Prepared for

Berkeley Lake Village Owners Association, LLC
P.O. Box 283
Adairsville, GA, 30103

VOLUNTARY REMEDIATION PROGRAM APPLICATION

BERKELEY LAKE VILLAGE OWNERS ASSOCIATION SITE DULUTH, GEORGIA HSI #10844

Prepared by

Geosyntec consultants

engineers | scientists | innovators

1255 Roberts Boulevard, Suite 200
Kennesaw, Georgia 30144

Project Number GR5658

April 2015

PROFESSIONAL ENGINEER CERTIFICATION

I certify that I am a qualified engineer who has received a baccalaureate or post-graduate degree in the natural science or engineering, and have sufficient training and experience in environmental assessment and corrective measures, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments. I further certify that this report was prepared by myself or by a subordinate working under my direction.

_____

Peter J. de Haven, P.E.
Registered Professional Engineer Georgia
Registration # 28392

Geosyntec
consultants

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1. INTRODUCTION

1.1 Site Background

On behalf of Berkeley Lake Village Owners Association (BLVOA), Geosyntec Consultants (Geosyntec) has prepared this Voluntary Remediation Program Application (VRPA) for the facility located at 3351 North Berkeley Lake Rd NW in the City of Duluth, Gwinnett County, Georgia. Berkeley Lake Village (BLV) is part of a larger EPD "site" known as the North Berkeley Lake Road Site (NBLRS). Geosyntec has prepared this plan specifically for parcel described below and referred to as Berkeley Lake Village (BLV) or hereafter referred to as "the site".

The site has a Gwinnett County parcel ID of 6290 232 and a location corresponding to latitude 33.9834 and longitude -84.1702,. The approximate area of the site is 3.99 acres. The parcel (6290 232) includes the parking lot and common areas between the on-site building footprints (**Figure 1**). There are eight additional subdivided parcels within the boundary of the "site". Two of these parcels are future building footprints (6290 242 and 6290 243) and there are six other parcels with multi-story buildings used for commercial use. However these parcels are limited to the building footprints and are not included in the site. The site property is bounded to the east by North Berkeley Lake Road NW and the Gwinnett Regional Distribution Center (GRDC) (commercial/warehousing), and to the west by Peachtree Industrial Boulevard and commercial buildings. There is an undeveloped parcel to the north of the site and the Gwinnett County Fire Department Station No. 19 (Fire Station) directly to the south. The general area surrounding the BLV site is heavy commercial and industrial use. An aerial photograph of the site is shown on **Figure 2.**

In 2006, the Gwinnett Regional Distribution Center (GRDC) property, located directly east of the BLV site, was placed on the Hazardous Site Inventory (HSI), Site #10844, for elevated levels of arsenic in the soil and groundwater. In 2013, during planning for the installation of a gravity sewer line in the area, the Gwinnett County Department of Water Resources conducted soil sampling at the Fire Station after finding that the adjacent GRDC was listed on the HSI. This investigation revealed levels of arsenic exceeding the Hazardous Site Response Act (HRSA) soil notification concentration. Subsequently, a release notification was submitted to Georgia's Environmental Protection Division (EPD) and the Fire Station was listed on the HSI in December 2013. An EPD inspection of the Fire Station noted that a daycare center was located less

than 300 feet from the property. In August 2013, EPD personnel mobilized to collect seven surface soil samples from the BLV site, including four from the area being used for an outdoor playground area. EPD performed subsequent surficial soil sampling at the playground which resulted in six samples that exceeded the default residential risk reduction soil standard of 20 mg/kg as well as the promulgated notification concentration of 41 mg/kg (See **Figure 3**). In October 2013, BLVOA received a HSRA Release Notification letter from EPA and in February 2014, the BLV site was listed on the HSI. Two additional adjacent parcels, Diamond Crystal Brands and Suzanna's Kitchen were also placed on the HSI.

1.2 Site Setting

The site is located in the Piedmont Physiographic province of the Appalachian division. The Piedmont is characterized by gently rolling hills and complex geology with numerous intermingled rock formations. The site is located within the United States Geologic Survey (USGS) Southwest Atlanta, GA topographic quadrangle (**Figure 4**). The general site topography is level parking lot with flat landscaped areas, sloping gently to the west toward Berkeley Lake.

The immediate site vicinity consists of mixed industrial/commercial land uses with the Fire Station and Diamond Crystal Brands and Suzanna's Kitchen to the south and the GRDC to the east. All of these properties are listed on the HSI as part of the North Berkeley Lake Road Site under site number 10844. These properties are shown on **Figure 2**.

The geology of the Piedmont Physiographic Province is characterized by Pre-Cambrian to Paleozoic age metamorphic and igneous rocks that have been weathered into a distinctive residual soil known as saprolite near ground surface. Saprolite has the texture and appearance of the parent rock but has been decomposed by chemical and physical weathering. Beneath the saprolite is generally a transition zone of partially weathered rock (PWR) underlain by fractured bedrock.

The occurrence and movement of groundwater in the Piedmont is generally within two hydrogeologic units. A shallow hydrogeologic unit is the saprolite and PWR, whereas a deeper hydrogeologic unit is the fractured bedrock. Groundwater usually occurs under water table (i.e., unconfined) or semi-confined conditions. Groundwater flow is

controlled by local topographic features, where recharge occurs in upland areas and discharge occurs in drainage features such as streams, rivers, or lakes. Recharge to the shallow hydrogeologic unit is primarily the result of infiltrating precipitation. Groundwater in the deeper water-bearing zone is associated with secondary porosity (fractures or open spaces) within the crystalline bedrock and flow is controlled by the distribution and degree of interconnection of these openings in the rock. Based on other site investigations at neighboring facilities, bedrock has been encountered from about 5 feet to over 50 feet below ground surface (bgs) (ENVIRON, 2011).

2. SITE CHARACTERIZATION

2.1 Site Investigation

A preliminary and limited investigation of the site was conducted by Georgia EPD personnel in August 2013. As described above, the surface soils were found to contain concentrations of arsenic above the default residential risk reduction soil standards. Cadmium was also detected at levels between 7.7 and 11 mg/kg, but could not be confirmed through further analyses by the EPD laboratory.

Geosyntec conducted additional field investigation of site surface soils in January 2015. The landscaped areas (i.e., areas not capped with asphalt or building) of the BLV site were screened in the field using a portable x-ray fluorescence machine (XRF: Olympus Delta Classic Plus RK). Soil samples were collected from 30 locations throughout the site using clean, decontaminated hand augers. Samples were collected from 0-1 ft bgs. Twelve locations had also samples collected from the 1-2 ft bgs and three locations a 2-3 ft bgs. The field investigation confirmed the widespread presence of arsenic at values greater than the notification concentration of 41 mg/kg. The complete results are provided in **Table 1** and shown in **Figure 5**. Cadmium was also screened in the field; however it was not detected in any of the 45 samples screened with the XRF.

For ten soil samples, the field measurements by XRF were confirmed by submitting soils samples to a fixed-based laboratory (TestAmerica in Canton, Ohio) and analyzed by EPA Method 6010C. The results of these confirmatory samples are presented in Table 1 and indicated that the field data is an effective and accurate tool. Most samples had a relative percent difference of 10 percent or less and all samples were less than 30 percent.

Groundwater was not evaluated at this time. However, groundwater investigations from the adjacent Fire Station conducted in 2014 did not detect the presence of arsenic in groundwater (CDM Smith, 2014).

2.2 Conceptual Site Model

The source of the arsenic contamination is not known at this time. There have been no known industrial facilities or hazardous materials in the site's past use. However, at least portions of the site are known to have been used as farmland as reported in site documents for the GRDC (ENVIRON, 2011). The farmed areas can be seen in **Figure**

6, which shows historical aerial photographs from 1955, 2005, and 2007. The GRDC land was developed in 1969 and involved significant filling and grading. As can be seen in the 2005 and 2007 aerial photographs, the site was developed in 2007. The use of the site as farmland and the potential application of arsenical pesticides could be a source of arsenic. **Figure 7** shows the arsenic data on the 1955 aerial photograph. It appears that the higher concentrations of arsenic are co-located with the area that was utilized for farming in the past. This evidence indicates that past agricultural use could be the source of elevated arsenic concentrations.

However, at adjacent sites within NBLRS, it has been postulated that agriculture is not the source due to the fact that arsenic concentrations do not decrease with depth. The Fire Station is currently evaluating other theories regarding the source of arsenic such as naturally occurring arsenic in the form of a locally prevalent arsenopyrite schist (CDM Smith, 2014).

4. POTENTIAL RECEPTORS

There are potential exposure pathways to receptors at the site via exposure to soils and groundwater. Receptor pathways are shown in **Figure 8**.

The asphalt cover and vegetative soil cover provide engineering controls to eliminate potential direct exposure pathways (i.e., direct contact and fugitive dust) over much of the site. The asphalt and landscaped cover also improves storm water management, erosion protection and sediment control. A complete exposure pathway exists for receptors with direct contact to exposed soils.

A direct groundwater pathway is not thought to exist. However, if at the completion of corrective action plan, groundwater exceeds the Type 4 risk reduction standard (RRS), institutional controls, including restrictive covenants under the VRP, will be placed on the site properties to prevent future groundwater use and effectively eliminate any potential pathways for on-site receptors.

5. RISK REDUCTION STANDARDS

This section provides a summary of RRS for soil and groundwater calculated according to HSRA Chapter 391-3-19-.07(9). This regulation provides for the development of both "generic" and "site-specific" RRS Types 1 through 5, for soil and groundwater at residential (Types 1 and 2) and/or non-residential (Types 3, 4, and 5) sites. Arsenic is the HSRA regulated substance at the site. More detailed information on the derivation of the RRS values are presented in Attachment C.

The RRS equations consider both direct contact exposure to contaminants as well as the protection of groundwater based on the potential leaching of contaminants from soil to the underlying groundwater. The direct exposure pathway calculations for the "generic" residential (Type 1) and non-residential (Type 3) RRS utilize exposure assumptions provided in the Rules of GA DNR EPD, Chapter 391-3-19: Hazardous Site Response, Appendix III, Table 3.

The direct exposure pathway calculations for the "site-specific" residential (Type 2) and non-residential (Type 4) RRS utilize exposure assumptions provided in recent guidance from the United States Environmental Protection Agency (USEPA) entitled, *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER 9200.1-120* (USEPA 2014), where available. For specific factors not discussed in this USEPA guidance, the EPD HSRA defaults were used. A Type 5 soil RRS was also calculated for the BLV site based on a short-term construction worker exposure scenario. Use of the Type 5 RRS value assumes that the exposed soils exceeding the higher of the Type 3 or Type 4 RRS would be removed and/or capped and appropriate land use controls (e.g., a deed restriction) would be used to eliminate exposures to contaminated soil or groundwater for long-term receptors at the site.

The direct exposure pathway calculations for the all of the RRS values (Types 1 – 5) utilize a relative bioavailability (RBA) factor for arsenic in soil obtained from recent USEPA guidance entitled, *Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113* (USEPA 2012).

A summary of final RRS selected for arsenic in soil for Types 1-5 is presented in **Table 2**, including the selection rationale. Risk reductions standards range from 5.8 mg/kg for

protection of groundwater (Type 2 and 4) to 1,009 mg/kg for construction worker exposure to soil (Type 5).

6. PROPOSED REMEDIATION PLAN

The current delineation at the site and neighboring sites suggests that arsenic concentrations above the Type 1 RRS are ubiquitous. No further soil sampling is planned.

Although contamination of groundwater is not expected, at the request of EPD, BLVOA proposes the collection of groundwater from three locations. One will be at the southwest portion of the site close to the highest observed arsenic concentrations; upgradient from the prevailing direction of groundwater flow per previous NBLRS reports (ENVIRON, 2011). The second location will be near the center of the site and the third will be in northeast portion.

Geosyntec and BLVOA will evaluate the removal and/or capping of hot spots to achieve a site-wide average concentration that will meet the appropriate risk reduction standards. Various scenarios for removal of two feet of surface soils will be evaluated. The majority of the site is already "capped" by the presence of asphalt parking lot and buildings. The results of the various scenarios will be presented to EPD for discussion of the best way to meet the site's risk reduction objectives.

Environmental covenants are likely to be implemented at the site so that the areas of the site that are capped remained capped and properly maintained. No corrective action on the subsurface soils is planned; an environmental covenants will be put in place so that proper controls are used during any future construction activities that may occur at the site.

Due to the fact that the source of the site-wide elevated arsenic concentrations is not known with certainty, BLVOA will evaluate the results of the pending investigations at the Fire Station. The Fire Station VRP application is proposing two lines of evidence to evaluate both the source of the arsenic and the risk posed by the arsenic at the site. The area is known to have local deposits of a mineral (arsenopyrite) that is naturally high in arsenic. Electron microprobe (EMP) analysis will be used to determine arsenic species and how it is attached to particles. If the arsenic is naturally occurring, it will allow for a different RRS standard to be used based on background concentrations. Furthermore, the Fire Station is evaluating the bioavailability of the arsenic present at the site using *in vitro* bioaccessibility (IVBA) tests. This test is designed to determine what fraction of

the arsenic is bioavailable to potential receptors. Pending the results of both of these evaluations, the remediation plan may be revised in consultation with EPD.

7. SCHEDULE

BLVOA proposes the following schedule (see **Figure 9**). The extended schedule allows the various parties within BLVOA to meet the financial obligations of the remediation plan.

Submit VRP Application, Enrollment in the VRP Program	April 16, 2015
Complete horizontal delineation of arsenic impacted soils	Completed January 2015
Complete groundwater investigation	October 16, 2015 (6 months)
Submit updated CSM and update remediation plan, provide cost estimate	April 16, 2016 (6 months)
Complete implementation of remediation plan	October 16, 2017 (18 months)
Submit Compliance Status Report	April 16, 2018 (6 months)

8. REFERENCES

CDM Smith. 2014. Corrective Action Plan. Fire Station 19 Gwinnett County, Georgia. Prepared for Gwinnett County, Georgia. CDM Smith Inc., Atlanta, GA.

Environ. 2011. Gwinnett Regional Distribution Center Voluntary Investigation and Remediation Plan. Prepared for 3312 Berkeley Lake Investors, LLC. Environ International Corporation, Atlanta, GA.

USEPA. 1991. Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). Interim. Office of Emergency and Remedial Response. EPA/540/R-92/003. December 1991.

USEPA. 2012. Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113. December.

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

TABLES

Table 1. Arsenic in Soil, January 27, 2015
Berkeley Lake Village

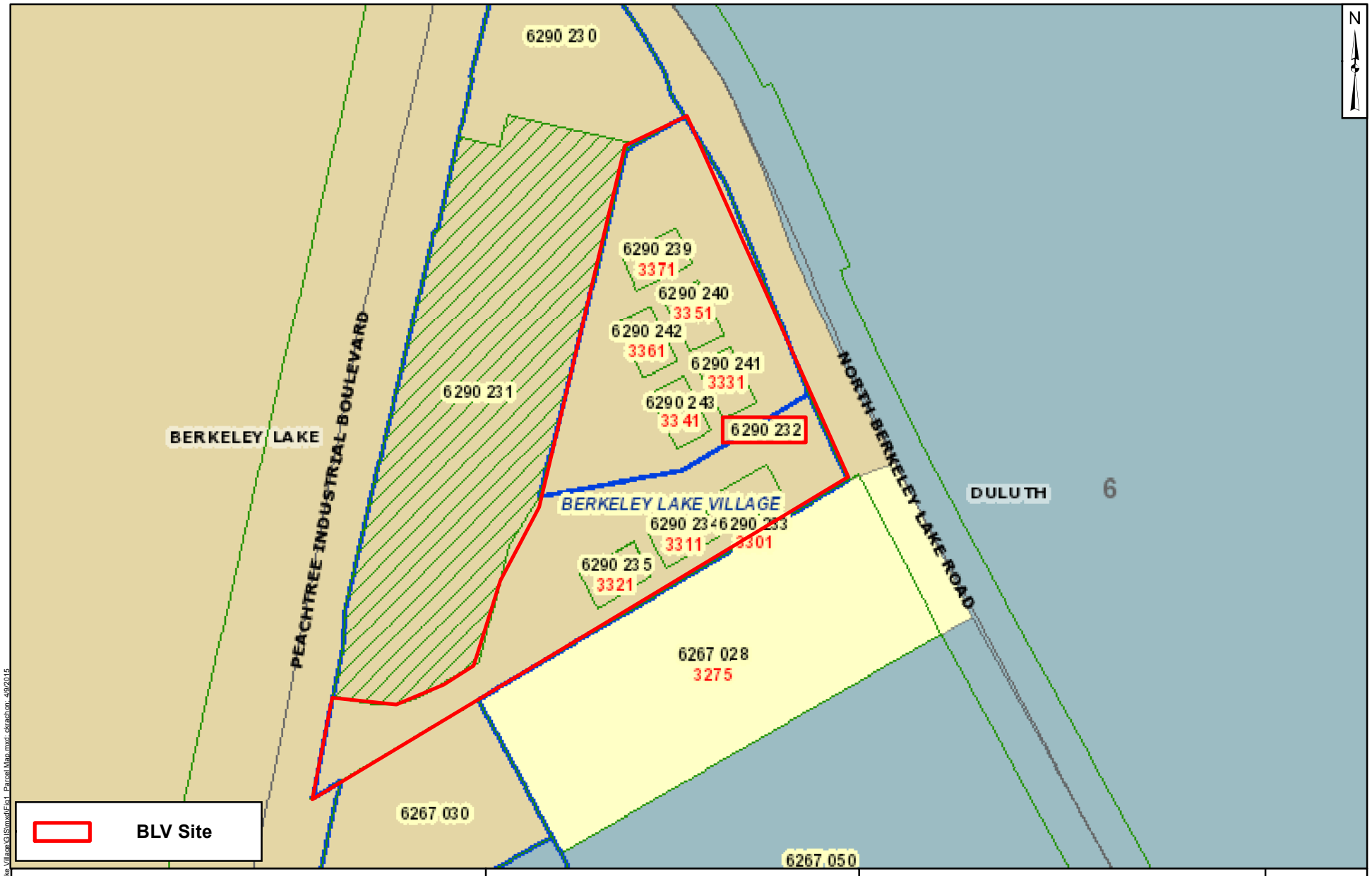
Sample ID (Depth in ft)	Arsenic by XRF (mg/kg)	Arsenic by Method 6010C (mg/kg)
SS-A1 (0-1)	**235.7**	
SS-A1 (1-2)	**213.3**	
SS-A2 (0-1)	**76.3**	
SS-A2 (1-2)	**191.0**	
SS-A3 (0-1)	**135.3**	
SS-A3 (1-2)	**92.3**	**89**
SS-A4 (0-1)	**123.7**	
SS-A4 (1-2)	**112.0**	
SS-A4 (2-3)	**139.7**	
SS-A5 (0-1)	**126.3**	
SS-A5 (1-2)	**119.3**	
SS-B1 (0-1)	**145.0**	
SS-B2 (0-1)	**52.7**	
SS-B3 (0-1)	**60.0**	
SS-B4 (0-1)	**128.7**	
SS-B5 (0-1)	**110.7**	
SS-B6 (0-1)	**69.3**	**63**
SS-B6 (2-3)	**54.3**	
SS-B7 (0-1)	**81.3**	
SS-B8 (0-1)	**87.3**	
SS-C1 (0-1)	**47.0**	
SS-C2 (0-1)	**59.0**	**57**
SS-C3 (0-1)	**48.0**	
SS-D1 (0-1)	35.3	27
SS-D2 (0-1)	**55.3**	**50**
SS-D3 (0-1)	**85.7**	**95**
SS-E1 (0-1)	**208.7**	
SS-E1 (1-2)	**209.3**	
SS-E2 (0-1)	**120.3**	**130**
SS-E2 (1-2)	**129.0**	
SS-E3 (0-1)	**123.0**	
SS-E3 (1-2)	**82.0**	
SS-F1 (0-1)	**120.3**	
SS-F1 (1-2)	**121.3**	
SS-F2 (0-1)	**126.3**	
SS-F2 (1-2)	**170.7**	**210**
SS-G1 (0-1)	**124.0**	
SS-G1 (1-2)	**197.7**	
SS-G2 (0-1)	**174.3**	
SS-G2 (1-2)	**239.7**	
SS-G2 (2-3)	**170.0**	**160**
SS-H1 (0-1)	**111.3**	**95**
SS-H2 (0-1)	**124.7**	
SS-H3 (0-1)	**122.3**	
SS-H4 (0-1)	**51.7**	

Notes:
XRF values shown are the average of 3 measurements recorded in the field.
Bold text indicate a value greater than 41 mg/kg (HSRA notification concentration).

Table 2.
Final Soil RRS Values
Berkeley Lake Village, Duluth, Georgia

Detected Constituents	Units	Final Residential RRS Values				Final NonResidential RRS Values						Final Construction Worker RRS Values [3]	
		Type 1 RRS	Basis	Type 2 RRS	Basis	Type 3 RRS (<2 ft)	Basis	Type 3 RRS (>2 ft)	Basis	Type 4 RRS	Basis	Type 5 RRS	Basis
Arsenic	mg/kg	20	App. III, Table 2	5.8	Leachability	41	Soil NC	41	Soil NC	5.8	Leachability	1009	Cancer Risk

FIGURES



Gwinnett County Parcel Map

Berkeley Lake Village
Duluth, Georgia

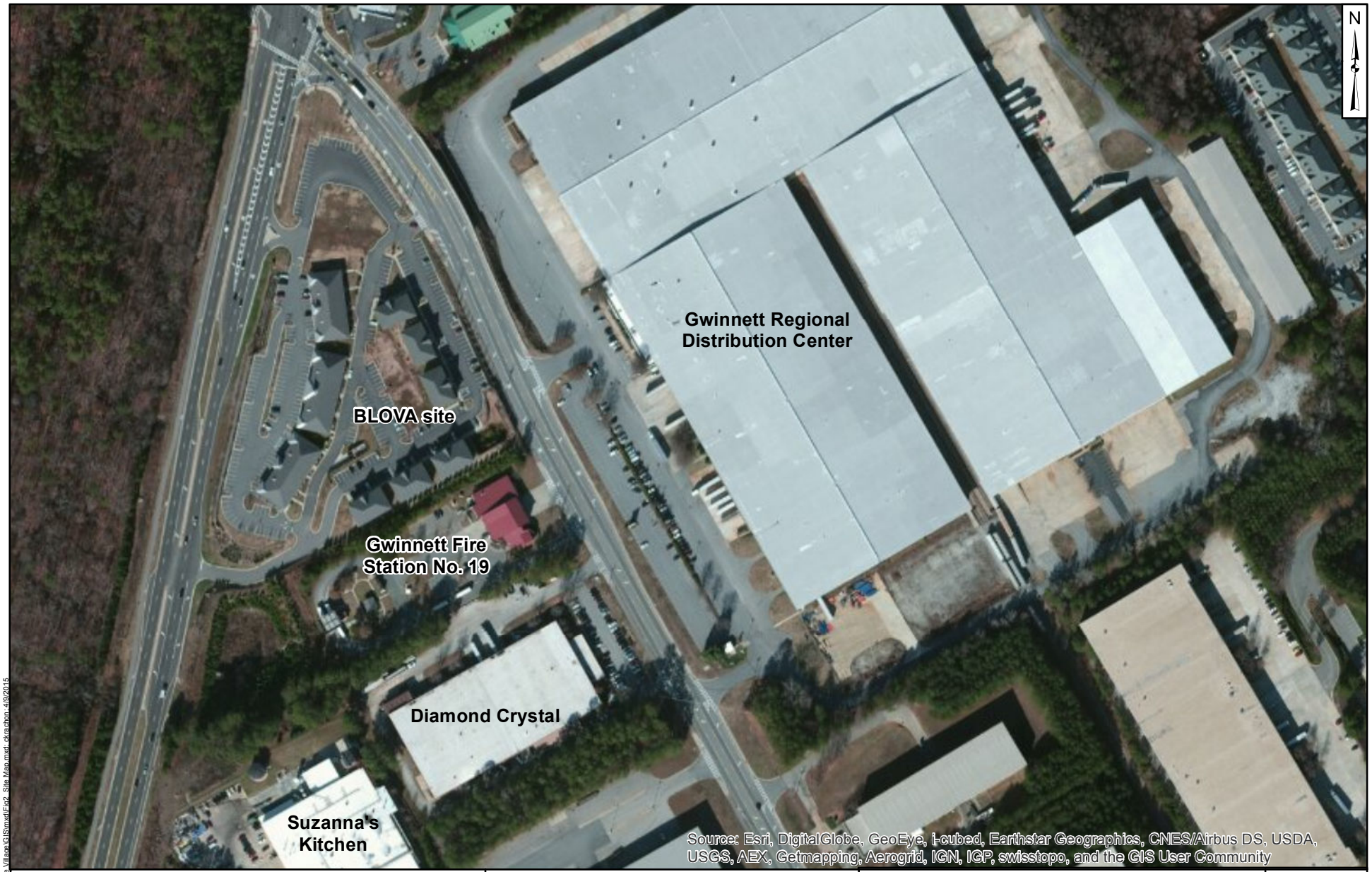
Geosyntec consultants

Kennesaw, Georgia

03-April-2015

Figure 1

N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig1_Parcel Map.mxd dkaahan 4/9/2015



0 250 500 Feet

Berkeley Lake Road Site
Site Number 10844

Berkeley Lake Village
Duluth, Georgia

Geosyntec consultants

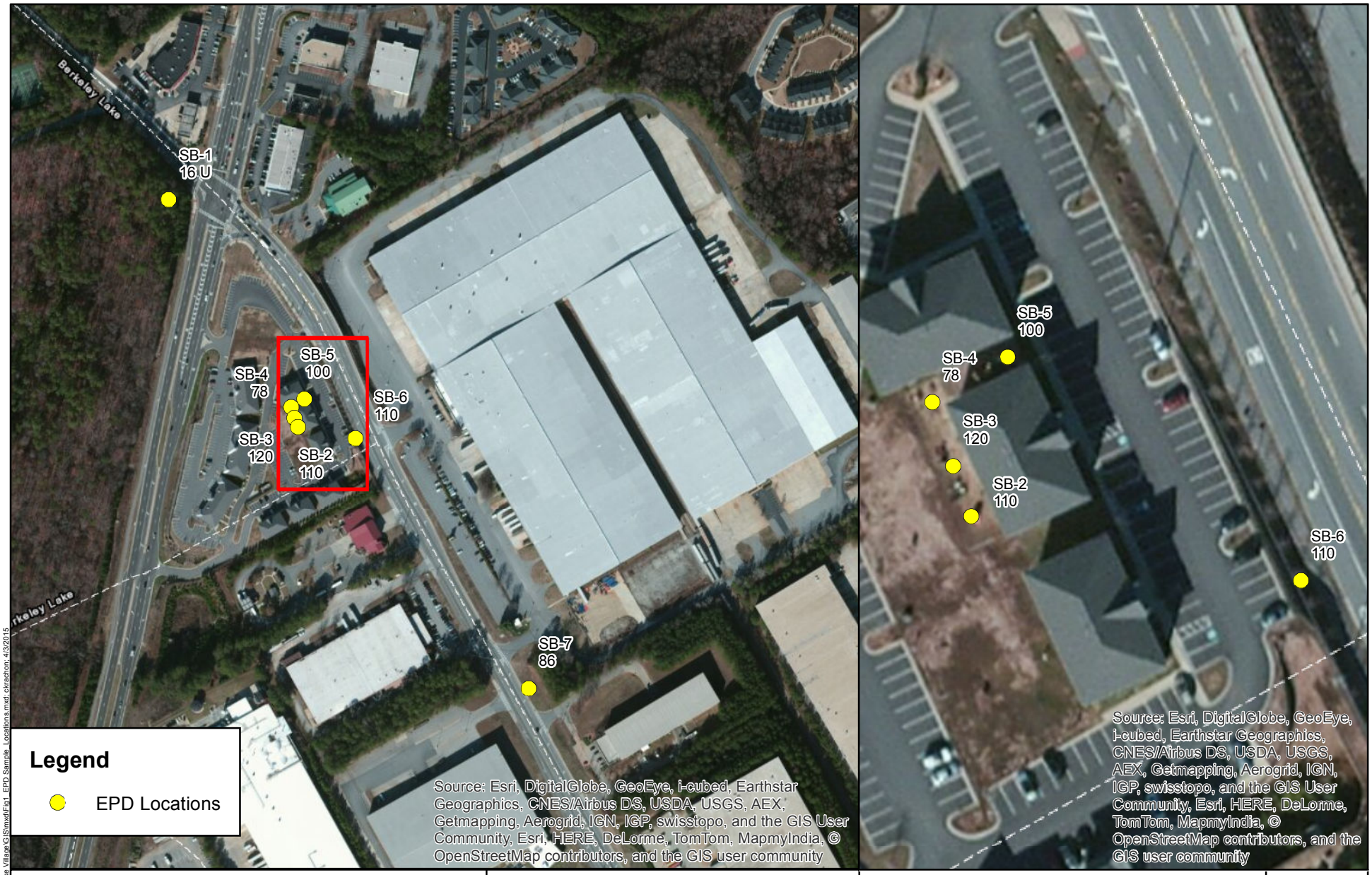
Kennesaw, Georgia

03-April-2015

Figure

2

N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig2_Site Map.mxd dkragnon 4/9/2015



0 250 500 1,000 Feet

Arsenic in Soil, August 2013 (mg/kg)

Berkeley Lake Village
Duluth, Georgia

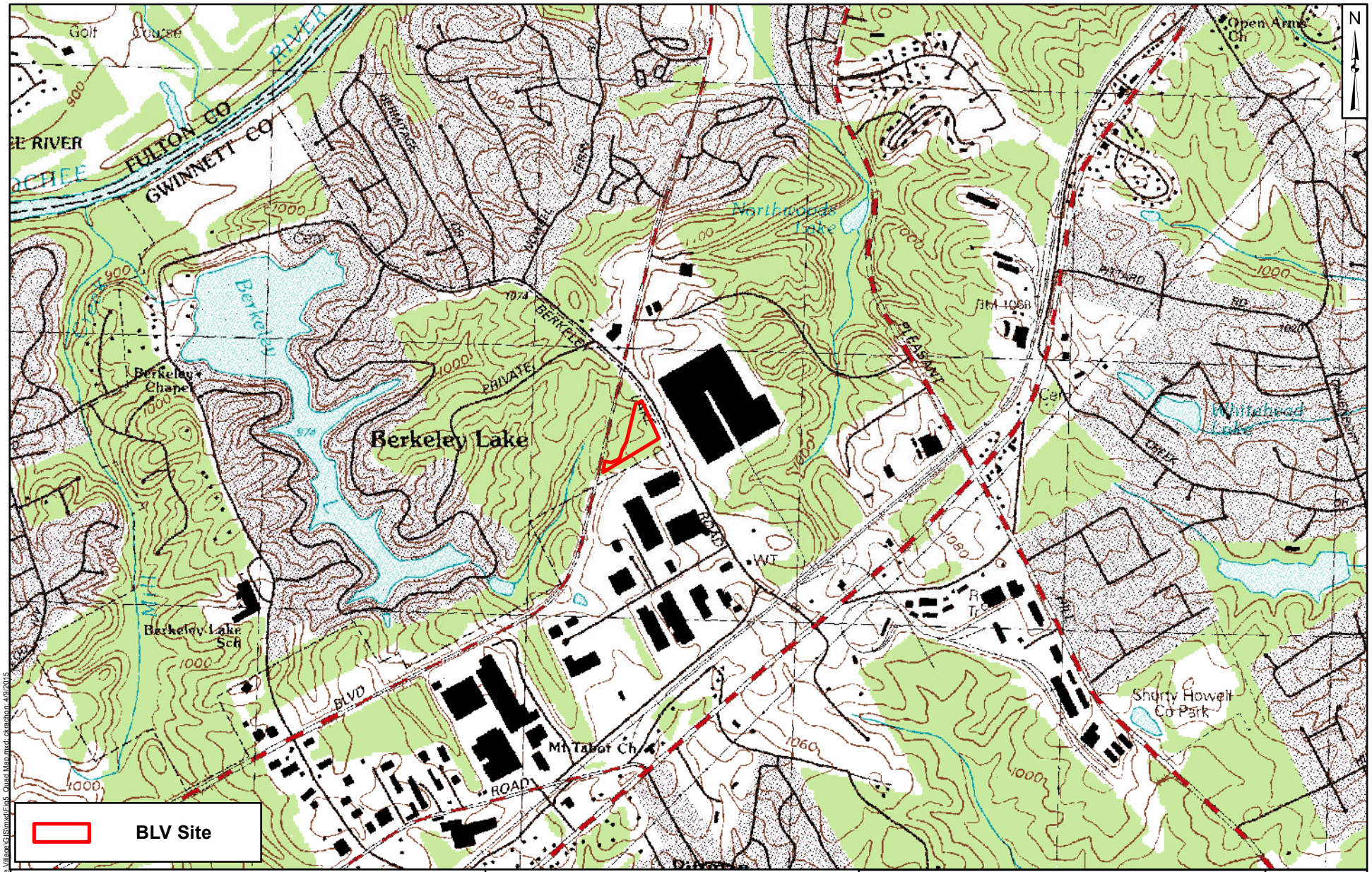
Geosyntec consultants

Kennesaw, Georgia

03-April-2015

Figure 3

N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig1_EPD Sample_Locations.mxd; ckrachon; 4/3/2015



Norcross Quadrangle

Berkeley Lake Village
Duluth, Georgia

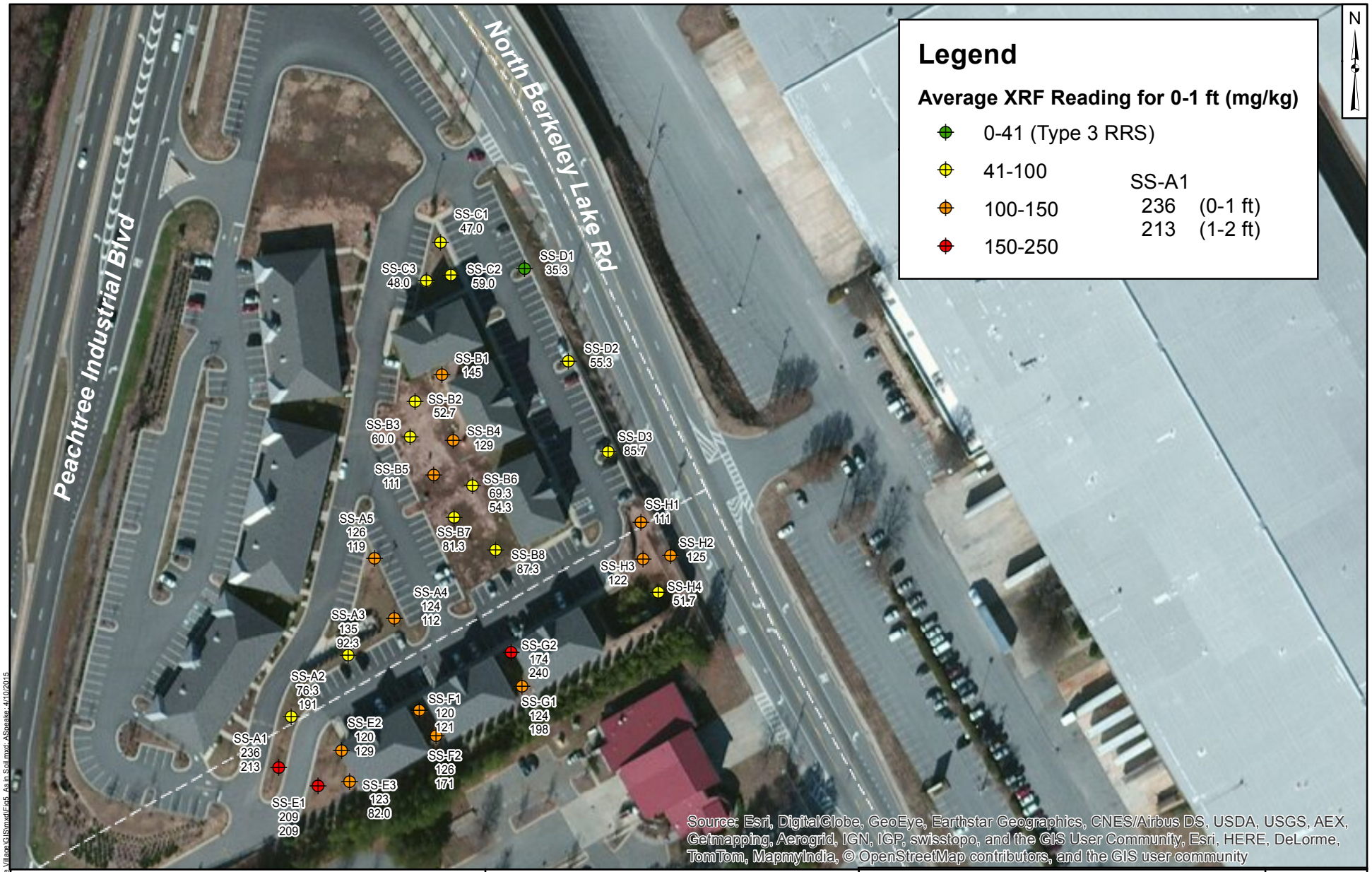
Geosyntec consultants

Kennesaw, Georgia

03-April-2015

Figure **4**

N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig5_Quad Map.mxd, dcranton 4/9/2015



N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig5_As in Soil.mxd ASneake 4/10/2015

0 200 400 Feet

Arsenic in Soil by XRF

Berkeley Lake Village
Duluth, Georgia

Geosyntec consultants

Kennesaw, Georgia

10-April-2015

Figure **5**

1955 Aerial Imagery

Berkeley Lake Village
Duluth, Georgia

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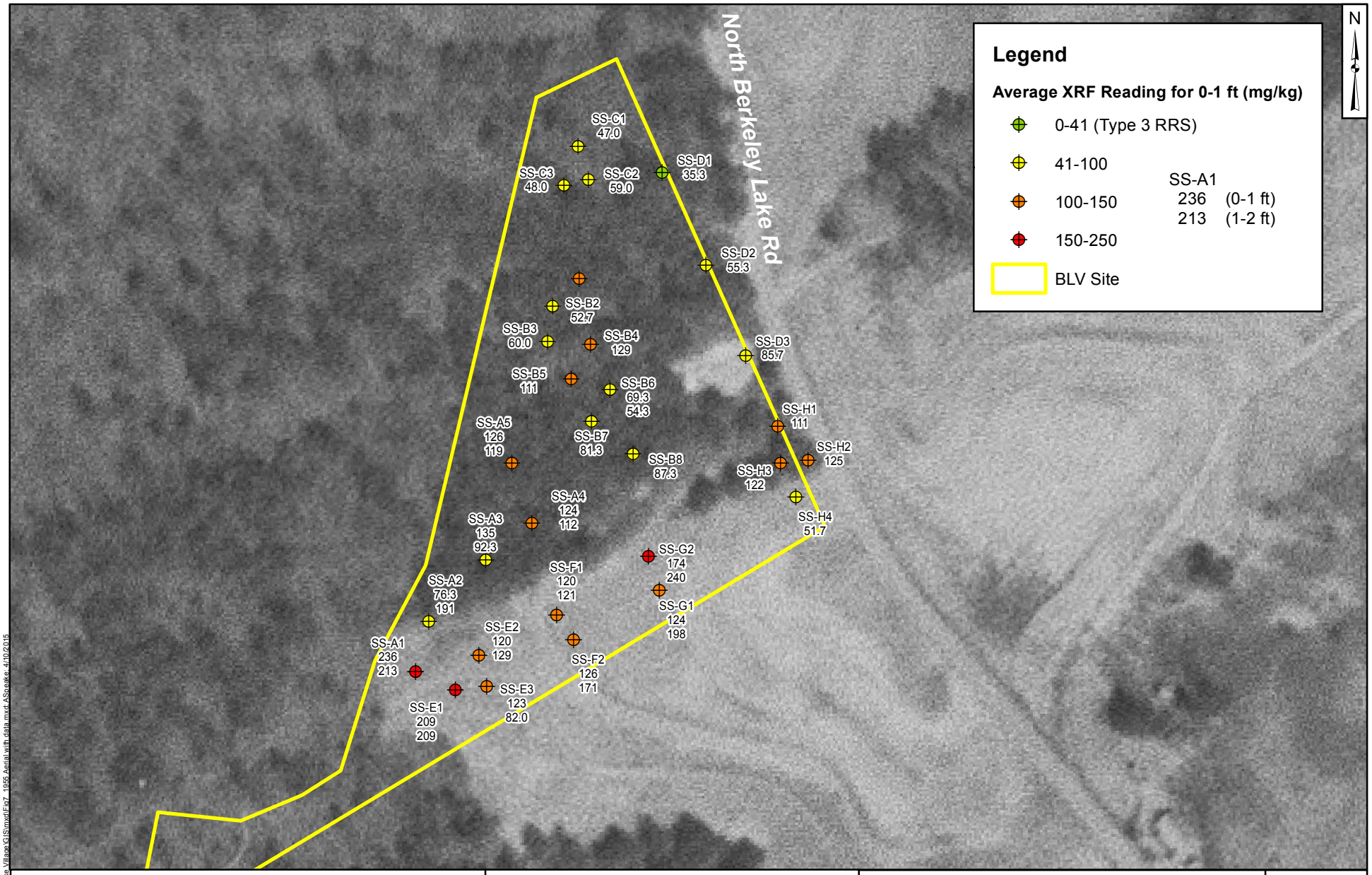
Kennesaw, Georgia

03-April-2015

Figure 6

N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig4_1955 Aerial.mxd, ckrachon, 4/9/2015



N:\N\Northside Bank\Berkeley Lake Village\GIS\mxd\Fig7_1955 Aerial with data.mxd ASpeake 4/10/2015

1955 Aerial Imagery with 2015 Soil Data

Berkeley Lake Village
Duluth, Georgia

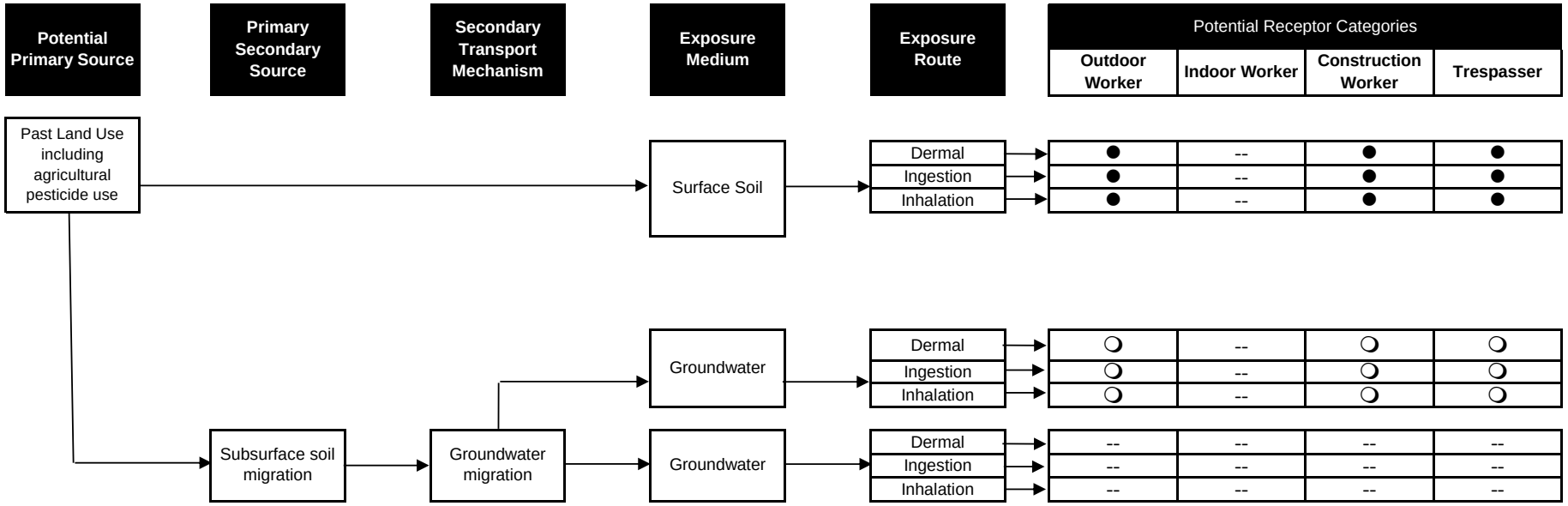
Geosyntec consultants

Kennesaw, Georgia

10-April-2015

Figure 7

Figure 8. Preliminary Conceptual Site Model
Berkeley Lake Village - Duluth, Georgia



Notes

● = Potentially complete exposure pathway

❍ = Potentially complete exposure pathway (future use)

-- = Incomplete or insignificant exposure pathway

TBD = To be determined

(1) Several industrial facilities are present along Terry and Dupree Creeks which may potentially release contaminants.

(2) Direct exposure pathways include ingestion of, dermal contact with, and respiration of COPCs in affected media; however, it should be noted that not all direct exposure pathways will be quantitatively evaluated in the ecological risk assessment.

(3) Off-site (i.e., non-OU1) media will be evaluated separately (e.g., sediment and surface water of Terry and Dupree Creeks).

	Task	Duration	January 2015	April 16 2015	Qtr 2 2015	Qtr 3 2015	Qtr 4 2015	Qtr 1 2016	Qtr 2 2016	Qtr 3 2016	Qtr 4 2016	Qtr 1 2017	Qtr 2 2017	Qtr 3 2017	Qtr 4 2017	Qtr 1 2018	April 16 2018
1	**Complete horizontal delineation of soil**																
2	**Submit VRP Application**			♦													
3	**Complete groundwater investigation**	6 months															
4	**Submit updated CSM and remediation plan**	6 months															
5	**Complete implementation of remediation plan**	18 months															
6	**Submit Compliance Status Report**	6 months															♦

Project Schedule

Berkeley Lake Village
Duluth, Georgia

Geosyntec consultants

Kennesaw, Georgia

April 2015

Figure 9

ATTACHMENT A

VRP Application Checklist

Voluntary Investigation and Remediation Plan Application Form and Checklist

VRP APPLICANT INFORMATION					
COMPANY NAME	Berkeley Lake Village Owners Association, LLC				
CONTACT PERSON/TITLE	Mr. Robbie Stephens, President, Berkeley Lake Village Owners Association				
ADDRESS	P.O. Box 283, 7742 Adairsville Hwy, Adairsville, GA, 30103				
PHONE	770-877-7926	FAX		E-MAIL	rstephens@northsidebankga.com

GEORGIA CERTIFIED PROFESSIONAL GEOLOGIST OR PROFESSIONAL ENGINEER OVERSEEING CLEANUP					
NAME	Peter J. de Haven			GA PE/PG NUMBER	28392
COMPANY	Geosyntec Consultants				
ADDRESS	1255 Roberts Blvd. Ste. 200, Kennesaw, GA, 30144				
PHONE	678-202-9500	FAX	678-202-9501	E-MAIL	pdehaven@geosyntec.com

APPLICANT'S CERTIFICATION

In order to be considered a qualifying property for the VRP:

(1) The property must have a release of regulated substances into the environment;
(2) The property shall not be:
- (A) Listed on the federal National Priorities List pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601.
- (B) Currently undergoing response activities required by an order of the regional administrator of the federal Environmental Protection Agency; or
- (C) A facility required to have a permit under Code Section 12-8-66.

(3) Qualifying the property under this part would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or similar authorization from the United States Environmental Protection Agency.
(4) Any lien filed under subsection (e) of Code Section 12-8-96 or subsection (b) of Code Section 12-13-12 against the property shall be satisfied or settled and released by the director pursuant to Code Section 12-8-94 or Code Section 12-13-6.

In order to be considered a participant under the VRP:
- (1) The participant must be the property owner of the voluntary remediation property or have express permission to enter another's property to perform corrective action.
- (2) The participant must not be in violation of any order, judgment, statute, rule, or regulation subject to the enforcement authority of the director.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, 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.

I also certify that this property is eligible for the Voluntary Remediation Program (VRP) as defined in Code Section 12-8-105 and I am eligible as a participant as defined in Code Section 12-8-106.

APPLICANT'S SIGNATURE			
APPLICANT'S NAME/TITLE (PRINT)	Robbie Stephens, President	DATE	4-15-15

QUALIFYING PROPERTY INFORMATION (For additional qualifying properties, please refer to the last page of application form)			
HAZARDOUS SITE INVENTORY INFORMATION (if applicable)			
HSI Number	10844	Date HSI Site listed	2/25/2014
HSI Facility Name	North Berkeley Lake Road Site	NAICS CODE	
PROPERTY INFORMATION			
TAX PARCEL ID	6290 232	PROPERTY SIZE (ACRES)	3.99
PROPERTY ADDRESS	North Berkeley Lake Rd NW		
CITY	Duluth	COUNTY	Gwinnett
STATE	GA	ZIPCODE	30096
LATITUDE (decimal format)	33.9834	LONGITUDE (decimal format)	-84.1702
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Berkeley Lake Village Owners Association	PHONE #	770-877-7926
MAILING ADDRESS	7741 Adairsville Hwy P.O. Box 283		
CITY	Adairsville	STATE/ZIPCODE	GA, 30103

ITEM #	DESCRIPTION OF REQUIREMENT	Location in VRP (i.e. pg., Table #, Figure #, etc.)	For EPD Comment Only (Leave Blank)
1.	**$5,000 APPLICATION FEE** IN THE FORM OF A CHECK PAYABLE TO THE GEORGIA DEPARTMENT OF NATURAL RESOURCES. (PLEASE LIST CHECK DATE AND CHECK NUMBER IN COLUMN TITLED "LOCATION IN VRP." PLEASE DO NOT INCLUDE A SCANNED COPY OF CHECK IN ELECTRONIC COPY OF APPLICATION.)	**Check No. 006352 dated April 16, 2015**	
2.	**WARRANTY DEED(S)** FOR QUALIFYING PROPERTY.	**Enclosed; Attachment A to VRP Plan**	
3.	**TAX PLAT** OR OTHER FIGURE INCLUDING QUALIFYING PROPERTY BOUNDARIES, ABUTTING PROPERTIES, AND TAX PARCEL IDENTIFICATION NUMBER(S).	**Enclosed; Figure 1**	
4.	**ONE (1) PAPER COPY AND TWO (2) COMPACT DISC (CD) COPIES** OF THE VOLUNTARY REMEDIATION PLAN IN A SEARCHABLE PORTABLE DOCUMENT FORMAT (PDF).	**Enclosed**	
5.	The VRP participant's initial plan and application must include, using all reasonably available current information to the extent known at the time of application, a graphic three-dimensional preliminary conceptual site model (CSM) including a preliminary remediation plan with a table of delineation standards, brief supporting text, charts, and figures (no more than 10 pages, total) that illustrates the site's surface and subsurface setting, the known or suspected source(s) of contamination, how contamination might move within the environment, the potential human health and ecological receptors, and the complete or incomplete exposure pathways that may exist at the site; the preliminary CSM must be updated as the investigation and remediation progresses and an up-to-date CSM must be included in each semi-annual status report submitted to the director by the participant; a **PROJECTED MILESTONE SCHEDULE** for investigation and remediation of the site, and	**Enclosed in the attached VRP Plan**	

	after enrollment as a participant, must update the schedule in each semi-annual status report to the director describing implementation of the plan during the preceding period. A Gantt chart format is preferred for the milestone schedule. The following four (4) generic milestones are required in all initial plans with the results reported in the participant's next applicable semi-annual reports to the director. The director may extend the time for or waive these or other milestones in the participant's plan where the director determines, based on a showing by the participant, that a longer time period is reasonably necessary:		
5.a.	Within the first 12 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern on property where access is available at the time of enrollment;	**To be completed per the VRP Plan**	
5.b.	Within the first 24 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern extending onto property for which access was not available at the time of enrollment;	**Off-site delineation not required per EPD meeting on 7/31/14**	
5.c.	Within 30 months after enrollment, the participant must update the site CSM to include vertical delineation, finalize the remediation plan and provide a preliminary cost estimate for implementation of remediation and associated continuing actions; and	**To be completed per the VRP Plan**	
5.d.	Within 60 months after enrollment, the participant must submit the compliance status report required under the VRP, including the requisite certifications.	**To be completed per the VRP Plan**	
6.	**SIGNED AND SEALED PE/PG CERTIFICATION** AND SUPPORTING DOCUMENTATION: "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/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists 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 attached a monthly summary of hours invoiced and 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." Peter J. de Haven, PE #28392 _____ Printed Name and GA PE/PG Number Date _____ Signature and Stamp		

ADDITIONAL QUALIFYING PROPERTIES (COPY THIS PAGE AS NEEDED)

PROPERTY INFORMATION			
TAX PARCEL ID		PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS			
CITY		COUNTY	
STATE		ZIPCODE	
LATITUDE (decimal format)		LONGITUDE (decimal format)	
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)		PHONE #	
MAILING ADDRESS			
CITY		STATE/ZIPCODE	

PROPERTY INFORMATION			
TAX PARCEL ID		PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS			
CITY		COUNTY	
STATE		ZIPCODE	
LATITUDE (decimal format)		LONGITUDE (decimal format)	
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)		PHONE #	
MAILING ADDRESS			
CITY		STATE/ZIPCODE	

PROPERTY INFORMATION			
TAX PARCEL ID		PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS			
CITY		COUNTY	
STATE		ZIPCODE	
LATITUDE (decimal format)		LONGITUDE (decimal format)	
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)		PHONE #	
MAILING ADDRESS			
CITY		STATE/ZIPCODE	

ATTACHMENT B

Warranty Deeds

FILED AND RECORDED
CLERK SUPERIOR COURT
GWINNETT COUNTY GA

2014 AUG 26 PM 2:00

RICHARD ALEXANDER, CLERK

BK53096 PG0412

After Recording Return To:

Clinton Taw Cole, Esq.
Cole, LLC
1993 Grand Prix Dr NE
Atlanta, Georgia 30345

NOTE TO CLERK:
Please cross-reference to
Deed Book 49576, Page 540
Gwinnett County, Georgia Records.

AFFIDAVIT

North Berkeley Lake Village Owners Association, Inc.
North Berkeley Lake Road Site - HSI No. 10844

Tract B Property: All that tract or parcel of land lying and being in Land Lots 267 and 290, 6th District, Gwinnett County, Georgia, and being more particularly described as Tract B on Exhibit "A" (attached hereto and incorporated herein by reference), less and except the property described on Exhibit "B" (attached hereto and incorporated herein by reference).

The Tract B Property described above and located in Duluth, Gwinnett County, Georgia has been listed on the State's Hazardous Site Inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law.

IN WITNESS WHEREOF, this document has been signed and sealed by North Berkeley Lake Village Owners Association, Inc. this 13th day of August, 2014.

Signed, sealed and delivered
in the presence of:

Eileen Howell
Unofficial Witness

North Berkeley Lake Village Owners Association, Inc.

By: Robbie Stephens
Title: President
(CORPORATE SEAL)

Personally appeared before the undersigned authority, Robbie Stephens (the affiant) who on oath states that he is an officer of North Berkeley Lake Village Owners Association, Inc. with the title designated hereinabove; that he is fully authorized to execute the within and above instrument on behalf of North Berkeley Lake Village Owners Association, Inc. and thereby bind North Berkeley Lake Village Owners Association, Inc. thereto; and that the facts stated, and the representations and warranties made by North Berkeley Lake Village Owners Association, Inc. in the within and foregoing instrument are true and correct.

Sworn to and subscribed before me this 15th day of August, 2014.

Lynsey Santora
Notary Public
My commission expires: 12-10-16

LYNSEY SANTORA
MY COMMISSION
NOTARY
PUBLIC
EXPIRES
12-10-2016
BARTOW COUNTY, GEORGIA

0065717

EXHIBIT "A"

LAND DESCRIPTION
TRACT B

ALL that tract or parcel of land, lying and being in Land Lot 290 of the 6th Land District, Gwinnett County, Georgia, containing 3.998 acres of land, more or less, and being more particularly described as follows:

BEGINNING at a point at the intersection of the Land Lot Line common to Land Lots 267 and 290 and the easterly margin of the right-of-way of Peachtree Industrial Boulevard (revised right-of-way with varying width), being the TRUE POINT OF BEGINNING; thence along the easterly margin of the right-of-way of Peachtree Industrial Boulevard North 11 degrees 51 minutes 32 seconds East, 136.97 feet to a point; thence departing said right-of-way, South 78 degrees 14 minutes 51 seconds East, 53.73 feet to a point; thence 83.34 feet along the arc of a curve to the left having a radius of 115.00 feet, chord bearing of North 80 degrees 59 minutes 26 seconds East and chord distance of 81.53 feet to a point; thence North 60 degrees 13 minutes 44 seconds East, 73.40 feet to a point; thence North 13 degrees 12 minutes 36 seconds East, 148.08 feet to a point; thence North 33 degrees 12 minutes 36 seconds East, 70.90 feet to a point; thence North 13 degrees 11 minutes 48 seconds East, 443.75 feet to a point; thence North 60 degrees 53 minutes 58 seconds East, 83.00 feet to a point on the southwesterly margin of the right-of-way of Berkeley Lake Road (revised right-of-way of variable width); thence along the southwesterly margin of the right-of-way of Berkeley Lake Road the following courses and distances: South 33 degrees 32 minutes 04 seconds East, 25.40 feet to a point; South 33 degrees 15 minutes 39 seconds East, 72.86 feet to a point; South 23 degrees 05 minutes 08 seconds East, 210.23 feet to a point; 200.30 feet along the arc of a curve to the left having a radius of 2914.79 feet, chord bearing of South 25 degrees 00 minutes 04 seconds East and chord distance of 200.26 feet to a point on the Land Lot Line common to Land Lots 267 and 290; thence departing said right-of-way and along the Land Lot Line common to Land Lots 267 and 290 South 60 degrees 32 minutes 17 seconds West, 795.56 feet to the TRUE POINT OF BEGINNING.

LAND DESCRIPTION
TRACT C

ALL that tract or parcel of land, lying and being in Land Lot 290 of the 6th Land District, Gwinnett County, Georgia, containing 3.438 acres of land, more or less, and being more particularly described as follows:

BEGINNING at a point at the intersection of the Land Lot Line common to Land Lots 267 and 290 and the easterly margin of the right-of-way of Peachtree Industrial Boulevard (revised); thence along the easterly margin of the right-of-way of Peachtree Industrial Boulevard North 11 degrees 51 minutes 32 seconds East, 136.97 feet to the TRUE POINT OF BEGINNING; thence continuing along the margin of said right-of-way the following courses and distances: North 11 degrees 51 minutes 32 seconds East, 40.05 feet to a point; North 01 degree 39 minutes 51 seconds East, 50.34 feet to a point; North 13 degrees 12 minutes 40 seconds East, 493.97 feet to a point; South 76 degrees 47 minutes 20 seconds East, 4.00 feet to a point; North 13 degrees 12 minutes 36 seconds East, 50.00 feet to a point; North 12 degrees 36 minutes 17 seconds East, 77.32 feet to a point; thence departing said right-of-way, North 76 degrees 49 minutes 08 seconds West, 53.32 feet to a point; thence North 13 degrees 12 minutes 40 seconds East, 38.72 feet to a point; thence South 76 degrees 47 minutes 20 seconds East, 161.53 feet to a point; thence South 13 degrees 11 minutes 48 seconds West, 452.45 feet to a point; thence South 33 degrees 12 minutes 36 seconds West, 70.90 feet to a point; thence South 13 degrees 12 minutes 40 seconds West, 148.08 feet to a point; thence South 60 degrees 13 minutes 44 seconds West, 73.40 feet to a point; thence 83.34 feet along the arc of a curve to the right having a radius of 115.00 feet, chord bearing of South 80 degrees 59 minutes 26 seconds West and chord distance of 81.53 feet to a point; thence North 78 degrees 14 minutes 51 seconds West, 55.73 feet to the TRUE POINT OF BEGINNING.

LAND DESCRIPTION
TRACT D

ALL that tract or parcel of land, lying and being in Land Lot 267 of the 6th Land District, Gwinnett County, Georgia, containing 1.284 acres of land, more or less, and being more particularly described as follows:

BEGINNING at a point at the intersection of the Land Lot Line common to Land Lots 267 and 290 and the easterly margin of the right-of-way of Peachtree Industrial Boulevard (revised right-of-way with varying width); thence along the easterly margin of the right-of-way of Peachtree Industrial Boulevard and the Land Lot Line common to Land Lots 267 and 290 North 60 degrees 32 minutes 17 seconds East, 23.57 feet to the TRUE POINT OF BEGINNING; thence continuing along the Land Lot Line North 60 degrees 32 minutes 17 seconds East, 202.56 feet to a point; thence departing the Land Lot Line, South 28 degrees 52 minutes 45 seconds East, 189.62 feet to a point; thence South 61 degrees 15 minutes 00 seconds West, 375.49 feet to a point on the easterly margin of the right-of-way of Peachtree Industrial Boulevard; thence along the margin of said right-of-way North 13 degrees 04 minutes 30 seconds East, 258.68 feet to the TRUE POINT OF BEGINNING.

EXHIBIT "B"
LESS AND EXCEPT PROPERTIES

1. The properties within Tract B that are identified as Future Building 1, Future Building 2, Future Building 3, Future Building 4, Future Building 5, Building 7, Building 8 and Building 9 on the Final Plat for Berkeley Lake Village recorded in Plat Book 121, page 35, Gwinnett County, Georgia records.

2. All the property submitted to that certain Declaration of Condominium for Berkeley Lake Village Retail Buildings Condominium, recorded in Deed Book 49383, page 544 Gwinnett County, Georgia records (the "Condominium Declaration"), including, without limitation, Retail Building Parcels 10, 11 and 12 of the Berkeley Lake Village, as defined in the Condominium Declaration.

ATTACHMENT C

Calculation of Residential and Non-Residential Risk Reduction Standards

Geosyntec consultants

Technical Memorandum

Date:	10 April 2015
Subject:	Calculation of Residential and Non-Residential Risk Reduction Standards Berkeley Lake Village Owners Association Site, Duluth, Georgia HSI #10844

Geosyntec Consultants, Inc. (Geosyntec) has prepared this memorandum which describes the development of Residential and Non-Residential Risk Reduction Standards (RRS) for soils and groundwater at the Berkeley Lake Village site located at 3351 North Berkeley Lake Rd NW in the City of Duluth, Gwinnett County, Georgia. RRS are soil concentrations which are unlikely to result in adverse effects to human health as a result of soil ingestion and/or inhalation of volatiles and particulates.

RRS for soil were developed for Type 1 Default Residential, Type 2 Site-Specific Residential, Type 3 Default Non-Residential (i.e., commercial/industrial), Type 4 Site-Specific Non-Residential, and Type 5 Site-Specific Non-Residential (construction worker scenario) land use in accordance with the Georgia Environmental Protection Division (GAEPD) Hazardous Site Response Act (HSRA), Chapter 391-3-19-.07 (GAEPD, 1999).

RRS values were developed for all constituents that have been detected in soil samples collected at the property (**Table 2**), which includes arsenic.

RAGS Part B Equations and Exposure Factors

Four equations are used for the derivation of risk-based concentrations (RBCs) according to Rule §391-3-19. The equations are presented in the USEPA's Risk Assessment Guidance for Superfund (RAGS), Part B document (USEPA, 1991). The residential and non-residential receptors exposure factors used in these equations are shown in **Table 1**.

The direct exposure pathway calculations for the "site-specific" residential (Type 2) and non-residential (Type 4) RRS utilize exposure assumptions provided in recent guidance from the United States Environmental Protection Agency (USEPA) entitled, *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER 9200.1-120* (USEPA, 2014a), where available. For specific factors not discussed in this USEPA guidance, the EPD HSRA defaults were used.

A Type 5 soil RRS was also calculated for the BLV site based on a short-term construction worker exposure scenario. Use of the Type 5 RRS value assumes that the exposed soils exceeding the higher of the Type 3 or Type 4 RRS would be removed and/or capped and appropriate land use controls (e.g., a deed restriction) would be used to eliminate exposures to contaminated for long-term receptors at the site

Equation 1 from RAGS, Part B calculates RBCs for carcinogens in drinking water. The two routes of exposure are direct ingestion by drinking and inhalation of volatiles:

$$C\left(\frac{mg}{L}\right) = \frac{TR \times BW \times AT}{EF \times ED \times \left[\left(CSF_{inhalation} \times K \times IR_{air}\right) + \left(CSF_{oral} \times IR_{water}\right)\right]} \quad \text{(RAGS, Eq. 1)}$$

Where: C = Risk-based concentration (mg/L)
TR = Target Risk (unitless)
BW = Body Weight (kg)
AT = Averaging Time (days)
EF = Exposure Frequency (days/yr)
ED = Exposure Duration (yr)
K = Volatilization Factor (unitless)
IR_{air} = Inhalation Rate of air (m^3/day)
IR_{water} = Ingestion Rate of water (L/day)
$CSF_{inhalation}$ = Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$
CSF_{oral} = Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$.

Equation 2 from RAGS, Part B calculates RBCs for non-carcinogens in drinking water. The two routes of exposure are direct ingestion by drinking and inhalation of volatiles:

$$C\left(\frac{mg}{L}\right) = \frac{THQ \times BW \times ED \times 365 \frac{days}{yr}}{EF \times ED \times \left[\left(\frac{1}{RfD_{inhalation}} \times K \times IR_{air}\right) + \left(\frac{1}{RfD_{oral}} \times IR_{water}\right)\right]} \quad \text{(RAGS, Eq. 2)}$$

Where[1]: THQ = Target Hazard Quotient (unitless)

[1] Definitions of parameters is limited to those not defined in previous equations

$RfD_{inhalation}$ = inhalation reference dose (mg/kg-day)
RfD_{oral} = oral reference dose (mg/kg-day).

Equation 6 from RAGS, Part B calculates RBCs for exposure to carcinogens in soil. The two routes of exposure are direct incidental ingestion by and inhalation of either particulate or volatiles:

$$C\left(\frac{mg}{kg}\right) = \frac{TR \times BW \times AT}{EF \times ED \times \left[\left(CSF_{oral} \times 10^{-6}\ \frac{kg}{mg} \times IR_{soil}\right) + \left(CSF_{inhalation} \times IR_{air} \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)\right)\right]}$$

(RAGS, Eq. 6)

Where: IR_{soil} = soil ingestion rate (mg/day)
VF = volatilization factor (m^3/kg)
PEF = particulate emission factor (m^3/kg).

Equation 7 from RAGS, part B calculates RBCs for exposure to non-carcinogens in soil. The two routes of exposure are direct incidental ingestion by and inhalation of either particulate or volatiles:

$$C\left(\frac{mg}{kg}\right) = \frac{THQ \times BW \times ED \times 365\ \frac{days}{yr}}{EF \times ED \times \left[\left(\frac{1}{RfD_{oral}} \times 10^{-6}\ \frac{kg}{mg} \times IR_{soil}\right) + \left(\frac{1}{RfD_{inhalation}} \times IR_{air} \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)\right)\right]}$$

(RAGS, Eq. 7)

The RBCs derived from RAGS, B, Equations 1 and 2 above are used to calculate target concentrations of chemicals in soil that could potentially contaminate groundwater via leaching from the soil. The equations presented in the *Supplemental Soil Screening Guidance* (USEPA, 2002) were utilized to calculate generic, conservative soil screening levels (SSLs) protective of the groundwater for drinking water. The equation utilized for these calculations is presented below:

$$C_{Soil} = C_{water} \cdot \left[K_d \cdot \frac{\theta_w + \theta_a \cdot H'}{\rho_b} \right]$$

Where: Cs = soil screening level (mg/kg) protective of groundwater
Cw = groundwater risk-based concentration (mg/L)
Kd = soil/water partitioning coefficient (L/kg; for organics, Kd = Koc × OC)
Koc = organic carbon partitioning coefficient (cm^3/g)
OC = fraction organic carbon content (unitless)
θw = water filled porosity (cm^3/cm^3)
θa = air filled porosity (cm^3/cm^3)
H′ = Henry's Law coefficient (unitless)
ρb = bulk density (kg/L).

Factors Used in the Derivation of the RRS

The RAGS, Part B equations described above require a variety chemical-specific physical/chemical factors and toxicity values. The EPD recommends the use of the USEPA's Regional Screening Level (RSL) tables as the source for these values (USEPA, 2014). The physical/chemical factors are presented in **Table 2**, and toxicity values are presented in **Table 3**.

The direct exposure pathway calculations for the all of the RRS values (Types 1 – 5) utilize a relative bioavailability (RBA) factor for arsenic in soil obtained from recent USEPA guidance entitled, *Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113* (USEPA, 2012).

The RRS calculations also require a consideration of the Maximum Contaminant Levels (MCLs) for drinking water established by the Georgia EPD and/or USEPA as well as chemical-specific regulatory criteria contained in Appendices I and III to the Hazardous Sites Response regulations.

Soil RRS Derivation

Soil RRS were calculated for the direct exposure pathways and for potential leachability. Soil RBC calculations for carcinogens and non-carcinogens were calculated for the worker receptor. Types 1 and 2 leachability SSLs for all of the detected chemicals were calculated using the residential groundwater RRS multiplied by the default dilution attenuation factor (DAF). Types 3 and 4 leachability SSLs for all of the detected chemicals were calculated using the nonresidential groundwater RRS multiplied by the default DAF. The final RRS for the

residential receptor is based on the higher value between the Type 1/2 SSL and the RBC values for cancer and non-cancer endpoints for the worker receptor, and the final RRS for the worker receptor is based on the higher value between the Type 3/4 SSL and the RBC values for cancer and non-cancer endpoints for the worker receptor. Type 5 soil values were calculated for the construction worker scenario and represent the lower of the RBC values for cancer and non-cancer endpoints.

The toxicity values, chemical-specific parameters, and cancer and non-cancer RRS equations were obtained from USEPA's RSL Tables (USEPA, 2014b); the commercial/industrial worker exposure assumptions are the GAEPD (1999) default non-residential values from Chapter 391-3-19-.07.

Table 4 presents the soil Type 1 RRS values that were calculated for each HSRA regulated parameter detected at the site. As detailed in the table, potential RRS include state standards, leachability-based values, as well as the calculated risk-based values.

Table 5 presents the soil Type 2 RRS values that were calculated for each HSRA regulated parameter detected at the site. As shown in the table, potential RRS include protection of groundwater values and calculated direct contact risk-based values, and where neither is available, the highest of Appendix III, Table 2 values, background or detection limit concentrations.

Table 6 presents the soil Type 3 RRS values that were calculated for each HSRA regulated parameter detected at the site. As detailed in the table, potential RRS include leachability-based values, state standards, as well as the calculated risk-based values.

Table 7 presents the soil Type 4 RRS values that were calculated for each HSRA regulated parameter detected at the site. As shown in the table, potential RRS include protection of groundwater values and calculated direct contact risk-based values, and where neither are available, Appendix III, Table 2 values.

Table 8 presents the soil Type 5 RRS values that were calculated for each HSRA regulated parameter detected at the site. As shown in the table, potential RRS include direct contact risk-based values, as the use of Type 5 RRS would assume that engineering controls would be in place such that exposure to groundwater via leaching from contaminated soil is not a concern.

Table 9 provides a summary of the final selected soil RRS values for the Berkeley Lake Village site. Residential RRS values are based on the higher of the Type 1 or Type 2 RRS values, and

non-residential RRS values are based on the higher of the Type 3 or Type 4 RRS values. Type 5 RRS values represent the lower of the RBC cancer and non-cancer values for the construction worker.

REFERENCES

GAEPD. 1999. Rules of the Georgia Department of Natural Resources – Environmental Protection Division, Chapter 391-3-19, Hazardous Site Response. Last amended June 2003.

USEPA. 1991. Risk Assessment Guidance for Superfund: Volume 1 – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). Office of Emergency and Remedial Response, EPA/540/R-92/003. December.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24. December.

USEPA. 2012. Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113. December.

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

USEPA. 2014. Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. November 2014 (as revised January 2015).

Table 1
Exposure Parameters for Residential and Non-Residential Receptors
Berkeley Lake Village, Gwinnett County, Georgia

Symbol	Parameter Definition	Units	Type 1 RRS: Residential	Type 2 RRS: Residential	Type 3 RRS: Non-Residential	Type 4 RRS: Non-Residential	Type 5 RRS: Construction Worker
IRs-a	Soil Ingestion Rate, Adult	mg/day	114	100	--	--	--
IRs-c	Soil Ingestion Rate, Child	mg/day	200	200	--	--	--
IRs-w	Soil Ingestion Rate, Worker	mg/day	--	--	50	50	100
IRair	Inhalation Rate (Adult & Child)	m^3/day	15	15	--	--	--
IRair	Inhalation Rate	m3/day	--	--	20	20	20
IRw-a	Water Ingestion Rate, Adult	L/day	2	2.5	--	--	--
IRw-c	Water Ingestion Rate, Child	L/day	1	0.78	--	--	--
IRw-w	Water Ingestion Rate, Worker	L/day	--	--	1	1	1
EF	Exposure Frequency (Adult & Child)	days/year	350	350	250	250	225
ED-a	Exposure Duration, Adult	years	30	26	--	--	--
ED-c	Exposure Duration, Child	years	6	6	--	--	--
ED-w	Exposure Duration, Worker	years	--	--	25	25	1
BW-a	Body Weight, adult	kg	70	80	--	--	--
BW-c	Body Weight, child	kg	15	15	--	--	--
BW-w	Body Weight, worker	kg	--	--	80	80	80
PEF	Particulate Emission Factor	m^3/kg	4.63E+09	4.63E+09	4.63E+09	4.63E+09	4.63E+09
VF	Volatilization Factor	m^3/kg	chemical-specific	chemical-specific	chemical-specific	chemical-specific	chemical-specific
CFs	Conversion Factor - Soil	kg/mg	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06
CFa	Conversion Factor - Air	µg/mg	1.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03
CFt	Conversion Factor - Time	day/hrs	0.042	0.042	0.042	0.042	0.042
TCRa	Target Cancer Risk - Class A&B Carcinogens	unitless	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05
TCRc	Target Cancer Risk - Class C Carcinogens	unitless	1.0E-04	1.0E-04	1.0E-04	1.0E-04	1.0E-04
THI	Target Hazard Index	unitless	1.0	1.0	1.0	1.0	1.0
ATC	Averaging Time - Cancer	days	25,550	25,550	25,550	25,550	25,550
ATN-a	Averaging Time - Noncancer, Adult (ED x 365)	days	10,950	9,490	--	--	--
ATN-c	Averaging Time - Noncancer, Child (ED x 365)	days	2,190	2,190	--	--	--
ATN-w	Averaging Time - Noncancer, Worker (ED x 365)	days	--	--	9,125	9,125	9,125

Notes:

Types 2, 4, and 5 exposure assumptions were based on the USEPA Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, OSWER 9200.1-113 (December 2014), where available; where not available, exposure assumptions were based on the recommended value for residential or non-residential scenarios as found in the Rules of GA DNR EPD, Chapter 391-3-19: Hazardous Site Response, Appendix III, Table 3, and HSRA Guidance (http://www.georgiaepd.org/Documents/hsraguideCSRRRS.html).

Table 2
Chemical-Specific Parameters
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Chemical-Specific Parameters [1]									
		Volatile	Di (cm^2/s)	Dei (cm^2/s)	HLC (atm-m^3/mol)	H' (unitless)	Koc (cm^3/g)	Kd (cm^3/g)	Kas (g soil/ cm^3 air)	α (cm^2/s)	VF [2] (m^3/kg)
Arsenic	7440-38-2	--	--	--	--	--	--	29	--	--	--

Notes:

(1) Chemical-specific parameters were obtained from: United States Environmental Protection Agency . Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. (Accessed 03-31-15).

(2) Volatilization factors (VFs) were calculated following RSL methodology:

$$VF\ (m^3/kg) = \frac{(LS \times V \times DH)}{AC} \times \frac{(\pi \times \alpha \times T)^{1/2}}{(2 \times D_{ei} \times E \times K_{as} \times 10^{-3}\ kg/g)}$$

Where:

LS = Length of side of contaminated area (45 m)
V = Wind speed in mixing zone (2.25 m/s)
DH = Diffusion height (2 m)
AC = Area of contamination (2.03×10^{-7} cm^2)

π = pi (3.14)
$\alpha = [D_{ei} \times E] / [E + (\rho_S)(1\text{-}E)/K_{as}]$ (cm^2/s)
T = Exposure interval ($7.9 \times 10^{+8}$ s) (=25 yrs)

D_{ei} = Effective diffusivity (D_i x E^0.33)
D_i = Molecular diffusivity (chemical-specific; cm^2/s)
E = Total soil porosity (0.35; unitless)
Kas = Soil-air partition coefficient (= HLC/Kd*41; g soil/cm^3 air)
HLC = Henry's law constant (chemical-specific; atm-m^3/mol)
Kd = Soil-water partition coefficient (= Koc x OC; cm^3/g)
Koc = Organic carbon partition coefficient (chemical-specific; cm^3/g)
OC = Soil organic carbon content fraction (0.002 unitless)

Table 3
Toxicity Values and Chemical-Specific Parameters
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Toxicity Values (1)											
		Cancer Class (2)	SFo (1) $(mg/kg\text{-}day)^{-1}$		IUR (1) $(\mu g/m^3)^{-1}$		RfDo (1) mg/kg-day		RfC (1) mg/m^3		RBA (3) unitless	
Arsenic	7440-38-2	A	1.5E+00	I	4.3E-03	I	3.0E-04	I	1.5E-05	C	6.0E-01	

Notes:

(1) Toxicity values were obtained from: United States Environmental Protection Agency . Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. (Accessed 03-31-15) Primary sources include: I - EPA's Integrated Risk Information System; P - Provisional Peer Reviewed Toxicity Values; C - California Environmental Protection Agency; E - Environmental Criteria and Assessment Office; H - Health Effects Assessment Summary Table; J - New Jersey Department of Environmental Protection; and X - Provisional Peer Reviewed Toxicity Values Screen Appendix (Frequently Asked Questions #27).

Sfo = Oral slope factor
RfDo = Oral reference dose
IUR = Inhalation unit risk factor
RfC = Inhalation reference concentration

(2) Cancer classes were obtained from: USEPA's Integrated Risk Information System (IRIS). http://www.epa.gov/iris/index.html. (Accessed 03-31-15).

A = Human carcinogen
B2 = Probable human carcinogen
C = Possible human carcinogen (note: GAEPD's target risk level of class C carcinogens is $1x10^{-4}$)
D = Not classifiable as to human carcinogenicity

(3) Relative bioavailability factor was obtained from the USEPA *Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil*, OSWER 9200.1-113 (December 2012).

Table 4
Calculation of Type 1 Soil RRS Values
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Units	Appendix III, Table 2 [1]	Protection of Groundwater Values [2]				Risk-Based Values [3]			Selected Type 1 Soil RRS Values [4]	
				Soil NC [2i]	Type I GWx100 [2ii]	TCLP [2iii]	Maximum Value [2]	Noncancer Endpoint [3i]	Cancer Endpoint [3ii]	Minimum Value [3]	Type 1	Basis
Arsenic	7440-38-2	mg/kg	20.0	41	5.0	--	41	319	17	17	20	App. III, Table 2

Notes:

1. Section (6)(c) Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the concentrations listed in Table 2 of Appendix III (metals only).

2. Section (6)(c)(1) Concentrations which will not cause contamination of groundwater at levels which exceed Type I Groundwater criteria, determined as the highest of the soil concentrations in Items (i) - (ii) below:

   (i) Soil concentrations in Appendix I, excluding any values given in square brackets;

   (ii) Multiplication of Type 1 groundwater concentration criteria by factor of 100; and

   (iii) Demonstration through the use of the Toxicity Characteristic Leaching Procedure, SW-846 Method 1311, or other approved method, that a concentration in soil will not generate leachate concentrations that exceed Type 1 groundwater concentration criteria.

3. Section (6)(c)(2) Concentrations in surface soil shall meet the criteria of item 2 above and, in addition, shall not exceed the lower of the concentrations defined in items below.

   (i) Concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates. These concentrations were determined using Equation 7 of RAGS, Part B (EPA) and the and standard residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

   (ii) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} (10^{-4} for class C carcinogens) via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 of RAGS, Part B (EPA) and standard non-residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

4. HSRA Type 1 Criteria for soil were determined as the concentration listed in Table 2 of Appendix III or, if not available, the minimum of the concentrations defined in Sections (6)(c)(1)-(3) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19-.07.

Table 5
Calculation of Site-Specific Type 2 Soil RRS
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Protection of Groundwater Values [1]		Risk-Based Values [2]					Selected Type 2 RRS Values [3]	
		Higher of Type 1/2 GW RRS	Type 2 SSL Protection of GW [1i]	Adult Noncancer Endpoint [2i]	Adult Cancer Endpoint [2ii]	Child Noncancer Endpoint [2i]	Child Cancer Endpoint [2ii]	Min. Risk Value [2]	Type 2 RRS	Basis
		(mg/L)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	7440-38-2	0.01	5.8	416	25	39	10	10	5.8	Leachability

Notes:

1. Section (7)(c)(1) Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not cause contamination in groundwater at levels which exceed Type 1 or 2 groundwater concentration criteria, as described in Rule 391-3-19-07(7)(c).

(i) These concentrations were determined using the Target Soil Leachate Concentration (Cw = GW RRS * DAF) to determine the Type 1/2 SSL, using Equation 4-10 of the Supplemental SSG (USEPA 2002) (p. 4-28):
SSL = Cw*(Kd+((0w+0a*H')/pb))

2. Section (7)(c)(2) Concentrations in soil shall not exceed the lower of the concentrations defined in items below.

(i) Concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates. These concentrations were determined using Equation 7 from RAGS, Part B, and the and site-specific residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

(ii) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site-specific residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

3. HSRA Type 2 Criteria for soil were determined as the minimum of the concentrations defined in Sections (7)(c)(1)-(4) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19-.07, or for those substances for which calculations cannot be made, the highest of the concentrations in Table 2 of Appendix III, background concentrations, or detection limit concentrations.

Table 6
Calculation of Type 3 Soil RRS Values
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Units	Protection of Groundwater Values [1]				Risk-Based Values [3]			Selected Type 3 Soil RRS Values [3]			
			Soil NC [1ia]	Type I GWx100 [1ib]	Type I Soil Criteria [1ii]	Maximum Value [1]	Noncancer Endpoint [2i]	Cancer Endpoint [2ii]	Minimum Value [2]	Type 3 (<2 ft)	Basis	Type 3 (>2 ft)	Basis
Arsenic	7440-38-2	mg/kg	41	5.0	20	41	1012	63	63	41	Soil NC	41	Soil NC

Notes:

1. Section (8)(d)(1) Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not exceed the higher of items (i) through (iii) below:

(i) Concentrations described in Item 1 of Rule 391-3-19-.07(6)(c)

(ia) Soil concentrations in Appendix I, excluding any values given in square brackets;

(ib) Multiplication of Type 1 groundwater concentration criteria by factor of 100; and

(ii) Concentrations listed in Table 2 of Appendix III (metals only).

2. Section (8)(d)(2) Concentrations in surface soil shall meet the criteria of item 2 above and, in addition, shall not exceed the lower of the concentrations defined in items below.

particulates. These concentrations were determined using Equation 4.2.1 of the RSL User's Guide (EPA, 2009) and the and standard non-residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

(ii) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} (10^{-4} for class C carcinogens) via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 4.2.2 of the RSL User's Guide (EPA, 2009) and standard non-residential

3. HSRA Type 3 Criteria for soil were determined as the minimum of the concentrations defined in Sections (8)(d)(1) and (8)(d)(2) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19-.07.

Table 7
Calculation of Site-Specific Type 4 Soil RRS
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Protection of Groundwater Values [1]		Risk-Based Values [2]			Selected Type 4 RRS Values [3]	
		Higher of Type 3/4 GW RRS (mg/L)	Type 4 SSL Protection of GW [1i] (mg/kg)	Noncancer Endpoint [2i] (mg/kg)	Cancer Endpoint [2ii] (mg/kg)	Min. Risk Value [2] (mg/kg)	Type 4 RRS (mg/kg)	Basis (mg/kg)
Arsenic	7440-38-2	0.01	5.8	1156	73	73	5.8	Leachability

Notes:

1. Section (9)(d)(1) Concentrations at any point above the uppermost groundwater zone in soil that has been affected by a release shall not cause contamination in groundwater at levels which exceed Type 3 or 4 groundwater concentration criteria, as described in Rule 391-3-19-07(9)(d).

   (i) These concentrations were determined using the Target Soil Leachate Concentration (Cw = GW RRS * DAF) to determine the Type 4 SSL, using Equation 4-10 of the Supplemental SSG (USEPA 2002) (p. 4-28): SSL = Cw*(Kd+((0w+0a*H')/pb))

2. Section (9)(d)(2) Concentrations in surface soil shall meet the criteria of item 2 above and, in addition, shall not exceed the lower of the concentrations defined in items below.

   (i) Concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates. These concentrations were determined using Equation 6 from RAGS, Part B, and the and site-specific non-residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

   (ii) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site-specific non-residential exposure assumptions in Table 3 of Appendix III of Rule 391-3-19-.07.

3. HSRA Type 4 Criteria for soil were determined as the minimum of the concentrations defined in Sections (8)(d)(1) and (8)(d)(2) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19-.07.

Table 8
Calculation of Site-Specific Type 5 Soil RRS
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Risk-Based Values [1]			Selected Type 5 RRS Values [2]	
		Noncancer Endpoint (2i) (mg/kg)	Cancer Endpoint (2ii) (mg/kg)	Min. Risk Value (2) (mg/kg)	Type 4 RRS (mg/kg)	Basis (mg/kg)
Arsenic	7440-38-2	16141	1009	1009	1009	CW, Cancer Risk

Notes:

1. Section (10)(d) Remedial measures designed to achieve compliance with Type 5 standards shall be consistent with the general requirements of Rule 391-3-19-.07(10)(a) and meet the following performance criteria:

(1) Carcinogens. For carcinogens, the measures shall be expected to permanently prevent exposures which exceed the upper bound on an estimated excess cancer risk of 10-5 (10-4 for Class C carcinogens) for individual carcinogenic substances and individual exposure pathways. The cumulative excess cancer risk for multiple carcinogenic substances and exposure pathways shall not be greater than 10-5.

population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of deleterious effect during a lifetime. Exposures shall not exceed a hazard quotient of one or a hazard index of one. The hazard quotient is the ratio of a single systemic toxicant exposure level for a specified time period to a

2. HSRA Type 5 Criteria for soil were determined as the minimum of the concentrations defined in Sections (10)(d)(1) and (10)(d)(2) of the Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Chapter 391-3-19-.07.

Table 9
Final Soil RRS Values
Berkeley Lake Village, Gwinnett County, Georgia

Detected Constituents	CAS No.	Units	Final Residential RRS Values [1]		Final NonResidential RRS Values [2]				Final Construction Worker RRS Value [3]	
			RRS	Basis	RRS (<2 ft)	Basis	RRS (>2 ft)	Basis	RRS	Basis
Arsenic	7440-38-2	mg/kg	20	App. III, Table 2	41	Soil NC	41	Soil NC	1009	Cancer Risk

Notes:

1. The Final Residential RRS represents the maximum of Type 1 and 2 RRS.
2. The Final Non-Residential RRS represents the maximum of Type 3 and 4 RRS.
3. The Final Construction Worker RRS represents the Type 5 RRS.

ATTACHMENT D

Laboratory Analytical Report

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-46768-2
Client Project/Site: Arsenic

For:
Geosyntec Consultants, Inc.
1255 Roberts Blvd, NW
Suite 200
Kennesaw, Georgia 30144

Attn: Ms. Cristin C Krachon

Authorized for release by:
2/10/2015 10:58:52 AM

John McFadden, Project Manager I
(330)497-9396
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Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-46768-2

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Geosyntec Consultants, Inc.

Project: Arsenic

Report Number: 240-46768-2

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 some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 1/29/2015 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.3º C and 3.9º C.

TCLP METALS (ICP)

Sample DRUM-01 (240-46768-46) was analyzed for TCLP metals (ICP) in accordance with EPA SW-846 Methods 1311/6010C. The sample was leached on 02/03/2015, prepared on 02/04/2015, and analyzed on 02/05/2015.

Arsenic was detected in method blank LB 240-166590/1-B at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. Aresnic was not detected in the associated sample at the method detection limit, therefore, the sample result was not affected.

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

TOTAL METALS (ICP)

Samples SS-E2 (1-2) (240-46768-4), SS-F2 (1-2) (240-46768-10), SS-A3 (1-2) (240-46768-20), SS-D1 (0-1) (240-46768-25), SS-D2 (0-1) (240-46768-26), SS-D3 (0-1) (240-46768-27), SS-C2 (0-1) (240-46768-29), SS-B6 (2-3) (240-46768-37), SS-H1 (0-1) (240-46768-41) and SS-G2 (2-3) (240-46768-45) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/03/2015 and analyzed on 02/05/2015.

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

Job ID: 240-46768-2 (Continued)

Laboratory: TestAmerica Canton (Continued)

TOTAL RECOVERABLE METALS (ICP)

Sample DRUM-01 (240-46768-46) was analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010C. The sample was prepared on 02/04/2015 and analyzed on 02/05/2015.

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

PERCENT SOLIDS

Samples SS-E2 (1-2) (240-46768-4), SS-F2 (1-2) (240-46768-10), SS-A3 (1-2) (240-46768-20), SS-D1 (0-1) (240-46768-25), SS-D2 (0-1) (240-46768-26), SS-D3 (0-1) (240-46768-27), SS-C2 (0-1) (240-46768-29), SS-B6 (2-3) (240-46768-37), SS-H1 (0-1) (240-46768-41) and SS-G2 (2-3) (240-46768-45) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 01/29/2015.

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

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-46768-4	SS-E2 (1-2)	Solid	01/27/15 13:19	01/29/15 09:20
240-46768-10	SS-F2 (1-2)	Solid	01/27/15 13:30	01/29/15 09:20
240-46768-20	SS-A3 (1-2)	Solid	01/27/15 14:03	01/29/15 09:20
240-46768-25	SS-D1 (0-1)	Solid	01/27/15 17:18	01/29/15 09:20
240-46768-26	SS-D2 (0-1)	Solid	01/27/15 17:20	01/29/15 09:20
240-46768-27	SS-D3 (0-1)	Solid	01/27/15 17:23	01/29/15 09:20
240-46768-29	SS-C2 (0-1)	Solid	01/27/15 17:28	01/29/15 09:20
240-46768-37	SS-B6 (2-3)	Solid	01/27/15 17:51	01/29/15 09:20
240-46768-41	SS-H1 (0-1)	Solid	01/27/15 18:02	01/29/15 09:20
240-46768-45	SS-G2 (2-3)	Solid	01/27/15 18:15	01/29/15 09:20
240-46768-46	DRUM-01	Water	01/27/15 17:00	01/29/15 09:20

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-E2 (1-2) — Lab Sample ID: 240-46768-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	130		1.7	0.48	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-F2 (1-2) — Lab Sample ID: 240-46768-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	210		1.7	0.46	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-A3 (1-2) — Lab Sample ID: 240-46768-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	89		1.8	0.48	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-D1 (0-1) — Lab Sample ID: 240-46768-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	27		1.9	0.51	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-D2 (0-1) — Lab Sample ID: 240-46768-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	50		1.5	0.42	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-D3 (0-1) — Lab Sample ID: 240-46768-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	95		1.8	0.50	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-C2 (0-1) — Lab Sample ID: 240-46768-29

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	57		1.7	0.45	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-B6 (2-3) — Lab Sample ID: 240-46768-37

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	63		2.1	0.59	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-H1 (0-1) — Lab Sample ID: 240-46768-41

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	95		1.7	0.46	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SS-G2 (2-3) — Lab Sample ID: 240-46768-45

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	160		1.9	0.52	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DRUM-01 — Lab Sample ID: 240-46768-46

This Detection Summary does not include radiochemical test results.

Client Sample ID: DRUM-01 (Continued)

Lab Sample ID: 240-46768-46

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	8.6	J	15	2.9	ug/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-E2 (1-2)
Date Collected: 01/27/15 13:19
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-4
Matrix: Solid
Percent Solids: 78.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	130		1.7	0.48	mg/Kg	☼	02/03/15 12:40	02/05/15 12:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	78		0.10	0.10	%			01/29/15 15:05	1
Percent Moisture	22		0.10	0.10	%			01/29/15 15:05	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-F2 (1-2)
Date Collected: 01/27/15 13:30
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-10
Matrix: Solid
Percent Solids: 81.0

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	210		1.7	0.46	mg/Kg	☼	02/03/15 12:40	02/05/15 12:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	81		0.10	0.10	%			01/29/15 15:05	1
Percent Moisture	19		0.10	0.10	%			01/29/15 15:05	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-A3 (1-2)
Date Collected: 01/27/15 14:03
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-20
Matrix: Solid
Percent Solids: 79.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	89		1.8	0.48	mg/Kg	☼	02/03/15 12:40	02/05/15 13:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	20		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-D1 (0-1)
Date Collected: 01/27/15 17:18
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-25
Matrix: Solid
Percent Solids: 72.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	27		1.9	0.51	mg/Kg	☼	02/03/15 12:40	02/05/15 13:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	73		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	27		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-D2 (0-1)
Date Collected: 01/27/15 17:20
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-26
Matrix: Solid
Percent Solids: 81.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	50		1.5	0.42	mg/Kg	☼	02/03/15 12:40	02/05/15 13:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	81		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	19		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-D3 (0-1)
Date Collected: 01/27/15 17:23
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-27
Matrix: Solid
Percent Solids: 77.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	95		1.8	0.50	mg/Kg	☼	02/03/15 12:40	02/05/15 13:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	77		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	23		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-C2 (0-1)
Date Collected: 01/27/15 17:28
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-29
Matrix: Solid
Percent Solids: 80.2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	57		1.7	0.45	mg/Kg	☼	02/03/15 12:40	02/05/15 13:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	20		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-B6 (2-3)
Date Collected: 01/27/15 17:51
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-37
Matrix: Solid
Percent Solids: 67.8

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	63		2.1	0.59	mg/Kg	☼	02/03/15 12:40	02/05/15 13:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	68		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	32		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-H1 (0-1)
Date Collected: 01/27/15 18:02
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-41
Matrix: Solid
Percent Solids: 75.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	95		1.7	0.46	mg/Kg	☼	02/03/15 12:40	02/05/15 13:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	75		0.10	0.10	%			01/29/15 16:17	1
Percent Moisture	25		0.10	0.10	%			01/29/15 16:17	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-G2 (2-3)
Date Collected: 01/27/15 18:15
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-45
Matrix: Solid
Percent Solids: 70.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	160		1.9	0.52	mg/Kg	☼	02/03/15 12:40	02/05/15 13:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	71		0.10	0.10	%			01/29/15 16:21	1
Percent Moisture	29		0.10	0.10	%			01/29/15 16:21	1

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: DRUM-01
Date Collected: 01/27/15 17:00
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-46
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**8.6**	**J**	15	2.9	ug/L		02/04/15 11:03	02/05/15 11:43	1

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0029	U	0.50	0.0029	mg/L		02/04/15 09:32	02/05/15 14:10	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-166542/1-A
Matrix: Solid
Analysis Batch: 166871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 166542

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.41	U	1.5	0.41	mg/Kg		02/03/15 12:40	02/05/15 12:27	1

Lab Sample ID: LCS 240-166542/2-A
Matrix: Solid
Analysis Batch: 166871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166542

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	188		mg/Kg		94	80 - 120

Lab Sample ID: 240-46768-4 MS
Matrix: Solid
Analysis Batch: 166871

Client Sample ID: SS-E2 (1-2)
Prep Type: Total/NA
Prep Batch: 166542

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	130		246	265	F1	mg/Kg	☼	56	75 - 125

Lab Sample ID: 240-46768-4 MSD
Matrix: Solid
Analysis Batch: 166871

Client Sample ID: SS-E2 (1-2)
Prep Type: Total/NA
Prep Batch: 166542

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	130		246	304	F1	mg/Kg	☼	71	75 - 125	14	20

Lab Sample ID: MB 240-166693/2-A
Matrix: Water
Analysis Batch: 166871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 166693

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0029	U	0.50	0.0029	mg/L		02/04/15 09:32	02/05/15 14:02	1

Lab Sample ID: LCS 240-166693/3-A
Matrix: Water
Analysis Batch: 166871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166693

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	2.18		mg/L		109	50 - 150

Lab Sample ID: MB 240-166676/1-A
Matrix: Water
Analysis Batch: 166871

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 166676

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.9	U	15	2.9	ug/L		02/04/15 08:55	02/05/15 08:44	1

Lab Sample ID: LCS 240-166676/2-A
Matrix: Water
Analysis Batch: 166871

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 166676

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2000	1980		ug/L		99	80 - 120

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Lab Sample ID: LB 240-166590/1-B
Matrix: Water
Analysis Batch: 166871

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 166693

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00389	J	0.50	0.0029	mg/L		02/04/15 09:32	02/05/15 13:50	1

Metals

Prep Batch: 166542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-4	SS-E2 (1-2)	Total/NA	Solid	3050B	
240-46768-4 MS	SS-E2 (1-2)	Total/NA	Solid	3050B	
240-46768-4 MSD	SS-E2 (1-2)	Total/NA	Solid	3050B	
240-46768-10	SS-F2 (1-2)	Total/NA	Solid	3050B	
240-46768-20	SS-A3 (1-2)	Total/NA	Solid	3050B	
240-46768-25	SS-D1 (0-1)	Total/NA	Solid	3050B	
240-46768-26	SS-D2 (0-1)	Total/NA	Solid	3050B	
240-46768-27	SS-D3 (0-1)	Total/NA	Solid	3050B	
240-46768-29	SS-C2 (0-1)	Total/NA	Solid	3050B	
240-46768-37	SS-B6 (2-3)	Total/NA	Solid	3050B	
240-46768-41	SS-H1 (0-1)	Total/NA	Solid	3050B	
240-46768-45	SS-G2 (2-3)	Total/NA	Solid	3050B	
LCS 240-166542/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 240-166542/1-A	Method Blank	Total/NA	Solid	3050B	

Leach Batch: 166590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-46	DRUM-01	TCLP	Water	1311	
LB 240-166590/1-B	Method Blank	TCLP	Water	1311	

Prep Batch: 166676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-46	DRUM-01	Total Recoverable	Water	3005A	
LCS 240-166676/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-166676/1-A	Method Blank	Total Recoverable	Water	3005A	

Prep Batch: 166693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-46	DRUM-01	TCLP	Water	3010A	166590
LB 240-166590/1-B	Method Blank	TCLP	Water	3010A	166590
LCS 240-166693/3-A	Lab Control Sample	Total/NA	Water	3010A	
MB 240-166693/2-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 166871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-4	SS-E2 (1-2)	Total/NA	Solid	6010C	166542
240-46768-4 MS	SS-E2 (1-2)	Total/NA	Solid	6010C	166542
240-46768-4 MSD	SS-E2 (1-2)	Total/NA	Solid	6010C	166542
240-46768-10	SS-F2 (1-2)	Total/NA	Solid	6010C	166542
240-46768-20	SS-A3 (1-2)	Total/NA	Solid	6010C	166542
240-46768-25	SS-D1 (0-1)	Total/NA	Solid	6010C	166542
240-46768-26	SS-D2 (0-1)	Total/NA	Solid	6010C	166542
240-46768-27	SS-D3 (0-1)	Total/NA	Solid	6010C	166542
240-46768-29	SS-C2 (0-1)	Total/NA	Solid	6010C	166542
240-46768-37	SS-B6 (2-3)	Total/NA	Solid	6010C	166542
240-46768-41	SS-H1 (0-1)	Total/NA	Solid	6010C	166542
240-46768-45	SS-G2 (2-3)	Total/NA	Solid	6010C	166542
240-46768-46	DRUM-01	TCLP	Water	6010C	166693
240-46768-46	DRUM-01	Total Recoverable	Water	6010C	166676
LB 240-166590/1-B	Method Blank	TCLP	Water	6010C	166693
LCS 240-166542/2-A	Lab Control Sample	Total/NA	Solid	6010C	166542

Metals (Continued)

Analysis Batch: 166871 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-166676/2-A	Lab Control Sample	Total Recoverable	Water	6010C	166676
LCS 240-166693/3-A	Lab Control Sample	Total/NA	Water	6010C	166693
MB 240-166542/1-A	Method Blank	Total/NA	Solid	6010C	166542
MB 240-166676/1-A	Method Blank	Total Recoverable	Water	6010C	166676
MB 240-166693/2-A	Method Blank	Total/NA	Water	6010C	166693

General Chemistry

Analysis Batch: 165818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-46768-4	SS-E2 (1-2)	Total/NA	Solid	Moisture	
240-46768-10	SS-F2 (1-2)	Total/NA	Solid	Moisture	
240-46768-20	SS-A3 (1-2)	Total/NA	Solid	Moisture	
240-46768-25	SS-D1 (0-1)	Total/NA	Solid	Moisture	
240-46768-26	SS-D2 (0-1)	Total/NA	Solid	Moisture	
240-46768-27	SS-D3 (0-1)	Total/NA	Solid	Moisture	
240-46768-29	SS-C2 (0-1)	Total/NA	Solid	Moisture	
240-46768-37	SS-B6 (2-3)	Total/NA	Solid	Moisture	
240-46768-41	SS-H1 (0-1)	Total/NA	Solid	Moisture	
240-46768-45	SS-G2 (2-3)	Total/NA	Solid	Moisture	

Client Sample ID: SS-E2 (1-2)

Lab Sample ID: 240-46768-4

Date Collected: 01/27/15 13:19

Matrix: Solid

Date Received: 01/29/15 09:20

Percent Solids: 78.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 12:35	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 15:05	SEM	TAL CAN

Client Sample ID: SS-F2 (1-2)

Lab Sample ID: 240-46768-10

Date Collected: 01/27/15 13:30

Matrix: Solid

Date Received: 01/29/15 09:20

Percent Solids: 81.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 12:56	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 15:05	SEM	TAL CAN

Client Sample ID: SS-A3 (1-2)

Lab Sample ID: 240-46768-20

Date Collected: 01/27/15 14:03

Matrix: Solid

Date Received: 01/29/15 09:20

Percent Solids: 79.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:00	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-D1 (0-1)

Lab Sample ID: 240-46768-25

Date Collected: 01/27/15 17:18

Matrix: Solid

Date Received: 01/29/15 09:20

Percent Solids: 72.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:12	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-D2 (0-1)

Lab Sample ID: 240-46768-26

Date Collected: 01/27/15 17:20

Matrix: Solid

Date Received: 01/29/15 09:20

Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:16	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: SS-D3 (0-1)

Lab Sample ID: 240-46768-27

Date Collected: 01/27/15 17:23
Matrix: Solid
Date Received: 01/29/15 09:20
Percent Solids: 77.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:21	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-C2 (0-1)

Lab Sample ID: 240-46768-29

Date Collected: 01/27/15 17:28
Matrix: Solid
Date Received: 01/29/15 09:20
Percent Solids: 80.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:25	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-B6 (2-3)

Lab Sample ID: 240-46768-37

Date Collected: 01/27/15 17:51
Matrix: Solid
Date Received: 01/29/15 09:20
Percent Solids: 67.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:29	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-H1 (0-1)

Lab Sample ID: 240-46768-41

Date Collected: 01/27/15 18:02
Matrix: Solid
Date Received: 01/29/15 09:20
Percent Solids: 75.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:33	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:17	SEM	TAL CAN

Client Sample ID: SS-G2 (2-3)

Lab Sample ID: 240-46768-45

Date Collected: 01/27/15 18:15
Matrix: Solid
Date Received: 01/29/15 09:20
Percent Solids: 70.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166542	02/03/15 12:40	DEE	TAL CAN
Total/NA	Analysis	6010C		1	166871	02/05/15 13:37	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	165818	01/29/15 16:21	SEM	TAL CAN

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Client Sample ID: DRUM-01
Date Collected: 01/27/15 17:00
Date Received: 01/29/15 09:20

Lab Sample ID: 240-46768-46
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			166590	02/03/15 17:40	DRJ	TAL CAN
TCLP	Prep	3010A			166693	02/04/15 09:32	WAL	TAL CAN
TCLP	Analysis	6010C		1	166871	02/05/15 14:10	KLC	TAL CAN
Total Recoverable	Prep	3005A			166676	02/04/15 11:03	WAL	TAL CAN
Total Recoverable	Analysis	6010C		1	166871	02/05/15 11:43	KLC	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Arsenic

TestAmerica Job ID: 240-46768-2

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-15 *
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15
Georgia	State Program	4	N/A	06-30-15
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	03-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15
New York	NELAP	2	10975	03-31-15 *
Ohio VAP	State Program	5	CL0024	10-31-15
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

0.0/C1.3
3.2/C3.9

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Andrew Speake	Lab PM: McFadden, John	Carrier Tracking No(s): Carrier	COC No: 240-25814-11278.1
Client Contact: Ms. Cristin Krachon	Phone: (678) 202-9500	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:
Address: 1255 Roberts Blvd, NW Suite 200	Due Date Requested:			
City: Kennesaw	TAT Requested (days): Standard			
State, Zip: GA, 30144				
Phone:	PO #: Purchase Order not required			
Email: ckrachon@geosyntec.com	WO #:			
Project Name: Arsenic	Project #: 24013578			
Site: BLOVA	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	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)	Arsenic 6010C	Total Number of Containers	Special Instructions/Note:
			Preservation Code:						
SS-E1 (0-1)	1/27/15	13:12	G	S			X		Hold for analysis
SS-E1 (1-2)	1/27/15	13:15	G	S			X		
SS-E2 (0-1)	1/27/15	13:17	G	S			X		
SS-E2 (1-2)	1/27/15	13:19	G	S			X		
SS-E3 (0-1)	1/27/15	13:21	G	S			X		
SS-E3 (1-2)	1/27/15	13:23	G	S			X		
SS-F1 (0-1)	1/27/15	13:25	G	S			X		
SS-F1 (1-2)	1/27/15	13:27	G	S			X		
SS-F2 (0-1)	1/27/15	13:29	G	S			X		
SS-F2 (1-2)	1/27/15	13:30	G	S			X		
SS-G1 (0-1)	1/27/15	13:39	G	S			X		

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 6 Months

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

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		1/28 1:12	GEOSYNTEC		1/28/15 1312	TA
2		1/28/15 1358	TA		1/29/15 9:20	TA
3						

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

Page 30 of 36
2/10/2015

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

0.6/C1.3

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Andrew Speake	Lab PM: McFadden, John	Carrier Tracking No(s): Carrier	COC No: 240-25814-11278.1
Client Contact: Ms. Cristin Krachon	Phone: (678) 202-9508	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:
Address: 1255 Roberts Blvd, NW Suite 200	Due Date Requested:			
City: Kennesaw	TAT Requested (days): Std			
State, Zip: GA, 30144				
Phone:	PO #: Purchase Order not required			
Email: ckrachon@geosyntec.com	WO #:			
Project Name: Arsenic	Project #: 24013578			
Site: BLOVA	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	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)	Arsenic 6010C	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SS-B1 (1-2)	1/27/15	13:41	G	S			X		Hold for analysis
SS-B2 (0-1)	1/27/15	13:43	G	S			X		
SS-B2 (1-2)	1/27/15	13:44	G	S			X		
SS-A1 (0-1)	1/27/15	13:46	G	S			X		
SS-A1 (1-2)	1/27/15	13:48	G	S			X		
SS-A2 (0-1)	1/27/15	13:55	G	S			X		
SS-A3 (1-2)	1/27/15	13:57	G	S			X		
SS-A3 (0-1)	1/27/15	14:01	G	S			X		
SS-A3 (1-2)	1/27/15	14:03	G	S			X		
SS-A4 (0-1)	1/27/15	14:06	G	S			X		
~~1/27/15~~			G	S			X		

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 6 Months

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

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	1/26 1:12	Geosyntec	[signature]	1/28/15 1312	DTA
2	[signature]	1/28/15 1358	DTA	Heather Lowe	01/28/15 9:20	TAL
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

0.6/C1.3

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Andrew Speake	Lab PM: McFadden, John	Carrier Tracking No(s): Carrier	COC No: 240-25814-11278.1
Client Contact: Ms. Cristin Krachon	Phone: (678) 202-9500	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:
Address: 1255 Roberts Blvd, NW Suite 200	Due Date Requested:			
City: Kennesaw	TAT Requested (days): std			
State, Zip: GA, 30144				
Phone:	PO #: Purchase Order not required			
Email: ckrachon@geosyntec.com	WO #:			
Project Name: Arsenic	Project #: 24013578			
Site: BLOVA	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	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)	Arsenic 6010C	Total Number of containers	Special Instructions/Note:
			Preservation Code						
SS-A4 (1-2)	1/27/15	14:10	G	S			X		Hold for analysis
SS-A5 (0-1)	1/27/15	14:12	G	S			X		
SS-A5 (1-2)	1/27/15	14:16	G	S			X		
SS-D1 (0-1)	1/27/15	17:18	G	S			X		
SS-D2 (0-1)	1/27/15	17:20	G	S			X		
SS-D3 (0-1)	1/27/15	17:23	G	S			X		
SS-C1 (0-1)	1/27/15	17:25	G	S			X		
SS-C2 (0-1)	1/27/15	17:28	G	S			X		
SS-C3 (0-1)	1/27/15	17:30	G	S			X		
SS-B1 (0-1)	1/27/15	17:32	G	S			X		
SS-B2 (0-1)	1/27/15	17:35	G	S			X		

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 6 Months

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 1/28 1:12	Company	Received by:	Date/Time: 1/28/15 13:12	Company
Relinquished by:	Date/Time: 1/28/15 1358	Company	Received by:	Date/Time: 01/29/15 9:00	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

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2/10/2015

C.G/C1.3

Chain of Custody Record

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Andrew Speake	Lab PM: McFadden, John	Carrier Tracking No(s): Carrier	COC No: 240-25814-11278.1
Client Contact: Ms. Cristin Krachon	Phone: (678) 202-9500	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:
Address: 1255 Roberts Blvd, NW Suite 200	Due Date Requested:			
City: Kennesaw	TAT Requested (days): Std			
State, Zip: GA, 30144				
Phone:	PO #: Purchase Order not required			
Email: ckrachon@geosyntec.com	WO #:			
Project Name: Arsenic	Project #: 24013578			
Site: BLOVA	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	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)	Arsenic 6010C	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SS-B3 (0-1)	1/27/15	17:38	G	S			X	1	Hold for analysis
SS-B4 (0-1)	1/27/15	17:42	G	S			X		
SS-B5 (0-1)	1/27/15	17:45	G	S			X		
SS-B6 (0-1)	1/27/15	17:47	G	S			X		
SS-B6 (2-3)	1/27/15	17:51	G	S			X		
SS-B7 (0-1)	1/27/15	17:53	G	S			X		
SS-B8 (0-1)	1/27/15	17:55	G	S			X		
SS-H2 (0-1)	1/27/15	17:59	G	S			X		
SS-H1 (0-1)	1/27/15	18:02	G	S			X		
SS-H3 (0-1)	1/27/15	18:05	G	S			X		
SS-H4 (0-1)	1/27/15	18:09	G	S			X		

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 6 Months

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

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		1/28 1:12	Geosyntec		1/28/15 1312	TA
2		1/28/15 1358	TA		1/28/15 9:20	TA
3						

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

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

0.6/C1.3

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Andrew Speaks	Lab PM: McFadden, John	Carrier Tracking No(s): Carrier	COC No: 240-25814-11278.1
Client Contact: Ms. Cristin Krachon	Phone: (678) 202-9500	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:
Address: 1255 Roberts Blvd, NW Suite 200	Due Date Requested:			
City: Kennesaw	TAT Requested (days): Std			
State, Zip: GA, 30144				
Phone:	PO #: Purchase Order not required			
Email: ckrachon@geosyntec.com	WO #:			
Project Name: Arsenic	Project #: 24013578			
Site: BLOVA	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	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)	Arsenic 6010 C	TCLP metals	Total Number of containers	Special Instructions/Note:
	Preservation Code:									
SS-A4 (2-3)	1/27/15	18:12	G	S			X		1	Hold for analysis
SS-B2 (2-3)	1/27/15	18:15	G	S			X		1	Hold for analysis
Drum-01	1/27/15	17:00	G	W			X	X	2	Hold for analysis

Cristin Krachon

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☒ Archive For 6 Months

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

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		1/28 1:12	Geosyntec		1/28/15 13:12	TA
2		1/28/15 1358	TA		1/28/15 9:40	TA
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

2/10/2015

TestAmerica Canton Sample Receipt Form/Narrative Login # : 446768
Canton Facility

Client Geosyntec Site Name Arsenic
Cooler Received on 11/29/15 Opened on 11/29/15
Cooler unpacked by: Heather Power
FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other mec
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN# 4 (CF +1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C ☒ See Multiple Cooler Form
   IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
   IR GUN# 8 (CF +0.7 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Did all bottles arrive in good condition (Unbroken)? Yes No
7. Could all bottle labels be reconciled with the COC? Yes No
8. Were correct bottle(s) used for the test(s) indicated? Yes No
9. Sufficient quantity received to perform indicated analyses? Yes No
10. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC425511
11. Were VOAs on the COC? Yes No
12. Were air bubbles >6 mm in any VOA vials? Yes No NA
13. Was a trip blank present in the cooler(s)? Yes No

Contacted PM Date by via Verbal Voice Mail Other
Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

Ref: SOP NC-SC-0005, Sample Receiving
L:\QAQC\QA Department\QA TARDIS\Document Control\Work Instructions\WI_QA use only\WI-NC-099M-110614 Cooler Receipt Form.doc djl

TestAmerica Multiple Cooler Receipt Form/Narrative **Login # :** 46768
Canton Facility

Cooler #	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
A701	8	0.6	1.3	Ice
Client	↓	3.2	3.9	↓

	after enrollment as a participant, must update the schedule in each semi-annual status report to the director describing implementation of the plan during the preceding period. A Gantt chart format is preferred for the milestone schedule. The following four (4) generic milestones are required in all initial plans with the results reported in the participant's next applicable semi-annual reports to the director. The director may extend the time for or waive these or other milestones in the participant's plan where the director determines, based on a showing by the participant, that a longer time period is reasonably necessary:		
5.a.	Within the first 12 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern on property where access is available at the time of enrollment;	**To be completed per the VRP Plan**	
5.b.	Within the first 24 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern extending onto property for which access was not available at the time of enrollment;	**Off-site delineation not required per EPD meeting on 7/31/14**	
5.c.	Within 30 months after enrollment, the participant must update the site CSM to include vertical delineation, finalize the remediation plan and provide a preliminary cost estimate for implementation of remediation and associated continuing actions; and	**To be completed per the VRP Plan**	
5.d.	Within 60 months after enrollment, the participant must submit the compliance status report required under the VRP, including the requisite certifications.	**To be completed per the VRP Plan**	
6.	**SIGNED AND SEALED PE/PG CERTIFICATION** AND SUPPORTING DOCUMENTATION: "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/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists 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 attached a monthly summary of hours invoiced and 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." PETER J. de HAVEN GA 28392 4/17/15 Printed Name and GA PE/PG Number Date Signature and Stamp		

PROFESSIONAL ENGINEER CERTIFICATION

I certify that I am a qualified engineer who has received a baccalaureate or post-graduate degree in the natural science or engineering, and have sufficient training and experience in environmental assessment and corrective measures, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments. I further certify that this report was prepared by myself or by a subordinate working under my direction.

Peter J. de Haven, P.E.
Registered Professional Engineer
Georgia Registration # 28392