAmerica Savannah

DEC 21 2011

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 680-222317/3
Matrix: Water
Analysis Batch: 222317

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	1910	1680		ug/L		88	75 - 125

Lab Sample ID: LCSD 680-222317/4
Matrix: Water
Analysis Batch: 222317

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	1910	1880		ug/L		98	75 - 125	11	30

9

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 680-221182/1-A
Matrix: Water
Analysis Batch: 221766

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 221182

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		11/17/11 08:45	11/23/11 01:54	1
Iron, Dissolved	0.050	U	0.050		mg/L		11/17/11 08:45	11/23/11 01:54	1
Manganese	0.010	U	0.010		mg/L		11/17/11 08:45	11/23/11 01:54	1
Manganese, Dissolved	0.010	U	0.010		mg/L		11/17/11 08:45	11/23/11 01:54	1

Lab Sample ID: LCS 680-221182/2-A
Matrix: Water
Analysis Batch: 221766

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 221182

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	1.00	1.04		mg/L		104	75 - 125
Iron, Dissolved	1.00	1.04		mg/L		104	75 - 125
Manganese	0.500	0.514		mg/L		103	75 - 125
Manganese, Dissolved	0.500	0.514		mg/L		103	75 - 125

Lab Sample ID: MB 680-221583/1-A
Matrix: Water
Analysis Batch: 221766

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 221583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		11/22/11 08:44	11/22/11 23:08	1
Iron, Dissolved	0.050	U	0.050		mg/L		11/22/11 08:44	11/22/11 23:08	1
Manganese	0.010	U	0.010		mg/L		11/22/11 08:44	11/22/11 23:08	1
Manganese, Dissolved	0.010	U	0.010		mg/L		11/22/11 08:44	11/22/11 23:08	1

Lab Sample ID: LCS 680-221583/2-A
Matrix: Water
Analysis Batch: 221766

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 221583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	1.00	1.06		mg/L		106	75 - 125
Iron, Dissolved	1.00	1.06		mg/L		106	75 - 125
Manganese	0.500	0.524		mg/L		105	75 - 125
Manganese, Dissolved	0.500	0.524		mg/L		105	75 - 125

DEC 21 2011

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 680-221899/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222353 — **Prep Batch: 221899**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		11/28/11 09:14	12/01/11 05:17	1
Iron, Dissolved	0.050	U	0.050		mg/L		11/28/11 09:14	12/01/11 05:17	1
Manganese	0.010	U	0.010		mg/L		11/28/11 09:14	12/01/11 05:17	1
Manganese, Dissolved	0.010	U	0.010		mg/L		11/28/11 09:14	12/01/11 05:17	1

Lab Sample ID: LCS 680-221899/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222353 — **Prep Batch: 221899**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	1.00	1.02		mg/L		102	75 - 125
Iron, Dissolved	1.00	1.02		mg/L		102	75 - 125
Manganese	0.500	0.517		mg/L		103	75 - 125
Manganese, Dissolved	0.500	0.517		mg/L		103	75 - 125

Lab Sample ID: MB 680-221909/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222208 — **Prep Batch: 221909**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		11/28/11 09:56	11/29/11 21:52	1
Iron, Dissolved	0.050	U	0.050		mg/L		11/28/11 09:56	11/29/11 21:52	1
Manganese	0.010	U	0.010		mg/L		11/28/11 09:56	11/29/11 21:52	1
Manganese, Dissolved	0.010	U	0.010		mg/L		11/28/11 09:56	11/29/11 21:52	1

Lab Sample ID: LCS 680-221909/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222208 — **Prep Batch: 221909**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	1.00	1.13		mg/L		113	75 - 125
Iron, Dissolved	1.00	1.13		mg/L		113	75 - 125
Manganese	0.500	0.566		mg/L		113	75 - 125
Manganese, Dissolved	0.500	0.566		mg/L		113	75 - 125

Lab Sample ID: 680-74529-1 MS — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222208 — **Prep Batch: 221909**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	13		1.00	13.8	4	mg/L		90	75 - 125
Manganese	0.31		0.500	0.840		mg/L		106	75 - 125

Lab Sample ID: 680-74529-1 MSD — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 222208 — **Prep Batch: 221909**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	13		1.00	14.1	4	mg/L		116	75 - 125	2	20
Manganese	0.31		0.500	0.854		mg/L		109	75 - 125	2	20

DEC 21 2011

Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-221191/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221191

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			11/16/11 17:13	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			11/16/11 17:13	1

Lab Sample ID: LCS 680-221191/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221191

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	230	211		mg/L		92	80 - 120

Lab Sample ID: LCSD 680-221191/32 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221191

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	230	223		mg/L		97	80 - 120	5	30

Lab Sample ID: 680-74408-3 DU — **Client Sample ID: CPA-MW-2D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221191

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	580		588		mg/L		2	30
Carbon Dioxide, Free	31		30.7		mg/L		2	30

Lab Sample ID: MB 680-221193/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221193

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			11/16/11 20:46	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			11/16/11 20:46	1

Lab Sample ID: LCS 680-221193/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221193

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	230	209		mg/L		91	80 - 120

Lab Sample ID: LCSD 680-221193/22 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221193

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	230	210		mg/L		91	80 - 120	1	30

9

DEC 21 2011

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: 680-74408-1 DU — **Client Sample ID: BSA-MW-3D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221193

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	540		521		mg/L		3	30
Carbon Dioxide, Free	30		27.4		mg/L		8	30

Lab Sample ID: MB 680-221288/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221288

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			11/17/11 18:34	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			11/17/11 18:34	1

Lab Sample ID: LCS 680-221288/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221288

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	230	209		mg/L		91	80 - 120

Lab Sample ID: LCSD 680-221288/32 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221288

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	230	210		mg/L		91	80 - 120	0	30

Lab Sample ID: MB 680-221478/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221478

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			11/19/11 14:37	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			11/19/11 14:37	1

Lab Sample ID: LCS 680-221478/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221478

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	183	163		mg/L		89	80 - 120

Lab Sample ID: LCSD 680-221478/32 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221478

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	183	163		mg/L		89	80 - 120	0	30

DEC 21 2011

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: 680-74529-1 DU — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221478

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	770		776		mg/L		0.4	30
Carbon Dioxide, Free	47		41.7		mg/L		11	30

Method: 325.2 - Chloride

Lab Sample ID: MB 680-221181/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221181

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			11/16/11 16:50	1

Lab Sample ID: LCS 680-221181/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.5		mg/L		101	85 - 115

Lab Sample ID: MB 680-222364/18 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			12/01/11 12:46	1

Lab Sample ID: LCS 680-222364/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.8		mg/L		102	85 - 115

Lab Sample ID: 680-74457-1 MS — **Client Sample ID: BSA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	110		50.0	153		mg/L		87	85 - 115

Lab Sample ID: 680-74457-1 MSD — **Client Sample ID: BSA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	110		50.0	150	F	mg/L		80	85 - 115	2	30

DEC 21 2011

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-221272/14 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221272

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			11/16/11 14:50	1

Lab Sample ID: LCS 680-221272/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.497	0.448		mg/L		90	90 - 110
Nitrate Nitrite as N	0.998	0.948		mg/L		95	90 - 110
Nitrite as N	0.502	0.500		mg/L		100	90 - 110

Lab Sample ID: MB 680-222057/14 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			11/18/11 14:59	1

Lab Sample ID: LCS 680-222057/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.497	0.524		mg/L		105	90 - 110
Nitrate Nitrite as N	0.998	1.02		mg/L		102	90 - 110
Nitrite as N	0.502	0.494		mg/L		98	90 - 110

Lab Sample ID: 680-74529-1 DU — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222057

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	0.050	U	0.050	U	mg/L		NC	10

Lab Sample ID: MB 680-222211/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222211

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			11/17/11 17:00	1

Lab Sample ID: LCS 680-222211/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222211

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.497	0.531		mg/L		107	90 - 110
Nitrate Nitrite as N	0.998	1.07		mg/L		107	90 - 110
Nitrite as N	0.502	0.538		mg/L		107	90 - 110

9

DEC 21 2011

Method: 375.4 - Sulfate

Lab Sample ID: MB 680-222819/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222819

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			12/06/11 15:46	1

Lab Sample ID: LCS 680-222819/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222819

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	21.1		mg/L		106	75 - 125

Lab Sample ID: 680-74408-8 DU — **Client Sample ID: BSA-MW-1S-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222819

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	5.0	U	5.0	U	mg/L		NC	30

Lab Sample ID: MB 680-223009/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 223009

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			12/08/11 11:23	1

Lab Sample ID: LCS 680-223009/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 223009

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	20.1		mg/L		101	75 - 125

Lab Sample ID: 680-74529-1 MS — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 223009

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	50	U	200	193		mg/L		97	75 - 125

Lab Sample ID: 680-74529-1 MSD — **Client Sample ID: CPA-MW-4D-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 223009

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	50	U	200	194		mg/L		97	75 - 125	0	30

9

DEC 21 2011

Method: 415.1 - DOC

Lab Sample ID: MB 680-221730/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 221730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			11/22/11 10:59	1

Lab Sample ID: LCS 680-221730/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 221730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	20.0	18.0		mg/L		90	80 - 120

Lab Sample ID: 680-74408-2 MS — **Client Sample ID: BSA-MW-3D-F(0.2)-1111**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 221730

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	3.7		20.0	23.4		mg/L		98	80 - 120

Lab Sample ID: 680-74408-2 MSD — **Client Sample ID: BSA-MW-3D-F(0.2)-1111**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 221730

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dissolved Organic Carbon	3.7		20.0	22.9		mg/L		96	80 - 120	2	20

Lab Sample ID: 680-74529-2 DU — **Client Sample ID: CPA-MW-4D-F(0.2)-1111**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 221730

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Dissolved Organic Carbon	7.8		7.73		mg/L		0.6	30

Method: 415.1 - TOC

Lab Sample ID: MB 680-221351/26 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221351

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			11/17/11 17:51	1

Lab Sample ID: LCS 680-221351/31 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	20.0	20.4		mg/L		102	80 - 120

DEC 21 2011

Method: 415.1 - TOC (Continued)

Lab Sample ID: 680-74408-8 DU — **Client Sample ID: BSA-MW-1S-1111**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 221351

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	6.6		6.44		mg/L		3	25

Lab Sample ID: MB 680-222156/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222156

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			11/29/11 11:07	1

Lab Sample ID: LCS 680-222156/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 222156

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	20.0	19.7		mg/L		99	80 - 120

9

DEC 21 2011

QC Association Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

GC/MS VOA

Analysis Batch: 221574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-3	4Q11 LTM Trip Blank #4	Total/NA	Water	8260B	
LCS 680-221574/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-221574/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-221574/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 221987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	8260B	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	8260B	
680-74408-5	CPA-MW-2D-1111-AD	Total/NA	Water	8260B	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	8260B	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	8260B	
680-74408-10	4Q11 LTM Trip Blank #1	Total/NA	Water	8260B	
LCS 680-221987/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-221987/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-221987/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 222080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	8260B	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	8260B	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	8260B	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	8260B	
680-74457-7 MS	CPA-MW-5D-1111	Total/NA	Water	8260B	
680-74457-7 MSD	CPA-MW-5D-1111	Total/NA	Water	8260B	
680-74457-11	4Q11LTM Trip Blank #2	Total/NA	Water	8260B	
680-74457-12	4Q11LTM Trip Blank #3	Total/NA	Water	8260B	
LCS 680-222080/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-222080/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-222080/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 222233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	8260B	
LCS 680-222233/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-222233/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-222233/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 222244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	8280B	
LCS 680-222244/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-222244/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-222244/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 222253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-4	CPA-MW-4D-1111-EB	Total/NA	Water	8260B	
LCS 680-222253/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-222253/6	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-222253/8	Method Blank	Total/NA	Water	8260B	

10

TestAmerica Savannah

DEC 21 2011

QC Association Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

GC VOA

Analysis Batch: 221209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	RSK-175	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	RSK-175	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	RSK-175	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	RSK-175	
LCS 680-221209/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-221209/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-221209/4	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 221214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	RSK-175	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	RSK-175	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	RSK-175	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	RSK-175	
LCS 680-221214/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-221214/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-221214/4	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 222315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	RSK-175	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	RSK-175	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	RSK-175	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	RSK-175	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	RSK-175	
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	RSK-175	
LCS 680-222315/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-222315/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-222315/2	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 222317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	RSK-175	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	RSK-175	
660-74457-9	BSA-MW-5D-1111	Total/NA	Water	RSK-175	
660-74529-1	CPA-MW-4D-1111	Total/NA	Water	RSK-175	
LCS 680-222317/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-222317/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-222317/2	Method Blank	Total/NA	Water	RSK-175	

Metals

Prep Batch: 221182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total Recoverable	Water	3005A	
680-74408-2	BSA-MW-3D-F(0.2)-1111	Dissolved	Water	3005A	
680-74408-3	CPA-MW-2D-1111	Total Recoverable	Water	3005A	
680-74408-4	CPA-MW-2D-F(0.2)-1111	Dissolved	Water	3005A	
680-74408-6	CPA-MW-1D-1111	Total Recoverable	Water	3005A	
680-74408-7	CPA-MW-1D-F(0.2)-1111	Dissolved	Water	3005A	
680-74408-8	BSA-MW-1S-1111	Total Recoverable	Water	3005A	
680-74408-9	BSA-MW-1S-F(0.2)-1111	Dissolved	Water	3005A	

TestAmerica Savannah

DEC 21 2011

Metals (Continued)

Prep Batch: 221182 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-221182/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-221182/1-A	Method Blank	Total Recoverable	Water	3005A	

Prep Batch: 221583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total Recoverable	Water	3005A	
680-74457-2	BSA-MW-4D-F(0.2)-1111	Dissolved	Water	3005A	
680-74457-3	BSA-MW-2D-1111	Total Recoverable	Water	3005A	
LCS 680-221583/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-221583/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 221766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total Recoverable	Water	6010B	221182
680-74408-2	BSA-MW-3D-F(0.2)-1111	Dissolved	Water	6010B	221182
680-74408-3	CPA-MW-2D-1111	Total Recoverable	Water	6010B	221182
680-74408-4	CPA-MW-2D-F(0.2)-1111	Dissolved	Water	6010B	221182
680-74408-6	CPA-MW-1D-1111	Total Recoverable	Water	6010B	221182
680-74408-7	CPA-MW-1D-F(0.2)-1111	Dissolved	Water	6010B	221182
680-74408-8	BSA-MW-1S-1111	Total Recoverable	Water	6010B	221182
680-74408-9	BSA-MW-1S-F(0.2)-1111	Dissolved	Water	6010B	221182
680-74457-1	BSA-MW-4D-1111	Total Recoverable	Water	6010B	221583
680-74457-2	BSA-MW-4D-F(0.2)-1111	Dissolved	Water	6010B	221583
680-74457-3	BSA-MW-2D-1111	Total Recoverable	Water	6010B	221583
LCS 680-221182/2-A	Lab Control Sample	Total Recoverable	Water	6010B	221182
LCS 680-221583/2-A	Lab Control Sample	Total Recoverable	Water	6010B	221583
MB 680-221182/1-A	Method Blank	Total Recoverable	Water	6010B	221182
MB 680-221583/1-A	Method Blank	Total Recoverable	Water	6010B	221583

Prep Batch: 221899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-4	BSA-MW-2D-F(0.2)-1111	Dissolved	Water	3005A	
680-74457-5	CPA-MW-3D-1111	Total Recoverable	Water	3005A	
680-74457-6	CPA-MW-3D-F(0.2)-1111	Dissolved	Water	3005A	
680-74457-7	CPA-MW-5D-1111	Total Recoverable	Water	3005A	
680-74457-8	CPA-MW-5D-F(0.2)-1111	Dissolved	Water	3005A	
680-74457-9	BSA-MW-5D-1111	Total Recoverable	Water	3005A	
680-74457-10	BSA-MW-5D-F(0.2)-1111	Dissolved	Water	3005A	
LCS 680-221899/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-221899/1-A	Method Blank	Total Recoverable	Water	3005A	

Prep Batch: 221909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-1	CPA-MW-4D-1111	Total Recoverable	Water	3005A	
680-74529-1 MS	CPA-MW-4D-1111	Total Recoverable	Water	3005A	
680-74529-1 MSD	CPA-MW-4D-1111	Total Recoverable	Water	3005A	
680-74529-2	CPA-MW-4D-F(0.2)-1111	Dissolved	Water	3005A	
LCS 680-221909/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-221909/1-A	Method Blank	Total Recoverable	Water	3005A	

DEC 21 2011

Metals (Continued)

Analysis Batch: 222208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-74529-1	CPA-MW-4D-1111	Total Recoverable	Water	6010B	221909
880-74529-1 MS	CPA-MW-4D-1111	Total Recoverable	Water	6010B	221909
680-74529-1 MSD	CPA-MW-4D-1111	Total Recoverable	Water	6010B	221909
680-74529-2	CPA-MW-4D-F(0.2)-1111	Dissolved	Water	6010B	221909
LCS 680-221909/2-A	Lab Control Sample	Total Recoverable	Water	6010B	221909
MB 680-221909/1-A	Method Blank	Total Recoverable	Water	6010B	221909

Analysis Batch: 222353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-4	BSA-MW-2D-F(0.2)-1111	Dissolved	Water	6010B	221899
680-74457-5	CPA-MW-3D-1111	Total Recoverable	Water	6010B	221899
680-74457-6	CPA-MW-3D-F(0.2)-1111	Dissolved	Water	6010B	221899
680-74457-7	CPA-MW-5D-1111	Total Recoverable	Water	6010B	221899
680-74457-8	CPA-MW-5D-F(0.2)-1111	Dissolved	Water	6010B	221899
680-74457-9	BSA-MW-5D-1111	Total Recoverable	Water	6010B	221899
680-74457-10	BSA-MW-5D-F(0.2)-1111	Dissolved	Water	6010B	221899
LCS 680-221899/2-A	Lab Control Sample	Total Recoverable	Water	6010B	221899
MB 680-221899/1-A	Method Blank	Total Recoverable	Water	6010B	221899

General Chemistry

Analysis Batch: 221181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	325.2	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	325.2	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	325.2	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	325.2	
LCS 680-221181/5	Lab Control Sample	Total/NA	Water	325.2	
MB 680-221181/12	Method Blank	Total/NA	Water	325.2	

Analysis Batch: 221191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	310.1	
680-74408-3 DU	CPA-MW-2D-1111	Total/NA	Water	310.1	
LCS 680-221191/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-221191/32	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-221191/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 221193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	310.1	
680-74408-1 DU	BSA-MW-3D-1111	Total/NA	Water	310.1	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	310.1	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	310.1	
LCS 680-221193/5	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-221193/22	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-221193/3	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 221272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	353.2	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	353.2	

DEC 21 2011

General Chemistry (Continued)

Analysis Batch: 221272 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	353.2	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	353.2	
LCS 680-221272/15	Lab Control Sample	Total/NA	Water	353.2	
MB 680-221272/14	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 221288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	310.1	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	310.1	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	310.1	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	310.1	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	310.1	
LCS 680-221288/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-221288/32	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-221288/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 221351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	415.1	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	415.1	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	415.1	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	415.1	
680-74408-8 DU	BSA-MW-1S-1111	Total/NA	Water	415.1	
LCS 680-221351/31	Lab Control Sample	Total/NA	Water	415.1	
MB 680-221351/26	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 221478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	310.1	
680-74529-1 DU	CPA-MW-4D-1111	Total/NA	Water	310.1	
LCS 680-221478/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-221478/32	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-221478/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 221730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-2	BSA-MW-3D-F(0.2)-1111	Dissolved	Water	415.1	
680-74408-2 MS	BSA-MW-3D-F(0.2)-1111	Dissolved	Water	415.1	
680-74408-2 MSD	BSA-MW-3D-F(0.2)-1111	Dissolved	Water	415.1	
680-74408-4	CPA-MW-2D-F(0.2)-1111	Dissolved	Water	415.1	
680-74408-7	CPA-MW-1D-F(0.2)-1111	Dissolved	Water	415.1	
680-74408-9	BSA-MW-1S-F(0.2)-1111	Dissolved	Water	415.1	
680-74457-2	BSA-MW-4D-F(0.2)-1111	Dissolved	Water	415.1	
680-74457-4	BSA-MW-2D-F(0.2)-1111	Dissolved	Water	415.1	
680-74457-6	CPA-MW-3D-F(0.2)-1111	Dissolved	Water	415.1	
680-74457-8	CPA-MW-5D-F(0.2)-1111	Dissolved	Water	415.1	
680-74457-10	BSA-MW-5D-F(0.2)-1111	Dissolved	Water	415.1	
680-74529-2	CPA-MW-4D-F(0.2)-1111	Dissolved	Water	415.1	
680-74529-2 DU	CPA-MW-4D-F(0.2)-1111	Dissolved	Water	415.1	
LCS 680-221730/2	Lab Control Sample	Dissolved	Water	415.1	
MB 680-221730/1	Method Blank	Dissolved	Water	415.1	

DEC 21 2011

QC Association Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

General Chemistry (Continued)

Analysis Batch: 222057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	353.2	
880-74529-1 DU	CPA-MW-4D-1111	Total/NA	Water	353.2	
LCS 680-222057/15	Lab Control Sample	Total/NA	Water	353.2	
MB 680-222057/14	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 222156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	415.1	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	415.1	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	415.1	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	415.1	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	415.1	
880-74529-1	CPA-MW-4D-1111	Total/NA	Water	415.1	
LCS 680-222156/4	Lab Control Sample	Total/NA	Water	415.1	
MB 680-222158/2	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 222211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	353.2	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	353.2	
880-74457-5	CPA-MW-3D-1111	Total/NA	Water	353.2	
880-74457-7	CPA-MW-5D-1111	Total/NA	Water	353.2	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	353.2	
LCS 680-222211/2	Lab Control Sample	Total/NA	Water	353.2	
MB 680-222211/1	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 222364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74457-1	BSA-MW-4D-1111	Total/NA	Water	325.2	
680-74457-1 MS	BSA-MW-4D-1111	Total/NA	Water	325.2	
680-74457-1 MSD	BSA-MW-4D-1111	Total/NA	Water	325.2	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	325.2	
880-74457-5	CPA-MW-3D-1111	Total/NA	Water	325.2	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	325.2	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	325.2	
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	325.2	
LCS 680-222364/2	Lab Control Sample	Total/NA	Water	325.2	
MB 680-222364/18	Method Blank	Total/NA	Water	325.2	

Analysis Batch: 222819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74408-1	BSA-MW-3D-1111	Total/NA	Water	375.4	
680-74408-3	CPA-MW-2D-1111	Total/NA	Water	375.4	
680-74408-6	CPA-MW-1D-1111	Total/NA	Water	375.4	
680-74408-8	BSA-MW-1S-1111	Total/NA	Water	375.4	
680-74408-8 DU	BSA-MW-1S-1111	Total/NA	Water	375.4	
880-74457-1	BSA-MW-4D-1111	Total/NA	Water	375.4	
680-74457-3	BSA-MW-2D-1111	Total/NA	Water	375.4	
680-74457-5	CPA-MW-3D-1111	Total/NA	Water	375.4	
680-74457-7	CPA-MW-5D-1111	Total/NA	Water	375.4	
680-74457-9	BSA-MW-5D-1111	Total/NA	Water	375.4	
LCS 680-222819/1	Lab Control Sample	Total/NA	Water	375.4	

TestAmerica Savannah

DEC 21 2011

General Chemistry (Continued)

Analysis Batch: 222819 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-222819/2	Method Blank	Total/NA	Water	375.4	

Analysis Batch: 223009

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-74529-1	CPA-MW-4D-1111	Total/NA	Water	375.4	
680-74529-1 MS	CPA-MW-4D-1111	Total/NA	Water	375.4	
680-74529-1 MSD	CPA-MW-4D-1111	Total/NA	Water	375.4	
LCS 680-223009/2	Lab Control Sample	Total/NA	Water	375.4	
MB 680-223009/1	Method Blank	Total/NA	Water	375.4	

10

DEC 21 2011

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-3D-1111

Lab Sample ID: 680-74408-1
Matrix: Water

Date Collected: 11/15/11 14:10
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	221987	11/28/11 12:19	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221209	11/16/11 18:18	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221214	11/16/11 18:18	SMC	TAL SAV
Total Recoverable	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	221766	11/23/11 02:31	BCB	TAL SAV
Total/NA	Analysis	325.2		2	221181	11/16/11 17:22	JR	TAL SAV
Total/NA	Analysis	310.1		1	221193	11/16/11 22:03	TH	TAL SAV
Total/NA	Analysis	353.2		1	221272	11/16/11 15:00	JNC	TAL SAV
Total/NA	Analysis	415.1		1	221351	11/17/11 21:45	JR	TAL SAV
Total/NA	Analysis	375.4		5	222819	12/06/11 16:12	JNC	TAL SAV

Client Sample ID: BSA-MW-3D-F(0.2)-1111

Lab Sample ID: 680-74408-2
Matrix: Water

Date Collected: 11/15/11 14:10
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Dissolved	Analysis	6010B		1	221766	11/23/11 02:36	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: CPA-MW-2D-1111

Lab Sample ID: 680-74408-3
Matrix: Water

Date Collected: 11/15/11 12:50
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	221987	11/28/11 12:48	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221209	11/16/11 18:31	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221214	11/16/11 18:31	SMC	TAL SAV
Total Recoverable	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	221766	11/23/11 02:41	BCB	TAL SAV
Total/NA	Analysis	325.2		1	221181	11/16/11 17:03	JR	TAL SAV
Total/NA	Analysis	310.1		1	221191	11/16/11 19:33	TH	TAL SAV
Total/NA	Analysis	353.2		1	221272	11/16/11 15:01	JNC	TAL SAV
Total/NA	Analysis	415.1		1	221351	11/17/11 22:00	JR	TAL SAV
Total/NA	Analysis	375.4		1	222819	12/06/11 15:46	JNC	TAL SAV

Client Sample ID: CPA-MW-2D-F(0.2)-1111

Lab Sample ID: 680-74408-4
Matrix: Water

Date Collected: 11/15/11 12:50
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV

DEC 21 2011

Client Sample ID: CPA-MW-2D-F(0.2)-1111

Lab Sample ID: 680-74408-4

Date Collected: 11/15/11 12:50
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	221766	11/23/11 02:57	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: CPA-MW-2D-1111-AD

Lab Sample ID: 680-74408-5

Date Collected: 11/15/11 12:50
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	221987	11/28/11 13:18	AJMC	TAL SAV

Client Sample ID: CPA-MW-1D-1111

Lab Sample ID: 680-74408-6

Date Collected: 11/15/11 14:20
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	221987	11/28/11 13:47	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221209	11/16/11 18:44	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221214	11/16/11 18:44	SMC	TAL SAV
Total Recoverable	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Total Recoverable	Analysis	8010B		1	221766	11/23/11 03:02	BCB	TAL SAV
Total/NA	Analysis	325.2		2	221181	11/16/11 17:22	JR	TAL SAV
Total/NA	Analysis	310.1		1	221193	11/16/11 21:47	TH	TAL SAV
Total/NA	Analysis	353.2		1	221272	11/16/11 15:04	JNC	TAL SAV
Total/NA	Analysis	415.1		1	221351	11/17/11 22:14	JR	TAL SAV
Total/NA	Analysis	375.4		1	222619	12/08/11 15:48	JNC	TAL SAV

Client Sample ID: CPA-MW-1D-F(0.2)-1111

Lab Sample ID: 680-74408-7

Date Collected: 11/15/11 14:20
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Dissolved	Analysis	6010B		1	221766	11/23/11 03:07	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: BSA-MW-1S-1111

Lab Sample ID: 680-74408-8

Date Collected: 11/15/11 10:30
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	221987	11/28/11 14:17	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221209	11/16/11 18:57	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	221214	11/16/11 18:57	SMC	TAL SAV

DEC 21 2011

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-1S-1111

Lab Sample ID: 680-74408-8

Date Collected: 11/15/11 10:30
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			221182	11/17/11 08:45	RAM	TAL SAV
Total Recoverable	Analysis	8010B		1	221766	11/23/11 03:12	BCB	TAL SAV
Total/NA	Analysis	325.2		5	221181	11/16/11 17:20	JR	TAL SAV
Total/NA	Analysis	310.1		1	221193	11/16/11 21:33	TH	TAL SAV
Total/NA	Analysis	353.2		1	221272	11/16/11 15:06	JNC	TAL SAV
Total/NA	Analysis	415.1		1	221351	11/17/11 22:28	JR	TAL SAV
Total/NA	Analysis	375.4		1	222819	12/06/11 15:48	JNC	TAL SAV

Client Sample ID: BSA-MW-1S-F(0.2)-1111

Lab Sample ID: 680-74408-9

Date Collected: 11/15/11 10:30
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221182	11/17/11 06:45	RAM	TAL SAV
Dissolved	Analysis	6010B		1	221766	11/23/11 03:18	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: 4Q11 LTM Trip Blank #1

Lab Sample ID: 680-74408-10

Date Collected: 11/15/11 00:00
Matrix: Water
Date Received: 11/16/11 10:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	221987	11/28/11 11:49	AJMC	TAL SAV

Client Sample ID: BSA-MW-4D-1111

Lab Sample ID: 680-74457-1

Date Collected: 11/16/11 10:15
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	222080	11/29/11 02:32	WJC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 19:01	SMC	TAL SAV
Total Recoverable	Prep	3005A			221583	11/22/11 08:44	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	221766	11/23/11 01:28	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221288	11/17/11 18:59	CDJ	TAL SAV
Total/NA	Analysis	415.1		1	222156	11/29/11 14:58	JR	TAL SAV
Total/NA	Analysis	353.2		1	222211	11/17/11 17:03	JR	TAL SAV
Total/NA	Analysis	325.2		2	222364	12/01/11 13:07	JR	TAL SAV
Total/NA	Analysis	375.4		5	222819	12/06/11 16:12	JNC	TAL SAV

TestAmerica Savannah

DEC 21 2011

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-4D-F(0.2)-1111

Lab Sample ID: 680-74457-2

Date Collected: 11/16/11 10:15
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221583	11/22/11 08:44	RAM	TAL SAV
Dissolved	Analysis	6010B		1	221766	11/23/11 01:33	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: BSA-MW-2D-1111

Lab Sample ID: 680-74457-3

Date Collected: 11/16/11 11:35
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2000	222080	11/29/11 03:01	WJC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 19:14	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	222317	11/30/11 19:14	SMC	TAL SAV
Total Recoverable	Prep	3005A			221583	11/22/11 08:44	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	221766	11/23/11 01:39	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221288	11/17/11 19:41	CDJ	TAL SAV
Total/NA	Analysis	415.1		1	222156	11/29/11 15:12	JR	TAL SAV
Total/NA	Analysis	353.2		1	222211	11/17/11 17:04	JR	TAL SAV
Total/NA	Analysis	325.2		2	222364	12/01/11 13:07	JR	TAL SAV
Total/NA	Analysis	375.4		1	222819	12/06/11 15:54	JNC	TAL SAV

Client Sample ID: BSA-MW-2D-F(0.2)-1111

Lab Sample ID: 680-74457-4

Date Collected: 11/16/11 11:35
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Dissolved	Analysis	6010B		1	222353	12/01/11 05:44	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: CPA-MW-3D-1111

Lab Sample ID: 680-74457-5

Date Collected: 11/16/11 15:15
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	222080	11/29/11 03:30	WJC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 19:27	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	222317	11/30/11 19:27	SMC	TAL SAV
Total Recoverable	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	222353	12/01/11 06:10	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221288	11/17/11 19:29	CDJ	TAL SAV
Total/NA	Analysis	415.1		1	222156	11/29/11 15:27	JR	TAL SAV
Total/NA	Analysis	353.2		1	222211	11/17/11 17:08	JR	TAL SAV
Total/NA	Analysis	325.2		2	222364	12/01/11 13:10	JR	TAL SAV

DEC 21 2011

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-3D-1111
Lab Sample ID: 680-74457-5
Date Collected: 11/16/11 15:15
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	375.4		2	222819	12/06/11 16:14	JNC	TAL SAV

Client Sample ID: CPA-MW-3D-F(0.2)-1111
Lab Sample ID: 680-74457-6
Date Collected: 11/16/11 15:15
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Dissolved	Analysis	6010B		1	222353	12/01/11 06:15	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: CPA-MW-5D-1111
Lab Sample ID: 680-74457-7
Date Collected: 11/16/11 11:10
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	222080	11/29/11 04:00	WJC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 19:40	SMC	TAL SAV
Total Recoverable	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	222353	12/01/11 06:20	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221288	11/17/11 19:20	CDJ	TAL SAV
Total/NA	Analysis	415.1		1	222156	11/29/11 15:43	JR	TAL SAV
Total/NA	Analysis	353.2		1	222211	11/17/11 17:09	JR	TAL SAV
Total/NA	Analysis	325.2		5	222364	12/01/11 13:10	JR	TAL SAV
Total/NA	Analysis	375.4		20	222819	12/06/11 16:36	JNC	TAL SAV

Client Sample ID: CPA-MW-5D-F(0.2)-1111
Lab Sample ID: 680-74457-8
Date Collected: 11/16/11 11:10
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221699	11/28/11 09:14	RAM	TAL SAV
Dissolved	Analysis	6010B		1	222353	12/01/11 06:25	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: BSA-MW-5D-1111
Lab Sample ID: 680-74457-9
Date Collected: 11/16/11 14:44
Matrix: Water
Date Received: 11/17/11 09:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	222233	11/30/11 02:29	WJC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 19:53	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	222317	11/30/11 19:53	SMC	TAL SAV

DEC 21 2011

US EPA ARCHIVE DOCUMENT

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: BSA-MW-5D-1111

Lab Sample ID: 680-74457-9

Date Collected: 11/16/11 14:44
Date Received: 11/17/11 09:22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	222353	12/01/11 06:30	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221288	11/17/11 19:10	CDJ	TAL SAV
Total/NA	Analysis	415.1		1	222156	11/29/11 15:57	JR	TAL SAV
Total/NA	Analysis	353.2		1	222211	11/17/11 17:10	JR	TAL SAV
Total/NA	Analysis	325.2		5	222364	12/01/11 13:10	JR	TAL SAV
Total/NA	Analysis	375.4		1	222819	12/06/11 15:55	JNC	TAL SAV

Client Sample ID: BSA-MW-5D-F(0.2)-1111

Lab Sample ID: 680-74457-10

Date Collected: 11/16/11 14:45
Date Received: 11/17/11 09:22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221899	11/28/11 09:14	RAM	TAL SAV
Dissolved	Analysis	6010B		1	222353	12/01/11 06:36	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: 4Q11LTM Trip Blank #2

Lab Sample ID: 680-74457-11

Date Collected: 11/16/11 00:00
Date Received: 11/17/11 09:22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8280B		1	222080	11/28/11 23:36	WJC	TAL SAV

Client Sample ID: 4Q11LTM Trip Blank #3

Lab Sample ID: 680-74457-12

Date Collected: 11/16/11 00:00
Date Received: 11/17/11 09:22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	222080	11/29/11 00:05	WJC	TAL SAV

Client Sample ID: CPA-MW-4D-1111

Lab Sample ID: 680-74529-1

Date Collected: 11/17/11 13:45
Date Received: 11/18/11 09:32

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	222244	11/30/11 14:08	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	222315	11/30/11 20:44	SMC	TAL SAV
Total/NA	Analysis	RSK-175		1	222317	11/30/11 20:44	SMC	TAL SAV
Total Recoverable	Prep	3005A			221909	11/28/11 09:56	RAM	TAL SAV
Total Recoverable	Analysis	6010B		1	222208	11/29/11 22:01	BCB	TAL SAV
Total/NA	Analysis	310.1		1	221478	11/19/11 17:02	CDJ	TAL SAV
Total/NA	Analysis	353.2		1	222057	11/18/11 15:16	JR	TAL SAV

TestAmerica Savannah

DEC 21 2011

Lab Chronicle

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Client Sample ID: CPA-MW-4D-1111

Lab Sample ID: 680-74529-1

Date Collected: 11/17/11 13:45
Matrix: Water
Date Received: 11/18/11 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	415.1		1	222156	11/29/11 16:14	JR	TAL SAV
Total/NA	Analysis	325.2		5	222364	12/01/11 13:10	JR	TAL SAV
Total/NA	Analysis	375.4		10	223009	12/08/11 13:07	JR	TAL SAV

Client Sample ID: CPA-MW-4D-F(0.2)-1111

Lab Sample ID: 680-74529-2

Date Collected: 11/17/11 13:45
Matrix: Water
Date Received: 11/18/11 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			221909	11/28/11 09:56	RAM	TAL SAV
Dissolved	Analysis	6010B		1	222208	11/29/11 22:23	BCB	TAL SAV
Dissolved	Analysis	415.1		1	221730	11/22/11 10:59	JR	TAL SAV

Client Sample ID: 4Q11 LTM Trip Blank #4

Lab Sample ID: 680-74529-3

Date Collected: 11/17/11 00:00
Matrix: Water
Date Received: 11/18/11 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	221574	11/21/11 15:01	AJMC	TAL SAV

Client Sample ID: CPA-MW-4D-1111-EB

Lab Sample ID: 680-74529-4

Date Collected: 11/17/11 12:10
Matrix: Water
Date Received: 11/18/11 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	222253	11/30/11 12:26	AJMC	TAL SAV

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

DEC 21 2011

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/14/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: FedEx	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No.
St. Louis, MO 63110	Calendar (C) or Work Days (W) _____			21562703.00003
(314) 429-0100 Phone	TAT if different from Below Standard			SDG No.
(314) 429-0462 FAX	☒ 2 weeks			
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date (11/15/11 ★)	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
BSA-MW-3D-1111	11/14/11	1410	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-3D-F(0.2)-1111		1410	G	Water	2	X								1	1	
CPA-MW-2D-1111		1250	G	W	12		3	1	1	1	3	2	1			
CPA-MW-2D-F(0.2)-1111		1250	G	W	2	X								1	1	
CPA-MW-2D-1111 ~~DUP~~ AD * LG 11/16/11		1250	G	W	3		3									* Correct ID per URS request LG 11/16/11
CPA-MW-1D-1111		1420	G	W	12		3	1	1	1	3	2	1			
CPA-MW-1D-F(0.2)-1111		1420	G	W	2	X								1	1	
BSA-MW-1S-1111		1030	G	W	12		3	1	1	1	3	2	1			
BSA-MW-1S-F(0.2)-1111	↓	1030	G	W	2	X								1	1	★ Corrected sampling date per client info LG 11/17/11
4Q11 LTM Trip Blank # 1				Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B ☐ Unknown ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ■ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

680-0001754
680-74408
1.8°C

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/14/11 1630	[signature]	TA	11/14/11 1630
[signature]	TA	11/14/11 1645	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA	Date/Time: 11/16/11 1017

DEC 21 2011

Savannah
5102 LaRoche Avenue
Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/16/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier:	___ of ___ COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~
St. Louis, MO 63110	Calendar (C) or Work Days (W) ___			
(314) 429-0100 Phone	TAT if different from Below (Standard)			
(314) 429-0462 FAX	☐ 2 weeks			SDG No.
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO3 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
BSA-MW-4D -1111	11/16/11	1015	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-4D-F(0.2)-1111	11/16/11	1015	G	Water	2	X								1	1	
BSA-MW-2D-1111	11/16/11	1135	G	Water	12		3	1	1	1	3	2	1			
BSA-MW-2D-F(0.2)-1111	11/16/11	1135	G	Water	2	X							NA	1	1	
CPA-MW-3D-1111	11/16/11	1515	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-3D-F(0.2)-1111	11/16/11	1515	G	Water	2	X								1	1	
~~NM FB-2 NM~~	~~11/16/11~~	~~0000~~	—	~~Water~~	~~2~~		~~2~~									
4Q11 LTM Trip Blank #2	11/16/11	0000	G	Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ___							2	1	4	1	1	1	3.1	2	4	2

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant Poison B ☐ Unknown ☒

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ■ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/16/11 1645	[signature]	TA	11/16/11 1645
[signature]	TA	11/16/11 1730	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TASW	Date/Time: 11/17/11

600-74457
3.3/3.6°C

DEC 21 2011

US EPA ARCHIVE DOCUMENT

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/16/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: Fed Ex	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~ nc
St. Louis, MO 63110	Calendar (C) or Work Days (W) C			
(314) 429-0100 Phone	TAT if different from Below Standard			
(314) 429-0462 FAX	☒ 2 weeks			SDG No.
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-MW-5D -1111	11/16/11	1110	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-5D -F(0.2)-1111	↓	1110	G	Water	2	X								1	1	
BSA-MW-5D-1111	↓	1445	G	W	12		3	1	1	1	3	2	1			
BSA-MW-5D-F(0.2)-1111	↓	1445	G	W	2	X								1	1	
CPA-MW-5D-1111-MS	↓	1110	G	W	3		3									
CPA-MW-5D-1111-MSD	↓	1110	G	W	3		3									
4Q11 LTM Trip Blank # 3	11/16/11	—	—	Water	2		2									
							2	1	4	1	1	1	3,1	2	4	2

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ■ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/16/11 1635	[signature]	TA	11/16/11 1635
[signature]	TA	11/16/11 1730	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA GN	Date/Time: 11/17/11

680-74457
3.8°/7.6°C

DEC 21 2011

Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax 912.352.0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dave Palmer	Site Contact: Nathan McNurlen	Date: 11/17/11	COC No:
URS Corporation	Tel/Fax: (314) 743-4154	Lab Contact: Lidya Gulizia	Carrier: FedEx	1 of 1 COCs
1001 Highlands Plaza Drive West, Suite 300	Analysis Turnaround Time			Job No. 21562682.00004 ~~21562703.00003~~
St. Louis, MO 63110	Calendar (C) or Work Days (W) C			
(314) 429-0100 Phone	TAT if different from Below Standard			
(314) 429-0462 FAX	☒ 2 weeks			SDG No.
Project Name: 4Q11 Long-Term GW Sampling	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Methane by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-MW-4D -1111	11/17/11	1345	G	Water	12		3	1	1	1	3	2	1			
CPA-MW-4D -F(0.2)-1111	11/17/11	1345	G	Water	2	X								1	1	
4Q11 LTM Trip Blank # 4	11/17/11	—	—	Water	2		2									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other							2	1	4	1	1	1	3,1	2	4	2

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ■ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: **Level 4 Data Package**

680-74529
3.1°C

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	11/17/11 1600	[signature]	TA	11/17/11 1600
[signature]	TA	11/17/11 1800	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company: TA SW	Date/Time: 11/18/11 0943

DEC 21 2011

12

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-74408-1
SDG Number: KPS067

Login Number: 74408
List Number: 1
Creator: Conner, Keaton

List Source: TestAmerica Savannah

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.8 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	COC dated incorrectly for sampling & relinquish/rec dates per URS info.
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the sample IDs on the containers and the COC.	False	Client field dup ID differs on bottle vs COC; client corrected to -AD
Samples are received within Holding Time.	False	NO3 samples rec'd 2nd day of HT (greater than 50% HT).
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	-6 "C", -7 "A", -7 "A" needs the pH adjusted
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	Insufficient volume received for MS/MSD.
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

13

US EPA ARCHIVE DOCUMENT

DEC 21 2011

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-74408-1
SDG Number: KPS067

Login Number: 74457
List Number: 1
Creator: Conner, Keaton

List Source: TestAmerica Savannah

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.8 and 3.6 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

13

DEC 21 2011

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-74408-1
SDG Number: KPS067

Login Number: 74529
List Number: 1
Creator: Conner, Keaton

List Source: TestAmerica Savannah

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the sample IDs on the containers and the COC.	False	EB not listed on COC
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	Insufficient volume received for MS/MSD.
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

13

DEC 21 2011

Certification Summary

Client: Solutia Inc.
Project/Site: WGK LTM - GW 4Q11 - NOV 2011

TestAmerica Job ID: 680-74408-1
SDG: KPS067

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Savannah	A2LA	DoD ELAP		0399-01
TestAmerica Savannah	A2LA	ISO/IEC 17025		399.01
TestAmerica Savannah	Alabama	State Program	4	41450
TestAmerica Savannah	Arkansas	Arkansas DOH	6	N/A
TestAmerica Savannah	Arkansas	State Program	6	88-0692
TestAmerica Savannah	California	NELAC	9	3217CA
TestAmerica Savannah	Colorado	State Program	8	N/A
TestAmerica Savannah	Connecticut	State Program	1	PH-0161
TestAmerica Savannah	Delaware	State Program	3	N/A
TestAmerica Savannah	Florida	NELAC	4	E87052
TestAmerica Savannah	Georgia	Georgia EPD	4	N/A
TestAmerica Savannah	Georgia	State Program	4	803
TestAmerica Savannah	Guam	State Program	9	09-005r
TestAmerica Savannah	Hawaii	State Program	9	N/A
TestAmerica Savannah	Illinois	NELAC	5	200022
TestAmerica Savannah	Indiana	State Program	5	N/A
TestAmerica Savannah	Iowa	State Program	7	353
TestAmerica Savannah	Kentucky	Kentucky UST	4	18
TestAmerica Savannah	Kentucky	State Program	4	90084
TestAmerica Savannah	Louisiana	NELAC	6	30690
TestAmerica Savannah	Louisiana	NELAC	6	LA100015
TestAmerica Savannah	Maine	State Program	1	GA00006
TestAmerica Savannah	Maryland	State Program	3	250
TestAmerica Savannah	Massachusetts	State Program	1	M-GA006
TestAmerica Savannah	Michigan	State Program	5	9925
TestAmerica Savannah	Mississippi	State Program	4	N/A
TestAmerica Savannah	Montana	State Program	8	CERT0081
TestAmerica Savannah	Nebraska	State Program	7	TestAmerica-Savannah
TestAmerica Savannah	New Jersey	NELAC	2	GA769
TestAmerica Savannah	New Mexico	State Program	6	N/A
TestAmerica Savannah	New York	NELAC	2	10842
TestAmerica Savannah	North Carolina	North Carolina DENR	4	269
TestAmerica Savannah	North Carolina	North Carolina PHL	4	13701
TestAmerica Savannah	Oklahoma	State Program	6	9984
TestAmerica Savannah	Pennsylvania	NELAC	3	68-00474
TestAmerica Savannah	Puerto Rico	State Program	2	GA00006
TestAmerica Savannah	Rhode Island	State Program	1	LAO00244
TestAmerica Savannah	South Carolina	State Program	4	98001
TestAmerica Savannah	Tennessee	State Program	4	TN02961
TestAmerica Savannah	Texas	NELAC	6	T104704185-08-TX
TestAmerica Savannah	USDA	USDA		SAV 3-04
TestAmerica Savannah	Vermont	State Program	1	87052
TestAmerica Savannah	Virginia	NELAC	3	460161
TestAmerica Savannah	Virginia	State Program	3	302
TestAmerica Savannah	Washington	State Program	10	C1794
TestAmerica Savannah	West Virginia	West Virginia DEP	3	94
TestAmerica Savannah	West Virginia	West Virginia DHHR (DW)	3	9950C
TestAmerica Savannah	Wisconsin	State Program	5	999819810
TestAmerica Savannah	Wyoming	State Program	8	8TMS-Q

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

14

TestAmerica Savannah

DEC 21 2011

US EPA ARCHIVE DOCUMENT

Appendix E

Microbial Insights Data Package

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Client: Dave Palmer
URS Corp
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110

Phone: (314) 743-4154

Fax: (314) 429-0462

Identifier: 049IK **Date Rec:** 11/15/2011 **Report Date:** 12/07/2011

Client Project #: 21565682 **Client Project Name:** Solutia WGK LTM 4Q11

Purchase Order #: 21565682

Analysis Requested: PLFA, Stable Isotope Probing

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

Sample Information

Sample Name:	**CPA-MW-5D**	**BSA-MW-5D**	**CPA-MW-4D**	**BSA-MW-4D**	**BSA-MW-3D**
Sample Date:	11/14/2011	11/14/2011	11/14/2011	11/14/2011	11/14/2011
Sample Matrix:	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap
Analyst:	BJ	BJ	BJ	BJ	BJ

Biomass Concentrations

Total Biomass (cells/bead)	**1.81E+04**	**1.53E+05**	**4.82E+04**	**3.93E+04**	**4.32E+04**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**0.00**	**0.00**	**2.15**	**10.85**	**0.00**
Proteobacteria (Monos)	**58.24**	**52.25**	**66.29**	**57.48**	**77.20**
Anaerobic metal reducers (BrMonos)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SRB/Actinomycetes (MidBrSats)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
General (Nsats)	**41.76**	**24.45**	**28.36**	**29.07**	**22.79**
Eukaryotes (polyenoics)	**0.00**	**23.30**	**3.21**	**2.58**	**0.00**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.00**	**0.00**	**0.00**	**0.29**	**0.13**
Decreased Permeability	**0.00**	**0.22**	**0.00**	**0.25**	**0.00**

Legend:
NA = Not Analyzed NS = Not Sampled

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

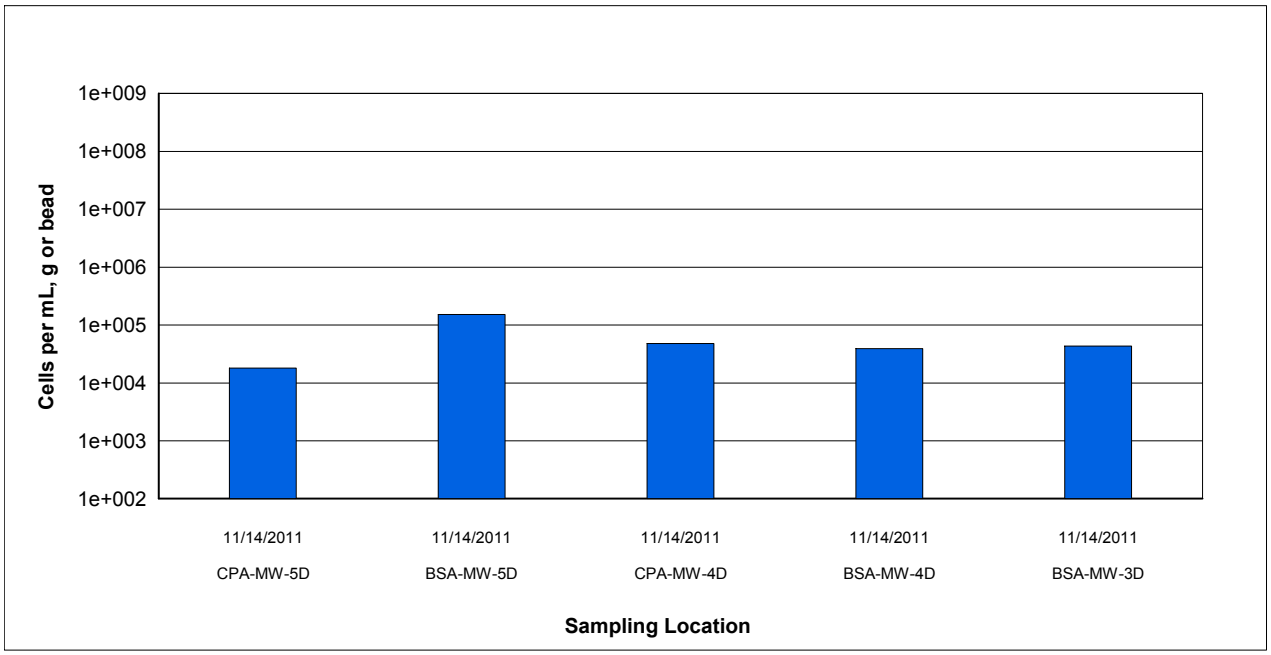


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

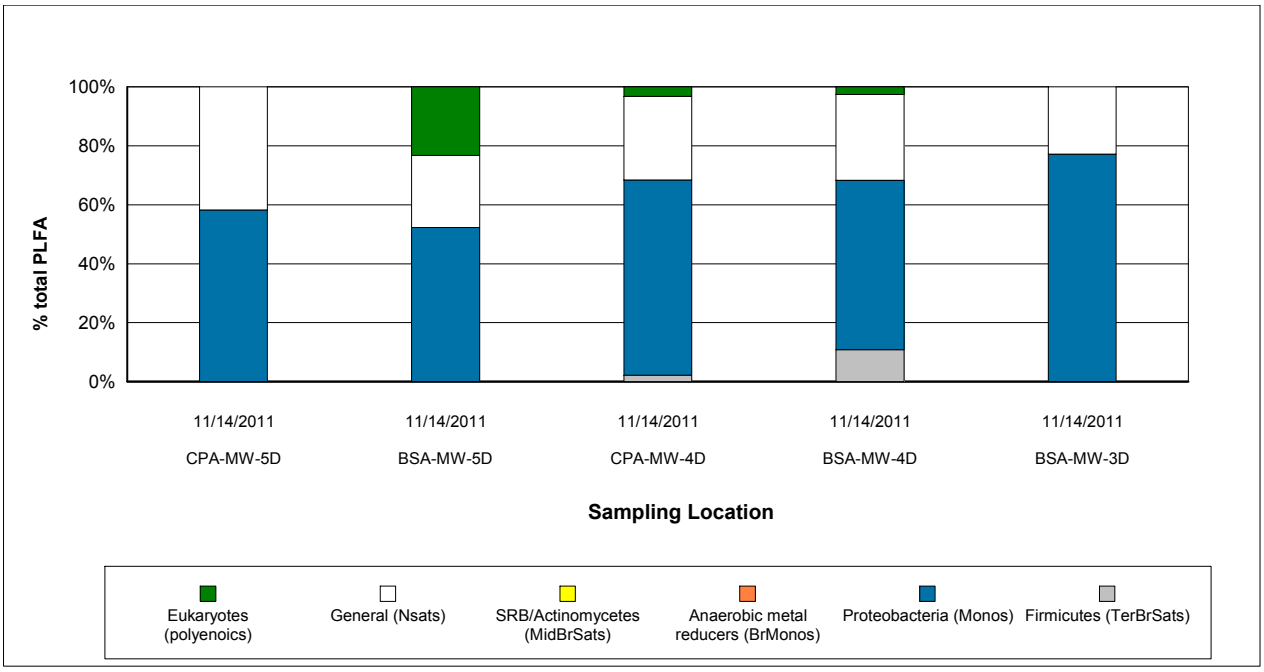


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

Sample Information

Sample Name:	**BSA-MW-2D Benzene**	**BSA-MW-2D**	**CPA-MW-3D Chlorobenzene**	**CPA-MW-3D**	**BSA-MW-2S**
Sample Date:	11/14/2011	11/14/2011	11/14/2011	11/14/2011	11/14/2011
Sample Matrix:	Adv. Bio-Trap	Std. Bio-Trap	Adv. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap
Analyst:	BJ	BJ	BJ	BJ	BJ

Biomass Concentrations

Total Biomass (cells/bead)	**1.31E+05**	**1.34E+05**	**3.30E+04**	**3.40E+04**	**3.86E+04**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Proteobacteria (Monos)	**82.03**	**82.74**	**73.44**	**79.97**	**64.90**
Anaerobic metal reducers (BrMonos)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SRB/Actinomycetes (MidBrSats)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
General (Nsats)	**17.95**	**17.25**	**26.56**	**20.03**	**35.09**
Eukaryotes (polyenoics)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.17**	**0.17**	**0.20**	**0.00**	**0.00**
Decreased Permeability	**0.12**	**0.24**	**0.00**	**0.00**	**0.15**

Legend:
NA = Not Analyzed NS = Not Sampled

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

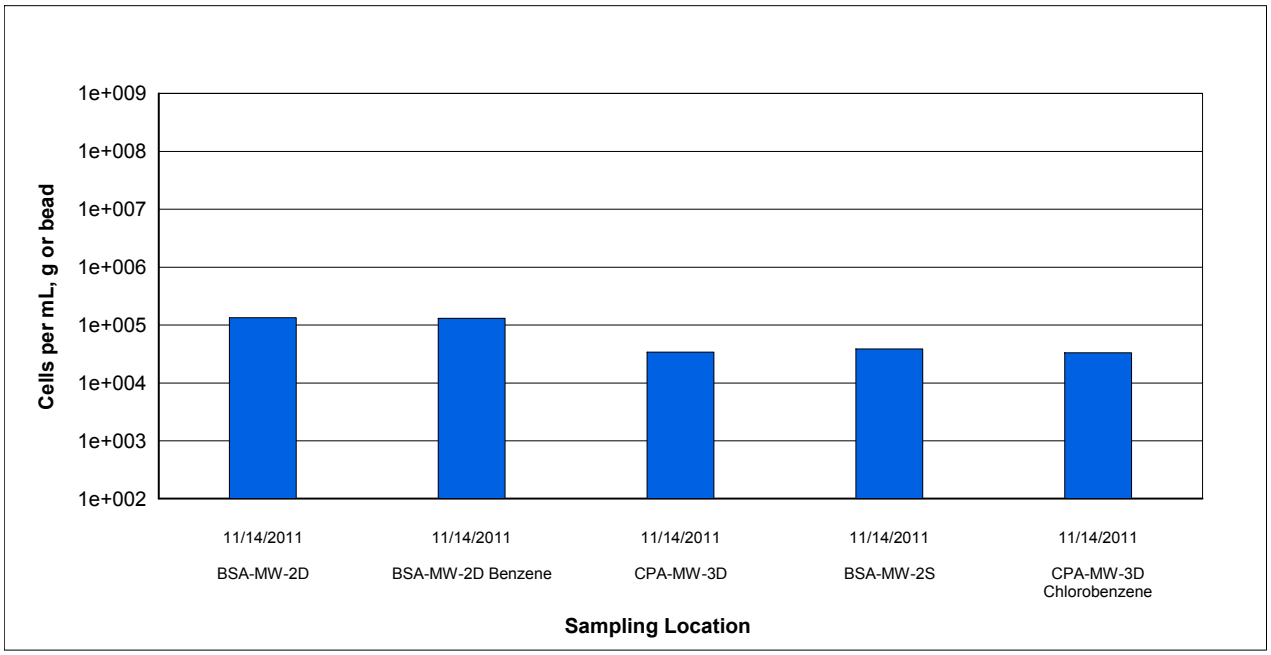


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

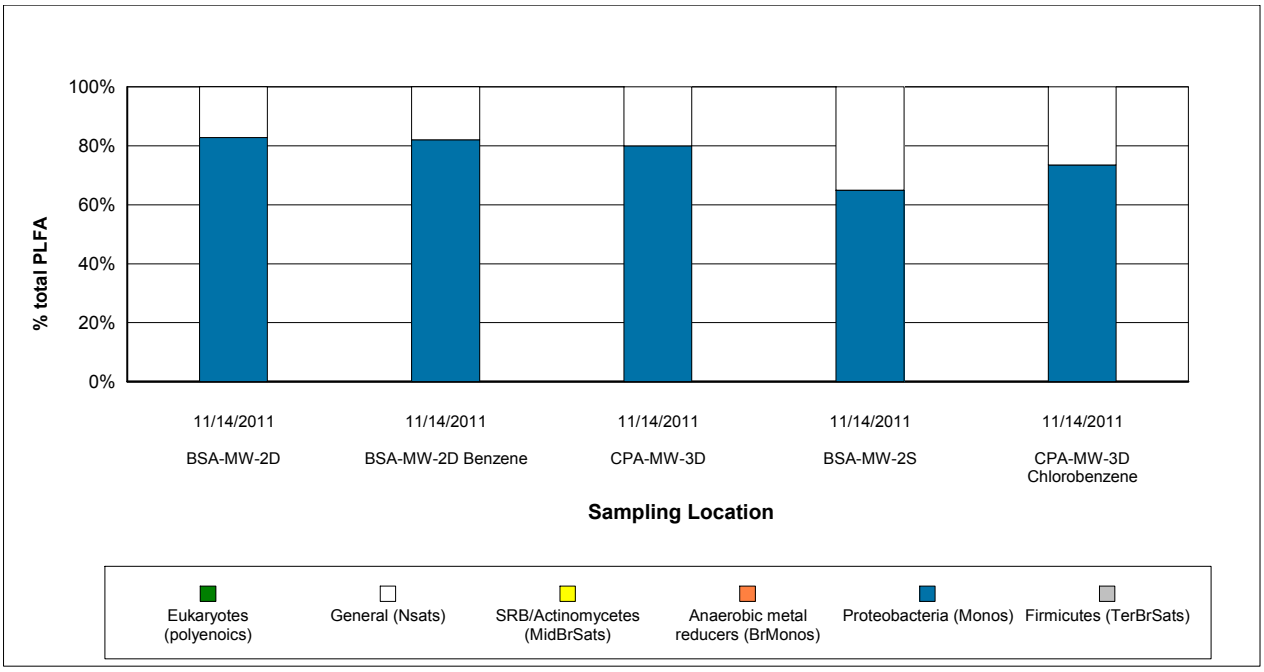


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

Sample Information

Sample Name:	**CPA-MW-2D**	**CPA-MW-1D**
Sample Date:	11/14/2011	11/14/2011
Sample Matrix:	Std. Bio-Trap	Std. Bio-Trap
Analyst:	BJ	BJ

Biomass Concentrations

Total Biomass (cells/bead)	**7.59E+03**	**8.64E+04**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**0.00**	**0.00**
Proteobacteria (Monos)	**57.01**	**89.47**
Anaerobic metal reducers (BrMonos)	**0.00**	**0.00**
SRB/Actinomycetes (MidBrSats)	**0.00**	**0.00**
General (Nsats)	**42.99**	**10.54**
Eukaryotes (polyenoics)	**0.00**	**0.00**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.00**	**0.00**
Decreased Permeability	**0.00**	**0.34**

Legend:
NA = Not Analyzed NS = Not Sampled

MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

Client: **URS Corp**
Project: Solutia WGK LTM 4Q11

MI Project Number: **049IK**
Date Received: 11/15/2011

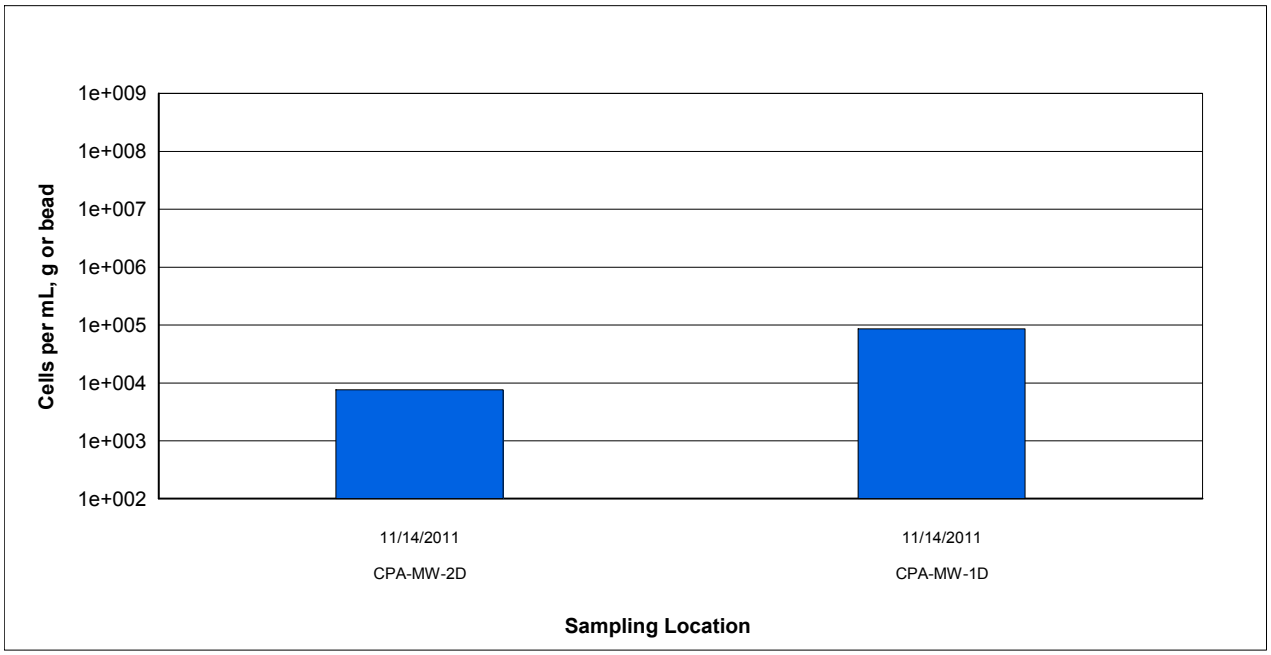


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

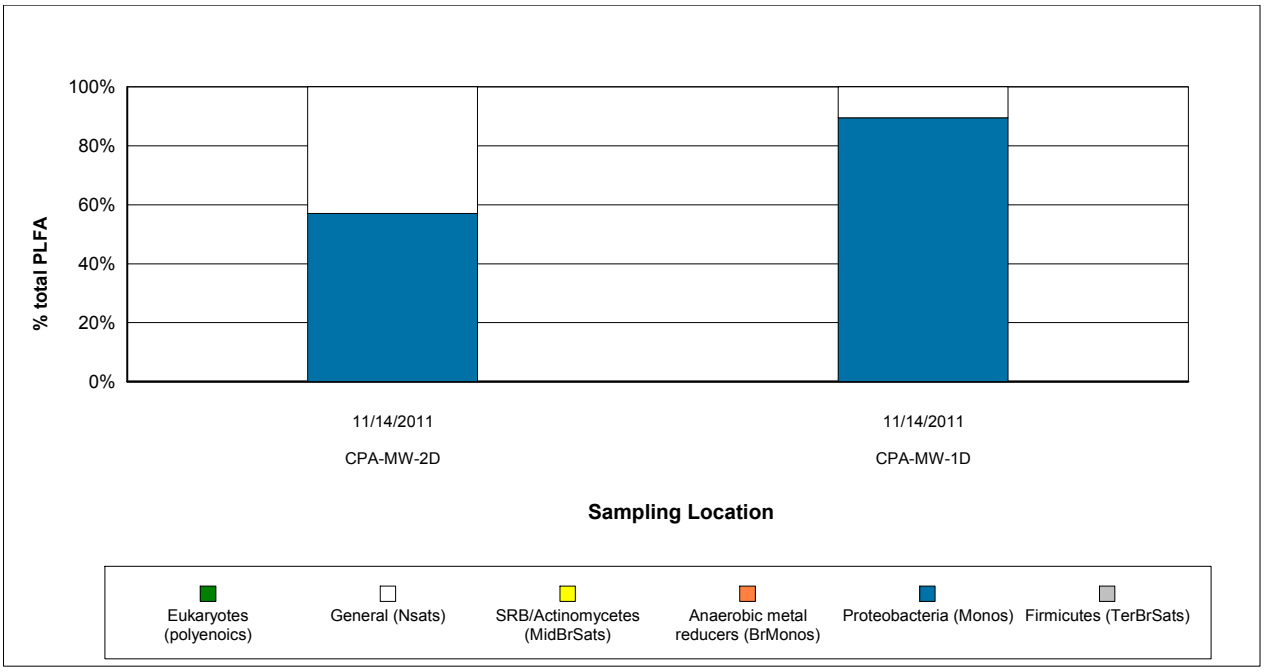


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

Identifier: 049IK **Date Rec:** 11/15/2011 **Report Date:** 12/07/2011

Client Project #: 21565682 **Client Project Name:** Solutia WGK LTM 4Q11

Purchase Order #: 21565682

Comments: The total PLFA biomass for samples CPA-MW-5D, CPA-MW-4D, BSA-MW-4D, BSA-MW-3D, CPA-MW-3D Chlorobenzene, CPA-MW-3D and BSA-MW-2S was below the laboratory PQL but above the LQL.

The total PLFA biomass for sample CPA-MW-2D was below the LQL.

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
Web: www.microbe.com

SITE LOGIC Report

Stable Isotope Probing (SIP) Study

Contact: Dave Palmer
Address: URS Corporation – St. Louis MO
1001 Highlands Plaza Drive West
Suite 300
St. Louis, MO 63110

Phone: 314-743-4154

Email: dave_palmer@urscorp.com

MI Identifier: 049IK

Report Date: December 19, 2011

Project: Solutia WGK LTM 4Q11

Comments:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

US EPA ARCHIVE DOCUMENT

Executive Summary

A Stable Isotope Probing (SIP) study was performed to determine whether biodegradation of benzene and chlorobenzene is occurring under existing site conditions. Bio-Trap® samplers baited with ^{13}C labeled benzene or ^{13}C labeled chlorobenzene were deployed in monitoring wells BSA-MW-2D and CPA-MW-3D, respectively, for 32 days. Following field deployment, the Bio-Traps were recovered to quantify ^{13}C incorporation into biomass and dissolved inorganic carbon (DIC). A complete summary of the results is provided in Table 1.

- Quantification of ^{13}C enriched biomass demonstrated utilization of the ^{13}C benzene and the ^{13}C chlorobenzene. This is conclusive evidence that biodegradation is occurring under the site conditions which were present during the deployment period.
- A moderate level of mineralization of the ^{13}C benzene was observed during the deployment period. This is an additional line of evidence that biodegradation was occurring in the benzene well under the site conditions that were present during the deployment period. Little to no mineralization of the ^{13}C chlorobenzene occurred during the deployment period.
- A moderate level (~10^5 cells/bead) of biomass was detected in the ^{13}C benzene sampler and a low level (~10^4 cells/bead) in the ^{13}C chlorobenzene sampler.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

Overview of Approach

Stable Isotope Probing (SIP)

Stable isotope probing (SIP) is an innovative method to track the environmental fate of a "labeled" contaminant of concern to unambiguously demonstrate biodegradation. Two stable carbon isotopes exist in nature – carbon 12 (^{12}C) which accounts for 99% of carbon and carbon 13 (^{13}C) which is considerably less abundant (~1%). With the SIP method, the Bio-Trap® sampler is baited with a specially synthesized form of the contaminant containing ^{13}C labeled carbon. Since ^{13}C is rare, the labeled compound can be readily differentiated from the contaminants present at the site. Following deployment, the Bio-Trap® is recovered and three approaches are used to conclusively demonstrate biodegradation of the contaminant of concern.

- The loss of the labeled compound provides an estimate of the degradation rate (% loss of ^{13}C).
- Quantification of ^{13}C enriched phospholipid fatty acids (PLFA) indicates incorporation into microbial biomass.
- Quantification of ^{13}C enriched dissolved inorganic carbon (DIC) indicates contaminant mineralization.

Phospholipid Fatty Acids (PLFA): PLFA are a primary component of the membrane of all living cells including bacteria. PLFA decomposes rapidly upon cell death (1, 2), so the total amount of PLFA present in a sample is indicative of the viable biomass. When combined with stable isotope probing (SIP), incorporation of ^{13}C into PLFA is a conclusive indicator of biodegradation.

Some organisms produce "signature" types of PLFA allowing quantification of important microbial functional groups (e.g. iron reducers, sulfate reducers, or fermenters). The relative proportions of the groups of PLFA provide a "fingerprint" of the microbial community. In addition, *Proteobacteria* modify specific PLFA during periods of slow growth or in response to environmental stress providing an index of their health and metabolic activity.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

Results

Table 1. Summary of the results obtained from the Bio-Trap® Units. Interpretation guidelines and definitions are found later in the document.

Sample Name	BSA-MW-2D Benzene	CPA-MW-3D Chlorobenzene
^{13}C Contaminant Loss		
^{13}C Benzene Pre-deployment (µg/bd)	185 ± 12	-----
^{13}C Benzene Post-deployment (µg/bd)	134 ± 12	-----
^{13}C Chlorobenzene Pre-deployment (µg/bd)	-----	202 ± 28
^{13}C Chlorobenzene Post-deployment (µg/bd)	-----	162 ± 8
Biomass & ^{13}C Incorporation		
Total Biomass (Cells/bd)	1.31E+05	3.30E+04 *
^{13}C Enriched Biomass (Cells/bd)	3.40E+03	2.19E+02
Average PLFA Del (‰)	1649	3
Maximum PLFA Del (‰)	2179	5
^{13}C Mineralization		
DIC Del (‰)	202	-12
% 13C	1.31	1.08
Community Structure (% total PLFA)		
Firmicutes (TerBrSats)	0.0	0.0
Proteobacteria (Monos)	82.0	73.4
Anaerobic metal reducers (BrMonos)	0.0	0.0
Actinomycetes (MidBrSats)	0.0	0.0
General (Nsats)	18.0	26.6
Eukaryotes (Polyenoics)	0.0	0.0
Physiological Status (Proteobacteria only)		
Slowed Growth	0.17	0.20
Decreased Permeability	0.12	0.00

* Total PLFA biomass was below the laboratory PQL but above the LQL.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

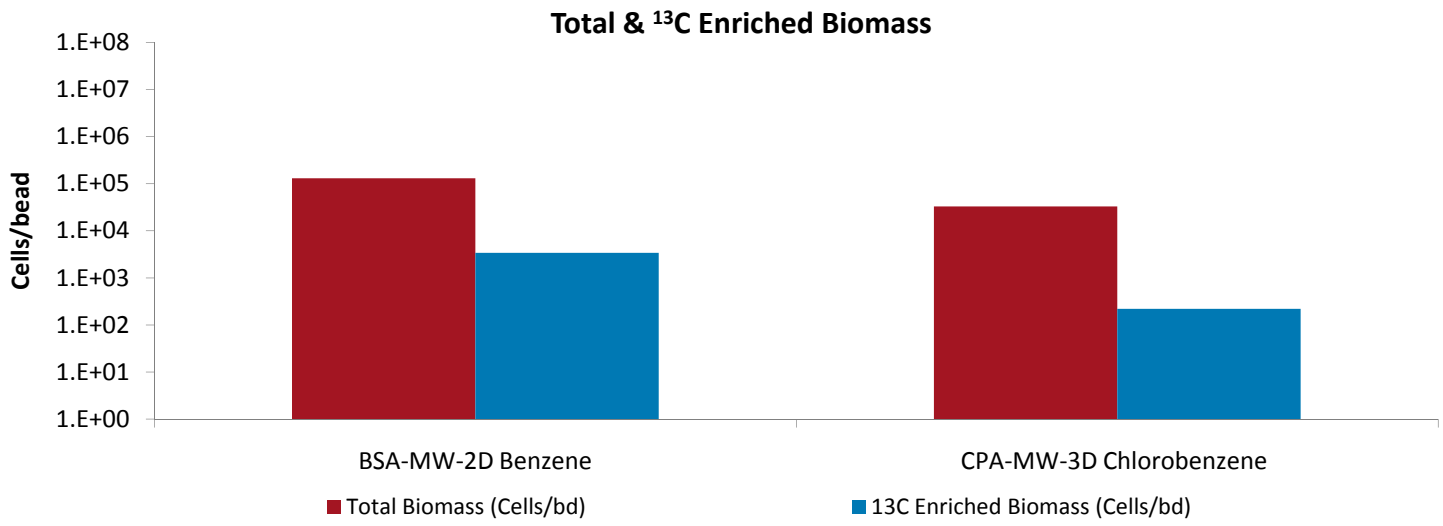


Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

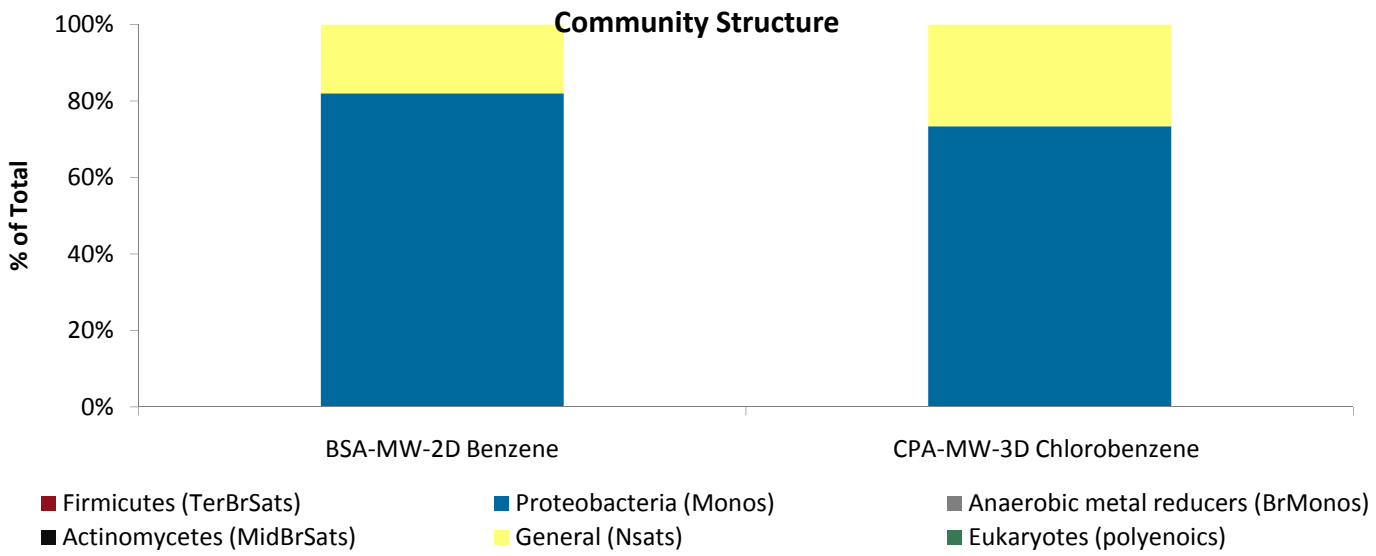


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See the table in the interpretation section for detailed descriptions of the structural groups.

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

US EPA ARCHIVE DOCUMENT

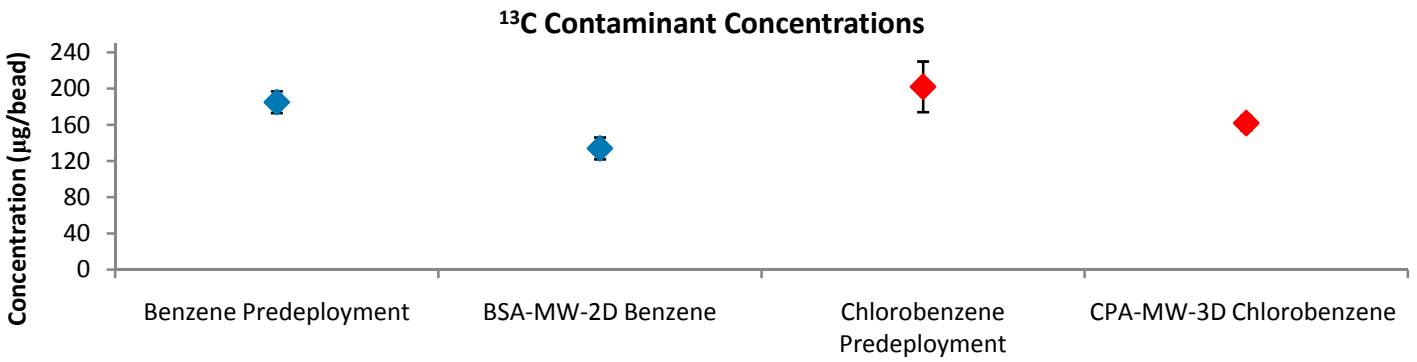


Figure 3. Comparison of Pre-deployment concentrations loaded on Bio-Sep beads to the concentrations detected after incubation.

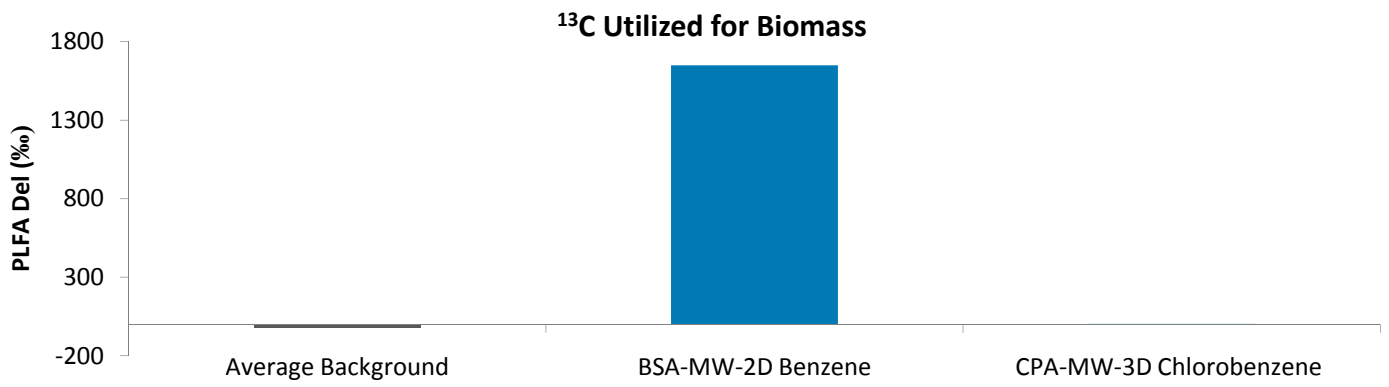


Figure 4. Comparison of the average Del value obtained from PLFA biomarkers from each Bio-Trap® unit to the average background Del observed in samples not exposed to ^{13}C enriched compounds.

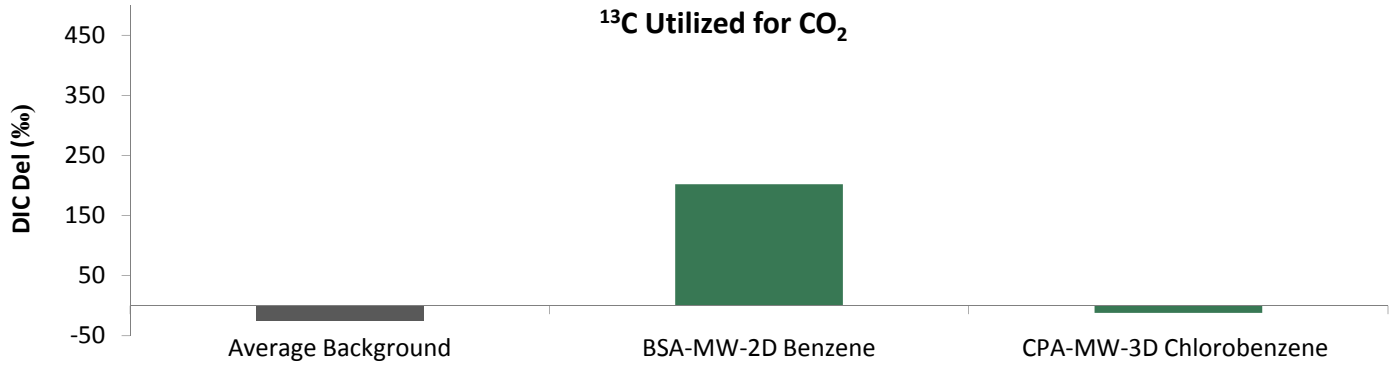


Figure 5. Comparison of the Del value obtained from DIC from each Bio-Trap® unit to the average background Del observed in samples not exposed to ^{13}C enriched compounds.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

Table 2. Summary of the PLFA results for the benzene wells obtained from the Bio-Trap® Units.

Sample Name	BSA-MW-5D	BSA-MW-4D	BSA-MW-3D	BSA-MW-2D Benzene	BSA-MW-2D	BSA-MW-2S
Biomass Concentration						
Total Biomass (Cells/bd)	1.53E+05	3.93E+04*	4.32E+04*	1.31E+05	1.34E+05	3.86E+04*
Community Structure (% total PLFA)						
Firmicutes (TerBrSats)	0.0	10.9	0.0	0.0	0.0	0.0
Proteobacteria (Monos)	52.3	57.5	77.2	82.0	82.7	64.9
Anaerobic metal reducers (BrMonos)	0.0	0.0	0.0	0.0	0.0	0.0
Actinomycetes (MidBrSats)	0.0	0.0	0.0	0.0	0.0	0.0
General (Nsats)	24.5	29.1	22.8	18.0	17.3	35.1
Eukaryotes (Polyenoics)	23.3	2.6	0.0	0.0	0.0	0.0
Physiological Status (Proteobacteria only)						
Slowed Growth	0.00	0.29	0.13	0.17	0.17	0.00
Decreased Permeability	0.22	0.25	0.00	0.12	0.24	0.15

* Total PLFA biomass was below the laboratory PQL but above the LQL.

Table 3. Summary of the PLFA results for the chlorobenzene wells obtained from the Bio-Trap® Units.

Sample Name	CPA-MW-5D	CPA-MW-4D	CPA-MW-3D Chloroben-zene	CPA-MW-3D	CPA-MW-2D	CPA-MW-1D
Biomass Concentration						
Total Biomass (Cells/bd)	1.81E+04*	4.82E+04*	3.30E+04*	3.40E+04*	7.59E+03**	8.64E+04
Community Structure (% total PLFA)						
Firmicutes (TerBrSats)	0.0	2.2	0.0	0.0	0.0	0.0
Proteobacteria (Monos)	58.2	66.3	73.4	80.0	57.0	89.5
Anaerobic metal reducers (BrMonos)	0.0	0.0	0.0	0.0	0.0	0.0
Actinomycetes (MidBrSats)	0.0	0.0	0.0	0.0	0.0	0.0
General (Nsats)	41.8	28.4	26.6	20.0	43.0	10.5
Eukaryotes (Polyenoics)	0.0	3.2	0.0	0.0	0.0	0.0
Physiological Status (Proteobacteria only)						
Slowed Growth	0.00	0.00	0.20	0.00	0.00	0.00
Decreased Permeability	0.00	0.00	0.00	0.00	0.00	0.34

* Total PLFA biomass was below the laboratory PQL but above the LQL.
** Total PLFA biomass was below the laboratory LQL.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

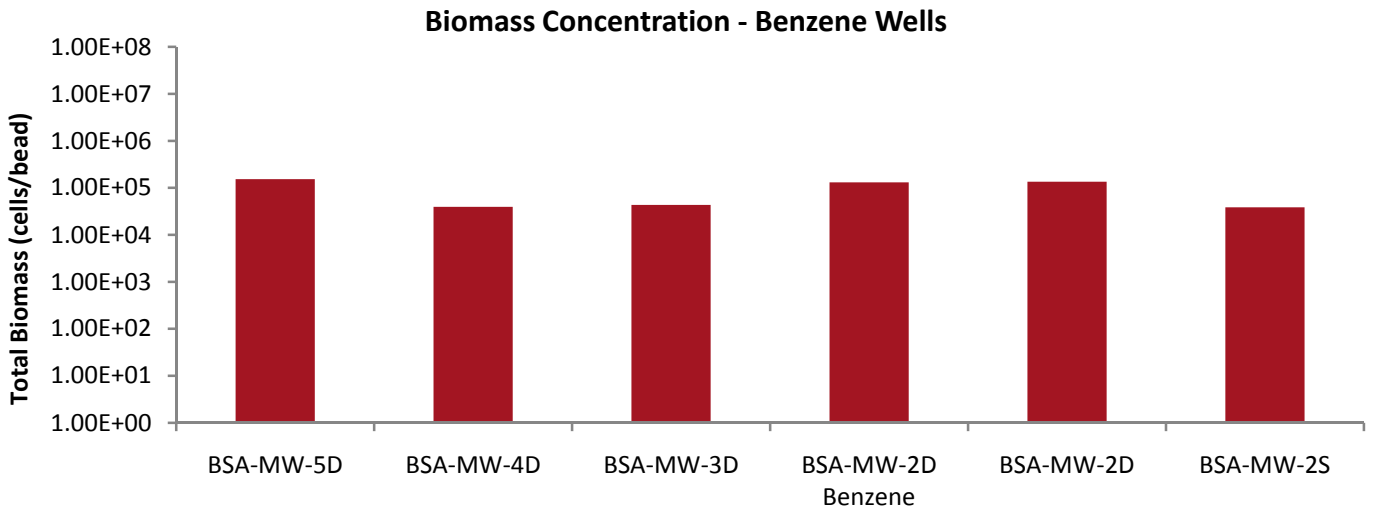


Figure 6. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

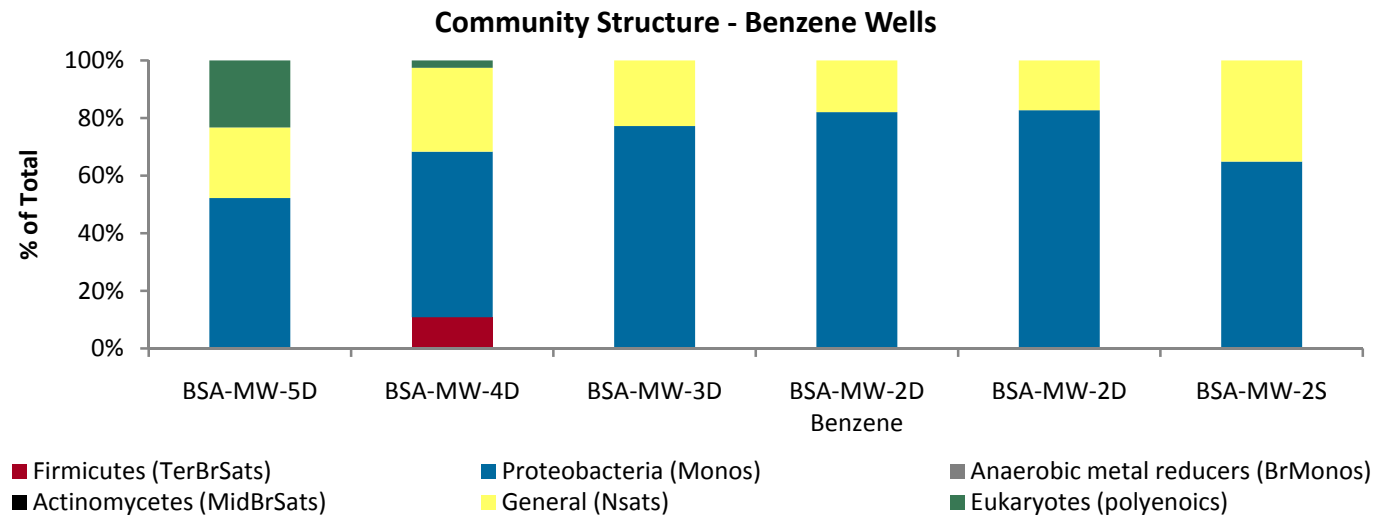


Figure 7. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See the table in the interpretation section for detailed descriptions of the structural groups.

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

US EPA ARCHIVE DOCUMENT

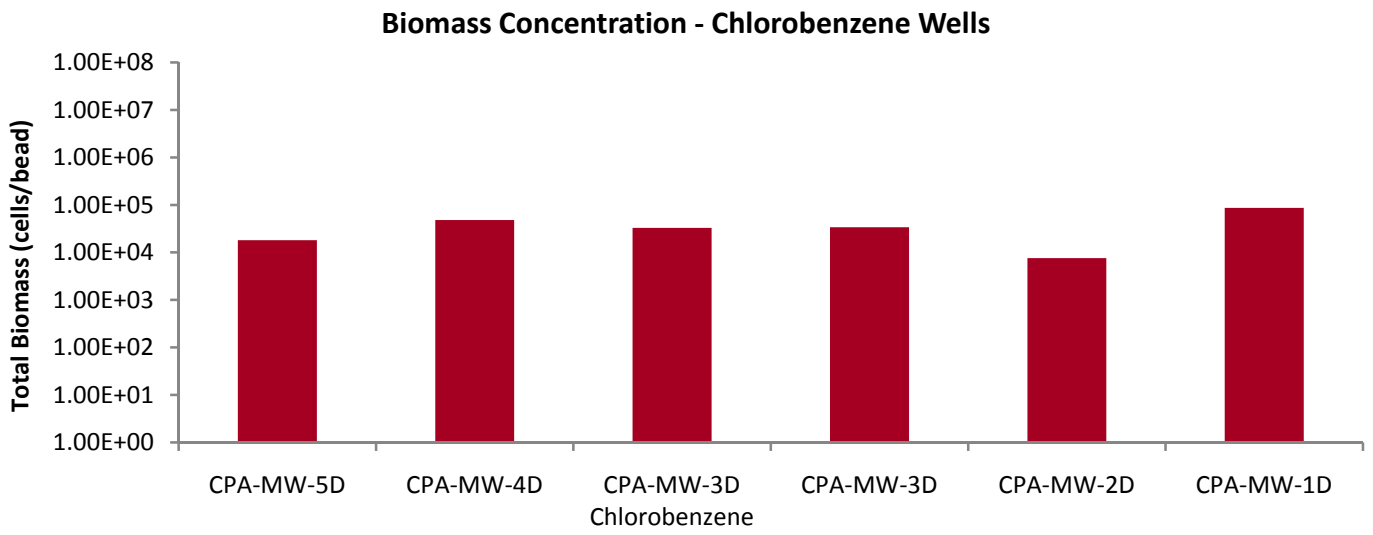


Figure 8. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

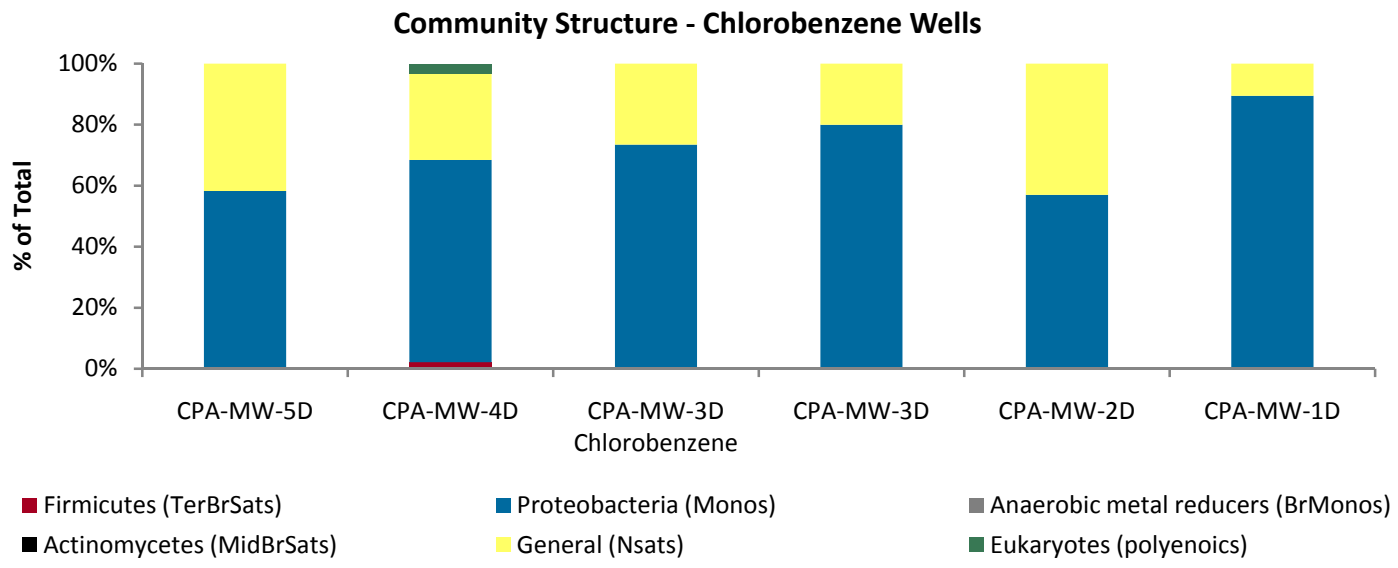


Figure 9. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See the table in the interpretation section for detailed descriptions of the structural groups.

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

US EPA ARCHIVE DOCUMENT

Interpretation

Interpretation of the results of the SIP Bio-Trap® study must be performed with due consideration of site conditions, site activities, and the desired treatment mechanism. The following discussion describes interpretation of results in general terms and is meant to serve as a guide.

Contaminant Concentration: Bio-Traps® are baited with a ^{13}C labeled contaminant of concern and a pre-deployment concentration is determined prior to shipping. Following deployment, Bio-Traps® are recovered for analysis including measurement of the concentration of the ^{13}C labeled contaminant remaining. Pre- and post-deployment concentrations are used to calculate percent loss.

Biomass Concentrations: PLFA analysis is one of the most reliable and accurate methods available for the determination of viable (live) biomass. Phospholipids break down rapidly upon cell death, so biomass calculations based on PLFA content do not include "fossil" lipids from dead cells. Total biomass (cells/bead) is calculated from total PLFA using a conversion factor of 20,000 cells/pmole of PLFA. When making comparisons between wells, treatments, or over time, differences of one order of magnitude or more are considered significant.

	Total Biomass	
Low	**Moderate**	**High**
10^3 to 10^4 cells	10^5 to 10^6 cells	10^7 to 10^8 cells

For SIP studies, the ^{13}C enriched PLFA is also determined to conclusively demonstrate contaminant biodegradation and quantify incorporation into biomass as a result of the ^{13}C being used for cellular growth. The % ^{13}C incorporation (^{13}C enriched biomass/total biomass) is also provided in the data summary table, but the value must be interpreted carefully especially when comparing wells or treatments. Typically, biodegradation of a contaminant of concern is performed by a small subset of the total microbial community. For Bio-Traps® with large total biomass, the % ^{13}C incorporation value could be low despite significant ^{13}C labeled biomass and loss of the compound. The % ^{13}C incorporation should be viewed in light of total biomass, percent loss, and dissolved inorganic carbon (DIC) results.

^{13}C enrichment data is often reported as a del value. The del value is the difference between the isotopic ratio ($^{13}C/^{12}C$) of the sample (R_x) and a standard (R_{std}) normalized to the isotopic ratio of the standard (R_{std}) and multiplied by 1,000 (units are parts per thousand, denoted ‰).

R_{std} is the naturally occurring isotopic ratio and is approximately 0.011180 (roughly 1% of naturally occurring carbon is ^{13}C). The isotopic ratio, R_x, of PLFA is typically less than the R_{std} under natural conditions, resulting in a del value between -20 and -30‰. For a SIP Bio-Trap® study, biodegradation and incorporation of the ^{13}C labeled compound into PLFA results in a larger $^{13}C/^{12}C$ ratio (R_x) and thus del values greater than under natural conditions. Typical PLFA del values are provided below.

	PLFA Del (‰)	
Low	**Moderate**	**High**
0 to 100	100 to 1,000	>1,000

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

US EPA ARCHIVE DOCUMENT

Dissolved Inorganic Carbon (DIC): Often, bacteria can utilize the ^{13}C labeled compound as both a carbon and energy source. The ^{13}C portion used as a carbon source for growth can be incorporated into PLFA as discussed above, while the ^{13}C used for energy is oxidized to $^{13}CO_2$ (mineralized).

^{13}C enriched CO_2 data is often reported as a del value as described above for PLFA. Under natural conditions, the R_x of CO_2 is approximately the same as R_{std} (0.01118 or about 1.1% ^{13}C). For an SIP Bio-Trap® study, mineralization of the ^{13}C labeled contaminant of concern would lead to a greater value of R_x (increased $^{13}CO_2$ production) and thus a positive del value. As with PLFA, del values between 0 and 100‰ are considered low, values between 100 and 1,000‰ are considered moderate, and values greater than 1,000‰ are considered high. Thus DIC %^{13}C are considered low if the value is less than 1.23%, moderate if between 1.23 and 2.24%, and high if greater than 2.24%.

Dissolved Inorganic Carbon (DIC) Del and %^{13}C		
Low	**Moderate**	**High**
0 to 100	100 to 1,000	>1,000
1.11 to 1.23%	1.23 to 2.24%	>2.24%

Community Structure (% total PLFA): Community structure data is presented as a percentage of PLFA structural groups normalized to the total PLFA biomass. The relative proportions of the PLFA structural groups provide a "fingerprint" of the types of microbial groups (e.g. anaerobes, sulfate reducers, etc.) present and therefore offer insight into the dominant metabolic processes occurring at the sample location. Thorough interpretation of the PLFA structural groups depends in part on an understanding of site conditions and the desired microbial biodegradation pathways. For example, an increase in mid chain branched saturated PLFA (MidBrSats), indicative of sulfate reducing bacteria (SRB) and *Actinomycetes*, may be desirable at a site where anaerobic BTEX biodegradation is the treatment mechanism, but would not be desirable for a corrective action promoting aerobic BTEX or MTBE biodegradation. The following table provides a brief summary of each PLFA structural group and its potential relevance to bioremediation.

Table 2. Description of PLFA structural groups.

PLFA Structural Group	General classification	Potential Relevance to Bioremediation Studies
Monoenoic (Monos)	Abundant in Proteobacteria (Gram negative bacteria), typically fast growing, utilize many carbon sources, and adapt quickly to a variety of environments.	Proteobacteria is one of the largest groups of bacteria and represents a wide variety of both aerobes and anaerobes. The majority of Hydrocarbon utilizing bacteria fall within the Proteobacteria
Terminally Branched Saturated (TerBrSats)	Characteristic of Firmicutes (Low G+C Gram-positive bacteria), and also found in Bacteriodes, and some Gram-negative bacteria (especially anaerobes).	Firmicutes are indicative of presence of anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination
Branched Monoenoic (BrMonos)	Found in the cell membranes of micro-aerophiles and anaerobes, such as sulfate- or iron-reducing bacteria	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in sulfate reducing bacteria and also Actinobacteria (High G+C Gram-positive bacteria).	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Normal Saturated (Nsats)	Found in all organisms.	High proportions often indicate less diverse populations.
Polyenoic	Found in eukaryotes such as fungi, protozoa, algae, higher plants, and animals.	Eukaryotic scavengers will often rise up and prey on contaminant utilizing bacteria

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

US EPA ARCHIVE DOCUMENT

Physiological Status (*Proteobacteria*): Some *Proteobacteria* modify specific PLFA as a strategy to adapt to stressful environmental conditions (3, 4). For example, *cis* monounsaturated fatty acids may be modified to cyclopropyl fatty acids during periods of slowed growth or modified to *trans* monounsaturated fatty acids to decrease membrane permeability in response to environmental stress. The ratio of product to substrate fatty acid thus provides an index of their health and metabolic activity. In general, status ratios greater than 0.25 indicate a response to unfavorable environmental conditions.

Glossary

Del: A Del value is the difference between the isotopic ratio ($^{13}C/^{12}C$) of the sample (R_x) and a standard (R_{std}) normalized to the isotopic ratio of the standard (R_{std}) and multiplied by 1,000 (units are parts per thousand denoted ‰).

$$Del = (R_x - R_{std})/R_{std} \times 1000$$

References

1. White, D.C., W.M. Davis, J.S. Nickels, J.D. King, and R.J. Bobbie. 1979. Determination of the sedimentary microbial biomass by extractable lipid phosphate. Oecologia 40:51-62.
2. White, D.C. and D.B. Ringelberg. 1995. Utility of signature lipid biomarker analysis in determining in situ viable biomass. In P.S. Amy and D.L. Halderman (eds.) The microbiology of the terrestrial surface. CRC Press, Boca Raton.
3. Guckert, J.B., M.A. Hood, and D.C. White. 1986. Phospholipid ester-linked fatty acid profile changes during nutrient deprivation of *Vibrio chloerae*: increases in the trans/cis ratio and proportions of cyclopropyl fatty acids. Applied and Environmental Microbiology. 52:794-801.
4. Tsitko, I.V., G. M. Zaitsev, A. G. Lobanok, and M.S. Salkinoja-Salonen. 1999. Effect of aromatic compounds on cellular fatty acid composition of *Rhodococcus opacus*. Applied and Environmental Microbiology. 65:853-855.

US EPA ARCHIVE DOCUMENT

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

REPORT TO:

Reports will be provided to the contact(s) listed below. Parties other than the contact(s) listed below will require prior approval.

Name: Dave Palmer
Company: URS Corporation
Address: 1001 Highlands Plaza Dr W
Suite 300
St. Louis, MO 63110
email: dave.palmer@urs.com
Phone: (314) 429-0100
Fax: (314) 429-0462

Project Manager: Dave Palmer
Project Name: Solutia WGK LTM 4Q11
Project No.: ~~21562703~~ 21562682

INVOICE TO:

For Invoices **paid by a third party** it is imperative that contact information & corresponding reference No. be provided.

Name: Accounts Payable
Company: URS
Address: PO Box 203970
Austin, TX 78720
email:
Phone: ( )
Fax: ( )

Purchase Order No. 21562682
Subcontract No.

microbialinsights
2340 Stock Creek Blvd.
Rockford, TN 37853-3044
phone (865) 573-8188
fax: (865) 573-8133
email: info@microbe.com
www.microbe.com

Please Check One:

☐ More samples to follow
☒ No Additional Samples

Saturday Delivery

Please see sampling protocol for instructions

Report Type: ☒ Standard (default) ☐ Comprehensive (15% surcharge) ☐ Historical (30% surcharge)

Please contact us prior to submitting samples regarding questions about the analyses you are requesting at (865) 573-8188 (8:00 am to 4:00 pm M-F). After these hours please call (865) 300-8053.

Sample Information											CENSUS: Please select the target organism/gene																								
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	VFA	MEE	DGGE+3ID	DGGE+5ID		qDHC (Dehalococcoides)	DHC Functional genes (tvc, tce, vcr)	qDHB (Dehalobacter)	qDSM (Desulfuromonas)	qDSB (Desulfitobacterium)	qEBAC (Total)	qDSR (SRBs only)	qSRB/IRB	qMGN (methanogens)	qMOB (methanotrophs)	qDNF (Denitrifying)	qAOB (ammonia oxidizing)	qPM1 (MTBE aerobic)	qTOD (Initial PAHs aerobic)	qPHE (aerobic BTEX)	qBSS (Toluen/Xylene Anaerobic)	qNAH (Napthalene aerobic)	add. qPCR:	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Oil Retention	Other: Benzene SIP	Other: Chlorobenzene SIP	Other:
049iK 1	CPA-MW-5D	11/14/11	0935	Water	X																														
2	BSA-MW-5D	11/14/11	1005	Water	X																														
3	CPA-MW-4D	11/14/11	1020	Water	X																														
4	BSA-MW-4D	11/14/11	1030	Water	X																														
5	BSA-MW-3D	11/14/11	1050	Water	X																														
6,7	BSA-MW-2D	11/14/11	1105	Water	X																											X			
8,9	CPA-MW-3D	11/14/11	1115	Water	X																												X		
10	BSA-MW-2S	11/14/11	1235	Water	X																														
11	CPA-MW-2D	11/14/11	1245	Water	X																														
12	CPA-MW-1D	11/14/11	1255	Water	X																														

Relinquished by: [signature] URS Date: 11/14/11 Received by: FedEx Date 11/14/11 [signature] 11/15/11

In order for analysis to be completed correctly, it is vital that chain of custody is filled out correctly & that all relative information is provided. Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable. Most analyses have a 24-48 hour hold time. *** additional cost and sample preservation are associated with RNA samples.**

Airbill # 7954 0538 8844