



ARM Group LLC

Engineers and Scientists

April 30, 2021

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Re: Lead Characterization
Supplemental Investigation Report
Area B: Parcel B18 (B18-043-SB)
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic (TPA), completed the Phase II Investigation of Parcel B18 (the Site) between September 2016 and August 2017. Parcel B18 is located within Area B of the TPA property located in Sparrows Point, Maryland. The Phase II Investigation Report (Revision 0) was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on August 3, 2020.

The analytical soil results from the Phase II Investigation identified an elevated lead concentration (9,580 mg/kg) in subsurface sample B18-043-SB-5, which was collected from boring B18-043-SB in the interval from 4 to 5 feet below ground surface (bgs). Although this lead detection did not exceed 10,000 mg/kg (the mandatory delineation criterion), this result is relatively high in comparison to the majority of data collected at the Site and on the TPA property as a whole.

A Work Plan for Delineation/Characterization of Lead Impacted Soil at B18-043-SB was submitted to the MDE and USEPA on February 16, 2018. Following review of the Work Plan, the proposed sampling approach was approved by the agencies on February 27, 2018, and four soil borings were installed on May 4, 2018. Following this initial round of characterization which identified elevated lead in soil, seven additional borings were completed on June 22, 2018 to expand the investigation area beyond what was originally proposed in the Work Plan. The investigation was limited to the area south of boring B18-043-SB due to its proximity to the TPA property boundary. The soil sampling results generated in May and June 2018 were reported to the agencies within an Interim Submittal dated September 5, 2018.

In agency comments received on October 22, 2018 regarding the Interim Submittal, the MDE requested a supplemental Work Plan for groundwater characterization in this area, to determine whether elevated lead concentrations in the soil might cause elevated lead in groundwater in the vicinity of B18-043-SB. Due to the presence of stormwater utilities in the area, the MDE noted that utilities may represent possible preferential pathways for lead contaminated groundwater to enter adjacent waterways. Toxicity Characteristic Leaching Procedure (TCLP) sampling was also requested by the MDE for discrete soil samples in the area with elevated lead (rather than bulk samples). A Work Plan for Characterization of Groundwater & TCLP Analysis (Revision 1) was submitted to the MDE and USEPA on September 5, 2019. Following review of the supplemental Work Plan, the proposed sampling approach was approved by the agencies on February 3, 2020, and two soil borings with temporary piezometers were installed on June 4, 2020 (with groundwater samples later collected on June 25, 2020). Also, one temporary piezometer (B18-080-PZ) had previously been installed to the southeast of the lead investigation area on July 16, 2018 during a separate non-aqueous phase liquid (NAPL) investigation conducted in the historical No. 10 Tank Area on Parcel B18. The results from this separate investigation were presented to the agencies in the No. 10 Tank Area Investigation Report dated January 6, 2020. B18-080-PZ was also sampled on November 30, 2018 to provide additional aqueous lead data in the area.

A total of 39 soil samples from 14 boring locations (including those collected from B18-042-SB and B18-043-SB during the original Phase II Investigation) and three groundwater samples were collected and analyzed for lead during this supplemental investigation. The soil borings and piezometers were installed at the locations shown on **Figure 1** and **Figure 2**, respectively. Analytical soil and groundwater lead results are presented in **Table 1** through **Table 3**. This Supplemental Investigation Report provides a summary of the field methods and findings of the completed characterization activities.

Characterization Field Methods

Specific field methods and protocols employed for this supplemental lead investigation, which was conducted under the property-wide Health and Safety Plan (HASP), are described below. All field methods and protocols were conducted in accordance with the Standard Operating Procedures (SOPs) and requirements given in the property-wide Quality Assurance Project Plan (QAPP).

Soil and groundwater samples were submitted to Pace Analytical Services, Inc. (PACE) and analyzed for lead via USEPA Method 6010. Select soil samples were also submitted to Caliber Analytical Services (Caliber) and analyzed via the TCLP for lead. Sample containers, preservatives, and holding times are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times. The laboratory reports for all soil and groundwater samples analyzed during the supplemental lead characterization activities are included as electronic attachments.



Soil Sampling

Soil samples were collected from the locations shown on **Figure 1**. Soil cores recovered from each location were screened and logged by ARM personnel. Soil boring logs for each location completed during this characterization investigation are provided in **Attachment 1**. After sampling had been concluded at each location, all down-hole equipment was decontaminated in accordance with the procedures and methods referenced in the QAPP. At each boring location, soil samples were collected for lead analysis from intervals of 0 to 1, 4 to 5, and 9 to 10 feet bgs using a Geoprobe® direct push rig. Samples were not collected from below the groundwater table. If groundwater was encountered above 10 feet bgs, the deepest sample interval was shifted to the 1-foot interval just above the groundwater table. The original B18-043-SB soil boring location was re-collected using the same methods.

Additional soil samples were requested by the MDE to be analyzed via the TCLP for lead. Soil samples were collected from the B18-084-SB/PZ and B18-085-SB/PZ boring locations that were installed during the supplemental (groundwater) phase of this investigation. Soil samples were collected from the 0 to 1 and 4 to 5 foot bgs depth intervals at both locations and analyzed for lead (via USEPA Method 6010 and TCLP).

Groundwater Sampling

Groundwater samples were collected from temporary piezometers installed at the locations shown on **Figure 2**. Static groundwater is present at approximately 6 to 7 feet bgs in the investigation area. Each temporary groundwater sample collection point was installed with 1-inch diameter PVC screen and riser using a Geoprobe® direct push rig equipped with the DT22 Dual Tube sampling system. Soil cores recovered from each location were screened and logged by ARM personnel. The combined soil boring logs and piezometer construction logs have been included in **Attachment 1**. Immediately after installation, 48 hours after installation, and immediately prior to sampling, each groundwater collection point was checked for the presence of NAPL using an oil-water interface probe. NAPL was not detected at any location.

Groundwater samples were collected from B18-084-PZ and B18-085-PZ using low-flow sampling techniques consistent with the QAPP, which employed the use of laboratory supplied sample containers and preservatives, a peristaltic pump, dedicated polyethylene tubing, and a water quality multiparameter meter with a flow-through cell. Groundwater samples submitted for analysis of dissolved lead were filtered in the field with a dedicated in-line 0.45-micron filter. The sampling and purge logs for locations B18-084-PZ and B18-085-PZ are provided as **Attachment 2**. A sampling purge log was not recorded for B18-080-PZ; modified sampling methods were utilized during the No. 10 Tank Area Investigation and low-flow sampling (specifically the use of a flow-through cell and multiparameter meter) was not required based on the objectives of that investigation.



Investigation-Derived Waste (IDW)

In accordance with the approved Work Plan(s) and the requirements of the QAPP, potentially impacted IDW generated during this investigation was containerized. Following the completion of field activities, composite samples were prepared using aliquots from each of the Parcel B18 IDW soil drums for waste characterization. Multiple composite samples were required due to the extended duration of this investigation. A list of all results from the soil IDW characterization procedure can be found in **Table 4**.

Waste soil generated from the June 4, 2020 mobilization was determined to exceed the TCLP limit for lead. The hazardous waste soil from this investigation phase was transported along with excavation soil waste generated on the nearby Parcel B17, which had also exceeded the TCLP limit for lead, to a hazardous waste disposal facility (Envirite of Pennsylvania, Inc.). A uniform hazardous waste manifest for the proper disposal of this material is included as **Attachment 3**. The remedial excavation on Parcel B17 was previously reported in the Excavation Completion Report (Revision 1) dated November 11, 2020.

As stated in the Work Plan(s), the aqueous waste generated during this investigation from decontamination fluids, purged groundwater, etc. was managed in bulk with waste from other investigations on the property. Aqueous waste is characterized in bulk via composite sampling prior to disposal.

Characterization Results

Table 1 and **Figure 1** provide the analytical results for lead from each soil sample that was collected and analyzed during this investigation. The samples collected from the original Phase II Investigation borings B18-042-SB and B18-043-SB are included in the figure and table. The original intermediate soil sample analyzed at B18-043-SB-5 had a lead detection of 9,580 mg/kg. This location was resampled during the characterization activities in 2018, and the replicated soil sample had a significantly lower lead concentration of only 1,020 mg/kg. During the soil characterization activities completed in 2018, three soil samples contained elevated concentrations of lead (over 8,000 mg/kg). These samples include B18-043A-SB-5, B18-043B-SB-5, and B18-043C-SB-1 with lead concentrations of 10,300 mg/kg, 8,270 mg/kg, and 10,000, respectively. During the additional soil characterization activities completed in 2020, B18-084-SB-1 had a lead concentration of 11,600 mg/kg. All 34 remaining soil samples collected during the Phase II Investigation and the supplemental characterization activities contained significantly lower lead concentrations, none of which approached the delineation threshold of 10,000 mg/kg.

Although lead concentrations were identified in several soil samples above (or close to) the established delineation threshold of 10,000 mg/kg, these concentrations are surrounded by borings with significantly lower concentrations of lead, or the property boundary to the north. The lead impacts appear to be limited to a relatively small area, on an area of the TPA property which is not



in operational use. No further action is proposed at this time. In the future, it will be necessary to incorporate the results into a future Screening Level Risk Assessment (SLRA) of a Response and Development Work Plan (RADWP) or related document for this area of the property. The need for additional action in the future will be contingent on future development planning and the findings of the SLRA.

Four soil samples collected from locations B18-084-SB and B18-085-SB were also analyzed via the TCLP method. The TCLP-lead results are provided in **Table 2**. One soil sample B18-085-SB-5 had a TCLP-lead concentration of 8.5 mg/L, which is above the characteristically hazardous threshold of 5 mg/L. As discussed in the preceding IDW section, the bulk soil waste generated during this investigation phase (on June 4, 2020) was also determined to be characteristically hazardous and has since been properly manifested and transported (along with remedial excavation soil waste generated on Parcel B17) to a hazardous waste disposal facility.

The groundwater characterization sample locations are provided on **Figure 2**. Analytical results from the groundwater sampling are included in **Table 3**. The groundwater sample collected from B18-080-PZ during the No. 10 Tank Area Investigation was analyzed for total lead; whereas, the two characterization groundwater samples collected from B18-084-PZ and B18-085-PZ were filtered in the field and analyzed for dissolved lead. All three groundwater samples had undetectable concentrations of lead, indicating a lack of impacts to groundwater resulting from lead-contaminated soils in the area.

If you have questions regarding any information covered in this document, please feel free to contact ARM Group LLC at (410) 290-7775.

Respectfully Submitted,
ARM Group LLC



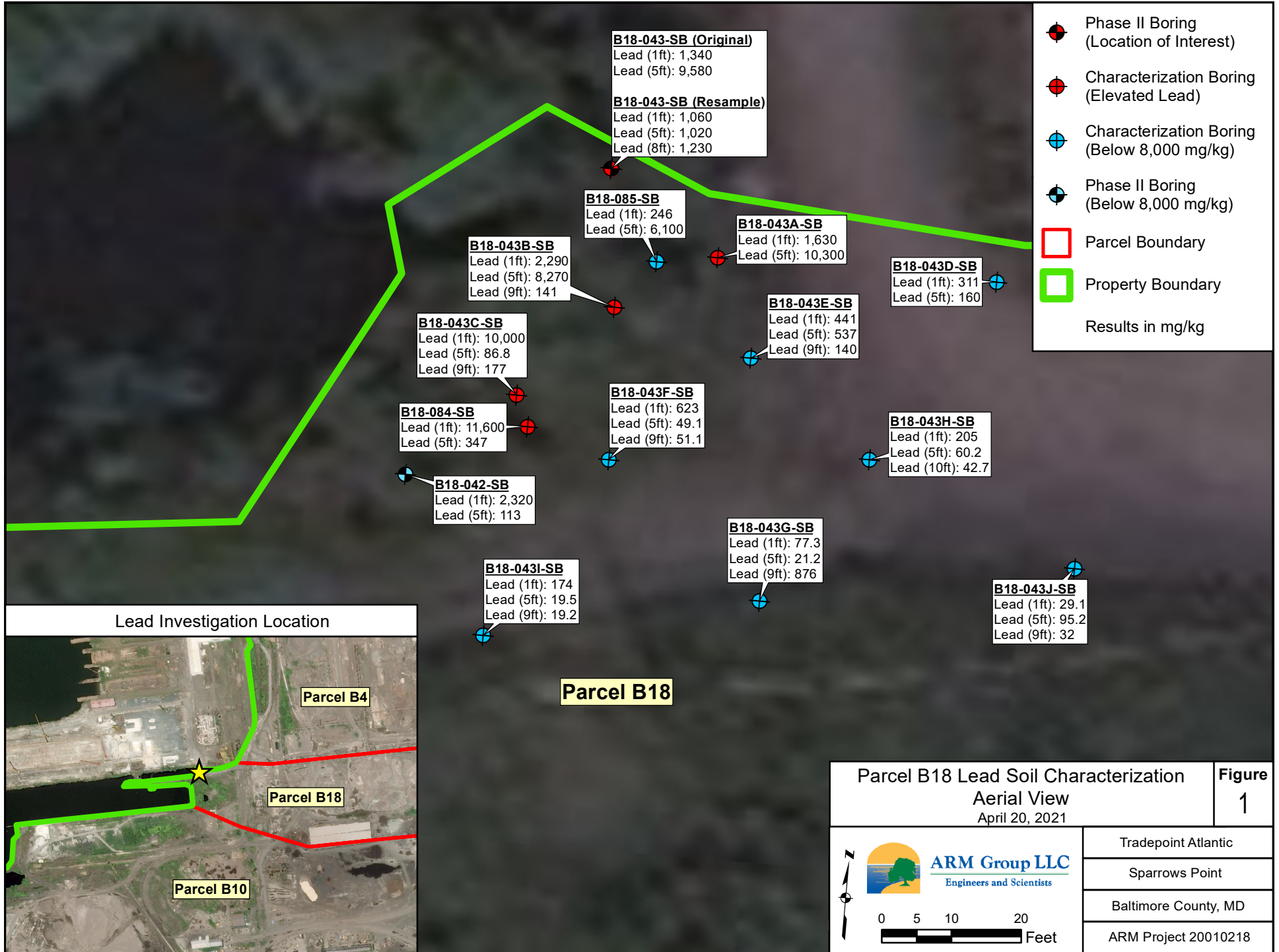
Ryan Clancy, E.I.T
Project Engineer



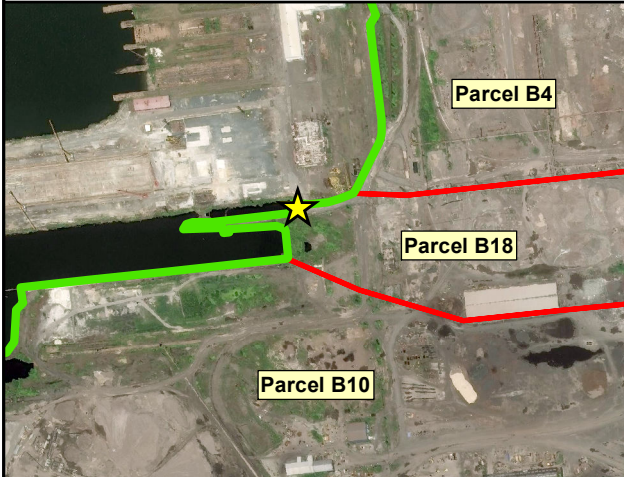
Eric S. Magdar, P.G.
Vice President
QA Reviewer



FIGURES



Lead Investigation Location

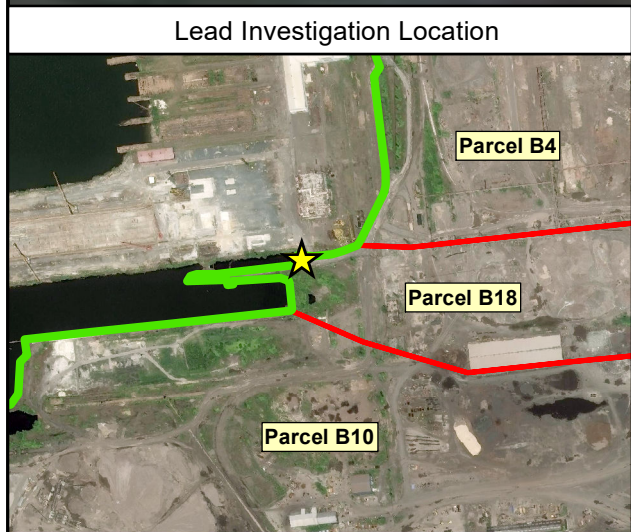


Parcel B4


Parcel B18

Parcel B18

Parcel B10



Parcel B18

| | | |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|
| Parcel B18 Lead GW Characterization Aerial View April 20, 2021 | | Figure 2 |
|  ARM Group LLC Engineers and Scientists | Tradepoint Atlantic | |
| | Sparrows Point | |
| | Baltimore County, MD | |
| | ARM Project 20010218 | |

0 5 10 20 Feet

TABLES

Table 1
B18-043 Soil Lead Characterization Results
Tradepoint Atlantic
Sparrows Point, Maryland

| Sample Date | Location ID | Result (mg/kg) |
|---------------------------------------|----------------|----------------|
| Original Phase II Lead Results | | |
| 10/21/2016 | B18-042-SB-1 | 2,320 |
| 10/21/2016 | B18-042-SB-5 | 113 |
| 10/21/2016 | B18-043-SB-1 | 1,340 |
| 10/21/2016 | B18-043-SB-5 | 9,580 |
| Characterization Lead Results | | |
| 5/4/2018 | B18-043-SB-1 | 1,060 |
| 5/4/2018 | B18-043-SB-5 | 1,020 |
| 5/4/2018 | B18-043-SB-8 | 1,230 |
| 5/4/2018 | B18-043A-SB-1 | 1,630 |
| 5/4/2018 | B18-043A-SB-5 | 10,300 |
| 5/4/2018 | B18-043B-SB-1 | 2,290 |
| 5/4/2018 | B18-043B-SB-5 | 8,270 |
| 5/4/2018 | B18-043B-SB-9 | 141 |
| 5/4/2018 | B18-043C-SB-1 | 10,000 |
| 5/4/2018 | B18-043C-SB-5 | 86.8 |
| 5/4/2018 | B18-043C-SB-9 | 177 |
| 6/22/2018 | B18-043D-SB-1 | 311 |
| 6/22/2018 | B18-043D-SB-5 | 160 |
| 6/22/2018 | B18-043E-SB-1 | 441 |
| 6/22/2018 | B18-043E-SB-5 | 537 |
| 6/22/2018 | B18-043E-SB-9 | 140 |
| 6/22/2018 | B18-043F-SB-1 | 623 |
| 6/22/2018 | B18-043F-SB-5 | 49.1 |
| 6/22/2018 | B18-043F-SB-9 | 51.1 |
| 6/22/2018 | B18-043G-SB-1 | 77.3 |
| 6/22/2018 | B18-043G-SB-5 | 21.2 |
| 6/22/2018 | B18-043G-SB-9 | 876 |
| 6/22/2018 | B18-043H-SB-1 | 205 |
| 6/22/2018 | B18-043H-SB-5 | 60.2 |
| 6/22/2018 | B18-043H-SB-10 | 42.7 |
| 6/22/2018 | B18-043I-SB-1 | 174 |
| 6/22/2018 | B18-043I-SB-5 | 19.5 |
| 6/22/2018 | B18-043I-SB-9 | 19.2 |
| 6/22/2018 | B18-043J-SB-1 | 29.1 |
| 6/22/2018 | B18-043J-SB-5 | 95.2 |
| 6/22/2018 | B18-043J-SB-9 | 32 |
| 6/4/2020 | B18-084-SB-1 | 11,600 |
| 6/4/2020 | B18-084-SB-5 | 347 |
| 6/4/2020 | B18-085-SB-1 | 246 |
| 6/4/2020 | B18-085-SB-5 | 6,100 |

Highlighted indicate an elevated lead result over 8,000 mg/kg

Table 2
B18-043 Soil TCLP-Lead Results
Tradepoint Atlantic
Sparrows Point, Maryland

| Sample Date | Location ID | Result (mg/L) |
|-----------------------------------|--------------|---------------|
| TCLP Analysis Lead Results | | |
| 6/4/2020 | B18-084-SB-1 | 1.2 |
| 6/4/2020 | B18-084-SB-5 | ND |
| 6/4/2020 | B18-085-SB-1 | ND |
| 6/4/2020 | B18-085-SB-5 | 8.5 |

ND: Lead not detected above the quantitation limit of 0.5 mg/L

Value in red exceeds the TCLP threshold of 5 mg/L

Table 3
B18-043 Groundwater Lead Characterization Results
Tradepoint Atlantic
Sparrows Point, Maryland

| Sample Date | Location ID | Result (ug/L) |
|---------------------------------|-----------------------------|------------------|
| Groundwater Lead Results | | |
| 11/30/2018 | B18-080-PZ (Total Lead) | 5 U |
| 6/25/2020 | B18-084-PZ (Dissolved Lead) | 50 U |
| 6/25/2020 | B18-085-PZ (Dissolved Lead) | 10 U |

U: The analyte was not detected in the sample.
This numeric value represents the sample quantitation limit.

Table 4
B18-043 TCLP Characterization Results for Solid IDW
Tradeport Atlantic
Sparrows Point, Maryland

| <u>Sample ID</u> | <u>Parameter</u> | <u>Result</u> (mg/L) | <u>TCLP Limit</u> (mg/L) | <u>TCLP</u> <u>Exceedance</u> | <u>Laboratory</u> <u>Flag</u> | <u>LOQ</u> (mg/L) |
|----------------------------|------------------------------|-------------------------|-----------------------------|----------------------------------|----------------------------------|----------------------|
| B18 IDW CHAR. 6/4/20 | 1,1-Dichloroethene | 0.05 | 0.7 | no | U | 0.05 |
| | 1,2-Dichloroethane | 0.05 | 0.5 | no | U | 0.05 |
| | 1,4-Dichlorobenzene | 0.5 | 7.5 | no | U | 0.5 |
| | 2,4,5-Trichlorophenol | 5 | 400 | no | U | 5 |
| | 2,4,6-Trichlorophenol | 0.1 | 2 | no | U | 0.1 |
| | 2,4-Dinitrotoluene | 0.1 | 0.13 | no | U | 0.1 |
| | 2-Butanone (MEK) | 0.1 | 200 | no | U | 0.1 |
| | 2-Methylphenol | 2 | 200 | no | U | 2 |
| | 3&4-Methylphenol(m&p Cresol) | 2 | 200 | no | U | 2 |
| | Arsenic | 0.022 | 5 | no | J | 0.025 |
| | Barium | 0.79 | 100 | no | | 0.05 |
| | Benzene | 0.05 | 0.5 | no | U | 0.05 |
| | Cadmium | 0.0029 | 1 | no | J | 0.015 |
| | Carbon tetrachloride | 0.05 | 0.5 | no | U | 0.05 |
| | Chlorobenzene | 0.05 | 100 | no | U | 0.05 |
| | Chloroform | 0.05 | 6 | no | U | 0.05 |
| | Chromium | 0.025 | 5 | no | U | 0.025 |
| | Hexachlorobenzene | 0.1 | 0.13 | no | U | 0.1 |
| | Hexachloroethane | 0.2 | 3 | no | U | 0.2 |
| | Lead | 15.8 | 5 | YES | | 0.25 |
| | Mercury | 0.001 | 0.2 | no | U | 0.001 |
| | Nitrobenzene | 0.1 | 2 | no | U | 0.1 |
| | Pentachlorophenol | 5 | 100 | no | U | 5 |
| | Selenium | 0.04 | 1 | no | U | 0.04 |
| | Silver | 0.03 | 5 | no | U | 0.03 |
| | Tetrachloroethene | 0.05 | 0.7 | no | U | 0.05 |
| | Trichloroethene | 0.05 | 0.5 | no | U | 0.05 |
| | Vinyl chloride | 0.05 | 0.2 | no | U | 0.05 |

Table 4
B18-043 TCLP Characterization Results for Solid IDW
Tradepoint Atlantic
Sparrows Point, Maryland

| <u>Sample ID</u> | <u>Parameter</u> | <u>Result</u> (mg/L) | <u>TCLP Limit</u> (mg/L) | <u>TCLP</u> <u>Exceedance</u> | <u>Laboratory</u> <u>Flag</u> | <u>LOQ</u> (mg/L) |
|----------------------|------------------------------|-------------------------|-----------------------------|----------------------------------|----------------------------------|----------------------|
| B18 Waste 8/17/18 | 1,1-Dichloroethene | 0.05 | 0.7 | no | U | 0.05 |
| | 1,2-Dichloroethane | 0.05 | 0.5 | no | U | 0.05 |
| | 1,4-Dichlorobenzene | 0.1 | 7.5 | no | U | 0.1 |
| | 2,4,5-Trichlorophenol | 0.25 | 400 | no | U | 0.25 |
| | 2,4,6-Trichlorophenol | 0.1 | 2 | no | U | 0.1 |
| | 2,4-Dinitrotoluene | 0.1 | 0.13 | no | U | 0.1 |
| | 2-Butanone (MEK) | 0.1 | 200 | no | U | 0.1 |
| | 2-Methylphenol | 0.1 | 200 | no | U | 0.1 |
| | 3&4-Methylphenol(m&p Cresol) | 0.2 | 200 | no | U | 0.2 |
| | Arsenic | 0.025 | 5 | no | U | 0.025 |
| | Barium | 0.24 | 100 | no | | 0.05 |
| | Benzene | 0.05 | 0.5 | no | U | 0.05 |
| | Cadmium | 0.015 | 1 | no | U | 0.015 |
| | Carbon tetrachloride | 0.05 | 0.5 | no | U | 0.05 |
| | Chlorobenzene | 0.05 | 100 | no | U | 0.05 |
| | Chloroform | 0.05 | 6 | no | U | 0.05 |
| | Chromium | 0.025 | 5 | no | U | 0.025 |
| | Hexachlorobenzene | 0.1 | 0.13 | no | U | 0.1 |
| | Hexachloroethane | 0.1 | 3 | no | U | 0.1 |
| | Lead | 0.05 | 5 | no | U | 0.05 |
| | Mercury | 0.001 | 0.2 | no | U | 0.001 |
| | Nitrobenzene | 0.1 | 2 | no | U | 0.1 |
| | Pentachlorophenol | 0.25 | 100 | no | U | 0.25 |
| | Selenium | 0.04 | 1 | no | U | 0.04 |
| | Silver | 0.03 | 5 | no | U | 0.03 |
| | Tetrachloroethene | 0.05 | 0.7 | no | U | 0.05 |
| | Trichloroethene | 0.05 | 0.5 | no | U | 0.05 |
| | Vinyl chloride | 0.05 | 0.2 | no | U | 0.05 |

Table 4
B18-043 TCLP Characterization Results for Solid IDW
Tradepoint Atlantic
Sparrows Point, Maryland

| <u>Sample ID</u> | <u>Parameter</u> | <u>Result</u> (mg/L) | <u>TCLP Limit</u> (mg/L) | <u>TCLP</u> <u>Exceedance</u> | <u>Laboratory</u> <u>Flag</u> | <u>LOQ</u> (mg/L) |
|---------------------------------|------------------------------|-------------------------|-----------------------------|----------------------------------|----------------------------------|----------------------|
| B18 Waste Disposal 2/2/17 | 1,1-Dichloroethene | 0.05 | 0.7 | no | U | 0.05 |
| | 1,2-Dichloroethane | 0.05 | 0.5 | no | U | 0.05 |
| | 1,4-Dichlorobenzene | 0.5 | 7.5 | no | U | 0.5 |
| | 2,4,5-Trichlorophenol | 5 | 400 | no | U | 5 |
| | 2,4,6-Trichlorophenol | 0.1 | 2 | no | U | 0.1 |
| | 2,4-Dinitrotoluene | 0.1 | 0.13 | no | U | 0.1 |
| | 2-Butanone (MEK) | 5 | 200 | no | U | 5 |
| | 2-Methylphenol | 2 | 200 | no | U | 2 |
| | 3&4-Methylphenol(m&p Cresol) | 2 | 200 | no | U | 2 |
| | Arsenic | 0.05 | 5 | no | U | 0.05 |
| | Barium | 0.21 | 100 | no | J | 1 |
| | Benzene | 0.05 | 0.5 | no | U | 0.05 |
| | Cadmium | 0.0006 | 1 | no | J | 0.05 |
| | Carbon tetrachloride | 0.05 | 0.5 | no | U | 0.05 |
| | Chlorobenzene | 1 | 100 | no | U | 1 |
| | Chloroform | 0.5 | 6 | no | U | 0.5 |
| | Chromium | 0.0073 | 5 | no | B | 0.05 |
| | Hexachlorobenzene | 0.1 | 0.13 | no | U | 0.1 |
| | Hexachloroethane | 0.5 | 3 | no | U | 0.5 |
| | Lead | 0.1 | 5 | no | U | 0.1 |
| | Mercury | 0.001 | 0.2 | no | U | 0.001 |
| | Nitrobenzene | 0.1 | 2 | no | U | 0.1 |
| | Pentachlorophenol | 5 | 100 | no | U | 5 |
| | Selenium | 0.011 | 1 | no | J | 0.1 |
| | Silver | 0.05 | 5 | no | U | 0.05 |
| | Tetrachloroethene | 0.05 | 0.7 | no | U | 0.05 |
| Trichloroethene | 0.05 | 0.5 | no | U | 0.05 | |
| Vinyl chloride | 0.05 | 0.2 | no | U | 0.05 | |

U: The analyte was not detected in the sample. This numeric value represents the sample LOQ.

B: The analyte was not detected substantially above the level of the associated method blank or field blank.

J: The positive result reported for this analyte is a quantitative estimate below the laboratory LOQ.

TCLP: Toxicity Characteristic Leaching Procedure

LOQ: Limit of Quantitation

ATTACHMENT 1



ARM Group LLC
Engineers and Scientists

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 5/4/18
 Weather : Rainy, 70s
 Northing (US ft) : 563690.09
 Easting (US ft) : 1455778.81

Boring ID: B18-043-SB NEW

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|-----------------------------------------------------------------------------------------------------------|------|---------------------------------------|
| 0 | | - | B18-043-SB-1 | (0-7') SAND with GRAVEL, dense, dark brown to black, moist, no plasticity, no cohesion | SW | BRICK and METAL fragments at 4.5' bgs |
| 40 | | - | | | | |
| | | 0.2 | | | | |
| | | 0.3 | B18-043-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| | | 0.1 | B18-043-SB-8.5 | (7-10') GRAVEL with SAND, dense, pale gray to black, moist to wet at 8.5' bgs, no plasticity, no cohesion | GW | Wet at 8.5' bgs |
| 40 | | 0.4 | | | | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 5/4/18
 Weather : Sunny, 70s

Northing (US ft) : 563680.42
 Easting (US ft) : 1455808.00

Boring ID: B18-043A-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------|
| 0 | | - | B18-043A-SB-1 | (0-8') SAND with GRAVEL, fine to medium, dense, light to dark brown, moist to wet at 5' bgs, no plasticity, no cohesion | SW | Wet at 5' bgs Oily product present at 5' bgs |
| | | 3.5 | | | | |
| 80 | | 0.1 | | | | |
| | | 0.1 | | | | |
| | | 0.1 | B18-043A-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| 50 | | 0.2 | | | | |
| | | 0.4 | | (8-10') GRAVEL with SAND, firm, dark brown, wet, no plasticity, no cohesion | GW | |
| | | 1.5 | | | | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 5/4/18
 Weather : Sunny, 70s

Northing (US ft) : 563672.03
 Easting (US ft) : 1455793.85

Boring ID: B18-043B-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------|------|---------------|
| 0 | | - | B18-043B-SB-1 | (0-9') SAND with GRAVEL, medium to fine, dense, light to dark brown, moist, no plasticity, no cohesion | SW | |
| | | - | | | | |
| 60 | 0.1 | 0.1 | | | | |
| | 0.1 | | | | | |
| | | 0.2 | B18-043B-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| 60 | | - | | | | |
| | | - | B18-043B-SB-9 | | | |
| | | | | (9-10') GRAVEL with SAND, loose, dark gray, wet, no plasticity, no cohesion; with a thin gray to light green CLAY lens at 9' bgs | GP | Wet at 9' bgs |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 5/4/18
 Weather : Sunny, 70s

Northing (US ft) : 563658.33
 Easting (US ft) : 1455780.97

Boring ID: B18-043C-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|--------------------------------------------------------------------------------------------------------|------|--------------------|
| 0 | | - | B18-043C-SB-1 | (0-3') SAND, fine to very fine, dense, dark brown to black, moist, no plasticity, no cohesion | SP | |
| 60 | | 0.1 | | | | |
| | | 0.1 | | (3-6') CLAY with SAND, very firm, pale brown to reddish yellow, moist, moderate plasticity, cohesive | CL | |
| 5 | | 0.1 | B18-043C-SB-5 | | | |
| | | - | | | | |
| 50 | | - | | (6-9') SAND with GRAVEL, medium to fine, dense, dark brown to black, moist, no plasticity, no cohesion | SW | |
| | | 0.1 | B18-043C-SB-9 | | | |
| | | 0.0 | | (9-10') GRAVEL with SAND, dense, black to pale brown, wet, no plasticity, no cohesion | GW | Wet at 9' bgs |
| 10 | | | | End of boring | | CONCRETE at 9' bgs |

Total Borehole Depth: 10' bgs.



ARM Group LLC
Engineers and Scientists

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Sunny, 70s

Northing (US ft) : 563680.48
 Easting (US ft) : 1455848.23

Boring ID: B18-043D-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------|------|-----------------|
| 0 | | - | B18-043D-SB-1 | (0-10') SLAG GRAVELwith SAND, loose, bluish gray to black, dry to slightly moist to wet at 9.5' bgs, no plasticity, no cohesion | GW | Wet at 9.5' bgs |
| | | - | | | | |
| 50 | 0.6 | 2.9 | | | | |
| | 0.8 | | B18-043D-SB-5 | | | |
| 5 | - | - | | | | |
| | - | - | | | | |
| 20 | - | 0.3 | | | | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563666.46
 Easting (US ft) : 1455813.98

Boring ID: B18-043E-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|------------------------------------------------------------------------------------------------|------|---------------------------|
| 0 | | - | B18-043E-SB-1 | (0-9') SAND with GRAVEL, loose, black to dark gray, slightly moist, no plasticity, no cohesion | SW | CONCRETE at 4' and 9' bgs |
| | | - | | | | |
| 60 | 0.2 | | | | | |
| | 0.1 | | | | | |
| | | 0.3 | B18-043E-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| 50 | 0.1 | | | | | |
| | | 0.3 | B18-043E-SB-9 | | | |
| | | | | (9-10') GRAVEL with SAND, loose, pale brown to gray, wet, no plasticity, no cohesion | GP | Wet at 9' bgs |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563650.17
 Easting (US ft) : 1455794.93

Boring ID: B18-043F-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|---------------|-------------------|--------------------|-------------------------------------------------------------------------------------------------|------|------------------|
| 0 | | - | B18-043F-SB-1 | (0-9') SAND with GRAVEL, loose, pale brown to black, slightly moist, no plasticity, no cohesion | | |
| | | 2.3 | | | | |
| | 70 | 43.1 | | | | |
| | | 18.2 | | | | |
| | | 11.5 | B18-043F-SB-5 | | SW | Odor at 4.5' bgs |
| 5 | | - | | (9-10') GRAVEL with SAND, dense, black, wet, no plasticity, no cohesion | | Wet at 9' bgs |
| | | - | | | | |
| | 50 | 1.2 | | | | |
| | | 0.5 | B18-043F-SB-9 | | | |
| | | 0.3 | | | GP | |
| 10 | End of boring | | | | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563631.85
 Easting (US ft) : 1455818.32

Boring ID: B18-043G-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|---------------------------------------------------------------------------------------------------------|------|------------------|
| 0 | | - | B18-043G-SB-1 | (0-10') SAND with GRAVEL, loose, pale brown to black, dry to slightly moist, no plasticity, no cohesion | SW | WOOD at 2.5' bgs |
| | | - | | | | |
| 50 | 1.1 | 3.2 | | | | |
| | | 0.2 | B18-043G-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| | 50 | 0.2 | B18-043G-SB-9 | | | |
| | | 0.2 | | | | |
| | | 0.8 | | | | Wet at 9' bgs |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563653.44
 Easting (US ft) : 1455832.25

Boring ID: B18-043H-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|---------------------------------------------------------------------------------------------------|------|----------------------|
| 0 | | - | B18-043E-SB-1 | (0-2') GRAVEL with SAND, loose, pale brown, dry, no plasticity, no cohesion | SP | No water encountered |
| | | - | | | | |
| 50 | | - | | (2-3.5') CLAY with SAND, very firm, pale brown to black, slightly moist, low plasticity, cohesive | CL | |
| | | 0.3 | | | | |
| | | 0.4 | B18-043E-SB-5 | (3.5-9.5') SAND with GRAVEL, loose, black, moist, no plasticity, no cohesion | | |
| 5 | | - | | | SW | |
| 30 | | - | | | | |
| | | 1.0 | | | | |
| | | 0.2 | B18-043E-SB-10 | (9.5-10') BRICK | NA | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563623.41
 Easting (US ft) : 1455779.19

Boring ID: B18-043I-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|-------------------------------------------------------------------------------------------------------------------|------|---------------|
| 0 | | - | B18-043I-SB-1 | (0-2.5') CLAY with SAND and GRAVEL, very firm, dark brown to pale brown, slightly moist, low plasticity, cohesive | CL | |
| | | - | | | | |
| 50 | | 0.5 | | (2.5-8') SAND with GRAVEL, loose, black, moist, no plasticity, no cohesion | | |
| | | 0.8 | | | | |
| 5 | | 0.2 | B18-043I-SB-5 | | SW | |
| | | - | | | | |
| 40 | | - | | | | |
| | | - | | | | |
| | | 0.8 | B18-043I-SB-9 | (8-9') BRICK | NA | Wet at 9' bgs |
| | | 0.2 | | (9-10') SAND with GRAVEL, loose, black, moist, no plasticity, no cohesion | SW | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B17
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Date : 6/22/18
 Weather : Rainy, 70s
 Northing (US ft) : 563640.41
 Easting (US ft) : 1455862.96

Boring ID: B18-043J-SB

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|-------------------------------------------------------------------------------------------------------|------|----------------------|
| 0 | | - | B18-043J-SB-1 | (0-10') SAND with SLAG GRAVEL, black to pale brown, dry to slightly moist, no plasticity, no cohesion | SW | No water encountered |
| | | - | | | | |
| 50 | 0.2 | 1.3 | | | | |
| | | - | B18-043J-SB-5 | | | |
| 5 | | - | | | | |
| | | - | | | | |
| 30 | 0.3 | | | | | |
| | | 0.2 | B18-043J-SB-9 | | | |
| | | | | | | |
| 10 | | | | End of boring | | |

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-14-3
 Project Description : Sparrows Point - Parcel B18
 Site Location : Sparrows Point, MD
 ARM Representative : M. Kedenburg
 Checked by : M. Replogle, E.I.T.
 Drilling Company : Allied Drilling Co.
 Driller : Ryan Sites
 Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 7/13/2018
 Piezometer Installation Date : 7/16/2018
 Casing/Riser/Screen Type : PVC
 Borehole Diameter : 2.25"
 Riser/Screen Diameter : 1"
 Northing (US ft) : 563633.14
 Easting (US ft) : 1455835.54
 0-Hr DTW : 11.40' TOC
 48-Hr DTW : 10.92' TOC
 No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: B18-080-SB/PZ

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|----------------------|--------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------|
| 0 | - | - | No Samples Collected | (0-0.3') SAND with SILT and GRAVEL, fine to medium, loose, pale brown, dry, no plasticity, no cohesion | SW-SM | <p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p> <p>Wet at 8' bgs</p> |
| 50 | 0.0 | 0.0 | | (0.3-12.5') SAND with GRAVEL, medium, dense, black, dry then wet at 8' bgs, no plasticity, no cohesion | SP/GW | |
| 5 | - | 0.2 | | | | |
| 40 | - | - | | | | |
| 10 | 2.9 | 3.2 | | | | |
| 98 | 0.0 | 0.4 | | (12.5-15.5') GRAVEL with SAND, coarse, wet, dense, bluish gray, no plasticity, no cohesion | GP/SW | |
| 15 | - | 3.0 | | | | |
| 80 | 0.0 | 0.0 | | (15.5-18') SAND, medium, dense, pale gray to black, wet, no plasticity, no cohesion | SP | |
| 20 | 0.0 | 0.0 | | (18-20') CLAY, very firm to soft, pale brown to reddish yellow, wet, low plasticity, cohesive | CL | |
| | | | | End of Boring | | |

Boring terminated at 20' bgs due to water and piezometer installation
 TOC: Top of PVC casing
 DTW: Depth to water
 bgs: Below ground surface
 AMSL: Above mean sea level

Riser Stickup: 4.00'
 Riser: 0 - 3' bgs
 Screen: 3 - 20' bgs [Slot Size: 0.010"]
 Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
 Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]



Client : EnviroAnalytics Group
 ARM Project No. : 20010218
 Project Description : Sparrows Point - Parcel B18
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : M. Replogle, E.I.T.
 Drilling Company : GSI
 Driller : D. Marchese
 Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 06/04/2020
 Piezometer Installation Date : 06/04/2020
 Casing/Riser/Screen Type : PVC
 Borehole Diameter : 2.25"
 Riser/Screen Diameter : 1"
 Northing (US ft) : 563653.9
 Easting (US ft) : 1455782.9
 0-Hr DTW : 10.61' TOC
 48-Hr DTW : 10.38' TOC
 No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: B18-084-SB/PZ

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------|
| 0 | | 0.0 | B18-084-SB-1 | (0-2.6') SILY SAND with trace GRAVEL, medium dense, light grayish brown grading to very dark brown, dry, no plasticity, no cohesion | SM | |
| 90 | | 0.0 | | (2.6-5.5') CLAY with trace SAND, very firm, reddish yellow with pale brown, dry, low plasticity, cohesive | CL | |
| 5 | | 0.0 | B18-084-SB-5 | (5.5-7.6') SLAG GRAVEL with some SAND-sized SLAG, medium dense, light gray, dry, no plasticity, no cohesion | GW | |
| 80 | | 0.5 | | (7.6-14.7') NON-NATIVE SAND with fine smooth pebble GRAVEL, with SILT and trace SLAG and BRICK at 12.5' bgs, very fine to coarse, medium dense, black, wet, no plasticity, no cohesion | SW/SP | |
| 10 | | 0.0 | | | | |
| 78 | | 0.0 | | | | Wet at 8' bgs |
| 15 | | 0.0 | | (14.7-15') SLAG, SAND-sized, medium dense to dense, light gray and white, wet, no plasticity, no cohesion | SW | Trace odor and trace sheen at 12.5' bgs |
| | | | | End of Boring | | |

Boring terminated at 15' bgs due to water and piezometer installation
 Piezometer installed to 15' bgs
 TOC: Top of PVC casing
 DTW: Depth to water
 bgs: Below ground surface

Riser Stickup: 3.56' ags
 Riser: 0 - 5' bgs
 Screen: 5 - 15' bgs [Slot Size: 0.010"]
 Sand Pack: 3 - 15' bgs [Grain Size: WG #2]
 Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]



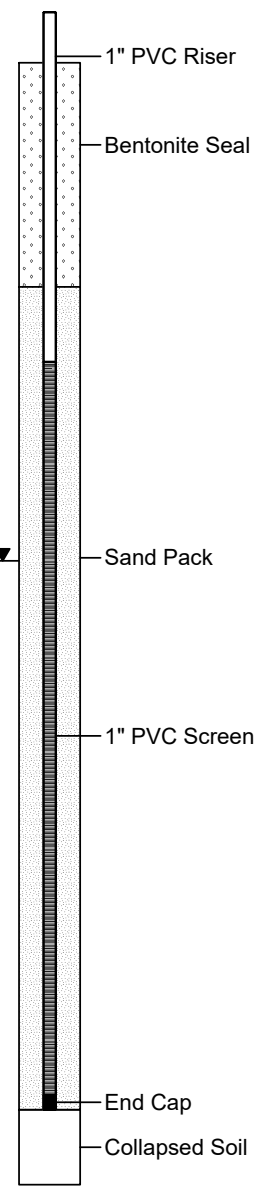
Client : EnviroAnalytics Group
 ARM Project No. : 20010218
 Project Description : Sparrows Point - Parcel B18
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : M. Replogle, E.I.T.
 Drilling Company : GSI
 Driller : D. Marchese
 Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 06/04/2020
 Piezometer Installation Date : 06/04/2020
 Casing/Riser/Screen Type : PVC
 Borehole Diameter : 2.25"
 Riser/Screen Diameter : 1"
 Northing (US ft) : 563679.1
 Easting (US ft) : 1455799.3
 0-Hr DTW : 11.05' TOC
 48-Hr DTW : 10.76' TOC
 No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: B18-085-SB/PZ

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample No/Interval | DESCRIPTION | USCS | REMARKS |
|-------------|------------|-------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|
| 0 | | - | B18-085-SB-1 | (0-1') SILT with SAND with trace GRAVEL, medium dense, light grayish brown, dry, no plasticity, no cohesion | ML | |
| 4.8 | | | | (1-2.4') SLAG SAND and GRAVEL-sized, medium dense, light grayish brown, dry, no plasticity, no cohesion | SW/GW | |
| 80 | | 0.0 | | (2.4-2.9') SILT with very fine SAND, very firm, brown, dry, no plasticity, no cohesion | ML SW | |
| | | 0.0 | | (2.9-3.2') SAND, fine to medium, medium dense, yellow, dry, no plasticity, no cohesion | ML | |
| 5 | | 0.0 | B18-085-SB-5 | (3.2-5.5') SILT with very fine SAND with trace SAND layer at 3.8' bgs, very firm, brown, dry to moist, no plasticity, no cohesion | ML | |
| | | - | | (5.5-7') SLAG GRAVEL with SAND-sized SLAG, gray, dry, no plasticity, no cohesion | GW/SW | |
| 76 | | 0.2 | | (7-8.8') Non-native GRAVEL, fine, with non-native SAND, medium dense, dark brown, wet, no plasticity, no cohesion | GW/SW | Wet at 7' bgs |
| | | 0.0 | | (8.8-9.8') NON-NATIVE SAND, very fine to coarse, medium dense, dark brown, wet, no plasticity, no cohesion | SW | Trace odor at 9' bgs |
| 10 | | 0.0 | | (9.8-15') SILT, firm, light gray, wet, low plasticity, cohesive | ML | |
| 100 | | 0.0 | | | ML | |
| 15 | | 0.0 | | End of Boring | | |



Boring terminated at 15' bgs due to water and piezometer installation
 Piezometer installed to 14' bgs
 TOC: Top of PVC casing
 DTW: Depth to water
 bgs: Below ground surface

Riser Stickup: 4.10' ags
 Riser: 0 - 4' bgs
 Screen: 4 - 14' bgs [Slot Size: 0.010"]
 Sand Pack: 3 - 14' bgs [Grain Size: WG #2]
 Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]

ATTACHMENT 2

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: B18
Well Number: B18-084-P2
Well Diameter (in): 1
Depth to Product (ft): none
Depth to Water (ft): 10.64
Product Thickness (ft): -
Depth to Bottom (ft): 17.82

Project Number:
Date: 9/6/25/2020
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min) 350
Length of time Purged (min):
Condition of Pad/Cover: 1

PURGING RECORD

| Time | Volume Purged (gallons) | DTW (feet) | Temp (°C) | pH (s.u.) ± 0.1 | Specific Conductance (ms/cm) ± 3% | Dissolved Oxygen (mg/L) ± 0.3 | ORP (mV) ± 10 | Turbidity (NTU) ± 10% or < 5 | Comments |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|----------|
| 1005 | 1 | | 21.93 | 11.54 | 29.8 | 0.83 | -347 | 64.8 | |
| 1010 | 1.3 | | 22.56 | 11.59 | 29.9 | 0.65 | -364 | 22.9 | |
| 1015 | 1.6 | | 22.30 | 11.64 | 30.0 | 0.56 | -378 | 9.99 | |
| 1020 | 1.9 | | 22.49 | 11.64 | 30.0 | 0.55 | -387 | 12.1 | |
| 1025 | 2.2 | | 22.42 | 11.64 | 30.1 | 0.54 | -392 | 7.65 | |
| 1030 | 2.5 | 11.82 | 22.60 | 11.60 | 30.1 | 0.56 | -395 | 5.91 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

MONITORING SAMPLE RECORD

| Sample ID | Time Collected | Parameter/Order | Container | Perservative | Collected? |
|-----------|----------------|-----------------------------------------------------------|--------------------|--------------|------------|
| | 1035 | TCL-VOCs | 3 - 40 mL VOA | HCl | |
| | | TPH-GRO | 3 - 40 mL VOA | HCl | |
| | | TPH-DRO | 2 - 1 L Amber | none | |
| | | TCL-SVOCs | 2- 1 L Amber | none | |
| | | Oil & Grease | 2- 1 L Amber | HCl | |
| | | TAL-Metals & Mercury (total) | 1 - 250 mL Plastic | HNO3 | |
| | | Hexavalent Chromium (total) | 1 - 250 mL Plastic | none | |
| | | Total Cyanide | 1 - 250 mL Plastic | NaOH | |
| | | TAL-Metals & Mercury (Dissolved) Field Filtered | 1 - 250 mL Plastic | HNO3 | |
| | | Hexavalent Chromium (Dissolved) Field Filtered | 1 - 250 mL Plastic | none | |
| PCB | 2 - 1 L Amber | None | | | |

Matrix Spike
Duplicate

Sampled By: LMG

Comments:
Lead

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.

Earth Resource Engineers and Consultants

| | |
|------------------------------------|----------------------------------|
| Project Name: <u>B18</u> | Project Number: |
| Well Number: <u>B18-085-P7</u> | Date: <u>06/25/2010</u> |
| Well Diameter (in): <u>1</u> | One Well Volume (gal): |
| Depth to Product (ft): <u>npad</u> | QED Controller Settings: |
| Depth to Water (ft): <u>11.12</u> | Flow Rate (mL/min) <u>350</u> |
| Product Thickness (ft): <u>-</u> | Length of time Purged (min) |
| Depth to Bottom (ft): <u>18.08</u> | Condition of Pad/Cover: <u>1</u> |

PURGING RECORD

| Time | Volume Purged (gallons) | DTW (feet) | Temp (°C) | pH (s.u.) ± 0.1 | Specific Conductance (ms/cm) ± 3% | Dissolved Oxygen (mg/L) ± 0.3 | ORP (mV) ± 10 | Turbidity (NTU) ± 10% or < 5 | Comments |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|----------|
| 1105 | .6 | | 26.16 | 8.44 | 6.30 | 1.21 | -25 | 25.6 | |
| 1110 | .9 | | 23.83 | 8.23 | 6.54 | 1.06 | -4 | 19.2 | |
| 1115 | 1.2 | | 23.91 | 7.88 | 6.55 | 1.01 | 8 | 15.9 | |
| 1120 | 1.5 | | 23.92 | 7.78 | 6.44 | 1.10 | 16 | 10.1 | |
| 1125 | 1.8 | | 23.56 | 7.71 | 6.46 | 1.13 | 25 | 4.98 | |
| 1130 | 2 | | 24.09 | 7.67 | 6.35 | 1.05 | 29 | 2.27 | |
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MONITORING SAMPLE RECORD

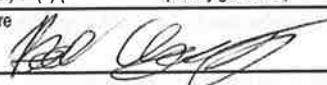
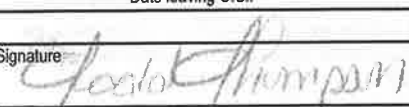
| Sample ID | Time Collected | Parameter/Order | Container | Perservative | Collected? |
|--------------|----------------|-----------------------------------------------------------|--------------------|--------------|------------|
| | 1135 | TCL-VOCs | 3 - 40 mL VOA | HCl | |
| | | TPH-GRO | 3 - 40 mL VOA | HCl | |
| | | TPH-DRO | 2 - 1 L Amber | none | |
| | | TCL-SVOCs | 2 - 1 L Amber | none | |
| | | Oil & Grease | 2 - 1 L Amber | HCl | |
| | | TAL-Metals & Mercury (total) | 1 - 250 mL Plastic | HNO3 | |
| | | Hexavalent Chromium (total) | 1 - 250 mL Plastic | none | |
| | | Total Cyanide | 1 - 250 mL Plastic | NaOH | |
| | | TAL-Metals & Mercury (Dissolved) Field Filtered | 1 - 250 mL Plastic | HNO3 | |
| | | Hexavalent Chromium (Dissolved) Field Filtered | 1 - 250 mL Plastic | none | |
| PCB | 2 - 1 L Amber | None | | | |
| Matrix Spike | | | | | |
| Duplicate | | | | | |

| | |
|------------------------|---------------------------|
| Sampled By: <u>Lmf</u> | Comments: <u>D pad</u> |
|------------------------|---------------------------|

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x _____ gal/ft = _____ (gal)

ATTACHMENT 3

Please print or type.

| | | | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------|--|----------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|--------------------|-------------------|-------------------|
| UNIFORM HAZARDOUS WASTE MANIFEST | | 1. Generator ID Number MO053945432 | | 2. Page 1 of 1 | | 3. Emergency Response Phone 314-620-3058 | | 4. Manifest Tracking Number 021322673 JJK | | | | | |
| | | 5. Generator's Name and Mailing Address Enviro Analytics Group, LLC 1050 De Paves Rd., Suite 203, St. Louis, MO 63131 Generator's Phone: 314-835-2813 | | | | | | Generator's Site Address (if different than mailing address) Enviro Analytics Group, LLC 1100 Sparrows Point Blvd. Sparrow Point, MD 21219 | | | | | |
| 6. Transporter 1 Company Name Enviro of Pennsylvania, Inc. | | | | | | | | U.S. EPA ID Number PAD 010154045 | | | | | |
| 7. Transporter 2 Company Name | | | | | | | | U.S. EPA ID Number | | | | | |
| 8. Designated Facility Name and Site Address Enviro of PA 730 Vogelsong Rd., York, PA 17404 Facility's Phone: (717) 846-1900 | | | | | | | | U.S. EPA ID Number PAD 010 154 045 | | | | | |
| GENERATOR | 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | | | | 10. Containers | | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | | |
| | | | | | | No. | Type | | | | | | |
| | X | 1. TK2, NA3077, Hazardous Waste Solid N.O.S., (lead), 9, PG III | | | | 01 | DT | 20 <i>Est.</i> | FF | 0008 | | | |
| | | 2. | | | | | | | | | | | |
| | | 3. | | | | | | | | | | | |
| | 4. | | | | | | | | | | | | |
| 14. Special Handling Instructions and Additional Information 1: App# G203522EPA ERIS 171 (lead contaminated soil) Emergency response# 314-620-3058 Job# ROAN-SSCH | | | | | | | | | | | | | |
| 15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true. | | | | | | | | | | | | | |
| Generator's/Offoror's Printed/Typed Name Ryan Clancy (EAG) | | | | | | | | Signature  | | Month 07 | Day 28 | Year 20 | |
| TRANSPORTER INT'L | 16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____ | | | | | | | | | | | | |
| | 17. Transporter Acknowledgment of Receipt of Materials | | | | | | | | | | | | |
| TRANSPORTER | Transporter 1 Printed/Typed Name Todd Thompson | | | | | | | | Signature  | | Month 07 | Day 26 | Year 20 |
| | Transporter 2 Printed/Typed Name | | | | | | | | Signature | | Month | Day | Year |
| DESIGNATED FACILITY | 18. Discrepancy | | | | | | | | | | | | |
| | 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection | | | | | | | | | | | | |
| | Manifest Reference Number: _____ | | | | | | | | | | | | |
| 18b. Alternate Facility (or Generator) | | | | | | | | U.S. EPA ID Number | | | | | |
| Facility's Phone: _____ | | | | | | | | | | | | | |
| 18c. Signature of Alternate Facility (or Generator) | | | | | | | | | | | | | |
| 19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) | | | | | | | | | | | | | |
| 1. | | | 2. | | | 3. | | | 4. | | | | |
| 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a | | | | | | | | | | | | | |
| Printed/Typed Name | | | | | | | | Signature | | Month | Day | Year | |



Profile ID : 659545

LAND DISPOSAL RESTRICTION FORM (From Question G3)

manifest # 021322673 JJK

GENERATOR INFORMATION

| | | | |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|
| 1. Generator: | ENVIRO ANALYTICS GROUP | 2. EPA ID Number: | MDD053945432 |
| 5. Waste is a: | <input type="radio"/> Wastewater (<1% TSS & TOC) <input checked="" type="radio"/> Non-wastewater <input type="radio"/> Debris | | |
| 6. Notification Frequency: | <input type="radio"/> One Time <input type="radio"/> Required with Each Shipment | | |
| 7. Shipment EPA Waste Codes: | D008 | | |
| 8. UHC's: (Underlying Hazardous Constituents 40 CFR 268.48)? | <input type="radio"/> Yes <input checked="" type="radio"/> No <i>(If yes, list constituents):</i> | | |
| 9. Does a subcategory apply per 40 CFR 268.40? | <input type="radio"/> Yes <input checked="" type="radio"/> No <i>(If yes, select subcategory):</i> | | |
| 10. Constituents requiring treatment in F001-5, F039, debris, and alternate soils? | <input checked="" type="radio"/> Yes <input type="radio"/> No <i>(If yes, list):</i> | | |

Requires Treatment

Waste Subject To Treatment (40 CFR 268.7(a) (2))
The restricted waste identified above must be treated to the applicable treatment standards in 40 CFR 268.40, or treated to comply with applicable Prohibitions set forth in Part 268.32 or RCRA Section 3004(d) and 268.49 (c).

If applicable, under 268.49, this contaminated soil does or does not contain listed hazardous waste and does or does not exhibit a characteristic of hazardous waste and is subject to the soil treatment standards as provided by 268.49 (c) or the universal treatment standards.

Hazardous Debris Subject To Treatment (40 CFR 268.45)
This hazardous debris identified above must be treated to the alternative treatment standards in 40 CFR 268.45.

Waste De-characterized But Requires Treatment For UHC (40 CFR 268.7 (b) (4) (iv))
I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49 to remove the hazardous characteristic. This de-characterized waste contains Underlying Hazardous Constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Waste Meets Treatment Standards

Waste Meets Treatment Standards (40 CFR 268.7(a) (3))
The restricted waste identified above meets the treatment standards in 40 CFR 268.40 or Alternative LDR treatment standards for contaminated soil 40 CFR 268.49 and can be landfill disposed without further treatment.

If applicable, under 268.49, this contaminated soil does or does not contain listed hazardous waste and does or does not exhibit a characteristic of hazardous waste and complies with the soil treatment standards as provided by 268.49 (c) or the universal treatment standards.

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Waste Treated To Treatment Standards (40 CFR 268.7(b) (1) & 268.7 (b) (2))
The treatment residue, or extract of such residue, or the restricted waste identified above has been tested to assure that the treatment residues or Extract meet all applicable treatment standards in 40 CFR 268.40 and/or performance standards in 40 CFR 268.45

I certify under penalty of law that I personally have examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

Waste Soil treated to alternative standards (40 CFR 268.7 (b) (4))
I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.49 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

I certify and warrant that the information that appears on this form, and appended documents, is true and correct. I have correctly indicated how my waste is to be Managed in accordance with 40 CFR 268. My certification is based on personal examination of the information submitted, or is based on my inquiries of those individuals responsible for obtaining the information.

| | | | |
|-------------|------------|--------|-------|
| Print Name: | Signature: | Title: | Date: |
|-------------|------------|--------|-------|