Voluntary Remediation Program
Ninth Semi-Annual Status Update

DePriest Signal Shop
641 East Liberty Street
Savannah, Chatham County, Georgia
Tax Parcel ID #2-0033-12-001

September 2017

Prepared for:

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ATTACHMENTS

UCL input data and calculated UCL's are provided in the enclosed CD.

1.0 Introduction and Background

This report was prepared on behalf of CSX Transportation, Inc. (CSXT), to provide the ninth semi-annual status update for the DePriest Signal Shop Voluntary Remediation Program (VRP) Site. The site was accepted into the VRP program on March 15, 2013. Activities since the last semi-annual report are summarized below, and include responses to Georgia Environmental Protection Division (GAEPD) comments in its June 21, 2017 letter. Efforts were focused on designation of multiple exposure domains and development of risk reduction standards applicable to each. After approval of these standards, efforts will focus on delineation of regulated substances and a Corrective Action Plan to achieve compliance with the approved standards.

2.0 Summary of Field Activities

Field activities at the site were conducted on June 13, August 8-9, and August 23-24, 2017. Site wells were inspected, purged, and gauged on June 13. Ground water and soil samples were collected on August 8-9. An additional ground water sample was collected on August 23-24.

2.1 Ground Water Sampling

Site monitoring wells were last sampled in January 2004. Nine (9) wells were present during that event. In 2016, one of the wells (MW-12) was abandoned so that a retention pond could be installed associated with a new building. The remaining wells include MW-15, -17, -18, -19, -20, -21, -22, and -23.

Wells were purged on June 13, 2017. Significant accumulations of fine solids, primarily iron bacteria, were observed in most wells. Submersible pumps were used to reduce the solids concentrations.

All wells were gauged and sampled on August 23, 2017. Flow direction was to the northwest, as in the previous sampling event in 204. The “Low Flow Method” as described in the EPA SESD Operating Procedure date April 26, 2017, was employed. A peristaltic pump was used to recover the samples through Teflon tubing. Monitoring of stabilization parameters was accomplished with an In-Situ Aqua Troll 600 equipped with a flow cell. Low Flow Test Reports are included in **Attachment A**.

As agreed by GAEPD, samples were analyzed for total RCRA metals only with no samples for SVOC’s. Results are summarized in **Table 1**, and a complete laboratory report is included in **Attachment B**. All samples contained detectable but acceptable levels of Barium. Two samples had low concentrations of Lead (0.0062 and 0.0046 mg/l). Other metals were not detected in any well except for MW-20. It was noted during sampling this well that turbidity remained elevated and fine solids (believed to be iron bacteria) were observed in the tubing.

Because MW-20 did not contain detectable levels of metals other than Barium in the 2004 event, it was believed that the elevated levels were due to the solids recovered during sampling. On August 23, 2017, the well was swabbed and purged. It was re-sampled the following day in the same method as previously used. Analysis showed that only Barium was detectable at an acceptable concentration (see **Table 1** and **Attachment B**).

2.2 Soil Sampling

Soil samples were collected on August 9, 2017. Included were 10 sample points for total and SPLP metals, and three (3) sample points each for Hexavalent Chromium and Fraction Organic Carbon. Sample locations are shown on **Figure 1.** Results are summarized in **Table 2**, with a laboratory report included in **Attachment B**.

The purpose of the total and SPLP metals analysis was to update limited data from a previous calculation that included only two sample points. These analyses, along with Fraction Organic Carbon, were used to develop estimates of partition coefficients for calculation of allowable soil concentrations protective of ground water. Samples were collected from areas with elevated levels of one or more regulated substances. Because ground water sampling revealed no impacts, these calculations were not used in setting allowable soil concentrations (see discussion below).

Hexavalent Chromium analysis was conducted to speciate total Chromium. No detectable levels of hexavalent Chromium were found, so risk reduction standards were calculated using toxicity values for trivalent Chromium.

3.0 Calculation of Risk Reduction Standards

The following sections discuss the exposure domains and exposure assumptions used for each site receptor in the calculation of Risk Reduction Standards (RRS) for the site.

3.1 Exposure Assessment

The Site is divided into four exposure domains (East, West, North, and South). The primary production area is the North area. The North area is mostly covered with pavement or gravel and includes buildings. Potential receptors in the North area include current and future site industrial workers (surface soil) and future construction workers (subsurface soil).

Site industrial workers are assumed to be present 250 days per year for 25 years (EPD defaults). They are assumed to ingest 50 milligrams per day (mg/day) of soil because they are primarily inside the site buildings during the work day. Periodically, a fork lift is used to load signal devices onto trucks for transport off-site. Otherwise, site workers spend minimal time outdoors. The industrial workers are assumed to ingest 1 liter of water per day (L/day) even though well water is not used at the site and workers obtain drinking water from the public utility. Industrial

workers, as well as construction and maintenance landscapers are assumed to have a body weight of 80 kilograms (USEPA, 2014a).

Future construction work was assumed to potentially occur at all four exposure domains. Construction workers were assumed to be on-site for 125 days (six months) during one year. Construction workers are assumed to ingest 330 mg/day of soil and incidentally ingest shallow groundwater during excavations at the rate of 0.08 L/day (0.01 L per hour for 8 hours, USEPA, 2014b).

The South area is primarily grass-covered and is not actively utilized. Potential receptors for the south area include current maintenance landscape workers (surface soil) that mow the grass during the growing season (1 day per week for 35 weeks of the year), future commercial/industrial workers (surface soil), and future construction workers (subsurface soil). Future commercial/industrial workers are assumed to have exposures equivalent to site industrial workers. Maintenance landscapers are assumed to ingest 100 mg/day of soil and to incidentally ingest 0.08 L/day of groundwater (USEPA, 2014a, 2014b).

The West area is undeveloped with a mixture of gravel and grass covering. This area is outside the fenced production area. There is a school located further to the west. The West area is adjacent to a previous soil removal action in Mathilda Park and East Broad Elementary School. Potential receptors for the West area include adolescent trespassers (2 days per week for 50 weeks per year for 10 years), future commercial/industrial workers (surface soil) and future construction workers (subsurface soil). Adolescent trespassers are assumed to ingest 100 mg/day of soil and pro-rated water ingestion of 0.312 L/day. Adolescent trespassers are assumed to be at the site 2 hours per day. Their water ingestion rate assumes 0.156 L per hour ingested over a 16-hour waking day (i.e., daily rate of 2.5 L/day divided by 16 = 0.156 L/hour, USEPA, 2014a, 2014b).

The East area is also undeveloped and outside of the fenced area. This area borders a school property further east. Potential receptors for the east area include trespassers (surface soil), future commercial/industrial workers (surface soil), and future construction workers (subsurface soil).

The exposure assumptions for each of the exposure domain receptors were used to calculate the risk reduction standards (RRS) that are presented in **Attachment C**. The RRS are calculated in accordance with the Hazardous Substances Response Act using equations from USEPA's *Risk Assessment Guidance for Superfund, Volume 1, Part B (USEPA, 1991).*

3.2 Calculation of the Representative Exposure Point Concentrations in Soils

For the majority of the site constituents, the maximum detected concentrations of the constituents within each of the four domains was used for comparison to non-residential RRS (Type 3 and Type 4). These comparisons are presented in **Table 3** for metals and in **Table 4** for SVOCs. In

most cases, the maximum concentrations are less than the non-residential RRS. For arsenic and lead, representative exposure point concentrations were calculated.

Per the Georgia VRP Act of 2009, a representative concentration is the average concentration to which a receptor is exposed within a relevant exposure domain. USEPA guidance has been used to generate representative exposure point concentrations (EPCs) for surface soils. Subsurface soils results were compared to the RRS on a point-by-point basis. USEPA has developed software (ProUCL) that supports the development of upper confidence limits (UCLs) of the arithmetic mean (USEPA, 2015). The ProUCL program generates multiple statistics based on normal, lognormal, gamma, and nonparametric distributions. The program tests the distribution of the data and makes a recommendation regarding the most applicable UCL to use.

Using an UCL as the representative EPC for site detected constituents is appropriate because exposure may potentially occur over an exposure domain. The use of the 95 percent UCL would be protective of the majority of the potentially exposed populations (95 percent or greater) without skewing site remediation to the farthest limits of the data distribution.

UCLs were calculated using the data for surface soil collected within each of the four domains. The mean concentration was used as the EPC for lead exposure modeling per USEPA guidelines (USEPA, 2016a; 2017a). A comparison of the EPCs to RRS for each domain are provided in **Table 3** (metals) and **Table 4** (SVOCs). UCL input data and calculated UCL's are provided in the **enclosed CD**.

3.3 Toxicity Assessment

Toxicity values used to calculate the RRS were taken from the USEPA Integrated Risk Information System database and from the June 2017 Regional Screening Level tables (USEPA. 2017b).

3.4 Leaching Assessment

As noted above, ground water data were collected in January 2004 and most recently in August 2017. The only constituent consistently detected in groundwater is barium, and its concentrations were less than Type 1 groundwater RRS. Lead was detected at low levels in two samples in 2017 at less than ½ its Type 1 standard.

Soil samples were collected during the field event in August 2017 to update calculations of partition coefficients, dilution factors, and resulting soil limits to protect ground water. The resulting calculations were not consistent with ground water sampling results, and overestimated the concentration of leachate and associated ground water levels. Use of these calculations to set soil limits is not appropriate because:

1. Ground water in all site wells is within allowable limits;
2. The yard has been in operation since the 1850's. Ground water at the wells would have been affected by now under any reasonable migration model;
3. The SPLP approach is a predictive tool applicable to more recent releases that may not have reached downgradient monitoring points;
4. The site was not listed for ground water under HSRA, and ground water was not a concern in adjacent off-site areas (East Broad Elementary School and Mathilda Park) during remediation of those areas. See VRP Act Section 12-8-107.(g)(2);

Because no impacts are detected in groundwater, the RRS for soil at the site are based on direct contact exposures.

3.5 Soil and Groundwater RRS Calculations

Tables associated with RRS calculations are presented in **Attachment C**. **Table C-1** summarizes the Type 1 through Type 4 soil RRS calculated for the DePriest Signal Site. **Table C-2** lists the toxicity values used to calculate the soil and groundwater RRS. **Table C-3** presents the Type 1 through Type 4 groundwater RRS. However, as mentioned previously, there are no observed impacts to groundwater and thus no evidence of soil leaching to groundwater. Type 1 and Type 3 soil RRS, based on EPD default assumptions for residential and non-residential receptors, are presented in **Table C-4**. **Table C-5** presents the Type 2 RRS based on direct contact exposures to residential receptors. However, no residential receptors are currently present at the site and no residential land use is predicted for the future. Type 2 soil RRS were calculated to support delineation at the site.

Tables C-6 through C-9 present the Type 4 soil RRS calculations for industrial workers, maintenance landscape workers, construction workers, and adolescent trespassers. The North and South areas of the site are fenced. The East and West areas are not fenced and are the only areas potentially assessable to trespassers. All areas were considered for potential future commercial/industrial development and future construction work associated with development. However, there are no current plans to develop these areas. The South Area is primarily unused and grass-covered and is mainly visited by maintenance landscapers to periodically mow this area. However, in recent months, some of the South area is being used to store equipment and may become an extension of the main production area in the North. The direct contact RRS summarized in **Table C-1** are drawn from the Type 3 and applicable Type 4 RRS for each of the four exposure domains.

Table C-10 lists the volatilization factors for the few potentially volatile organic compounds at the site. The parameters used to calculate the volatilization factors were based on USEPA's Regional Screening Tables – Chemical and Physical Parameters Table, June 2017 (USEPA, 2017b).

Tables C-11 through C-11c present the site-specific calculations for non-residential receptors exposed to lead in soil. The Georgia Adult Lead Model (GALM) was used for these calculations. In August 2016, USEPA's Technical Review Workgroup for Lead, Adult Lead Committee issued a memorandum in which they recommended updates to two of the parameters in the ALM model, the GSDi and the PbB0 factors. These values have been amended accordingly in **Table C-11 through C-11c** in the GALM calculations. This change is also consistent with draft changes to the HSRA Rule as proposed by EPD (USEPA, 2016b).

Also included as **Table C-12** is the IEUBK Modeling output developed with default assumptions that is provided to support the direct contact calculations used for Type 2 lead soil RRS. As mentioned previously, residential Type 2 RRS are not strictly applicable to the DePriest Signal Site and are provided in support of site delineation.

4.0 Future Activities

It is anticipated that GAEPD review of this semi-annual report will result in approval of the proposed domain designations and associated risk reduction standards. Upon approval CSX will proceed with horizontal delineation of regulated substances and preparation of a Corrective Action Plan for limited soil removal to meet risk reduction standards. Figures will be revised and re-submitted accordingly.

5.0 Site Inspections

Inspections of the site property are performed on an ongoing basis by CSXT employees at the DePriest Signal Shop, as well as CSXT police. Inspections of the site were also accomplished by Holley Consultants personnel in June and August 2017. Site conditions were found to be acceptable.

6.0 Professional Hours and Certification

Below is a summary of professional engineer hours expended on the project during the period:

May 2017	11.0 hours
June 2017	10.0 hours
July 2017	23.0 hours
August 2017	86.0 hours
Total	130.0 hours

Professional Engineer Certification

I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et. seq.). I am a professional engineer who is registered with the Georgia State Board of Registration for Professional Engineers and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have included a monthly summary of hours invoiced and a description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

September 12, 2017

Ronald E. Holley, P.E. Date
Georgia Registration 16507

7.0 References

USEPA, 1991. Risk Assessment Guidance for Superfund, Volume 1, Part B (Development of Risk-based Preliminary Remediation Goals),EPA/540/R-92/003.

USEPA, 2014a. OSWER Directive 9200.1-120, Memorandum: Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, February 6, 2014.

USEPA, 2014b. Region 4 Human Health Risk Assessment Supplemental Guidance, https://www.epa.gov/sites/production/files/2015-09/documents/region_4_hhraguidedoc011014.pdf, January 2014.

USEPA, 2015. ProUCL Version 5.1.002 User Guide: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041, October 2015.

USEPA, 2016a. Lead at Superfund Sites: Frequent Questions from Risk Assessors on the Integrated Exposure Uptake Biokinetic (IEUBK) Model, https://www.epa.gov/superfund/lead-superfund-sites-frequent-questions-risk-assessors-integrated-exposure-uptake.

USEPA, 2016b. OLEM Directive 9285.6-52: Recommendations for Using Blood Lead Data at Superfund and RCRA Corrective Action Sites, August 2, 2016.

USEPA, 2017a. Lead at Superfund Sites: Frequent Questions from Risk Assessors on the Adult Lead Methodology, https://www.epa.gov/superfund/lead-superfund-sites-frequent-questions-risk-assessors-adult-lead-methodology.

USEPA, 2017b. Regional Screening Level Tables, June 2017.

PORTABLE DOCUMENT FORMAT CERTIFICATION

The electronic document of the Ninth Semiannual Report, CSXT DePriest Signal Shop dated September 2017, as provided on this CD is, to the best of our knowledge, complete and identical to the paper copy and virus free.

Holley Consultants, Inc.

Ronald E. Holley

September 12, 2017

TABLE 1
GROUND WATER DATA
AUGUST 2017

Well	MW-15	MW-17	MW-18	MW-19	MW-20	MW-20 RE-SAMPLE	MW-21	MW-22	DUPL (MW-22)	MW-23
Date	8/8/2017	8/8/2017	8/8/2017	8/8/2017	8/8/2017	8/24/2017	8/8/2017	8/8/2017	8/8/2017	8/8/2017
Arsenic	0.0062 U	0.0062 U	0.0062 U	0.0062 U	**0.11**	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U
Barium	**0.0072** J	**0.022**	**0.0077** J	**0.11**	**0.1**	**0.043**	**0.064**	0.013	0.0017 U	**0.022**
Cadmium	0.001 U	0.001 U	0.001 U	0.001 U	**0.051**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	0.0016 U	0.0016 U	0.0016 U	0.0016 U	**0.1**	0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U
Silver	0.0006 U	0.0006 U	0.0006 U	0.0006 U	**0.05**	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0006 U
Lead	0.0039 U	0.0039 U	**0.0062** J	0.0039 U	**0.51**	0.0039 U	0.0039 U	0.0039 U	0.0039 U	**0.0046** J
Selenium	0.0099 U	0.0099 U	0.0099 U	0.0099 U	**0.11**	0.0099 U	0.0099 U	0.0099 U	0.0099 U	0.0099 U
Mercury	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U

Bold values > detection limit.

TABLE 2
SOIL DATA
AUGUST 2017

	Arsenic		Barium		Cadmium		Chromium		Lead		Selenium		Silver		Hex chromium	FOC
	total	SPLP	total	SPLP	total	SPLP	total	SPLP	total	SPLP	total	SPLP	total	SPLP	total	
Sample	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	mg/kg	
201 S	19 F1	0.02 U	200 F2	0.01 U	**0.84**	0.005 U	16 F1 F2	0.01 U	3200 F2	**0.13**	1.1 U	0.02 U	**0.34 J**	0.01 U		
203 S	**340**	**0.15**	**130**	**0.016**	**0.13 J**	0.005 U	**24**	0.01 U	**400**	**0.033**	**2.3 J**	0.02 U	**0.41 J**	0.01 U		**0.0024**
204 S	**260**	**0.16**	**190**	0.01 U	**0.32 J**	0.005 U	**14**	0.01 U	**650**	**0.058**	**2.5 J**	0.02 U	**0.31 J**	0.01 U		
404 S	**300**	**0.21**	**200**	**0.017**	**1.2**	0.005 U	**22**	0.01 U	**450**	**0.078**	**3.4**	0.02 U	**0.25 J**	0.01 U		
419 S	**67**	**0.021**	**170**	**0.012**	**0.27 J**	0.005 U	**21**	0.01 U	**1100**	**0.14**	**1.2 J**	0.02 U	**0.21 J**	0.01 U		0.00050 U
603 S	**13**	0.02 U	**59**	0.01 U	**1**	0.005 U	**24**	0.01 U	**380**	**0.022**	0.93 U	0.02 U	0.058 U	0.01 U	3.4 U	
903 S	**8.6**	0.02 U	**78**	**0.01**	**0.58**	0.005 U	**62**	0.01 U	**290**	**0.033**	0.92 U	0.02 U	0.057 U	0.01 U		**0.069**
923 S	**15**	0.02 U	**85**	**0.012**	**0.89**	0.005 U	**480**	**0.036**	**380**	**0.042**	0.94 U	0.02 U	0.058 U	0.01 U	2.9 U	
1103 S	**45**	0.02 U	**140**	**0.014**	**0.4 J**	0.005 U	**43**	0.01 U	**510**	**0.089**	**1.6 J**	0.02 U	**0.099**	0.01 U	3.0 U	
1332 S	**35**	**0.032**	**66**	0.01 U	**0.56**	0.005 U	**7.6**	0.01 U	**770**	0.01 U F1	0.91 U	0.02 U	0.056 U	0.01 U		

Bold and highlighted values are > detection limit

Table 3. Statistical Summary of Metals in Soil
DePriest Signal Site - Savannah, GA

Exposure Domain	Surface Soil (SS) Detection Summary					ProUCL Recommended		Type 3-4 RRS	ProUCL Recommended		Data Points
NORTH	N_{Total}	N_{Detect}	FOD	Min	Max	UCL	Distribution	SS	UCL(alt)	Distribution	Removed
Antimony	3	1	33%	11	11			930			
Arsenic	20	20	100%	1.1	17	9	95% Student's-t	44			
Barium	16	16	100%	23	480			100000			
Cadmium	19	11	58%	0.56	2			2300			
Chromium (III)	14	14	100%	4.2	1700			100000			
Lead	19	19	100%	24	1600	504	Mean	2600			
Mercury	19	19	100%	0.043	2.9			700			
Selenium	10	0	0%	--	--			12000			
Silver	10	0	0%	--	--			12000			

Exposure Domain	Subsurface Soil (SbS) Detection Summary					Type 3-4 RRS
NORTH	(n-total)	(n-detect)	Freq	Min	Max	SbS
Antimony	0	0	--	--	--	280
Arsenic	3	0	0%	--	--	210
Barium	1	1	100%	45	45	100000
Cadmium	1	0	0%	--	--	700
Chromium (III)	1	1	100%	2.4	2.4	100000
Lead	1	1	100%	2.8	2.8	1200
Mercury	1	1	100%	0.03	0.03	210
Selenium	1	0	0%	--	--	3500
Silver	1	0	0%	--	--	3500

Exposure Domain	Surface Soil (SS) Detection Summary					ProUCL Recommended		Type 3-4 RRS	ProUCL Recommended		Removed
SOUTH	N_{Total}	N_{Detect}	FOD	Min	Max	UCL	Distribution	SS	UCL(alt)	Distribution	Data Points
Antimony	0	0	--	--	--			930			
Arsenic	23	22	96%	5.3	300	**96**	95% KM (Chevyshev)	**44**	36	KM H-UCL	602 (0-1), 701 (0-1)
Barium	22	22	100%	10	2900			100000			
Cadmium	22	9	41%	0.088	70			2300			
Chromium (III)	24	24	100%	3.3	2300			100000			
Lead	29	29	100%	25	27000	1927	Mean	2600			502(0-2) Hotspot
Mercury	22	22	100%	0.02	1.8			700			
Selenium	22	0	0%	--	--			12000			
Silver	22	3	14%	1.9	14			12000			

Exposure Domain	Subsurface Soil (SbS) Detection Summary					Type 3-4 RRS	Data Points
SOUTH	N_{Total}	N_{Detect}	FOD	Min	Max	SbS	Removed
Antimony	0	0	--	--	--	280	
Arsenic	3	1	33%	15	15	210	
Barium	3	3	100%	3.7	81	100000	
Cadmium	3	1	33%	2	2	700	
Chromium (III)	3	3	100%	2	250	100000	
Lead	3	3	100%	3.1	2600	**1200**	502 (2-3)
Mercury	2	1	50%	0.026	0.026	210	
Selenium	3	0	0%	--	--	3500	
Silver	3	0	0%	--	--	3500	

Exposure Domain	Surface Soil (SS) Detection Summary					ProUCL Recommended		Type 3-4 RRS	ProUCL Recommended		Removed
EAST	N_{Total}	N_{Detect}	FOD	Min	Max	UCL	Distribution	SS	UCL(alt)	Distribution	Data Points
Antimony	7	3	43%	4.4	6.5			660			
Arsenic	22	22	100%	1.3	160	**58**	95% Chebyshev (m, sd)	**44**	38	95% Chebyshev (m, sd)	822 (0-1)
Barium	7	7	100%	38	250			100000			
Cadmium	15	6	40%	0.45	24			1600			
Chromium (III)	16	16	100%	3.2	38			100000			
Lead	21	21	100%	46	5400	764	Mean	2600			
Mercury	12	12	100%	0.11	8.6			490			
Selenium	1	0	0%	--	--			8200			
Silver	1	0	0%	--	--			8200			

Exposure Domain	Subsurface Soil (SbS) Detection Summary					Type 3-4 RRS
EAST	N_{Total}	N_{Detect}	FOD	Min	Max	SbS
Antimony	1	0	0%	--	--	280
Arsenic	1	0	0%	--	--	210
Barium	0	0	--	--	--	100000
Cadmium	1	0	0%	--	--	700
Chromium (III)	1	1	100%	3.1	3.1	100000
Lead	1	1	100%	3.5	3.5	1200
Mercury	1	0	0%	--	--	210
Selenium	0	0	--	--	--	3500
Silver	0	0	--	--	--	3500

Exposure Domain	Surface Soil (SS) Detection Summary					ProUCL Recommended		Type 3-4 RRS	ProUCL Recommended		Removed
WEST	N_{Total}	N_{Detect}	FOD	Min	Max	UCL	Distribution	SS	UCL(alt)	Distribution	Data Points
Antimony	14	5	36%	2.9	14						
Arsenic	37	35	95%	2.2	380	**87**	Gamma Adjusted KM	**44**	41.0	95% KM Adjusted Gamma	203 (0-2), 404 (0-2), 003 (0-2), 1332 (0-1)
Barium	17	17	100%	11	290			100000			
Cadmium	36	16	44%	0.084	6.2			1600			
Chromium (III)	34	34	100%	2.8	23			100000			
Lead	31	31	100%	3.7	590	232	Mean	2600			
Mercury	32	32	100%	0.056	1.3			490			
Selenium	19	5	26%	1.2	2.6			8200			
Silver	15	0	0%	--	--			8200			

Exposure Domain	Subsurface Soil (SbS) Detection Summary					Type 3-4 RRS
WEST	N_{Total}	N_{Detect}	FOD	Min	Max	SbS
Antimony	2	1	50%	12	12	280
Arsenic	2	1	50%	51	51	210
Barium	1	1	100%	19	19	100000
Cadmium	2	1	50%	0.88	0.88	700
Chromium (III)	2	2	100%	1.9	9.1	100000
Lead	2	2	100%	12	350	1200
Mercury	2	2	100%	0.025	0.18	210
Selenium	2	0	0%	--	--	3500
Silver	2	0	0%	--	--	3500

Notes:

1) Concentrations are in milligrams/kilogram.
2)
3)

Updated by/date LO 08/29/2017
Checked by/date LMS 8/30/17

Table 4. Statistical Summary of SVOCs in Soil
DePriest Signal Site - Savannah, GA

Exposure Domain	Surface Soil (SS) Detection Summary					Type 3/4 RRS
NORTH	N_{Total}	N_{Detect}	FOD	Min	Max	Surface
Anthracene	6	0	0%	--	--	100000
Benzo (a) anthracene	6	2	33%	0.6	18	650
Benzo (a) pyrene	6	3	50%	0.39	10	65
Benzo (b) fluoranthene	6	3	50%	0.46	20	650
Benzo (g,h,i)perylene	6	0	0%	--	--	500
Benzo (k) fluoranthene	6	3	50%	0.4	18	6500
Chrysene	6	3	50%	0.42	20	65000
Dibenzo (a,h) anthracene	6	0	0%	--	--	65
Fluoranthene	6	3	50%	0.44	44	93000
Indeno (1,2,3-cd) pyrene	6	1	17%	4.2	4.2	650
Phenanthrene	6	0	0%	--	--	110
Pyrene	6	5	83%	0.4	49	70000

Exposure Domain	Surface Soil (SS) Detection Summary					Type 3/4 RRS
SOUTH	N_{Total}	N_{Detect}	FOD	Min	Max	Surface
Anthracene	14	0	0%	--	--	100000
Benzo (a) anthracene	14	2	14%	1.1	1.2	650
Benzo (a) pyrene	14	6	43%	0.47	1.5	65
Benzo (b) fluoranthene	14	7	50%	0.74	4.4	650
Benzo (g,h,i)perylene	14	3	21%	0.42	0.98	500
Benzo (k) fluoranthene	14	6	43%	0.44	3.8	6500
Chrysene	14	8	57%	0.42	3	65000
Dibenzo (a,h) anthracene	14	1	7%	0.49	0.49	65
Fluoranthene	14	8	57%	0.44	2.8	93000
Indeno (1,2,3-cd) pyrene	14	3	21%	0.44	1.1	650
Phenanthrene	14	1	7%	0.56	0.56	110
Pyrene	14	8	57%	0.52	2.7	70000

Notes:

1) Concentrations are in milligram per kilogram.

Exposure Domain	Surface Soil (SS) Detection Summary					Type 3/4 RRS
WEST	N_{Total}	N_{Detect}	FOD	Min	Max	Surface
Anthracene	9	0	0%	--	--	100000
Benzo (a) anthracene	9	2	22%	0.58	0.65	650
Benzo (a) pyrene	9	4	44%	0.6	4.4	65
Benzo (b) fluoranthene	9	7	78%	0.44	5.1	650
Benzo (g,h,i)perylene	9	4	44%	0.39	0.88	500
Benzo (k) fluoranthene	9	5	56%	0.41	2.3	6500
Chrysene	9	3	33%	0.64	1.3	65000
Dibenzo (a,h) anthracene	9	0	0%	--	--	65
Fluoranthene	9	3	33%	0.56	0.88	66000
Indeno (1,2,3-cd) pyrene	9	3	33%	0.41	0.77	650
Phenanthrene	9	0	0%	--	--	110
Pyrene	9	6	67%	0.56	9.9	49000

Exposure Domain	Surface Soil (SS) Detection Summary				
EAST	N_{Total}	N_{Detect}	FOD	Min	Max
Anthracene	0	0	0%	--	--
Benzo (a) anthracene	0	0	0%	--	--
Benzo (a) pyrene	0	0	0%	--	--
Benzo (b) fluoranthene	0	0	0%	--	--
Benzo (g,h,i)perylene	0	0	0%	--	--
Benzo (k) fluoranthene	0	0	0%	--	--
Chrysene	0	0	0%	--	--
Dibenzo (a,h) anthracene	0	0	0%	--	--
Fluoranthene	0	0	0%	--	--
Indeno (1,2,3-cd) pyrene	0	0	0%	--	--
Phenanthrene	0	0	0%	--	--
Pyrene	0	0	0%	--	--

Notes:

1) Concentrations are in milligram per kilogram.

Exposure Domain	(SbS) Detection Summary				
SOUTH	N_{Total}	N_{Detect}	FOD	Min	Max
Anthracene	1	0	0%	--	--
Benzo (a) anthracene	1	0	0%	--	--
Benzo (a) pyrene	1	0	0%	--	--
Benzo (b) fluoranthene	1	0	0%	--	--
Benzo (g,h,i)perylene	1	0	0%	--	--
Benzo (k) fluoranthene	1	0	0%	--	--
Chrysene	1	0	0%	--	--
Dibenzo (a,h) anthracene	1	0	0%	--	--
Fluoranthene	1	0	0%	--	--
Indeno (1,2,3-cd) pyrene	1	0	0%	--	--
Phenanthrene	1	0	0%	--	--
Pyrene	1	0	0%	--	--

Notes:

1) Concentrations are in milligram per kilogram.

Prepared by/date LO 08/21/201
Checked by/date LMS 8/30/17

MAGNETIC

ST. JAMES A.M.E. CHURCH

DOW ELECTRONICS, INC.

THE MASONIC BLDG. ASSOC.

ENTLEMAN STREET

MAYOR & ALDERMEN CITY OF SAVANNAH

SHIPWATCH PARTNERS

MATHILDA PARK

SHIPWATCH PARTNERS

BOARD OF EDUCATION FOR SAVANNAH & CHATHAM COUNTY

EAST BROAD STREET ELEMENTARY SCHOOL

BOARD OF EDUCATION FOR SAVANNAH & CHATHAM COUNTY

HUBERT MIDDLE SCHOOL

BOARD OF EDUCATION FOR SAVANNAH & CHATHAM COUNTY

STEVENS OIL/SCRAP SITE

MATCH LINE SEE BELOW FOR CONTINUATION

LEGEND

- Property Line
- RRS
- Background
- 30A — Sample Point
- SPLP CHROMIUM — Sample Point

MATCH LINE

LIBERTY STREET

GRAPHIC SCALE IN FEET

60 0 60 120 180 240

VICINITY MAP
N.T.S.

LIBERTY STREET
WHEATON STREET
EAST BROAD STREET
SITE
GWINNETT STREET
WATERS AVE.

CSX TRANSPORTATION

HOLLEY CONSULTANTS

REVISIONS & DATE

FIGURE 1
SOIL SAMPLE POINTS AUGUST 2017
CSXT DEPRIEST SIGNAL SHOP
SAVANNAH, GA

DESIGNED BY	CHECKED BY	SCALE	DATE
–	REH	INDICATED	SEP 2017

Attachment A

Low Flow Test Reports

Low-Flow Test Report:

Test Date / Time: 8/8/2017 3:47:07 PM
Project: DePriest (2) (2) (3) (2)
Operator Name: Ron Holley

Location Name: MW 15 **Latitude: 32.06877** **Longitude: -81.08452** **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 8.88 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2213.999 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.17 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 3:47 PM	00:00	6.54 pH	33.76 °C	817.66 µS/cm	1.15 mg/L	5.97 NTU	-90.1 mV	8.88 ft	100.00 ml/min
8/8/2017 3:49 PM	02:02	6.56 pH	33.24 °C	797.35 µS/cm	0.79 mg/L	13.82 NTU	-74.7 mV	8.88 ft	100.00 ml/min
8/8/2017 3:51 PM	04:05	6.55 pH	31.77 °C	783.32 µS/cm	0.35 mg/L	7.85 NTU	-84.7 mV	9.02 ft	110.00 ml/min
8/8/2017 3:53 PM	06:08	6.54 pH	30.85 °C	783.60 µS/cm	0.24 mg/L	6.90 NTU	-92.5 mV	9.02 ft	110.00 ml/min
8/8/2017 3:55 PM	08:11	6.53 pH	30.07 °C	786.49 µS/cm	0.22 mg/L	3.63 NTU	-106.3 mV	9.02 ft	110.00 ml/min
8/8/2017 3:57 PM	10:15	6.52 pH	29.71 °C	793.96 µS/cm	0.21 mg/L	7.94 NTU	-103.8 mV	9.02 ft	110.00 ml/min
8/8/2017 3:59 PM	12:18	6.51 pH	29.68 °C	796.51 µS/cm	0.26 mg/L	3.67 NTU	-105.6 mV	9.05 ft	140.00 ml/min
8/8/2017 4:01 PM	14:20	6.52 pH	30.01 °C	798.62 µS/cm	0.29 mg/L	4.08 NTU	-108.4 mV	9.05 ft	100.00 ml/min
8/8/2017 4:03 PM	16:24	6.53 pH	30.12 °C	799.16 µS/cm	0.23 mg/L	2.91 NTU	-108.5 mV	9.05 ft	100.00 ml/min
8/8/2017 4:05 PM	18:26	6.53 pH	30.48 °C	802.97 µS/cm	0.24 mg/L	2.97 NTU	-108.7 mV	9.05 ft	100.00 ml/min
8/8/2017 4:07 PM	20:29	6.54 pH	30.58 °C	805.06 µS/cm	0.25 mg/L	2.99 NTU	-107.7 mV	9.05 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 9:33:11 AM
Project: DePriest
Operator Name: Ron Holley

Location Name: MW17 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 2.64 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 3280 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.05 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Weather Conditions:
Clear 90's

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 9:33 AM	00:00	5.87 pH	27.11 °C	390.04 µS/cm	0.89 mg/L	5.46 NTU	-135.9 mV	2.64 ft	100.00 ml/min
8/8/2017 9:35 AM	02:02	5.85 pH	26.57 °C	396.97 µS/cm	0.47 mg/L	69.89 NTU	-151.2 mV	2.64 ft	100.00 ml/min
8/8/2017 9:37 AM	04:05	5.87 pH	26.50 °C	400.65 µS/cm	0.52 mg/L	135.79 NTU	-132.7 mV	2.64 ft	100.00 ml/min
8/8/2017 9:39 AM	06:08	5.85 pH	26.44 °C	401.90 µS/cm	0.71 mg/L	190.90 NTU	-127.9 mV	2.64 ft	100.00 ml/min
8/8/2017 9:41 AM	08:11	5.86 pH	26.53 °C	400.75 µS/cm	0.88 mg/L	250.47 NTU	-132.9 mV	2.68 ft	100.00 ml/min
8/8/2017 9:43 AM	10:14	5.86 pH	26.42 °C	401.14 µS/cm	0.58 mg/L	254.41 NTU	-142.0 mV	2.68 ft	100.00 ml/min
8/8/2017 9:45 AM	12:17	5.86 pH	26.35 °C	397.71 µS/cm	0.51 mg/L	254.84 NTU	-142.2 mV	2.68 ft	100.00 ml/min
8/8/2017 9:47 AM	14:20	5.87 pH	26.52 °C	399.41 µS/cm	0.43 mg/L	254.60 NTU	-152.7 mV	2.68 ft	100.00 ml/min
8/8/2017 9:49 AM	16:23	5.87 pH	26.66 °C	397.15 µS/cm	0.54 mg/L	253.43 NTU	-152.1 mV	2.68 ft	100.00 ml/min
8/8/2017 9:51 AM	18:26	5.86 pH	26.25 °C	393.40 µS/cm	0.24 mg/L	263.81 NTU	-161.6 mV	2.68 ft	100.00 ml/min
8/8/2017 9:53 AM	20:29	5.87 pH	26.27 °C	396.67 µS/cm	0.26 mg/L	262.52 NTU	-164.5 mV	2.69 ft	100.00 ml/min
8/8/2017 9:55 AM	22:32	5.87 pH	26.50 °C	397.13 µS/cm	0.32 mg/L	5.27 NTU	-166.0 mV	2.69 ft	100.00 ml/min

8/8/2017 9:57 AM	24:35	5.87 pH	26.85 °C	392.61 µS/cm	0.45 mg/L	3.02 NTU	-170.1 mV	2.69 ft	100.00 ml/min
8/8/2017 9:59 AM	26:39	5.88 pH	27.10 °C	393.75 µS/cm	0.69 mg/L	3.72 NTU	-170.8 mV	2.69 ft	100.00 ml/min
8/8/2017 10:01 AM	28:41	5.88 pH	27.26 °C	395.58 µS/cm	0.68 mg/L	5.33 NTU	-165.2 mV	2.69 ft	100.00 ml/min
8/8/2017 10:03 AM	30:45	5.88 pH	27.31 °C	393.62 µS/cm	0.61 mg/L	3.39 NTU	-161.1 mV	2.69 ft	100.00 ml/min
8/8/2017 10:05 AM	32:47	5.88 pH	27.31 °C	388.37 µS/cm	0.41 mg/L	2.90 NTU	-167.2 mV	2.69 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 10:31:06 AM
Project: DePriest (2)
Operator Name: Ron Holley

Location Name: MW18 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 2.55 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2869.999 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.17 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 10:31 AM	00:00	6.45 pH	31.71 °C	293.84 µS/cm	3.78 mg/L	40.94 NTU	17.9 mV	2.65 ft	100.00 ml/min
8/8/2017 10:33 AM	02:02	6.40 pH	29.87 °C	300.36 µS/cm	2.30 mg/L	45.81 NTU	34.0 mV	2.68 ft	100.00 ml/min
8/8/2017 10:35 AM	04:05	6.38 pH	29.53 °C	298.31 µS/cm	1.96 mg/L	52.10 NTU	42.8 mV	2.68 ft	100.00 ml/min
8/8/2017 10:37 AM	06:08	6.39 pH	29.47 °C	298.51 µS/cm	1.88 mg/L	53.40 NTU	47.9 mV	2.68 ft	100.00 ml/min
8/8/2017 10:39 AM	08:11	6.39 pH	29.68 °C	302.83 µS/cm	1.87 mg/L	58.07 NTU	48.3 mV	2.69 ft	100.00 ml/min
8/8/2017 10:41 AM	10:14	6.40 pH	29.46 °C	301.30 µS/cm	1.92 mg/L	41.91 NTU	46.2 mV	2.69 ft	100.00 ml/min
8/8/2017 10:43 AM	12:17	6.40 pH	29.51 °C	306.74 µS/cm	1.90 mg/L	63.95 NTU	44.4 mV	2.69 ft	100.00 ml/min
8/8/2017 10:45 AM	14:20	6.36 pH	29.36 °C	306.04 µS/cm	1.83 mg/L	31.22 NTU	44.8 mV	2.69 ft	100.00 ml/min
8/8/2017 10:47 AM	16:23	6.34 pH	29.07 °C	308.04 µS/cm	1.64 mg/L	27.50 NTU	45.1 mV	2.69 ft	100.00 ml/min
8/8/2017 10:49 AM	18:26	6.33 pH	29.05 °C	309.05 µS/cm	1.50 mg/L	19.15 NTU	46.7 mV	2.69 ft	100.00 ml/min
8/8/2017 10:51 AM	20:29	6.33 pH	29.07 °C	308.09 µS/cm	1.41 mg/L	24.71 NTU	48.5 mV	2.69 ft	100.00 ml/min
8/8/2017 10:53 AM	22:32	6.33 pH	29.06 °C	307.42 µS/cm	1.36 mg/L	44.47 NTU	49.4 mV	2.69 ft	100.00 ml/min
8/8/2017 10:55 AM	24:35	6.34 pH	29.05 °C	307.38 µS/cm	1.32 mg/L	32.26 NTU	50.0 mV	2.72 ft	100.00 ml/min
8/8/2017 10:57 AM	26:38	6.32 pH	29.07 °C	308.54 µS/cm	1.29 mg/L	27.95 NTU	51.1 mV	2.72 ft	100.00 ml/min

8/8/2017 10:59 AM	28:41	6.33 pH	29.13 °C	306.98 µS/cm	1.23 mg/L	73.27 NTU	52.4 mV	2.72 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 11:22:27 AM
Project: DePriest (2) (2)
Operator Name: Ron Holley

Location Name: MW19 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 m** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 5.1 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2993 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.14 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 11:22 AM	00:00	6.03 pH	32.19 °C	320.64 µS/cm	1.11 mg/L	36.93 NTU	-25.7 mV	5.10 ft	100.00 ml/min
8/8/2017 11:24 AM	02:03	5.99 pH	30.23 °C	325.80 µS/cm	0.31 mg/L	54.60 NTU	-19.4 mV	5.26 ft	100.00 ml/min
8/8/2017 11:26 AM	04:06	5.96 pH	29.56 °C	329.53 µS/cm	0.27 mg/L	44.16 NTU	-16.4 mV	5.25 ft	100.00 ml/min
8/8/2017 11:28 AM	06:08	5.95 pH	29.25 °C	330.45 µS/cm	0.45 mg/L	41.42 NTU	-14.9 mV	5.25 ft	100.00 ml/min
8/8/2017 11:30 AM	08:11	5.95 pH	28.90 °C	334.40 µS/cm	0.37 mg/L	31.45 NTU	-14.4 mV	5.25 ft	100.00 ml/min
8/8/2017 11:32 AM	10:15	5.95 pH	28.62 °C	335.10 µS/cm	0.35 mg/L	32.88 NTU	-14.7 mV	5.24 ft	100.00 ml/min
8/8/2017 11:34 AM	12:18	5.94 pH	28.47 °C	337.47 µS/cm	0.29 mg/L	31.03 NTU	-13.4 mV	5.24 ft	110.00 ml/min
8/8/2017 11:36 AM	14:21	5.94 pH	28.70 °C	335.43 µS/cm	0.35 mg/L	36.07 NTU	-11.3 mV	5.24 ft	110.00 ml/min
8/8/2017 11:38 AM	16:24	5.93 pH	28.63 °C	330.09 µS/cm	0.36 mg/L	37.64 NTU	-6.4 mV	5.24 ft	110.00 ml/min
8/8/2017 11:40 AM	18:27	5.93 pH	28.60 °C	329.27 µS/cm	0.32 mg/L	34.67 NTU	-4.4 mV	5.24 ft	110.00 ml/min
8/8/2017 11:42 AM	20:29	5.93 pH	28.32 °C	322.43 µS/cm	0.21 mg/L	40.60 NTU	-3.3 mV	5.24 ft	110.00 ml/min
8/8/2017 11:45 AM	22:33	5.93 pH	28.23 °C	325.75 µS/cm	0.23 mg/L	25.44 NTU	-5.7 mV	5.24 ft	110.00 ml/min
8/8/2017 11:47 AM	24:35	5.94 pH	28.30 °C	328.37 µS/cm	0.25 mg/L	20.81 NTU	-6.2 mV	5.24 ft	100.00 ml/min
8/8/2017 11:49 AM	26:39	5.95 pH	28.49 °C	327.65 µS/cm	0.29 mg/L	19.94 NTU	-4.0 mV	5.24 ft	100.00 ml/min

8/8/2017 11:51 AM	28:41	5.96 pH	28.42 °C	325.00 µS/cm	0.35 mg/L	16.96 NTU	-4.7 mV	5.24 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 2:59:53 PM
Project: DePriest (2) (2) (3)
Operator Name: Ron Holley

Location Name: MW 20 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 8.65 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2214 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 90 ml/min** **Final Draw Down: 0.13 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 2:59 PM	00:00	5.41 pH	32.04 °C	409.87 µS/cm	3.10 mg/L	161.41 NTU	-6.9 mV	8.65 ft	100.00 ml/min
8/8/2017 3:01 PM	02:03	5.35 pH	31.57 °C	417.69 µS/cm	0.97 mg/L	100.19 NTU	-1.1 mV	8.65 ft	100.00 ml/min
8/8/2017 3:03 PM	04:05	5.37 pH	31.53 °C	420.55 µS/cm	0.66 mg/L	75.90 NTU	-20.9 mV	8.65 ft	100.00 ml/min
8/8/2017 3:06 PM	06:08	5.38 pH	31.40 °C	416.44 µS/cm	0.84 mg/L	74.54 NTU	-22.2 mV	8.70 ft	110.00 ml/min
8/8/2017 3:08 PM	08:11	5.39 pH	30.83 °C	413.52 µS/cm	0.37 mg/L	71.70 NTU	-28.5 mV	8.78 ft	110.00 ml/min
8/8/2017 3:10 PM	10:15	5.39 pH	31.02 °C	418.41 µS/cm	0.39 mg/L	18.49 NTU	-29.6 mV	8.78 ft	110.00 ml/min
8/8/2017 3:12 PM	12:17	5.39 pH	31.64 °C	422.16 µS/cm	0.46 mg/L	14.59 NTU	-22.7 mV	8.78 ft	90.00 ml/min
8/8/2017 3:14 PM	14:21	5.40 pH	31.71 °C	416.32 µS/cm	0.46 mg/L	29.58 NTU	-20.4 mV	8.78 ft	90.00 ml/min
8/8/2017 3:16 PM	16:23	5.40 pH	31.56 °C	419.42 µS/cm	0.38 mg/L	149.67 NTU	-27.5 mV	8.78 ft	90.00 ml/min
8/8/2017 3:18 PM	18:26	5.39 pH	31.61 °C	417.37 µS/cm	0.35 mg/L	25.82 NTU	-38.2 mV	8.78 ft	90.00 ml/min
8/8/2017 3:20 PM	20:29	5.40 pH	31.63 °C	416.43 µS/cm	0.34 mg/L	14.68 NTU	-38.7 mV	8.78 ft	90.00 ml/min
8/8/2017 3:22 PM	22:32	5.41 pH	31.58 °C	416.61 µS/cm	0.30 mg/L	13.82 NTU	-41.8 mV	8.78 ft	90.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 2:21:50 PM
Project: DePriest (2) (2) (2) (2) (2)
Operator Name: Ron Holley

Location Name: MW21 **Latitude: 32.07005** **Longitude: -81.08496** **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 6.6 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2173.001 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.06 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 2:21 PM	00:00	6.35 pH	27.55 °C	460.12 µS/cm	0.33 mg/L	39.89 NTU	-176.3 mV	6.60 ft	100.00 ml/min
8/8/2017 2:23 PM	02:03	6.31 pH	27.32 °C	448.10 µS/cm	0.38 mg/L	2.18 NTU	-174.0 mV	6.65 ft	110.00 ml/min
8/8/2017 2:25 PM	04:06	6.29 pH	27.19 °C	444.13 µS/cm	0.28 mg/L	2.28 NTU	-177.9 mV	6.65 ft	110.00 ml/min
8/8/2017 2:27 PM	06:08	6.26 pH	27.12 °C	433.72 µS/cm	0.26 mg/L	2.12 NTU	-178.1 mV	6.65 ft	110.00 ml/min
8/8/2017 2:30 PM	08:11	6.25 pH	27.07 °C	429.26 µS/cm	0.24 mg/L	2.09 NTU	-177.2 mV	6.65 ft	110.00 ml/min
8/8/2017 2:32 PM	10:15	6.24 pH	27.10 °C	428.96 µS/cm	0.25 mg/L	2.07 NTU	-172.8 mV	6.66 ft	120.00 ml/min
8/8/2017 2:34 PM	12:18	6.24 pH	27.47 °C	426.28 µS/cm	0.26 mg/L	12.51 NTU	-169.4 mV	6.66 ft	100.00 ml/min
8/8/2017 2:36 PM	14:21	6.24 pH	27.27 °C	418.74 µS/cm	0.28 mg/L	2.12 NTU	-175.3 mV	6.66 ft	100.00 ml/min
8/8/2017 2:38 PM	16:23	6.23 pH	27.09 °C	417.32 µS/cm	0.24 mg/L	2.14 NTU	-173.3 mV	6.66 ft	100.00 ml/min
8/8/2017 2:40 PM	18:27	6.22 pH	26.92 °C	413.51 µS/cm	0.24 mg/L	2.14 NTU	-175.2 mV	6.66 ft	100.00 ml/min
8/8/2017 2:42 PM	20:30	6.21 pH	26.93 °C	409.05 µS/cm	0.23 mg/L	2.11 NTU	-171.1 mV	6.66 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 1:41:41 PM
Project: DePriest (2) (2) (2) (2)
Operator Name: Ron Holley

Location Name: MW22 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 5.98 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2152.5 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.02 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:
Duplicate at this location

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 1:41 PM	00:00	5.83 pH	28.81 °C	136.87 µS/cm	0.46 mg/L	20.11 NTU	-17.6 mV	5.98 ft	150.00 ml/min
8/8/2017 1:43 PM	02:03	5.73 pH	27.90 °C	140.14 µS/cm	0.28 mg/L	6.61 NTU	-19.3 mV	5.98 ft	150.00 ml/min
8/8/2017 1:45 PM	04:06	5.72 pH	27.76 °C	140.17 µS/cm	0.26 mg/L	5.08 NTU	-24.1 mV	6.00 ft	150.00 ml/min
8/8/2017 1:47 PM	06:08	5.72 pH	28.22 °C	141.33 µS/cm	0.40 mg/L	4.29 NTU	-28.4 mV	6.00 ft	100.00 ml/min
8/8/2017 1:49 PM	08:11	5.73 pH	28.15 °C	138.67 µS/cm	0.35 mg/L	4.60 NTU	-37.3 mV	6.00 ft	100.00 ml/min
8/8/2017 1:51 PM	10:15	5.73 pH	28.10 °C	137.95 µS/cm	0.40 mg/L	2.95 NTU	-46.0 mV	6.00 ft	100.00 ml/min
8/8/2017 1:53 PM	12:18	5.73 pH	27.93 °C	137.47 µS/cm	0.39 mg/L	3.07 NTU	-54.9 mV	6.00 ft	100.00 ml/min
8/8/2017 1:56 PM	14:21	5.72 pH	27.76 °C	137.75 µS/cm	0.30 mg/L	3.64 NTU	-60.4 mV	6.00 ft	100.00 ml/min
8/8/2017 1:58 PM	16:24	5.72 pH	27.65 °C	138.68 µS/cm	0.26 mg/L	2.89 NTU	-64.8 mV	6.00 ft	100.00 ml/min
8/8/2017 2:00 PM	18:27	5.72 pH	27.43 °C	138.71 µS/cm	0.24 mg/L	2.94 NTU	-71.1 mV	6.00 ft	100.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/8/2017 12:54:00 PM
Project: DePriest (2) (2) (2)
Operator Name: Ron Holley

Location Name: MW 23 **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 6.7 ft**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 10 ft** **Estimated Total Volume Pumped: 2910.999 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 110 ml/min** **Final Draw Down: 0.02 ft**	**Instrument Used: AquaTROLL 600** **Serial Number: 496339**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/8/2017 12:54 PM	00:00	6.26 pH	33.92 °C	274.44 µS/cm	2.68 mg/L	17.86 NTU	86.4 mV	6.70 ft	100.00 ml/min
8/8/2017 12:56 PM	02:02	6.21 pH	31.51 °C	279.85 µS/cm	1.17 mg/L	11.53 NTU	91.4 mV	6.70 ft	110.00 ml/min
8/8/2017 12:58 PM	04:05	6.18 pH	30.91 °C	283.68 µS/cm	0.88 mg/L	4.27 NTU	100.8 mV	6.70 ft	110.00 ml/min
8/8/2017 1:00 PM	06:08	6.18 pH	30.91 °C	287.57 µS/cm	0.76 mg/L	4.96 NTU	105.5 mV	6.70 ft	110.00 ml/min
8/8/2017 1:02 PM	08:11	6.20 pH	30.77 °C	289.27 µS/cm	0.90 mg/L	3.52 NTU	105.2 mV	6.70 ft	110.00 ml/min
8/8/2017 1:04 PM	10:14	6.20 pH	30.41 °C	293.31 µS/cm	0.87 mg/L	3.18 NTU	105.5 mV	6.70 ft	110.00 ml/min
8/8/2017 1:06 PM	12:17	6.19 pH	30.10 °C	294.88 µS/cm	0.82 mg/L	3.08 NTU	103.5 mV	6.70 ft	110.00 ml/min
8/8/2017 1:08 PM	14:21	6.19 pH	30.10 °C	296.21 µS/cm	0.76 mg/L	3.06 NTU	102.4 mV	6.72 ft	110.00 ml/min
8/8/2017 1:10 PM	16:23	6.18 pH	29.69 °C	293.71 µS/cm	0.76 mg/L	2.97 NTU	105.0 mV	6.72 ft	110.00 ml/min
8/8/2017 1:12 PM	18:26	6.18 pH	29.29 °C	293.36 µS/cm	0.68 mg/L	8.88 NTU	105.2 mV	6.72 ft	110.00 ml/min
8/8/2017 1:14 PM	20:29	6.16 pH	28.76 °C	294.84 µS/cm	0.61 mg/L	3.06 NTU	106.1 mV	6.72 ft	110.00 ml/min
8/8/2017 1:16 PM	22:32	6.14 pH	28.58 °C	296.13 µS/cm	0.62 mg/L	2.66 NTU	107.1 mV	6.72 ft	110.00 ml/min
8/8/2017 1:18 PM	24:35	6.13 pH	28.42 °C	297.01 µS/cm	0.55 mg/L	2.50 NTU	107.6 mV	6.72 ft	110.00 ml/min
8/8/2017 1:20 PM	26:38	6.11 pH	28.40 °C	299.10 µS/cm	0.54 mg/L	2.57 NTU	109.2 mV	6.72 ft	110.00 ml/min

Samples

Sample ID:	Description:

Low-Flow Test Report:

Test Date / Time: 8/24/2017 8:00:39 AM
Project: DePriest
Operator Name: Ron

Location Name: MW 20 **Latitude: 32.06935** **Longitude: -81.08444** **Well Diameter: 2 in** **Casing Type: Pvc** **Screen Length: 10 ft** **Top of Screen: 5 ft** **Total Depth: 15 ft** **Initial Depth to Water: 8.64 m**	**Pump Type: Peristaltic** **Tubing Type: Teflon** **Tubing Inner Diameter: 0.187 in** **Tubing Length: 13 ft** **Pump Intake From TOC: 3 ft** **Estimated Total Volume Pumped: 4368.001 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 8.79 ft**	**Instrument Used: AquaTROLL 600 Vented** **Serial Number: 449367**

Test Notes:
Test time shown is
mountain dst

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 0.3	+/- 10	+/- 20	+/- 0.3	
8/24/2017 8:00 AM	00:00	5.54 pH	30.85 °C	0.00 µS/cm	3.13 mg/L	2.11 NTU	17.7 mV	8.66 ft	90.00 ml/min
8/24/2017 8:02 AM	02:06	5.64 pH	31.03 °C	0.00 µS/cm	1.39 mg/L	22.98 NTU	-28.0 mV	8.78 ft	90.00 ml/min
8/24/2017 8:04 AM	04:12	5.52 pH	30.96 °C	0.00 µS/cm	0.64 mg/L	37.82 NTU	-30.7 mV	8.78 ft	90.00 ml/min
8/24/2017 8:06 AM	06:18	5.22 pH	31.01 °C	0.00 µS/cm	0.47 mg/L	52.17 NTU	-34.4 mV	8.78 ft	110.00 ml/min
8/24/2017 8:09 AM	08:23	5.44 pH	31.01 °C	0.00 µS/cm	0.40 mg/L	3.59 NTU	-81.4 mV	8.78 ft	110.00 ml/min
8/24/2017 8:11 AM	10:30	5.53 pH	31.08 °C	0.00 µS/cm	0.37 mg/L	6.98 NTU	-76.3 mV	8.78 ft	100.00 ml/min
8/24/2017 8:13 AM	12:35	5.47 pH	31.05 °C	0.00 µS/cm	0.34 mg/L	10.69 NTU	-83.6 mV	8.78 ft	100.00 ml/min
8/24/2017 8:15 AM	14:42	5.47 pH	31.23 °C	0.00 µS/cm	0.29 mg/L	26.09 NTU	-49.3 mV	8.78 ft	100.00 ml/min
8/24/2017 8:17 AM	16:47	5.52 pH	31.36 °C	0.00 µS/cm	0.27 mg/L	22.04 NTU	-50.7 mV	8.79 ft	110.00 ml/min
8/24/2017 8:19 AM	18:54	5.50 pH	31.48 °C	0.00 µS/cm	0.25 mg/L	18.71 NTU	-63.2 mV	8.79 ft	110.00 ml/min
8/24/2017 8:21 AM	21:00	5.47 pH	31.65 °C	0.00 µS/cm	0.22 mg/L	5.61 NTU	-73.5 mV	8.79 ft	110.00 ml/min
8/24/2017 8:23 AM	23:06	5.46 pH	31.82 °C	0.00 µS/cm	0.20 mg/L	6.74 NTU	-94.7 mV	8.79 ft	110.00 ml/min
8/24/2017 8:25 AM	25:12	5.47 pH	31.74 °C	0.00 µS/cm	0.19 mg/L	6.37 NTU	-98.3 mV	8.79 ft	110.00 ml/min
8/24/2017 8:27 AM	27:18	5.46 pH	31.94 °C	0.00 µS/cm	0.19 mg/L	11.16 NTU	-95.4 mV	8.79 ft	110.00 ml/min

8/24/2017 8:30 AM	29:23	5.46 pH	32.16 °C	0.00 µS/cm	0.19 mg/L	7.33 NTU	-90.8 mV	8.79 ft	110.00 ml/min
8/24/2017 8:32 AM	31:30	5.46 pH	32.38 °C	0.00 µS/cm	0.19 mg/L	15.77 NTU	-86.2 mV	8.79 ft	110.00 ml/min
8/24/2017 8:34 AM	33:36	5.49 pH	32.56 °C	0.00 µS/cm	0.19 mg/L	12.99 NTU	-44.6 mV	8.79 ft	110.00 ml/min
8/24/2017 8:36 AM	35:42	5.49 pH	32.66 °C	0.00 µS/cm	0.18 mg/L	6.55 NTU	-46.2 mV	8.79 ft	100.00 ml/min
8/24/2017 8:38 AM	37:48	5.44 pH	32.60 °C	0.00 µS/cm	0.17 mg/L	8.01 NTU	-90.1 mV	8.79 ft	100.00 ml/min
8/24/2017 8:40 AM	39:54	5.43 pH	32.79 °C	0.00 µS/cm	0.16 mg/L	8.16 NTU	-97.9 mV	8.79 ft	100.00 ml/min
8/24/2017 8:42 AM	42:00	5.43 pH	32.96 °C	0.00 µS/cm	0.16 mg/L	8.90 NTU	-100.9 mV	8.79 ft	100.00 ml/min

Samples

Sample ID:	Description:

Attachment B

Laboratory Reports

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: 680-142461-1
Client Project/Site: CSX GA, Depriest Signal Shop

For:
Holley Consultants
1550 Sandpoint Drive
Roswell, Georgia 30075

Attn: Mr. Ron Holley

Carol M Webb

Authorized for release by:
8/29/2017 12:24:19 PM

Carol Webb, Project Manager II
(850)471-6250
carol.webb@testamericainc.com

Job ID: 680-142461-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Holley Consultants

Project: CSX GA, Depriest Signal Shop

Report Number: 680-142461-1

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 08/24/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.6 C.

METALS (ICP) - DISSOLVED
Sample MW-20 (680-142461-1) was analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/28/2017 and analyzed on 08/29/2017.

Silver failed the recovery criteria low for the MS of sample 680-142401-7 in batch 680-493350.

Silver failed the recovery criteria low for the MSD of sample 680-142401-7 in batch 680-493350.

Refer to the QC report for details.

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

METALS (ICP)
Sample MW-20 (680-142461-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/25/2017 and analyzed on 08/29/2017.

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

MERCURY (ICP) - DISSOLVED
Sample MW-20 (680-142461-1) was analyzed for Mercury (ICP) - Dissolved in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 08/28/2017.

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

TOTAL MERCURY
Sample MW-20 (680-142461-1) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 08/25/2017.

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

Sample Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-142461-1	MW-20	Water	08/24/17 10:45	08/24/17 11:57

Method Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV

Protocol References:

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

Laboratory References:

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

Definitions/Glossary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Qualifiers

Metals

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Client Sample ID: MW-20
Date Collected: 08/24/17 10:45
Date Received: 08/24/17 11:57

Lab Sample ID: 680-142461-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/25/17 17:13	08/29/17 02:26	1
Barium	**0.043**		0.010	0.0017	mg/L		08/25/17 17:13	08/29/17 02:26	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/25/17 17:13	08/29/17 02:26	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/25/17 17:13	08/29/17 02:26	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/25/17 17:13	08/29/17 02:26	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/25/17 17:13	08/29/17 02:26	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/25/17 17:13	08/29/17 02:26	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/28/17 12:12	08/29/17 00:50	1
Barium	**0.042**		0.010	0.0017	mg/L		08/28/17 12:12	08/29/17 00:50	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/28/17 12:12	08/29/17 00:50	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/28/17 12:12	08/29/17 00:50	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/28/17 12:12	08/29/17 00:50	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/28/17 12:12	08/29/17 00:50	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/28/17 12:12	08/29/17 00:50	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/25/17 09:59	08/25/17 16:24	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/28/17 11:08	08/28/17 17:56	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-493015/1-A
Matrix: Water
Analysis Batch: 493350

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 493015

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/25/17 17:13	08/29/17 01:20	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/25/17 17:13	08/29/17 01:20	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/25/17 17:13	08/29/17 01:20	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/25/17 17:13	08/29/17 01:20	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/25/17 17:13	08/29/17 01:20	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/25/17 17:13	08/29/17 01:20	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/25/17 17:13	08/29/17 01:20	1

Lab Sample ID: LCS 680-493015/2-A
Matrix: Water
Analysis Batch: 493350

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 493015

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.106		mg/L		106	80 - 120
Barium	0.100	0.0951		mg/L		95	80 - 120
Cadmium	0.0500	0.0517		mg/L		103	80 - 120
Chromium	0.100	0.103		mg/L		103	80 - 120
Silver	0.0500	0.0504		mg/L		101	80 - 120
Lead	0.500	0.493		mg/L		99	80 - 120
Selenium	0.100	0.108		mg/L		108	80 - 120

Lab Sample ID: MB 680-493225/1-B
Matrix: Water
Analysis Batch: 493350

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 493227

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/28/17 12:12	08/29/17 00:05	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/28/17 12:12	08/29/17 00:05	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/28/17 12:12	08/29/17 00:05	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/28/17 12:12	08/29/17 00:05	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/28/17 12:12	08/29/17 00:05	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/28/17 12:12	08/29/17 00:05	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/28/17 12:12	08/29/17 00:05	1

Lab Sample ID: LCS 680-493225/2-B
Matrix: Water
Analysis Batch: 493350

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 493227

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0961		mg/L		96	80 - 120
Barium	0.100	0.0876		mg/L		88	80 - 120
Cadmium	0.0500	0.0470		mg/L		94	80 - 120
Chromium	0.100	0.0954		mg/L		95	80 - 120
Silver	0.0500	0.0465		mg/L		93	80 - 120
Lead	0.500	0.451		mg/L		90	80 - 120
Selenium	0.100	0.0960		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-492910/1-A
Matrix: Water
Analysis Batch: 493141

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 492910

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/25/17 09:59	08/25/17 16:17	1

Lab Sample ID: LCS 680-492910/2-A
Matrix: Water
Analysis Batch: 493141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 492910

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00255		mg/L		102	80 - 120

Lab Sample ID: 680-142461-1 MS
Matrix: Water
Analysis Batch: 493141

Client Sample ID: MW-20
Prep Type: Total/NA
Prep Batch: 492910

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000080	U	0.00100	0.00102		mg/L		102	80 - 120

Lab Sample ID: 680-142461-1 MSD
Matrix: Water
Analysis Batch: 493141

Client Sample ID: MW-20
Prep Type: Total/NA
Prep Batch: 492910

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000080	U	0.00100	0.00102		mg/L		102	80 - 120	0	20

Lab Sample ID: MB 680-493204/1-B
Matrix: Water
Analysis Batch: 493369

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 493207

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/28/17 11:08	08/28/17 17:49	1

Lab Sample ID: LCS 680-493204/2-B
Matrix: Water
Analysis Batch: 493369

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 493207

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00239		mg/L		96	80 - 120

Metals

Prep Batch: 492910

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Total/NA	Water	7470A	
MB 680-492910/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-492910/2-A	Lab Control Sample	Total/NA	Water	7470A	
680-142461-1 MS	MW-20	Total/NA	Water	7470A	
680-142461-1 MSD	MW-20	Total/NA	Water	7470A	

Prep Batch: 493015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Total Recoverable	Water	3005A	
MB 680-493015/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-493015/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 493141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Total/NA	Water	7470A	492910
MB 680-492910/1-A	Method Blank	Total/NA	Water	7470A	492910
LCS 680-492910/2-A	Lab Control Sample	Total/NA	Water	7470A	492910
680-142461-1 MS	MW-20	Total/NA	Water	7470A	492910
680-142461-1 MSD	MW-20	Total/NA	Water	7470A	492910

Filtration Batch: 493204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	FILTRATION	
MB 680-493204/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 680-493204/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	

Prep Batch: 493207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	7470A	493204
MB 680-493204/1-B	Method Blank	Dissolved	Water	7470A	493204
LCS 680-493204/2-B	Lab Control Sample	Dissolved	Water	7470A	493204

Filtration Batch: 493225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	FILTRATION	
MB 680-493225/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 680-493225/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	

Prep Batch: 493227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	3005A	493225
MB 680-493225/1-B	Method Blank	Dissolved	Water	3005A	493225
LCS 680-493225/2-B	Lab Control Sample	Dissolved	Water	3005A	493225

Analysis Batch: 493350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	6010C	493227
680-142461-1	MW-20	Total Recoverable	Water	6010C	493015
MB 680-493015/1-A	Method Blank	Total Recoverable	Water	6010C	493015
MB 680-493225/1-B	Method Blank	Dissolved	Water	6010C	493227
LCS 680-493015/2-A	Lab Control Sample	Total Recoverable	Water	6010C	493015

Metals (Continued)

Analysis Batch: 493350 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 680-493225/2-B	Lab Control Sample	Dissolved	Water	6010C	493227

Analysis Batch: 493369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-142461-1	MW-20	Dissolved	Water	7470A	493207
MB 680-493204/1-B	Method Blank	Dissolved	Water	7470A	493207
LCS 680-493204/2-B	Lab Control Sample	Dissolved	Water	7470A	493207

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Client Sample ID: MW-20
Date Collected: 08/24/17 10:45
Date Received: 08/24/17 11:57

Lab Sample ID: 680-142461-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	493225	08/28/17 12:10	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	50 mL	493227	08/28/17 12:12	AJR	TAL SAV
Dissolved	Analysis	6010C		1			493350	08/29/17 00:50	BCB	TAL SAV
	Instrument ID: ICPF									
Total Recoverable	Prep	3005A			50 mL	50 mL	493015	08/25/17 17:13	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			493350	08/29/17 02:26	BCB	TAL SAV
	Instrument ID: ICPF									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	493204	08/28/17 11:05	NVF	TAL SAV
Dissolved	Prep	7470A			50 mL	50 mL	493207	08/28/17 11:08	NVF	TAL SAV
Dissolved	Analysis	7470A		1			493369	08/28/17 17:56	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	7470A			50 mL	50 mL	492910	08/25/17 09:59	NVF	TAL SAV
Total/NA	Analysis	7470A		1			493141	08/25/17 16:24	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Laboratory References:

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

CSX TRANSPORTATION — CHAIN OF CUSTODY

COC #

LABORATORY INFORMATION

- ☐ TestAmerica Savannah - 5102 LaRoche Avenue, Savannah, GA 31404 P: 912-354-7858 F: 912-352-0165
- ☐ TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P: 330-497-9396 F: 330-497-0772
- ☐ TestAmerica Tampa - 6712 Benjamin Road, Suite 100, Tampa, FL 33634 P: 813-885-7427 F: 813-885-7049
- ☐ TestAmerica Pensacola - 3355 McLemore Drive, Pensacola, FL 32514 P: 850-474-1001 F: 850-478-2671
- ☐ TestAmerica Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P: 716-691-2600 F: 716-961-7991
- ☐ TestAmerica Chicago - 2417 Bond Street, University Park, IL 60466 P: 708-534-5200 F: 708-534-5211

SHIPMENT INFORMATION

Shipment Method:

Shipment Tracking No:

CSXT PROJECT INFORMATION

CSXT Project Number: 9814901

Proj. State (State of Origin): GA

Proj. City: SAVANNAH

CSXT Project Name: DEPRIEST SIGNAL SHOP

CSXT Contact:

LWON:

CONSULTANT INFORMATION

Company: HOLLEY CONSULTANTS

Project #:

PM:

Address: 1550 SANDPOINT DR

Email: RON@HOLLEYCONSULTANTS.COM

City, State, Zip: ROSWELL GA 30075

Phone:

Fax:

Turnaround Time:

- ☐ 1 Day Rush
- ☐ 2 Day Rush
- ☒ 3 Day Rush
- ☐ Standard 6-13 Days
- Specify # Days ____
- ☐ Standard 14 Days
- ☐ Other ____

Deliverables:

- ☒ CSXT Standard (Level II)
- ☐ Level III
- ☐ Level IV
- ☐ Other Deliv: ____
- ☐ EDD Required, Format: ____

Preservative Codes:

0 = No Preservatives; 1 = Hydrochloric Acid; 2 = Nitric Acid; 3 = Sulfuric Acid; 4 = Sodium Thiosulfate; 5 = Sodium Hydroxide; 6 = Other ____

Matrix Codes:

GW = Groundwater; WW = Waste Water; SW = Surface Water; SO = Soil; SL = Sludge; OI = Oil; SOL = Other Solid; LIQ = Liquid

SAMPLE INFORMATION

Sample Identification	Containers Number & Type	Sample Collection Date	Time	Sampler	Filtered Y or N	Type Comp or Grab	Matrix Code	Note ➡ Pres. Code 0	2							COMMENTS	LAB USE
								METHODS FOR ANALYSIS									
								RCRA METALS *	RCRA METALS							* FILTER BEFORE ANALYSIS	
MW 20	2P	8/24/17	1045	RH	N	G	GW	1	1								

680-142461 Chain of Custody

Relinquished By	Date/Time	Received By	Date/Time
[signature]	8/24/17 1157	MTH	8/24/17 1157
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Received By Laboratory:	Date/Time:	Lab Remarks:	LAB USE: ☐ Yes Custody Intact ☐ No

Comments & Special Analytical Requirements:

Custody Seal # #

LAB Log Number #

ORIGINAL – RETURN TO LABORATORY WITH SAMPLES

240C (CF) 260C

INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC

TAL-6006 (0509)

681-Atlanta

Page 12 of 14

8/29/2017

Login Sample Receipt Checklist

Client: Holley Consultants

Job Number: 680-142461-1

Login Number: 142461
List Number: 1
Creator: Tyler, Matthew M

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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-142461-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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: 680-141933-1
Client Project/Site: CSX GA, Depriest Signal Shop

For:
Holley Consultants
1550 Sandpoint Drive
Roswell, Georgia 30075

Attn: Mr. Ron Holley

Carol M Webb

Authorized for release by:
8/22/2017 4:50:44 PM

Carol Webb, Project Manager II
(850)471-6250
carol.webb@testamericainc.com

Job ID: 680-141933-1

Laboratory: TestAmerica Savannah

Narrative

Job Narrative
680-141933-1

Comments
No additional comments.

Receipt
The samples were received on 8/9/2017 12:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.6º C and 2.4º C.

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

General Chemistry
Method 7196A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 400-364981 and analytical batch 400-365175 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method WALKLEY BLACK: The method blank associated with analytical batch 400-364498 contained a hit greater than one-half the reporting limit (RL). The samples could not be re-analyzed because all remaining QC was within range, therefore samples were not re-extracted. The sample results have been qualified and reported.

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

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

Sample Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-141933-1	201 S	Solid	08/09/17 10:15	08/09/17 12:20
680-141933-2	203 S	Solid	08/09/17 10:40	08/09/17 12:20
680-141933-3	204 S	Solid	08/09/17 10:50	08/09/17 12:20
680-141933-4	404 S	Solid	08/09/17 11:00	08/09/17 12:20
680-141933-5	419 S	Solid	08/09/17 09:45	08/09/17 12:20
680-141933-6	603 S	Solid	08/09/17 10:00	08/09/17 12:20
680-141933-7	903 S	Solid	08/09/17 08:50	08/09/17 12:20
680-141933-8	923 S	Solid	08/09/17 08:30	08/09/17 12:20
680-141933-9	1103 S	Solid	08/09/17 09:00	08/09/17 12:20
680-141933-10	1332 S	Solid	08/09/17 08:10	08/09/17 12:20
680-141933-11	MW-17	Water	08/08/17 10:06	08/09/17 12:20
680-141933-12	MW-18	Water	08/08/17 11:00	08/09/17 12:20
680-141933-13	MW-19	Water	08/08/17 11:52	08/09/17 12:20
680-141933-14	MW-20	Water	08/08/17 15:22	08/09/17 12:20
680-141933-15	MW-21	Water	08/08/17 14:42	08/09/17 12:20
680-141933-16	MW-22	Water	08/08/17 14:00	08/09/17 12:20
680-141933-17	MW-23	Water	08/08/17 13:20	08/09/17 12:20
680-141933-18	MW-15	Water	08/08/17 16:07	08/09/17 12:20
680-141933-19	DUPL	Water	08/08/17 14:00	08/09/17 12:20

Method Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
7471A	Mercury (CVAA)	SW846	TAL SAV
7196A	Chromium, Hexavalent	SW846	TAL PEN
Moisture	Percent Moisture	EPA	TAL SAV
WALKLEY BLACK	Organic Carbon, Total (TOC)	MSA	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

MSA = "Methods Of Soil Analysis, Chemical And Microbiological Properties", Part 2, 2nd Ed., 1982 And Subsequent Revisions.

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

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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)

Client Sample ID: 201 S
Date Collected: 08/09/17 10:15
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-1
Matrix: Solid
Percent Solids: 72.2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**19**	**F1**	2.3	0.94	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1
Barium	**200**	**F2**	1.2	0.19	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1
Cadmium	**0.84**		0.59	0.12	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1
Chromium	**16**	**F1 F2**	1.2	0.25	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1
Lead	**3200**	**F2**	12	4.0	mg/Kg	☼	08/10/17 07:02	08/14/17 14:34	10
Selenium	1.1	U	2.9	1.1	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1
Silver	**0.34**	**J**	1.2	0.070	mg/Kg	☼	08/10/17 07:02	08/12/17 01:30	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:04	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:04	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:04	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:04	1
Lead	**0.13**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:04	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:04	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:04	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 10:52	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.14**		0.026	0.010	mg/Kg	☼	08/10/17 08:01	08/10/17 14:47	1

Client Sample ID: 203 S
Date Collected: 08/09/17 10:40
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-2
Matrix: Solid
Percent Solids: 83.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**340**		2.0	0.81	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Barium	**130**		1.0	0.16	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Cadmium	**0.13**	**J**	0.51	0.10	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Chromium	**24**		1.0	0.21	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Lead	**400**		1.0	0.34	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Selenium	**2.3**	**J**	2.5	0.98	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1
Silver	**0.41**	**J**	1.0	0.061	mg/Kg	☼	08/10/17 07:02	08/12/17 01:55	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.15**		0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:08	1
Barium	**0.016**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:08	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:08	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:08	1
Lead	**0.033**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:08	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:08	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:08	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 10:56	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.19**		0.023	0.0094	mg/Kg	☼	08/10/17 08:01	08/10/17 14:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	**0.0024**	**^**	0.0012	0.00050	g/g	☼		08/16/17 11:30	1

Client Sample ID: 204 S
Date Collected: 08/09/17 10:50
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-3
Matrix: Solid
Percent Solids: 81.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**260**		2.1	0.83	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Barium	**190**		1.0	0.17	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Cadmium	**0.32**	**J**	0.52	0.10	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Chromium	**14**		1.0	0.22	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Lead	**650**		1.0	0.35	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Selenium	**2.5**	**J**	2.6	1.0	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1
Silver	**0.31**	**J**	1.0	0.062	mg/Kg	☼	08/10/17 07:02	08/12/17 02:10	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.16**		0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:22	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:22	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:22	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:22	1
Lead	**0.058**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:22	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:22	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:22	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 10:59	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.24**		0.021	0.0085	mg/Kg	☼	08/10/17 08:01	08/10/17 14:54	1

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 404 S
Date Collected: 08/09/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-4
Matrix: Solid
Percent Solids: 84.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**300**		2.1	0.83	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Barium	**200**		1.0	0.17	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Cadmium	**1.2**		0.52	0.10	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Chromium	**22**		1.0	0.22	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Lead	**450**		1.0	0.35	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Selenium	**3.4**		2.6	1.0	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1
Silver	**0.25**	**J**	1.0	0.062	mg/Kg	☼	08/10/17 07:02	08/12/17 02:14	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.21**		0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:26	1
Barium	**0.017**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:26	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:26	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:26	1
Lead	**0.078**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:26	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:26	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:26	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:02	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.25**		0.022	0.0086	mg/Kg	☼	08/10/17 08:01	08/10/17 14:57	1

Client Sample ID: 419 S

Date Collected: 08/09/17 09:45
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-5

Matrix: Solid
Percent Solids: 83.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**67**		2.1	0.82	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Barium	**170**		1.0	0.16	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Cadmium	**0.27**	**J**	0.51	0.10	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Chromium	**21**		1.0	0.22	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Lead	**1100**		1.0	0.35	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Selenium	**1.2**	**J**	2.6	0.99	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1
Silver	**0.21**	**J**	1.0	0.062	mg/Kg	☼	08/10/17 07:02	08/12/17 02:19	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.021**		0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:31	1
Barium	**0.012**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:31	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:31	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:31	1
Lead	**0.14**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:31	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:31	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:31	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:06	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.60**		0.11	0.044	mg/Kg	☼	08/10/17 08:01	08/10/17 16:07	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.00050	U ^	0.0012	0.00050	g/g	☼		08/16/17 11:30	1

Client Sample ID: 603 S
Date Collected: 08/09/17 10:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-6
Matrix: Solid
Percent Solids: 87.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**13**		1.9	0.77	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Barium	**59**		0.96	0.15	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Cadmium	**1.0**		0.48	0.096	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Chromium	**24**		0.96	0.20	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Lead	**380**		0.96	0.33	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Selenium	0.93	U	2.4	0.93	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1
Silver	0.058	U	0.96	0.058	mg/Kg	☼	08/10/17 07:02	08/12/17 02:24	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:35	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:35	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:35	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:35	1
Lead	**0.022**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:35	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:35	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:35	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:09	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.24**		0.021	0.0085	mg/Kg	☼	08/10/17 08:01	08/10/17 15:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	3.4	U F1 F2	4.9	3.4	mg/Kg	☼	08/21/17 17:11	08/22/17 12:17	1

Client Sample ID: 903 S
Date Collected: 08/09/17 08:50
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-7
Matrix: Solid
Percent Solids: 89.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**8.6**		1.9	0.76	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Barium	**78**		0.95	0.15	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Cadmium	**0.58**		0.48	0.095	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Chromium	**62**		0.95	0.20	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Lead	**290**		0.95	0.32	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Selenium	0.92	U	2.4	0.92	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1
Silver	0.057	U	0.95	0.057	mg/Kg	☼	08/10/17 07:02	08/12/17 02:29	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:40	1
Barium	**0.010**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:40	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:40	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:40	1
Lead	**0.033**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:40	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:40	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:40	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:12	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.13**		0.022	0.0088	mg/Kg	☼	08/10/17 08:01	08/10/17 15:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	**0.069**	^	0.0011	0.00047	g/g	☼		08/16/17 11:30	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 923 S
Date Collected: 08/09/17 08:30
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-8
Matrix: Solid
Percent Solids: 90.8

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**15**		1.9	0.77	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Barium	**85**		0.97	0.15	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Cadmium	**0.89**		0.48	0.097	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Chromium	**480**		0.97	0.20	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Lead	**380**		0.97	0.33	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Selenium	0.94	U	2.4	0.94	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1
Silver	0.058	U	0.97	0.058	mg/Kg	☼	08/10/17 07:02	08/12/17 02:34	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:44	1
Barium	**0.012**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:44	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:44	1
Chromium	**0.036**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:44	1
Lead	**0.042**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:44	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:44	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:44	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.00020**		0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:16	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.95**		0.10	0.041	mg/Kg	☼	08/10/17 08:01	08/10/17 16:11	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	2.9	U	4.1	2.9	mg/Kg	☼	08/21/17 17:11	08/22/17 12:17	1

Client Sample ID: 1103 S

Date Collected: 08/09/17 09:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-9

Matrix: Solid
Percent Solids: 84.8

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**45**		2.0	0.79	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Barium	**140**		0.99	0.16	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Cadmium	**0.40**	**J**	0.50	0.099	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Chromium	**43**		0.99	0.21	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Lead	**510**		0.99	0.34	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Selenium	**1.6**	**J**	2.5	0.96	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1
Silver	**0.099**	**J**	0.99	0.059	mg/Kg	☼	08/10/17 07:02	08/12/17 02:39	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:49	1
Barium	**0.014**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:49	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:49	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:49	1
Lead	**0.089**		0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:49	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:49	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:49	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:26	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.53**		0.022	0.0087	mg/Kg	☼	08/10/17 08:01	08/10/17 15:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	3.0	U	4.4	3.0	mg/Kg	☼	08/21/17 17:11	08/22/17 12:20	1

Client Sample ID: 1332 S

Date Collected: 08/09/17 08:10
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-10

Matrix: Solid
Percent Solids: 90.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**35**		1.9	0.75	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Barium	**66**		0.94	0.15	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Cadmium	**0.56**		0.47	0.094	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Chromium	**7.6**		0.94	0.20	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Lead	**770**		0.94	0.32	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Selenium	0.91	U	2.3	0.91	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1
Silver	0.056	U	0.94	0.056	mg/Kg	☼	08/10/17 07:02	08/12/17 02:44	1

Method: 6010C - Metals (ICP) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.032**		0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:53	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:53	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 19:53	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:53	1
Lead	0.010	U F1	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:53	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 19:53	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 19:53	1

Method: 7470A - Mercury (CVAA) - SPLP East

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 11:29	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.10**		0.020	0.0081	mg/Kg	☼	08/10/17 08:01	08/10/17 15:24	1

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-17
Date Collected: 08/08/17 10:06
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-11
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 13:44	08/16/17 21:45	1
Barium	**0.022**		0.010	0.0017	mg/L		08/11/17 13:44	08/16/17 21:45	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 13:44	08/16/17 21:45	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 13:44	08/16/17 21:45	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 13:44	08/16/17 21:45	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 13:44	08/16/17 21:45	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 13:44	08/16/17 21:45	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:19	1

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-18
Date Collected: 08/08/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-12
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 13:44	08/16/17 21:50	1
Barium	**0.0077**	**J**	0.010	0.0017	mg/L		08/11/17 13:44	08/16/17 21:50	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 13:44	08/16/17 21:50	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 13:44	08/16/17 21:50	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 13:44	08/16/17 21:50	1
Lead	**0.0062**	**J**	0.010	0.0039	mg/L		08/11/17 13:44	08/16/17 21:50	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 13:44	08/16/17 21:50	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:29	1

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-19
Date Collected: 08/08/17 11:52
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-13
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/14/17 12:15	08/16/17 03:02	1
Barium	**0.11**		0.010	0.0017	mg/L		08/14/17 12:15	08/16/17 03:02	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/14/17 12:15	08/16/17 03:02	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/14/17 12:15	08/16/17 03:02	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/14/17 12:15	08/16/17 03:02	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/14/17 12:15	08/16/17 03:02	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/14/17 12:15	08/16/17 03:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:33	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-20
Date Collected: 08/08/17 15:22
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-14
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.11		0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:37	1
Barium	0.10		0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:37	1
Cadmium	0.051		0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:37	1
Chromium	0.10		0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:37	1
Silver	0.050		0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:37	1
Lead	0.51		0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:37	1
Selenium	0.11		0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:37	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:36	1

Client Sample Results

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-21
Date Collected: 08/08/17 14:42
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-15
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:42	1
Barium	**0.064**		0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:42	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:42	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:42	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:42	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:42	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:42	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:39	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-22
Date Collected: 08/08/17 14:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-16
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:47	1
Barium	**0.013**		0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:47	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:47	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:47	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:47	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:47	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:47	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:43	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-23
Date Collected: 08/08/17 13:20
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-17
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:12	1
Barium	**0.022**		0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:12	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:12	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:12	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:12	1
Lead	**0.0046**	**J**	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:12	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:53	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-15
Date Collected: 08/08/17 16:07
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-18
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:17	1
Barium	**0.0072**	**J**	0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:17	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:17	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:17	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:17	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:17	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:56	1

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: DUPL
Date Collected: 08/08/17 14:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-19
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 17:22	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 17:22	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 17:22	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 17:22	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 17:22	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 17:22	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 17:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:59	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-490954/1-A
Matrix: Solid
Analysis Batch: 491449

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490954

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.79	U	2.0	0.79	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Barium	0.16	U	0.99	0.16	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Cadmium	0.099	U	0.50	0.099	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Chromium	0.21	U	0.99	0.21	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Lead	0.34	U	0.99	0.34	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Selenium	0.96	U	2.5	0.96	mg/Kg		08/10/17 07:02	08/12/17 01:20	1
Silver	0.059	U	0.99	0.059	mg/Kg		08/10/17 07:02	08/12/17 01:20	1

Lab Sample ID: LCS 680-490954/2-A
Matrix: Solid
Analysis Batch: 491449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	9.80	10.5		mg/Kg		107	80 - 120
Barium	9.80	10.0		mg/Kg		102	80 - 120
Cadmium	4.90	5.03		mg/Kg		103	80 - 120
Chromium	9.80	10.2		mg/Kg		104	80 - 120
Lead	49.0	49.9		mg/Kg		102	80 - 120
Selenium	9.80	10.1		mg/Kg		103	80 - 120
Silver	4.90	4.96		mg/Kg		101	80 - 120

Lab Sample ID: 680-141933-1 MS
Matrix: Solid
Analysis Batch: 491449

Client Sample ID: 201 S
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	19	F1	11.6	33.7		mg/Kg	☼	124	75 - 125
Barium	200	F2	11.6	771	4	mg/Kg	☼	4866	75 - 125
Cadmium	0.84		5.82	7.05		mg/Kg	☼	107	75 - 125
Chromium	16	F1 F2	11.6	38.1	F1	mg/Kg	☼	194	75 - 125
Selenium	1.1	U	11.6	10.7		mg/Kg	☼	92	75 - 125
Silver	0.34	J	5.82	5.98		mg/Kg	☼	97	75 - 125

Lab Sample ID: 680-141933-1 MS
Matrix: Solid
Analysis Batch: 491601

Client Sample ID: 201 S
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	3200	F2	58.2	7600	4	mg/Kg	☼	7553	75 - 125

Lab Sample ID: 680-141933-1 MSD
Matrix: Solid
Analysis Batch: 491449

Client Sample ID: 201 S
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	19	F1	11.7	40.9	F1	mg/Kg	☼	184	75 - 125	19	20
Barium	200	F2	11.7	430	4 F2	mg/Kg	☼	1922	75 - 125	57	20
Cadmium	0.84		5.87	6.90		mg/Kg	☼	103	75 - 125	2	20
Chromium	16	F1 F2	11.7	29.4	F2	mg/Kg	☼	118	75 - 125	26	20

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

Lab Sample ID: 680-141933-1 MSD
Matrix: Solid
Analysis Batch: 491449

Client Sample ID: 201 S
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Selenium	1.1	U	11.7	11.9		mg/Kg	☼	101	75 - 125	10	20
Silver	0.34	J	5.87	5.97		mg/Kg	☼	96	75 - 125	0	20

Lab Sample ID: 680-141933-1 MSD
Matrix: Solid
Analysis Batch: 491601

Client Sample ID: 201 S
Prep Type: Total/NA
Prep Batch: 490954

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	3200	F2	58.7	2040	4 F2	mg/Kg	☼	-1986	75 - 125	115	20

Lab Sample ID: MB 680-491619/1-A
Matrix: Solid
Analysis Batch: 491939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 491619

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 17:57	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 17:57	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 17:57	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 17:57	1
Lead	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 17:57	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 17:57	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 17:57	1

Lab Sample ID: LCS 680-491619/2-A
Matrix: Solid
Analysis Batch: 491939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 491619

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.200	0.203		mg/L		101	80 - 120
Barium	0.200	0.197		mg/L		98	80 - 120
Cadmium	0.100	0.0985		mg/L		98	80 - 120
Chromium	0.200	0.200		mg/L		100	80 - 120
Lead	1.00	0.979		mg/L		98	80 - 120
Selenium	0.200	0.197		mg/L		98	80 - 120
Silver	0.100	0.0989		mg/L		99	80 - 120

Lab Sample ID: MB 680-491281/1-A
Matrix: Water
Analysis Batch: 491939

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 491281

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 13:44	08/16/17 21:23	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/11/17 13:44	08/16/17 21:23	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 13:44	08/16/17 21:23	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 13:44	08/16/17 21:23	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 13:44	08/16/17 21:23	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 13:44	08/16/17 21:23	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 13:44	08/16/17 21:23	1

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

Lab Sample ID: LCS 680-491281/2-A
Matrix: Water
Analysis Batch: 491939

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 491281

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.108		mg/L		108	80 - 120
Barium	0.100	0.102		mg/L		102	80 - 120
Cadmium	0.0500	0.0515		mg/L		103	80 - 120
Chromium	0.100	0.105		mg/L		105	80 - 120
Lead	0.500	0.511		mg/L		102	80 - 120
Selenium	0.100	0.0973		mg/L		97	80 - 120
Silver	0.0500	0.0508		mg/L		102	80 - 120

Lab Sample ID: MB 680-491289/1-A
Matrix: Water
Analysis Batch: 491601

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 491289

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/11/17 14:12	08/14/17 16:37	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/11/17 14:12	08/14/17 16:37	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/11/17 14:12	08/14/17 16:37	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/11/17 14:12	08/14/17 16:37	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/11/17 14:12	08/14/17 16:37	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/11/17 14:12	08/14/17 16:37	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/11/17 14:12	08/14/17 16:37	1

Lab Sample ID: LCS 680-491289/2-A
Matrix: Water
Analysis Batch: 491601

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 491289

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.110		mg/L		110	80 - 120
Barium	0.100	0.100		mg/L		100	80 - 120
Cadmium	0.0500	0.0510		mg/L		102	80 - 120
Chromium	0.100	0.103		mg/L		103	80 - 120
Lead	0.500	0.506		mg/L		101	80 - 120
Selenium	0.100	0.108		mg/L		108	80 - 120
Silver	0.0500	0.0506		mg/L		101	80 - 120

Lab Sample ID: MB 680-491448/1-A
Matrix: Water
Analysis Batch: 491792

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 491448

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0062	U	0.020	0.0062	mg/L		08/14/17 12:15	08/16/17 02:12	1
Barium	0.0017	U	0.010	0.0017	mg/L		08/14/17 12:15	08/16/17 02:12	1
Cadmium	0.0010	U	0.0050	0.0010	mg/L		08/14/17 12:15	08/16/17 02:12	1
Chromium	0.0016	U	0.010	0.0016	mg/L		08/14/17 12:15	08/16/17 02:12	1
Lead	0.0039	U	0.010	0.0039	mg/L		08/14/17 12:15	08/16/17 02:12	1
Selenium	0.0099	U	0.020	0.0099	mg/L		08/14/17 12:15	08/16/17 02:12	1
Silver	0.00060	U	0.010	0.00060	mg/L		08/14/17 12:15	08/16/17 02:12	1

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

Lab Sample ID: LCS 680-491448/2-A
Matrix: Water
Analysis Batch: 491792

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 491448

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.108		mg/L		108	80 - 120
Barium	0.100	0.104		mg/L		104	80 - 120
Cadmium	0.0500	0.0527		mg/L		105	80 - 120
Chromium	0.100	0.106		mg/L		106	80 - 120
Lead	0.500	0.516		mg/L		103	80 - 120
Selenium	0.100	0.0945		mg/L		94	80 - 120
Silver	0.0500	0.0498		mg/L		100	80 - 120

Lab Sample ID: LB 680-491098/1-B
Matrix: Solid
Analysis Batch: 491939

Client Sample ID: Method Blank
Prep Type: SPLP East
Prep Batch: 491619

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 18:59	1
Barium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 18:59	1
Cadmium	0.0050	U	0.0050	0.0050	mg/L		08/15/17 13:27	08/16/17 18:59	1
Chromium	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 18:59	1
Lead	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 18:59	1
Selenium	0.020	U	0.020	0.020	mg/L		08/15/17 13:27	08/16/17 18:59	1
Silver	0.010	U	0.010	0.010	mg/L		08/15/17 13:27	08/16/17 18:59	1

Lab Sample ID: 680-141933-10 MS
Matrix: Solid
Analysis Batch: 491939

Client Sample ID: 1332 S
Prep Type: SPLP East
Prep Batch: 491619

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.032		0.200	0.232		mg/L		100	75 - 125
Barium	0.010	U	0.200	0.192		mg/L		96	75 - 125
Cadmium	0.0050	U	0.200	0.190		mg/L		95	75 - 125
Chromium	0.010	U	0.200	0.196		mg/L		98	75 - 125
Lead	0.010	U F1	0.200	0.246		mg/L		123	75 - 125
Selenium	0.020	U	0.200	0.175		mg/L		87	75 - 125
Silver	0.010	U	0.200	0.159		mg/L		79	75 - 125

Lab Sample ID: 680-141933-10 MSD
Matrix: Solid
Analysis Batch: 491939

Client Sample ID: 1332 S
Prep Type: SPLP East
Prep Batch: 491619

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.032		0.200	0.239		mg/L		104	75 - 125	3	20
Barium	0.010	U	0.200	0.198		mg/L		99	75 - 125	3	20
Cadmium	0.0050	U	0.200	0.196		mg/L		98	75 - 125	3	20
Chromium	0.010	U	0.200	0.203		mg/L		101	75 - 125	4	20
Lead	0.010	U F1	0.200	0.255	F1	mg/L		127	75 - 125	4	20
Selenium	0.020	U	0.200	0.195		mg/L		97	75 - 125	11	20
Silver	0.010	U	0.200	0.163		mg/L		82	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-490986/13-A
Matrix: Water
Analysis Batch: 491151

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490986

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000080	U	0.00020	0.000080	mg/L		08/10/17 09:07	08/10/17 17:13	1

Lab Sample ID: LCS 680-490986/14-A
Matrix: Water
Analysis Batch: 491151

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490986

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00250		mg/L		100	80 - 120

Lab Sample ID: 680-141933-11 MS
Matrix: Water
Analysis Batch: 491151

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 490986

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000080	U	0.00100	0.000886		mg/L		89	80 - 120

Lab Sample ID: 680-141933-11 MSD
Matrix: Water
Analysis Batch: 491151

Client Sample ID: MW-17
Prep Type: Total/NA
Prep Batch: 490986

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000080	U	0.00100	0.000905		mg/L		90	80 - 120	2	20

Lab Sample ID: MB 680-491646/1-A
Matrix: Solid
Analysis Batch: 491983

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 491646

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 10:36	1

Lab Sample ID: LCS 680-491646/2-A
Matrix: Solid
Analysis Batch: 491983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 491646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00275		mg/L		110	80 - 120

Lab Sample ID: LB 680-491098/1-C
Matrix: Solid
Analysis Batch: 491983

Client Sample ID: Method Blank
Prep Type: SPLP East
Prep Batch: 491646

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00020	0.00020	mg/L		08/15/17 16:29	08/17/17 10:49	1

Lab Sample ID: 680-141933-10 MS
Matrix: Solid
Analysis Batch: 491983

Client Sample ID: 1332 S
Prep Type: SPLP East
Prep Batch: 491646

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00020	U	0.00200	0.00191		mg/L		95	80 - 120

Lab Sample ID: 680-141933-10 MSD
Matrix: Solid
Analysis Batch: 491983

Client Sample ID: 1332 S
Prep Type: SPLP East
Prep Batch: 491646

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00020	U	0.00200	0.00184		mg/L		92	80 - 120	3	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 680-490962/13-A
Matrix: Solid
Analysis Batch: 491121

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 490962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0074	U	0.019	0.0074	mg/Kg		08/10/17 08:01	08/10/17 14:00	1

Lab Sample ID: LCS 680-490962/14-A
Matrix: Solid
Analysis Batch: 491121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 490962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.231	0.227		mg/Kg		98	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 400-364981/6-A
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 364981

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	3.2	U	4.6	3.2	mg/Kg		08/21/17 17:11	08/22/17 12:14	1

Lab Sample ID: LCS 400-364981/7-A
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 364981

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	96.7	96.6		mg/Kg		100	80 - 120

Lab Sample ID: LCSSRM 400-364981/9-A
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 364981

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	276	110		mg/Kg		39.9	31.3 - 120.3

Lab Sample ID: MRL 400-364981/5-A
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 364981

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.0500	0.0314		mg/L		63	50 - 150

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 680-141933-6 MS
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: 603 S
Prep Type: Total/NA
Prep Batch: 364981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)	3.4	U F1 F2	105	43.9	F1	mg/Kg	☼	42	75 - 125		

Lab Sample ID: 680-141933-6 MSD
Matrix: Solid
Analysis Batch: 365175

Client Sample ID: 603 S
Prep Type: Total/NA
Prep Batch: 364981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	3.4	U F1 F2	97.3	24.8	F1 F2	mg/Kg	☼	25	75 - 125	56	25

Method: WALKLEY BLACK - Organic Carbon, Total (TOC)

Lab Sample ID: MB 400-364498/1
Matrix: Solid
Analysis Batch: 364498

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.00042	U ^	0.0010	0.00042	g/g			08/16/17 11:30	1

Lab Sample ID: LCS 400-364498/15
Matrix: Solid
Analysis Batch: 364498

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fractional Organic Carbon			0.00260	0.00221		g/g		85	65 - 126		

Metals

Prep Batch: 490954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	3050B	
680-141933-2	203 S	Total/NA	Solid	3050B	
680-141933-3	204 S	Total/NA	Solid	3050B	
680-141933-4	404 S	Total/NA	Solid	3050B	
680-141933-5	419 S	Total/NA	Solid	3050B	
680-141933-6	603 S	Total/NA	Solid	3050B	
680-141933-7	903 S	Total/NA	Solid	3050B	
680-141933-8	923 S	Total/NA	Solid	3050B	
680-141933-9	1103 S	Total/NA	Solid	3050B	
680-141933-10	1332 S	Total/NA	Solid	3050B	
MB 680-490954/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 680-490954/2-A	Lab Control Sample	Total/NA	Solid	3050B	
680-141933-1 MS	201 S	Total/NA	Solid	3050B	
680-141933-1 MSD	201 S	Total/NA	Solid	3050B	

Prep Batch: 490962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	7471A	
680-141933-2	203 S	Total/NA	Solid	7471A	
680-141933-3	204 S	Total/NA	Solid	7471A	
680-141933-4	404 S	Total/NA	Solid	7471A	
680-141933-5	419 S	Total/NA	Solid	7471A	
680-141933-6	603 S	Total/NA	Solid	7471A	
680-141933-7	903 S	Total/NA	Solid	7471A	
680-141933-8	923 S	Total/NA	Solid	7471A	
680-141933-9	1103 S	Total/NA	Solid	7471A	
680-141933-10	1332 S	Total/NA	Solid	7471A	
MB 680-490962/13-A	Method Blank	Total/NA	Solid	7471A	
LCS 680-490962/14-A	Lab Control Sample	Total/NA	Solid	7471A	

Prep Batch: 490986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-11	MW-17	Total/NA	Water	7470A	
680-141933-12	MW-18	Total/NA	Water	7470A	
680-141933-13	MW-19	Total/NA	Water	7470A	
680-141933-14	MW-20	Total/NA	Water	7470A	
680-141933-15	MW-21	Total/NA	Water	7470A	
680-141933-16	MW-22	Total/NA	Water	7470A	
680-141933-17	MW-23	Total/NA	Water	7470A	
680-141933-18	MW-15	Total/NA	Water	7470A	
680-141933-19	DUPL	Total/NA	Water	7470A	
MB 680-490986/13-A	Method Blank	Total/NA	Water	7470A	
LCS 680-490986/14-A	Lab Control Sample	Total/NA	Water	7470A	
680-141933-11 MS	MW-17	Total/NA	Water	7470A	
680-141933-11 MSD	MW-17	Total/NA	Water	7470A	

Leach Batch: 491098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	SPLP East	Solid	1312	
680-141933-2	203 S	SPLP East	Solid	1312	
680-141933-3	204 S	SPLP East	Solid	1312	

Metals (Continued)

Leach Batch: 491098 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-4	404 S	SPLP East	Solid	1312	
680-141933-5	419 S	SPLP East	Solid	1312	
680-141933-6	603 S	SPLP East	Solid	1312	
680-141933-7	903 S	SPLP East	Solid	1312	
680-141933-8	923 S	SPLP East	Solid	1312	
680-141933-9	1103 S	SPLP East	Solid	1312	
680-141933-10	1332 S	SPLP East	Solid	1312	
LB 680-491098/1-B	Method Blank	SPLP East	Solid	1312	
LB 680-491098/1-C	Method Blank	SPLP East	Solid	1312	
680-141933-10 MS	1332 S	SPLP East	Solid	1312	
680-141933-10 MSD	1332 S	SPLP East	Solid	1312	

Analysis Batch: 491121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	7471A	490962
680-141933-2	203 S	Total/NA	Solid	7471A	490962
680-141933-3	204 S	Total/NA	Solid	7471A	490962
680-141933-4	404 S	Total/NA	Solid	7471A	490962
680-141933-5	419 S	Total/NA	Solid	7471A	490962
680-141933-6	603 S	Total/NA	Solid	7471A	490962
680-141933-7	903 S	Total/NA	Solid	7471A	490962
680-141933-8	923 S	Total/NA	Solid	7471A	490962
680-141933-9	1103 S	Total/NA	Solid	7471A	490962
680-141933-10	1332 S	Total/NA	Solid	7471A	490962
MB 680-490962/13-A	Method Blank	Total/NA	Solid	7471A	490962
LCS 680-490962/14-A	Lab Control Sample	Total/NA	Solid	7471A	490962

Analysis Batch: 491151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-11	MW-17	Total/NA	Water	7470A	490986
680-141933-12	MW-18	Total/NA	Water	7470A	490986
680-141933-13	MW-19	Total/NA	Water	7470A	490986
680-141933-14	MW-20	Total/NA	Water	7470A	490986
680-141933-15	MW-21	Total/NA	Water	7470A	490986
680-141933-16	MW-22	Total/NA	Water	7470A	490986
680-141933-17	MW-23	Total/NA	Water	7470A	490986
680-141933-18	MW-15	Total/NA	Water	7470A	490986
680-141933-19	DUPL	Total/NA	Water	7470A	490986
MB 680-490986/13-A	Method Blank	Total/NA	Water	7470A	490986
LCS 680-490986/14-A	Lab Control Sample	Total/NA	Water	7470A	490986
680-141933-11 MS	MW-17	Total/NA	Water	7470A	490986
680-141933-11 MSD	MW-17	Total/NA	Water	7470A	490986

Prep Batch: 491281

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-11	MW-17	Total Recoverable	Water	3005A	
680-141933-12	MW-18	Total Recoverable	Water	3005A	
MB 680-491281/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-491281/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Metals (Continued)

Prep Batch: 491289

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-14	MW-20	Total Recoverable	Water	3005A	
680-141933-15	MW-21	Total Recoverable	Water	3005A	
680-141933-16	MW-22	Total Recoverable	Water	3005A	
680-141933-17	MW-23	Total Recoverable	Water	3005A	
680-141933-18	MW-15	Total Recoverable	Water	3005A	
680-141933-19	DUPL	Total Recoverable	Water	3005A	
MB 680-491289/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-491289/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 491448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-13	MW-19	Total Recoverable	Water	3005A	
MB 680-491448/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-491448/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 491449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	6010C	490954
680-141933-2	203 S	Total/NA	Solid	6010C	490954
680-141933-3	204 S	Total/NA	Solid	6010C	490954
680-141933-4	404 S	Total/NA	Solid	6010C	490954
680-141933-5	419 S	Total/NA	Solid	6010C	490954
680-141933-6	603 S	Total/NA	Solid	6010C	490954
680-141933-7	903 S	Total/NA	Solid	6010C	490954
680-141933-8	923 S	Total/NA	Solid	6010C	490954
680-141933-9	1103 S	Total/NA	Solid	6010C	490954
680-141933-10	1332 S	Total/NA	Solid	6010C	490954
MB 680-490954/1-A	Method Blank	Total/NA	Solid	6010C	490954
LCS 680-490954/2-A	Lab Control Sample	Total/NA	Solid	6010C	490954
680-141933-1 MS	201 S	Total/NA	Solid	6010C	490954
680-141933-1 MSD	201 S	Total/NA	Solid	6010C	490954

Analysis Batch: 491601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	6010C	490954
680-141933-14	MW-20	Total Recoverable	Water	6010C	491289
680-141933-15	MW-21	Total Recoverable	Water	6010C	491289
680-141933-16	MW-22	Total Recoverable	Water	6010C	491289
680-141933-17	MW-23	Total Recoverable	Water	6010C	491289
680-141933-18	MW-15	Total Recoverable	Water	6010C	491289
680-141933-19	DUPL	Total Recoverable	Water	6010C	491289
MB 680-491289/1-A	Method Blank	Total Recoverable	Water	6010C	491289
LCS 680-491289/2-A	Lab Control Sample	Total Recoverable	Water	6010C	491289
680-141933-1 MS	201 S	Total/NA	Solid	6010C	490954
680-141933-1 MSD	201 S	Total/NA	Solid	6010C	490954

Prep Batch: 491619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	SPLP East	Solid	3010A	491098
680-141933-2	203 S	SPLP East	Solid	3010A	491098
680-141933-3	204 S	SPLP East	Solid	3010A	491098

Metals (Continued)

Prep Batch: 491619 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-4	404 S	SPLP East	Solid	3010A	491098
680-141933-5	419 S	SPLP East	Solid	3010A	491098
680-141933-6	603 S	SPLP East	Solid	3010A	491098
680-141933-7	903 S	SPLP East	Solid	3010A	491098
680-141933-8	923 S	SPLP East	Solid	3010A	491098
680-141933-9	1103 S	SPLP East	Solid	3010A	491098
680-141933-10	1332 S	SPLP East	Solid	3010A	491098
LB 680-491098/1-B	Method Blank	SPLP East	Solid	3010A	491098
MB 680-491619/1-A	Method Blank	Total/NA	Solid	3010A	
LCS 680-491619/2-A	Lab Control Sample	Total/NA	Solid	3010A	
680-141933-10 MS	1332 S	SPLP East	Solid	3010A	491098
680-141933-10 MSD	1332 S	SPLP East	Solid	3010A	491098

Prep Batch: 491646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	SPLP East	Solid	7470A	491098
680-141933-2	203 S	SPLP East	Solid	7470A	491098
680-141933-3	204 S	SPLP East	Solid	7470A	491098
680-141933-4	404 S	SPLP East	Solid	7470A	491098
680-141933-5	419 S	SPLP East	Solid	7470A	491098
680-141933-6	603 S	SPLP East	Solid	7470A	491098
680-141933-7	903 S	SPLP East	Solid	7470A	491098
680-141933-8	923 S	SPLP East	Solid	7470A	491098
680-141933-9	1103 S	SPLP East	Solid	7470A	491098
680-141933-10	1332 S	SPLP East	Solid	7470A	491098
LB 680-491098/1-C	Method Blank	SPLP East	Solid	7470A	491098
MB 680-491646/1-A	Method Blank	Total/NA	Solid	7470A	
LCS 680-491646/2-A	Lab Control Sample	Total/NA	Solid	7470A	
680-141933-10 MS	1332 S	SPLP East	Solid	7470A	491098
680-141933-10 MSD	1332 S	SPLP East	Solid	7470A	491098

Analysis Batch: 491792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-13	MW-19	Total Recoverable	Water	6010C	491448
MB 680-491448/1-A	Method Blank	Total Recoverable	Water	6010C	491448
LCS 680-491448/2-A	Lab Control Sample	Total Recoverable	Water	6010C	491448

Analysis Batch: 491939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	SPLP East	Solid	6010C	491619
680-141933-2	203 S	SPLP East	Solid	6010C	491619
680-141933-3	204 S	SPLP East	Solid	6010C	491619
680-141933-4	404 S	SPLP East	Solid	6010C	491619
680-141933-5	419 S	SPLP East	Solid	6010C	491619
680-141933-6	603 S	SPLP East	Solid	6010C	491619
680-141933-7	903 S	SPLP East	Solid	6010C	491619
680-141933-8	923 S	SPLP East	Solid	6010C	491619
680-141933-9	1103 S	SPLP East	Solid	6010C	491619
680-141933-10	1332 S	SPLP East	Solid	6010C	491619
680-141933-11	MW-17	Total Recoverable	Water	6010C	491281
680-141933-12	MW-18	Total Recoverable	Water	6010C	491281

Metals (Continued)

Analysis Batch: 491939 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 680-491098/1-B	Method Blank	SPLP East	Solid	6010C	491619
MB 680-491281/1-A	Method Blank	Total Recoverable	Water	6010C	491281
MB 680-491619/1-A	Method Blank	Total/NA	Solid	6010C	491619
LCS 680-491281/2-A	Lab Control Sample	Total Recoverable	Water	6010C	491281
LCS 680-491619/2-A	Lab Control Sample	Total/NA	Solid	6010C	491619
680-141933-10 MS	1332 S	SPLP East	Solid	6010C	491619
680-141933-10 MSD	1332 S	SPLP East	Solid	6010C	491619

Analysis Batch: 491983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	SPLP East	Solid	7470A	491646
680-141933-2	203 S	SPLP East	Solid	7470A	491646
680-141933-3	204 S	SPLP East	Solid	7470A	491646
680-141933-4	404 S	SPLP East	Solid	7470A	491646
680-141933-5	419 S	SPLP East	Solid	7470A	491646
680-141933-6	603 S	SPLP East	Solid	7470A	491646
680-141933-7	903 S	SPLP East	Solid	7470A	491646
680-141933-8	923 S	SPLP East	Solid	7470A	491646
680-141933-9	1103 S	SPLP East	Solid	7470A	491646
680-141933-10	1332 S	SPLP East	Solid	7470A	491646
LB 680-491098/1-C	Method Blank	SPLP East	Solid	7470A	491646
MB 680-491646/1-A	Method Blank	Total/NA	Solid	7470A	491646
LCS 680-491646/2-A	Lab Control Sample	Total/NA	Solid	7470A	491646
680-141933-10 MS	1332 S	SPLP East	Solid	7470A	491646
680-141933-10 MSD	1332 S	SPLP East	Solid	7470A	491646

General Chemistry

Analysis Batch: 364498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-2	203 S	Total/NA	Solid	WALKLEY BLACK	
680-141933-5	419 S	Total/NA	Solid	WALKLEY BLACK	
680-141933-7	903 S	Total/NA	Solid	WALKLEY BLACK	
MB 400-364498/1	Method Blank	Total/NA	Solid	WALKLEY BLACK	
LCS 400-364498/15	Lab Control Sample	Total/NA	Solid	WALKLEY BLACK	

Prep Batch: 364981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-6	603 S	Total/NA	Solid	3060A	
680-141933-8	923 S	Total/NA	Solid	3060A	
680-141933-9	1103 S	Total/NA	Solid	3060A	
MB 400-364981/6-A	Method Blank	Total/NA	Solid	3060A	
LCS 400-364981/7-A	Lab Control Sample	Total/NA	Solid	3060A	
LCSSRM 400-364981/9-A	Lab Control Sample	Total/NA	Solid	3060A	
MRL 400-364981/5-A	Lab Control Sample	Total/NA	Solid	3060A	
680-141933-6 MS	603 S	Total/NA	Solid	3060A	
680-141933-6 MSD	603 S	Total/NA	Solid	3060A	

QC Association Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Analysis Batch: 365175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-6	603 S	Total/NA	Solid	7196A	364981
680-141933-8	923 S	Total/NA	Solid	7196A	364981
680-141933-9	1103 S	Total/NA	Solid	7196A	364981
MB 400-364981/6-A	Method Blank	Total/NA	Solid	7196A	364981
LCS 400-364981/7-A	Lab Control Sample	Total/NA	Solid	7196A	364981
LCSSRM 400-364981/9-A	Lab Control Sample	Total/NA	Solid	7196A	364981
MRL 400-364981/5-A	Lab Control Sample	Total/NA	Solid	7196A	364981
680-141933-6 MS	603 S	Total/NA	Solid	7196A	364981
680-141933-6 MSD	603 S	Total/NA	Solid	7196A	364981

Analysis Batch: 490993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-141933-1	201 S	Total/NA	Solid	Moisture	
680-141933-2	203 S	Total/NA	Solid	Moisture	
680-141933-3	204 S	Total/NA	Solid	Moisture	
680-141933-4	404 S	Total/NA	Solid	Moisture	
680-141933-5	419 S	Total/NA	Solid	Moisture	
680-141933-6	603 S	Total/NA	Solid	Moisture	
680-141933-7	903 S	Total/NA	Solid	Moisture	
680-141933-8	923 S	Total/NA	Solid	Moisture	
680-141933-9	1103 S	Total/NA	Solid	Moisture	
680-141933-10	1332 S	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 201 S
Date Collected: 08/09/17 10:15
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.16 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:04	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.16 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 10:52	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 201 S
Date Collected: 08/09/17 10:15
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-1
Matrix: Solid
Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.18 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 01:30	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	3050B			1.18 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		10			491601	08/14/17 14:34	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.53 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 14:47	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: 203 S
Date Collected: 08/09/17 10:40
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.11 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:08	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.11 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 10:56	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 203 S

Lab Sample ID: 680-141933-2

Date Collected: 08/09/17 10:40
Matrix: Solid
Date Received: 08/09/17 12:20
Percent Solids: 83.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.18 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 01:55	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.51 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 14:50	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	WALKLEY BLACK		1			364498	08/16/17 11:30	VLS	TAL PEN
	Instrument ID: NOEQUIP									

Client Sample ID: 204 S

Lab Sample ID: 680-141933-3

Date Collected: 08/09/17 10:50
Matrix: Solid
Date Received: 08/09/17 12:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.12 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:22	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.12 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 10:59	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 204 S

Lab Sample ID: 680-141933-3

Date Collected: 08/09/17 10:50
Matrix: Solid
Date Received: 08/09/17 12:20
Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.19 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:10	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.58 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 14:54	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: 404 S

Lab Sample ID: 680-141933-4

Date Collected: 08/09/17 11:00
Matrix: Solid
Date Received: 08/09/17 12:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.04 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV

Client Sample ID: 404 S
Date Collected: 08/09/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:26	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.04 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:02	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 404 S
Date Collected: 08/09/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-4
Matrix: Solid
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.15 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:14	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.55 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 14:57	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: 419 S
Date Collected: 08/09/17 09:45
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.02 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:31	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.02 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:06	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 419 S
Date Collected: 08/09/17 09:45
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-5
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.17 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 419 S

Date Collected: 08/09/17 09:45
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-5

Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010C		1			491449	08/12/17 02:19	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.54 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		5			491121	08/10/17 16:07	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	WALKLEY BLACK		1			364498	08/16/17 11:30	VLS	TAL PEN
	Instrument ID: NOEQUIP									

Client Sample ID: 603 S

Date Collected: 08/09/17 10:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.05 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:35	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.05 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:09	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 603 S

Date Collected: 08/09/17 10:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-6

Matrix: Solid
Percent Solids: 87.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.19 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:24	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.54 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 15:04	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	3060A			0.5813 g	50 mL	364981	08/21/17 17:11	CLM	TAL PEN
Total/NA	Analysis	7196A		1	10 mL	10 mL	365175	08/22/17 12:17	CLM	TAL PEN
	Instrument ID: KONELAB									

Client Sample ID: 903 S
Date Collected: 08/09/17 08:50
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.05 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:40	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.05 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:12	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 903 S
Date Collected: 08/09/17 08:50
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-7
Matrix: Solid
Percent Solids: 89.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.18 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:29	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.51 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 15:07	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	WALKLEY BLACK		1			364498	08/16/17 11:30	VLS	TAL PEN
	Instrument ID: NOEQUIP									

Client Sample ID: 923 S
Date Collected: 08/09/17 08:30
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.13 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:44	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.13 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:16	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: 923 S

Lab Sample ID: 680-141933-8
Date Collected: 08/09/17 08:30
Matrix: Solid
Date Received: 08/09/17 12:20
Percent Solids: 90.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.14 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:34	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.54 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		5			491121	08/10/17 16:11	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	3060A			0.6691 g	50 mL	364981	08/21/17 17:11	CLM	TAL PEN
Total/NA	Analysis	7196A		1	10 mL	10 mL	365175	08/22/17 12:17	CLM	TAL PEN
	Instrument ID: KONELAB									

Client Sample ID: 1103 S

Lab Sample ID: 680-141933-9
Date Collected: 08/09/17 09:00
Matrix: Solid
Date Received: 08/09/17 12:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.04 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:49	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.04 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:26	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 1103 S

Lab Sample ID: 680-141933-9
Date Collected: 08/09/17 09:00
Matrix: Solid
Date Received: 08/09/17 12:20
Percent Solids: 84.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.19 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:39	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.54 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 15:20	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	3060A			0.6779 g	50 mL	364981	08/21/17 17:11	CLM	TAL PEN
Total/NA	Analysis	7196A		1	10 mL	10 mL	365175	08/22/17 12:20	CLM	TAL PEN
	Instrument ID: KONELAB									

Client Sample ID: 1332 S
Date Collected: 08/09/17 08:10
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
SPLP East	Leach	1312			100.15 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	3010A			50 mL	50 mL	491619	08/15/17 13:27	AJR	TAL SAV
SPLP East	Analysis	6010C		1			491939	08/16/17 19:53	BCB	TAL SAV
	Instrument ID: ICPF									
SPLP East	Leach	1312			100.15 g	2000 mL	491098	08/10/17 15:45	EDE	TAL SAV
SPLP East	Prep	7470A			50 mL	50 mL	491646	08/15/17 16:29	NVF	TAL SAV
SPLP East	Analysis	7470A		1			491983	08/17/17 11:29	NVF	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	Moisture		1			490993	08/10/17 10:10	EDE	TAL SAV
	Instrument ID: KONELAB2									

Client Sample ID: 1332 S
Date Collected: 08/09/17 08:10
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-10
Matrix: Solid
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.18 g	100 mL	490954	08/10/17 07:02	CDD	TAL SAV
Total/NA	Analysis	6010C		1			491449	08/12/17 02:44	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7471A			0.55 g	50 mL	490962	08/10/17 08:01	NVF	TAL SAV
Total/NA	Analysis	7471A		1			491121	08/10/17 15:24	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-17
Date Collected: 08/08/17 10:06
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491281	08/11/17 13:44	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491939	08/16/17 21:45	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:19	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-18
Date Collected: 08/08/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491281	08/11/17 13:44	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491939	08/16/17 21:50	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-18

Date Collected: 08/08/17 11:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7470A		1			491151	08/10/17 17:29	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-19

Date Collected: 08/08/17 11:52
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491448	08/14/17 12:15	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491792	08/16/17 03:02	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:33	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-20

Date Collected: 08/08/17 15:22
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:37	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:36	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-21

Date Collected: 08/08/17 14:42
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:42	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:39	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Client Sample ID: MW-22

Date Collected: 08/08/17 14:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:47	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:43	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-23

Date Collected: 08/08/17 13:20
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:12	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:53	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: MW-15

Date Collected: 08/08/17 16:07
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:17	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:56	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Client Sample ID: DUPL

Date Collected: 08/08/17 14:00
Date Received: 08/09/17 12:20

Lab Sample ID: 680-141933-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	491289	08/11/17 14:12	AJR	TAL SAV
Total Recoverable	Analysis	6010C		1			491601	08/14/17 17:22	BCB	TAL SAV
	Instrument ID: ICPF									
Total/NA	Prep	7470A			50 mL	50 mL	490986	08/10/17 09:07	NVF	TAL SAV
Total/NA	Analysis	7470A		1			491151	08/10/17 17:59	NVF	TAL SAV
	Instrument ID: LEEMAN2									

Lab Chronicle

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

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

CSX TRANSPORTATION — CHAIN OF CUSTODY

COC #

LABORATORY INFORMATION

- ☐ TestAmerica Savannah - 5102 LaRoche Avenue, Savannah, GA 31404 P: 912-354-7858 F: 912-352-0165
- ☐ TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P: 330-497-9396 F: 330-497-0772
- ☐ TestAmerica Tampa - 6712 Benjamin Road, Suite 100, Tampa, FL 33634 P: 813-885-7427 F: 813-885-7049
- ☐ TestAmerica Pensacola - 3355 McLemore Drive, Pensacola, FL 32514 P: 850-474-1001 F: 850-478-2671
- ☐ TestAmerica Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P: 716-691-2600 F: 716-961-7991
- ☐ TestAmerica Chicago - 2417 Bond Street, University Park, IL 60466 P: 708-534-5200 F: 708-534-5211

SHIPMENT INFORMATION

Shipment Method:

Shipment Tracking No:

CSXT PROJECT INFORMATION

CSXT Project Number: 9814901 | Proj. City: SAVANNAH | Proj. State (State of Origin): GA

CSXT Project Name: DIPMEST SIGNAL SHOP

CSXT Contact: ADKINS | LWON:

CONSULTANT INFORMATION

Company: HOLLEY CONSULTANTS | Project #:

Address: | PM:

City, State, Zip: ROSWELL, GA 30075 | Email:

Phone: | Fax:

Turnaround Time:
- ☐ 1 Day Rush
- ☐ 2 Day Rush
- ☐ 3 Day Rush
- ☒ Standard 6-13 Days — Specify # Days 7
- ☐ Standard 14 Days
- ☐ Other

Deliverables:
- ☒ CSXT Standard (Level II)
- ☐ Level III
- ☐ Level IV
- ☐ Other Deliv:
- ☐ EDD Required, Format:

Preservative Codes: 0 = No Preservatives; 1 = Hydrochloric Acid; 2 = Nitric Acid; 3 = Sulfuric Acid; 4 = Sodium Thiosulfate; 5 = Sodium Hydroxide; 6 = Other

Matrix Codes: GW = Groundwater; WW = Waste Water; SW = Surface Water; SO = Soil; SL = Sludge; OI = Oil; SOL = Other Solid; LIQ = Liquid

Note ➡ Pres. Code

SAMPLE INFORMATION

Sample Identification	Containers Number & Type	Sample Collection Date	Time	Sampler	Filtered Y or N	Type Comp or Grab	Matrix Code	METHODS FOR ANALYSIS: TOTAL RCRA METALS	RCRA SPLP	HEXAVALENT CHROME	FRACTION ORGANIC CARBON	COMMENTS	LAB USE
201 S	26	8/9/17	1015	RH	N	G	SO	1	1				
203 S	36		1040					1	1		1		
204 S	26		1050					1	1				
404 S	26		1100					1	1				
419 S	36		0945					1	1		1		
603 S	36		1000					1	1	1			
903 S	36		0850					1	1		1		
923 S	36		0830					1	1	1			
1103 S	36		0900					1	1	1			
1332 S	26		0810					1	1				

	Date/Time	Received By	Date/Time
Relinquished By:	8/9/17 1220	MTyler	8/4/17 1220
Relinquished By:			
Relinquished By:			
Received By Laboratory:		Lab Remarks:	

Comments & Special Analytical Requirements:

LAB USE: ☐ Yes ☐ No Custody Intact | Custody Seal # | LAB Log Number #

ORIGINAL – RETURN TO LABORATORY WITH SAMPLES

INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC

TAL-6006 (0509)

2.2 (CF) 2.4°C 1.4°C (CF) 1.6

CSX TRANSPORTATION — CHAIN OF CUSTODY

COC #

LABORATORY INFORMATION

- ☐ TestAmerica Savannah - 5102 LaRoche Avenue, Savannah, GA 31404 P: 912-354-7858 F: 912-352-0165
- ☐ TestAmerica North Canton - 4101 Shuffel Drive NW, North Canton, OH 44720 P: 330-497-9396 F: 330-497-0772
- ☐ TestAmerica Tampa - 6712 Benjamin Road, Suite 100, Tampa, FL 33634 P: 813-885-7427 F: 813-885-7049
- ☐ TestAmerica Pensacola - 3355 McLemore Drive, Pensacola, FL 32514 P: 850-474-1001 F: 850-478-2671
- ☐ TestAmerica Buffalo - 10 Hazelwood Drive, Suite 106, Amherst, NY 14228 P: 716-691-2600 F: 716-961-7991
- ☐ TestAmerica Chicago - 2417 Bond Street, University Park, IL 60466 P: 708-534-5200 F: 708-534-5211

SHIPMENT INFORMATION

Shipment Method:

Shipment Tracking No:

CSXT PROJECT INFORMATION

CSXT Project Number: 9814901
Proj. State (State of Origin): GA
Proj. City: SAVANNAH
CSXT Project Name: DEPRIEST SIGNAL SHOP
CSXT Contact: ADKINS
LWON:

CONSULTANT INFORMATION

Company: HOLLEY CONSULTANTS
Project #:
PM: RON HOLLEY
Address: 1550 SANDPOINT DR
Email: RON@HOLLEYCONSULTANTS.COM
City, State, Zip: ROSWELL, GA 30075
Phone: 770 993 0809
Fax:

Turnaround Time:
- ☐ 1 Day Rush
- ☐ 2 Day Rush
- ☐ 3 Day Rush
- ☒ Standard 6-13 Days — Specify # Days: 7
- ☐ Standard 14 Days
- ☐ Other

Deliverables:
- ☒ CSXT Standard (Level II)
- ☐ Level III
- ☐ Level IV
- ☐ Other Deliv:
- ☐ EDD Required, Format:

Preservative Codes:
0 = No Preservatives; 1 = Hydrochloric Acid; 2 = Nitric Acid; 3 = Sulfuric Acid; 4 = Sodium Thiosulfate; 5 = Sodium Hydroxide; 6 = Other

Matrix Codes:
GW = Groundwater; WW = Waste Water; SW = Surface Water; SO = Soil; SL = Sludge; OI = Oil; SOL = Other Solid; LIQ = Liquid

Note ⇒ 2

SAMPLE INFORMATION

Sample Identification	Containers: Number & Type	Sample Collection: Date	Time	Sampler	Filtered: Y or N	Type: Comp or Grab	Matrix: Code	Pres. Code: RCRA METALS, Hg	COMMENTS	LAB USE
MW-17	1P	8/8/17	1006	RH	N	G	GW	1		
-18			1100							
-19			1152							
-20			1522							
-21			1442							
-22			1400							
-23			1320							
-15			1607							
DUPL.			1400							

	Date/Time		Date/Time	
Relinquished By:	8/9/17 1220	Received By:		Date/Time: 8/9/17 1220
Relinquished By:	Date/Time:	Received By:		Date/Time:
Relinquished By:	Date/Time:	Received By:		Date/Time:
Received By Laboratory:	Date/Time:	Lab Remarks:	LAB USE: ☐ Yes ☐ No Custody Intact	Custody Seal #	LAB Log Number

Comments & Special Analytical Requirements:

ORIGINAL – RETURN TO LABORATORY WITH SAMPLES

INVOICE MUST BE SUBMITTED TO CSXT WITH ORIGINAL COC

TAL-6006 (0509)

2.2°C (CF) 2.4°C

1.4°C (CF) 1.6°C

5102 LaRoche Avenue
Savannah, GA 31404
Phone (912) 354-7858 Fax (912) 352-0165

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Webb, Carol M	Carrier Tracking No(s):	COC No: 680-487260.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carol.webb@testamericainc.com	State of Origin: Georgia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Georgia		Job #: 680-141933-1
Address: 3355 McLemore Drive, ,	Due Date Requested: 8/21/2017			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32514				
Phone: 850-474-1001(Tel) 850-478-2671(Fax)	PO #:			
Email:	WO #:			
Project Name: CSX GA, Depriest Signal Shop	Project #: 68015167			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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 - Na2S2O3
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)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	WALKLEY_BLACK/ Fraction Organic Carbon	7196A/3060A Chromium, Hexavalent	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
203 S (680-141933-2)	8/9/17	10:40 Eastern		Solid			X		1	
419 S (680-141933-5)	8/9/17	09:45 Eastern		Solid			X		1	
603 S (680-141933-6)	8/9/17	10:00 Eastern		Solid				X	1	
903 S (680-141933-7)	8/9/17	08:50 Eastern		Solid			X		1	
923 S (680-141933-8)	8/9/17	08:30 Eastern		Solid				X	1	
1103 S (680-141933-9)	8/9/17	09:00 Eastern		Solid				X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Jessica Edwards	8/10/17 1800	TASV			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 8-11-17	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other R

8/22/2017


TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
4.8°C
IR2
ORIGIN ID:SAVA (912) 354-7858
BERNARD KIRKLAND
TEST AMERICA
5102 LAROCHE AVE
SAVANNAH, GA 31404
UNITED STATES US
TO CUSTODY
T A LABORATORIES, INC
3355 MCLEMORE DRIVE
SAMPLES PLEASE HANDLE CAREFULLY
PENSACOLA FL 32514
(860) 474-1001
REF: SO 680
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
FedEx
Express
1 of 2
TRK# 0201 7201 3130 7738
MASTER
XH PNSA
FRI - 11 AUG
STANDARD OVERNIGHT
FL-US
SIGNATURE
DATE
Custody Seal
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
414530

Login Sample Receipt Checklist

Client: Holley Consultants

Job Number: 680-141933-1

Login Number: 141933
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Holley Consultants

Job Number: 680-141933-1

Login Number: 141933
List Number: 2
Creator: Edwards, Robin S

List Source: TestAmerica Pensacola
List Creation: 08/11/17 01:11 PM

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	4.8°C IR-2
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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Laboratory: TestAmerica Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	11-05-17
Arizona	State Program	9	AZ808	12-14-17
Arkansas DEQ	State Program	6	88-0692	02-01-18
California	State Program	9	2939	06-30-17 *
Colorado	State Program	8	N/A	12-31-17
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-17
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-17
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-17
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-17
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-17
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-17 *
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-17
Oklahoma	State Program	6	9984	08-31-17 *
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-17
South Carolina	State Program	4	98001	06-30-17 *
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia (DW)	State Program	3	9950C	12-31-17
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-17 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Holley Consultants
Project/Site: CSX GA, Depriest Signal Shop

TestAmerica Job ID: 680-141933-1

Laboratory: TestAmerica Pensacola

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-18
Arizona	State Program	9	AZ0710	01-11-18
Arkansas DEQ	State Program	6	88-0689	09-01-17
California	ELAP	9	2510	03-31-18
Florida	NELAP	4	E81010	06-30-18
Georgia	State Program	4	N/A	06-30-18
Illinois	NELAP	5	200041	10-09-17
Iowa	State Program	7	367	08-01-18
Kansas	NELAP	7	E-10253	10-31-17
Kentucky (UST)	State Program	4	53	06-30-18
Kentucky (WW)	State Program	4	98030	12-31-17
L-A-B	ISO/IEC 17025		L2471	02-22-20
Louisiana	NELAP	6	30976	06-30-18
Louisiana (DW)	NELAP	6	LA170005	12-31-17
Maryland	State Program	3	233	09-30-18
Massachusetts	State Program	1	M-FL094	06-30-18
Michigan	State Program	5	9912	06-30-18
New Jersey	NELAP	2	FL006	06-30-18
North Carolina (WW/SW)	State Program	4	314	12-31-17
Oklahoma	State Program	6	9810	08-31-17
Pennsylvania	NELAP	3	68-00467	01-31-18
Rhode Island	State Program	1	LAO00307	12-30-17
South Carolina	State Program	4	96026	06-30-17 *
Tennessee	State Program	4	TN02907	06-30-18
Texas	NELAP	6	T104704286-16-10	09-30-17
USDA	Federal		P330-16-00172	05-24-19
Virginia	NELAP	3	460166	06-14-18
Washington	State Program	10	C915	05-15-18
West Virginia DEP	State Program	3	136	06-30-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Attachment C

Risk Reduction Standard Calculation Tables

Table C-1
Summary of Soil RRS
Direct Contact

PARAMETER	Type 1 RRS mg/kg	Type 2 RRS mg/kg	Type 3 RRS Surface mg/kg	Type 3 RRS Subsurface mg/kg	Type 4 RRS IW mg/kg	Type 4 RRS CW mg/kg	Type 4 RRS Trespasser mg/kg	Type 4 RRS LMW mg/kg
SVOCS								
Anthracene	5.0E+02	2.3E+04	5.0E+02	5.0E+02	7.0E+05	2.1E+05	4.9E+05	2.5E+06
Benzo(a)anthracene	5.0E+00	9.1E+01	5.0E+00	5.0E+00	6.5E+02	5.0E+03	1.1E+03	2.3E+03
Benzo(a)pyrene	1.6E+00	9.1E+00	1.6E+00	1.6E+00	6.5E+01	2.1E+02	1.1E+02	2.3E+02
Benzo(b)fluoranthene	5.0E+00	9.1E+01	5.0E+00	5.0E+00	6.5E+02	5.0E+03	1.1E+03	2.3E+03
Benzo(ghi)perylene	5.0E+02	DL/BKG	5.0E+02	5.0E+02	DL/BKG	DL/BKG	DL/BKG	DL/BKG
Benzo(k)fluoranthene	5.0E+00	9.1E+02	5.0E+00	5.0E+00	6.5E+03	5.0E+04	1.1E+04	2.3E+04
Chrysene	5.0E+00	9.1E+03	5.0E+00	5.0E+00	6.5E+04	5.0E+05	1.1E+05	2.3E+05
Dibenzo(a,h)anthracene	5.0E+00	9.1E+00	5.0E+00	5.0E+00	6.5E+01	5.0E+02	1.1E+02	2.3E+02
Fluoranthene	5.0E+02	3.1E+03	5.0E+02	5.0E+02	9.3E+04	2.8E+04	6.6E+04	3.3E+05
Indeno(1,2,3-cd)pyrene	5.0E+00	9.1E+01	5.0E+00	5.0E+00	6.5E+02	5.0E+03	1.1E+03	2.3E+03
Phenanthrene	1.1E+02	DL/BKG	1.1E+02	1.1E+02	DL/BKG	DL/BKG	DL/BKG	DL/BKG
Pyrene	5.0E+02	2.4E+03	5.0E+02	5.0E+02	7.0E+04	2.1E+04	4.9E+04	2.5E+05
Metals								
Antimony	4.0E+00	3.1E+01	1.0E+01	1.0E+01	9.3E+02	2.8E+02	6.6E+02	3.3E+03
Arsenic	2.0E+01	6.1E+00	3.8E+01	4.1E+01	4.4E+01	2.1E+02	7.7E+01	1.6E+02
Barium	1.0E+03	1.5E+04	1.0E+03	1.0E+03	4.2E+05	1.4E+05	3.1E+05	1.6E+06
Cadmium (Diet)	2.0E+00	7.8E+01	3.9E+01	3.9E+01	2.3E+03	7.0E+02	1.6E+03	8.2E+03
Chromium, Total	1.0E+02	DL/BKG	1.2E+03	1.2E+03	DL/BKG	DL/BKG	DL/BKG	DL/BKG
Chromium III (Insoluble Salts)	5.0E-01	1.2E+05	5.0E-01	5.0E-01	3.5E+06	1.1E+06	2.5E+06	1.3E+07
Chromium VI	5.0E-02	1.8E+01	5.0E-02	5.0E-02	1.2E+02	9.8E+02	2.2E+02	4.6E+02
Lead	7.5E+01	4.2E+02	4.0E+02	4.0E+02	2.6E+03	1.2E+03	3.0E+03	8.6E+03
Mercury (Mercuric Chloride and Inorganic Salts)	5.0E-01	2.3E+01	1.7E+01	1.7E+01	7.0E+02	2.1E+02	4.9E+02	2.5E+03
Selenium	2.0E+00	3.9E+02	3.6E+01	3.6E+01	1.2E+04	3.5E+03	8.2E+03	4.2E+04
Silver	2.0E+00	3.9E+02	1.0E+01	1.0E+01	1.2E+04	3.5E+03	8.2E+03	4.2E+04

PREPARED/DATE: MKB 6/30/14
CHECKED/DATE: LMS 8/9/17

Table C-2
Toxicity Values

PARAMETER	Chronic Reference Dose: Oral (RfDo) (mg/kg/day)	Chronic Reference Dose: Inhalation (RfDi) (mg/kg/day)	Cancer Slope Factor: Oral (SFo) (mg/kg/day)-1	Cancer Slope Factor: Inhalation (SFi) (mg/kg/day)-1	Weight of Evidence	Source for Chronic RfDs and SFs
Semi-volatile Organic Compounds						
Anthracene	3.0E-01	ND	ND	ND	D	IRIS
Benzo(a)anthracene	ND	ND	1.0E-01	2.1E-01	B2	IRIS x TEF
Benzo(a)pyrene	3.0E-04	5.7E-07	1.0E+00	2.1E+00	Carc to Humans	IRIS
Benzo(b)fluoranthene	ND	ND	1.0E-01	2.1E-01	B2	IRIS x TEF
Benzo(ghi)perylene	ND	ND	ND	ND	D	IRIS
Benzo(k)fluoranthene	ND	ND	1.0E-02	2.1E-02	B2	IRIS x TEF
Chrysene	ND	ND	1.0E-03	2.1E-03	B2	IRIS x TEF
Dibenzo(a,h)anthracene	ND	ND	1.0E+00	2.1E+00	B2	IRIS x TEF
Fluoranthene	4.0E-02	ND	ND	ND	D	IRIS
Indeno(1,2,3-cd)pyrene	ND	ND	1.0E-01	2.1E-01	B2	IRIS x TEF
Phenanthrene	ND	ND	ND	ND	D	NA
Pyrene	3.0E-02	ND	ND	ND	D	IRIS
Metals						
Antimony	4.0E-04	ND	ND	ND	NA	IRIS
Arsenic	3.0E-04	4.3E-06	1.5E+00	1.5E+01	A	IRIS, CALEPA
Barium	2.0E-01	1.4E-04	ND	ND	D	IRIS, HEAST
Cadmium (Water)	5.0E-04	2.9E-06	ND	6.3E+00	B1	IRIS, ATSDR
Cadmium (Diet)	1.0E-03	2.9E-06	ND	6.3E+00	B1	IRIS, ATSDR
Chromium, Total	ND	ND	ND	ND	ND	NA
Chromium III (Insoluble Salts)	1.5E+00	ND	ND	ND	D	IRIS
Chromium VI	3.0E-03	2.9E-05	5.0E-01	2.9E+02	A/D	IRIS, NJ
Lead	ND	ND	ND	ND	B2	NCEA
Mercury (mercuric chloride and inorganic Salts)	3.0E-04	8.6E-05	ND	ND	C	IRIS, RSL
Selenium	5.0E-03	5.7E-03	ND	ND	D	IRIS, CALEPA
Silver	5.0E-03	ND	ND	ND	D	IRIS

SOURCES: EPA Regional Screening Level Table (RSL), November 2015.
IRIS Integrated Risk Information System
PPRTV Provisional Peer Reviewed Toxicity Values
CALEPA California Environmental Protection Agency
HEAST Health Exposure Assessment Summary Tables
ATSDR Agency for Toxic Substances and Disease Registry
NJ New Jersey
ND No Data
NA Not Available
* Because of uncertainty associated with inhalation unit risk published by Cal EPA, only the non-carcinogenic toxicity values are used.

PREPARED/DATE: MKB 6/30/14
CHECKED/DATE: LMS 8/9/17

Table C-3
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Chronic Reference Dose Oral (mg/kg/day)	Chronic Reference Dose Inhalation (mg/kg/day)	Cancer Slope Factor Oral (mg/kg/day)-1	Cancer Slope Factor Inhalation (mg/kg/day)-1	Source for Chronic Rfds and CSFs	Volatile? (a)	Type 1/ Type 3 (mg/L)	
Semi-volatile Organic Compounds								
Anthracene	3.0E-01	ND	ND	ND	IRIS	v	1.0E-02	RL
Benzo(a)anthracene	ND	ND	1.0E-01	2.1E-01	IRIS x TEF	v	1.0E-04	
Benzo(a)pyrene	3.0E-04	(a)	1.0E+00	(a)	IRIS		2.0E-04	
Benzo(b)fluoranthene	ND	ND	1.0E-01	(a)	IRIS x TEF		2.0E-04	
Benzo(ghi)perylene	ND	ND	ND	ND	IRIS		1.0E-02	RL
Benzo(k)fluoranthene	ND	ND	1.0E-02	(a)	IRIS x TEF		1.0E-04	RL
Chrysene	ND	ND	1.0E-03	(a)	IRIS x TEF		1.0E-02	RL
Dibenzo(a,h)anthracene	ND	ND	1.0E+00	(a)	IRIS x TEF		3.0E-04	
Fluoranthene	4.0E-02	ND	ND	ND	IRIS		1.0E+00	
Indeno(1,2,3-cd)pyrene	ND	ND	1.0E-01	(a)	IRIS x TEF		4.0E-04	
Phenanthrene	ND	ND	ND	ND	NA		1.0E-02	RL
Pyrene	3.0E-02	ND	ND	ND	IRIS	v	1.0E+00	
Metals								
Antimony	4.0E-04	ND	ND	ND	IRIS		6.0E-03	
Arsenic	3.0E-04	(a)	1.5E+00	(a)	IRIS, CALEPA		1.0E-02	
Barium	2.0E-01	(a)	ND	ND	IRIS, HEAST		2.0E+00	
Cadmium (Water)	5.0E-04	(a)	ND	(a)	IRIS, ATSDR		5.0E-03	
Chromium, Total	ND	(a)	ND	(a)	NA		1.0E-01	
Chromium III (Insoluble Salts)	1.5E+00	ND	ND	ND	IRIS		5.0E-03	RL
Chromium VI	3.0E-03	(a)	5.0E-01	(a)	IRIS, NJ		5.0E-04	RL
Lead	ND	ND	ND	ND	NCEA		1.5E-02	
Mercury (mercuric chloride and inorganic Salts)	3.0E-04	(a)	ND	ND	IRIS, RSL		2.0E-03	
Selenium	5.0E-03	(a)	ND	ND	IRIS, CALEPA		5.0E-02	
Silver	5.0E-03	ND	ND	ND	IRIS		1.0E-01	

SOURCES: EPA Regional Screening Level Table (RSL), January 2015.
IRIS Integrated Risk Information System
PPRTV Provisional Peer Reviewed Toxicity Values
CALEPA California Environmental Protection Agency
HEAST Health Exposure Assessment Summary Tables
ATSDR Agency for Toxic Substances and Disease Registry
ND No Data
NA Not Available
DL Detection limit
(a) Compound is not volatile in water.

Equation 2 (Noncarcinogens):

$$C = \frac{THI \times BW \times AT \times 365 days/year}{EF \times ED \times [(1/RfDi \times K \times IRa) + (1/RfDo \times IRw)]}$$

Where:
THI = Target Hazard Index =
BW = Body Weight =
AT = Averaging Time =
EF = Exposure Frequency =

ED = Exposure Duration =
RfDi = Inhalation Reference Dose =
K = Volatilization Factor = 0.0005 x 1000 L/m3 =
IRa = Inhalation Rate for Air =
RfDo = Oral Reference Dose =
IRw = Ingestion Rate for Water =
TR = Target Risk =

SFo = Oral Cancer Slope Factor =
SFi = Inhalation Cancer Slope Factor =

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Table C-3
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Type 2 Standard (mg/L) Adult Noncarcinogenic	Type 2 Standard (mg/L) Adult Carcinogenic	Type 2 Standard (mg/L) Child Noncarcinogenic	Type 2 Standard (mg/L) Child Carcinogenic	Type 2 Overall	Overall Residential	Type 4 (mg/L) Industrial Worker Noncarcinogenic	Type 4 (mg/L) Industrial Worker Carcinogenic	Type 4 Overall IW	Overall Nonresidential IW
Semi-volatile Organic Compounds										
Anthracene	1.0E+01	ND	6.0E+00	ND	6.0E+00	6.0E+00	3.5E+01	ND	3.5E+01	3.5E+01
Benzo(a)anthracene	ND	1.1E-03	ND	1.1E-03	1.1E-03	1.1E-03	ND	1.5E-03	1.5E-03	1.5E-03
Benzo(a)pyrene	1.0E-02	7.8E-04	6.0E-03	2.3E-03	7.8E-04	7.8E-04	3.5E-02	3.3E-03	3.3E-03	3.3E-03
Benzo(b)fluoranthene	ND	7.8E-03	ND	2.3E-02	7.8E-03	7.8E-03	ND	3.3E-02	3.3E-02	3.3E-02
Benzo(ghi)perylene	ND	ND	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02
Benzo(k)fluoranthene	ND	7.8E-02	ND	2.3E-01	7.8E-02	7.8E-02	ND	3.3E-01	3.3E-01	3.3E-01
Chrysene	ND	7.8E-01	ND	2.3E+00	7.8E-01	7.8E-01	ND	3.3E+00	3.3E+00	3.3E+00
Dibenzo(a,h)anthracene	ND	7.8E-04	ND	2.3E-03	7.8E-04	7.8E-04	ND	3.3E-03	3.3E-03	3.3E-03
Fluoranthene	1.3E+00	ND	8.0E-01	ND	8.0E-01	8.0E-01	4.7E+00	ND	4.7E+00	4.7E+00
Indeno(1,2,3-cd)pyrene	ND	7.8E-03	ND	2.3E-02	7.8E-03	7.8E-03	ND	3.3E-02	3.3E-02	3.3E-02
Phenanthrene	ND	ND	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02
Pyrene	1.0E+00	ND	6.0E-01	ND	6.0E-01	6.0E-01	3.5E+00	ND	3.5E+00	3.5E+00
Metals										
Antimony	1.3E-02	ND	8.0E-03	ND	8.0E-03	8.0E-03	4.7E-02	ND	4.7E-02	4.7E-02
Arsenic	1.0E-02	5.2E-04	6.0E-03	1.6E-03	5.2E-04	1.0E-02	3.5E-02	2.2E-03	2.2E-03	1.0E-02
Barium	6.7E+00	ND	4.0E+00	ND	4.0E+00	4.0E+00	2.3E+01	ND	2.3E+01	2.3E+01
Cadmium (Water)	1.7E-02	ND	1.0E-02	ND	1.0E-02	1.0E-02	5.8E-02	ND	5.8E-02	5.8E-02
Chromium, Total	ND	ND	ND	ND	ND	1.0E-01	ND	ND	ND	1.0E-01
Chromium III (Insoluble Salts)	5.0E+01	ND	3.0E+01	ND	3.0E+01	3.0E+01	1.8E+02	ND	1.8E+02	1.8E+02
Chromium VI	1.0E-01	1.6E-03	6.0E-02	4.7E-03	1.6E-03	1.6E-03	3.5E-01	6.5E-03	6.5E-03	6.5E-03
Lead	ND	ND	ND	ND	ND	1.5E-02	ND	ND	1.5E-02	1.5E-02
Mercury (mercuric chloride and inorganic Salts)	1.0E-02	ND	6.0E-03	ND	6.0E-03	6.0E-03	3.5E-02	ND	3.5E-02	3.5E-02
Selenium	1.7E-01	ND	1.0E-01	ND	1.0E-01	1.0E-01	5.8E-01	ND	5.8E-01	5.8E-01
Silver	1.7E-01	ND	1.0E-01	ND	1.0E-01	1.0E-01	5.8E-01	ND	5.8E-01	5.8E-01

Equation 1 (Carcinogens):

$$C = \frac{TR \times BW \times AT \times 365 days/year}{EF \times ED \times [(SFi \times K \times IRa) + (SFo \times IRw)]}$$

Type 2 Adult		Type 2 Parameters Chil]d		Type 4 Industrial Worker Parameters	
1		1		1	
80	kg	15	kg	80	kg
30	years (noncarc.); 70 (carc	6	years (noncarc.); 70 (carcinogens)	25	years for noncarcinogens; 70 years for carc.
350	days/year	350	days/year	250	day/year
30	years	6	years	25	year
Chemical Specific		Chemical Specific		Chemical Specific	
0.5	L/m3	0.5	L/m3	0.5	L/m3
15	m3/day	15	m3/day	20	m3/day
Chemical Specific		Chemical Specific		Chemical Specific	
2.5	L/day	0.78	L/day	1	L/day
0.00001		0.00001		0.00001	
Chemical Specific		Chemical Specific		Chemical Specific	
Chemical Specific		Chemical Specific		Chemical Specific	

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Table C-3
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Type 4 (mg/L) Construction Worker Noncarcinogenic	Type 4 (mg/L) Construction Worker Carcinogenic	Type 4 Overall CW	Overall Nonresidential CW	Type 4 (mg/L) Trespasser Noncarcinogenic	Type 4 (mg/L) Trespasser Carcinogenic	Type 4 Overall Trespasser	Overall Nonresidential Trespasser	Type 4 (mg/L) Landscape/Maintenance Worker Noncarcinogenic	Type 4 (mg/L) Landscape/Maintenance Worker Carcinogenic	Type 4 Overall L/MW	Overall Nonresidential L/MW
Semi-volatile Organic Compounds												
Anthracene	8.8E+02	ND	8.8E+02	8.8E+02	1.9E+02	ND	1.9E+02	1.9E+02	3.1E+03	ND	3.1E+03	3.1E+03
Benzo(a)anthracene	ND	4.1E+01	4.1E+01	4.1E+01	ND	5.4E-01	5.4E-01	5.4E-01	ND	2.9E+00	2.9E+00	2.9E+00
Benzo(a)pyrene	8.8E-01	4.1E+00	8.8E-01	8.8E-01	1.9E-01	5.4E-02	5.4E-02	5.4E-02	3.1E+00	2.9E-01	2.9E-01	2.9E-01
Benzo(b)fluoranthene	ND	4.1E+01	4.1E+01	4.1E+01	ND	5.4E-01	5.4E-01	5.4E-01	ND	2.9E+00	2.9E+00	2.9E+00
Benzo(ghi)perylene	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02
Benzo(k)fluoranthene	ND	4.1E+02	4.1E+02	4.1E+02	ND	5.4E+00	5.4E+00	5.4E+00	ND	2.9E+01	2.9E+01	2.9E+01
Chrysene	ND	4.1E+03	4.1E+03	4.1E+03	ND	5.4E+01	5.4E+01	5.4E+01	ND	2.9E+02	2.9E+02	2.9E+02
Dibenzo(a,h)anthracene	ND	4.1E+00	4.1E+00	4.1E+00	ND	5.4E-02	5.4E-02	5.4E-02	ND	2.9E-01	2.9E-01	2.9E-01
Fluoranthene	1.2E+02	ND	1.2E+02	1.2E+02	2.5E+01	ND	2.5E+01	2.5E+01	4.2E+02	ND	4.2E+02	4.2E+02
Indeno(1,2,3-cd)pyrene	ND	4.1E+01	4.1E+01	4.1E+01	ND	5.4E-01	5.4E-01	5.4E-01	ND	2.9E+00	2.9E+00	2.9E+00
Phenanthrene	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02	ND	ND	ND	1.0E-02
Pyrene	8.8E+01	ND	8.8E+01	8.8E+01	1.9E+01	ND	1.9E+01	1.9E+01	3.1E+02	ND	3.1E+02	3.1E+02
Metals												
Antimony	1.2E+00	ND	1.2E+00	1.2E+00	2.5E-01	ND	2.5E-01	2.5E-01	4.2E+00	ND	4.2E+00	4.2E+00
Arsenic	8.8E-01	2.7E+00	8.8E-01	8.8E-01	1.9E-01	3.6E-02	3.6E-02	3.6E-02	3.1E+00	1.9E-01	1.9E-01	1.9E-01
Barium	5.8E+02	ND	5.8E+02	5.8E+02	1.2E+02	ND	1.2E+02	1.2E+02	2.1E+03	ND	2.1E+03	2.1E+03
Cadmium (Water)	1.5E+00	ND	1.5E+00	1.5E+00	3.1E-01	ND	3.1E-01	3.1E-01	5.2E+00	ND	5.2E+00	5.2E+00
Chromium, Total	ND	ND	ND	1.0E-01	ND	ND	ND	1.0E-01	ND	ND	ND	1.0E-01
Chromium III (Insoluble Salts)	4.4E+03	ND	4.4E+03	4.4E+03	9.3E+02	ND	9.3E+02	9.3E+02	1.6E+04	ND	1.6E+04	1.6E+04
Chromium VI	8.8E+00	8.2E+00	8.2E+00	8.2E+00	1.9E+00	1.1E-01	1.1E-01	1.1E-01	3.1E+01	5.8E-01	5.8E-01	5.8E-01
Lead	ND	ND	1.5E-02	1.5E-02	ND	ND	1.5E-02	1.5E-02	ND	ND	1.5E-02	1.5E-02
Mercury (mercuric chloride and inorganic Salts)	8.8E-01	ND	8.8E-01	8.8E-01	1.9E-01	ND	1.9E-01	1.9E-01	3.1E+00	ND	3.1E+00	3.1E+00
Selenium	1.5E+01	ND	1.5E+01	1.5E+01	3.1E+00	ND	3.1E+00	3.1E+00	5.2E+01	ND	5.2E+01	5.2E+01
Silver	1.5E+01	ND	1.5E+01	1.5E+01	3.1E+00	ND	3.1E+00	3.1E+00	5.2E+01	ND	5.2E+01	5.2E+01

Type 4 Construction Worker Parameters		
1		
80	kg	
0.5	years for noncarcinogens; 70 years for carc.	
125	day/year	
0.5	year	
Chemical Specific		
0.25	L/m3	(hand-washing)
20	m3/day	
Chemical Specific		
0.08	L/day	(0.01 per hour for 8 hrs)
0.00001		
Chemical Specific		
Chemical Specific		

Type 4 Trespasser Adolescent Parameters		
1		
55	kg	
8	years for noncarcinogens; 70 years for carc.	
104	day/year	
10	year	
Chemical Specific		
0.25	L/m3	(hand-washing)
20	m3/day	
Chemical Specific		
0.312	L/day	(0.156 L/hr - 2 hours per event)
0.00001		
Chemical Specific		
Chemical Specific		

Type 4 Landscape/Maintenance Worker (L/MW) Parameters		
1		
80	kg	
25	years for noncarcinogens; 70 years for carc.	
35	day/year	
25	years	
Chemical Specific		
0.25	L/m3	(hand-washing)
20	m3/day	
Chemical Specific		
0.08	L/day	(0.01 per hour for 8 hrs)
0.00001		
Chemical Specific		
Chemical Specific		

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Table C-4
Type 1 and Type 3 Soil RRS, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	HSRA Type I Soil Criteria (mg/kg) (a)	HSRA Appendix I Value (mg/kg) (b)	Type I Groundwater RRS (mg/L) (c)		Type 1 GW RRS x 100 (mg/kg)	Number 1 (mg/kg) (d)	Risk-Based Residential Type 1 Noncarcinogenic (mg/kg) (e)	Risk-Based Residential Type 1 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 1 RRS (mg/kg) (g)	Overall Type 1 RRS (mg/kg) (h)	Risk-Based Nonresidential Type 3 Noncarcinogenic (mg/kg) (e)	Risk-Based Nonresidential Type 3 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 3 RRS (mg/kg) (g)	Subsurface Soil Type 3 RRS (mg/kg) (i)	Surface Soil Type 3 RRS (mg/kg) (j)
Semi-volatile Organic Compounds																
Anthracene	7.3E+05	ND	5.0E+02	1.0E-02	RL	1.0E+00	5.0E+02	1.9E+05	ND	1.9E+05	5.0E+02	6.1E+05	ND	6.1E+05	5.0E+02	5.0E+02
Benzo(a)anthracene	6.3E+06	ND	5.0E+00	1.0E-04		1.0E-02	5.0E+00	ND	1.5E+02	1.5E+02	5.0E+00	ND	5.7E+02	5.7E+02	5.0E+00	5.0E+00
Benzo(a)pyrene	NA	ND	1.6E+00	2.0E-04		2.0E-02	1.6E+00	1.9E+02	1.5E+01	1.5E+01	1.6E+00	5.9E+02	5.7E+01	5.7E+01	1.6E+00	1.6E+00
Benzo(b)fluoranthene	NA	ND	5.0E+00	2.0E-04		2.0E-02	5.0E+00	ND	1.5E+02	1.5E+02	5.0E+00	ND	5.7E+02	5.7E+02	5.0E+00	5.0E+00
Benzo(ghi)perylene	NA	ND	5.0E+02	1.0E-02	RL	1.0E+00	5.0E+02	ND	ND	ND	5.0E+02	ND	ND	ND	5.0E+02	5.0E+02
Benzo(k)fluoranthene	NA	ND	5.0E+00	1.0E-04	RL	1.0E-02	5.0E+00	ND	1.5E+03	1.5E+03	5.0E+00	ND	5.7E+03	5.7E+03	5.0E+00	5.0E+00
Chrysene	NA	ND	5.0E+00	1.0E-02	RL	1.0E+00	5.0E+00	ND	1.5E+04	1.5E+04	5.0E+00	ND	5.7E+04	5.7E+04	5.0E+00	5.0E+00
Dibenzo(a,h)anthracene	NA	ND	5.0E+00	3.0E-04		3.0E-02	5.0E+00	ND	1.5E+01	1.5E+01	5.0E+00	ND	5.7E+01	5.7E+01	5.0E+00	5.0E+00
Fluoranthene	NA	ND	5.0E+02	1.0E+00		1.0E+02	5.0E+02	2.6E+04	ND	2.6E+04	5.0E+02	8.2E+04	ND	8.2E+04	5.0E+02	5.0E+02
Indeno(1,2,3-cd)pyrene	NA	ND	5.0E+00	4.0E-04		4.0E-02	5.0E+00	ND	1.5E+02	1.5E+02	5.0E+00	ND	5.7E+02	5.7E+02	5.0E+00	5.0E+00
Phenanthrene	NA	ND	1.1E+02	1.0E-02	RL	1.0E+00	1.1E+02	ND	ND	ND	1.1E+02	ND	ND	ND	1.1E+02	1.1E+02
Pyrene	3.4E+06	ND	5.0E+02	1.0E+00		1.0E+02	5.0E+02	1.9E+04	ND	1.9E+04	5.0E+02	6.1E+04	ND	6.1E+04	5.0E+02	5.0E+02
Metals																
Antimony	NA	4.0E+00	1.0E+01	6.0E-03		6.0E-01	1.0E+01	2.6E+02	ND	2.6E+02	4.0E+00	8.2E+02	ND	8.2E+02	1.0E+01	1.0E+01
Arsenic	NA	2.0E+01	4.1E+01	1.0E-02		1.0E+00	4.1E+01	1.9E+02	1.0E+01	1.0E+01	2.0E+01	6.1E+02	3.8E+01	3.8E+01	4.1E+01	3.8E+01
Barium	NA	1.0E+03	5.0E+02	2.0E+00		2.0E+02	5.0E+02	1.2E+05	ND	1.2E+05	1.0E+03	3.6E+05	ND	3.6E+05	1.0E+03	1.0E+03
Cadmium (Diet)	NA	2.0E+00	3.9E+01	5.0E-03		5.0E-01	3.9E+01	6.3E+02	8.3E+04	6.3E+02	2.0E+00	2.0E+03	1.1E+05	2.0E+03	3.9E+01	3.9E+01
Chromium, Total	NA	1.0E+02	1.2E+03	1.0E-01		1.0E+01	1.2E+03	ND	ND	ND	1.0E+02	ND	ND	ND	1.2E+03	1.2E+03
Chromium III (Insoluble Salts)	NA	NA	NA	5.0E-03	RL	5.0E-01	5.0E-01	9.6E+05	ND	9.6E+05	5.0E-01	3.1E+06	ND	3.1E+06	5.0E-01	5.0E-01
Chromium VI	NA	NA	NA	5.0E-04	RL	5.0E-02	5.0E-02	1.9E+03	2.9E+01	2.9E+01	5.0E-02	6.1E+03	1.1E+02	1.1E+02	5.0E-02	5.0E-02
Lead	NA	7.5E+01	4.0E+02	1.5E-02		1.5E+00	4.0E+02	ND	ND	ND	7.5E+01	ND	ND	4.0E+02	4.0E+02	4.0E+02
Mercury (Mercuric Chloride and Inorganic Salts)	NA	5.0E-01	1.7E+01	2.0E-03		2.0E-01	1.7E+01	1.9E+02	ND	1.9E+02	5.0E-01	6.1E+02	ND	6.1E+02	1.7E+01	1.7E+01
Selenium	NA	2.0E+00	3.6E+01	5.0E-02		5.0E+00	3.6E+01	3.2E+03	ND	3.2E+03	2.0E+00	1.0E+04	ND	1.0E+04	3.6E+01	3.6E+01
Silver	NA	2.0E+00	1.0E+01	1.0E-01		1.0E+01	1.0E+01	3.2E+03	ND	3.2E+03	2.0E+00	1.0E+04	ND	1.0E+04	1.0E+01	1.0E+01

Notes:

(a) Table 2, Appendix III of HSRA regulations

(b) Appendix I of HSRA regulations. Value is the soil concentration that triggers notification requirements.

(c) Table 1, Appendix III of HSRA regulations. For those substances not listed, reporting limit used as the Type I groundwater RRS.

(d) Value is the highest of the Appendix I value and the groundwater RRS x 100.

(e)
$$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(f)
$$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(g) Minimum of noncarcinogenic and carcinogenic concentrations.

(h) Minimum concentration of Number 1 and Type 1 RRS.

(i) Maximum concentration of Number 1 and HSRA Type 1 Soil Criteria.

(j) Minimum concentration of the risk-based soil Type 3 RRS and the subsurface soil Type 3 RRS.

RL Reporting Limit

RRS Risk Reduction Standard

GW Groundwater

ND Not Determined - Can not be calculated

Exposure Parameters	Residential Type 1	Nonresidential Type 3	Unit
Total Hazard Index (THI)	1	1	unitless
Target Risk (TR)	1.E-05	1.E-05	unitless
Target Risk (TR) WOE - C	1.E-04	1.E-04	
Body Weight (BW)	70	70	kg
Averaging Time, Carcinogen (ATc)	70	70	yrs
Averaging Time, Noncarcinogen (ATn)	30	25	yrs
Exposure Duration (ED)	30	25	yrs
Exposure Frequency (EF)	350	250	days/yr
Soil Ingestion Rate (IRs)	114	50	mg/day
Air Inhalation Rate (InhR)	15	20	m^3/day
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09	m^3/kg
Conversion Factor (CF)	1.E-06	1.E-06	kg/mg
Volatilization Factor (VF)	Chemical-specific	Chemical-specific	m^3/kg

PREPARED/DATE: MKB 6/30/1
CHECKED/DATE: LMS 8/9/17

Table C-5
Type 2 Soil RRS, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	Risk-Based Residential Child Noncarcinogenic (mg/kg) (a)	Risk-Based Residential Child Carcinogenic (mg/kg) (b)	Risk-Based Residential Adult Noncarcinogenic (mg/kg) (a)	Risk-Based Residential Adult Carcinogenic (mg/kg) (b)	Risk-Based Soil Type 2 RRS (mg/kg) (c)	Overall Type 2 RRS (mg/kg)
Volatile Organic Compounds (VOCs)							
SVOCS							
Anthracene	7.3E+05	2.3E+04	ND	2.5E+05	ND	2.3E+04	2.3E+04
Benzo(a)anthracene	6.3E+06	ND	9.1E+01	ND	2.4E+02	9.1E+01	9.1E+01
Benzo(a)pyrene	NA	ND	9.1E+00	ND	2.4E+01	9.1E+00	9.1E+00
Benzo(b)fluoranthene	NA	ND	9.1E+01	ND	2.4E+02	9.1E+01	9.1E+01
Benzo(ghi)perylene	NA	ND	ND	ND	ND	ND	DL/BKG
Benzo(k)fluoranthene	NA	ND	9.1E+02	ND	2.4E+03	9.1E+02	9.1E+02
Chrysene	NA	ND	9.1E+03	ND	2.4E+04	9.1E+03	9.1E+03
Dibenzo(a,h)anthracene	NA	ND	9.1E+00	ND	2.4E+01	9.1E+00	9.1E+00
Fluoranthene	NA	3.1E+03	ND	3.3E+04	ND	3.1E+03	3.1E+03
Indeno(1,2,3-cd)pyrene	NA	ND	9.1E+01	ND	2.4E+02	9.1E+01	9.1E+01
Phenanthrene	NA	ND	ND	ND	ND	ND	DL/BKG
Pyrene	3.4E+06	2.3E+03	ND	2.5E+04	ND	2.3E+03	2.3E+03
Metals							
Antimony	NA	3.1E+01	ND	3.3E+02	ND	3.1E+01	3.1E+01
Arsenic	NA	2.3E+01	6.1E+00	2.5E+02	1.6E+01	6.1E+00	6.1E+00
Barium	NA	1.5E+04	ND	1.6E+05	ND	1.5E+04	1.5E+04
Cadmium (Diet)	NA	7.8E+01	8.9E+04	8.2E+02	8.9E+04	7.8E+01	7.8E+01
Chromium, Total	NA	ND	ND	ND	ND	ND	DL/BKG
Chromium III (Insoluble Salts)	NA	1.2E+05	ND	1.3E+06	ND	1.2E+05	1.2E+05
Chromium VI	NA	2.3E+02	1.8E+01	2.5E+03	4.7E+01	1.8E+01	1.8E+01
Lead	NA	4.2E+02	ND	ND	ND	4.2E+02	4.2E+02
Mercury (Mercuric Chloride and Inorganic Salts)	NA	2.3E+01	ND	2.5E+02	ND	2.3E+01	2.3E+01
Selenium	NA	3.9E+02	ND	4.2E+03	ND	3.9E+02	3.9E+02
Silver	NA	3.9E+02	ND	4.2E+03	ND	3.9E+02	3.9E+02

Notes:

RRS Risk Reduction Standard

ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

Exposure Parameters	Residential Child Type 2	Residential Adult Type 2
Total Hazard Index (THI)	1	1
Target Risk (TR)	1.E-05	1.E-05
Body Weight (BW)	15	80
Averaging Time, Carcinogen (ATc)	70	70
Averaging Time, Noncarcinogen (ATn)	6	24
Exposure Duration (ED)	6	24
Exposure Frequency (EF)	350	350
Soil Ingestion Rate (IRS)	200	100
Air Inhalation Rate (InhR)	15	20
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09
Conversion Factor (CF)	1.E-06	1.E-06
Volatilization Factor (VF)	Chemical-specific	Chemical-specific

PREPARED/DATE: MKB 6/30/14
CHECKED/DATE: LMS 8/9/17

Table C-6
Type 4 Soil RRS, mg/kg
Default Industrial Worker

PARAMETER	Volatilization Factor (m^3/kg)	Risk-Based Industrial Worker Noncarcinogenic (mg/kg) (a)	Risk-Based Industrial Worker Carcinogenic (mg/kg) (b)	Risk-Based Soil IW Type 4 RRS (mg/kg) (c)	Overall IW Type 4 RRS (mg/kg)
Volatile Organic Compounds (VOCs)					
SVOCS					
Anthracene	7.3E+05	7.0E+05	ND	7.0E+05	7.0E+05
Benzo(a)anthracene	6.3E+06	ND	6.5E+02	6.5E+02	6.5E+02
Benzo(a)pyrene	NA	6.7E+02	6.5E+01	6.5E+01	6.5E+01
Benzo(b)fluoranthene	NA	ND	6.5E+02	6.5E+02	6.5E+02
Benzo(ghi)perylene	NA	ND	ND	ND	DL/BKG
Benzo(k)fluoranthene	NA	ND	6.5E+03	6.5E+03	6.5E+03
Chrysene	NA	ND	6.5E+04	6.5E+04	6.5E+04
Dibenzo(a,h)anthracene	NA	ND	6.5E+01	6.5E+01	6.5E+01
Fluoranthene	NA	9.3E+04	ND	9.3E+04	9.3E+04
Indeno(1,2,3-cd)pyrene	NA	ND	6.5E+02	6.5E+02	6.5E+02
Phenanthrene	NA	ND	ND	ND	DL/BKG
Pyrene	3.4E+06	7.0E+04	ND	7.0E+04	7.0E+04
Metals					
Antimony	NA	9.3E+02	ND	9.3E+02	9.3E+02
Arsenic	NA	7.0E+02	4.4E+01	4.4E+01	4.4E+01
Barium	NA	4.2E+05	ND	4.2E+05	4.2E+05
Cadmium (Diet)	NA	2.3E+03	1.2E+05	2.3E+03	2.3E+03
Chromium, Total	NA	ND	ND	ND	DL/BKG
Chromium III (Insoluble Salts)	NA	3.5E+06	ND	3.5E+06	3.5E+06
Chromium VI	NA	6.9E+03	1.2E+02	1.2E+02	1.2E+02
Lead	NA	2.6E+03	ND	2.6E+03	2.6E+03
Mercury (Mercuric Chloride and Inorganic Salts)	NA	7.0E+02	ND	7.0E+02	7.0E+02
Selenium	NA	1.2E+04	ND	1.2E+04	1.2E+04
Silver	NA	1.2E+04	ND	1.2E+04	1.2E+04

Notes:

RRS Risk Reduction Standard

ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

Exposure Parameters	Industrial Worker Type 4	Unit
Total Hazard Index (THI)	1	unitless
Target Risk (TR)	1.E-05	unitless
Body Weight (BW)	80	kg
Averaging Time, Carcinogen (ATc)	70	yrs
Averaging Time, Noncarcinogen (ATn)	25	yrs
Exposure Duration (ED)	25	yrs
Exposure Frequency (EF)	250	days/yr
Soil Ingestion Rate (IRs)	50	mg/day
Air Inhalation Rate (InhR)	20	m3/day
Particulate Emission Factor (PEF)	4.63E+09	m3/kg
Conversion Factor (CF)	1.E-06	kg/mg
Volatilization Factor (VF)	Chemical-specific	m3/kg

PREPARED/DATE: MKB 6/30/14
CHECKED/DATE: LMS 8/9/17

Table C-7
Type 4 Soil RRS, mg/kg
Site-Specific Landscaper

PARAMETER	Volatilization Factor (m^3/kg)	Risk-Based Landscaper/Maintenance Worker Noncarcinogenic (mg/kg) (a)	Risk-Based Landscaper/Maintenance Worker Carcinogenic (mg/kg) (b)	Risk-Based Soil LMW Type 4 RRS (mg/kg) (c)	Overall LMW Type 4 RRS (mg/kg)
SVOCS					
Anthracene	7.3E+05	2.5E+06	ND	2.5E+06	2.5E+06
Benzo(a)anthracene	6.3E+06	ND	2.3E+03	2.3E+03	2.3E+03
Benzo(a)pyrene	NA	2.4E+03	2.3E+02	2.3E+02	2.3E+02
Benzo(b)fluoranthene	NA	ND	2.3E+03	2.3E+03	2.3E+03
Benzo(ghi)perylene	NA	ND	ND	ND	DL/BKG
Benzo(k)fluoranthene	NA	ND	2.3E+04	2.3E+04	2.3E+04
Chrysene	NA	ND	2.3E+05	2.3E+05	2.3E+05
Dibenzo(a,h)anthracene	NA	ND	2.3E+02	2.3E+02	2.3E+02
Fluoranthene	NA	3.3E+05	ND	3.3E+05	3.3E+05
Indeno(1,2,3-cd)pyrene	NA	ND	2.3E+03	2.3E+03	2.3E+03
Phenanthrene	NA	ND	ND	ND	DL/BKG
Pyrene	3.4E+06	2.5E+05	ND	2.5E+05	2.5E+05
Metals					
Antimony	NA	3.3E+03	ND	3.3E+03	3.3E+03
Arsenic	NA	2.5E+03	1.6E+02	1.6E+02	1.6E+02
Barium	NA	1.6E+06	ND	1.6E+06	1.6E+06
Cadmium (Diet)	NA	8.2E+03	8.6E+05	8.2E+03	8.2E+03
Chromium, Total	NA	ND	ND	ND	DL/BKG
Chromium III (Insoluble Salts)	NA	1.3E+07	ND	1.3E+07	1.3E+07
Chromium VI (Particulates)	NA	2.5E+04	4.6E+02	4.6E+02	4.6E+02
Lead	NA	8.6E+03	ND	8.6E+03	8.6E+03
Mercury (Inorganic Salts)	NA	2.5E+03	ND	2.5E+03	2.5E+03
Selenium	NA	4.2E+04	ND	4.2E+04	4.2E+04
Silver	NA	4.2E+04	ND	4.2E+04	4.2E+04

Notes:
RRS Risk Reduction Standard
ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

Exposure Parameters	Landscaper Type 4	Unit	
Total Hazard Index (THI)	1	unitless	
Target Risk (TR)	1.E-05	unitless	
Body Weight (BW)	80	kg	
Averaging Time, Carcinogen (ATc)	70	yrs	
Averaging Time, Noncarcinogen (ATn)	25	yrs	
Exposure Duration (ED)	25	yrs	
Exposure Frequency (EF)	35	days/yr	(1 day per week during growing season)
Soil Ingestion Rate (IRs)	100	mg/day	
Air Inhalation Rate (InhR)	20	m3/day	
Particulate Emission Factor (PEF)	4.63E+09	m3/kg	
Conversion Factor (CF)	1.E-06	kg/mg	
Volatilization Factor (VF)	Chemical-specific	m3/kg	

PREPARED/DATE: MKB 6/30/14
CHECKED/DATE: LMS 8/9/17

Table C-8
Type 4 Soil RRS, mg/kg
Site-Specific Construction Worker

PARAMETER	Volatilization Factor (m^3/kg)	Risk-Based Construction Worker Noncarcinogenic (mg/kg) (a)	Risk-Based Construction Worker Carcinogenic (mg/kg) (b)	Risk-Based Soil CW Type 4 RRS (mg/kg) (c)	Overall CW Type 4 RRS (mg/kg)
SVOCS					
Anthracene	7.3E+05	2.1E+05	ND	2.1E+05	2.1E+05
Benzo(a)anthracene	6.3E+06	ND	5.0E+03	5.0E+03	5.0E+03
Benzo(a)pyrene	NA	2.1E+02	5.0E+02	2.1E+02	2.1E+02
Benzo(b)fluoranthene	NA	ND	5.0E+03	5.0E+03	5.0E+03
Benzo(ghi)perylene	NA	ND	ND	ND	DL/BKG
Benzo(k)fluoranthene	NA	ND	5.0E+04	5.0E+04	5.0E+04
Chrysene	NA	ND	5.0E+05	5.0E+05	5.0E+05
Dibenzo(a,h)anthracene	NA	ND	5.0E+02	5.0E+02	5.0E+02
Fluoranthene	NA	2.8E+04	ND	2.8E+04	2.8E+04
Indeno(1,2,3-cd)pyrene	NA	ND	5.0E+03	5.0E+03	5.0E+03
Phenanthrene	NA	ND	ND	ND	DL/BKG
Pyrene	3.4E+06	2.1E+04	ND	2.1E+04	2.1E+04
Metals					
Antimony	NA	2.8E+02	ND	2.8E+02	2.8E+02
Arsenic	NA	2.1E+02	3.3E+02	2.1E+02	2.1E+02
Barium	NA	1.4E+05	ND	1.4E+05	1.4E+05
Cadmium (Diet)	NA	7.0E+02	6.0E+06	7.0E+02	7.0E+02
Chromium, Total	NA	ND	ND	ND	DL/BKG
Chromium III (Insoluble Salts)	NA	1.1E+06	ND	1.1E+06	1.1E+06
Chromium VI (Particulates)	NA	2.1E+03	9.8E+02	9.8E+02	9.8E+02
Lead	NA	1.2E+03	ND	1.2E+03	1.2E+03
Mercury (Mercuric Chloride and Inorganic Salts)	NA	2.1E+02	ND	2.1E+02	2.1E+02
Selenium	NA	3.5E+03	ND	3.5E+03	3.5E+03
Silver	NA	3.5E+03	ND	3.5E+03	3.5E+03

Notes:
RRS Risk Reduction Standard
ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

Exposure Parameters	Construction Worker Type 4	Unit
Total Hazard Index (THI)	1	unitless
Target Risk (TR)	1.E-05	unitless
Body Weight (BW)	80	kg
Averaging Time, Carcinogen (ATc)	70	yrs
Averaging Time, Noncarcinogen (ATn)	1	yrs
Exposure Duration (ED)	1	yrs
Exposure Frequency (EF)	125	days/yr
Soil Ingestion Rate (IRs)	330	mg/day
Air Inhalation Rate (InhR)	20	m3/day
Particulate Emission Factor (PEF)	4.63E+09	m3/kg
Conversion Factor (CF)	1.E-06	kg/mg
Volatilization Factor (VF)	Chemical-specific	m3/kg

UPDATED/DATE: LMS 7/22/11
CHECKED/DATE: LWC 7/22/11

Table C-9
Type 4 Soil RRS, mg/kg
Site-Specific Trespasser Adolescent

PARAMETER	Volatilization Factor (m^3/kg)	Risk-Based Trespasser Adolescent Noncarcinogenic (mg/kg) (a)	Risk-Based Trespasser Adolescent Carcinogenic (mg/kg) (b)	Risk-Based Soil Trespasser Type 4 RRS (mg/kg) (c)	Overall Trespasser Type 4 RRS (mg/kg)
SVOCS					
Anthracene	7.3E+05	4.9E+05	ND	4.9E+05	4.9E+05
Benzo(a)anthracene	6.3E+06	ND	1.1E+03	1.1E+03	1.1E+03
Benzo(a)pyrene	NA	4.8E+02	1.1E+02	1.1E+02	1.1E+02
Benzo(b)fluoranthene	NA	ND	1.1E+03	1.1E+03	1.1E+03
Benzo(ghi)perylene	NA	ND	ND	ND	DL/BKG
Benzo(k)fluoranthene	NA	ND	1.1E+04	1.1E+04	1.1E+04
Chrysene	NA	ND	1.1E+05	1.1E+05	1.1E+05
Dibenzo(a,h)anthracene	NA	ND	1.1E+02	1.1E+02	1.1E+02
Fluoranthene	NA	6.6E+04	ND	6.6E+04	6.6E+04
Indeno(1,2,3-cd)pyrene	NA	ND	1.1E+03	1.1E+03	1.1E+03
Phenanthrene	NA	ND	ND	ND	DL/BKG
Pyrene	3.4E+06	4.9E+04	ND	4.9E+04	4.9E+04
Metals					
Antimony	NA	6.6E+02	ND	6.6E+02	6.6E+02
Arsenic	NA	4.9E+02	7.7E+01	7.7E+01	7.7E+01
Barium	NA	3.1E+05	ND	3.1E+05	3.1E+05
Cadmium (Diet)	NA	1.6E+03	4.2E+05	1.6E+03	1.6E+03
Chromium, Total	NA	ND	ND	ND	DL/BKG
Chromium III (Insoluble Salts)	NA	2.5E+06	ND	2.5E+06	2.5E+06
Chromium VI (Particulates)	NA	4.9E+03	2.2E+02	2.2E+02	2.2E+02
Lead	NA	3.0E+03	ND	3.0E+03	3.0E+03
Mercury (Inorganic Salts)	NA	4.9E+02	ND	4.9E+02	4.9E+02
Selenium	NA	8.2E+03	ND	8.2E+03	8.2E+03
Silver	NA	8.2E+03	ND	8.2E+03	8.2E+03

Notes:

RRS Risk Reduction Standard

ND Not Determined - Can not be calculated

(a) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/VF + 1/PEF) \times InhR) + (1/RfDo \times Irs \times CF)]}$$

(b) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/VF + 1/PEF) \times InhR) + (SFo \times Irs \times CF)]}$$

(c) Minimum of noncarcinogenic and carcinogenic concentrations.

Exposure Parameters	Trespasser Adolescent Type 4	Unit	
Total Hazard Index (THI)	1	unitless	
Target Risk (TR)	1.E-05	unitless	
Body Weight (BW)	45	kg	
Averaging Time, Carcinogen (ATc)	70	yrs	
Averaging Time, Noncarcinogen (ATn)	10	yrs	(7 to 16 years)
Exposure Duration (ED)	10	yrs	
Exposure Frequency (EF)	100	days/yr	(2 days per week for 50 weeks per year)
Soil Ingestion Rate (IRs)	100	mg/day	
Air Inhalation Rate (InhR)	20	m3/day	
Particulate Emission Factor (PEF)	4.63E+09	m3/kg	
Conversion Factor (CF)	1.E-06	kg/mg	
Volatilization Factor (VF)	Chemical-specific	m3/kg	

UPDATED/DATE: LMS 1/31/11
CHECKED/DATE: LWC 1/31/11

Table C-10
Derivation of VF Factors (Soil-to-Air Volatilization Factor)
Based on Regional Screening Level Chemical-specific Parameters Supporting Table June 2017

Analyte	CAS No.	MW	H` (unitless)	HLC (atm-m^3/mole)	Density (g/cm^3)	Dia (cm^2/s)	Diw (cm^2/s)	K_{oc} (L/kg)	Dei (cm^2/sec)	K_d (cm^3/g)	K_{as} (g/cm^3)	Y (cm^2/sec)	VF (m^3/kg)
~Anthracene	120-12-7	1.8E+02	2.3E-03	5.6E-05	1.3E+00	3.9E-02	7.9E-06	1.6E+04	0.0275619	3.27E+02	6.97E-06	3.90E-08	7.32E+05
~Benz[a]anthracene	56-55-3	2.3E+02	4.9E-04	1.2E-05	1.3E+00	2.6E-02	6.7E-06	1.8E+05	0.0184677	3.54E+03	1.39E-07	5.22E-10	6.33E+06
~Benzo[a]pyrene	50-32-8	2.5E+02	1.9E-05	4.6E-07		4.8E-02	5.6E-06	5.9E+05	0.0336508	1.17E+04	1.59E-09	1.09E-11	4.38E+07
~Benzo[b]fluoranthene	205-99-2	2.5E+02	2.7E-05	6.6E-07		4.8E-02	5.6E-06	6.0E+05	0.0336508	1.20E+04	2.25E-09	1.54E-11	3.69E+07
~Benzo[k]fluoranthene	207-08-9	2.5E+02	2.4E-05	5.8E-07		4.8E-02	5.6E-06	5.9E+05	0.0336508	1.17E+04	2.04E-09	1.39E-11	3.87E+07
~Chrysene	218-01-9	2.3E+02	2.1E-04	5.2E-06	1.3E+00	2.6E-02	6.7E-06	1.8E+05	0.0184677	3.61E+03	5.94E-08	2.23E-10	9.68E+06
~Dibenz[a,h]anthracene	53-70-3	2.8E+02	5.8E-06	1.4E-07		4.5E-02	5.2E-06	1.9E+06	0.0315179	3.82E+04	1.51E-10	9.68E-13	1.47E+08
~Fluoranthene	206-44-0	2.0E+02	3.6E-04	8.9E-06	1.3E+00	2.8E-02	7.2E-06	5.5E+04	0.0195157	1.11E+03	3.28E-07	1.30E-09	4.01E+06
~Indeno[1,2,3-cd]pyrene	193-39-5	2.8E+02	1.4E-05	3.5E-07		4.5E-02	5.2E-06	2.0E+06	0.0316714	3.90E+04	3.66E-10	2.35E-12	9.42E+07
~Pyrene	129-00-0	2.0E+02	4.9E-04	1.2E-05	1.3E+00	2.8E-02	7.2E-06	5.4E+04	0.0196512	1.09E+03	4.49E-07	1.79E-09	3.41E+06

Equation is from USEPA, 1991b.
VF = Volatilization Factor (m3/kg)

$$VF = (LS \times V \times DH) / (A) * \frac{(3.14 \times Y \times T)^{1/2}}{(2 \times Dei \times P \times Kas \times 0.001)}$$

$$Y = \frac{Dei \times P}{P + (p(1-P)/Kas)}$$

LS = Length of side of contaminated area =	45	m (default)
V = wind speed in mixing zone =	2.25	m/s (default)
DH = diffusion height =	2	m
A = area of contamination =	20250000	cm² (default)
T = exposure interval =	7.9E+08	s = 25 yrs
Dei = effective diffusivity (cm2/s) =	Chemical Specific	
P = air filled soil porosity (unitless) =	0.35	(default)
Kas = soil/air partition coefficient (g soil/cm3 air) =	Chemical Specific	
Conversion factor =	0.001	kg/g
p = True soil density or particulate density =	2.65	g/cm³ (default)

Table C-11
Calculation of Remediation Goal for Lead in Soil - Industrial Workers

Exposure Variable	PRG Equation[1]	Description of Exposure Variable	Units	Values for Industrial Worker Using Equation 1 GSDi = 1.7 (a)
$PbB_{fetal,\ 0.95}$	X	95th percentile PbB in fetus	ug/dL	10
$R_{fetal/maternal}$	X	Fetal/maternal PbB ratio	--	0.9
BKSF	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	X	Geometric standard deviation PbB	--	1.7
PbB_0	X	Baseline PbB	ug/dL	0.70
IR_S	X	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
$AF_{S,\ D}$	X	Absorption fraction (same for soil and dust)	--	0.12
C_w	X	Concentration of lead in ground water (average for site)	ug/L	4
IR_w[2]	X	Intake rate of water from on-site ground water	L/day	1
AF_w	X	Absolute gastrointestinal absorption fraction for lead in GW		0.2
EF	X	Exposure frequency (same for soil and dust and water)	days/yr	219
AT	X	Averaging Time	days/yr	365
PRG		**Preliminary Remediation Goal**	**ppm**	**2,600**

Note:

Level in groundwater set to background concentration.

(a) Based on U.S. EPA August 2016 GSDi and PbB0 updates. These values should be amended based on updates by the U.S. EPA Technical Review Workgroup for Lead – Adult Lead Committee.

***Equation based on Georgia Adult Lead Model (November, 1999).**

$$\textbf{PRG} = \frac{[([[PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0) - (C_w*I_w*A_w)] * (IR_S*AF_S)^{-1}}{BKSF*(EF/AT)}$$

Sources:

U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.
Georgia EPD HSRA: Appendix IV.

Table C-11A
Calculation of Remediation Goal for Lead in Soil - Construction Workers

Exposure Variable	PRG Equation[1]	Description of Exposure Variable	Units	Values for Construction Worker Using Equation 1 GSDi = 1.7 (a)
$PbB_{fetal,\ 0.95}$	X	95th percentile PbB in fetus	ug/dL	10
$R_{fetal/maternal}$	X	Fetal/maternal PbB ratio	--	0.9
BKSF	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	X	Geometric standard deviation PbB	--	1.7
PbB_0	X	Baseline PbB	ug/dL	0.70
IR_S	X	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100
$AF_{S,\ D}$	X	Absorption fraction (same for soil and dust)	--	0.12
C_w	X	Concentration of lead in ground water (average for site)	ug/L	4
IR_w[2]	X	Intake rate of water from on-site ground water	L/day	0.08
AF_w	X	Absolute gastrointestinal absorption fraction for lead in GW		0.2
EF	X	Exposure frequency (same for soil and dust and water)	days/yr	125
AT	X	Averaging Time	days/yr	183
PRG		**Preliminary Remediation Goal**	**ppm**	**1,200**

Note:

Level in groundwater set to background.

(a) Based on U.S. EPA August 2016 GSDi and PbB0 updates. These values should be amended based on updates by the U.S. EPA Technical Review Workgroup for Lead – Adult Lead Committee.

***Equation based on Georgia Adult Lead Model (November, 1999).**

$$\mathbf{PRG} = \frac{[([[PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0) - (C_w*I_w*A_w)] * (IR_S*AF_S)^{-1}}{BKSF*(EF/AT)}$$

Table C-11B
Calculation of Remediation Goal for Lead in Soil - Adolescent Trespassers

Exposure Variable	PRG Equation[1]	Description of Exposure Variable	Units	Values for Adolescent Trespasser Using Equation 1 GSDi = 1.7 (a)
$PbB_{fetal,\ 0.95}$	X	95th percentile PbB in fetus	ug/dL	10
$R_{fetal/maternal}$	X	Fetal/maternal PbB ratio	--	0.9
BKSF	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	X	Geometric standard deviation PbB	--	1.7
PbB_0	X	Baseline PbB	ug/dL	0.70
IR_S	X	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100
$AF_{S,\ D}$	X	Absorption fraction (same for soil and dust)	--	0.12
C_w	X	Concentration of lead in ground water (average for site)	ug/L	4
IR_w[2]	X	Intake rate of water from on-site ground water	L/day	0.312
AF_w	X	Absolute gastrointestinal absorption fraction for lead in GW		0.2
EF	X	Exposure frequency (same for soil and dust and water)	days/yr	100
AT	X	Averaging Time	days/yr	365
PRG		**Preliminary Remediation Goal**	**ppm**	**3,000**

Note:

Level in groundwater set to background.

(a) Based on U.S. EPA August 2016 GSDi and PbB0 updates. These values should be amended based on updates by the U.S. EPA Technical Review Workgroup for Lead – Adult Lead Committee.

***Equation based on Georgia Adult Lead Model (November, 1999).**

$$\mathbf{PRG} = \frac{[([[PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0) - (C_w*I_w*A_w)] * (IR_S*AF_S)^{-1}}{BKSF*(EF/AT)}$$

Sources:

U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.

Georgia EPD HSRA: Appendix IV.

Table C-11C
Calculation of Remediation Goal for Lead in Soil - Maintenance Landscaper

Exposure Variable	PRG Equation[1]	Description of Exposure Variable	Units	Values for Maintenance Landscaper Using Equation 1 GSDi = 1.7 (a)
$PbB_{fetal,\ 0.95}$	X	95th percentile PbB in fetus	ug/dL	10
$R_{fetal/maternal}$	X	Fetal/maternal PbB ratio	--	0.9
BKSF	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	X	Geometric standard deviation PbB	--	1.7
PbB_0	X	Baseline PbB	ug/dL	0.70
IR_S	X	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100
$AF_{S,\ D}$	X	Absorption fraction (same for soil and dust)	--	0.12
C_w	X	Concentration of lead in ground water (average for site)	ug/L	4
IR_w[2]	X	Intake rate of water from on-site ground water	L/day	0.08
AF_w	X	Absolute gastrointestinal absorption fraction for lead in GW		0.2
EF	X	Exposure frequency (same for soil and dust and water)	days/yr	35
AT	X	Averaging Time	days/yr	365
PRG		**Preliminary Remediation Goal**	**ppm**	**8,600**

Note:

Level in groundwater set to background.

(a) Based on U.S. EPA August 2016 GSDi and PbB0 updates. These values should be amended based on updates by the U.S. EPA Technical Review Workgroup for Lead – Adult Lead Committee.

***Equation based on Georgia Adult Lead Model (November, 1999).**

$$\mathbf{PRG} = \frac{[([[PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0) - (C_w*I_w*A_w)] * (IR_S*AF_S)^{-1}}{BKSF*(EF/AT)}$$

Sources:

U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.
Georgia EPD HSRA: Appendix IV.

Table C-12
IEUBK Model

LEAD MODEL FOR WINDOWS Version 1.1

==========

Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research

==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

******** Soil & Dust ********

Multiple Source Analysis Used
Average multiple source concentration: 300.500 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Table C-12
IEUBK Model

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	415.000	300.500
1-2	415.000	300.500
2-3	415.000	300.500
3-4	415.000	300.500
4-5	415.000	300.500
5-6	415.000	300.500
6-7	415.000	300.500

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

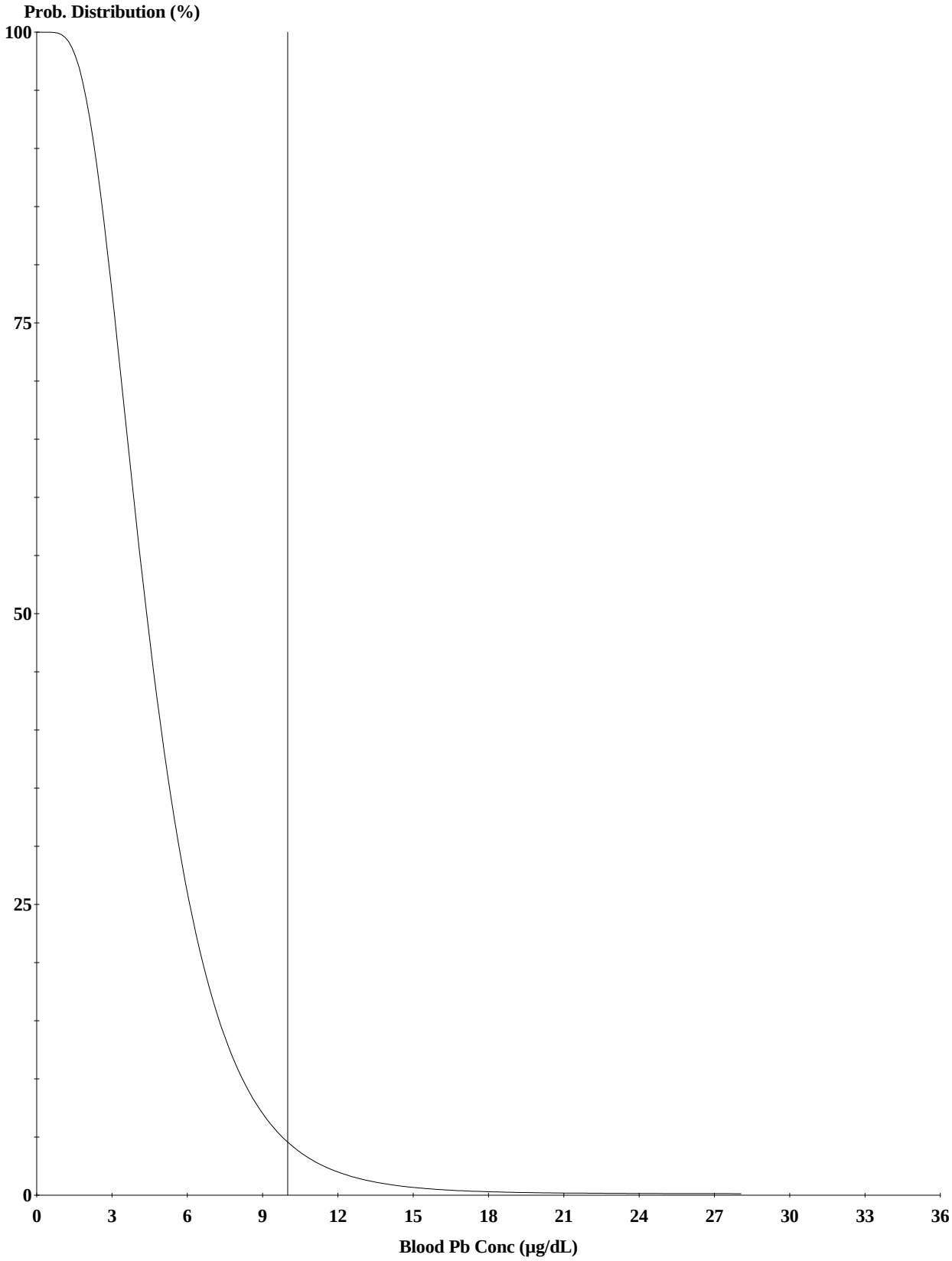
Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.014	0.000	0.359
1-2	0.034	0.863	0.000	0.881
2-3	0.062	0.954	0.000	0.931
3-4	0.067	0.927	0.000	0.964
4-5	0.067	0.914	0.000	1.031
5-6	0.093	0.971	0.000	1.099
6-7	0.093	1.058	0.000	1.125

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	8.055	9.449	5.1
1-2	12.557	14.335	5.9
2-3	12.768	14.716	5.5
3-4	12.962	14.920	5.2
4-5	9.895	11.906	4.3
5-6	9.006	11.169	3.6
6-7	8.557	10.833	3.1

Table C-12
IEUBK Model



Cutoff = 10.000 µg/dl
Geo Mean = 4.590
GSD = 1.600
% Above = 4.878

Age Range = 0 to 84 months

Run Mode = Research