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April 21, 2016

Ms. Carolyn Bury - LU-9J  
U.S. EPA Region 5  
Corrective Action Section  
77 West Jackson Boulevard  
Chicago, IL 60604-3507

Re: Route 3 Drum Site Groundwater Monitoring Program  
1<sup>st</sup> Quarter 2016 Data Report  
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

Dear Ms. Bury:

Enclosed please find the Route 3 Drum Site Groundwater Monitoring Program  
1<sup>st</sup> Quarter 2016 Data Report for Solutia Inc.'s W. G. Krummrich Plant, Sauget, IL.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Gerald M. Rinaldi".

Gerald M. Rinaldi  
Manager, Remediation Services

Enclosure

cc: Distribution List

## **DISTRIBUTION LIST**

**Route 3 Drum Site Groundwater Monitoring Program  
1<sup>st</sup> Quarter 2016 Data Report  
Solutia Inc., W. G. Krummrich Plant, Sauget, IL**

### USEPA

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

### Solutia

Donn Haines                      500 Monsanto Avenue, Sauget, IL 62206-1198



# GROUNDWATER MONITORING REPORT

1<sup>st</sup> QUARTER 2016 DATA REPORT  
ILLINOIS ROUTE 3 DRUM SITE  
GROUNDWATER MONITORING  
SOLUTIA INC., W.G. KRUMMRICH FACILITY  
SAUGET, ILLINOIS

**Prepared For:** Solutia Inc.  
575 Maryville Centre Drive  
St. Louis, MO 63141 USA

**Submitted By:** Golder Associates Inc.  
820 S. Main Street, Suite 100  
St. Charles, MO 63301 USA

April 2016

140-3345

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## TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	FIELD ACTIVITIES .....	2
2.1	Water Level Measurement .....	2
2.2	Groundwater Sample Collection .....	2
2.3	Quality Assurance and Sample Handling .....	3
2.4	Decontamination and Investigation Derived Waste .....	4
3.0	QUALITY ASSURANCE .....	4
4.0	OBSERVATIONS.....	4
5.0	CLOSING .....	5
6.0	REFERENCES.....	6

### List of Figures

- Figure 1 Site Location Map
- Figure 2 Monitoring Well Locations and Groundwater Elevation Map

### List of Tables

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

### List of Appendices

- Appendix A Groundwater Purging and Sampling Forms
- Appendix B Chain-of-Custody
- Appendix C Quality Assurance Report
- Appendix D Groundwater Analytical Results (including data validation reports)



## 1.0 INTRODUCTION

Golder Associates Inc. (Golder) is pleased to submit this report summarizing the 1<sup>st</sup> Quarter 2016 (1Q16) groundwater sampling activities at the Illinois Route 3 Drum Site (Site), located within “Lot F” on Figure 1. The Site is associated with the Solutia Inc. (Solutia) W.G. Krummrich (WGK) facility in Sauget, Illinois located at 500 Monsanto Avenue, Sauget, Illinois. The 1Q16 sampling event was performed in general accordance with the Revised Illinois Route 3 Drum Site Operation and Maintenance Plan (Work Plan) (Solutia 2008).

The scope of work detailed in the Work Plan is summarized below.

Two (2) monitoring wells, located in the shallow hydrogeologic unit (SHU), are sampled during the Drum Site monitoring event. The locations of the monitoring wells are shown on Figure 2 and the sample locations are included on the table below.

Area	Location Relative to Area	Sample Identification
Illinois Route 3 Drum Site	Adjacent	GM-31A
	Downgradient	GM-58A

The water levels of the two (2) monitoring wells are measured quarterly and total depths are measured in the 1<sup>st</sup> quarter of each year.

During the quarterly sampling events, monitoring wells are sampled for the following semi-volatile organic compound (SVOC) analytes: 1,1'-biphenyl, 1-chloro-2,4-dinitrobenzene, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2-chloronitrobenzene/4-chloronitrobenzene, 2-nitrobiphenyl, 3,4-dichloronitrobenzene, 3-nitrobiphenyl, 3-nitrochlorobenzene, 4-nitrobiphenyl, nitrobenzene, and pentachlorophenol. In addition, the following monitored natural attenuation (MNA) parameters are sampled quarterly to evaluate active natural attenuation occurring at the Site:

- Electron Donors – total and dissolved organic carbon
- Electron Acceptors – iron, manganese, nitrate, sulfate
- Biodegradation Byproducts – carbon dioxide, chloride, methane
- Biodegradation Indicators – alkalinity



## 2.0 FIELD ACTIVITIES

Golder conducted 1Q16 sampling activities on February 18 and 19, 2016. Activities were performed in general accordance with the Work Plan.

### 2.1 Water Level Measurement

Prior to sampling during the 1Q16 event, Golder performed a synoptic round of water level and total depth measurements at 77 monitoring wells and piezometers on February 16 and 17, 2016. The following monitoring well series is included in the Drum Site program:

- GM-series

An oil/water interface probe was used to measure the water level (to 0.01 feet) and, if present, detect and measure the thickness of non-aqueous phase liquid (NAPL). During the 1Q16 sampling event, NAPL was not detected in monitoring wells or piezometers. Total depths are measured during the 1<sup>st</sup> quarter of each year. The 1Q16 well gauging information is shown on Table 1.

### 2.2 Groundwater Sample Collection

Monitoring wells sampled during the 1Q16 Drum Site event were purged and sampled using low-flow sampling techniques, low-density polyethylene tubing (LDPE) and a submersible (GM-31A) or peristaltic pump (GM-58A). The pump intake was placed at approximately the middle of the screened interval for each well. Purging occurred at a rate of approximately 300 mL/min to reduce drawdown. Drawdown was measured throughout purging activities to ensure that it did not exceed 25% of the distance between the pump intake and the top of the screen. Measurement of field parameters began once the flow rate and drawdown were stable for each well. Parameters were measured for each system volume purged using a SmartTROLL™ multi-parameter meter. The system volume includes the volume of the tubing, the volume of the pump and the volume of the flow-through cell containing the multi-parameter meter. Samples were collected after field parameters were stabilized within the ranges below for three (3) consecutive measurements:

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

The flow rate was adjusted as needed to maintain approximately 300 mL/min during sampling activities. To reduce possible sample cross contamination, the flow-through cell was bypassed and gloves were replaced prior to sampling.



Sample bottles were provided by TestAmerica Laboratories, Inc. (TestAmerica) for the following analyses:

- SVOCs – United States Environmental Protection Agency (USEPA) SW-846 Method 8270D
- MNA parameters – alkalinity and carbon dioxide (USEPA Method 310.1), chloride (USEPA Method 352.5), total and dissolved iron and total and dissolved manganese (USEPA SW-846 Method 6010C), methane, ethane and ethylene (RSK-175), nitrate (USEPA Method 353.2), sulfate (USEPA Method 375.4), and total and dissolved organic carbon (USEPA Method 415.1)

Gas sensitive parameter sample bottles were filled first followed by SVOCs and general chemistry parameters. Ferrous iron was field analyzed with a HACH 890 Colorimeter and HACH AccuVac® ampules. Samples collected for ferrous iron and dissolved analyses were field filtered using an in-line 0.2 micron disposable filter. Groundwater purging and sampling forms are included in Appendix A.

### 2.3 Quality Assurance and Sample Handling

One (1) analytical duplicate (AD), one (1) equipment blank (EB) and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were collected during the 1Q16 Drum Site sampling event. Sample bottles were labeled with the date and time of sample collection, sampler initials, analysis requested, preservative used, and sample identification based on the following nomenclature “GM-##A-MMY- QA/QC” where:

- “**GM**” denotes “Geraghty & Miller” and “**##A**” denotes monitoring well location and number
- “**MMY**” denotes month and year of sampling quarter, e.g.: February (1<sup>st</sup> Quarter), 2016 (0216)
- “**QA/QC**” denotes QA/QC sample
  - **AD** – Analytical Duplicate
  - **EB** – Equipment Blank
  - **MS or MSD** – Matrix Spike or Matrix Spike Duplicate

Samples that were field filtered with an in-line 0.2 micron filter include “F(0.2)” prior to the “MMY” portion of the sample identification. Sample information was recorded on a chain-of-custody (COC) that included project identification, sample identification, date and time of sample collection, analysis requested, preservative used, sample matrix and type, number of sample containers, sampler signature, and date COC was completed. A copy of the COC is included in Appendix B.

Directly after sampling, sample bottles were placed in an iced cooler to maintain a sample temperature of approximately 4°C. Prior to sample shipment, samples and ice were placed inside two (2) contractor trash bags. The bags were tied and the cooler was sealed between the lid and sides with a signed and dated custody seal. Samples were shipped overnight via FedEx to the TestAmerica facility in Savannah, Georgia.



## 2.4 Decontamination and Investigation Derived Waste

Sampling equipment was decontaminated prior to mobilizing to the Site, between sample locations and prior to demobilizing from the Site. Non-dedicated sampling equipment was decontaminated between samples with a non-phosphatic detergent solution and a deionized water rinse.

Investigation derived waste (IDW) was placed in 55-gallon drums, labeled with the generation date and staged for disposal by Solutia. IDW such as gloves and other disposable sampling equipment was bagged for disposal by Solutia.

## 3.0 QUALITY ASSURANCE

Sample results were provided by TestAmerica in electronic format and reviewed for quality and completeness by Golder in accordance with the Work Plan. Results were submitted in two (2) sample delivery groups (SDG) as follows:

Sample Delivery Group (SDG)	Sample Identification
KOM031	GM-58A-0216
KOM032	GM-31A-0216
	GM-31A-0216-AD
	GM-31A-0216-EB

Golder completed validation of the analytical data following the general guidelines in the Work Plan, and the most recent versions of the national data validation guidelines. The following guidelines were generally used:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Qualifications are included in Appendix C. The completeness for the data set was 100%.

## 4.0 OBSERVATIONS

SVOCs were not detected in groundwater samples collected from monitoring well GM-58A during the 1Q16 sampling event. The SVOC 2-nitrobiphenyl was detected in GM-31A and GM-31A-AD at concentrations of 10 µg/L and 12 µg/L, respectively. Groundwater analytical data for SVOCs and MNA parameters is presented in Table 2 and 3, respectively. The groundwater analytical laboratory results including data validation reports are included in Appendix D.



## 5.0 CLOSING

Golder appreciates the opportunity to assist Solutia Inc. with the Illinois Route 3 Drum Site groundwater sampling events. Please contact the undersigned if you need additional information.

Sincerely,

**GOLDER ASSOCIATES INC.**

Amanda W. Derhake, Ph.D., P.E.  
Senior Project Engineer

Mark N. Haddock, R.G., P.E.  
Principal, Senior Consultant



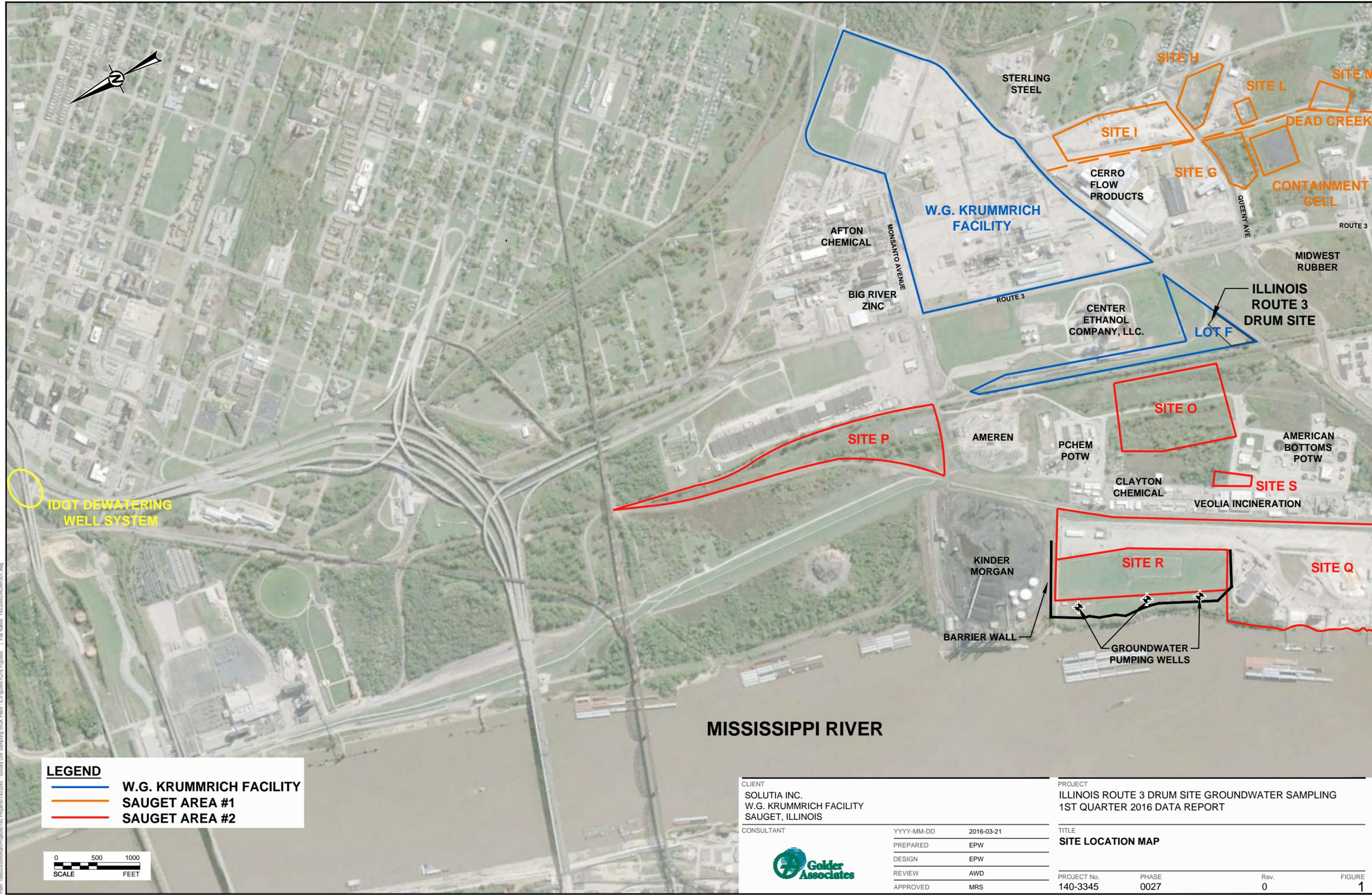
## 6.0 REFERENCES

Solutia Inc., 2008. Revised Illinois Route 3 Drum Site Operation and Maintenance Plan, W.G. Krummrich Facility, Sauget, IL, May 2008.

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

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

## FIGURES



LEGEND	
	W.G. KRUMMRICH FACILITY
	SAUGET AREA #1
	SAUGET AREA #2



### MISSISSIPPI RIVER

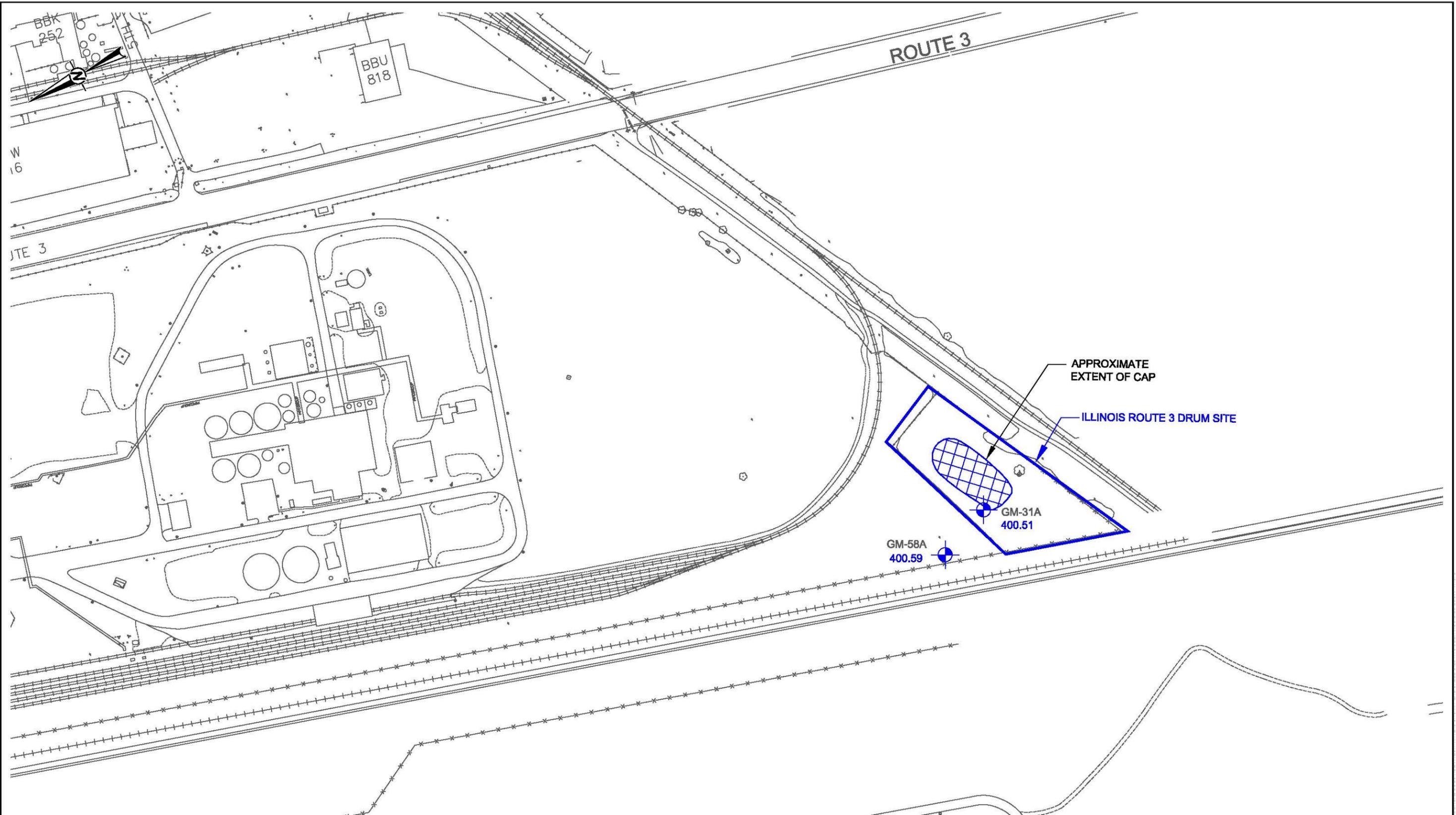
CLIENT	SOLUTIA INC. W.G. KRUMMRICH FACILITY SAUGET, ILLINOIS	
CONSULTANT	YYYY-MM-DD	2016-03-21
	PREPARED	EPW
	DESIGN	EPW
	REVIEW	AWD
	APPROVED	MRS



PROJECT	ILLINOIS ROUTE 3 DRUM SITE GROUNDWATER SAMPLING 1ST QUARTER 2016 DATA REPORT		
TITLE	SITE LOCATION MAP		
PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0027	0	1

Path: \\utah\public\common\Projects\140\Projects\1403345 - Sauget GW Sampling\WGK\Drawn - 11\Figures\1016\Figure1.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B 11in



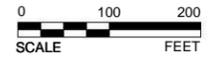
Path: \\valouiscor\mon\Projects\140-3345 - Solutia GW Sampling WGR Plan - LUF\figures\Q16 Figures - File Name: 1403345\_ROUTE3 DRUM SITE.dwg

**LEGEND**

 MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (FT NAVD)

**NOTES**

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



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

CONSULTANT	YYYY-MM-DD	2016-03-21
	PREPARED	EPW
	DESIGN	EPW
	REVIEW	AWD
	APPROVED	MRS



PROJECT  
ILLINOIS ROUTE 3 DRUM SITE GROUNDWATER SAMPLING  
1ST QUARTER 2016 DATA REPORT

TITLE  
**MONITORING WELL LOCATIONS AND  
GROUNDWATER ELEVATION MAP**

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0027	0	2

## TABLES

**Table 1**  
**Monitoring Well Gauging Information**  
**1Q16 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Facility**  
**Sauget, Illinois**

Well Identification	Monitoring Well Construction Data						1Q16 - February 16 and 17, 2016			
	Ground Surface Elevation <sup>1</sup> (ft)	Top of Casing Elevation <sup>1</sup> (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Top of Screen Elevation <sup>1</sup> (ft)	Bottom of Screen Elevation <sup>1</sup> (ft)	Water Level (ft btoc)	Depth to NAPL (ft btoc)	Total Depth <sup>2</sup> (ft btoc)	Water Level Elevation <sup>1</sup> (ft)
<b>SHU 395-380 ft NAVD 88</b>										
GM-31A	416.63	418.63	19.00	39.00	397.63	377.63	18.12	NP	39.99	400.51
GM-58A	412.24	414.24	19.40	39.40	392.84	372.84	13.65	NP	40.84	400.59

**Notes**

ft - feet

bgs - below ground surface

btoc - below top of casing

NP - no product observed

SHU - shallow hydrogeologic unit

<sup>1</sup> - Elevations based on North American Vertical Datum (NAVD) 88 datum.

<sup>2</sup> - Total depths are measured annually during the first quarter of each year.

Prepared By: PJJ 03/18/2016

Checked By: EPW 03/18/2016

Reviewed by: AWD 04/06/2016

**Table 2**  
**Groundwater Analytical Results**  
**1Q16 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Facility**  
**Sauget, Illinois**

Sample Identification	Sample Date	SVOCs (µg/L)											
		1,1'-Biphenyl	1-Chloro-2,4-Dinitrobenzene	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2-Chloronitrobenzene/ 4-Chloronitrobenzene	2-Nitrobiphenyl	3,4-Dichloronitrobenzene	3-Nitrobiphenyl	3-Nitrochlorobenzene	4-Nitrobiphenyl	Nitrobenzene	Pentachlorophenol
<b>SHU</b>													
GM-31A-0216	2/19/2016	<10	<10	<10	<10	<20	<b>10</b>	<10	<10	<10	<10	<10	<50
GM-31A-0216-AD	2/19/2016	<9.9	<9.9	<9.9	<9.9	<20	<b>12</b>	<9.9	<9.9	<9.9	<9.9	<9.9	<50
GM-58A-0216	2/18/2016	<10	<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<50

**Notes**

SVOCs - semi-volatile organic compounds  
µg/L - micrograms per liter  
< - result is non-detect, less than the reporting limit  
AD - analytical duplicate  
SHU - shallow hydrogeologic unit  
**Bold** - indicates detection greater than reporting limit

Prepared By: EPW 03/21/2016  
Checked By: JS 03/31/2016  
Reviewed By: AWD 04/06/2016

**Table 3**  
**1Q16 Route 3 Drum Site Monitoring Program**  
**Solutia Inc., W.G. Krummrich Facility**  
**Sauget, Illinois**

Sample Identification	Sample Date	Monitored Natural Attenuation Parameters																
		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 SO <sub>4</sub> (mg/L)	Total Organic Carbon (mg/L)	Dissolved Organic Carbon (mg/L)	ORP ( mV)
<b>SHU</b>																		
GM-31A-0216	2/19/2016	350	41	32	0.09	<1.0	<1.0	-	1.4	-	0.46	-	1.9	2.7 D	100 D	2.9	-	73.80
GM-31A-F(0.2)-0216	2/19/2016	-	-	-	-	-	-	0.0	-	<0.050	-	0.45	-	-	-	-	2.6	-
GM-58A-0216	2/18/2016	420	31	62 D	0.06	<1.0	<1.0	-	0.12	-	1.0	-	1.2	0.75	220 D	3.1	-	74.79
GM-58A-F(0.2)-0216	2/18/2016	-	-	-	-	-	-	0.0	-	2.6	-	1.0	-	-	-	-	2.9	-

**Notes**

Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) values represent the final field measurements prior to sampling (In-Situ - SmartTroll™)  
 Ferrous Iron was field measured using a 0.2 µm field filtered sample (Hach DR-890 Colorimeter)  
 F(0.2) - sample was field filtered using a 0.2 µm filter during sample collection  
 µg/L - micrograms per liter  
 mg/L - milligrams per liter  
 mV - millivolts  
 < - result is non-detect, less than the reporting limit  
 "-" - not analyzed  
 D - compound analyzed at a dilution  
 SHU - shallow hydrogeologic unit

Prepared By: EPW 03/21/2016  
 Checked By: JS 03/31/2016  
 Reviewed By: AWD 04/06/2016

**APPENDIX A**  
**GROUNDWATER PURGING AND SAMPLING FORMS**

**Project Information:**

Operator Name SJD  
 Company Name Golder Associates  
 Project Name W.G. Krummrich  
 Site Name Rt. 3 Drum

**Pump Information:**

Pump Model/Type SS Monsoon  
 Tubing Type LDPE  
 Tubing Diameter 0.19 in  
 Tubing Length 44.32 ft  
 Pump Placement from TOC 31.00 ft

**Well Information:**

Well Id GM-31A  
 Well Diameter 2 in  
 Well Total Depth 39.99 ft  
 Depth to Top of Screen 21.00 ft  
 Screen Length 20 ft  
 Depth to Water 18.12 ft

**Pumping Information:**

Final Pumping Rate 300 mL/min  
 System Volume 437 mL  
 Calculated Sample Rate 87 sec  
 Sample Rate 87 sec  
 Stabilized Drawdown 0.00 ft

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [C]	pH [pH]	Cond [ $\mu$ S/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	9:42:10	16.09	6.85	949.52	24.60	0.11	76.73
	9:43:17	16.08	6.85	950.27	24.40	0.10	75.61
	9:44:25	16.09	6.85	949.59	28.40	0.09	79.38
	9:45:32	16.09	6.85	949.52	26.10	0.09	76.54
	9:46:39	16.09	6.85	948.29	24.20	0.09	73.80
Variance in Last 3 Readings		0.01	0.00	-0.68	4.00	-0.01	3.77
		0.00	0.00	-0.07	-2.30	0.00	-2.84
		0.00	0.00	-1.23	-1.90	0.00	-2.74

**Notes:**

**Project Information:**

Operator Name SJD  
 Company Name Golder Associates  
 Project Name W.G. Krummrich  
 Site Name Rt. 3 Drum

**Pump Information:**

Pump Model/Type Peristaltic  
 Tubing Type LDPE  
 Tubing Diameter 0.19 in  
 Tubing Length 48.33 ft  
 Pump Placement from TOC 31.40 ft

**Well Information:**

Well Id GM-58A  
 Well Diameter 2 in  
 Well Total Depth 40.84 ft  
 Depth to Top of Screen 21.40 ft  
 Screen Length 20 ft  
 Depth to Water 13.65 ft

**Pumping Information:**

Final Pumping Rate 300 mL/min  
 System Volume 359 mL  
 Calculated Sample Rate 71 sec  
 Sample Rate 71 sec  
 Stabilized Drawdown 0.00 ft

**Low-Flow Sampling Stabilization Summary**

	Time	Temp [C]	pH [pH]	Cond [ $\mu$ S/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	12:51:35	14.65	6.88	1195.35	60.60	0.06	75.51
	12:52:46	14.69	6.88	1203.66	61.00	0.06	74.61
	12:53:58	14.67	6.88	1202.48	51.20	0.06	71.66
	12:55:09	14.73	6.87	1204.99	51.80	0.06	73.67
	12:56:20	14.79	6.87	1199.29	55.50	0.06	74.79
Variance in Last 3 Readings		-0.02	0.00	-1.18	-9.80	0.00	-2.95
		0.06	-0.01	2.51	0.60	0.00	2.01
		0.06	0.00	-5.70	3.70	0.00	1.12

**Notes:**

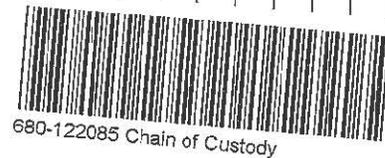
**APPENDIX B  
CHAIN-OF-CUSTODY**

TestAmerica 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

<b>Client Information</b>		Sampler: <u>Samantha Di Censo</u>	Lab PM: Kersey, Michele R	Carrier Tracking No(s):	COC No: 680-68790-29364.2																								
Client Contact: Emily White / <u>Samantha Di Censo</u>		Phone: <u>636-724-9191</u>	E-Mail: michele.kersey@testamericainc.com		Page: <u>1 of 1</u>																								
Company: Golder Associates Inc.		<b>Analysis Requested</b>			Job #:																								
Address: 820 South Main Street Suite 100		Due Date Requested:	<table border="1"> <tr><td>Field Filtered, Same Day (No. of No.)</td><td>853.2 - NO3</td><td>810.1 - ALKAL/CO2</td><td>8010C - Total Fe/Mn</td><td>825.2, 875.4</td><td>415.1 - Total Organic Carbon</td><td>89K_175 - Methane</td><td>8010C - Diss Fe/Mn</td><td>415.1 Diss - DOC (Field Filtered)</td><td>8270C - 8270 SVOC</td></tr> </table>			Field Filtered, Same Day (No. of No.)	853.2 - NO3	810.1 - ALKAL/CO2	8010C - Total Fe/Mn	825.2, 875.4	415.1 - Total Organic Carbon	89K_175 - Methane	8010C - Diss Fe/Mn	415.1 Diss - DOC (Field Filtered)	8270C - 8270 SVOC														
Field Filtered, Same Day (No. of No.)	853.2 - NO3	810.1 - ALKAL/CO2				8010C - Total Fe/Mn	825.2, 875.4	415.1 - Total Organic Carbon	89K_175 - Methane	8010C - Diss Fe/Mn	415.1 Diss - DOC (Field Filtered)	8270C - 8270 SVOC																	
City: St. Charles		TAT Requested (days):																											
State, Zip: MO, 63301		PO #: 42262863																											
Phone: <u>636-724-9191</u>		WO #:																											
Email: emily_white@golder.com / <u>aderhake@golder.com</u>		Project #: 68005355	Preservation Codes:																										
Project Name: WCK Route 3 Drum Site O&M <u>1Q16</u>		SSOW#:	<table border="0"> <tr><td>A - HCL</td><td>M - Hexane</td></tr> <tr><td>B - NaOH</td><td>N - None</td></tr> <tr><td>C - Zn Acetate</td><td>O - AsNaO2</td></tr> <tr><td>D - Nitric Acid</td><td>P - Na2O4S</td></tr> <tr><td>E - NaHSO4</td><td>Q - Na2SO3</td></tr> <tr><td>F - MeOH</td><td>R - Na2S2SO3</td></tr> <tr><td>G - Amchlor</td><td>S - H2SO4</td></tr> <tr><td>H - Ascorbic Acid</td><td>T - TSP Dodecahydrate</td></tr> <tr><td>I - Ice</td><td>U - Acetone</td></tr> <tr><td>J - DI Water</td><td>V - MCAA</td></tr> <tr><td>K - EDTA</td><td>W - ph 4-5</td></tr> <tr><td>L - EDA</td><td>Z - other (specify)</td></tr> </table>			A - HCL	M - Hexane	B - NaOH	N - None	C - Zn Acetate	O - AsNaO2	D - Nitric Acid	P - Na2O4S	E - NaHSO4	Q - Na2SO3	F - MeOH	R - Na2S2SO3	G - Amchlor	S - H2SO4	H - Ascorbic Acid	T - TSP Dodecahydrate	I - Ice	U - Acetone	J - DI Water	V - MCAA	K - EDTA	W - ph 4-5	L - EDA	Z - other (specify)
A - HCL	M - Hexane																												
B - NaOH	N - None																												
C - Zn Acetate	O - AsNaO2																												
D - Nitric Acid	P - Na2O4S																												
E - NaHSO4	Q - Na2SO3																												
F - MeOH	R - Na2S2SO3																												
G - Amchlor	S - H2SO4																												
H - Ascorbic Acid	T - TSP Dodecahydrate																												
I - Ice	U - Acetone																												
J - DI Water	V - MCAA																												
K - EDTA	W - ph 4-5																												
L - EDA	Z - other (specify)																												
Site:		Other:																											
<b>Sample Identification</b>		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	Field Filtered, Same Day (No. of No.)	853.2 - NO3	810.1 - ALKAL/CO2	8010C - Total Fe/Mn	825.2, 875.4	415.1 - Total Organic Carbon	89K_175 - Methane	8010C - Diss Fe/Mn	415.1 Diss - DOC (Field Filtered)	8270C - 8270 SVOC	Total Number of Containers	Special Instructions/Note:												
<u>GM-58A-0216</u>		<u>02/18/16</u>	<u>1358</u>	<u>G</u>	<u>Water</u>	<u>2</u>												<u>1 cooler</u>											
<u>GM-58A-FID.2)-0216</u>																													
<u>GM-58A-0216-MS</u>																													
<u>GM-58A-0216-MSD</u>																													



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

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For 2.4/2.8 Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

Empty Kit Reinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <u>Samantha Di Censo</u>	Date/Time: <u>2-18-16 145</u>	Company: <u>Golder</u>	Received by: <u>[Signature]</u>
Relinquished by:	Date/Time:	Company:	Date/Time: <u>2-19-16 TA</u>
Relinquished by:	Date/Time:	Company:	Date/Time:

Custody Seals Intact:  Yes  No  
 Custody Seal No.: 758687

Cooler Temperature(s) °C and Other Remarks:





**APPENDIX C**  
**QUALITY ASSURANCE REPORT**



# QUALITY ASSURANCE REPORT

**1<sup>st</sup> QUARTER 2016**  
**ILLINOIS ROUTE 3 DRUM SITE**  
**GROUNDWATER MONITORING**  
**SOLUTIA INC., W.G. KRUMMRICH FACILITY**  
**SAUGET, ILLINOIS**

**Prepared For:** Solutia Inc.  
575 Maryville Centre Drive  
St. Louis, MO 63141 USA

**Submitted By:** Golder Associates Inc.  
820 S. Main Street, Suite 100  
St. Charles, MO 63301 USA

April 2016

140-3345

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capabilities  
delivered locally





## Table of Contents

1.0	INTRODUCTION.....	1
2.0	SEMI-VOLATILE ORGANIC COMPOUNDS .....	2
2.1	Receipt Condition and Sample Holding Times .....	3
2.2	Blanks.....	3
2.3	Surrogate Spike Recoveries .....	3
2.4	Laboratory Control Sample Recoveries .....	3
2.5	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples .....	3
2.6	Analytical Duplicates .....	4
2.7	Internal Standard Responses.....	4
2.8	Results Reported From Dilutions .....	4
3.0	INORGANICS AND GENERAL CHEMISTRY .....	4
3.1	Receipt Condition and Sample Holding Times .....	4
3.2	Blanks.....	5
3.3	Laboratory Control Sample Recoveries .....	5
3.4	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples .....	5
3.5	Results Reported From Dilutions .....	5
4.0	SUMMARY .....	6
5.0	REFERENCES.....	7



## 1.0 INTRODUCTION

Golder Associates Inc. (Golder) completed a review of analytical data for the groundwater samples collected on February 18 and 19, 2016 at the Illinois Route 3 Drum Site (Site) associated with the Solutia Inc. (Solutia) W.G. Krummrich (WGK) facility in Sauget, Illinois. Golder collected a total of six (6) samples from groundwater monitoring wells as part of the 1<sup>st</sup> Quarter 2016 (1Q16) Illinois Route 3 Drum Site groundwater monitoring. Two (2) groundwater samples, one (1) equipment blank (EB), one (1) analytical duplicate (AD), and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were prepared. Groundwater monitoring location GM-31A is located at the Site and monitoring location GM-58A is located just north of the Site. The samples were submitted to the TestAmerica Laboratories, Inc. (TestAmerica) facility located in Savannah, Georgia for analysis using United States Environmental Protection Agency (USEPA) methods, standard methods and USEPA SW-846 test methods. Samples submitted to TestAmerica were analyzed for semi-volatile organic compounds (SVOCs), total and dissolved metals, dissolved gases, and general chemistry parameters. The analytical results were placed into two (2) sample delivery groups (SDGs) as described in the table below:

Sample Delivery Group (SDG)	Sample Identification
KOM031	GM-58A-0216
KOM032	GM-31A-0216
	GM-31A-0216-AD
	GM-31A-0216-EB

The samples were collected and analyzed in general accordance with the Revised Illinois Route 3 Drum Site Operation and Maintenance Plan (Work Plan) (Solutia 2008). The groundwater monitoring well samples were analyzed for SVOCs, total and dissolved metals, dissolved gases, and general chemistry parameters. The general chemistry parameters included chloride, nitrate, sulfate, total organic carbon (TOC), alkalinity, carbon dioxide, and dissolved organic carbon (DOC). One (1) EB, one (1) AD, and one (1) MS/MSD pair were submitted and analyzed for SVOCs only. The following analytical methods used are from USEPA document SW-846, Test Methods for Evaluating Solid Waste, Revision 6 contained in Final Update III August 2002 and listed below:

- SVOCs were analyzed using USEPA SW-846 Method 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Total and Dissolved Iron and Manganese analyzed by USEPA SW-846 Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry

The following standard methods were used to analyze monitored natural attenuation (MNA) parameters:

- Dissolved Gases analyzed by Method RSK-175
- Alkalinity and Free Carbon Dioxide analyzed by USEPA Method 310.1 by Titration
- Chloride analyzed by USEPA Method 325.2 by Automated Colorimetry



- Nitrogen, Nitrate analyzed by USEPA Method 353.2 by Automated Colorimetry
- Sulfate analyzed by USEPA Method 375.4 by Spectrophotometer
- Total and Dissolved Organic Carbon analyzed by USEPA Method 415.1

Golder completed validation of the analytical data following the general guidelines in the Work Plan. The most recent versions of the national data validation guidelines were used for data review. The following guidelines were generally used:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

These documents are hereafter referred to as the "functional guidelines". If there was a conflict between the functional guidelines and the quality control criteria specified in the analytical method, the method-specific criteria were used. The SDGs were prepared as Level IV data report packages containing quality control information and raw data. Golder completed Level III review of 100% of the analytical data and Level IV review of 10% of the analytical data.

Data that has been qualified by the data validator has been added to the laboratory report. The qualifiers indicate data that did not meet acceptance criteria and corrective actions were not successful or not performed. Laboratory data qualifiers are defined below:

- U – The analyte was analyzed for but not was not detected
- F1 – MS/MSD Recovery exceeds the control limits
- X – Surrogate is outside control limits

Golder data qualifiers are defined below:

- D – The analyte was analyzed at a dilution

Sections 2 and 3 summarize the specific instances where quality control criteria in the functional guidelines were not met. As specified in the functional guidelines, if the non-adherence to quality control criteria is slight, professional judgment was used in qualification of the data. However, if the non-adherence is significant, qualification and rejection of the data may be necessary. A summary of qualified data is provided in Section 4.0.

## 2.0 SEMI-VOLATILE ORGANIC COMPOUNDS

Samples were collected from two (2) groundwater monitoring locations and analyzed for SVOCs. An AD sample was collected from one (1) sampling location, GM-31A. One (1) EB was also prepared and shipped for laboratory analysis. The samples were submitted to TestAmerica, placed into two (2) data packages or SDGs (KOM031 and KOM032), and were prepared and analyzed using SW-846 Method



8270D. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

## 2.1 Receipt Condition and Sample Holding Times

The SDG Case Narratives, chain-of-custodies, login sample receipt checklists, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. Samples were received by TestAmerica in good condition.

## 2.2 Blanks

Laboratory and field blanks, including method blanks and equipment blanks, are prepared and analyzed to determine if contamination occurred as a result of laboratory or field activities.

Laboratory method blanks were performed for each laboratory system as outlined for each analytical method to evaluate whether cross contamination occurred during laboratory analysis activities. Results for the method blanks were non-detect.

One (1) EB was collected during the 1Q16 event, associated with sample GM-31A, to assess the effectiveness of the decontamination procedure. Results for the EB were non-detect.

## 2.3 Surrogate Spike Recoveries

Samples to be analyzed for SVOCs were spiked with surrogate compounds: 2-fluorobiphenyl, 2-fluorophenol, nitrobenzene-d5, phenol-d5, terphenyl-d14, and 2,4,6-tribromophenol, prior to analysis, to evaluate overall laboratory performance. Surrogate compound 2,4,6-tribromophenol was recovered low in sample GM-58A, data qualification was not required.

## 2.4 Laboratory Control Sample Recoveries

A laboratory control sample (LCS) is analyzed on each laboratory system to evaluate the analytical method accuracy and laboratory performance. LCS recoveries were within acceptance criteria.

## 2.5 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples are analyzed to determine long term precision and accuracy of the analytical method on various matrices. One (1) MS/MSD pair is sampled for every twenty (20) field samples. One (1) MS/MSD pair was collected during the 1Q16 event associated with sample GM-58A. Some MS/MSD data for these samples was outside acceptance criteria. Since MS/MSD data alone cannot be used to evaluate the precision and accuracy of data, data qualification was not required for associated samples.



## 2.6 Analytical Duplicates

One (1) AD is collected for every ten (10) field samples to determine the overall precision of field and laboratory methods. One (1) AD was collected during the 1Q16 event associated with sample GM-31A. The relative percent difference (RPD) between the sample GM-31A and the AD, GM-31A-AD, did not exceed 25%; therefore, data qualification was not required.

## 2.7 Internal Standard Responses

Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during each analysis. Internal standard area counts did not vary by more than a factor of two (2) from the associated 12 hour calibration standard. Internal standard retention times did not vary more than +/-30 seconds from the retention time of the associated 12 hour calibration standard. Qualification of data was not required.

## 2.8 Results Reported From Dilutions

SVOC samples in the SDGs did not require dilutions.

## 3.0 INORGANICS AND GENERAL CHEMISTRY

Samples were collected from two (2) groundwater monitoring locations and analyzed for inorganics and general chemistry. The samples were submitted to TestAmerica, placed into two (2) data packages or SDGs (KOM031 and KOM032), and were prepared and analyzed using the following methods:

- Total and Dissolved Iron and Manganese analyzed by USEPA Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry
- Dissolved Gases analyzed by Method RSK-175
- Alkalinity and Free Carbon Dioxide analyzed by USEPA Method 310.1 by Titration
- Chloride analyzed by USEPA Method 325.2 by Automated Colorimetry
- Nitrogen, Nitrate analyzed by USEPA Method 353.2 by Automated Colorimetry
- Sulfate analyzed by USEPA Method 375.4 by Spectrophotometer
- Total and Dissolved Organic Carbon analyzed by USEPA Method 415.1

Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

## 3.1 Receipt Condition and Sample Holding Times

The SDG Case Narratives, chain-of-custodies, login sample receipt checklists, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. Samples were received by TestAmerica in good condition.



### **3.2 Blanks**

Laboratory method blanks are prepared and analyzed to determine if contamination occurred as a result of laboratory activities.

Laboratory method blanks were performed for each laboratory system as outlined for each analytical method to evaluate whether cross contamination occurred during laboratory analysis activities. Results for the method blanks were non-detect.

### **3.3 Laboratory Control Sample Recoveries**

A LCS is analyzed on each laboratory system to evaluate the analytical method accuracy and laboratory performance. LCS recoveries were within acceptance criteria; therefore, data qualification was not required.

### **3.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples**

MS/MSD samples are analyzed to determine long term precision and accuracy of the analytical method on various matrices. Although MS/MSD analysis was not required for inorganic and general chemistry per the Work Plan, the laboratory spiked groundwater sample GM-31A and GM-58A for various analytes. Results were within accuracy and precision criteria.

### **3.5 Results Reported From Dilutions**

Samples in the SDGs required dilutions due to high levels of target analytes nitrate, chloride and sulfate. Reporting limits were adjusted to reflect the dilution. Result qualifications are shown in Section 4.0.



#### 4.0 SUMMARY

Golder validated the data collected during the 1Q16 sampling event from the Illinois Route 3 Drum Site in general accordance with the Work Plan and USEPA functional guidelines. Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Where a positive result was qualified as estimated, the analyte should be considered present. Similarly, a result that was qualified as an estimated reporting limit should be considered not present for the purposes of this program, although the limit itself may not be precise. The completeness for the entire data set was 100%.

**Qualification Summary Table**

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Nitrate, Chloride and Sulfate	D	GM-31A and GM-58A



## 5.0 REFERENCES

Solutia Inc., 2008. Revised Illinois Route 3 Drum Site Operation and Maintenance Plan, W.G. Krummrich Facility, Sauget, IL, May 2008.

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

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

**APPENDIX D**  
**GROUNDWATER ANALYTICAL RESULTS**  
**(INCLUDING DATA VALIDATION REPORT)**

**SDG KOM031**  
**Sample Results from:**

**GM-58A**



Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
1Q16 Route 3 Drum Site Monitoring Program

Company Name: Golder Associates
Project Name: WGK-1Q16 DRUM
Reviewer: A. Derhake
Laboratory: TestAmerica
SDG#: KOM031
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: February 2016

Analytical Method: SVOC (8270D), Dissolved Gases (RSK-175), Metals (6010C), Alkalinity (310.1), Chloride (325.2), Nitrogen, Nitrate-Nitrite (353.2), Sulfate (375.4), TOC (415.1), and DOC (415.1)

Sample Names: GM-58A-0216 and GM-58A-F(0.2)-0216

Field Information

YES NO NA

- a) Sampling dates noted? [X] [ ] [ ]
b) Does the laboratory narrative indicate deficiencies? [X] [ ] [ ]

Comments:

SVOC: Sample GM-58A-0216 contained an allowable number of surrogate compounds outside limits. Results have been reported and qualified. 1,1'-Biphenyl, 2,4,6-Trichlorophenol and 2,4-Dichlorophenol exceeded the recovery criteria low for the MS and MSD of sample GM-58A-0216MS in batch 423974.

Dissolved Gases: No deficiencies noted.

Metals: No deficiencies noted.

Alkalinity: No deficiencies noted.

Chloride: Sample GM-58A-0216 required dilution prior to analysis, reporting limits have been adjusted accordingly.

Nitrate-Nitrite as Nitrogen: No deficiencies noted.

Sulfate: Sample GM-58A-0216 required dilution prior to analysis, reporting limits were adjusted accordingly.

TOC: No deficiencies noted.

DOC: No deficiencies noted.

Chain-of-Custody (COC)

YES NO NA

- a) Was the COC signed by both field and laboratory personnel? [X] [ ] [ ]
b) Were samples received in good condition? [X] [ ] [ ]

Comments: Samples were received at 2.8°C, within the 4°C +/- 2°C criteria.

General

YES NO NA

- a) Were hold times met for sample analysis? [X] [ ] [ ]
b) Were the correct preservatives used? [X] [ ] [ ]
c) Was the correct method used? [X] [ ] [ ]
d) Any sample dilutions noted? [X] [ ] [ ]

Comments: Sample GM-58A-0216 required dilution prior to sulfate and chloride analyses.



**GC/MS Instrument Performance Check (IPC) and Internal Standards (IS)****YES NO NA**

- a) IPC analyzed at the appropriate frequency and met the appropriate standards?
- b) Does DFTPP meet the ion abundance criteria?
- c) Internal Standard retention times and areas met appropriate criteria?

**Comments:** None**Calibrations****YES NO NA**

- a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?
- b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?
- c) Initial calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?
- d) Continuing calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?

**Comments:** Analytes of interested met calibration standards.**Blanks****YES NO NA**

- a) Were blanks (trip, equipment, method) performed at required frequency?
- b) Were analytes detected in any blanks?

**Comments:** None.**Matrix Spike/Matrix Spike Duplicate (MS/MSD)****YES NO NA**

- a) Was MS/MSD accuracy criteria met?
- b) Was MS/MSD precision criteria met?

**Comments:** 1,1'-Biphenyl, 2,4,6-Trichlorophenol and 2,4-Dichlorophenol recovery low for MS and MSD in batch 423974. Data was not qualified based on MS/MSD data alone.**Laboratory Control Sample (LCS)****YES NO NA**

- a) LCS analyzed at the appropriate frequency and met appropriate standards?

**Comments:** None**Surrogate (System Monitoring) Compounds****YES NO NA**

- a) Surrogate compounds analyzed at the appropriate frequency and met appropriate standards?

**Comments:** Surrogate, 2,4,6-tribromophenol recovered low in sample GM-58A-0216. Qualification not required.**Duplicates****YES NO NA**

- a) Were field duplicates collected?
- b) Was field duplicate precision criteria met?

**Comments:** None.**Additional Comments:** None



**Qualifications:**

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Chloride and Sulfate	D	GM-58A

# 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: 680-122085-1  
TestAmerica Sample Delivery Group: KOM031  
Client Project/Site: 1Q16 Route 3 Drum Site O&M

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

Attn: Mr. Jerry Rinaldi

*Michele Kersey*

Authorized for release by:  
3/16/2016 5:28:03 PM

Michele Kersey, Project Manager I  
(912)354-7858  
michele.kersey@testamericainc.com

### LINKS

Review your project  
results through  
**Total Access**

Have a Question?

**Ask  
The  
Expert**

Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*AWD 3/12/14*

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.

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# Definitions/Glossary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

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## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.
X	Surrogate is outside control limits

### GC VOA

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

### Metals

Qualifier	Qualifier Description
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.

## 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
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

*AWP 3/21/16*  
TestAmerica Savannah

# Sample Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-122085-1	GM-58A-0216	Water	02/18/16 13:58	02/19/16 09:20
680-122085-2	GM-58A- F(0.2)-0216	Water	02/18/16 13:58	02/19/16 09:20

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- 2
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- 11
- 12

AWD 3/21/16  
TestAmerica Savannah

# Case Narrative

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

Job ID: 680-122085-1

Laboratory: TestAmerica Savannah

Narrative

## CASE NARRATIVE

Client: Solutia Inc.

Project: 1Q16 Route 3 Drum Site O&M

Report Number: 680-122085-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

### RECEIPT

The samples were received on 2/19/2016 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.8° C.

### SEMIVOLATILE ORGANIC COMPOUNDS (AQUEOUS)

Sample GM-58A-0216 (680-122085-1) was analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 02/23/2016 and analyzed on 03/04/2016.

The following sample contained an allowable number of surrogate compounds outside limits: GM-58A-0216 (680-122085-1). These results have been reported and qualified.

1,1'-Biphenyl, 2,4,6-Trichlorophenol and 2,4-Dichlorophenol exceeded the recovery criteria low for the MS and MSD of sample GM-58A-0216MS (680-122085-1) in batch 680-423974.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### DISSOLVED GASES

Sample GM-58A-0216 (680-122085-1) was analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 03/03/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP)

Sample GM-58A- F(0.2)-0216 (680-122085-2) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/22/2016 and analyzed on 02/24/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP)

Sample GM-58A-0216 (680-122085-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/22/2016 and analyzed on 02/24/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### ALKALINITY

Sample GM-58A-0216 (680-122085-1) was analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 02/22/2016.



## Case Narrative

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

---

### Job ID: 680-122085-1 (Continued)

---

#### Laboratory: TestAmerica Savannah (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### CHLORIDE

Sample GM-58A-0216 (680-122085-1) was analyzed for Chloride in accordance with EPA Method 325.2. The samples were analyzed on 02/25/2016.

Sample GM-58A-0216 (680-122085-1)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### NITRATE-NITRITE AS NITROGEN

Sample GM-58A-0216 (680-122085-1) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 02/19/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### SULFATE

Sample GM-58A-0216 (680-122085-1) was analyzed for sulfate in accordance with EPA Method 375.4. The samples were analyzed on 02/26/2016.

Sample GM-58A-0216 (680-122085-1)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL ORGANIC CARBON

Sample GM-58A-0216 (680-122085-1) was analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 03/04/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### DISSOLVED ORGANIC CARBON (DOC)

Sample GM-58A- F(0.2)-0216 (680-122085-2) was analyzed for Dissolved Organic Carbon (DOC) in accordance with EPA Method 415.1. The samples were analyzed on 03/07/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Client Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

**Client Sample ID: GM-58A-0216**

**Lab Sample ID: 680-122085-1**

Date Collected: 02/18/16 13:58

Matrix: Water

Date Received: 02/19/16 09:20

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	10	U F1	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
1-chloro-2,4-dinitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
1-Chloro-3-nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	20		ug/L		02/23/16 16:28	03/04/16 21:37	1
3,4-Dichloronitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
2,4-Dichlorophenol	10	U F1	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
Nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
2-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
3-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
4-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 21:37	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 21:37	1
2,4,6-Trichlorophenol	10	U F1	10		ug/L		02/23/16 16:28	03/04/16 21:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	33		32 - 113	02/23/16 16:28	03/04/16 21:37	1
2-Fluorophenol	35		26 - 109	02/23/16 16:28	03/04/16 21:37	1
Nitrobenzene-d5	40		32 - 118	02/23/16 16:28	03/04/16 21:37	1
Phenol-d5	40		27 - 110	02/23/16 16:28	03/04/16 21:37	1
Terphenyl-d14	32		10 - 126	02/23/16 16:28	03/04/16 21:37	1
2,4,6-Tribromophenol	34	X	39 - 124	02/23/16 16:28	03/04/16 21:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.2		1.0		ug/L			03/03/16 12:19	1
Ethane	1.0	U	1.0		ug/L			03/03/16 12:19	1
Ethylene	1.0	U	1.0		ug/L			03/03/16 12:19	1

## Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.12		0.050		mg/L		02/22/16 13:49	02/24/16 02:23	1
Manganese	1.0		0.010		mg/L		02/22/16 13:49	02/24/16 02:23	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	62	D	2.0		mg/L			02/25/16 17:37	2
Nitrate as N	0.75		0.050		mg/L			02/19/16 17:54	1
Sulfate	220	D	50		mg/L			02/26/16 09:25	10
Total Organic Carbon	3.1		1.0		mg/L			03/04/16 16:10	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	420		5.0		mg/L			02/22/16 14:53	1
Carbon Dioxide, Free	31		5.0		mg/L			02/22/16 14:53	1

AWD 3/21/16  
TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

Client Sample ID: GM-58A- F(0.2)-0216

Lab Sample ID: 680-122085-2

Date Collected: 02/18/16 13:58

Matrix: Water

Date Received: 02/19/16 09:20

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	2.6		0.050		mg/L		02/22/16 13:49	02/24/16 02:28	1
Manganese, Dissolved	1.0		0.010		mg/L		02/22/16 13:49	02/24/16 02:28	1

## General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	2.9		1.0		mg/L			03/07/16 18:11	1



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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-422451/21-A  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1'-Biphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
1-chloro-2,4-dinitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
1-Chloro-3-nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2-chloronitrobenzene /	20	U	20		ug/L		02/23/16 16:28	03/04/16 20:48	1
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2,4-Dichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
Nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
3-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
4-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 20:48	1
2,4,6-Trichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	72		32 - 113	02/23/16 16:28	03/04/16 20:48	1
2-Fluorophenol	59		26 - 109	02/23/16 16:28	03/04/16 20:48	1
Nitrobenzene-d5	75		32 - 118	02/23/16 16:28	03/04/16 20:48	1
Phenol-d5	70		27 - 110	02/23/16 16:28	03/04/16 20:48	1
Terphenyl-d14	92		10 - 126	02/23/16 16:28	03/04/16 20:48	1
2,4,6-Tribromophenol	61		39 - 124	02/23/16 16:28	03/04/16 20:48	1

Lab Sample ID: LCS 680-422451/22-A  
Matrix: Water  
Analysis Batch: 422949

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 422451  
%Rec.

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1,1'-Biphenyl	100	69.2		ug/L		69	45 - 130
2,4-Dichlorophenol	100	70.0		ug/L		70	44 - 130
Nitrobenzene	100	64.5		ug/L		65	43 - 130
Pentachlorophenol	200	161		ug/L		80	33 - 130
2,4,6-Trichlorophenol	100	74.8		ug/L		75	47 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	66		32 - 113
2-Fluorophenol	51		26 - 109
Nitrobenzene-d5	62		32 - 118
Phenol-d5	55		27 - 110
Terphenyl-d14	82		10 - 126
2,4,6-Tribromophenol	77		39 - 124

Lab Sample ID: LCS 680-422451/28-A  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 422451  
%Rec.

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1-chloro-2,4-dinitrobenzene	100	72.2		ug/L		72	51 - 130
1-Chloro-3-nitrobenzene	100	71.0		ug/L		71	31 - 130

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# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-422451/28-A

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 423974

Prep Batch: 422451

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-chloronitrobenzene /	200	142		ug/L		71	34 - 130
4-chloronitrobenzene							
3,4-Dichloronitrobenzene	100	77.3		ug/L		77	34 - 130
2-Nitrobiphenyl	100	76.3		ug/L		76	39 - 130
3-Nitrobiphenyl	100	86.0		ug/L		86	40 - 130
4-Nitrobiphenyl	100	87.5		ug/L		87	39 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	56		32 - 113
2-Fluorophenol	59		26 - 109
Nitrobenzene-d5	74		32 - 118
Phenol-d5	65		27 - 110
Terphenyl-d14	89		10 - 126
2,4,6-Tribromophenol	51		39 - 124

Lab Sample ID: 680-122085-1 MS

Client Sample ID: GM-58A-0216

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 423974

Prep Batch: 422451

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
1-chloro-2,4-dinitrobenzene	10	U	99.8	60.2		ug/L		60	51 - 130
1-Chloro-3-nitrobenzene	10	U	99.8	42.5		ug/L		43	31 - 130
2-chloronitrobenzene /	20	U	200	95.1		ug/L		48	34 - 130
4-chloronitrobenzene									
3,4-Dichloronitrobenzene	10	U	99.8	48.7		ug/L		49	34 - 130
2-Nitrobiphenyl	10	U	99.8	65.5		ug/L		66	39 - 130
3-Nitrobiphenyl	10	U	99.8	69.6		ug/L		70	40 - 130
4-Nitrobiphenyl	10	U	99.8	68.8		ug/L		69	39 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	37		32 - 113
2-Fluorophenol	36		26 - 109
Nitrobenzene-d5	48		32 - 118
Phenol-d5	44		27 - 110
Terphenyl-d14	40		10 - 126
2,4,6-Tribromophenol	45		39 - 124

Lab Sample ID: 680-122085-1 MS

Client Sample ID: GM-58A-0216

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 423974

Prep Batch: 422451

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
1,1'-Biphenyl	10	U F1	99.6	26.7	F1	ug/L		27	45 - 130
2,4-Dichlorophenol	10	U F1	99.6	40.8	F1	ug/L		41	44 - 130
Nitrobenzene	10	U	99.6	47.0		ug/L		47	43 - 130
Pentachlorophenol	50	U	199	98.7		ug/L		47	33 - 130
2,4,6-Trichlorophenol	10	U F1	99.6	46.2	F1	ug/L		46	47 - 130

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AWD 3/21/16

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-122085-1 MS  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA  
Prep Batch: 422451

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	36		32 - 113
2-Fluorophenol	35		26 - 109
Nitrobenzene-d5	41		32 - 118
Phenol-d5	43		27 - 110
Terphenyl-d14	47		10 - 126
2,4,6-Tribromophenol	43		39 - 124

Lab Sample ID: 680-122085-1 MSD  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
				Result	Qualifier						
1,1'-Biphenyl	10	U F1	101	40.6	F1	ug/L		40	45 - 130	41	50
2,4-Dichlorophenol	10	U F1	101	40.4	F1	ug/L		40	44 - 130	1	50
Nitrobenzene	10	U	101	50.3		ug/L		50	43 - 130	7	50
Pentachlorophenol	50	U	202	92.6		ug/L		43	33 - 130	6	50
2,4,6-Trichlorophenol	10	U F1	101	42.2	F1	ug/L		42	47 - 130	9	50

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	41		32 - 113
2-Fluorophenol	35		26 - 109
Nitrobenzene-d5	47		32 - 118
Phenol-d5	42		27 - 110
Terphenyl-d14	32		10 - 126
2,4,6-Tribromophenol	43		39 - 124

Lab Sample ID: 680-122085-1 MSD  
Matrix: Water  
Analysis Batch: 424633

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
				Result	Qualifier						
1-chloro-2,4-dinitrobenzene	10	U	99.9	60.0		ug/L		60	51 - 130	0	50
1-Chloro-3-nitrobenzene	10	U	99.9	42.7		ug/L		43	31 - 130	0	50
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	200	93.7		ug/L		47	34 - 130	2	50
3,4-Dichloronitrobenzene	10	U	99.9	48.2		ug/L		48	34 - 130	1	50
2-Nitrobiphenyl	10	U	99.9	62.6		ug/L		63	39 - 130	4	50
3-Nitrobiphenyl	10	U	99.9	65.7		ug/L		66	40 - 130	6	50
4-Nitrobiphenyl	10	U	99.9	65.4		ug/L		65	39 - 130	5	50

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	40		32 - 113
2-Fluorophenol	30		26 - 109
Nitrobenzene-d5	47		32 - 118
Phenol-d5	39		27 - 110
Terphenyl-d14	38		10 - 126
2,4,6-Tribromophenol	40		39 - 124

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AWD 3/21/10

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

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

Lab Sample ID: MB 400-295942/2  
Matrix: Water  
Analysis Batch: 295942

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.0	U	1.0		ug/L			03/03/16 09:37	1
Ethane	1.0	U	1.0		ug/L			03/03/16 09:37	1
Ethylene	1.0	U	1.0		ug/L			03/03/16 09:37	1

Lab Sample ID: LCS 400-295942/3  
Matrix: Water  
Analysis Batch: 295942

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	169	166		ug/L		98	85 - 115
Ethane	321	317		ug/L		99	85 - 115
Ethylene	299	285		ug/L		95	85 - 115

Lab Sample ID: LCSD 400-295942/4  
Matrix: Water  
Analysis Batch: 295942

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	169	163		ug/L		97	85 - 115	1	20
Ethane	321	315		ug/L		98	85 - 115	0	20
Ethylene	299	284		ug/L		95	85 - 115	1	20

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-422364/1-A  
Matrix: Water  
Analysis Batch: 422624

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 422364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		02/22/16 13:49	02/24/16 00:13	1
Iron, Dissolved	0.050	U	0.050		mg/L		02/22/16 13:49	02/24/16 00:13	1
Manganese	0.010	U	0.010		mg/L		02/22/16 13:49	02/24/16 00:13	1
Manganese, Dissolved	0.010	U	0.010		mg/L		02/22/16 13:49	02/24/16 00:13	1

Lab Sample ID: LCS 680-422364/2-A  
Matrix: Water  
Analysis Batch: 422624

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 422364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.00	5.12		mg/L		102	80 - 120
Iron, Dissolved	5.00	5.12		mg/L		102	80 - 120
Manganese	0.500	0.522		mg/L		104	80 - 120
Manganese, Dissolved	0.500	0.522		mg/L		104	80 - 120

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AWD 3/21/16

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-422474/7  
Matrix: Water  
Analysis Batch: 422474

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			02/22/16 14:04	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			02/22/16 14:04	1

Lab Sample ID: LCS 680-422474/8  
Matrix: Water  
Analysis Batch: 422474

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	250	263		mg/L		105	80 - 120

Lab Sample ID: LCSD 680-422474/29  
Matrix: Water  
Analysis Batch: 422474

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
Alkalinity	250	268		mg/L		107	80 - 120	2	30

## Method: 325.2 - Chloride

Lab Sample ID: MB 680-423112/47  
Matrix: Water  
Analysis Batch: 423112

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			02/26/16 12:01	1

Lab Sample ID: LCS 680-423112/4  
Matrix: Water  
Analysis Batch: 423112

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.9		mg/L		104	85 - 115

Lab Sample ID: 680-122085-1 DU  
Matrix: Water  
Analysis Batch: 423112

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	62		61.9		mg/L		0.3	30

## Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-422167/38  
Matrix: Water  
Analysis Batch: 422167

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			02/19/16 15:45	1

TestAmerica Savannah  
*AWP 3/2/16*

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: LCS 680-422167/39  
Matrix: Water  
Analysis Batch: 422167

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.500	0.539		mg/L		108	75 - 125
Nitrate Nitrite as N	1.00	1.05		mg/L		105	90 - 110
Nitrite as N	0.500	0.511		mg/L		102	90 - 110

## Method: 375.4 - Sulfate

Lab Sample ID: MB 680-423114/2  
Matrix: Water  
Analysis Batch: 423114

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			02/25/16 17:00	1

Lab Sample ID: LCS 680-423114/1  
Matrix: Water  
Analysis Batch: 423114

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	21.6		mg/L		108	75 - 125

Lab Sample ID: LCSD 680-423114/5  
Matrix: Water  
Analysis Batch: 423114

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
Sulfate	20.0	20.9		mg/L		104	75 - 125	3	30

Lab Sample ID: 680-122085-1 DU  
Matrix: Water  
Analysis Batch: 423114

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	220		213		mg/L		1	30

## Method: 415.1 - DOC

Lab Sample ID: MB 160-239463/4  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: Method Blank  
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			03/07/16 17:18	1

Lab Sample ID: LCS 160-239463/5  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	10.0	9.76		mg/L		98	90 - 110

TestAmerica Savannah

*Awo 3/21/16*

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Method: 415.1 - TOC

Lab Sample ID: MB 160-239410/4  
Matrix: Water  
Analysis Batch: 239410

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			03/04/16 15:36	1

Lab Sample ID: LCS 160-239410/5  
Matrix: Water  
Analysis Batch: 239410

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.65		mg/L		96	90 - 110

Lab Sample ID: 680-122085-1 MS  
Matrix: Water  
Analysis Batch: 239410

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	3.1		5.00	9.13		mg/L		120	76 - 120

Lab Sample ID: 680-122085-1 DU  
Matrix: Water  
Analysis Batch: 239410

Client Sample ID: GM-58A-0216  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	3.1		3.33		mg/L		6	20

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TestAmerica Savannah  
AWD 3/21/16

# QC Association Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## GC/MS Semi VOA

### Prep Batch: 422451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	3520C	
680-122085-1 MS	GM-58A-0216	Total/NA	Water	3520C	
680-122085-1 MS	GM-58A-0216	Total/NA	Water	3520C	
680-122085-1 MSD	GM-58A-0216	Total/NA	Water	3520C	
680-122085-1 MSD	GM-58A-0216	Total/NA	Water	3520C	
LCS 680-422451/22-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-422451/28-A	Lab Control Sample	Total/NA	Water	3520C	
MB 680-422451/21-A	Method Blank	Total/NA	Water	3520C	

### Analysis Batch: 422949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-422451/22-A	Lab Control Sample	Total/NA	Water	8270D	422451

### Analysis Batch: 423974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	8270D	422451
680-122085-1 MS	GM-58A-0216	Total/NA	Water	8270D	422451
680-122085-1 MS	GM-58A-0216	Total/NA	Water	8270D	422451
680-122085-1 MSD	GM-58A-0216	Total/NA	Water	8270D	422451
LCS 680-422451/28-A	Lab Control Sample	Total/NA	Water	8270D	422451
MB 680-422451/21-A	Method Blank	Total/NA	Water	8270D	422451

### Analysis Batch: 424633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1 MSD	GM-58A-0216	Total/NA	Water	8270D	422451

## GC VOA

### Analysis Batch: 295942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	RSK-175	
LCS 400-295942/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 400-295942/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 400-295942/2	Method Blank	Total/NA	Water	RSK-175	

## Metals

### Prep Batch: 422364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total Recoverable	Water	3005A	
680-122085-2	GM-58A- F(0.2)-0216	Dissolved	Water	3005A	
LCS 680-422364/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-422364/1-A	Method Blank	Total Recoverable	Water	3005A	

### Analysis Batch: 422624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total Recoverable	Water	6010C	422364
680-122085-2	GM-58A- F(0.2)-0216	Dissolved	Water	6010C	422364
LCS 680-422364/2-A	Lab Control Sample	Total Recoverable	Water	6010C	422364
MB 680-422364/1-A	Method Blank	Total Recoverable	Water	6010C	422364

TestAmerica Savannah

*AWD 3/21/16*

# QC Association Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## General Chemistry

### Analysis Batch: 239410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	415.1	
680-122085-1 DU	GM-58A-0216	Total/NA	Water	415.1	
680-122085-1 MS	GM-58A-0216	Total/NA	Water	415.1	
LCS 160-239410/5	Lab Control Sample	Total/NA	Water	415.1	
MB 160-239410/4	Method Blank	Total/NA	Water	415.1	

### Analysis Batch: 239463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-2	GM-58A- F(0.2)-0216	Dissolved	Water	415.1	
LCS 160-239463/5	Lab Control Sample	Dissolved	Water	415.1	
MB 160-239463/4	Method Blank	Dissolved	Water	415.1	

### Analysis Batch: 422167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	353.2	
LCS 680-422167/39	Lab Control Sample	Total/NA	Water	353.2	
MB 680-422167/38	Method Blank	Total/NA	Water	353.2	

### Analysis Batch: 422474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	310.1	
LCS 680-422474/8	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-422474/29	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-422474/7	Method Blank	Total/NA	Water	310.1	

### Analysis Batch: 423112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	325.2	
680-122085-1 DU	GM-58A-0216	Total/NA	Water	325.2	
LCS 680-423112/4	Lab Control Sample	Total/NA	Water	325.2	
MB 680-423112/47	Method Blank	Total/NA	Water	325.2	

### Analysis Batch: 423114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122085-1	GM-58A-0216	Total/NA	Water	375.4	
680-122085-1 DU	GM-58A-0216	Total/NA	Water	375.4	
LCS 680-423114/1	Lab Control Sample	Total/NA	Water	375.4	
LCSD 680-423114/5	Lab Control Sample Dup	Total/NA	Water	375.4	
MB 680-423114/2	Method Blank	Total/NA	Water	375.4	

# Lab Chronicle

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

**Client Sample ID: GM-58A-0216**

**Lab Sample ID: 680-122085-1**

Date Collected: 02/18/16 13:58

Matrix: Water

Date Received: 02/19/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			501.0 mL	0.5 mL	422451	02/23/16 16:28	RBS	TAL SAV
Total/NA	Analysis	8270D		1	501.0 mL	0.5 mL	423974	03/04/16 21:37	JEM	TAL SAV
Total/NA	Analysis	RSK-175		1	1 mL		295942	03/03/16 12:19	RM	TAL PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	422364	02/22/16 13:49	CRW	TAL SAV
Total Recoverable	Analysis	6010C		1	50 mL	50 mL	422624	02/24/16 02:23	BCB	TAL SAV
Total/NA	Analysis	310.1		1			422474	02/22/16 14:53	KLD	TAL SAV
Total/NA	Analysis	325.2		2	2 mL	2 mL	423112	02/25/16 17:37	JME	TAL SAV
Total/NA	Analysis	353.2		1	2 mL	2 mL	422167	02/19/16 17:54	GRX	TAL SAV
Total/NA	Analysis	375.4		10	2 mL	2 mL	423114	02/26/16 09:25	JME	TAL SAV
Total/NA	Analysis	415.1		1	10 mL	10 mL	239410	03/04/16 16:10	JCB	TAL SL

**Client Sample ID: GM-58A- F(0.2)-0216**

**Lab Sample ID: 680-122085-2**

Date Collected: 02/18/16 13:58

Matrix: Water

Date Received: 02/19/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	422364	02/22/16 13:49	CRW	TAL SAV
Dissolved	Analysis	6010C		1	50 mL	50 mL	422624	02/24/16 02:28	BCB	TAL SAV
Dissolved	Analysis	415.1		1	10 mL	10 mL	239463	03/07/16 18:11	JCB	TAL SL

**Laboratory References:**

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001  
 TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858  
 TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

## Certification Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

### Laboratory: TestAmerica Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	200022	11-30-16

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
8270D	3520C	Water	4-Nitrobiphenyl

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
310.1		Water	Alkalinity
310.1		Water	Carbon Dioxide, Free
325.2		Water	Chloride
375.4		Water	Sulfate
8270D	3520C	Water	1,1'-Biphenyl
8270D	3520C	Water	1-chloro-2,4-dinitrobenzene
8270D	3520C	Water	1-Chloro-3-nitrobenzene
8270D	3520C	Water	2-chloronitrobenzene / 4-chloronitrobenzene
8270D	3520C	Water	2-Nitrobiphenyl
8270D	3520C	Water	3,4-Dichloronitrobenzene
8270D	3520C	Water	3-Nitrobiphenyl

### Laboratory: TestAmerica Pensacola

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	01-31-16 *
Arizona	State Program	9	AZ0710	01-11-17
Arkansas DEQ	State Program	6	88-0689	09-01-16
Florida	NELAP	4	E81010	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200041	10-09-16
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	05-31-16 *
Kentucky (UST)	State Program	4	53	06-30-16
Kentucky (WW)	State Program	4	98030	12-31-16
Louisiana	NELAP	6	30976	06-30-16
Maryland	State Program	3	233	09-30-16
Massachusetts	State Program	1	M-FL094	06-30-16
Michigan	State Program	5	9912	06-30-16
New Jersey	NELAP	2	FL006	06-30-16
North Carolina (WW/SW)	State Program	4	314	12-31-16
Oklahoma	State Program	6	9810	08-31-16
Pennsylvania	NELAP	3	68-00467	01-31-17
Rhode Island	State Program	1	LAO00307	12-30-16
South Carolina	State Program	4	96026	06-30-16
Tennessee	State Program	4	TN02907	06-30-16
Texas	NELAP	6	T104704286-15-9	09-30-16
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-16
West Virginia DEP	State Program	3	136	06-30-16

### Laboratory: TestAmerica St. Louis

\* Certification renewal pending - certification considered valid.

TestAmerica Savannah  
AWD 3/21/16

# Certification Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

## Laboratory: TestAmerica St. Louis (Continued)

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	003757	11-30-16

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TestAmerica Savannah  
AUD 3/21/16

# Method Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122085-1  
SDG: KOM031

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL PEN
6010C	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	DOC	MCAWW	TAL SL
415.1	TOC	MCAWW	TAL SL

### 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 PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001  
TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858  
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





**TestAmerica 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

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM: Kersey, Michele R		Carrier Tracking No(s):		COC No: 680-422670.1			
Client Contact: Shipping/Receiving		Phone:		E-Mail: michele.kersey@testamericainc.com				Page: Page 1 of 1			
Company: TestAmerica Laboratories, Inc.				<b>Analysis Requested</b>				Job #: 680-122085-1			
Address: 13715 Rider Trail North,		Due Date Requested: 3/9/2016		Total Number of Samples (Use only for 1000, 1000, 1000, 1000, 1000) 416.1 TOC 416.1_Diss/FIELD_FLTRD DOC		Total Number of Containers: 03 03		Preservation Codes:			
City: Earth City		TAT Requested (days):						A - HCL		M - Hexane	
State, Zip: MO, 63045		PO #:						B - NaOH		N - None	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:						C - Zn Acetate		O - AsNaO2	
Email:		Project #: 68005355						D - Nitric Acid		P - Na2O4S	
Project Name: 1Q16 Route 3 Drum Site O&M		SSOW#:		E - NaHSO4		Q - Na2SO3		R - Na2S2SO3			
Site:		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=wastefill, BT=Tissue, A=Air)			
<b>Sample Identification - Client ID (Lab ID)</b>								Other:			
GM-58A-0216 (680-122085-1)		2/18/16		13:58 Central		Water		T - TSP Dodecahydrate			
GM-58A- F(0.2)-0216 (680-122085-2)		2/18/16		13:58 Central		Water		U - Acetone			
								V - MCAA			
								W - ph 4-5			
								Z - other (specify)			
								Special Instructions/Note:			
<b>Possible Hazard Identification</b>				<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>							
Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)				Special Instructions/QC Requirements:							
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: <i>[Signature]</i>		Date/Time: 02/22/16 1445		Company: Saw. Co. Me K		Received by: <i>[Signature]</i>		Date/Time: 02/23/16 0925			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:			
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:							

Page 22 of 24

AND 3/21/16

## Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122085-1

SDG Number: KOM031

**Login Number: 122085**

**List Number: 1**

**Creator: White, Menica R**

**List Source: TestAmerica Savannah**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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	
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 containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122085-1

SDG Number: KOM031

**Login Number: 122085**

**List Number: 2**

**Creator: McKinney, Gerrod E**

**List Source: TestAmerica St. Louis**

**List Creation: 02/23/16 10:33 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	1.6
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**SDG KOM032**  
**Sample Results from:**

**GM-31A**



Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
1Q16 Route 3 Drum Site Monitoring Program

Company Name: Golder Associates
Project Name: WGK-1Q16 DRUM
Reviewer: A. Derhake
Laboratory: TestAmerica
SDG#: KOM032
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: February 2016

Analytical Method: SVOC (8270D), Dissolved Gases (RSK-175), Metals (6010C), Alkalinity (310.1), Chloride (325.2), Nitrogen, Nitrate-Nitrite (353.2), Sulfate (375.4), TOC (415.1), and DOC (415.1)

Sample Names: GM-31A-0216, GM-31A-F(0.2)-0216, GM-31A-0216-AD, and GM-31A-0216-EB

Field Information

Table with 3 columns: YES, NO, NA. Rows for sampling dates and laboratory deficiencies.

Comments:

- SVOC: No deficiencies noted.
Dissolved Gases: No deficiencies noted.
Metals: No deficiencies noted.
Alkalinity: No deficiencies noted.
Chloride: No deficiencies noted.
Nitrate-Nitrite as Nitrogen: Sample GM-31A-0216 required dilution...
Sulfate: Sample GM-31A-0216 required dilution...
TOC: No deficiencies noted.
DOC: No deficiencies noted.

Chain-of-Custody (COC)

Table with 3 columns: YES, NO, NA. Rows for COC signed and samples received.

Comments: Samples were received at 3.2°C, within the 4°C +/- 2°C criteria.

General

Table with 3 columns: YES, NO, NA. Rows for hold times, preservatives, method, and dilutions.

Comments: Samples GM-31A-0216 required dilution prior to sulfate and nitrate-nitrite analyses.



**GC/MS Instrument Performance Check (IPC) and Internal Standards (IS)****YES NO NA**

- a) IPC analyzed at the appropriate frequency and met the appropriate standards?
- b) Does DFPTP meet the ion abundance criteria?
- c) Internal Standard retention times and areas met appropriate criteria?

**Comments:** None**Calibrations****YES NO NA**

- a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?
- b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?
- c) Initial calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?
- d) Continuing calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?

**Comments:** Analytes of interest met calibration standards.**Blanks****YES NO NA**

- a) Were blanks (trip, equipment, method) performed at required frequency?
- b) Were analytes detected in any blanks?

**Comments:** Equipment blank GM-31A-0216-EB was submitted with SDG KOM032.**Matrix Spike/Matrix Spike Duplicate (MS/MSD)****YES NO NA**

- a) Was MS/MSD accuracy criteria met?
- b) Was MS/MSD precision criteria met?

**Comments:** None.**Laboratory Control Sample (LCS)****YES NO NA**

- a) LCS analyzed at the appropriate frequency and met appropriate standards?

**Comments:** None**Surrogate (System Monitoring) Compounds****YES NO NA**

- a) Surrogate compounds analyzed at the appropriate frequency and met appropriate standards?

**Comments:** None**Duplicates****YES NO NA**

- a) Were field duplicates collected?
- b) Was field duplicate precision criteria met?

**Comments:** Duplicate sample GM-31A-0216-AD was submitted with SDG KOM032.**Additional Comments:** None



**Qualifications:**

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Nitrate and Sulfate	D	GM-31A

# 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: 680-122104-1  
TestAmerica Sample Delivery Group: KOM032  
Client Project/Site: 1Q16 Route 3 Drum Site O&M

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

Attn: Mr. Jerry Rinaldi

*Michele Kersey*

Authorized for release by:  
3/16/2016 5:30:48 PM

Michele Kersey, Project Manager I  
(912)354-7858  
michele.kersey@testamericainc.com

### LINKS

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Expert

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[www.testamericainc.com](http://www.testamericainc.com)

*MKD*  
3/22/16

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.

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## Definitions/Glossary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

### Qualifiers

#### GC/MS Semi 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
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.

### 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
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

AWD  
3/22/10  
TestAmerica Savannah

# Sample Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-122104-1	GM-31A-0216	Water	02/19/16 09:45	02/20/16 09:54
680-122104-2	GM-31A-F(0.2)-0216	Water	02/19/16 09:45	02/20/16 09:54
680-122104-3	GM-31A-0216-AD	Water	02/19/16 09:45	02/20/16 09:54
680-122104-4	GM-31A-0216-EB	Water	02/19/16 10:25	02/20/16 09:54



*AWA*  
3/22/16  
TestAmerica Savannah

# Case Narrative

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

Job ID: 680-122104-1

Laboratory: TestAmerica Savannah

Narrative

## CASE NARRATIVE

Client: Solutia Inc.

Project: 1Q16 Route 3 Drum Site O&M

Report Number: 680-122104-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

### RECEIPT

The samples were received on 2/20/2016 9:54 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

### SEMIVOLATILE ORGANIC COMPOUNDS (AQUEOUS)

Samples GM-31A-0216 (680-122104-1), GM-31A-0216-AD (680-122104-3) and GM-31A-0216-EB (680-122104-4) were analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 02/23/2016 and analyzed on 03/04/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### DISSOLVED GASES

Sample GM-31A-0216 (680-122104-1) was analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 03/03/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP)

Sample GM-31A-F(0.2)-0216 (680-122104-2) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/25/2016 and analyzed on 02/26/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICP)

Sample GM-31A-0216 (680-122104-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/25/2016 and analyzed on 02/26/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### ALKALINITY

Sample GM-31A-0216 (680-122104-1) was analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 02/22/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### CHLORIDE

Sample GM-31A-0216 (680-122104-1) was analyzed for Chloride in accordance with EPA Method 325.2. The samples were analyzed on

AWD 3/22/16

## Case Narrative

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

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### Job ID: 680-122104-1 (Continued)

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#### Laboratory: TestAmerica Savannah (Continued)

02/25/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### NITRATE-NITRITE AS NITROGEN

Sample GM-31A-0216 (680-122104-1) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 02/20/2016.

Sample GM-31A-0216 (680-122104-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### SULFATE

Sample GM-31A-0216 (680-122104-1) was analyzed for sulfate in accordance with EPA Method 375.4. The samples were analyzed on 02/26/2016.

Sample GM-31A-0216 (680-122104-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### TOTAL ORGANIC CARBON

Sample GM-31A-0216 (680-122104-1) was analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 03/04/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### DISSOLVED ORGANIC CARBON (DOC)

Sample GM-31A-F(0.2)-0216 (680-122104-2) was analyzed for Dissolved Organic Carbon (DOC) in accordance with EPA Method 415.1. The samples were analyzed on 03/07/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Client Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

Client Sample ID: GM-31A-0216

Lab Sample ID: 680-122104-1

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

### Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
1-chloro-2,4-dinitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
1-Chloro-3-nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	20		ug/L		02/23/16 16:28	03/04/16 22:01	1
3,4-Dichloronitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
2,4-Dichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
Nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
2-Nitrobiphenyl	10		10		ug/L		02/23/16 16:28	03/04/16 22:01	1
3-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
4-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 22:01	1
2,4,6-Trichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 22:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	65		32 - 113				02/23/16 16:28	03/04/16 22:01	1
2-Fluorophenol	52		26 - 109				02/23/16 16:28	03/04/16 22:01	1
Nitrobenzene-d5	66		32 - 118				02/23/16 16:28	03/04/16 22:01	1
Phenol-d5	58		27 - 110				02/23/16 16:28	03/04/16 22:01	1
Terphenyl-d14	43		10 - 126				02/23/16 16:28	03/04/16 22:01	1
2,4,6-Tribromophenol	56		39 - 124				02/23/16 16:28	03/04/16 22:01	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.9		1.0		ug/L			03/03/16 12:29	1
Ethane	1.0	U	1.0		ug/L			03/03/16 12:29	1
Ethylene	1.0	U	1.0		ug/L			03/03/16 12:29	1

### Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.4		0.050		mg/L		02/25/16 13:53	02/26/16 23:15	1
Manganese	0.46		0.010		mg/L		02/25/16 13:53	02/26/16 23:15	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	32		1.0		mg/L			02/25/16 16:56	1
Nitrate as N	2.7	D	0.25		mg/L			02/20/16 13:44	5
Sulfate	100	D	25		mg/L			02/26/16 09:01	5
Total Organic Carbon	2.9		1.0		mg/L			03/04/16 16:52	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	350		5.0		mg/L			02/22/16 16:07	1
Carbon Dioxide, Free	41		5.0		mg/L			02/22/16 16:07	1

AWD  
3/22/16  
TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
 Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
 SDG: KOM032

**Client Sample ID: GM-31A-F(0.2)-0216**

**Lab Sample ID: 680-122104-2**

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

**Method: 6010C - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.050	U	0.050		mg/L		02/25/16 13:53	02/26/16 23:28	1
Manganese, Dissolved	0.45		0.010		mg/L		02/25/16 13:53	02/26/16 23:28	1

**General Chemistry - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	2.6		1.0		mg/L			03/07/16 18:23	1



*Aur*  
 3/22/16  
 TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
 Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
 SDG: KOM032

**Client Sample ID: GM-31A-0216-AD**

**Lab Sample ID: 680-122104-3**

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
1-chloro-2,4-dinitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
1-Chloro-3-nitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	20		ug/L		02/23/16 16:28	03/04/16 22:25	1
3,4-Dichloronitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
2,4-Dichlorophenol	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
Nitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
<b>2-Nitrobiphenyl</b>	<b>12</b>		9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
3-Nitrobiphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
4-Nitrobiphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 22:25	1
2,4,6-Trichlorophenol	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:25	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl	72		32 - 113				02/23/16 16:28	03/04/16 22:25	1
2-Fluorophenol	58		26 - 109				02/23/16 16:28	03/04/16 22:25	1
Nitrobenzene-d5	77		32 - 118				02/23/16 16:28	03/04/16 22:25	1
Phenol-d5	61		27 - 110				02/23/16 16:28	03/04/16 22:25	1
Terphenyl-d14	29		10 - 126				02/23/16 16:28	03/04/16 22:25	1
2,4,6-Tribromophenol	60		39 - 124				02/23/16 16:28	03/04/16 22:25	1

  
 TestAmerica Savannah

# Client Sample Results

Client: Solutia Inc.  
 Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
 SDG: KOM032

**Client Sample ID: GM-31A-0216-EB**

**Lab Sample ID: 680-122104-4**

Date Collected: 02/19/16 10:25

Matrix: Water

Date Received: 02/20/16 09:54

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1'-Biphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
1-chloro-2,4-dinitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
1-Chloro-3-nitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	20		ug/L		02/23/16 16:28	03/04/16 22:49	1
3,4-Dichloronitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
2,4-Dichlorophenol	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
Nitrobenzene	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
2-Nitrobiphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
3-Nitrobiphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
4-Nitrobiphenyl	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 22:49	1
2,4,6-Trichlorophenol	9.9	U	9.9		ug/L		02/23/16 16:28	03/04/16 22:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	50		32 - 113	02/23/16 16:28	03/04/16 22:49	1
2-Fluorophenol	42		26 - 109	02/23/16 16:28	03/04/16 22:49	1
Nitrobenzene-d5	57		32 - 118	02/23/16 16:28	03/04/16 22:49	1
Phenol-d5	43		27 - 110	02/23/16 16:28	03/04/16 22:49	1
Terphenyl-d14	52		10 - 126	02/23/16 16:28	03/04/16 22:49	1
2,4,6-Tribromophenol	39		39 - 124	02/23/16 16:28	03/04/16 22:49	1

  
 TestAmerica Savannah

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-422451/21-A  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1'-Biphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
1-chloro-2,4-dinitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
1-Chloro-3-nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2-chloronitrobenzene / 4-chloronitrobenzene	20	U	20		ug/L		02/23/16 16:28	03/04/16 20:48	1
3,4-Dichloronitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2,4-Dichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
Nitrobenzene	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
2-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
3-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
4-Nitrobiphenyl	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1
Pentachlorophenol	50	U	50		ug/L		02/23/16 16:28	03/04/16 20:48	1
2,4,6-Trichlorophenol	10	U	10		ug/L		02/23/16 16:28	03/04/16 20:48	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorobiphenyl	72		32 - 113	02/23/16 16:28	03/04/16 20:48	1
2-Fluorophenol	59		26 - 109	02/23/16 16:28	03/04/16 20:48	1
Nitrobenzene-d5	75		32 - 118	02/23/16 16:28	03/04/16 20:48	1
Phenol-d5	70		27 - 110	02/23/16 16:28	03/04/16 20:48	1
Terphenyl-d14	92		10 - 126	02/23/16 16:28	03/04/16 20:48	1
2,4,6-Tribromophenol	61		39 - 124	02/23/16 16:28	03/04/16 20:48	1

Lab Sample ID: LCS 680-422451/22-A  
Matrix: Water  
Analysis Batch: 422949

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1,1'-Biphenyl	100	69.2		ug/L		69	45 - 130
2,4-Dichlorophenol	100	70.0		ug/L		70	44 - 130
Nitrobenzene	100	64.5		ug/L		65	43 - 130
Pentachlorophenol	200	161		ug/L		80	33 - 130
2,4,6-Trichlorophenol	100	74.8		ug/L		75	47 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	66		32 - 113
2-Fluorophenol	51		26 - 109
Nitrobenzene-d5	62		32 - 118
Phenol-d5	55		27 - 110
Terphenyl-d14	82		10 - 126
2,4,6-Tribromophenol	77		39 - 124

Lab Sample ID: LCS 680-422451/28-A  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 422451

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
1-chloro-2,4-dinitrobenzene	100	72.2		ug/L		72	51 - 130
1-Chloro-3-nitrobenzene	100	71.0		ug/L		71	31 - 130

TestAmerica Savannah  
AWD 3/22/16

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-422451/28-A  
Matrix: Water  
Analysis Batch: 423974

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 422451  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-chloronitrobenzene /	200	142		ug/L		71	34 - 130
4-chloronitrobenzene							
3,4-Dichloronitrobenzene	100	77.3		ug/L		77	34 - 130
2-Nitrobiphenyl	100	76.3		ug/L		76	39 - 130
3-Nitrobiphenyl	100	86.0		ug/L		86	40 - 130
4-Nitrobiphenyl	100	87.5		ug/L		87	39 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	56		32 - 113
2-Fluorophenol	59		26 - 109
Nitrobenzene-d5	74		32 - 118
Phenol-d5	65		27 - 110
Terphenyl-d14	89		10 - 126
2,4,6-Tribromophenol	51		39 - 124

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

Lab Sample ID: MB 400-295942/2  
Matrix: Water  
Analysis Batch: 295942

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.0	U	1.0		ug/L			03/03/16 09:37	1
Ethane	1.0	U	1.0		ug/L			03/03/16 09:37	1
Ethylene	1.0	U	1.0		ug/L			03/03/16 09:37	1

Lab Sample ID: LCS 400-295942/3  
Matrix: Water  
Analysis Batch: 295942

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	169	166		ug/L		98	85 - 115
Ethane	321	317		ug/L		99	85 - 115
Ethylene	299	285		ug/L		95	85 - 115

Lab Sample ID: LCSD 400-295942/4  
Matrix: Water  
Analysis Batch: 295942

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	169	163		ug/L		97	85 - 115	1	20
Ethane	321	315		ug/L		98	85 - 115	0	20
Ethylene	299	284		ug/L		95	85 - 115	1	20

TestAmerica Savannah

Aug 3/22/16

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-422895/1-A  
Matrix: Water  
Analysis Batch: 423168

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 422895

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Iron	0.050	U	0.050		mg/L		02/25/16 13:53	02/26/16 21:19	1
Iron, Dissolved	0.050	U	0.050		mg/L		02/25/16 13:53	02/26/16 21:19	1
Manganese	0.010	U	0.010		mg/L		02/25/16 13:53	02/26/16 21:19	1
Manganese, Dissolved	0.010	U	0.010		mg/L		02/25/16 13:53	02/26/16 21:19	1

Lab Sample ID: LCS 680-422895/2-A  
Matrix: Water  
Analysis Batch: 423168

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 422895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	
Iron	5.00	5.19		mg/L		104	80 - 120	
Iron, Dissolved	5.00	5.19		mg/L		104	80 - 120	
Manganese	0.500	0.527		mg/L		105	80 - 120	
Manganese, Dissolved	0.500	0.527		mg/L		105	80 - 120	

## Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-422474/7  
Matrix: Water  
Analysis Batch: 422474

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

Analyte	MB MB		RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Alkalinity	5.0	U	5.0		mg/L			02/22/16 14:04	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			02/22/16 14:04	1

Lab Sample ID: LCS 680-422474/8  
Matrix: Water  
Analysis Batch: 422474

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	
Alkalinity	250	263		mg/L		105	80 - 120	

Lab Sample ID: LCSD 680-422474/29  
Matrix: Water  
Analysis Batch: 422474

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD
							Limits	RPD	Limit
Alkalinity	250	268		mg/L		107	80 - 120	2	30

## Method: 325.2 - Chloride

Lab Sample ID: MB 680-423112/47  
Matrix: Water  
Analysis Batch: 423112

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	1.0	U	1.0		mg/L			02/26/16 12:01	1

TestAmerica Savannah  
*MWD 3/22/16*

# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Method: 325.2 - Chloride (Continued)

Lab Sample ID: LCS 680-423112/1  
Matrix: Water  
Analysis Batch: 423112

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.8		mg/L		103	85 - 115

Lab Sample ID: LCS 680-423112/4  
Matrix: Water  
Analysis Batch: 423112

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.9		mg/L		104	85 - 115

## Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-422204/13  
Matrix: Water  
Analysis Batch: 422204

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			02/20/16 11:04	1

Lab Sample ID: LCS 680-422204/16  
Matrix: Water  
Analysis Batch: 422204

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.500	0.538		mg/L		108	75 - 125
Nitrate Nitrite as N	1.00	1.06		mg/L		106	90 - 110
Nitrite as N	0.500	0.522		mg/L		104	90 - 110

## Method: 375.4 - Sulfate

Lab Sample ID: MB 680-423114/2  
Matrix: Water  
Analysis Batch: 423114

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			02/25/16 17:00	1

Lab Sample ID: LCS 680-423114/1  
Matrix: Water  
Analysis Batch: 423114

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	21.6		mg/L		108	75 - 125

Lab Sample ID: LCSD 680-423114/5  
Matrix: Water  
Analysis Batch: 423114

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Sulfate	20.0	20.9		mg/L		104	75 - 125	3	30

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*MWD 3/22/16*



# QC Sample Results

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Method: 415.1 - DOC

Lab Sample ID: MB 160-239463/4  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: Method Blank  
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			03/07/16 17:18	1

Lab Sample ID: LCS 160-239463/5  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: Lab Control Sample  
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	10.0	9.76		mg/L		98	90 - 110

Lab Sample ID: 680-122104-2 MS  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: GM-31A-F(0.2)-0216  
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	2.6		5.00	7.77		mg/L		103	82 - 132

Lab Sample ID: 680-122104-2 DU  
Matrix: Water  
Analysis Batch: 239463

Client Sample ID: GM-31A-F(0.2)-0216  
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Dissolved Organic Carbon	2.6		2.76		mg/L		6	20

## Method: 415.1 - TOC

Lab Sample ID: MB 160-239410/4  
Matrix: Water  
Analysis Batch: 239410

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			03/04/16 15:36	1

Lab Sample ID: LCS 160-239410/5  
Matrix: Water  
Analysis Batch: 239410

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.65		mg/L		96	90 - 110

# QC Association Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## GC/MS Semi VOA

### Prep Batch: 422451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	3520C	
680-122104-3	GM-31A-0216-AD	Total/NA	Water	3520C	
680-122104-4	GM-31A-0216-EB	Total/NA	Water	3520C	
LCS 680-422451/22-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-422451/28-A	Lab Control Sample	Total/NA	Water	3520C	
MB 680-422451/21-A	Method Blank	Total/NA	Water	3520C	

### Analysis Batch: 422949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-422451/22-A	Lab Control Sample	Total/NA	Water	8270D	422451

### Analysis Batch: 423974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	8270D	422451
680-122104-3	GM-31A-0216-AD	Total/NA	Water	8270D	422451
680-122104-4	GM-31A-0216-EB	Total/NA	Water	8270D	422451
LCS 680-422451/28-A	Lab Control Sample	Total/NA	Water	8270D	422451
MB 680-422451/21-A	Method Blank	Total/NA	Water	8270D	422451

## GC VOA

### Analysis Batch: 295942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	RSK-175	
LCS 400-295942/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 400-295942/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 400-295942/2	Method Blank	Total/NA	Water	RSK-175	

## Metals

### Prep Batch: 422895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total Recoverable	Water	3005A	
680-122104-2	GM-31A-F(0.2)-0216	Dissolved	Water	3005A	
LCS 680-422895/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-422895/1-A	Method Blank	Total Recoverable	Water	3005A	

### Analysis Batch: 423168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total Recoverable	Water	6010C	422895
680-122104-2	GM-31A-F(0.2)-0216	Dissolved	Water	6010C	422895
LCS 680-422895/2-A	Lab Control Sample	Total Recoverable	Water	6010C	422895
MB 680-422895/1-A	Method Blank	Total Recoverable	Water	6010C	422895

## General Chemistry

### Analysis Batch: 239410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	415.1	
LCS 160-239410/5	Lab Control Sample	Total/NA	Water	415.1	

TestAmerica Savannah  
AWD 3/22/16

# QC Association Summary

Client: Solutia Inc.  
 Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
 SDG: KOM032

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

## General Chemistry (Continued)

### Analysis Batch: 239410 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-239410/4	Method Blank	Total/NA	Water	415.1	

### Analysis Batch: 239463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-2	GM-31A-F(0.2)-0216	Dissolved	Water	415.1	
680-122104-2 DU	GM-31A-F(0.2)-0216	Dissolved	Water	415.1	
680-122104-2 MS	GM-31A-F(0.2)-0216	Dissolved	Water	415.1	
LCS 160-239463/5	Lab Control Sample	Dissolved	Water	415.1	
MB 160-239463/4	Method Blank	Dissolved	Water	415.1	

### Analysis Batch: 422204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	353.2	
LCS 680-422204/16	Lab Control Sample	Total/NA	Water	353.2	
MB 680-422204/13	Method Blank	Total/NA	Water	353.2	

### Analysis Batch: 422474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	310.1	
LCS 680-422474/8	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-422474/29	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-422474/7	Method Blank	Total/NA	Water	310.1	

### Analysis Batch: 423112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	325.2	
LCS 680-423112/1	Lab Control Sample	Total/NA	Water	325.2	
LCS 680-423112/4	Lab Control Sample	Total/NA	Water	325.2	
MB 680-423112/47	Method Blank	Total/NA	Water	325.2	

### Analysis Batch: 423114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-122104-1	GM-31A-0216	Total/NA	Water	375.4	
LCS 680-423114/1	Lab Control Sample	Total/NA	Water	375.4	
LCSD 680-423114/5	Lab Control Sample Dup	Total/NA	Water	375.4	
MB 680-423114/2	Method Blank	Total/NA	Water	375.4	

TestAmerica Savannah  
*AWD 3/22/16*

# Lab Chronicle

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

**Client Sample ID: GM-31A-0216**

**Lab Sample ID: 680-122104-1**

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1001.4 mL	1.0 mL	422451	02/23/16 16:28	RBS	TAL SAV
Total/NA	Analysis	8270D		1	1001.4 mL	1.0 mL	423974	03/04/16 22:01	JEM	TAL SAV
Total/NA	Analysis	RSK-175		1	1 mL		295942	03/03/16 12:29	RM	TAL PEN
Total Recoverable	Prep	3005A			50 mL	50 mL	422895	02/25/16 13:53	CRW	TAL SAV
Total Recoverable	Analysis	6010C		1	50 mL	50 mL	423168	02/26/16 23:15	BCB	TAL SAV
Total/NA	Analysis	310.1		1			422474	02/22/16 16:07	KLD	TAL SAV
Total/NA	Analysis	325.2		1	2 mL	2 mL	423112	02/25/16 16:56	JME	TAL SAV
Total/NA	Analysis	353.2		5	2 mL	2 mL	422204	02/20/16 13:44	GRX	TAL SAV
Total/NA	Analysis	375.4		5	2 mL	2 mL	423114	02/26/16 09:01	JME	TAL SAV
Total/NA	Analysis	415.1		1	10 mL	10 mL	239410	03/04/16 16:52	JCB	TAL SL

**Client Sample ID: GM-31A-F(0.2)-0216**

**Lab Sample ID: 680-122104-2**

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	422895	02/25/16 13:53	CRW	TAL SAV
Dissolved	Analysis	6010C		1	50 mL	50 mL	423168	02/26/16 23:28	BCB	TAL SAV
Dissolved	Analysis	415.1		1	10 mL	10 mL	239463	03/07/16 18:23	JCB	TAL SL

**Client Sample ID: GM-31A-0216-AD**

**Lab Sample ID: 680-122104-3**

Date Collected: 02/19/16 09:45

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1005.9 mL	1.0 mL	422451	02/23/16 16:28	RBS	TAL SAV
Total/NA	Analysis	8270D		1	1005.9 mL	1.0 mL	423974	03/04/16 22:25	JEM	TAL SAV

**Client Sample ID: GM-31A-0216-EB**

**Lab Sample ID: 680-122104-4**

Date Collected: 02/19/16 10:25

Matrix: Water

Date Received: 02/20/16 09:54

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1005.3 mL	1.0 mL	422451	02/23/16 16:28	RBS	TAL SAV
Total/NA	Analysis	8270D		1	1005.3 mL	1.0 mL	423974	03/04/16 22:49	JEM	TAL SAV

**Laboratory References:**

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001  
 TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858  
 TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica Savannah

*AWP 3/22/16*

# Certification Summary

Client: Solutia Inc.  
 Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
 SDG: KOM032

## Laboratory: TestAmerica Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	200022	11-30-16

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
8270D	3520C	Water	4-Nitrobiphenyl

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
310.1		Water	Alkalinity
310.1		Water	Carbon Dioxide, Free
325.2		Water	Chloride
375.4		Water	Sulfate
8270D	3520C	Water	1,1'-Biphenyl
8270D	3520C	Water	1-chloro-2,4-dinitrobenzene
8270D	3520C	Water	1-Chloro-3-nitrobenzene
8270D	3520C	Water	2-chloronitrobenzene / 4-chloronitrobenzene
8270D	3520C	Water	2-Nitrobiphenyl
8270D	3520C	Water	3,4-Dichloronitrobenzene
8270D	3520C	Water	3-Nitrobiphenyl

## Laboratory: TestAmerica Pensacola

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	01-31-16 *
Arizona	State Program	9	AZ0710	01-11-17
Arkansas DEQ	State Program	6	88-0689	09-01-16
Florida	NELAP	4	E81010	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200041	10-09-16
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	05-31-16 *
Kentucky (UST)	State Program	4	53	06-30-16
Kentucky (WW)	State Program	4	98030	12-31-16
Louisiana	NELAP	6	30976	06-30-16
Maryland	State Program	3	233	09-30-16
Massachusetts	State Program	1	M-FL094	06-30-16
Michigan	State Program	5	9912	06-30-16
New Jersey	NELAP	2	FL006	06-30-16
North Carolina (WW/SW)	State Program	4	314	12-31-16
Oklahoma	State Program	6	9810	08-31-16
Pennsylvania	NELAP	3	68-00467	01-31-17
Rhode Island	State Program	1	LAO00307	12-30-16
South Carolina	State Program	4	96026	06-30-16
Tennessee	State Program	4	TN02907	06-30-16
Texas	NELAP	6	T104704286-15-9	09-30-16
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-16
West Virginia DEP	State Program	3	136	06-30-16

## Laboratory: TestAmerica St. Louis

\* Certification renewal pending - certification considered valid.

TestAmerica Savannah

*AWD 3/22/16*



# Certification Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

## Laboratory: TestAmerica St. Louis (Continued)

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAP	5	003757	11-30-16

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

TestAmerica Savannah  
*AWB 3/22/16*

## Method Summary

Client: Solutia Inc.  
Project/Site: 1Q16 Route 3 Drum Site O&M

TestAmerica Job ID: 680-122104-1  
SDG: KOM032

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL PEN
6010C	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 SL
415.1	DOC	MCAWW	TAL SL

### 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 PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

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

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





## Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122104-1

SDG Number: KOM032

**Login Number: 122104**

**List Number: 1**

**Creator: Banda, Christy S**

**List Source: TestAmerica Savannah**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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	
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 containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



*AWB 3/22/16*

## Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-122104-1

SDG Number: KOM032

**Login Number: 122104**

**List Number: 2**

**Creator: McKinney, Gerrod E**

**List Source: TestAmerica St. Louis**

**List Creation: 02/23/16 10:35 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	1.6
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



*AWO 3/22/16*

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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