PHASE II
INVESTIGATION REPORT

AREA A: PARCEL A6
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

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1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of EnviroAnalytics Group, LLC (EAG), has completed a Phase II Investigation of a portion of the Tradepoint Atlantic property (formerly Sparrows Point Terminal, LLC) that has been designated as Area A: Parcel A6 (the Site). Parcel A6 is comprised of 19.1 acres of the approximately 3,100-acre former steel making facility (**Figure 1**). The Site is bounded to the south by the portion of Parcel B6 located north of the Tin Mill Canal (TMC), to the north by Maryland Route 158 (Bethlehem Blvd.), and to the west by the former New Cold Mill Complex (NCMC) within Parcel A4.

The Phase II Investigation was performed in accordance with procedures outlined in the approved Phase II Investigation Work Plan for Area A: Parcel A6. This Work Plan (dated October 11, 2018) was approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on October 18, 2018 in compliance with requirements pursuant to the following:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the MDE effective September 12, 2014; and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the USEPA effective November 25, 2014.

Parcel A6 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from the USEPA on September 12, 2014. Based on this agreement, the USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE's Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE and delivered on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over the next several years.

1.1. SITE HISTORY

From the late 1800s until 2012, the production and manufacturing of steel was conducted at Sparrows Point. Iron and steel production operations and processes at Sparrows Point included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, Sparrows Point was the largest steel facility in the United States, producing hot and cold rolled sheets, coated materials, pipes, plates, and rod and wire. The steel making operations at Sparrows Point ceased in fall 2012.

Parcel A6 occupies the historical Mud Reservoir, which was most notably used for storage of mud and clays generated from the former Humphrey Creek. The Mud Reservoir was constructed to the east of the former Pipe Mill, which was later replaced by the NCMC. The Mud Reservoir is listed as Finding 280 within the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants dated May 19, 2014. According to their Phase I ESA, Weaver Boos determined that the Mud Reservoir should not be identified as a Recognized Environmental Condition (REC) because available analytical data, specifically for organic compounds (VOCs, SVOCs, PAHs, and PCBs), indicated that the concentrations of contaminants in the reservoir were at non-detect to minimal (ug/kg) levels. Weaver Boos concluded that no further action or assessment was warranted.

According to the Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure (which is included as an attachment to Weaver Boos' Phase I ESA), the Mud Reservoir received dredge spoil from Humphrey Creek from the 1930s until 1970, at which point it began to receive mud and clay from the Humphrey Impoundment. There is no evidence that iron and steel industrial processes were completed within the boundary of Parcel A6. Additional information including historical data available from previous investigations can be found in the Parcel A6 Phase II Investigation Work Plan (Revision 0 dated October 11, 2018).

1.2. OBJECTIVES

The objective of this Phase II Investigation was to characterize the nature and extent of contamination at the Site. A summary table of the site investigation locations, including the sample identification numbers and the analyses performed, is provided as **Appendix A**. This report includes a summary of the work performed, including the environmental setting, site investigation methods, analytical results and data usability assessment, and findings and recommendations.

2.0 ENVIRONMENTAL SETTING

2.1. LAND USE AND SURFACE FEATURES

The Tradepoint Atlantic property consists of the former Sparrows Point steel mill. According to the Phase I ESA prepared by Weaver Boos dated May 19, 2014, the property is zoned Manufacturing Heavy-Industrial Major (MH-IM). Surrounding property zoning classifications (beyond Tradepoint Atlantic) include the following: Manufacturing Light (ML); Resource Conservation (RC); Density Residential (DR); Business Roadside (BR); Business Major (BM); Business Local (BL); and Residential Office (RO). Light industrial and commercial properties are located northeast of the property and northwest of the property across Bear Creek. Residential areas of Edgemere and Fort Howard are located northeast of the property across Jones Creek and to the southeast across Old Road Bay, respectively. Residential and commercial areas of Dundalk are located northwest of the property across Bear Creek.

According to topographic maps provided by EAG, the Site is relatively flat, with elevated topography on all sides sloping down to the parcel interior. Elevations at the Site range from 12 to 20 feet above mean sea level (amsl) across the entire parcel area. A small hill is located in the central area of the Site in the center of a horseshoe-shaped pond. Because Parcel A6 is low-lying in comparison to the surrounding areas, the Site accumulates runoff and periodically contains significant standing water in the ephemeral horseshoe-shaped pond. Some of the low-lying topography extends to the northeast of the parcel into the area between Maryland Route 158 and Interstate 695.

2.2. REGIONAL GEOLOGY

The Site is located within the Atlantic Coastal Plain Physiographic Province (Coastal Plain). The western boundary of the Coastal Plain is the “Fall Line”, which separates the Coastal Plain from the Piedmont Plateau Province. The Fall Line runs from northeast to southwest along the western boundary of the Chesapeake Bay, passing through Elkton (MD), Havre de Grace (MD), Baltimore City (MD), and Laurel (MD). The eastern boundary of the Coastal Plain is the off-shore Continental Shelf.

The unconsolidated sediments beneath the Site belong to the Talbot Formation (Pleistocene), which is then underlain by the Cretaceous formations which comprise the Potomac Group (Patapsco Formation, Arundel Formation, and the Patuxent Formation). The Potomac Group formations are comprised of unconsolidated sediments of varying thicknesses and types, which may be several hundred feet to several thousand feet thick. These unconsolidated formations may overlie deeper Mesozoic and/or Precambrian bedrock. Depth to bedrock is approximately 700 feet within the Site.

2.3. SITE GEOLOGY/HYDROGEOLOGY

Groundcover at the Site is comprised of 100% natural soils (rather than slag/fill material) based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (adapted from Figure 2-20 in the DCC Report prepared by Rust Environment and Infrastructure dated January 1998).

In general, the encountered subsurface geology included natural soils, which included fine-grained sediments (clays and silts) and coarse-grained sediments (sands and gravels). Non-native slag fill materials were not encountered within the Site. Shallow groundwater was observed in soil cores at depths of 23.5 to 32.5 feet below ground surface (bgs) across the Site; however, groundwater was not encountered at every location. Soil boring observation logs are provided in **Appendix B**. Note that unless otherwise indicated, all Unified Soil Classification System (USCS) group symbols provided on the attached boring logs are from visual observations, and not from laboratory testing.

Groundwater was investigated at the Site via the installation of four temporary groundwater sample collection points (commonly referred to as piezometers). Sample locations where piezometers were installed within Parcel A6 include: A6-001-PZ, A6-003-PZ, A6-006-PZ, and A6-015-PZ. **Figure 3** shows an aerial view of the piezometers which were installed and sampled to characterize groundwater conditions in Parcel A6.

The piezometers were surveyed by a Maryland-licensed surveyor. Supporting documentation from the survey is included in **Appendix C**. A synoptic round of groundwater level measurements was collected on September 26, 2019. Surveyed top of casing (TOC) and ground surface elevations for all applicable locations can be found in **Table 1**, along with the depth to water (DTW) measurements from this date. Based on the recorded field measurements, a groundwater potentiometric surface map was constructed for the shallow hydrogeologic zone. The localized potentiometric map for shallow groundwater has been included on **Figure 3**. The elevation contours indicate that groundwater flows radially from the small hill located in the central area of the Site, but predominantly south toward the TMC.

3.0 SITE INVESTIGATION

A total of 46 soil samples (from 18 locations) and four groundwater samples were collected for analysis between September 20 and September 27, 2019 as part of the Parcel A6 Phase II Investigation. This Phase II Investigation utilized methods and protocols that followed the procedures included in the Quality Assurance Project Plan (QAPP) dated April 5, 2016 which was approved by the agencies to support the investigation and remediation of the Tradepoint Atlantic property. Information regarding the project organization, field activities and sampling methods, sampling equipment, sample handling and management procedures, the selected laboratory and analytical methods, quality control and quality assurance procedures, investigation-derived waste (IDW) management methods, and reporting requirements are described in detail in the approved Parcel A6 Work Plan and the QAPP.

All site characterization activities were conducted under the property-wide Health and Safety Plan (HASP) provided as Appendix G of the approved Work Plan.

3.1. SAMPLE TARGET IDENTIFICATION

Previous activities within and around the buildings and facilities located on the Tradepoint Atlantic property may have been historical sources of environmental contamination. If present, source areas were identified as targets for sampling through a careful review of historical documents. When a sampling target was identified, a boring was placed at or next to its location using Geographic Information Systems (GIS) software (ArcMap Version 10.6).

Sampling targets included, as applicable, 1) Recognized Environmental Conditions (RECs) shown on the REC Location Map provided in Weaver Boos' Phase I ESA, 2) additional findings (non-RECs) from the Phase I ESA which were identified as potential environmental concerns, and 3) Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified from the DCC Report prepared by Rust Environment and Infrastructure. There were no RECs, SWMUs, or AOCs identified at the Site based on the Phase I ESA or DCC Report.

Four sets of historical drawings were also reviewed to identify potential sampling targets for the Site. These drawings included the 5000 Set (Plant Arrangement), the 5100 Set (Plant Index), the 5500 Set (Plant Sewer Lines), and a set of drawings indicating coke oven gas distribution drip leg locations. Drip legs are points throughout the distribution system where coke oven gas condensate was removed from the gas pipelines. The condensate from the drip legs was typically discharged to drums, although it is possible some spilled out of the drums and onto the ground. There were no drip legs identified inside the boundary of Parcel A6. A summary of the specific drawings covering the Site is presented in **Table 2**. No specific sampling target locations were identified because the historical drawings depicted no industrial activities or specific features that may have been a source of environmental contamination within the Site. Based on the review of plant

drawings and the Phase I ESA, the only identified sampling target was the former Mud Reservoir. A summary table of the investigation plan, along with the applicable boring identification numbers and the analyses performed, has been provided as **Appendix A**. Because the Mud Reservoir encompasses the entire Site area, additional sample locations were not needed to fill in spatial gaps. Limited precipitation preceding and during the sampling period resulted in complete drying of the horseshoe-shaped pond at the time of fieldwork completion. Shallow soil samples were collected from the dry pond bottom. **Table 3** provides the identification numbers of the field adjusted samples, the coordinates of the proposed and final locations, and the distance/direction of the field shifts.

The density of soil borings met the requirements set forth in QAPP Worksheet 17 – Sampling Design and Rationale. Parcel A6 contains a total of 19.1 acres without engineered barriers. In accordance with the relevant sampling density requirements, a minimum of 15 soil borings were required to cover the area without engineered barriers. A total of 15 soil borings were completed during the Phase II Investigation, in addition to the collection of three shallow soil samples from within the area of the dry pond.

3.2. SOIL INVESTIGATION

Continuous core soil borings were advanced at 15 locations across the Site to assess the presence or absence of soil contamination, and to assess the vertical distribution of any encountered contamination (**Figure 4**). Three shallow soil samples (originally proposed as sediment samples) were also collected directly from the top 12 inches of soil within the dry horseshoe-shaped pond. The shallow soil samples (A6-016-SD through A6-018-SD) are also shown on **Figure 4**.

The 15 continuous core soil borings were advanced to a maximum depth of 35 feet bgs using the Geoprobe® MC-7 Macrocore soil sampler (surface to 10 feet bgs) and the Geoprobe® D-22 Dual-Tube Sampler (depths >10 feet bgs). At each of the 15 completed boring locations, each soil core was visually inspected and screened with a hand-held photoionization detector (PID) prior to logging soil types. Soil boring logs have been included as **Appendix B**, and the PID calibration log has been included as **Appendix D**. Unless otherwise indicated, all USCS group symbols provided on the attached boring logs are from visual observations.

One shallow sample was collected from the 0 to 1 foot depth interval, and a deeper sample was collected from the 4 to 5 foot depth interval from each continuous core soil boring. If the PID or other field observations indicated contamination to exist at a depth greater than 3 feet bgs but less than 9 feet bgs, and above the water table, the sample from the deeper 4 to 5 foot interval was shifted to the alternate depth interval. One additional set of samples was also collected from the 9 to 10 foot depth interval if groundwater had not been encountered. The 10-foot bgs samples may have been held by the laboratory prior to analysis in accordance with the requirements given in the Parcel A6 Work Plan. These project-specific requirements for the analysis of 10-foot bgs samples

are further described below. It should be noted that soil samples were not collected from a depth that was below the water table.

Soil sampling activities were conducted in accordance with the procedures and methods referenced in **Field Standard Operating Procedure (SOP) Numbers 003, 008, 009, 012, and 013** provided in Appendix A of the QAPP. Down-hole soil sampling equipment was decontaminated after soil sampling had been concluded at each location, according to the procedures and methods referenced in **Field SOP Number 016** provided in Appendix A of the QAPP.

Each soil sample collected during this investigation was submitted to Pace Analytical Services, Inc. (PACE) for analysis. As stated above, the 10-foot bgs samples may have been held prior to analysis in accordance with the Parcel A6 Work Plan. Excluding these deep samples, the remaining soil samples were analyzed for Target Compound List (TCL) semi-volatile organic compounds (SVOCs) via USEPA Methods 8270 and 8270 SIM, Oil & Grease via USEPA Methods 1664 and 9071, total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) via USEPA Methods 5030 and 8015, Target Analyte List (TAL) Metals via USEPA Methods 6010, 7470, and 7471, hexavalent chromium via USEPA Method 7196, and cyanide via USEPA Method 9012. Samples from any depth interval with a sustained PID reading of greater than 10 ppm were also analyzed for TCL volatile organic compounds (VOCs) via USEPA Method 8260. The three shallow soil samples collected from the dry pond were analyzed for VOCs regardless of PID reading. Additionally, the shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were analyzed for polychlorinated biphenyls (PCBs) via USEPA Method 8082. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

If the PID reading from the 9 to 10 foot bgs interval was less than 10 ppm (true for all 10-foot bgs samples in Parcel A6), all parameters were held by the laboratory pending the analysis of the overlying 0 to 1 and 4 to 5 foot bgs (or field adjusted interval) samples. If any 9 to 10 foot bgs interval had exhibited a sustained PID reading of 10 ppm, this sample would be released to be analyzed for VOCs, SVOCs, TPH-DRO, TPH-GRO, and Oil & Grease. However, the samples for metals and cyanide would still be held by the laboratory pending the analysis of the 0 to 1 and 4 to 5 foot bgs interval samples. If the preliminary laboratory results from the 4 to 5 foot bgs interval indicated exceedances of the Project Action Limits (PALs) for any constituents, the held sample from the 9 to 10 foot bgs interval was then released to be analyzed for those constituents that exhibited PAL exceedances in the overlying sample.

3.3. GROUNDWATER INVESTIGATION

Four shallow temporary groundwater piezometers (A6-001-PZ, A6-003-PZ, A6-006-PZ, and A6-015-PZ) were included in the parcel-specific sampling plan to characterize groundwater and to support the definition of the groundwater potentiometric surface. The locations where shallow groundwater samples were collected are provided on **Figure 3**. The soil boring logs and the piezometer construction logs for these piezometers are included in **Appendix B**. Following the installation of each sample collection point, the 0-hour depth to water was documented and the collection point was checked for the presence of non-aqueous phase liquid (NAPL) using an oil-water interface probe in accordance with the methods referenced in **Field SOP Number 019** provided in Appendix A of the QAPP.

After the installation of each temporary groundwater sample collection point, down-hole equipment was decontaminated according to the procedures and methods referenced in **Field SOP Number 016** provided in Appendix A of the QAPP.

Groundwater samples were collected at each location in accordance with methods referenced in **Field SOP Number 006** provided in Appendix A of 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 metals were filtered in the field with an in-line 0.45 micron filter. The sampling and purge logs have been included in **Appendix E**. Calibration of the multiparameter meter was performed before the start of each day of the sampling event, and a calibration post-check was completed at the end of the day. Documentation of the multiparameter meter calibration was not recorded for this parcel.

Groundwater samples collected in Parcel A6 were submitted to PACE, and analyzed for TCL-VOCs via USEPA Method 8260, TCL-SVOCs via USEPA Methods 8270 and 8270 SIM, Oil & Grease via USEPA Method 1664, TPH-DRO/GRO via USEPA Methods 5030 and 8015, TAL-Dissolved Metals via USEPA Methods 6010 and 7470, dissolved hexavalent chromium via USEPA Method 7196, total cyanide via USEPA Method 9012, and free cyanide via ASTM Method D7237-10. Note that, due to analytical limitations, PACE was unable to analyze for available cyanide, as specified in the Work Plan and marked on the Chains of Custody; therefore, free cyanide was analyzed in lieu of available cyanide. The change of analytical method does not significantly impact the findings of this investigation. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.4. MANAGEMENT OF INVESTIGATION-DERIVED WASTE (IDW)

In accordance with **Field SOP Number 005** provided in Appendix A of the QAPP, potentially impacted materials, or IDW, generated during this Phase II Investigation was containerized in 55-gallon (DOT-UN1A2) drums. The types of IDW that were generated during this Phase II Investigation included the following:

- soil cuttings generated from soil borings or the installation of groundwater sample points;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

Following the completion of field activities, a composite sample was gathered with aliquots from each of the Parcel A6 Phase II IDW soil drums for waste characterization. Following this analysis, the waste soil was characterized as non-hazardous. A list of all results from the soil waste characterization procedure can be found in **Table 4**. IDW drums containing aqueous materials (including aqueous waste generated during the Parcel A6 Phase II Investigation) were characterized by preparing a composite sample from randomly selected drums. The composite sample included aliquots from several individual drums that were chosen as a subset of the aqueous drums being staged on-site at the date of collection. Following this analysis, the aqueous waste was characterized as non-hazardous. A list of all results from the aqueous waste characterization procedure can be found in **Table 5**.

The parcel-specific IDW drum log from this Phase II Investigation is included as **Appendix F**. All IDW procedures were carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP.

4.0 ANALYTICAL RESULTS

4.1. SOIL CONDITIONS

Soil analytical results were screened against PALs established in the property-wide QAPP (or other direct guidance from the agencies; i.e., TPH/Oil & Grease) to determine PAL exceedances. PALs are generally based on the USEPA's Regional Screening Levels (RSLs) for the Composite Worker exposure to soil. The Composite Worker is defined by the USEPA as a long-term receptor exposed during the workday who is a full-time employee that spends most of the workday conducting maintenance activities (which typically involve on-site exposures to surface soils) outdoors.

The analytical results for the detected parameters in soil are summarized and compared to the PALs in **Table 6** (Organics) and **Table 7** (Inorganics). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (DVRs) have been included as electronic attachments. The DVRs contain a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.1.1. Soil Conditions: Organic Compounds

As provided on **Table 6**, two VOCs (acetone and styrene) were identified above the laboratory's method detection limits (MDLs) in the soil samples collected from across the Site. Except for the three shallow soil samples collected from the dry pond area, only samples which exhibited PID readings greater than 10 ppm were analyzed for VOCs. There were no VOCs detected above their respective PALs.

Table 6 provides a summary of SVOCs detected above the laboratory's MDLs in the soil samples collected from across the Site. The PALs for relevant polynuclear aromatic hydrocarbons (PAHs) have been adjusted upward based on revised toxicity data published in the USEPA RSL Composite Worker Soil Table. Therefore, any soil exceedances for PAHs would be based on the adjusted PALs rather than those presented in the QAPP. There were no SVOCs detected above their respective PALs.

Shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were analyzed for PCBs. **Table 6** does not provide analytical data for PCBs because these compounds were not detected above the laboratory's MDLs (or the PALs) in any soil samples.

Table 6 provides a summary of the TPH/Oil & Grease detections above the laboratory's MDLs in the soil samples collected from across the Site. There were no PAL exceedances of DRO, GRO, or Oil & Grease in any of the soil samples. Additionally, no physical evidence of NAPL was observed in any soil cores completed during this investigation.

4.1.2. Soil Conditions: Inorganic Constituents

Table 7 provides a summary of inorganic constituents detected above the laboratory's MDLs in the soil samples collected from across the Site. Arsenic was the only constituent detected above its respective PAL. Arsenic was detected above (or equal to) its PAL of 3 mg/kg in 36 total soil samples analyzed for this constituent with a maximum detection of 43.7 mg/kg in A6-010-SB-1. The inorganic PAL exceedance locations and results have been provided on **Figure 5**.

4.1.3. Soil Conditions: Results Summary

Table 6 and **Table 7** provide a summary of the detected organic compounds and inorganics in the soil samples submitted for laboratory analysis. **Figure 5** presents the soil sample results that exceeded the PALs. PAL exceedances in soil within Parcel A6 were limited to only arsenic. Of the 46 soil samples analyzed, 36 exceeded the arsenic PAL (approximately 78%). The maximum detected concentration of arsenic was 43.7 mg/kg in A6-010-SB-1. Organic compounds (VOCs, SVOCs, PCBs, TPH-DRO/GRO, and Oil & Grease) were not detected above their respective PALs and are not considered to be significant soil contaminants in Parcel A6. The Mud Reservoir is the only target identified in the Parcel A6 Work Plan.

Lead, PCBs, and TPH/Oil & Grease are subject to special requirements as designated by the agencies: lead results above 10,000 mg/kg are subject to additional delineation (and possible excavation), PCB results above 50 mg/kg are subject to delineation and excavation, and TPH/Oil & Grease results above 6,200 mg/kg should be evaluated for the potential presence and mobility of NAPL in any future development planning. Concentrations for all of these parameters did not exceed the PALs and specified thresholds in any soil samples collected at the Site.

4.2. GROUNDWATER CONDITIONS

The analytical results for the detected parameters in groundwater are summarized and compared to the PALs in **Table 8** (Organics) and **Table 9** (Inorganics). The laboratory Certificates of Analysis (including Chains of Custody) and the associated DVR have been included as electronic attachments. The DVR contains a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.2.1. Groundwater Conditions: Organic Compounds

As provided on **Table 8**, two VOCs (ethylbenzene and xylenes) were identified above the laboratory's MDLs in the groundwater samples collected from across the Site. No VOCs were detected above their respective PALs in groundwater.

Table 8 provides a summary of SVOCs identified in the groundwater samples above the laboratory's MDLs. Similar to the evaluation of soil data, the PALs for relevant PAHs have been adjusted upward based on revised toxicity data published in the USEPA RSL Resident Tapwater

Table. Naphthalene was the only SVOC detected with a PAL exceedance, with a detection of 0.17 µg/L at A6-001-PZ. This SVOC PAL exceedance is shown on **Figure 6**.

Table 8 provides a summary of the TPH/Oil & Grease detections in groundwater at the Site. There were no detections (or PAL exceedances) of Oil & Grease or GRO in any groundwater samples. DRO was detected above its PAL in one sample (A6-006-PZ) with a detection of 120 µg/L. Each location was checked for the potential presence of NAPL using an oil-water interface probe prior to sampling. During these checks, NAPL was not detected in any of the groundwater sampling locations. The DRO PAL exceedance is shown on **Figure 6**.

4.2.2. Groundwater Conditions: Inorganic Constituents

Table 9 provides a summary of inorganic constituents detected above the MDLs in the groundwater samples collected from across the Site. A total of six dissolved metals (arsenic, beryllium, cobalt, iron, manganese, and nickel) were detected above their respective aqueous PALs. The maximum detections of each inorganic constituent in groundwater were 10.5 ug/L of arsenic at A6-006-PZ, 6.7 µg/L of beryllium at A6-006-PZ, 946 ug/L of cobalt at A6-006-PZ, 332,000 ug/L of iron at A6-015-PZ, 15,000 ug/L of manganese at A6-015-PZ, and 812 ug/L of nickel at A6-006-PZ. The inorganic PAL exceedances are shown on **Figure 6**.

4.2.3. Groundwater Conditions: Results Summary

Table 8 and **Table 9** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure 6** presents the locations and aqueous results that exceeded the PALs. Aqueous PAL exceedances among the groundwater samples collected from the Site consisted of one SVOC (naphthalene), DRO, and six dissolved metals (arsenic, beryllium, cobalt, iron, manganese, and nickel).

Groundwater data were screened to determine whether individual sample results may exceed the USEPA Vapor Intrusion (VI) Screening Levels (Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient (THQ) of 1 as determined by the Vapor Intrusion Screening Level (VISL) Calculator version 3.5 (https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls). The PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site.

None of the aqueous results exceeded the individual VI TCR or THQ criteria as specified by the VISL Calculator. Following the initial screening, a cumulative VI risk assessment was also performed for each individual sample location, with the results separated by cancer risk versus non-cancer hazard. All compounds with detections were included in the computation of the cumulative cancer risk, and all compounds with detections exceeding 10% of the THQ level were included in the evaluation of non-cancer hazard. None of the cumulative VI cancer risks were greater than 1E-5. Only free cyanide was identified with detections slightly above the 10% THQ

level, and none of the calculated Hazard Index (HI) values were elevated. The results of the cumulative VI comparisons are provided in **Table 10**.

The presence and absence of groundwater impacts within the Site boundaries have been adequately described. There are no concerns related to potential VI risks at the Site. Based on the relatively low-level analytical results identified during this investigation, there do not appear to be significant ongoing sources of groundwater contamination present.

5.0 DATA USABILITY ASSESSMENT

The approved property-wide QAPP specified a process for evaluating data usability in the context of meeting project goals. Specifically, the goal of the Phase II Investigation is to determine if potentially hazardous substances or petroleum products (VOCs, SVOCs, PCBs, metals, cyanide, or TPH/Oil & Grease) are present in Site media (soil and groundwater) at concentrations that could pose an unacceptable risk to Site receptors. Individual results are compared to the PALs established in the QAPP (i.e., the USEPA RSLs) or based on other direct guidance from the agencies, to identify the presence of exceedances in each environmental medium.

Quality assurance and quality control (QA/QC) samples were collected during field studies to evaluate field/laboratory variability. A summary of QA/QC samples associated with this investigation has been included as **Appendix G**. The following QA/QC samples were submitted for analysis to support the data validation:

- Trip Blank – at a rate of one per cooler with VOC samples per day
  - Soil – VOCs only
  - Water – VOCs only
- Blind Field Duplicate – at a rate of one per twenty samples
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, PCBs, hexavalent chromium, and cyanide
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, PCBs, and hexavalent chromium
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, and hexavalent chromium
- Field Blank and Equipment Blank – at a rate of one per twenty samples
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide

The QA/QC samples were collected and analyzed in accordance with the QAPP Worksheet 12 – Measurement Performance Criteria, QAPP Worksheet 20 – Field Quality Control, and QAPP Worksheet 28 – Analytical Quality Control and Corrective Action.

5.1. DATA VERIFICATION

A verification review was performed on documentation generated during sample collection and analysis. The verification included a review of field log books, field data sheets, and Chain of Custody forms to ensure that all planned samples were collected, and to ensure consistency with

the field methods and decontamination procedures specified in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. In addition, calibration logs were reviewed to ensure that field equipment was calibrated at the beginning of each day and re-checked as needed. The PID calibration log has been provided in **Appendix D**. Documentation of the multiparameter meter calibration was not recorded for this parcel.

The laboratory deliverables were reviewed to ensure that all records specified in the QAPP as well as necessary signatures and dates are present. Sample receipt records were reviewed to ensure that the sample condition upon receipt was noted, and any missing/broken sample containers (if any) were noted and reported according to plan. The data packages were compared to the Chain of Custody forms to verify that results were provided for all collected samples. The data package case narratives were reviewed to ensure that all exceptions (if any) are described.

5.2. DATA VALIDATION

USEPA Stage 2B data validation was completed for a representative 30% of the environmental sample analyses performed by PACE and supporting Level IV Data Package information by Environmental Data Quality Inc. (EDQI). The DVRs provided by EDQI have been included as electronic attachments.

Sample analyses have undergone an analytical quality assurance review to ensure adherence to the required protocols. The Stage 2B review was performed as outlined in "Guide for Labeling Externally Validated Laboratory Analytical Data for Superfund Use", EPA-540-R-08-005. Results have been validated or qualified according to general guidance provided in "USEPA National Functional Guidelines for Inorganic Superfund Data Review (ISM02.1)", USEPA October 2013. Region III references this guidance for validation requirements. This document specifies procedures for validating data generated for Contract Laboratory Program (CLP) analyses. The approved property-wide QAPP dated April 5, 2016 and the quality control requirements specified in the methods and associated acceptance criteria were also used to evaluate the non-CLP data.

The PACE-Greensburg (PA) laboratory facility implements quality assurance and reporting requirements through the TNI certification program with the State of Pennsylvania; which is accepted by Maryland. Since late-January 2017, these requirements include the flagging of contaminants with a "B" qualifier when an analyte is detected in an associated laboratory method blank, regardless of the level of the contaminant detected in the sample. A method blank is analyzed at a rate of one blank for each 20 sample analytical batch. The USEPA has previously specified that results flagged with the "B" qualifier do not represent legitimate detections. They have also specified that results flagged with a "JB" qualifier are invalid, and any such results should be revised to display the "B" qualifier only.

Although elevated sample results may be "B" qualified by the laboratory as non-detects due to low-level blank detections, EDQI corrects any erroneous "B" qualifiers during the data validation procedure to avoid under-reporting analytical detections. EDQI removes the "B" qualifiers for relevant samples according to the guidance given in the table below. Therefore, a result originally flagged with a "B" qualifier in the laboratory certificate may be reported as a legitimate detection without this qualifier. Likewise, a result originally flagged with a "JB" qualifier in the laboratory certificate may be reported as a "J" qualifier if the erroneous "B" qualifier can be eliminated, but would be reported as a "B" qualified non-detect result if the original "B" qualifier is legitimate.

Blank Result	Sample Result	Qualifying Action
Result less than RL	Result less than RL	Result is Qualified "B"
	Result greater than RL	Remove "B"
Result greater than RL	Result less than Blank Result	Result is Qualified "B"
	Result greater than Blank Result	Remove "B"

RL = Reporting Limit

As directed by EDQI, ARM has reviewed all non-validated laboratory reports (those which were not designated to be reviewed by EDQI), and applied the same validation corrections to any relevant "B" or "JB" qualified results. This review of the non-validated data ensures that any elevated detections of parameters, including those which may exceed the PALs, are not mistakenly reported as non-detect values simply because they did not undergo the formal validation procedure by EDQI. ARM has also revised the non-validated results to eliminate any laboratory-specific, non-standardized qualifiers (L2, 6c, ip, 4c, etc.), which are customarily removed by EDQI during the validation procedure.

5.3. DATA USABILITY

The data were evaluated with respect to the quality control elements of precision, bias, representativeness, comparability, completeness, and sensitivity relative to data quality indicators and performance measurement criteria outlined in QAPP Worksheet 12 – Measurement Performance Criteria. The following discussion details deviation from the performance measurement criteria, and the impact on data quality and usability.

The measurement performance criteria of precision and bias were evaluated in the data validation process as described in the DVRs provided as electronic attachments. Where appropriate, potential limitations in the results have been indicated through final data flags. These flags indicate whether particular data points were quantitative estimates, biased high/low, associated with blank contamination, etc. Individual data flags are provided with the results in the detection summary tables. A qualifier code glossary is included with each DVR provided by EDQI. Particular results may have been marked with the "R" flag if the result was deemed to be unreliable and was not

included in any further data evaluation. The analytical soil results that were rejected during data validation are provided in **Table 11**. No groundwater analytical results were rejected. A discussion of data completeness (the proportion of valid data) is included below.

Representativeness is a measure of how accurately and precisely the data describe the Site conditions. Representativeness of the samples submitted for analysis was ensured by adherence to standard sampling techniques and protocols, as well as appropriate sample preservation prior to analysis. Sampling was conducted in accordance with the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. Specific Field SOPs applicable to the assessment of representativeness include **Field SOP Numbers 003, 006, 008, 009, 010, 011, 017, and 024**. Review of the field notes and laboratory sample receipt records indicated that sample collection at the Site was representative, with no significant deviations from the SOPs.

Comparability describes the degree of confidence in comparing two sets of data. Comparability is maintained across multiple datasets by the use of consistent sampling and analytical methods across multiple project phases. Comparability of sample results was ensured through the use of approved standard sampling and analysis methods outlined in the QAPP. QA/QC protocols help to maintain the comparability of datasets, and in this case were assessed via blind duplicates, blank samples, and spiked samples, where applicable. No significant deviations from the QAPP were noted in the dataset.

Sensitivity is a determination of whether the analytical methods and quantitation limits will satisfy the requirements of the project. The laboratory reports were reviewed to verify that reporting limits met the quantitation limits for specific analytes provided in QAPP Worksheet #15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits. In general, the laboratory reporting limits met the detection and quantitation limits specified in the QAPP.

Completeness is expressed as a ratio of the number of valid data points to the total number of analytical data results. Non-usable ("R" flagged) data results were determined through the data validation process. The approved QAPP specifies that the completeness of data is assessed by professional judgement, but should be greater than or equal to 90%. Data completeness for each compound is provided in **Appendix H**. This evaluation of completeness includes only the representative 30% of sample results which were randomly selected for validation.

All groundwater compounds had an overall completeness ratio of 100%. The only soil compounds with overall completeness ratios below 90% were 1,4-dioxane (0%) and methyl acetate (0%), each with three rejected results. The rejection of the results for these two compounds has not been uncommon for solid matrix data obtained from the Tradepoint Atlantic property. Groundwater data are available to evaluate the significance of these compounds in Parcel A6. Overall, the soil and groundwater data can be used as intended, and no significant data gaps were identified. While a limited set of analytes did not meet the completeness goal of 90% for all Site media, these compounds do not appear to be significant contaminants at the Site.

6.0 FINDINGS AND RECOMMENDATIONS

The objective of this Phase II Investigation was to characterize the nature and extent of contamination at the Site. During the Phase II Investigation, a total of 46 soil samples (from 18 locations) and four groundwater samples were collected and analyzed to define the nature and extent of contamination in Parcel A6. The sampling and analysis plan for the parcel was developed to target the Mud Reservoir, which represented an area potentially contaminated with hazardous substances and/or petroleum products. Soil samples were analyzed for VOCs, SVOCs, TPH-DRO/GRO, Oil & Grease, TAL-Metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot bgs) were additionally analyzed for PCBs. Groundwater samples were analyzed for VOCs, SVOCs, TPH-DRO/GRO, Oil & Grease, TAL-Dissolved Metals, dissolved hexavalent chromium, total cyanide, and free cyanide.

6.1. SOIL

The concentrations of constituents in the soil have been characterized by the Phase II Investigation to provide estimates of exposure point concentrations to support risk assessment.

Lead and PCB concentrations are well below the levels that would warrant evaluation of a removal remedy. There were no locations where detections of lead exceeded 10,000 mg/kg, the designated threshold at which delineation would be required. There were no detections of total PCBs (or concentrations identified above the mandatory delineation criterion of 50 mg/kg), indicating that further action is not needed.

There were no soil PAL exceedances identified for organic compounds (VOCs, SVOCs, PCBs, TPH-DRO/GRO, and Oil & Grease), indicating that these compounds are not significant contaminants in soil at the Site. No physical evidence of NAPL was observed in any soil cores completed during this investigation. PAL exceedances in soil within Parcel A6 were limited to only arsenic. Arsenic exceeded its PAL in 36 of the 46 samples analyzed for this constituent site-wide, with a maximum detection of 43.7 mg/kg in sample A6-010-SB-1.

6.2. GROUNDWATER

The concentrations of constituents in the groundwater have also been characterized by the Phase II Investigation to provide estimates of exposure point concentrations to support risk assessment.

There were no aqueous PAL exceedances identified in groundwater for VOCs, GRO, or Oil & Grease, indicating that these compounds are not significant contaminants in groundwater at the Site. Exceedances of the PALs in groundwater within Parcel A6 consisted of six dissolved metals (arsenic, beryllium, cobalt, iron, manganese, and nickel), DRO, and naphthalene. Dissolved arsenic, beryllium, cobalt, iron, manganese, nickel, and DRO were all detected at concentrations exceeding their respective PALs in A6-006-PZ. The other three groundwater sampling locations,

A6-001-PZ, A6-003-PZ, and A6-015-PZ all had PAL exceedances of dissolved iron and manganese. Naphthalene had only one PAL exceedance, located at A6-001-PZ. Each temporary groundwater sample collection point was checked for the potential presence of NAPL using an oil-water interface probe prior to sampling. During these checks, NAPL was not detected at any of the groundwater sampling locations. All temporary groundwater sample collection points remaining at the Site will be properly abandoned.

Groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized); therefore, there is no potential for direct human exposure for a Composite Worker. In the event that future construction/excavation leads to a potential Construction Worker exposure to groundwater, health and safety plans should be implemented to limit exposure risk. The groundwater data were screened to determine whether any cumulative (or individual) sample results exceeded the USEPA VI TCR (carcinogen) or THQ (non-carcinogen) Screening Levels. None of the individual sample results exceeded the VI TCR or THQ criteria. When the aqueous results were summed by sample location, none of the cumulative VI cancer risks were greater than 1E-5, and none of the cumulative VI non-cancer HI values exceeded 1. There are no concerns related to potential VI risks at the Site.

6.3. RECOMMENDATIONS

Sufficient remedial investigation data has been collected to evaluate the nature and extent of possible constituents of concern in Parcel A6. The presence and absence of soil and groundwater impacts within Parcel A6 have been adequately described and further investigation at the Site is not warranted to characterize overall conditions. No further action is recommended in Parcel A6 at this time. Any future proposed development will be presented in a project-specific Response and Development Work Plan.

7.0 REFERENCES

ARM Group Inc. (2018). *Phase II Investigation Work Plan: Parcel A6.* Revision 0. October 11, 2018.

ARM Group Inc. (2016). *Quality Assurance Project Plan: Sparrows Point Terminal Site*. Revision 3. April 5, 2016.

Rust Environment and Infrastructure (1998). *Description of Current Conditions: Bethlehem Steel Corporation*. Final Draft. January 1998.

USEPA (2017). Vapor Intrusion Screening Level (VISL) Calculator version 3.5 (https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls).

Weaver Boos Consultants (2014). *Phase I Environmental Site Assessment: Former RG Steel Facility*. Final Draft. May 19, 2014.

FIGURES

Site Boundary
Parcel Boundaries
Private Property

Parcel A9
Parcel A5
Parcel A13
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A2
Parcel A15
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B22
Parcel B16
Parcel B21
Parcel B15
Parcel B24
Parcel B23
Parcel B25
Parcel B7
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12

Tradepoint Atlantic
Area A and Area B Parcels

March 4, 2020

Figure 1

ARM Group LLC
Engineers and Scientists

0 500 1,000 2,000 Feet

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
Area A: Project 200101
Area B: Project 200102

Site Boundary

Parcel Boundaries

1916 Shoreline:

Land

Marsh

Water

Parcel A9

Parcel A5

Parcel A13

Parcel A7

Parcel A14

Greys Creek

Bear Creek

Parcel A11

Parcel A8

Parcel A12

Parcel A2

Parcel A15

Parcel A17

Parcel A18

Parcel A16

Parcel A6

Parcel A3

Parcel A4

Parcel A10

Parcel A1

Parcel B6

Humphrey Creek

Parcel B8

Parcel B14

Parcel B21

Parcel B22

Parcel B16

Parcel B15

Parcel B24

Parcel B23

Parcel B25

Old Road Bay

Block House Cove

Parcel B7

Jones Creek

Parcel B1

Parcel B2

Parcel B3

Parcel B17

Parcel B19

Parcel B4

Parcel B5

Parcel B9

Parcel B18

Parcel B10

Parcel B13

Parcel B20

Parcel B11

Parcel B12

Patapsco River

Approximate Shoreline 1916

March 4, 2020

Adapted from Figure 2-20 of the Description of Current Conditions Report prepared by Rust Environmental and Infrastructure, dated January 1998

Figure 2

ARM Group LLC
Engineers and Scientists

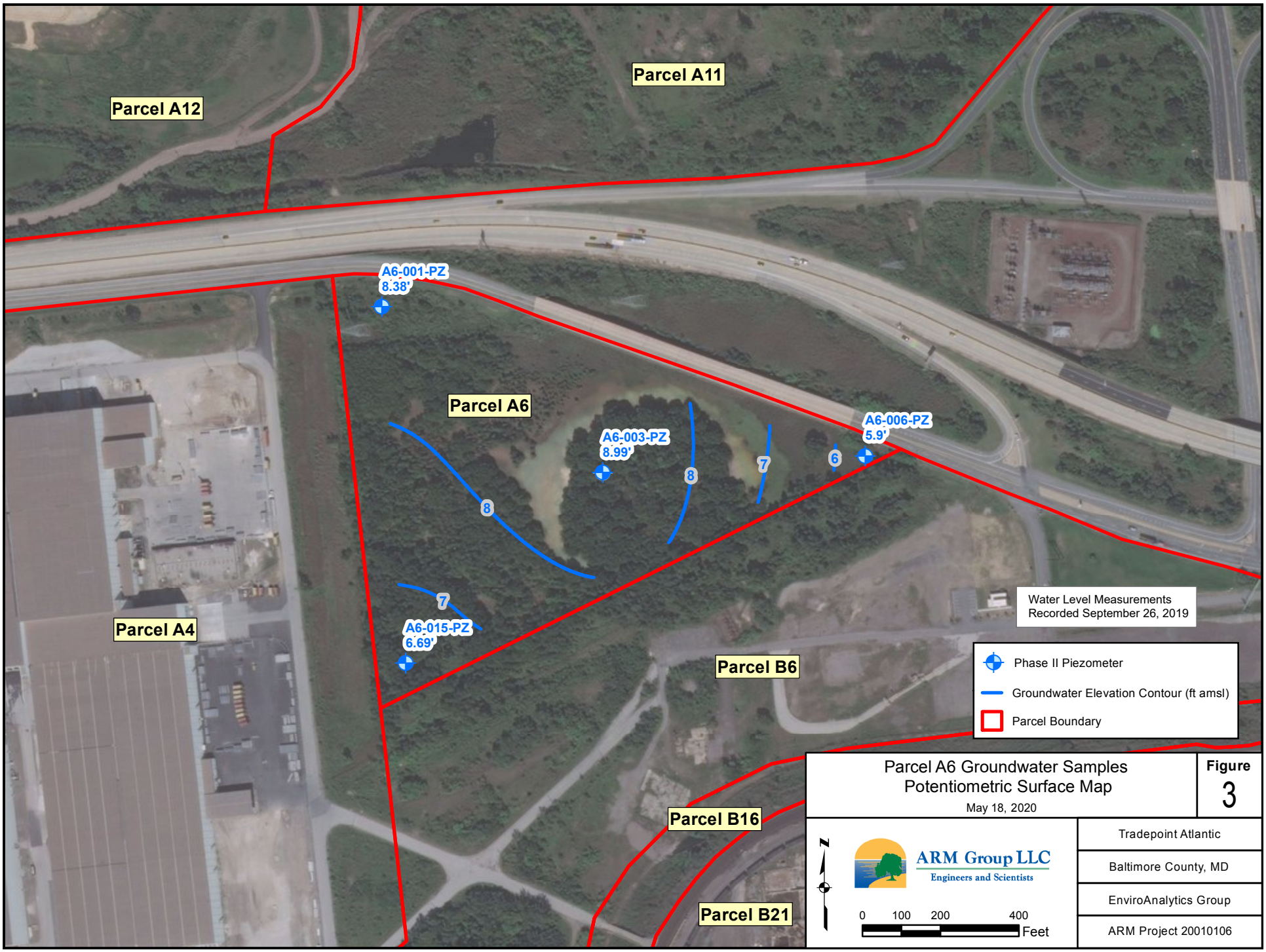
0 500 1,000 2,000 Feet

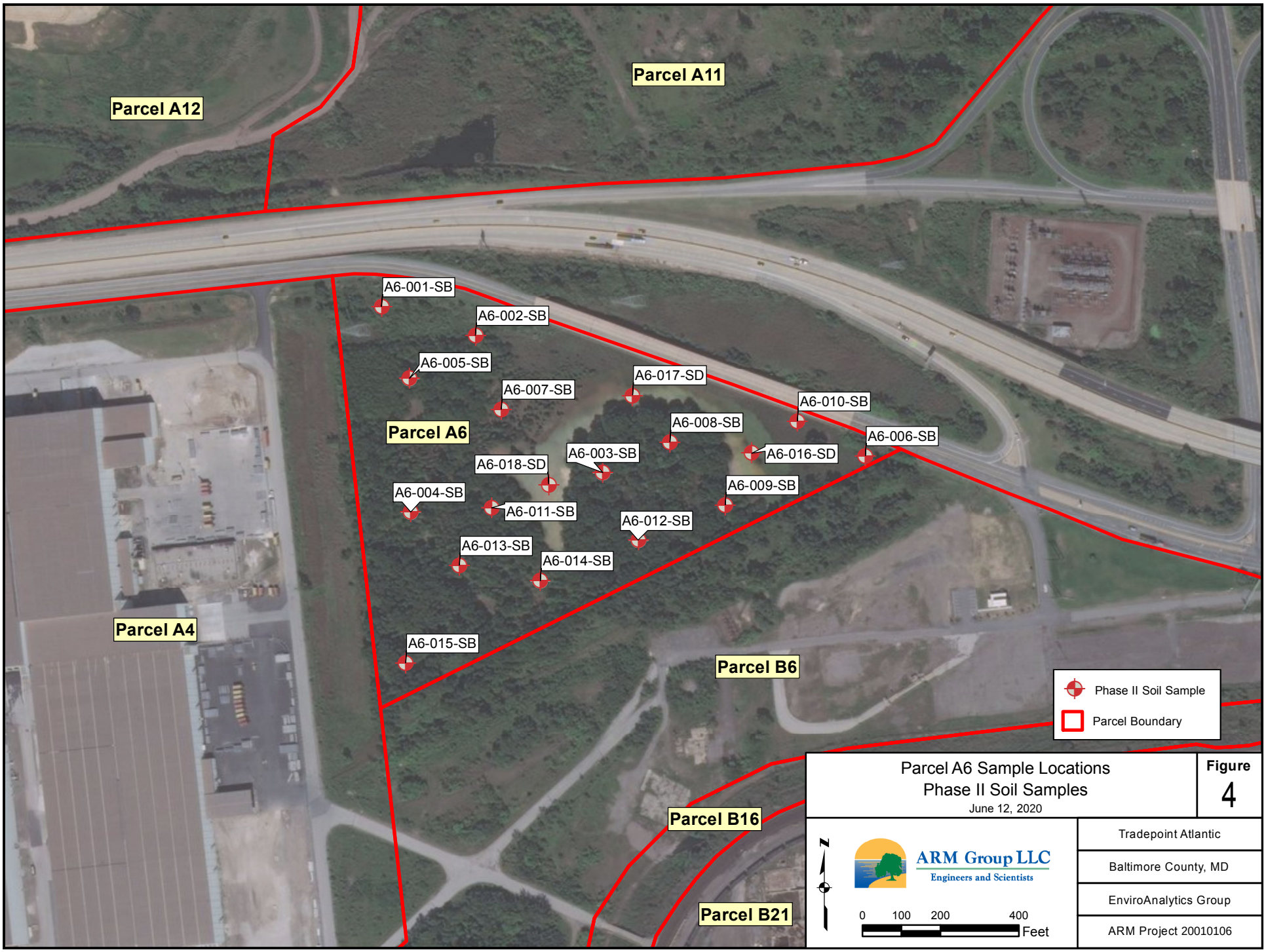
Tradepoint Atlantic

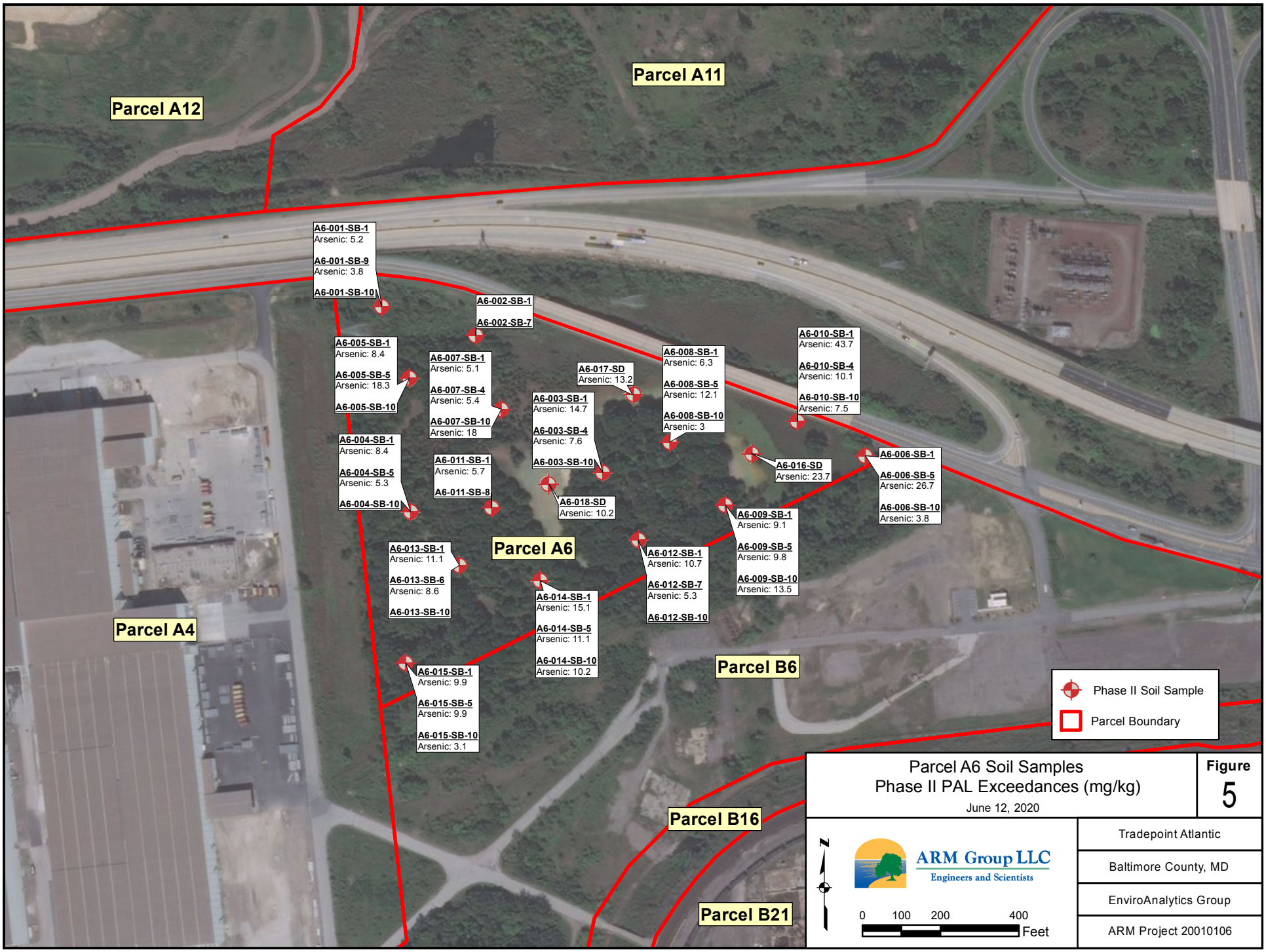
Baltimore County, MD

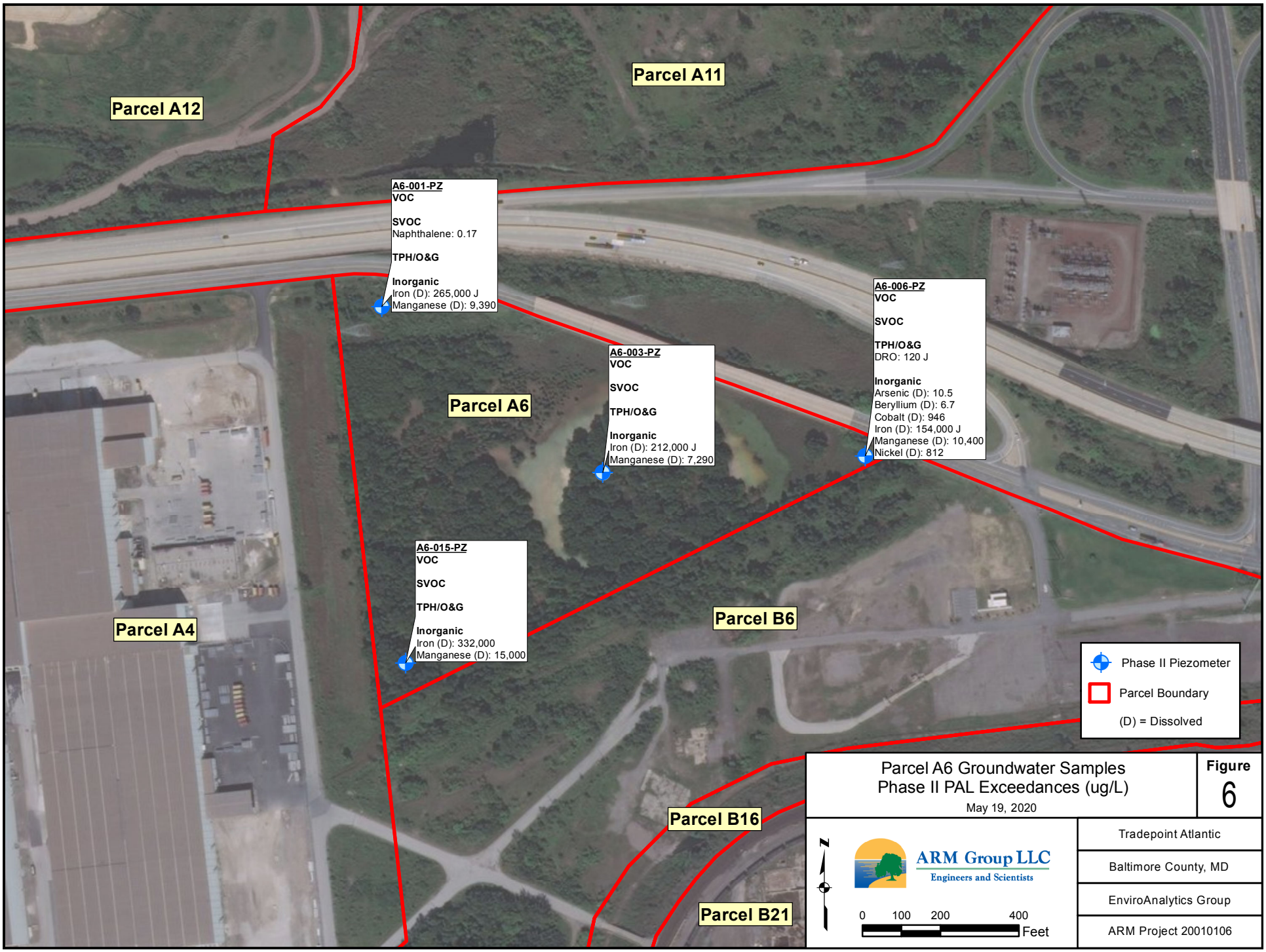
EnviroAnalytics Group

Area A: Project 200101
Area B: Project 200102


Parcel A12
Parcel A11
A6-001-PZ
8.38'
Parcel A6
A6-003-PZ
8.99'
A6-006-PZ
5.9'
8
8
7
6
7
A6-015-PZ
6.69'
Parcel A4
Parcel B6
Parcel B16
Parcel B21
Water Level Measurements
Recorded September 26, 2019
Phase II Piezometer
Groundwater Elevation Contour (ft amsl)
Parcel Boundary
Parcel A6 Groundwater Samples
Potentiometric Surface Map
May 18, 2020
Figure
3
N
ARM Group LLC
Engineers and Scientists
0 100 200 400
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010106


Parcel A12
Parcel A11
A6-001-SB
A6-002-SB
A6-005-SB
A6-007-SB
A6-017-SD
A6-010-SB
Parcel A6
A6-008-SB
A6-006-SB
A6-003-SB
A6-016-SD
A6-018-SD
A6-009-SB
A6-004-SB
A6-011-SB
A6-012-SB
A6-013-SB
A6-014-SB
Parcel A4
A6-015-SB
Parcel B6
Parcel B16
Parcel B21
Phase II Soil Sample
Parcel Boundary
Parcel A6 Sample Locations
Phase II Soil Samples
June 12, 2020
Figure
4
N
ARM Group LLC
Engineers and Scientists
0 100 200 400
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010106


Parcel A12
Parcel A11
Parcel A4
Parcel A6
Parcel B6
Parcel B16
Parcel B21
A6-001-SB-1
Arsenic: 5.2
A6-001-SB-9
Arsenic: 3.8
A6-001-SB-10
A6-002-SB-1
A6-002-SB-7
A6-005-SB-1
Arsenic: 8.4
A6-005-SB-5
Arsenic: 18.3
A6-005-SB-10
A6-007-SB-1
Arsenic: 5.1
A6-007-SB-4
Arsenic: 5.4
A6-007-SB-10
Arsenic: 18
A6-017-SD
Arsenic: 13.2
A6-003-SB-1
Arsenic: 14.7
A6-003-SB-4
Arsenic: 7.6
A6-003-SB-10
A6-008-SB-1
Arsenic: 6.3
A6-008-SB-5
Arsenic: 12.1
A6-008-SB-10
Arsenic: 3
A6-010-SB-1
Arsenic: 43.7
A6-010-SB-4
Arsenic: 10.1
A6-010-SB-10
Arsenic: 7.5
A6-004-SB-1
Arsenic: 8.4
A6-004-SB-5
Arsenic: 5.3
A6-004-SB-10
A6-011-SB-1
Arsenic: 5.7
A6-011-SB-8
A6-018-SD
Arsenic: 10.2
A6-016-SD
Arsenic: 23.7
A6-006-SB-1
A6-006-SB-5
Arsenic: 26.7
A6-006-SB-10
Arsenic: 3.8
A6-009-SB-1
Arsenic: 9.1
A6-009-SB-5
Arsenic: 9.8
A6-009-SB-10
Arsenic: 13.5
A6-013-SB-1
Arsenic: 11.1
A6-013-SB-6
Arsenic: 8.6
A6-013-SB-10
A6-012-SB-1
Arsenic: 10.7
A6-012-SB-7
Arsenic: 5.3
A6-012-SB-10
A6-014-SB-1
Arsenic: 15.1
A6-014-SB-5
Arsenic: 11.1
A6-014-SB-10
Arsenic: 10.2
A6-015-SB-1
Arsenic: 9.9
A6-015-SB-5
Arsenic: 9.9
A6-015-SB-10
Arsenic: 3.1
Phase II Soil Sample
Parcel Boundary
Parcel A6 Soil Samples
Phase II PAL Exceedances (mg/kg)
June 12, 2020
Figure
5
N
ARM Group LLC
Engineers and Scientists
0 100 200 400
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010106


Parcel A12
Parcel A11
Parcel A6
Parcel A4
Parcel B6
Parcel B16
Parcel B21
A6-001-PZ
VOC
SVOC
Naphthalene: 0.17
TPH/O&G
Inorganic
Iron (D): 265,000 J
Manganese (D): 9,390
A6-003-PZ
VOC
SVOC
TPH/O&G
Inorganic
Iron (D): 212,000 J
Manganese (D): 7,290
A6-006-PZ
VOC
SVOC
TPH/O&G
DRO: 120 J
Inorganic
Arsenic (D): 10.5
Beryllium (D): 6.7
Cobalt (D): 946
Iron (D): 154,000 J
Manganese (D): 10,400
Nickel (D): 812
A6-015-PZ
VOC
SVOC
TPH/O&G
Inorganic
Iron (D): 332,000
Manganese (D): 15,000
Phase II Piezometer
Parcel Boundary
(D) = Dissolved
Parcel A6 Groundwater Samples
Phase II PAL Exceedances (ug/L)
May 19, 2020
Figure
6
N
ARM Group LLC
Engineers and Scientists
0 100 200 400
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010106

TABLES

Table 1 - Parcel A6
Groundwater Elevation Data

Location Name	TOC Elevation (feet AMSL)	Ground Elevation (feet AMSL)	Measured DTW (feet)	Groundwater Elevation (feet AMSL)
A6-001-PZ	18.86	15.34	10.48	8.38
A6-003-PZ	19.75	16.24	10.76	8.99
A6-006-PZ	18.47	15.60	12.57	5.90
A6-015-PZ	21.52	18.71	14.83	6.69

DTW = Depth to water
TOC = Top of casing
AMSL = Above mean sea level
DTW measurements recorded September 26, 2019

Table 2 - Parcel A6
Historical Site Drawing Details

Set Name	Typical Features Shown	Drawing Number	Original Date Drawn	Latest Revision Date
Plant Arrangement	Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.)	5050	*Unknown*	3/19/1982
		5055	1/27/1959	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5150	*Unknown*	8/18/2008
		5155	*Unknown*	3/3/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5550	9/15/1959	3/5/1976
		5555	2/10/1976	2/10/1976
Drip Legs	Coke Oven Gas Drip Legs Locations	5888	*Unknown*	Sept. 1988

Table 3 - Parcel A6
Field Shifted Sample Locations

Location ID	Sample Target	Proposed Location*		Final Location*		Relocation Distance (ft.) & Direction	
		Northing	Easting	Northing	Easting		
A6-016-SD	Mud Reservoir	572,339	1,460,137	572,320	1,460,186	52	SE
A6-018-SD	Mud Reservoir	572,176	1,459,702	572,241	1,459,667	74	NW

*Reported northings and eastings are not survey accurate. Coordinates are reported in NAD 1983 Maryland State Plane (US feet).

Table 4 - Parcel A6
Characterization Results for Solid IDW

Sample ID	Parameter	Result (mg/L)	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory Flag	LOQ (mg/L)
A6 WASTE 10/25/19	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	0.025	5	no	U	0.025
	Barium	0.11	100	no		0.05
	Benzene	0.05	0.5	no	U	0.05
	Cadmium	0.0044	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	0.12	5	no	U	0.12
	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

J: The positive result reported for this analyte is a quantitative estimate below the laboratory LOQ.
U: The analyte was not detected in the sample. The numeric value represents the sample LOQ.
TCLP: Toxicity Characteristic Leaching Procedure
LOQ: Limit of Quantitation

Table 5 - Parcel A6
Characterization Results for Liquid IDW

Sample ID	Parameter	Result (mg/L)	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory Flag	LOQ (mg/L)
WASTE WATER 1247-1281 10/25/19	1,1-Dichloroethene	0.01	0.7	no	U	0.01
	1,2-Dichloroethane	0.01	0.5	no	U	0.01
	1,4-Dichlorobenzene	0.01	7.5	no	U	0.01
	2,4,5-Trichlorophenol	0.0024	400	no	U	0.0024
	2,4,6-Trichlorophenol	0.00097	2	no	U	0.00097
	2,4-Dinitrotoluene	0.00097	0.13	no	U	0.00097
	2-Butanone (MEK)	0.1	200	no	U	0.1
	2-Methylphenol	0.0028	200	no		0.00097
	3&4-Methylphenol(m&p Cresol)	0.0019	200	no	U	0.0019
	Arsenic	0.0154	5	no		0.005
	Barium	0.242	100	no		0.01
	Benzene	0.394	0.5	no		0.01
	Cadmium	0.0062	1	no		0.003
	Carbon tetrachloride	0.01	0.5	no	U	0.01
	Chlorobenzene	0.01	100	no	U	0.01
	Chloroform	0.01	6	no	U	0.01
	Chromium	0.156	5	no		0.005
	Hexachlorobenzene	0.00097	0.13	no	U	0.00097
	Hexachloroethane	0.00097	3	no	U	0.00097
	Lead	0.129	5	no		0.005
	Mercury	0.00051	0.2	no		0.0002
	Nitrobenzene	0.00097	2	no	U	0.00097
	Pentachlorophenol	0.0024	100	no	U	0.0024
	Selenium	0.008	1	no	U	0.008
	Silver	0.006	5	no	U	0.006
	Tetrachloroethene	0.01	0.7	no	U	0.01
	Trichloroethene	0.01	0.5	no	U	0.01
	Vinyl chloride	0.01	0.2	no	U	0.01

U: The analyte was not detected in the sample. The numeric value represents the sample LOQ.
TCLP: Toxicity Characteristic Leaching Procedure
LOQ: Limit of Quantitation

Table 6 - Parcel A6
Summary of Organics Detected in Soil

Parameter	Units	PAL	A6-001-SB-1	A6-001-SB-9	A6-002-SB-1	A6-002-SB-7	A6-003-SB-1	A6-003-SB-4	A6-003-SB-10	A6-004-SB-1*	A6-004-SB-5*
			9/24/2019	9/24/2019	9/24/2019	9/24/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019	9/23/2019
Volatile Organic Compounds											
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0063 U	N/A
Semi-Volatile Organic Compounds^											
2-Methylnaphthalene	mg/kg	3,000	**0.0062 J**	0.0081 U	0.0079 U	0.0098 U	**0.011**	**0.029**	0.0083 U	**0.013**	0.0079 U
Acenaphthene	mg/kg	45,000	**0.00083 J**	0.0081 U	0.0079 U	0.0098 U	**0.0044 J**	**0.026**	0.0083 U	**0.0032 J**	0.0079 U
Acenaphthylene	mg/kg	45,000	**0.0051 J**	0.0081 U	0.0079 U	0.0098 U	**0.0098**	**0.007 J**	0.0083 U	**0.018**	0.0079 U
Anthracene	mg/kg	230,000	**0.003 J**	0.0081 U	**0.0024 J**	0.0098 U	**0.014**	**0.027**	0.0083 U	**0.012**	0.0079 U
Benz[a]anthracene	mg/kg	21	**0.024**	0.0081 U	**0.0095**	0.0098 U	**0.033**	**0.024**	**0.0013 J**	**0.047**	0.0079 U
Benzo[a]pyrene	mg/kg	2.1	**0.031**	0.0081 U	**0.0085**	0.0098 U	**0.033 J**	**0.019**	0.0083 U	**0.055**	0.0079 U
Benzo[b]fluoranthene	mg/kg	21	**0.05**	0.0081 U	**0.011**	0.0098 U	**0.12 J**	**0.026**	0.0083 U	**0.11**	0.0079 U
Benzo[g,h,i]perylene	mg/kg		**0.022**	0.0081 U	**0.0044 J**	0.0098 U	**0.014 J**	**0.0053 J**	0.0083 U	**0.026**	0.0079 U
Benzo[k]fluoranthene	mg/kg	210	**0.014**	0.0081 U	**0.0048 J**	0.0098 U	**0.11 J**	**0.011 J**	0.0083 U	**0.091**	0.0079 U
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.024 B	0.082 U	0.027 B	0.026 B	0.044 B	0.045 B	0.031 B	**0.022 J**	0.078 U
Caprolactam	mg/kg	400,000	0.18 U	0.21 U	0.2 U	0.24 U	0.17 U	0.3 U	0.21 U	0.18 U	0.2 U
Chrysene	mg/kg	2,100	**0.029**	0.0081 U	**0.0094**	0.0098 U	**0.099**	**0.025**	0.0083 U	**0.058**	0.0079 U
Dibenz[a,h]anthracene	mg/kg	2.1	**0.007 J**	0.0081 U	0.0079 U	0.0098 U	**0.0062 J**	0.012 U	0.0083 U	**0.011**	0.0079 U
Di-n-ocytlphthalate	mg/kg	8,200	0.067 B	0.076 B	0.075 B	0.09 B	**0.098 J**	**0.037 J**	0.082 UJ	0.071 U	**0.074 J**
Fluoranthene	mg/kg	30,000	**0.042**	0.0081 U	**0.017**	0.0098 U	**0.05**	**0.092**	**0.0013 J**	**0.058**	0.0079 U
Fluorene	mg/kg	30,000	**0.00086 J**	0.0081 U	**0.0011 J**	0.0098 U	**0.0056 J**	**0.02**	0.0083 U	**0.0044 J**	0.0079 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.02**	0.0081 U	**0.0039 J**	0.0098 U	**0.016 J**	**0.0059 J**	0.0083 U	**0.028**	0.0079 U
Naphthalene	mg/kg	8.6	**0.0058 J**	0.0081 U	0.0079 U	0.0098 U	**0.024**	**0.18**	0.0083 U	**0.029**	0.0079 U
Phenanthrene	mg/kg		**0.018**	0.0081 U	**0.013**	0.0098 U	**0.034**	**0.03**	**0.0012 J**	**0.042**	0.0079 U
Pyrene	mg/kg	23,000	**0.037**	0.0081 U	**0.014**	0.0098 U	**0.042**	**0.065**	**0.00098 J**	**0.041**	0.0079 U
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	7 B	8.2 UJ	7.5 B	6.4 B	**165 J**	**317 J**	8.2 UJ	**72**	**4.6 J**
Oil & Grease	mg/kg	6,200	**91.5 J-**	247 UJ	**83.5 J-**	**116 J-**	**3,850**	**196 J**	249 U	**413**	233 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data
^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The acutal quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 6 - Parcel A6
Summary of Organics Detected in Soil

Parameter	Units	PAL	A6-005-SB-1* 9/23/2019	A6-005-SB-5* 9/23/2019	A6-006-SB-1 9/20/2019	A6-006-SB-5 9/20/2019	A6-007-SB-1 9/24/2019	A6-007-SB-4 9/24/2019	A6-008-SB-1 9/20/2019	A6-008-SB-5 9/20/2019	A6-009-SB-1 9/20/2019
Volatile Organic Compounds											
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^											
2-Methylnaphthalene	mg/kg	3,000	**0.003 J**	0.0084 U	**0.0034 J**	**0.013**	**0.0059 J**	0.0079 U	**0.0022 J**	0.012 U	**0.028**
Acenaphthene	mg/kg	45,000	0.0097 U	0.0084 U	**0.00071 J**	**0.0014 J**	**0.0016 J**	0.0079 U	0.007 U	**0.0027 J**	**0.038**
Acenaphthylene	mg/kg	45,000	**0.0016 J**	0.0084 U	**0.0026 J**	**0.0038 J**	**0.0014 J**	0.0079 U	**0.0018 J**	0.012 U	**0.018**
Anthracene	mg/kg	230,000	**0.0029 J**	0.0084 U	**0.0024 J**	**0.0044 J**	**0.0051 J**	0.0079 U	**0.0023 J**	**0.0044 J**	**0.1**
Benz[a]anthracene	mg/kg	21	**0.015**	0.0084 U	**0.012**	**0.01**	**0.029**	0.0079 U	**0.0091**	**0.018**	**0.32**
Benzo[a]pyrene	mg/kg	2.1	**0.015**	0.0084 U	**0.015**	**0.01**	**0.029**	0.0079 U	**0.0082**	**0.016**	**0.3**
Benzo[b]fluoranthene	mg/kg	21	**0.027**	0.0084 U	**0.024**	**0.023**	**0.039**	0.0079 U	**0.017**	**0.023**	**0.42**
Benzo[g,h,i]perylene	mg/kg		**0.0077 J**	0.0084 U	**0.0092**	**0.0068 J**	**0.017**	0.0079 U	**0.0045 J**	**0.0052 J**	**0.11**
Benzo[k]fluoranthene	mg/kg	210	**0.022**	0.0084 U	**0.0082**	**0.0069 J**	**0.016**	0.0079 U	**0.0051 J**	**0.0076 J**	**0.17**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.096 U	0.083 U	0.023 B	0.038 B	0.032 B	0.045 B	0.047 B	0.057 B	0.027 B
Caprolactam	mg/kg	400,000	0.24 U	0.21 U	0.18 U	0.23 U	0.26 U	0.2 U	0.18 U	**0.039 J**	0.18 U
Chrysene	mg/kg	2,100	**0.016**	0.0084 U	**0.014**	**0.023**	**0.03**	0.0079 U	**0.012**	**0.019**	**0.32**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.0028 J**	0.0084 U	**0.0029 J**	**0.0024 J**	**0.0056 J**	0.0079 U	**0.0016 J**	0.012 U	**0.035**
Di-n-ocytlphthalate	mg/kg	8,200	**0.092 J**	**0.079 J**	0.07 U	0.093 UJ	0.098 B	0.076 B	0.071 UJ	**0.034 J**	0.074 UJ
Fluoranthene	mg/kg	30,000	**0.018**	0.0084 U	**0.021**	**0.022**	**0.058**	0.0079 U	**0.013**	**0.034**	**0.59**
Fluorene	mg/kg	30,000	0.0097 U	0.0084 U	**0.00092 J**	**0.0023 J**	**0.0018 J**	0.0079 U	**0.00087 J**	**0.0015 J**	**0.053**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.0068 J**	0.0084 U	**0.0082**	**0.0064 J**	**0.016**	0.0079 U	**0.0039 J**	**0.0054 J**	**0.1**
Naphthalene	mg/kg	8.6	**0.0053 J**	0.0084 U	**0.0037 J**	**0.025**	**0.009 J**	0.0079 U	**0.0026 J**	**0.0039 J**	**0.04**
Phenanthrene	mg/kg		**0.013**	0.0084 U	**0.011**	**0.015**	**0.03**	0.0079 U	**0.0079**	**0.014**	**0.49**
Pyrene	mg/kg	23,000	**0.015**	0.0084 U	**0.019**	**0.018**	**0.049**	0.0079 U	**0.011**	**0.031**	**0.51**
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	**39.6**	**6.4 J**	**6.3 J**	**117 J**	**19.9 J**	7.6 B	**8.1 J**	**90.2 J**	**18.7 J**
Oil & Grease	mg/kg	6,200	**115 J**	246 U	**85.3 J**	**647**	**159 J-**	**143 J-**	**192**	**1,730**	**801**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data
^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The acutal quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 6 - Parcel A6
Summary of Organics Detected in Soil

Parameter	Units	PAL	A6-009-SB-5	A6-010-SB-1	A6-010-SB-4	A6-011-SB-1*	A6-011-SB-8*	A6-012-SB-1	A6-012-SB-7	A6-012-SB-10	A6-013-SB-1*
			9/20/2019	9/20/2019	9/20/2019	9/23/2019	9/23/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019
Volatile Organic Compounds											
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^											
2-Methylnaphthalene	mg/kg	3,000	**0.023**	**0.023**	0.011 U	0.0077 U	0.0082 U	**0.0059 J**	0.0079 U	0.0082 U	**0.0086**
Acenaphthene	mg/kg	45,000	**0.032**	**0.0061 J**	**0.0016 J**	0.0077 U	0.0082 U	**0.0026 J**	0.0079 U	0.0082 U	**0.003 J**
Acenaphthylene	mg/kg	45,000	**0.024**	**0.022**	**0.0011 J**	0.0077 U	0.0082 U	**0.0041 J**	0.0079 U	0.0082 U	**0.018**
Anthracene	mg/kg	230,000	**0.052**	**0.022**	**0.0025 J**	**0.00089 J**	0.0082 U	**0.0079**	0.0079 U	**0.00084 J**	**0.012**
Benz[a]anthracene	mg/kg	21	**0.088**	**0.082**	**0.012**	**0.006 J**	0.0082 U	**0.026**	**0.0014 J**	**0.0015 J**	**0.045**
Benzo[a]pyrene	mg/kg	2.1	**0.087**	**0.087**	**0.012**	**0.0048 J**	0.0082 U	**0.026**	0.0079 U	**0.00052 J**	**0.048**
Benzo[b]fluoranthene	mg/kg	21	**0.12**	**0.18**	**0.016**	**0.0065 J**	0.0082 U	**0.048**	0.0079 U	0.0082 U	**0.094**
Benzo[g,h,i]perylene	mg/kg		**0.03**	**0.038**	**0.0047 J**	**0.0025 J**	0.0082 U	**0.012**	0.0079 U	0.0082 U	**0.024**
Benzo[k]fluoranthene	mg/kg	210	**0.044**	**0.057**	**0.0058 J**	**0.0023 J**	0.0082 U	**0.016**	0.0079 U	0.0082 U	**0.077**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.052 B	0.056 B	0.025 B	**0.023 J**	**0.025 J**	0.039 B	0.035 B	0.033 B	**0.017 J**
Caprolactam	mg/kg	400,000	0.28 U	0.28 U	0.28 U	0.2 U	0.21 U	0.18 U	0.2 U	0.21 U	0.17 U
Chrysene	mg/kg	2,100	**0.081**	**0.17**	**0.011**	**0.0049 J**	0.0082 U	**0.03**	0.0079 U	**0.00053 J**	**0.049**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.012**	**0.013**	0.011 U	0.0077 U	0.0082 U	**0.0042 J**	0.0079 U	0.0082 U	**0.01**
Di-n-ocytlphthalate	mg/kg	8,200	0.11 UJ	0.11 UJ	0.11 U	**0.078 J**	**0.08 J**	0.071 UJ	0.08 UJ	**0.024 J**	0.07 U
Fluoranthene	mg/kg	30,000	**0.2**	**0.13**	**0.022**	**0.0094**	0.0082 U	**0.054**	**0.001 J**	**0.0017 J**	**0.065**
Fluorene	mg/kg	30,000	**0.035**	**0.0077 J**	**0.0012 J**	0.0077 U	0.0082 U	**0.0034 J**	0.0079 U	0.0082 U	**0.0034 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.031**	**0.036**	**0.0045 J**	**0.0022 J**	0.0082 U	**0.012**	0.0079 U	0.0082 U	**0.026**
Naphthalene	mg/kg	8.6	**0.16**	**0.054**	**0.0054 J**	0.0077 U	0.0082 U	**0.01**	0.0079 U	0.0082 U	**0.031**
Phenanthrene	mg/kg		**0.068**	**0.079**	**0.011**	**0.005 J**	0.0082 U	**0.037**	**0.00081 J**	**0.0023 J**	**0.033**
Pyrene	mg/kg	23,000	**0.14**	**0.1**	**0.019**	**0.0079**	0.0082 U	**0.041**	0.0079 U	**0.0013 J**	**0.033**
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	**157 J**	**562 J**	**53.3 J**	**7.8 J**	**5.4 J**	**25.4 J**	**5 J**	8.4 UJ	**154**
Oil & Grease	mg/kg	6,200	**435**	**2,560**	**716**	**130 J**	251 U	**449**	241 U	**280**	**574**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data
^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The acutal quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 6 - Parcel A6
Summary of Organics Detected in Soil

Parameter	Units	PAL	A6-013-SB-6*	A6-014-SB-1*	A6-014-SB-5*	A6-015-SB-1*	A6-015-SB-5*	A6-016-SD	A6-017-SD	A6-018-SD
			9/23/2019	9/23/2019	9/23/2019	9/23/2019	9/23/2019	9/24/2019	9/24/2019	9/24/2019
Volatile Organic Compounds										
Acetone	mg/kg	670,000	**0.021**	0.012 U	N/A	N/A	N/A	0.014 UJ	0.014 UJ	0.013 UJ
Styrene	mg/kg	35,000	**0.019**	0.0058 U	N/A	N/A	N/A	0.0069 U	0.0072 U	0.0063 U
Semi-Volatile Organic Compounds^										
2-Methylnaphthalene	mg/kg	3,000	**0.0086**	**0.033**	**0.024**	**0.0086**	**0.0059 J**	**0.0068 J**	**0.022**	**0.0084 J**
Acenaphthene	mg/kg	45,000	**0.0085**	**0.028**	**0.034**	**0.0011 J**	**0.0026 J**	**0.00092 J**	**0.0032 J**	**0.0014 J**
Acenaphthylene	mg/kg	45,000	**0.013**	**0.01**	**0.015**	**0.0075**	**0.0065 J**	**0.0078 J**	**0.02**	**0.0069 J**
Anthracene	mg/kg	230,000	**0.047**	**0.041**	**0.027**	**0.0058 J**	**0.009**	**0.0069 J**	**0.012**	**0.0065 J**
Benz[a]anthracene	mg/kg	21	**0.075**	**0.18**	**0.049**	**0.018**	**0.024**	**0.024**	**0.043**	**0.029**
Benzo[a]pyrene	mg/kg	2.1	**0.07**	**0.18**	**0.047**	**0.018**	**0.021**	**0.028**	**0.058**	0.0086 U
Benzo[b]fluoranthene	mg/kg	21	**0.1**	**0.32**	**0.079**	**0.037**	**0.035**	**0.093**	**0.14**	**0.059**
Benzo[g,h,i]perylene	mg/kg		**0.031**	**0.072**	**0.02**	**0.012**	**0.009**	**0.013**	**0.026**	**0.018**
Benzo[k]fluoranthene	mg/kg	210	**0.034**	**0.27**	**0.065**	**0.03**	**0.011**	**0.082**	**0.13**	**0.018**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.081 U	**0.029 J**	**0.026 J**	0.73 U	**0.018 J**	0.037 B	0.036 B	0.039 B
Caprolactam	mg/kg	400,000	0.2 U	0.21 U	**0.048 J**	1.8 U	0.2 U	0.22 U	0.25 U	0.22 U
Chrysene	mg/kg	2,100	**0.072**	**0.2**	**0.051**	**0.021**	**0.026**	**0.12**	**0.13**	**0.056**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.015**	**0.028**	**0.0082 J**	**0.005 J**	**0.0038 J**	**0.0049 J**	**0.0096 J**	**0.0058 J**
Di-n-ocytlphthalate	mg/kg	8,200	0.081 U	0.085 U	0.11 U	0.73 U	0.079 U	**0.14 J**	**0.14 J**	**0.096**
Fluoranthene	mg/kg	30,000	**0.12**	**0.44**	**0.13**	**0.028**	**0.042**	**0.046**	**0.079**	**0.053**
Fluorene	mg/kg	30,000	**0.013**	**0.023**	**0.017**	**0.0016 J**	**0.0028 J**	**0.0018 J**	**0.0036 J**	**0.0017 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.035**	**0.073**	**0.021**	**0.012**	**0.0094**	**0.014**	**0.027**	**0.017**
Naphthalene	mg/kg	8.6	**0.013**	**0.051**	**0.089**	**0.015**	**0.031**	**0.012**	**0.048**	**0.017**
Phenanthrene	mg/kg		**0.088**	**0.44**	**0.046**	**0.022**	**0.025**	**0.026**	**0.052**	**0.03**
Pyrene	mg/kg	23,000	**0.087**	**0.36**	**0.087**	**0.019**	**0.029**	**0.039**	**0.062**	**0.041**
TPH/Oil & Grease										
Diesel Range Organics	mg/kg	6,200	**125**	**157**	**320**	**42.2**	**68.2**	**240 J**	**637 J**	**108 J**
Oil & Grease	mg/kg	6,200	**989**	**1,520**	**2,770**	**164**	**266**	**4,380 J-**	**2,880 J-**	**710 J-**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data
^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The acutal quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-001-SB-1	A6-001-SB-9	A6-001-SB-10*	A6-002-SB-1	A6-002-SB-7	A6-003-SB-1
			9/24/2019	9/24/2019	9/24/2019	9/24/2019	9/24/2019	9/20/2019
Metals								
Aluminum	mg/kg	1,100,000	**8,980**	**18,300**	N/A	**11,000**	**20,000**	**4,520**
Arsenic	mg/kg	3	**5.2**	**3.8**	2.4 U	**2.8**	2.8 U	**14.7**
Barium	mg/kg	220,000	**70.4**	**34.3**	N/A	**50.4**	**70.7**	**28.8 J**
Beryllium	mg/kg	2,300	**0.59 J**	**0.89 J**	N/A	**0.36 J**	**0.84 J**	0.78 U
Cadmium	mg/kg	980	**0.47 J**	1.4 U	N/A	1.4 U	1.7 U	1.2 U
Chromium	mg/kg	120,000	**18.4**	**31.6**	N/A	**13.5**	**29.8**	**50**
Chromium VI	mg/kg	6.3	**0.55 J-**	**0.7 J-**	N/A	**0.76 J-**	**0.72 J-**	1 UJ
Cobalt	mg/kg	350	**8**	**3.8 J**	N/A	**4.3 J**	**4.7 J**	**1.5 J**
Copper	mg/kg	47,000	**56**	**10.4**	N/A	**23.8**	**10.8**	**29.5**
Iron	mg/kg	820,000	**13,500**	**16,100**	N/A	**9,660**	**14,300**	**30,100 J**
Lead	mg/kg	800	**67.7**	**18.8**	N/A	**17.9**	**21.3**	**61**
Manganese	mg/kg	26,000	**378**	**34.6**	N/A	**34.8**	**66.7**	**27.2**
Mercury	mg/kg	350	**0.25**	0.12 U	N/A	**0.28**	0.14 U	**0.13**
Nickel	mg/kg	22,000	**11.3**	**9.5 J**	N/A	**8.6 J**	**11.2**	**4.7 J**
Selenium	mg/kg	5,800	3.3 U	3.9 U	N/A	3.7 U	4.5 U	3.1 U
Vanadium	mg/kg	5,800	**27.6 J**	**40.2 J**	N/A	**22 J**	**38.3 J**	**25.1**
Zinc	mg/kg	350,000	**248**	**54.6**	N/A	**40**	**70.2**	**21.9**
Other								
Cyanide	mg/kg	150	**0.13 J**	1.2 U	N/A	1.1 U	1.5 U	**0.23 J-**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-003-SB-4	A6-003-SB-10	A6-004-SB-1*	A6-004-SB-5*	A6-004-SB-10*	A6-005-SB-1*
			9/20/2019	9/20/2019	9/23/2019	9/23/2019	9/23/2019	9/23/2019
Metals								
Aluminum	mg/kg	1,100,000	**19,500**	**16,600**	**7,210**	**14,100**	N/A	**7,000**
Arsenic	mg/kg	3	**7.6**	2.4 U	**8.4**	**5.3**	2.5 U	**8.4**
Barium	mg/kg	220,000	**33.3 J**	**34.1 J**	**29.5**	**46.5**	N/A	**88.5**
Beryllium	mg/kg	2,300	**1.1 J**	**0.63 J**	**0.18 J**	**0.6 J**	N/A	**0.33 J**
Cadmium	mg/kg	980	2.1 U	1.4 U	1.3 U	1.4 U	N/A	1.7 U
Chromium	mg/kg	120,000	**50.7**	**28.9**	**37**	**24.1**	N/A	**18.7**
Chromium VI	mg/kg	6.3	1.8 UJ	1.3 UJ	1.1 U	1.2 U	N/A	1.5 U
Cobalt	mg/kg	350	**10.4**	**4.1 J**	**1.4 J**	**3.2 J**	N/A	**1.7 J**
Copper	mg/kg	47,000	**36.5**	**9**	**36**	**10.8**	N/A	**42.1**
Iron	mg/kg	820,000	**47,500 J**	**17,200 J**	**31,800**	**26,100**	N/A	**10,200**
Lead	mg/kg	800	**45.7**	**12.4**	**47.1**	**9.7**	N/A	**137**
Manganese	mg/kg	26,000	**325**	**34.7**	**27.7**	**69.7**	N/A	**24.2**
Mercury	mg/kg	350	0.18 U	0.12 U	**0.14**	0.12 U	N/A	**0.56**
Nickel	mg/kg	22,000	**22.8 J**	**9.1 J**	**4.7 J**	**8.9 J**	N/A	**5 J**
Selenium	mg/kg	5,800	5.6 U	3.8 U	3.3 U	3.7 U	N/A	4.5 U
Vanadium	mg/kg	5,800	**43.2**	**64.1**	**31.8**	**31.4**	N/A	**26.7**
Zinc	mg/kg	350,000	**216**	**28.9**	**32.7**	**33.1**	N/A	**52.6**
Other								
Cyanide	mg/kg	150	**0.84 J-**	**0.19 J-**	**0.2 J**	0.98 U	N/A	1.2 U

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-005-SB-5*	A6-005-SB-10*	A6-006-SB-1	A6-006-SB-5	A6-006-SB-10	A6-007-SB-1
			9/23/2019	9/23/2019	9/20/2019	9/20/2019	9/20/2019	9/24/2019
Metals								
Aluminum	mg/kg	1,100,000	**16,500**	N/A	**2,430**	**13,000**	N/A	**9,130**
Arsenic	mg/kg	3	**18.3**	2.4 U	**2.8**	**26.7**	**3.8**	**5.1**
Barium	mg/kg	220,000	**24**	N/A	**12.8 J**	**59.2 J**	N/A	**89.9**
Beryllium	mg/kg	2,300	**1.2**	N/A	0.82 U	**1.9**	N/A	**0.29 J**
Cadmium	mg/kg	980	1.4 U	N/A	1.2 U	**0.69 J**	N/A	1.8 U
Chromium	mg/kg	120,000	**29.3**	N/A	**11.3**	**198**	N/A	**20.4**
Chromium VI	mg/kg	6.3	1.3 U	N/A	1.1 UJ	1.4 UJ	N/A	**0.93 J-**
Cobalt	mg/kg	350	**4.1 J**	N/A	**1 J**	**4.3 J**	N/A	**2.8 J**
Copper	mg/kg	47,000	**14.5**	N/A	**8.8**	**178**	N/A	**32.9**
Iron	mg/kg	820,000	**26,500**	N/A	**6,520 J**	**155,000 J**	N/A	**17,300**
Lead	mg/kg	800	**14.5**	N/A	**13.6**	**153**	N/A	**23.6**
Manganese	mg/kg	26,000	**78.4**	N/A	**85**	**96**	N/A	**35.8**
Mercury	mg/kg	350	0.12 U	N/A	**0.023 J**	**0.16**	N/A	**0.14 J**
Nickel	mg/kg	22,000	**13.1**	N/A	**3.8 J**	**14.6 J**	N/A	**7.5 J**
Selenium	mg/kg	5,800	3.8 U	N/A	3.3 U	4.4 U	N/A	4.7 U
Vanadium	mg/kg	5,800	**69.5**	N/A	**17.8**	**122**	N/A	**30.7 J**
Zinc	mg/kg	350,000	**101**	N/A	**67.1**	**329**	N/A	**50.3**
Other								
Cyanide	mg/kg	150	1.3 U	N/A	0.85 U	**0.56 J**	N/A	**0.21 J**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-007-SB-4	A6-007-SB-10*	A6-008-SB-1	A6-008-SB-5	A6-008-SB-10	A6-009-SB-1
			9/24/2019	9/24/2019	9/20/2019	9/20/2019	9/20/2019	9/20/2019
Metals								
Aluminum	mg/kg	1,100,000	**13,500**	N/A	**2,730**	**21,400**	N/A	**3,540**
Arsenic	mg/kg	3	**5.4**	**18**	**6.3**	**12.1**	**3**	**9.1**
Barium	mg/kg	220,000	**40.1**	N/A	**15.8 J**	**47.6 J**	N/A	**36.9 J**
Beryllium	mg/kg	2,300	**0.62 J**	N/A	0.84 U	**1.1 J**	N/A	0.88 U
Cadmium	mg/kg	980	1.3 U	N/A	1.3 U	2.1 U	N/A	1.3 U
Chromium	mg/kg	120,000	**22.5**	N/A	**17.4**	**65.8**	N/A	**28.6**
Chromium VI	mg/kg	6.3	**0.66 J-**	N/A	1.1 UJ	1.9 UJ	N/A	**0.62 J-**
Cobalt	mg/kg	350	**4.2 J**	N/A	**0.67 J**	**13.6**	N/A	**0.84 J**
Copper	mg/kg	47,000	**9.6**	N/A	**12.5**	**68.1**	N/A	**19**
Iron	mg/kg	820,000	**15,200**	N/A	**26,200 J**	**51,200 J**	N/A	**32,900 J**
Lead	mg/kg	800	**8.3**	N/A	**13**	**61.9**	N/A	**28.2**
Manganese	mg/kg	26,000	**68.9**	N/A	**16.4**	**319**	N/A	**71.6**
Mercury	mg/kg	350	0.12 U	N/A	**0.015 J**	**0.13 J**	N/A	**0.061 J**
Nickel	mg/kg	22,000	**13.1**	N/A	**2.5 J**	**25.6 J**	N/A	**3.9 J**
Selenium	mg/kg	5,800	3.6 U	N/A	3.3 U	5.6 U	N/A	3.5 U
Vanadium	mg/kg	5,800	**26 J**	N/A	**17**	**53.3**	N/A	**22.4**
Zinc	mg/kg	350,000	**56**	N/A	**21.1**	**305**	N/A	**31.4**
Other								
Cyanide	mg/kg	150	**0.2 J**	N/A	**0.19 J-**	**0.42 J-**	N/A	**0.14 J**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-009-SB-5	A6-009-SB-10	A6-010-SB-1	A6-010-SB-4	A6-010-SB-10	A6-011-SB-1*
			9/20/2019	9/20/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019
Metals								
Aluminum	mg/kg	1,100,000	**18,400**	N/A	**12,500**	**17,200**	N/A	**8,940**
Arsenic	mg/kg	3	**9.8**	**13.5**	**43.7**	**10.1**	**7.5**	**5.7**
Barium	mg/kg	220,000	**34.3 J**	N/A	**49.7 J**	**83.8 J**	N/A	**74**
Beryllium	mg/kg	2,300	**1 J**	N/A	**0.48 J**	**0.94 J**	N/A	**0.57 J**
Cadmium	mg/kg	980	2 U	N/A	1.9 U	2 U	N/A	1.4 U
Chromium	mg/kg	120,000	**53.8**	N/A	**179**	**42.5**	N/A	**17.8**
Chromium VI	mg/kg	6.3	1.7 UJ	N/A	1.7 UJ	1.6 UJ	N/A	1.2 U
Cobalt	mg/kg	350	**9.9**	N/A	**2.7 J**	**14.8**	N/A	**3.4 J**
Copper	mg/kg	47,000	**45.1**	N/A	**119**	**38.3**	N/A	**25.6**
Iron	mg/kg	820,000	**49,800 J**	N/A	**132,000 J**	**36,500 J**	N/A	**16,100**
Lead	mg/kg	800	**52.9**	N/A	**213**	**62.8**	N/A	**98.4**
Manganese	mg/kg	26,000	**313**	N/A	**67.6**	**463**	N/A	**37.7**
Mercury	mg/kg	350	**0.17**	N/A	**0.45**	**0.24**	N/A	**0.35**
Nickel	mg/kg	22,000	**22.8 J**	N/A	**9.3 J**	**22 J**	N/A	**7.9 J**
Selenium	mg/kg	5,800	5.2 U	N/A	5.1 U	5.2 U	N/A	3.7 U
Vanadium	mg/kg	5,800	**42**	N/A	**141**	**42.5**	N/A	**27**
Zinc	mg/kg	350,000	**268**	N/A	**77.8**	**231**	N/A	**53.9**
Other								
Cyanide	mg/kg	150	**0.81 J**	N/A	**1.1 J**	**0.83 J**	N/A	**0.16 J**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-011-SB-8*	A6-012-SB-1	A6-012-SB-7	A6-012-SB-10	A6-013-SB-1*	A6-013-SB-6*
			9/23/2019	9/20/2019	9/20/2019	9/20/2019	9/23/2019	9/23/2019
Metals								
Aluminum	mg/kg	1,100,000	**16,700**	**6,010**	**16,900**	**13,700**	**9,670**	**6,160**
Arsenic	mg/kg	3	**2.7**	**10.7**	**5.3**	2.4 U	**11.1**	**8.6**
Barium	mg/kg	220,000	**67.7**	**37.3 J**	**85.6 J**	**18.2 J**	**27.7**	**36.2**
Beryllium	mg/kg	2,300	**0.7 J**	**0.15 J**	**0.71 J**	**0.58 J**	**0.38 J**	**0.22 J**
Cadmium	mg/kg	980	1.5 U	1.2 U	1.4 U	1.5 U	1.2 U	1.5 U
Chromium	mg/kg	120,000	**29.4**	**34.3**	**24.7**	**28.3**	**45.5**	**39.2**
Chromium VI	mg/kg	6.3	1.2 U	1.1 UJ	1.2 UJ	1.2 UJ	1.1 U	1.3 U
Cobalt	mg/kg	350	**3.9 J**	**1.8 J**	**5.3**	**2.3 J**	**2.4 J**	**2.4 J**
Copper	mg/kg	47,000	**10.7**	**32.2**	**11.7**	**10.9**	**46.7**	**30.3**
Iron	mg/kg	820,000	**14,000**	**50,600 J**	**23,500 J**	**25,000 J**	**34,200**	**37,500**
Lead	mg/kg	800	**13.8**	**50.5**	**10.3**	**14.1**	**71.5**	**47.2**
Manganese	mg/kg	26,000	**58.4**	**102**	**85.2**	**36.5**	**48.4**	**64.9**
Mercury	mg/kg	350	0.12 U	**0.057 J**	**0.031 J**	0.13 U	**0.11**	**0.01 J**
Nickel	mg/kg	22,000	**8.5 J**	**5.6 J**	**14 J**	**5.6 J**	**7 J**	**8.8 J**
Selenium	mg/kg	5,800	3.9 U	3.3 U	3.7 U	3.9 U	3.2 U	3.9 U
Vanadium	mg/kg	5,800	**46.3**	**35.8**	**31.1**	**27.1**	**40.5**	**31.5**
Zinc	mg/kg	350,000	**57.5**	**54.6**	**44.1**	**22.3**	**45.6**	**57.5**
Other								
Cyanide	mg/kg	150	1.1 U	**0.21 J-**	**0.25 J-**	**0.15 J-**	**0.22 J**	**0.45 J**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-013-SB-10*	A6-014-SB-1*	A6-014-SB-5*	A6-014-SB-10*	A6-015-SB-1*
			9/23/2019	9/23/2019	9/23/2019	9/23/2019	9/23/2019
Metals							
Aluminum	mg/kg	1,100,000	N/A	**6,510**	**17,100**	N/A	**5,600**
Arsenic	mg/kg	3	2.4 U	**15.1**	**11.1**	**10.2**	**9.9**
Barium	mg/kg	220,000	N/A	**49.1**	**33.5**	N/A	**31.9**
Beryllium	mg/kg	2,300	N/A	**0.21 J**	**0.93 J**	N/A	**0.25 J**
Cadmium	mg/kg	980	N/A	1.5 U	1.9 U	N/A	1.2 U
Chromium	mg/kg	120,000	N/A	**123**	**72.4**	N/A	**33.5**
Chromium VI	mg/kg	6.3	N/A	1.3 U	**0.87 J**	N/A	1.1 U
Cobalt	mg/kg	350	N/A	**1.5 J**	**10.7**	N/A	**2.5 J**
Copper	mg/kg	47,000	N/A	**69.7**	**55.7**	N/A	**43.2**
Iron	mg/kg	820,000	N/A	**34,800**	**44,100**	N/A	**40,400**
Lead	mg/kg	800	N/A	**76.4**	**54.7**	N/A	**55.7**
Manganese	mg/kg	26,000	N/A	**37.9**	**299**	N/A	**83.4**
Mercury	mg/kg	350	N/A	**0.13**	**0.13 J**	N/A	**0.13**
Nickel	mg/kg	22,000	N/A	**5.6 J**	**22.8**	N/A	**8 J**
Selenium	mg/kg	5,800	N/A	4 U	5.1 U	N/A	3.3 U
Vanadium	mg/kg	5,800	N/A	**45**	**42.6**	N/A	**36.2**
Zinc	mg/kg	350,000	N/A	**44.1**	**287**	N/A	**58.4**
Other							
Cyanide	mg/kg	150	N/A	**0.26 J**	**0.45 J**	N/A	**1.4**

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Table 7 - Parcel A6
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A6-015-SB-5*	A6-015-SB-10*	A6-016-SD	A6-017-SD	A6-018-SD
			9/23/2019	9/23/2019	9/24/2019	9/24/2019	9/24/2019
Metals							
Aluminum	mg/kg	1,100,000	**8,410**	N/A	**4,030**	**10,600**	**5,430**
Arsenic	mg/kg	3	**9.9**	**3.1**	**23.7**	**14.2**	**10.2**
Barium	mg/kg	220,000	**35.9**	N/A	**54.1**	**40.8**	**23.8**
Beryllium	mg/kg	2,300	**0.26 J**	N/A	1 U	**0.27 J**	1 U
Cadmium	mg/kg	980	1.4 U	N/A	1.5 U	1.8 U	1.5 U
Chromium	mg/kg	120,000	**26.3**	N/A	**78.9**	**81.8**	**41.1**
Chromium VI	mg/kg	6.3	1.2 U	N/A	**0.83 J-**	1.5 UJ	**0.77 J-**
Cobalt	mg/kg	350	**2.3 J**	N/A	**1.1 J**	**2.3 J**	**1.5 J**
Copper	mg/kg	47,000	**24.7**	N/A	**27.3**	**40.3**	**35.9**
Iron	mg/kg	820,000	**42,800**	N/A	**42,300**	**64,400**	**46,000**
Lead	mg/kg	800	**27.3**	N/A	**101**	**138**	**33.9**
Manganese	mg/kg	26,000	**47.8**	N/A	**26.8**	**47.6**	**36.6**
Mercury	mg/kg	350	**0.037 J**	N/A	**0.18**	**0.24**	**0.14**
Nickel	mg/kg	22,000	**7.2 J**	N/A	**5.2 J**	**8.7 J**	**6.2 J**
Selenium	mg/kg	5,800	3.8 U	N/A	**3.1 J**	4.8 U	4 U
Vanadium	mg/kg	5,800	**33.1**	N/A	**41.7 J**	**34.8 J**	**26.4 J**
Zinc	mg/kg	350,000	**34.8**	N/A	**27.2**	**46.8**	**37.5**
Other							
Cyanide	mg/kg	150	**0.28 J**	N/A	**0.89 J**	**0.95 J**	**0.58 J**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/deteciton limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.

Table 8 - Parcel A6
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	A6-001-PZ	A6-003-PZ	A6-006-PZ	A6-015-PZ*
			9/26/2019	9/26/2019	9/26/2019	9/27/2019
Volatile Organic Compounds						
Ethylbenzene	µg/L	700	1 U	1 U	1 U	**1.4**
Xylenes	µg/L	10,000	3 U	3 U	3 U	**2.2 J**
Semi-Volatile Organic Compounds^						
Benzo[a]pyrene	µg/L	0.2	**0.013 J**	0.099 U	0.099 U	0.098 U
bis(2-Ethylhexyl)phthalate	µg/L	6	0.99 U	0.5 B	0.44 B	**0.43 J**
Naphthalene	µg/L	0.12	**0.17**	0.099 U	0.099 U	0.098 U
TPH/Oil & Grease						
Diesel Range Organics	µg/L	47	97.1 UJ	101 UJ	**120 J**	99 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 9 - Parcel A6
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	A6-001-PZ 9/26/2019	A6-003-PZ 9/26/2019	A6-006-PZ 9/26/2019	A6-015-PZ* 9/27/2019
Dissolved Metals						
Aluminum, Dissolved	µg/L	20,000	**59.2**	50 U	**1,110**	**86.8**
Arsenic, Dissolved	µg/L	10	5 U	5 U	**10.5**	5 U
Barium, Dissolved	µg/L	2,000	**17.1**	**53.9**	**19.8**	**26.5**
Beryllium, Dissolved	µg/L	4	**0.45 J**	**0.33 J**	**6.7**	**0.37 J**
Cobalt, Dissolved	µg/L	6	**2.9 J**	5 U	**946**	**3.4 J**
Copper, Dissolved	µg/L	1,300	**2.9 J**	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**265,000 J**	**212,000 J**	**154,000 J**	**332,000**
Manganese, Dissolved	µg/L	430	**9,390**	**7,290**	**10,400**	**15,000**
Nickel, Dissolved	µg/L	390	4 B	10 U	**812**	**8.6 J**
Zinc, Dissolved	µg/L	6,000	**66.7**	5 B	**263**	**25**
Other						
Cyanide, Total	µg/L	200	**8.1 J-**	**9.2 J-**	**9.4 J-**	**14**
Cyanide, Free	µg/L	200	**85 J+**	**110 J+**	**100 J+**	**7.4 J**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate but may be biased high.
B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 10 - Parcel A6
Cumulative Vapor Intrusion Criteria Comparison

				A6-001-PZ		A6-003-PZ		A6-006-PZ		A6-015-PZ	
Parameter	Type	Organ Systems	VI Screening Criteria	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk											
Naphthalene	SVOC		200	0.17	8.5E-09	0.099 U	0	0.099 U	0	0.098 U	0
Ethylbenzene	VOC		150	1 U	0	1 U	0	1 U	0	1.4	9.3E-08
Cumulative Vapor Intrusion Cancer Risk					9E-09		0E+00		0E+00		9E-08
Non-Cancer Hazard											
Cyanide, Free	CN	Reproductive	840	85 J+	0.1	110 J+	0.1	100 J+	0.1	7.4 J	0.009
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0

Highlighted values indicate an exceedance of the cumulative vapor intrusion criteria:
TCR>1E-05
THI>1
Conc. = Concentration

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.
J+: The positive result reported for this analyte is a quantitative estimate but may be biased high.

Table 11 - Parcel A6
Rejected Analytical Soil Results

Sample ID	Parameter	Result (mg/kg)	Flag	PAL (mg/kg)	Exceeds PAL?
A6-016-SD	1,4-Dioxane	0.14	R	24	no
	Methyl Acetate	0.069	R	1,200,000	no
A6-017-SD	1,4-Dioxane	0.14	R	24	no
	Methyl Acetate	0.072	R	1,200,000	no
A6-018-SD	1,4-Dioxane	0.13	R	24	no
	Methyl Acetate	0.063	R	1,200,000	no

APPENDIX A

Parcel A6 - Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Table 1 - Soil/Sediment Samples

Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil Samples
Parcel A6 Mud Reservoir (Soil)			Investigate potential impacts related to any historical activities which may have occurred in the Mud Reservoir (potential leaks or releases).	15	A6-001 through A6-015	*Total depth of 20 feet or groundwater.	*0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	^VOC, SVOC, Metals, DRO/GRO, Oil & Grease, PCBs (0-1')
Parcel A6 Mud Reservoir (Sediments)			Investigate potential impacts related to any historical activities which may have occurred in the Mud Reservoir (potential leaks or releases).	3	A6-016 through A6-018	Total depth of 12 inches.	Top 12" of sediment at each location	VOC, SVOC, Metals, DRO/GRO, Oil & Grease, PCBs
			Total:	18				

Soil Borings Sampling Density Requirements (from **Worksheet 17 - Sampling Design and Rationale**)
Engineered Barrier (N/A): No Areas in Parcel A6
No Engineered Barrier (16 to 40 acres): 1 boring per 1.5 acres with no less than 15
Engineered Barrier - Buildings/Paving (0 acres) = **N/A**
No Engineered Barrier (19.1 acres) = **15 Borings Required, 15 Completed (+3 Sediment)**

VOCs - Volatile Organic Compounds (Target Compound List)
SVOCs - Semivolatile Organic Compounds (Target Compound List)
Metals - (Target Analyte List plus Hexavalent Chromium and Cyanide)
PCBs - Polychlorinated Biphenyls
DRO/GRO - Diesel Range Organics/Gasoline Range Organics
bgs - Below Ground Surface
^VOCs are only collected if the PID reading exceeds 10 ppm

Parcel A6 - Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Table 2 - Groundwater Samples

Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	Condition of Existing Well	Number of Locations	Sample Locations	Well Depth	Screen Interval	Analytical Parameters: Groundwater Samples[†]
Parcel A6 Mud Reservoir (Groundwater)			N/A	4	A6-001 A6-003 A6-006 and A6-015	Total Depth of 7 feet below water table.	7 feet below water table to 3 feet above water table.	VOC, SVOC, Metals (dissolved), Cyanide (total/free), DRO/GRO, Oil & Grease
			Total:	4				

[†]Field measurements include pH, DO, ORP, conductivity, temperature
Metals analysis will include dissolved hexavalent chromium

APPENDIX B

ARM Group LLC
Engineers and Scientists

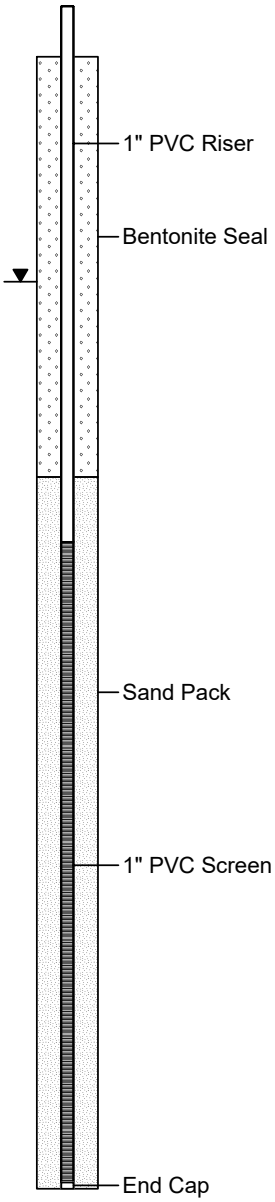
Boring ID: A6-001-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 9/24/19
Piezometer Installation Date	: 9/24/19
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572692.64
Easting (US ft)	: 1459250.71
48-Hr DTW	: 10.48' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS
0		0.0	A6-001-SB-1	(0-1') SILT and SAND, hard, brown, dry, no plasticity, no cohesion	SM
		0.2			
	100	0.2		(1-2.9') SANDY CLAY with SILT, hard, brown, dry, low plasticity, cohesive	SC
		0.1			
		0.1		(2.9-7.7') SANDY CLAY, hard, brown and gray with reddish yellow mottling, dry, low plasticity, cohesive	SC
5		0.2			
		1.5			
	100	7.5			
		8.0	A6-001-SB-9	(7.7-15') SANDY CLAY, hard then medium at 12.3' bgs, light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC
		2.5	A6-001-SB-10		
10		0.0			
		0.0			
	100	0.1			
		0.1			
		0.0			
15		0.0		(15-18') SANDY CLAY, medium to soft, dark gray, moist, low plasticity, cohesive	SC
		0.0			
	92	0.0			
		0.0		(18-19') SANDY SILT, medium, dark gray, moist, no plasticity, no cohesion	SM
		0.0		(19-32.7') CLAY, soft, dark gray, moist, low plasticity, cohesive	CL
20		0.0			
		0.0			
	100	0.0			
		0.0			
		0.0			
25		0.0			
		0.0			
	100	0.0			
		0.0			
		0.0			
30		0.0			
		0.0			
	100	0.0			
		0.0		(32.7-34') SAND, fine, dense, dark gray, wet, no plasticity, no cohesion	SP
		0.0		(34-35') CLAY, soft, dark gray, moist, low plasticity, cohesive	CL
35				End of Boring	



REMARKS: Wet at 32.5' bgs

Boring terminated at 35' bgs
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.53'
Riser: 0 - 15' bgs
Screen: 15 - 35' bgs [Slot Size: 0.010"]
Sand Pack: 13 - 35' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 13' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A6-002-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/24/19
Weather	: 70s, Sunny
Northing (US ft)	: 572620.97
Easting (US ft)	: 1459480.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	100	0.7	A6-002-SB-1	(0-1.5') SILT and SAND, dense, brown, dry, no plasticity, no cohesion	SM	Organic matter present
2		1.0		(1.5-3.7') SANDY CLAY with SILT, hard, brown, dry, low plasticity, cohesive	SC	
3		1.8				
4		0.2		(3.7-7.2') SANDY CLAY, hard, brown with reddish yellow mottling, dry, low plasticity, cohesive	SC	No groundwater encountered
5		0.3				
6	80	-				
7		0.7	A6-002-SB-7			
8		0.2		(7.2-7.9') SANDY CLAY, hard, reddish yellow, dry, low plasticity, cohesive	SC	
9		0.1		(7.9-15') SANDY CLAY, hard grading to medium, light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	
10		0.9				
11	100	0.0				
12		0.0				
13		0.1				
14		0.0				
15		0.0				
16	100	0.0		(15-20') SANDY CLAY, medium, dark gray, moist, low plasticity, cohesive	SC	
17		0.0				
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-003-SB/PZ

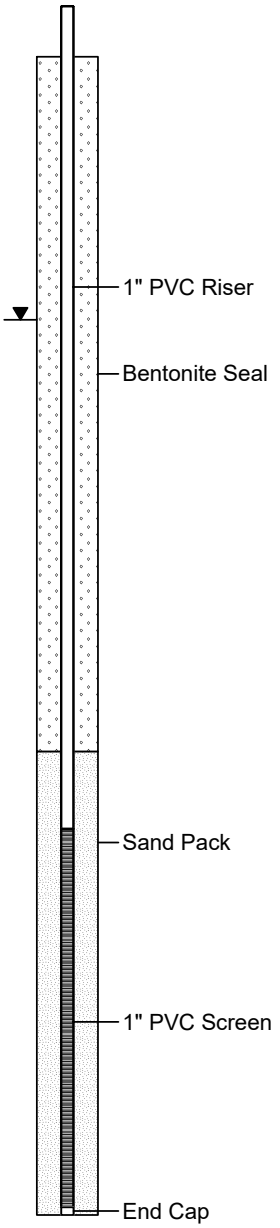
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 9/20/19
Piezometer Installation Date	: 9/20/19
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572263.48
Easting (US ft)	: 1459809.95
48-Hr DTW	: 10.60' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	80	-	A6-003-SB-1	(0-2') SAND with SILT, loose, light brown, dry, no plasticity, no cohesion	SM	Organic matter present
		-				
		2.6		(2-5') CLAY, medium to soft, dark gray to black, dry, low plasticity, cohesive	CL	
		3.1	A6-003-SB-4			
		1.1				
5	80	-		(5-10') CLAY, hard, brown grading to light gray with reddish yellow mottling throughout, dry, low plasticity, cohesive	CL	
		0.0				
		0.0				
		0.4				
		0.0	A6-003-SB-10			
10	100	0.0		(10-15') CLAY, hard, light gray with reddish yellow mottling, dry, low plasticity, cohesive	CL	
		0.0				
		0.0				
		0.0				
		0.0				
15	100	0.0		(15-18.6') CLAY, hard, light gray with some light brown, dry, low plasticity, cohesive	CL	
		0.0				
		0.0				
		0.0		(18.6- 20') SANDY CLAY, medium to hard, light gray, dry, low plasticity, cohesive	SC	
20	100	0.0		(20-23') SANDY CLAY, medium, dark gray, moist, low plasticity, cohesive	SC	
		0.0				
		0.0				
		0.0		(23-24') SILTY SAND, dense, dark gray, wet, no plasticity, no cohesion	SM	Wet at 23.5' bgs
		0.0			SP	
25	0	-		(24-25') SAND, fine, dense, dark gray, wet, no plasticity, no cohesion		
		-		(25-30') No recovery, heaving sand	NA	
		-				
		-				
30				End of Boring		



Boring terminated at 30' bgs
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.78'
Riser: 0 - 20' bgs
Screen: 20 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 18 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 18' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A6-004-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/23/19
Weather	: 80s, Sunny
Northing (US ft)	: 572169.87
Easting (US ft)	: 1459314.91

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	100	21.4	A6-004-SB-1	(0-1.5') SAND and SILT, loose, pale brown and light gray, dry, no plasticity, no cohesion	SM	No groundwater encountered
2		9.0		(1.5-3') SANDY CLAY with SILT, medium, yellow with red mottling, dry, low plasticity, cohesive	SC	
3		8.9				
4		0.4		(3-5') SANDY CLAY, medium, light gray with reddish yellow striations, dry, low plasticity, cohesive	SC	
5		1.7	A6-004-SB-5			
6	100	0.8		(5-10') SANDY CLAY, medium, light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	
7		1.0				
8		1.2				
9		0.1				
10		0.3	A6-004-SB-10			
11	80	0.0		(10-16.7') SANDY CLAY, medium soft, light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	
12		0.0				
13		0.0				
14		0.0				
15		0.0				
16	100	0.0				
17		0.0		(16.7-20') CLAY, soft, dark gray, dry, low plasticity, cohesive	CL	
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-005-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/23/19
Weather	: 90s, Sunny
Northing (US ft)	: 572511.02
Easting (US ft)	: 1459311.92

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	90	0.2	A6-005-SB-1	(0-1.4') SILT and SAND, medium, brown, dry, no plasticity, no cohesion	SM	
2		0.4				
3		0.4		(1.4-16') SANDY CLAY, hard then medium from 14-16' bgs, brown and light gray with reddish yellow mottling, dry, low plasticity, cohesive		
4		0.2				
5		0.2	A6-005-SB-5			No groundwater encountered
6	100	0.2				
7		0.2				
8		0.2				
9		0.1			SC	
10		0.1	A6-005-SB-10			
11	100	0.0				
12		0.0				
13		0.0				
14		0.0				
15		0.0				
16	100	0.0		(16-20') SANDY CLAY, soft, dark gray, moist, low plasticity, cohesive		
17		0.0				
18		0.0			SC	
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-006-SB/PZ

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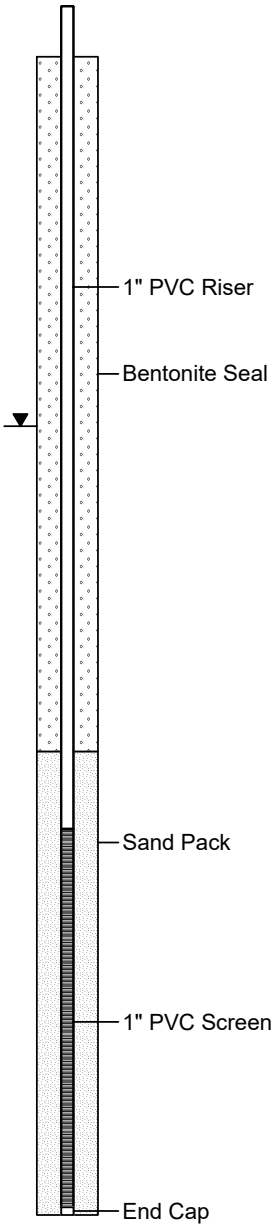
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 9/20/19
Piezometer Installation Date	: 9/20/19
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572321.00
Easting (US ft)	: 1460478.07
48-Hr DTW	: 12.46' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A6-006-SB-1	(0-3.5') SAND, fine, medium, light brown, dry, no plasticity, no cohesion	SP	Pinkish white organic matter present
	80	0.4				
		0.4				
		0.3				
		0.2	A6-006-SB-5	(3.5-5.9') SANDY CLAY, hard, dark gray and brown, dry, low plasticity, cohesive	SC	
5		0.1				
		0.0		(5.9-12') SANDY CLAY, hard, brown and tan with reddish yellow mottling, dry, low plasticity, cohesive	SC	
	100	0.3				
		0.0				
		0.0	A6-006-SB-10			
10		0.3				
		0.0				
	100	0.0		(12-20') SANDY CLAY, hard, light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	
		0.0				
		0.0				
15		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
20		0.0		(20-23.7') SANDY CLAY, medium to soft, light gray with light brown, dry, low plasticity, cohesive	SC	
		0.0				
	100	0.0				
		0.0				Wet at 23.5' bgs
		0.0		(23.7-24.2') SAND and CLAY, soft, light gray grading to dark gray, moist, low plasticity, cohesive	SC / SP	
25		-		(24.2-25') SAND, fine, dense, reddish yellow grading to dark gray, wet, no plasticity, no cohesion	NA	
	0	-				
		-		(25-30') No recovery, heaving sand		
		-				
30				End of Boring		



Boring terminated at 30' bgs
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.89'
Riser: 0 - 20' bgs
Screen: 20 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 18 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 18' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A6-007-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/24/19
Weather	: 80s, Sunny
Northing (US ft)	: 572432.58
Easting (US ft)	: 1459546.62

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	100	3.6	A6-007-SB-1	(0-3') SANDY CLAY with SILT, hard, light brown and light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	No groundwater encountered
2		5.0				
3		0.1				
4		2.2	A6-007-SB-4	(3-6') SANDY CLAY, hard, light brown and light gray with reddish yellow mottling, dry, low plasticity, cohesive	SC	
5	100	1.8				
6		0.8				
7		1.8		(6-15') SANDY CLAY, hard, light gray and pale brown with reddish yellow mottling, dry, low plasticity, cohesive	SC	
8		1.4				
9		1.0				
10	100	1.8	A6-007-SB-10			
11		0.2				
12		0.2				
13		0.1				
14		0.0				
15		0.0				
16	100	0.0		(15-20') SANDY CLAY, soft to medium, dark gray, dry, low plasticity, cohesive	SC	
17		0.0				
18		0.0				
19		0.0				
20		0.0				
				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-008-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/20/19
Weather	: 70s, Sunny
Northing (US ft)	: 572348.07
Easting (US ft)	: 1459976.64

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	80	-	A6-008-SB-1	(0-1.8') SAND, fine, medium to loose, pale brown, dry, no plasticity, no cohesion	SP	No groundwater encountered
2		0.1				
3		0.8		(1.8-2.5') CLAY, medium to hard, gray, dry, low plasticity, cohesive	CL	
4		2.3		(2.5-6.3') CLAY, very soft, black, dry, low plasticity, cohesive	CL	
5		4.3	A6-008-SB-5			
6	76	0.0				
7		0.0		(6.3-7.9') CLAY, hard, greenish gray, dry, low plasticity, cohesive	CL	
8		0.0		(7.9-14') CLAY, medium to hard, light gray and dark brown with reddish yellow mottling, dry, low plasticity, cohesive	CL	
9		0.0				
10		0.0	A6-008-SB-10			
11	80	0.0				
12		0.0				
13		0.0				
14		0.0				
15		0.0		(14-20') CLAY, medium grading to medium soft, gray, moist, low plasticity, cohesive	CL	
16		0.0				
17	100	0.0				
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-009-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/20/19
Weather	: 60s, Sunny
Northing (US ft)	: 572188.06
Easting (US ft)	: 1460118.35

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	26	-	A6-009-SB-1	(0-1.5') SANDY SILT, loose, dark brown grading to pale brown with light gray, dry, no plasticity, no cohesion	SM	Organic matter present
2		-		(1.5-7.5') CLAY, very soft, black, moist, low plasticity, cohesive		Organic odor
3		-				
4		4.3	A6-009-SB-5		CL	
5	100	0.0				
6		1.5				
7		0.0				No groundwater encountered
8		0.0		(7.5-10.5') CLAY, very hard, reddish yellow and brown with light gray mottling, dry, low plasticity, cohesive	CL	
9		0.0	A6-009-SB-10			
10	80	-		(10.5-15') CLAY, brown with reddish yellow mottling, dry, low plasticity, cohesive	CL	
11		0.8				
12		0.0				
13		0.0				
14		0.0				
15	100	0.0		(15-20') CLAY, soft, gray, moist, low plasticity, cohesive	CL	
16		0.0				
17		0.0				
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-010-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/20/19
Weather	: 60s, Sunny
Northing (US ft)	: 572402.05
Easting (US ft)	: 1460302.45

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		0.0	A6-010-SB-1	(0-0.5') SILT, medium, dark brown, dry, no plasticity, no cohesion	OL	Organic matter present
1		1.0		(0.5-2.5') CLAY, hard, light gray and pale brown with reddish yellow mottling, dry, low plasticity, cohesive	CL	
2	100	2.2				
3		1.8	A6-010-SB-4	(2.5-4') CLAY, soft, dark gray, dry, low plasticity, cohesive	CL	Organic odor
4		0.1		(4-9') CLAY, medium to hard, light gray and tan with reddish yellow mottling, dry, low plasticity, cohesive		
5		0.8				
6		0.4			CL	
7	100	0.3				No groundwater encountered
8		0.9				
9		1.0	A6-010-SB-10	(9-15') CLAY, medium to hard, light gray with reddish yellow mottling, moist, low plasticity, cohesive		
10		-				
11		-				
12	100	-			CL	
13		-				
14		-				
15		-		(15-20') CLAY, soft to medium, pale brown with reddish yellow mottling, moist, low plasticity, cohesive		
16		-				
17	100	-			CL	
18		-				
19		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-011-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/23/19
Weather	: 80s, Sunny
Northing (US ft)	: 572180.29
Easting (US ft)	: 1459521.59

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1		0.1	A6-011-SB-1	(0-1') SAND and SILT, medium, brown, dry, no plasticity, no cohesion	SM	
2		0.1		(1-10') SANDY CLAY, hard, brown and pale brown and light gray with reddish yellow mottling, dry, low plasticity, cohesive		
3	100	0.1				
4		0.0				
5		0.0				
6		0.0			SC	
7		0.9				
8	100	1.0	A6-011-SB-8			No groundwater encountered
9		0.8				
10		0.1				
11		0.0		(10-15') SANDY CLAY, medium, light gray, dry, low plasticity, cohesive		
12		0.0				
13	100	0.0			SC	
14		0.0				
15		0.0				
16		0.0		(15-20') SANDY CLAY, soft, light gray grading to dark gray, dry, low plasticity, cohesive		
17		0.0				
18	100	0.0			SC	
19		0.0				
20		0.0				
				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-012-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/20/19
Weather	: 70s, Sunny
Northing (US ft)	: 572097.48
Easting (US ft)	: 1459895.95

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	88	0.0	A6-012-SB-1	(0-2') SAND, fine, medium to loose, light brown, dry, no plasticity, no cohesion	SM	Organic matter present
2		0.0				
3		0.9		(2-5') CLAY, very soft, black, dry, low plasticity, cohesive	CL	
4		1.0				
5		1.7				
6	100	4.6		(5-9') CLAY, medium to hard, brown with gray mottling, dry, low plasticity, cohesive	CL	No groundwater encountered
7		4.8	A6-012-SB-7			
8		6.2				
9		1.0				
10	100	0.1	A6-012-SB-10	(9-10') CLAY, medium to hard, brown with reddish yellow mottling then light gray with reddish yellow mottling from 9.5-10' bgs, dry, low plasticity, cohesive	CL	
11		0.0		(10-15') CLAY, medium, light gray with reddish yellow to brown mottling, dry, low plasticity, cohesive	CL	
12		0.0				
13		0.0				
14		0.0				
15		0.0				
16	100	0.7		(15-20') CLAY, medium to hard, brown with gray mottling, dry, low plasticity, cohesive	CL	
17		0.0				
18		0.0				
19		0.0				
20		0.0				
				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-013-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/23/19
Weather	: 70s, Sunny
Northing (US ft)	: 572033.23
Easting (US ft)	: 1459439.19

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	96	5.2	A6-013-SB-1	(0-2.5') SAND and SILT, medium, light brown, dry, no plastiicity, no cohesion	SM	Organic matter present
2		39.2				
3		7.3		(2.5-5') SANDY CLAY with SILT, medium, light brown and light gray with reddish brown mottling, dry, low plasticity, cohesive	SC	
4		35.7				
5		14.9				
6	100	39.1	A6-013-SB-6	(5-10') SANDY CLAY, medium, light brown and light gray with reddish brown mottling, dry, low plasticity, cohesive	SC	No groundwater encountered
7		20.1				
8		22.4				
9		4.3				
10		3.4	A6-013-SB-10			
11	100	0.9		(10-16.2') SANDY CLAY, medium, light brown grading to light gray with reddish brown mottling, dry, low plasticity, cohesive	SC	
12		0.6				
13		0.7				
14		0.0				
15		0.0				
16	100	0.0		(16.2-20') CLAY, soft, light gray grading to gray, dry, low plasticity, cohesive	CL	
17		0.0				
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

Boring ID: A6-014-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 9/23/19
Weather	: 60s, Sunny
Northing (US ft)	: 571994.63
Easting (US ft)	: 1459645.84

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
1	20	-	A6-014-SB-1	(0-1.5') SILT and SAND, loose to medium, brown, dry, no plasticity, no cohesion	SM	Organic matter present
2		-		(1.5-7.7') CLAY, soft, black, moist, low plasticity, cohesive		
3		40.1				
4		4.5	A6-014-SB-5		CL	
5	100	0.5				
6		0.3				
7		0.2				No groundwater encountered
8		0.1		(7.7-12.4') CLAY, hard, light gray and pale brown with reddish yellow mottling, dry, low plasticity, cohesive		
9		0.1	A6-014-SB-10		CL	
10	100	0.0				
11		0.0				
12		0.0		(12.4-14.8') CLAY, medium, light gray, dry, low plasticity, cohesive		
13		0.0			CL	
14		0.0				
15	100	0.0		(14.8-20') SANDY CLAY, medium, light gray to pale brown, moist, low plasticity, cohesive		
16		0.0				
17		0.0			SC	
18		0.0				
19		0.0				
20				End of Boring		

Total Borehole Depth: 20' bgs.

ARM Group LLC
Engineers and Scientists

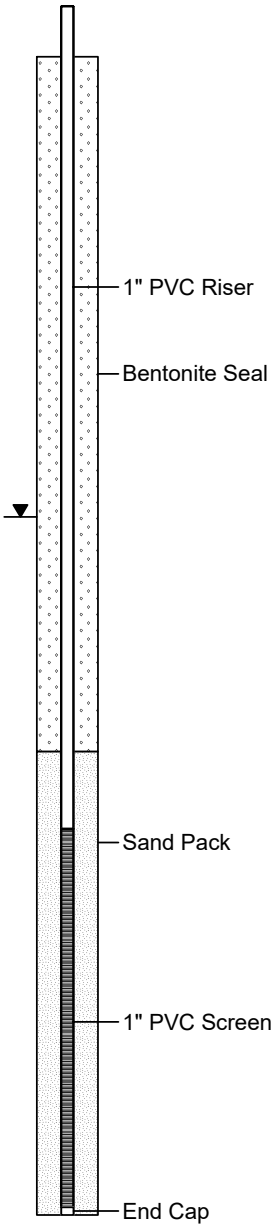
Boring ID: A6-015-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-7
Project Description	: Sparrows Point - Parcel A6
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 9/23/19
Piezometer Installation Date	: 9/23/19
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571796.56
Easting (US ft)	: 1459313.24
48-Hr DTW	: 14.83' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A6-015-SB-1	(0-4.8') SILTY SAND and GRAVEL, loose, light brown to pale brown, dry, no plasticity, no cohesion	GW	Organic matter present
	80	-				
		0.3				
		0.2				
		0.2	A6-015-SB-5			
5		-		(4.8-6') SANDY CLAY with SILT, medium, light gray with some yellow and reddish yellow mottling, dry, low plasticity, cohesive	SC	
		0.2				
	90	0.2		(6-7.9') SANDY CLAY, soft, dark gray, moist, low plasticity, cohesive	SC	
		0.2				
		0.1	A6-015-SB-10	(7.9-12.1') SANDY CLAY, hard, gray then brown at 10' bgs, dry, low plasticity, cohesive	SC	
10		0.0				
		0.0				
	100	0.0		(12.1-17.5') SANDY CLAY, hard, light gray to pale brown with reddish yellow mottling, dry, low plasticity, cohesive	SC	
		0.0				
		0.0				
15		0.0				
		0.0				
	100	0.0		(17.5-24.2') CLAY, medium, light gray, dry, low plasticity, cohesive	CL	
		0.0				
		0.0				
20		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0		(24.2-26.9') CLAY, soft, dark gray, moist, low plasticity, cohesive	CL	
25		0.0				
		0.0				
	100	0.0		(26.9-29') SAND, medium to coarse, medium, dark gray, wet, no plasticity, no cohesion	SW	Wet at 26.9' bgs
		0.0				
		0.0		(29-30') CLAY, soft, dark gray, moist, low plasticity, cohesive	CL	
30				End of Boring		



Boring terminated at 30' bgs
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.91'
Riser: 0 - 20' bgs
Screen: 20 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 18 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 18' bgs [Grain Size: bentonite chips]

APPENDIX C

November 26, 2019

Mr. Stewart Kabis
ARM Group, Inc.
9175 Guilford Road, Suite 310
Columbia, MD 21046

Re: Sparrows Point Well Survey
Sparrows Point, MD
Triad Engineering Job No. 03-15-0343

Mr. Kabis:
Below are the specified surveyed wells, date of last field work completed on November 21, 2019. The coordinate values shown were derived from G.P.S. observations based on National Geodetic Surveys stations "GIS 1", PID AC7684 and "GIS 2", PID AC7685 which purport to be on NAD83(2011) Maryland Grid coordinate system with NAVD88 (AMSL) elevations.

DESCRIPTION	***NORTHING***	***EASTING***	***TOP CASING ELEVATION***	***GROUND (NAIL SET) AT WELL/ PIEZOMETER***	***NOTES***
A6-001-PZ	572692.635	1459250.708	18.86	15.34	
A6-003-PZ	572263.478	1459809.950	19.75	16.24	
A6-006-PZ	572320.996	1460478.073	18.47	15.60	
A6-015-PZ	571796.563	1459313.238	21.52	18.71	

APPENDIX D

PID CALIBRATION LOG

PROJECT NAME: Area A, Parcel A6 Phase II	SAMPLER NAME: T. Van Ness	
PROJECT NUMBER: 150298M-7	DATE: September 2019	PAGE 1 of 1

DATE/TIME	SAMPLER INITIALS	PID SERIAL #	FRESH AIR CAL	STANDARD	STANDARD CONCENTRATION	METER READING	COMMENTS
9/20/2019 8:30	TCV	43146	0.0	Isobutylene	100 ppm	100.0	-
9/23/2019 8:40	TCV	592-913262	0.0	Isobutylene	100 ppm	100.0	-
9/24/2019 8:35	TCV	592-913262	0.0	Isobutylene	100 ppm	100.5	-

APPENDIX E

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A6 Phase II	Project Number: 150298 M-7
Well Number: A6-001-PZ	Date: 9-26-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.48	Flow Rate (mL/min) 300
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 37.75	Condition of Pad/Cover: /

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
1403		11.30	17.01	5.48	1.720	7.61	37.5		
1408		11.42	16.44	5.50	1.640	3.34	26.2		
1413		11.55	16.09	5.52	1.617	1.91	24.0		
1418		11.50	15.95	5.53	1.594	1.31	19.8		
1423			16.15	5.55	1.600	1.08	16.1		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A6-001-PZ	1428	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: TCV

Comments:

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: A6 Phase II	Project Number: 150298M-7
Well Number: A6-003-P2	Date: 4-26-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.76	Flow Rate (mL/min) 200
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 33.27	Condition of Pad/Cover: /

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
1103		13.28	16.71	5.62	1.801	5.36	-7.2		
1108		14.07	15.35	5.54	1.706	1.84	-3.6		
1113		14.28	15.59	5.52	1.713	1.44	-0.8		
1118		14.30	15.56	5.50	1.723	1.42	3.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A6-003-P2	1123	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: TCV

Comments:

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: A6 Phase II	Project Number: 150298 M-7
Well Number: A6-006-P2	Date: 9-26-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 12.57	Flow Rate (mL/min) 200
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 32.33	Condition of Pad/Cover: /

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
0925		14.50	16.09	5.84	2.021	4.79	-6.4		
0930		14.91	15.61	5.55	2.204	1.66	-2.6		
0935		14.98	15.82	5.52	2.156	1.17	-0.3		
0940		15.07	15.70	5.51	2.112	1.18	0.6		
0945		15.12	15.33	5.48	2.039	1.18	1.9		
0950		15.21	15.25	5.46	2.022	1.11	4.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A6-006-P2	0955	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: TCV

Comments:

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: AG Phase II	Project Number: 150298M-7
Well Number: AG-015-P2	Date: 9-27-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 14.83	Flow Rate (mL/min) 200
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 31.79	Condition of Pad/Cover: /

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
0815		15.99	14.89	5.44	2.545	7.10	47.1		
0820		16.01	14.25	5.48	2.088	2.24	7.5		
0825		16.02	14.14	5.51	1.972	1.64	1.9		
0830		16.03	14.16	5.51	1.936	1.47	1.5		
0835		16.03	14.20	5.52	1.923	1.31	0.6		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AG-015-P2	0840	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: TCV

Comments:

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)

APPENDIX F

Parcel A6 - IDW Drum Log

Drum Identification Number	Designation	Activity/Phase	Contents	Open Date
1264-Soil-9/19/19-A6	Non-Haz	Parcel A6 Phase II Investigation	Soil	9/19/2019
1265-Liners-9/19/19-A6	Non-Haz	Parcel A6 Phase II Investigation	Liners	9/19/2019
1266-PPE-9/19/19-A6	Non-Haz	Parcel A6 Phase II Investigation	PPE	9/19/2019
1268-Soil-9/24/19-A6	Non-Haz	Parcel A6 Phase II Investigation	Soil	9/24/2019
1269-Water-9/11/19-A8/A10/B4/B23/B7/A6	Non-Haz	Parcel A6 Phase II Investigation	Water	9/11/2019
1273-Water-9/26/19-A6	Non-Haz	Parcel A6 Phase II Investigation	Water	9/26/2019

APPENDIX G

QA/QC Tracking Log

Trip Blank:	Date:	Sample IDs:	
	9/20/2019	1) A6-010-SB-1	
		2) A6-010-SB-4	
		3) A6-010-SB-10	
		4) A6-006-SB-1	
		5) A6-006-SB-5	
		6) A6-006-SB-10	
		7) A6-009-SB-1	Duplicate: A6-006-SB-5
		8) A6-009-SB-5	Date: 9/20/2019
		9) A6-009-SB-10	MS/MSD: A6-012-SB-7
		10) A6-008-SB-1	Date: 9/20/2019
		11) A6-008-SB-5	Field Blank: 1500
		12) A6-008-SB-10	Date: 9/20/2019
		13) A6-012-SB-1	Eq. Blank: 1530
		14) A6-012-SB-7	Date: 9/20/2019
		15) A6-012-SB-10	
		16) A6-003-SB-1	
		17) A6-003-SB-4	
		18) A6-003-SB-10	
X	9/23/2019	19) A6-014-SB-1	
		20) A6-014-SB-5	

Trip Blank:	Date:	Sample IDs:	
	9/24/2019	1) A6-001-SB-9	
		2) A6-001-SB-10	
		3) A6-007-SB-1	
		4) A6-007-SB-4	
		5) A6-007-SB-10	
X		6) A6-018-SD	
X		7) A6-017-SD	Duplicate: A6-007-SB-4
X		8) A6-016-SD	Date: 9/24/2019
		9)	MS/MSD: A6-001-SB-9
		10)	Date: 9/24/2019
		11)	Field Blank: 1330
		12)	Date: 9/24/2019
		13)	Eq. Blank: 1340
		14)	Date: 9/24/2019
		15)	
		16)	
		17)	
		18)	
		19)	
		20)	

Trip Blank:	Date:	Sample IDs:	
	9/23/2019	1) A6-014-SB-10	
		2) A6-015-SB-1	
		3) A6-015-SB-5	
		4) A6-015-SB-10	
		5) A6-013-SB-1	
X		6) A6-013-SB-6	
		7) A6-013-SB-10	Duplicate: A6-011-SB-8
X		8) A6-004-SB-1	Date: 9/23/2019
		9) A6-004-SB-5	MS/MSD: A6-004-SB-5
		10) A6-004-SB-10	Date: 9/23/2019
		11) A6-011-SB-1	Field Blank: 1515
		12) A6-011-SB-8	Date: 9/23/2019
		13) A6-011-SB-10	Eq. Blank: 1530
		14) A6-005-SB-1	Date: 9/23/2019
		15) A6-005-SB-5	
		16) A6-005-SB-10	
	9/24/2019	17) A6-002-SB-1	
		18) A6-002-SB-7	
		19) A6-002-SB-10	
		20) A6-001-SB-1	

Trip Blank:	Date:	Sample IDs:	
X	9/26/2019	1) A6-006-PZ	
X		2) A6-003-PZ	
X		3) A6-001-PZ	
X	9/27/2019	4) A6-015-PZ	
		5)	
		6)	
		7)	Duplicate: A6-015-PZ
		8)	Date: 9/27/2019
		9)	MS/MSD: A6-003-PZ
		10)	Date: 9/26/2019
		11)	Field Blank:
		12)	Date:
		13)	Eq. Blank:
		14)	Date:
		15)	
		16)	
		17)	
		18)	
		19)	
		20)	

Soil samples with a sustained PID reading of 10 ppm or greater were collected for VOCs.
VOC samples were placed in a cooler with a trip blank.

APPENDIX H

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Cyanide	CN	Soil	mg/kg	23	19	0	23	100.00%
Aluminum	Metal	Soil	mg/kg	23	23	0	23	100.00%
Antimony	Metal	Soil	mg/kg	23	0	0	23	100.00%
Arsenic	Metal	Soil	mg/kg	27	24	0	27	100.00%
Barium	Metal	Soil	mg/kg	23	23	0	23	100.00%
Beryllium	Metal	Soil	mg/kg	23	17	0	23	100.00%
Cadmium	Metal	Soil	mg/kg	23	2	0	23	100.00%
Chromium	Metal	Soil	mg/kg	23	23	0	23	100.00%
Chromium VI	Metal	Soil	mg/kg	23	9	0	23	100.00%
Cobalt	Metal	Soil	mg/kg	23	23	0	23	100.00%
Copper	Metal	Soil	mg/kg	23	23	0	23	100.00%
Iron	Metal	Soil	mg/kg	23	23	0	23	100.00%
Lead	Metal	Soil	mg/kg	23	23	0	23	100.00%
Manganese	Metal	Soil	mg/kg	23	23	0	23	100.00%
Mercury	Metal	Soil	mg/kg	23	17	0	23	100.00%
Nickel	Metal	Soil	mg/kg	23	23	0	23	100.00%
Selenium	Metal	Soil	mg/kg	23	1	0	23	100.00%
Silver	Metal	Soil	mg/kg	23	0	0	23	100.00%
Thallium	Metal	Soil	mg/kg	23	0	0	23	100.00%
Vanadium	Metal	Soil	mg/kg	23	23	0	23	100.00%
Zinc	Metal	Soil	mg/kg	23	23	0	23	100.00%
Aroclor 1016	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1221	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1232	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1242	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1248	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1254	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1260	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1262	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1268	PCB	Soil	mg/kg	12	0	0	12	100.00%
PCBs (total)	PCB	Soil	mg/kg	12	0	0	12	100.00%
1,1-Biphenyl	SVOC	Soil	mg/kg	23	0	0	23	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4,5-Trichlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4,6-Trichlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4-Dichlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4-Dimethylphenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4-Dinitrophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,4-Dinitrotoluene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2,6-Dinitrotoluene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2-Chloronaphthalene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2-Chlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2-Methylnaphthalene	SVOC	Soil	mg/kg	23	14	0	23	100.00%
2-Methylphenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
2-Nitroaniline	SVOC	Soil	mg/kg	23	0	0	23	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Soil	mg/kg	23	0	0	23	100.00%
3,3'-Dichlorobenzidine	SVOC	Soil	mg/kg	23	0	0	23	100.00%
4-Chloroaniline	SVOC	Soil	mg/kg	23	0	0	23	100.00%
4-Nitroaniline	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Acenaphthene	SVOC	Soil	mg/kg	23	15	0	23	100.00%
Acenaphthylene	SVOC	Soil	mg/kg	23	15	0	23	100.00%
Acetophenone	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Anthracene	SVOC	Soil	mg/kg	23	18	0	23	100.00%
Benz[a]anthracene	SVOC	Soil	mg/kg	23	20	0	23	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Benzaldehyde	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Benzo[a]pyrene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
Benzo[b]fluoranthene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
Benzo[g,h,i]perylene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
Benzo[k]fluoranthene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
bis(2-chloroethoxy)methane	SVOC	Soil	mg/kg	23	0	0	23	100.00%
bis(2-Chloroethyl)ether	SVOC	Soil	mg/kg	23	0	0	23	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Soil	mg/kg	23	0	0	23	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Caprolactam	SVOC	Soil	mg/kg	23	1	0	23	100.00%
Carbazole	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Chrysene	SVOC	Soil	mg/kg	23	18	0	23	100.00%
Dibenz[a,h]anthracene	SVOC	Soil	mg/kg	23	13	0	23	100.00%
Diethylphthalate	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Di-n-butylphthalate	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Di-n-ocytlphthalate	SVOC	Soil	mg/kg	23	7	0	23	100.00%
Fluoranthene	SVOC	Soil	mg/kg	23	20	0	23	100.00%
Fluorene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
Hexachlorobenzene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Hexachlorobutadiene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Hexachlorocyclopentadiene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Hexachloroethane	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Soil	mg/kg	23	17	0	23	100.00%
Isophorone	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Naphthalene	SVOC	Soil	mg/kg	23	16	0	23	100.00%
Nitrobenzene	SVOC	Soil	mg/kg	23	0	0	23	100.00%
N-Nitroso-di-n-propylamine	SVOC	Soil	mg/kg	23	0	0	23	100.00%
N-Nitrosodiphenylamine	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Pentachlorophenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Phenanthrene	SVOC	Soil	mg/kg	23	20	0	23	100.00%
Phenol	SVOC	Soil	mg/kg	23	0	0	23	100.00%
Pyrene	SVOC	Soil	mg/kg	23	19	0	23	100.00%
Diesel Range Organics	TPH	Soil	mg/kg	23	16	0	23	100.00%
Gasoline Range Organics	TPH	Soil	mg/kg	23	0	0	23	100.00%
Oil and Grease	TPH	Soil	mg/kg	23	20	0	23	100.00%
1,1,1-Trichloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,1,2,2-Tetrachloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,1,2-Trichloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,1-Dichloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,1-Dichloroethene	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2,3-Trichlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2,4-Trichlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dibromo-3-chloropropane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dibromoethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dichlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dichloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dichloroethene (Total)	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,2-Dichloropropane	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,3-Dichlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,4-Dichlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
2-Butanone (MEK)	VOC	Soil	mg/kg	3	0	0	3	100.00%
2-Hexanone	VOC	Soil	mg/kg	3	0	0	3	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Soil	mg/kg	3	0	0	3	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Acetone	VOC	Soil	mg/kg	3	0	0	3	100.00%
Benzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Bromodichloromethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Bromoform	VOC	Soil	mg/kg	3	0	0	3	100.00%
Bromomethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Carbon disulfide	VOC	Soil	mg/kg	3	0	0	3	100.00%
Carbon tetrachloride	VOC	Soil	mg/kg	3	0	0	3	100.00%
Chlorobenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Chloroethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Chloroform	VOC	Soil	mg/kg	3	0	0	3	100.00%
Chloromethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
cis-1,2-Dichloroethene	VOC	Soil	mg/kg	3	0	0	3	100.00%
cis-1,3-Dichloropropene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Cyclohexane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Dibromochloromethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Dichlorodifluoromethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Ethylbenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Isopropylbenzene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Methyl Acetate	VOC	Soil	mg/kg	3	0	3	0	0.00%
Methyl tert-butyl ether (MTBE)	VOC	Soil	mg/kg	3	0	0	3	100.00%
Methylene Chloride	VOC	Soil	mg/kg	3	0	0	3	100.00%
Styrene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Tetrachloroethene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Toluene	VOC	Soil	mg/kg	3	0	0	3	100.00%
trans-1,2-Dichloroethene	VOC	Soil	mg/kg	3	0	0	3	100.00%
trans-1,3-Dichloropropene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Trichloroethene	VOC	Soil	mg/kg	3	0	0	3	100.00%
Trichlorofluoromethane	VOC	Soil	mg/kg	3	0	0	3	100.00%
Vinyl chloride	VOC	Soil	mg/kg	3	0	0	3	100.00%
Xylenes	VOC	Soil	mg/kg	3	0	0	3	100.00%
1,4-Dioxane	VOC/SVOC	Soil	mg/kg	3	0	3	0	0.00%
Cyanide (total)	CN	Water	ug/L	3	3	0	3	100.00%
Cyanide (free)	CN	Water	ug/L	3	3	0	3	100.00%
Aluminum	Metal	Water	ug/L	3	2	0	3	100.00%
Antimony	Metal	Water	ug/L	3	0	0	3	100.00%
Arsenic	Metal	Water	ug/L	3	1	0	3	100.00%
Barium	Metal	Water	ug/L	3	3	0	3	100.00%
Beryllium	Metal	Water	ug/L	3	3	0	3	100.00%
Cadmium	Metal	Water	ug/L	3	0	0	3	100.00%
Chromium	Metal	Water	ug/L	3	0	0	3	100.00%
Chromium VI	Metal	Water	ug/L	3	0	0	3	100.00%
Cobalt	Metal	Water	ug/L	3	2	0	3	100.00%
Copper	Metal	Water	ug/L	3	1	0	3	100.00%
Iron	Metal	Water	ug/L	3	3	0	3	100.00%
Lead	Metal	Water	ug/L	3	0	0	3	100.00%
Manganese	Metal	Water	ug/L	3	3	0	3	100.00%
Mercury	Metal	Water	ug/L	3	0	0	3	100.00%
Nickel	Metal	Water	ug/L	3	1	0	3	100.00%
Selenium	Metal	Water	ug/L	3	0	0	3	100.00%
Silver	Metal	Water	ug/L	3	0	0	3	100.00%
Thallium	Metal	Water	ug/L	3	0	0	3	100.00%
Vanadium	Metal	Water	ug/L	3	0	0	3	100.00%
Zinc	Metal	Water	ug/L	3	2	0	3	100.00%
1,1-Biphenyl	SVOC	Water	ug/L	3	0	0	3	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
1,2,4,5-Tetrachlorobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4,5-Trichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4,6-Trichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dimethylphenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dinitrophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dinitrotoluene	SVOC	Water	ug/L	3	0	0	3	100.00%
2,6-Dinitrotoluene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Chloronaphthalene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Chlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Methylnaphthalene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Methylphenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Nitroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Water	ug/L	3	0	0	3	100.00%
3,3'-Dichlorobenzidine	SVOC	Water	ug/L	3	0	0	3	100.00%
4-Chloroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
4-Nitroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
Acenaphthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Acenaphthylene	SVOC	Water	ug/L	3	0	0	3	100.00%
Acetophenone	SVOC	Water	ug/L	3	0	0	3	100.00%
Anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benz[a]anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzaldehyde	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[a]pyrene	SVOC	Water	ug/L	3	1	0	3	100.00%
Benzo[b]fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[g,h,i]perylene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[k]fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-chloroethoxy)methane	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Chloroethyl)ether	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Caprolactam	SVOC	Water	ug/L	3	0	0	3	100.00%
Carbazole	SVOC	Water	ug/L	3	0	0	3	100.00%
Chrysene	SVOC	Water	ug/L	3	0	0	3	100.00%
Dibenz[a,h]anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Diethylphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Di-n-butylphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Di-n-ocytlphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Fluorene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorobutadiene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorocyclopentadiene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachloroethane	SVOC	Water	ug/L	3	0	0	3	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Isophorone	SVOC	Water	ug/L	3	0	0	3	100.00%
Naphthalene	SVOC	Water	ug/L	3	1	0	3	100.00%
Nitrobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
N-Nitroso-di-n-propylamine	SVOC	Water	ug/L	3	0	0	3	100.00%
N-Nitrosodiphenylamine	SVOC	Water	ug/L	3	0	0	3	100.00%
Pentachlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
Phenanthrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Phenol	SVOC	Water	ug/L	3	0	0	3	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Pyrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Diesel Range Organics	TPH	Water	ug/L	3	1	0	3	100.00%
Gasoline Range Organics	TPH	Water	ug/L	3	0	0	3	100.00%
Oil and Grease	TPH	Water	ug/L	3	0	0	3	100.00%
1,1,1-Trichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2,2-Tetrachloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2-Trichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1-Dichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1-Dichloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2,3-Trichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2,4-Trichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dibromo-3-chloropropane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dibromoethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichloroethene (Total)	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichloropropane	VOC	Water	ug/L	3	0	0	3	100.00%
1,3-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,4-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
2-Butanone (MEK)	VOC	Water	ug/L	3	0	0	3	100.00%
2-Hexanone	VOC	Water	ug/L	3	0	0	3	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Water	ug/L	3	0	0	3	100.00%
Acetone	VOC	Water	ug/L	3	0	0	3	100.00%
Benzene	VOC	Water	ug/L	3	0	0	3	100.00%
Bromodichloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Bromoform	VOC	Water	ug/L	3	0	0	3	100.00%
Bromomethane	VOC	Water	ug/L	3	0	0	3	100.00%
Carbon disulfide	VOC	Water	ug/L	3	0	0	3	100.00%
Carbon tetrachloride	VOC	Water	ug/L	3	0	0	3	100.00%
Chlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Chloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
Chloroform	VOC	Water	ug/L	3	0	0	3	100.00%
Chloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
cis-1,2-Dichloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
cis-1,3-Dichloropropene	VOC	Water	ug/L	3	0	0	3	100.00%
Cyclohexane	VOC	Water	ug/L	3	0	0	3	100.00%
Dibromochloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Dichlorodifluoromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Ethylbenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Isopropylbenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Methyl Acetate	VOC	Water	ug/L	3	0	0	3	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Water	ug/L	3	0	0	3	100.00%
Methylene Chloride	VOC	Water	ug/L	3	0	0	3	100.00%
Styrene	VOC	Water	ug/L	3	0	0	3	100.00%
Tetrachloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
Toluene	VOC	Water	ug/L	3	0	0	3	100.00%
trans-1,2-Dichloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
trans-1,3-Dichloropropene	VOC	Water	ug/L	3	0	0	3	100.00%
Trichloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
Trichlorofluoromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Vinyl chloride	VOC	Water	ug/L	3	0	0	3	100.00%
Xylenes	VOC	Water	ug/L	3	0	0	3	100.00%
1,4-Dioxane	VOC/SVOC	Water	ug/L	3	0	0	3	100.00%

Data validation has been completed for a representative 30% of all samples