

# PHASE II INVESTIGATION REPORT

AREA B: PARCEL B15  
TRADEPOINT ATLANTIC  
SPARROWS POINT, MARYLAND

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## 1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (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 B: Parcel B15 (the Site). Parcel B15 is comprised of 19.3 acres of the approximately 3,100-acre former steel making facility (**Figure 1**). The original parcel boundary had an area of approximately 16.5 acres, but the parcel was later expanded slightly as outlined in the Proposed Modification to Area of Parcel B15 Letter dated April 4, 2017. The Site is bounded to the south by a former Carpenter Shop (within Parcel B23), to the north by the Tin Mill Canal (TMC; within Parcel B16), to the west by the Humphrey Creek Wastewater Treatment Plant (HCWWTP; within Parcel B24), and to the east by the Finishing Mills Study Area (within Parcel B21). Parcel B15 includes a 4,275 square foot enclosed building that is within the historical Brick Sheds and 4.5 acres of historical pavement and laydown areas. Recent development activities, completed in April 2017, included a paved capping remedy which was installed over the entire area (100%) of Parcel B15.

The Phase II Investigation was performed in accordance with procedures outlined in the approved Phase II Investigation Work Plan – Parcel B15. This Work Plan (dated September 16, 2016) was approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on October 5, 2016 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 B15 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 Maryland Department of the Environment 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.

This revised Phase II Investigation Report is being submitted in response to comments received from the MDE and USEPA regarding the Screening Level Risk Assessment (SLRA) procedure presented in Section 6.0, along with several other aspects of the report. The previous Phase II Investigation Report (Revision 0) was submitted to the agencies on October 13, 2016, and the report has since undergone significant revisions. A transmittal letter accompanies this submission of the Phase II Investigation Report. Based on the significance of the revisions, the transmittal letter does not directly respond to the agency comments. The entire document has been updated to align with current agency guidance.

## 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.

There is limited information on historical processes that occurred within Parcel B15. To confirm the status of the buildings and observe current activity at the Site prior to Phase II Field Investigation, ARM completed a site visit on June 15, 2016. During this site visit, it was confirmed that the Brick Sheds occupy the northern portion of Parcel B15 covering approximately 4 acres of the total parcel area. The Brick Sheds remain standing on elevated floor slabs (trailer height) with open sides. There were stockpiles of various metals and materials being stored in the Brick Sheds at the time of the site visit. A follow-up site visit was performed on August 26, 2016 to observe current conditions in the enclosed portion of the southern Brick Shed. At the time of this visit, the shed was vacant and being used for miscellaneous storage.

## 1.2. OBJECTIVES

The objective of this Phase II Investigation was to fully characterize the nature and extent of contamination at the Site. 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. A summary table of the site investigation locations, including the boring identification numbers and the analyses performed, is provided as **Appendix A**. A human health Screening Level Risk Assessment (SLRA) was prepared to identify constituents and pathways of potential concern and to evaluate the significance of any observed impacts or elevated concentrations with respect to the potential future use of the Site.

As specified in the approved Work Plan for Parcel B15, groundwater at the Site was investigated as described in the separate Area B Groundwater Investigation Work Plan (dated October 6, 2015) and the separate Finishing Mills Groundwater Investigation Work Plan (dated July 7,

2016). The final versions of these Work Plans were approved by the agencies on October 5, 2015 and June 28, 2016, respectively. The Area B Groundwater Phase II Investigation Report (Revision 0 dated September 30, 2016) and the Finishing Mills Groundwater Phase II Investigation Report (Revision 0 dated November 30, 2016) have been submitted to the agencies and discuss the detailed findings of each groundwater investigation. A limited amount of groundwater data was also obtained during the Parcel B15 Phase II Investigation to supplement the data gathered during the area-wide groundwater studies.

## 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 Environmental Site Assessment (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 (prior to recent development), the Site is at an elevation of approximately 12 feet above mean sea level (amsl). Elevations at the Site range from 10 to 18 feet amsl across the parcel area. In the northwestern corner of the parcel, the ground slightly slopes gradually to the west from 12 to 10 feet amsl. Across most of the Site, elevations are fairly uniform with no clear discharge location. There were two mounds located in the southwest portion of the Site which appeared to sharply decrease radially. Parcel B15 includes stormwater sewer infrastructure that directs runoff to the HCWWTP. Surface waters which are collected and treated at the HCWWTP ultimately flow through a National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014, which discharges to Bear Creek.

### 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% fill materials based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (adapted from Figure 2-20 in the Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure, dated January 1998).

In general, the encountered subsurface geology included slag fill materials overlying natural soils, which included fine-grained sediments (clays and silts) and coarse grained sediments (sands). Slag fill materials were encountered at depths of up to 20 feet below the ground surface (bgs), although typical thicknesses ranged from 0 to 10 feet bgs. Shallow groundwater was observed in soil cores from 7.8 to 14.5 feet bgs across the Site; however, groundwater was not encountered at every boring location. Soil boring logs are provided in **Appendix B**. Please 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 across the Site during the Area B Groundwater Investigation, Finishing Mills Groundwater Investigation, and the Parcel B15 Phase II Investigation. Three shallow hydrogeologic zone monitoring wells from the Area B Groundwater Investigation are included in this Phase II Report and two shallow hydrogeologic zone monitoring wells are included from the Finishing Mills Groundwater Investigation. In addition to these monitoring wells, three temporary groundwater sample collection points (commonly referred to as piezometers) were installed adjacent to the Brick Sheds to investigate shallow groundwater conditions. The locations of the groundwater sampling points are indicated on **Figure 3**. The permanent groundwater monitoring wells were surveyed by a Maryland-licensed surveyor; however, the piezometers were not surveyed. Supporting documentation from the surveys is included in **Appendix C**.

A synoptic round of groundwater level measurements was collected on October 3, 2016 from each of the permanent groundwater monitoring wells installed for the separate Area B Groundwater Investigation and the Finishing Mills Groundwater Investigation that are located within or adjacent to the Parcel B15 boundary. 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 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**. As seen on **Figure 3**, shallow hydrogeologic zone groundwater appears to flow from the southwest portion of the Site (groundwater elevation of 2.63 feet amsl at TM05-PZM005) to the northeast portion of the Site. Shallow groundwater elevations are relatively uniform across the central portion of the Site (highest elevation of 2.63 feet amsl and

lowest elevation observed at 2.01 feet amsl). The lowest shallow groundwater elevation observed at the Site is along the TMC just outside of the B15 parcel boundary (TM07-PZM005) with an elevation of 0.49 feet amsl.

### 3.0 SITE INVESTIGATION

A total of 49 soil samples (from 21 boring locations), eight shallow groundwater samples, and three sub-slab soil gas samples were included as part of the Parcel B15 Phase II Investigation. These samples were collected for analysis between February 4, 2016 and September 21, 2016. 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 B15 Work Plan dated September 16, 2016, and the QAPP.

All site characterization activities were conducted under the site-specific health and safety plan (HASP) provided as Appendix E 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 10.3.1).

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. RECs, additional findings (non-RECs), and SWMUs/AOCs were not identified in previous reports for the Site.

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 on to the ground. There were no drip legs identified inside the boundary of Parcel B15. A summary of the specific drawings covering the Site is presented in **Table 2**. Sampling target locations were



identified if the historical drawings depicted industrial activities or a specific feature at a location that may have been a source of environmental contamination that potentially impacted the Site.

Based on the review of plant drawings (or based on direct agency guidance), additional non-REC sampling targets were identified at the Site that included the following: Brick Sheds and Scrap Yard/Open Storage Area. A summary of the areas that were investigated, along with the applicable boring identification numbers and the analyses performed, has been provided as **Appendix A**. Additional sample locations were distributed to fill in large spatial gaps between proposed borings to provide complete coverage of the Site. During the completion of fieldwork, it was necessary to shift some borings from the approved locations given in the Work Plan, primarily due to access restrictions and/or refusal. **Table 3** provides the identification numbers of the field adjusted borings, 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, as described in the Parcel B15 Work Plan (and displayed in **Appendix A**). Since the implementation of the Work Plan, a paved capping remedy has been installed over the entire area (100%) of Parcel B15. Based on this new paving, Parcel B15 contains a total of 19.3 acres with engineered barriers. The Brick Sheds occupy approximately 3.3 acres. In accordance with the relevant sampling density requirements, a minimum of 7 soil boring locations are required in the parcel since it has been covered by engineered barriers. A total of 21 soil boring locations were completed during the field investigation.

### 3.2. SOIL INVESTIGATION

Continuous core soil borings were advanced at 21 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**). The continuous core soil borings were advanced to depths between 5 and 25 feet bgs using the Geoprobe<sup>®</sup> MC-7 Macrocore soil sampler (surface to 10 feet bgs) and the Geoprobe<sup>®</sup> D-22 Dual-Tube Sampler (depths >10 feet bgs). At each location, 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 clean surface cover materials (such as paving or gravel) were present, the first 1 foot of fine-grained material beneath this layer was collected as the surface sample. 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. It should be noted that soil samples were not collected from a depth



that was below the water table. One additional set of samples was also collected from the 9 to 10 foot depth interval if groundwater had not been encountered; however, these samples were held by the laboratory pending the analysis of the 0 to 1 and 4 to 5 foot depth interval samples, and were only analyzed for parameters that were detected in the 5 foot bgs (or field adjusted) samples at concentrations above the Project Action Limits (PALs). During field screening of the soil cores, any sample interval that exceeded a PID reading of 10 ppm had a sample collected for volatile organic compounds (VOCs), although 10-foot samples were still held prior to analysis. (These VOC sampling requirements have been adjusted several times under agency guidance and were updated for recent investigations, as described in the Soil Sampling Analysis Clarification: Standard Work Plan Procedure Letter prepared by ARM dated April 7, 2017.)

Soil sampling activities were conducted in accordance with the procedures and methods referenced in **Field Standard Operating Procedure (SOP) Numbers 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 a 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 by the laboratory and were only analyzed for parameters that were detected in the overlying 5-foot bgs (or field adjusted) sample at concentrations above the PALs. Excluding these deep samples, the remaining soil samples were analyzed for Target Compound List (TCL) semi-volatile organic compounds (SVOCs) via USEPA Methods 8270D and 8270D SIM, Target Analyte List (TAL) Metals via USEPA Methods 6010C and 7471C, Oil & Grease via USEPA Method 9071, total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) via USEPA Methods 8015B and 8015D, hexavalent chromium via USEPA Method 7196A, and cyanide via USEPA Method 9012. Samples with a sustained PID reading of greater than 10 ppm were also analyzed for TCL VOCs via USEPA Method 8260B. 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. Analytical methods, sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

### 3.3. GROUNDWATER INVESTIGATION

Parcel B15 is located within the study area investigated in the Area B Groundwater Investigation and adjacent to the Finishing Mills Groundwater Investigation. Three shallow monitoring wells from the Area B Groundwater Investigation (SW-021-MWS, TM03-PZM004, and TM05-PZM005) were reviewed in this Parcel B15 Phase II Investigation. Two shallow monitoring wells from the Finishing Mills Groundwater Investigation (SW-079-MWS and TM07-PZM005) were also reviewed in this Parcel B15 Phase II Investigation. Additionally, three temporary

groundwater sample collection points (piezometers) were installed in the shallow hydrogeologic zone on Parcel B15 to supplement the data gathered in the area-wide groundwater studies. The soil boring locations where shallow piezometers were installed during the investigation were B15-012-SB, B15-014-SB, and B15-018-SB. These piezometer locations were specifically requested by the agencies in the vicinity of the Brick Sheds to determine whether the existing buildings or associated storage may be a significant source of releases to the groundwater. The shallow groundwater sampling locations are displayed on **Figure 3**. The groundwater sample collection point construction logs have been included as **Appendix E**.

Groundwater sample collection point construction activities were conducted in accordance with the procedures and methods referenced in **Field SOP Number 028**. Temporary piezometers were installed at each location using the Geoprobe® DT22 Dual Tube sampling system. Each boring was advanced to a depth approximately 7 feet below where groundwater was identified in the associated soil core, the 1.25-inch inner rod string was removed, and the temporary, 1-inch PVC groundwater sample collection point was installed through the outer casing. 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 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 F**. 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. Appropriate documentation of the multiparameter meter calibration has also been included in **Appendix F**.

Groundwater samples were submitted to PACE, and analyzed for TCL-VOCs via USEPA Method 8260B, TCL-SVOCs via USEPA Methods 8270D and 8270D SIM, TPH-DRO/GRO via USEPA Methods 8015B and 8015D, TAL-Dissolved Metals via USEPA Methods 6010C and 7470A, dissolved hexavalent chromium via USEPA Method 7196A (piezometers only), and total cyanide via USEPA Method 9012A. The agencies have specified the requirements for analysis of TPH-DRO/GRO and/or Oil & Grease throughout the investigation process. During the implementation of the Area B Groundwater Investigation Work Plan and the Finishing Mills

Groundwater Investigation Work Plan, Oil & Grease analysis was not required. The samples collected from the temporary piezometers installed in Parcel B15 were analyzed for Oil & Grease via USEPA Method 1664A. The permanent groundwater monitoring wells were additionally analyzed for TAL-Total Metals via USEPA Methods 6010C and 7470A, and total hexavalent chromium via USEPA Method 7196A. Select permanent groundwater wells in both the Area B Groundwater Investigation and the Finishing Mills Groundwater Investigation were analyzed for PCBs via USEPA Method 680. 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. SUB-SLAB SOIL GAS INVESTIGATION

A total of three temporary vapor monitoring probes were installed at the locations provided on **Figure 5** to collect sub-slab soil gas samples. The sub-slab soil gas samples were collected according to procedures and methods referenced in **Field SOP Number 002** provided in Appendix A of the QAPP.

A core-drill was used to create a pilot-hole approximately three-inches in diameter that extended through the concrete floor to facilitate the collection of each sub-slab soil gas sample. A hand auger and/or Geoprobe<sup>®</sup> was then used to create a borehole that extended through the subgrade and into the soil to a depth of at least eight inches below the bottom of the floor slab. A six inch soil gas implant, constructed of double woven stainless steel wire screen, was then attached to an appropriate length of polyethylene tubing and lowered to the bottom of the borehole. Once the implant and tubing were installed, the tubing was capped with a three-way valve, and clean sand was added around the implant to create a permeable layer that extended at least two inches above the implant. Bentonite was then added and hydrated to create a seal above the sand pack that extended to the surface. Once installed, each sub-slab soil gas monitoring probe was allowed to equilibrate for at least 24 hours.

Leak tests were performed prior to sample collection to ensure that valid sub-slab soil gas samples were collected, and to provide quantitative proof of the integrity of the surface seal. The testing involved the introduction of a gaseous tracer compound (helium) into a shroud which covered the sampling point, and then monitoring with a hand held meter for the presence of helium in the air withdrawn from the subsurface.

While the shroud was inflated, air was purged from the monitoring point using a three-way valve and a syringe. Using the same three-way valve and a syringe, a Tedlar bag was then filled with at least 500 mL of air that was withdrawn from the monitoring point. The air inside of the Tedlar bag was then screened in the field with the meter.

As stated in **Field SOP Number 002**, if less than 10% of the starting concentration of the tracer gas within the shroud was observed in the Tedlar bag sample, the seal could be considered

competent and sampling would continue. During fieldwork, the concentration of helium measured in the Tedlar bag was always significantly less than 10%, and each seal was deemed adequate to proceed.

Prior to sampling, a syringe was attached to the three-way valve and three purge volumes of air were removed. After the probe had been purged of any ambient air, an evacuated stainless steel canister (summa canisters) with a flow restrictor set for an 24-hour intake time was attached to the tubing. The sub-slab soil gas sample was then collected over a period of 24 hours. At the completion of the sampling period, the valve of the summa canister was closed, and an identification tag was attached to the canister. The probes were then removed, the borehole filled, and the surface repaired.

Sub-slab soil gas samples were submitted to PACE, and analyzed for TCL-VOCs via USEPA Method TO-15.

### **3.5. 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 the groundwater points;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

Following the completion of field activities, a composite sample was gathered from the Parcel B15 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 B15 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 the Phase II investigation is included as **Appendix G**. 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 work day 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 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**, several VOCs were identified above the laboratory’s method detection limits (MDLs) in the soil samples collected from across the Site. 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, exceedances for PAHs are based on the adjusted PALs rather than those presented in the QAPP. Six SVOCs, all polynuclear aromatic hydrocarbons (PAHs), were detected above their respective adjusted PALs. These SVOCs were benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene. Exceedances were noted at over half of the boring locations distributed throughout the parcel. A summary of the SVOC PAL exceedance locations and results has been provided on **Figure S-1**.

Shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were analyzed for PCBs. **Table 6** provides a summary of the PCBs detected above the laboratory’s MDLs. PCBs (total) were detected above the applicable PAL in three shallow soil samples (B15-007-SB-1, B15-008-SB-1, and B15-010-SB-1) with a maximum detection of 1.267 mg/kg at boring location B15-007-SB. A summary of the PCB PAL exceedance locations and results has been provided on **Figure S-2**.



**Table 6** provides a summary of the TPH/Oil & Grease detections above the laboratory's MDLs in the soil samples collected across the parcel. GRO was not detected above the laboratory's MDL at any location. DRO exceeded its soil PAL in one sample (B15-008-SB-9) with a detection of 13,500 mg/kg. There were four Oil & Grease soil PAL exceedances with the maximum detection (24,900 mg/kg) also identified in sample B15-008-SB-9. A summary of the TPH/Oil & Grease PAL exceedance locations and results has been provided on **Figure S-3**. Evidence of possible NAPL was observed in the soil cores of two borings (B15-003-SB and B15-018-SB). These two borings are also highlighted on the exceedance figure, and the specific observations are discussed in greater detail in Section 4.3.

#### 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. Five inorganic compounds (arsenic, lead, manganese, thallium, and vanadium) were detected above their respective PALs. Arsenic was by far the most common inorganic exceedance, and was detected above the PAL in 44 (approximately 90%) of the soil samples analyzed for this compound. In comparison, lead, manganese, and thallium accounted for only 30 total exceedances. Vanadium only exceeded its PAL in one sample (B15-007-SB-1). A summary of the inorganic PAL exceedance locations and results has been provided on **Figure S-4**.

#### 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, and **Figure S-1** through **Figure S-4** present a summary of the soil sample results that exceeded the PALs. **Table 8** provides a summary of results for all PAL exceedances in soil, including maximum values and detection frequencies. **Table 9** indicates which soil impacts (PAL exceedances) are associated with the specific targets listed in the Parcel B15 Work Plan. There were no detections of VOCs above the applicable PALs, and these compounds are not considered to be significant contaminants in Parcel B15. The PAL exceedances in soil within Parcel B15 consisted of five inorganics (arsenic, lead, manganese, thallium, and vanadium), six SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene), PCBs (total), Oil & Grease, and TPH-DRO. The soil analytical results are further evaluated in the SLRA provided in Section 6.0.

## 4.2. GROUNDWATER CONDITIONS

The analytical results for the detected parameters in groundwater are summarized and compared to the PALs in **Table 10** (Organics) and **Table 11** (Inorganics). The laboratory Certificates of Analysis (including Chains of Custody) and 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.

#### 4.2.1. Groundwater Conditions: Organic Compounds

As provided on **Table 10**, several VOCs were identified above the laboratory's MDLs in the shallow zone groundwater samples collected from across the Site. Tetrachloroethene was detected slightly above its PAL (6.3 µg/L compared to the 5 µg/L PAL), at a single sample location (B15-014-PZ). Chloroform was detected above its respective PAL (0.22 µg/L) at two locations (SW-021-MWS and TM05-PZM005). A summary of the VOC PAL exceedance locations and results for the shallow zone has been provided as **Figure GW-1**.

**Table 10** provides a summary of SVOCs reported in shallow zone groundwater 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. Three SVOCs (1,1-biphenyl, benz[a]anthracene, and naphthalene) were detected above their respective PALs. A single PAL exceedance of 1,1-biphenyl was noted at TM03-PZM004 with a detection of 2.2 µg/L. Exceedances for benz[a]anthracene and naphthalene were identified in five locations each. A summary of the SVOC PAL exceedance locations and results for the shallow zone has been provided as **Figure GW-2**.

As specified in the Area B Groundwater Investigation Work Plan, wells located along the perimeter of the Area B Study Area were analyzed for PCBs. As specified in the Finishing Mills Groundwater Investigation Work Plan, wells located adjacent to the TMC were analyzed for PCBs. Piezometers installed in accordance with the Parcel B15 Phase II Investigation Work Plan were not analyzed for PCBs in the groundwater samples. As provided on **Table 10**, PCBs (total) were detected above the MDL at two shallow sample locations (TM07-PZM005 and SW-021-MWS). Trichlorobiphenyl was also detected above its MDL at sample location TM07-PZM005. There were no PAL exceedances for PCBs in shallow groundwater at the Site.

**Table 10** provides a summary of the Oil & Grease and TPH-DRO/GRO PAL exceedances in groundwater. Oil & Grease exceeded its PAL in two shallow groundwater samples (B15-014-PZ and B15-018-PZ). The maximum detection of Oil & Grease was 3,500 µg/L ("J" flagged) at B15-018-PZ. DRO exceeded its PAL in six of the eight shallow groundwater sample locations, although none of the detections were highly elevated. A summary of the shallow groundwater TPH/Oil & Grease PAL exceedance locations and results has been provided on **Figure GW-3**.

#### 4.2.2. Groundwater Conditions: Inorganic Constituents

**Table 11** provides a summary of shallow hydrogeologic zone inorganic constituents detected above the MDLs in the groundwater samples collected from across the Site. Two inorganic compounds (thallium and vanadium) were detected above their respective PALs. Vanadium

(both total and dissolved) exceeded its PAL in all shallow zone samples collected from permanent groundwater wells. Thallium (total and/or dissolved) was only detected above its PAL in two permanent groundwater wells (SW-079-MWS and TM07-PZM005). A summary of the inorganic PAL exceedance locations and results from the shallow zone has been provided as **Figure GW-4**. For simplicity, **Figure GW-4** does not include duplicate exceedances of total and dissolved metals at relevant sample locations. If both total and dissolved concentrations exceeded the PAL for a specific compound, the value for total metals is displayed on the figure for each sample.

#### 4.2.3. Groundwater Conditions: Results Summary

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 versus non-cancer risk. 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, and none of the cumulative VI non-cancer HI values exceeded 1. The results of the cumulative VI comparisons are provided in **Table 12**.

The presence and absence of groundwater impacts within the Site boundaries have been adequately described. There were 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.

#### 4.3. NON-AQUEOUS PHASE LIQUID (NAPL)

Immediately after the installation of each groundwater sampling point (B15-012-PZ, B15-014-PZ, B15-018-PZ, SW-021-MWS, SW-079-MWS, TM03-PZM004, TM05-PZM005, and TM07-PZM005), an oil-water interface probe was used to check for the presence of NAPL in accordance with the methods referenced in **Field SOP Number 019** provided in Appendix A of the QAPP. During the initial check, NAPL was not detected in any groundwater sampling point. Additional NAPL checks were completed prior to groundwater sampling (February 4 through August 30, 2016). NAPL was not detected in any groundwater point during these checks, and no NAPL delineation activities were warranted.



During the installation of B15-003-SB, indications of potential NAPL were observed at approximately 10 feet bgs (water was encountered at approximately 9.5 feet bgs). This location, which targeted the east side of the Brick Sheds, is highlighted on **Figure S-3**. A piezometer with a screen interval from 5 to 15 feet bgs was installed on August 22, 2016 in accordance with standard specifications for temporary groundwater sample collection points. The piezometer was checked for presence of product with an oil-water interface probe immediately after installation, approximately 48 hours after installation, and again after 30 days. The static water level was detected at depths ranging from approximately 10 to 11 feet bgs. No NAPL was detected in the piezometer during any of the NAPL checks, and no additional installations or delineation were warranted. The screening piezometer B15-003-PZ was abandoned in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36 on October 13, 2016 (although it was not gauged a final time on the abandonment date because the abandonment fieldwork preceded the updated MDE guidance).

During the installation of B15-018-SB, indications of a petroleum sheen were observed from 13 to 15 feet bgs (water was encountered at approximately 10 feet bgs). This location, which targeted the north side of the Brick Sheds, is also highlighted on **Figure S-3**. In accordance with the Parcel B15 Work Plan, a piezometer was installed at this location on August 25, 2016 to facilitate the collection of analytical groundwater samples. The piezometer was installed with a screen interval from 7 to 7 feet bgs in accordance with standard specifications for temporary groundwater sample collection points. The piezometer was checked for presence of product with an oil-water interface probe immediately after installation, approximately 48 hours after installation, and again prior to sampling on August 30, 2016 (five days after installation). During the sampling event, the static water level was detected at a depth of approximately 10 bgs. The analytical data obtained from this sampling point indicated that Oil & Grease was present at elevated levels. However, NAPL was not detected in the piezometer during any of the gauging events, and no additional installations or delineation were warranted. The screening piezometer was scheduled to be abandoned on October 13, 2016 in accordance with COMAR 26.04.04.34 through 36, but it was observed to have been destroyed prior to this event.

Soil sample B15-008-SB-9 had detections of DRO and Oil & Grease significantly above the PALs (13,500 mg/kg and 24,900 mg/kg, respectively). The elevated concentrations in B15-008-SB-9 (targeting an open storage area and former scrap yard) detected near the water table were investigated via the installation of a temporary piezometer under direct guidance from the agencies. The piezometer was installed on October 10, 2016 with a screen interval from 7 to 17 feet bgs in accordance with standard specifications for temporary groundwater sample collection points. The piezometer was checked for presence of product with an oil-water interface probe immediately after installation, approximately 48 hours after installation, and again after 30 days. The static water level was detected at depths ranging from approximately 7.5 to 9 feet bgs. No NAPL was detected in the piezometer during any of the NAPL checks, and no additional installations or delineation were warranted. The screening piezometer B15-008-PZ has not been

abandoned at this time; it was converted to a flush-mount monitoring point during the recent development of Parcel B15. Since all required NAPL gauging events have been completed, this location is proposed to be abandoned at this time in accordance with COMAR 26.04.04.34 through 36. The screening piezometer will be gauged a final time on the abandonment date in accordance with current MDE guidance.

The potential mobility of NAPL at B15-003-SB, B15-008-SB, and B15-018-SB was investigated via the installation of temporary piezometers. NAPL was not detected during any of the gauging events described above, and it has been determined that free petroleum product is not present at quantities that are likely to migrate. These three locations were identified as the most likely areas where NAPL could potentially be present and mobile in the groundwater. No additional delineation is recommended with regard to the remaining three analytical exceedance locations (B15-006-SB, B15-017-SB, and B15-021-SB).

#### **4.4. SUB-SLAB SOIL GAS CONDITIONS**

The detected VOCs in sub-slab soil gas are summarized and compared to the PALs in **Table 13**. While there were VOCs detected, none of the detections exceeded the PALs for any respective compound in any of the sub-slab soil gas samples submitted for analysis. These results indicate that potential impacts by VOCs below the building slab appear to be minimal, and there is an apparent insignificant risk for vapor intrusion due to VOCs. The laboratory Certificate of Analysis (including the Chain of Custody) and corresponding 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 table.

## 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, TAL-Metals, cyanide, Oil & Grease, or TPH-DRO/GRO) are present in Site media (soil, groundwater, and sub-slab soil gas) 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 most current USEPA RSLs) or based on other direct guidance from the agencies, to identify the presence of exceedances in each environmental medium.

Quality control (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 H**. The following QC samples were submitted for analysis to support the data validation:

- Trip Blank – at a rate of one per day in coolers with VOC samples only
  - 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
  - Soil Gas – VOCs only
- 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
  - Soil Gas – VOCs only

The 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 logs have been provided in **Appendix D** (PID calibration log) and **Appendix F** (multiparameter meter calibration logs).

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 Chains of Custody 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 50% 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.

As outlined in the Parcel A2 Phase II Investigation Report – Preliminary Responses to MDE/USEPA Comments Letter (dated November 14 and approved on November 30, 2017), the analytical laboratory was able to re-evaluate their archived analytical runs in order to report the sub-slab vapor concentrations for a supplemental list of soil gas constituents. The relevant laboratory report (Job ID #30196716) states that the report was reissued to add analytes. Since these supplemental compounds were recovered from archived analytical runs and represent estimated values, they were not validated by EDQI. Thus, they are reported as non-validated data in the detection summary table.

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-approved 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 USEPA has previously specified that results flagged with a “JB” qualifier are erroneous, and any such results should be revised to display the “B” qualifier only. EDQI reviews and corrects any “JB” qualified results during the data validation procedure. Therefore, any result originally flagged with a “JB” qualifier in the laboratory certificate is reported as a “B” qualified non-detect result in this Phase II Investigation Report. ARM has reviewed all non-validated laboratory reports (those which were not designated to be reviewed by EDQI), and applied the same validation correction to any relevant “JB” qualified results. 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. Lists of the analytical soil results that were rejected during data validation are provided as **Table 14** (soil) and **Table 15** (groundwater). There were no rejected analytical results from the sub-slab soil gas dataset, so an additional table is not warranted. 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 002, 006, 008, 009, 010, 011, 017, and 024**. Review of the field notes and laboratory sample receipt records indicated that collection of soil,

groundwater, and sub-slab soil gas 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 datasets.

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 I**. This evaluation of completeness includes only the representative 50% of sample results which were randomly selected for validation.

Limitations identified in the soil data were the number of rejected sample results for 2,4-dinitrophenol, pentachlorophenol, methyl acetate, 1,4-dioxane, benzaldehyde, and bromomethane. Since 2,4-dinitrophenol and pentachlorophenol had completeness scores very close to the 90% goal (88.9%), these are not considered to be significant data gaps.

All of the methyl acetate and 1,4-dioxane soil results which underwent the validation process were rejected; however, there were no detections of methyl acetate or 1,4-dioxane in soil throughout the parcel (among the non-validated data). The rejection of the soil results for these compounds has not been uncommon for data obtained from the Tradepoint Atlantic property. In addition, methyl acetate was not detected in groundwater at the Site, and 1,4-dioxane had only four low-level detections (“J” flagged) among all of the available groundwater data, so sufficient groundwater data is available to indicate that these compounds are not considered site-related contaminants. The limited soil completeness values for benzaldehyde (22.2%) and bromomethane (58.3%) are not considered to be significant data gaps. Only benzaldehyde had any detections in soil, and the maximum benzaldehyde detection (0.14 mg/kg) was well below the PAL (120,000 mg/kg). Benzaldehyde and bromomethane were not detected in any groundwater sample location analyzed for Parcel B15. Since there were no significant detections

of benzaldehyde or bromomethane in soil or groundwater, these compounds are not considered site-related contaminants.

In the groundwater samples, only acetone was below the goal of 90% completeness, with two rejected results. Adequate soil and sub-slab soil gas data were available to determine that acetone does not appear to be a significant concern at the Site. Since none of the groundwater results were detections, and all soil and sub-slab soil gas detections were very low values, the limited acetone data in groundwater is not a significant data gap.



## 6.0 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT (SLRA)

### 6.1. ANALYSIS PROCESS

A human health SLRA has been conducted for soils to further evaluate the Site conditions in support of the design of necessary response measures. The SLRA included the following evaluation process:

**Identification of Exposure Units (EUs):** Parcel B15 (19.3 ac) consisted of one single EU including the entire Site.

**Identification of Constituents of Potential Concern (COPCs):** Compounds that are present at concentrations at or above the USEPA RSLs set at a target cancer risk of  $1E-6$  or target non-cancer Hazard Quotient (HQ) of 0.1 were identified as COPCs to be included in the SLRA. A COPC screening analysis is provided in **Table 16** to identify compounds above the relevant screening levels in Parcel B15.

**Exposure Point Concentrations (EPCs):** The COPC soil data for the site-wide EU were divided into surface (0 to 1 foot) and subsurface (>1 foot) depths for estimation of potential EPCs. An evaluation of pooled surface and subsurface soil data was also performed. Thus, for Parcel B15 there are three soil datasets. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth category was calculated for comparison to the Adult Lead Model (ALM)-based values, and any individual results exceeding 10,000 mg/kg would be delineated for possible excavation and removal (if applicable). For PCBs, all results equaling or exceeding 50 mg/kg would be delineated for excavation and removal (if applicable).

**Risk Ratios:** The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Industrial Worker and to site-specific Soil Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). The risk ratios were calculated with a cancer risk of  $1E-6$  and a non-cancer HQ of 1. Site-specific risk-based evaluations for the Construction Worker were completed for a range of potential exposure frequencies. For each exposure frequency, risk ratios for the carcinogens were summed to develop a screening level estimate of the cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the cumulative non-cancer hazard. These calculated risk ratios were used to



determine the exposure frequency that would result in risk ratios equivalent to a cumulative cancer risk of  $1E-5$  or Hazard Index (HI) of 1 for any individual target organ. This analysis indicated that an exposure frequency of 35 days (7 weeks) would be allowable in the site-wide EU before additional worker protections or more detailed job safety evaluations might be needed.

There is no potential for human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that future construction/excavation leads to a potential Construction Worker exposure to groundwater, health and safety plans and procedures shall be followed to limit exposure risk.

**Assessment of Lead:** For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for the site-wide EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 2,518 mg/kg, which is the most conservative (i.e., lowest) concentration which would yield a probability of 5% of a blood lead concentration of 10 ug/dL. If the arithmetic mean concentrations for the EU were below 2,518 mg/kg, the EU was identified as requiring no further action for lead. The lead averages and ALM screening levels are presented for surface, subsurface, and pooled soils in **Table 17**. For lead, any results equaling or exceeding 10,000 mg/kg would warrant additional delineation for possible excavation and removal (if applicable).

**Assessment of TPH-DRO/GRO and Oil & Grease:** EPCs were not calculated for TPH-DRO/GRO or Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). One subsurface sample exceeded the specified limit for DRO (B15-008-SB-9 with a detection of 13,500 mg/kg) and four locations exceeded the Oil & Grease limit (B15-008-SB-9 with a detection of 24,900 mg/kg, B15-021-SB-4 with a detection of 10,300 mg/kg, B15-006-SB-4 with a detection of 7,010 mg/kg, and B15-017-SB-1 with a detection of 6,310 mg/kg). Evidence of NAPL was also noted in two soil cores (B15-003-SB and B15-018-SB), and a piezometer was installed and gauged at each location to assess the possible presence of mobile product. A temporary piezometer was also installed at B15-008-SB under agency guidance to assess the potential for mobile product based on the elevated TPH/Oil & Grease detections. These three piezometers are discussed in depth in Section 4.3, and an additional evaluation of the potential for product mobility is presented following the SLRA in Section 7.3.

**Risk Characterization Approach:** For the site-wide EU, if the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1 (with the exception of lead), and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of  $1E-5$ , then a no further action determination will be recommended. The primary EPC comparisons to determine the need for possible remedial action will be the Construction Worker scenario comparisons to the surface and subsurface soil EPCs, as well as the Composite Worker comparison to the surface soil EPCs. However, no further action will only be approvable if subsurface soil EPCs are compared to the Composite Worker RSLs in addition to the Construction Worker SSLs, and the cancer and non-cancer risk estimates are equal to or less than  $1E-5$  and 1, respectively. Pooled soil data has also been evaluated and included for discussion.

If the baseline estimate of cumulative cancer risk exceeds  $1E-5$ , but is less than or equal to  $1E-4$ , then capping of the EU will be considered to be an acceptable remedy for the Composite Worker. For the Construction Worker, cumulative cancer risks exceeding  $1E-5$ , but less than or equal to  $1E-4$ , will be mitigated via site-specific health and safety requirements. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of the exceedance and other factors such as bioavailability of the COPC. Similarly, for lead, if the ALM results indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 10 ug/dL for the EU, then capping of the EU would be an acceptable presumptive remedy. The mean soil lead concentrations corresponding to ALM probabilities of 5% and 10% are 2,518 mg/kg and 3,216 mg/kg, respectively. If capping of the identified area is not proposed, additional more detailed quantitative evaluation of risk will be required for the EU. This supplemental risk evaluation may include a selective removal (excavation) remedy to reduce site-wide risks/hazards to acceptable levels.

The USEPA's acceptable risk range is between  $1E-6$  and  $1E-4$ . If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of  $1E-4$ , further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of non-carcinogen hazard exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy. In addition, if the ALM indicates that the mean lead concentrations would present a >10% probability of a blood concentration of 10 ug/dL for the EU, further analysis of site conditions including toxicity reduction will be completed such that the probability would be reduced to less than 10% after toxicity reduction, but before capping.

## 6.2. PARCEL B15 SLRA RESULTS AND RISK CHARACTERIZATION

Soil data were divided into three datasets (surface, subsurface, and pooled) for the Parcel B15 EU to evaluate potential current and future exposure scenarios. The Composite Worker generally will be exposed only to surface soils. However, if construction activities were to result in the placement of subsurface material over existing surface soils, a Composite Worker could be exposed to a mixture of surface and subsurface soils. The Construction Worker may be exposed only to surface soils, but subsurface soils would be encountered for development activities that involve soil disturbances such as excavations or other intrusive earth-moving activities. The pooled data may be applicable for development work that involves disturbances through the surface soil, since workers would likely not be exposed solely to the subsurface soil.

If the detection frequency of an analyte is less than 5% in a dataset with a minimum of 20 samples, the COPC can be eliminated from the risk assessment assuming the detections are not extremely high (based on agency discretion). A single detection that is extremely high could require delineation rather than elimination. No analyte designated as a COPC in Parcel B15 had a detection frequency less than 5%; thus, no COPCs were removed due to low detection frequencies. All COPCs identified in **Table 16** have been retained for the risk assessment.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled surface/subsurface) in the site-wide EU. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the three datasets. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special management based on the risk characterization approach. The calculated site-wide EPCs for the surface and subsurface exposure scenarios are provided in **Table 18**. The supplemental EPCs generated from the pooled surface and subsurface soils are also included in the EPC table. These EPCs were used for both the Composite Worker and Construction Worker risk assessments.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations used to determine lead averages for each dataset in the site-wide EU, is also included as an electronic attachment. The average lead concentrations are presented for each dataset in **Table 17**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead value of 800 mg/kg. The screening criterion for lead was set at an EU arithmetic mean of 800 mg/kg based on the RSL, with a secondary limit of 2,518 mg/kg based on the May 2017 updated ALM developed by the USEPA (corresponding to a 5% probability of a blood lead level of 10 ug/dL). In addition, there were no locations where detections of lead exceeded 10,000 mg/kg, the designated threshold at which delineation would be required.

None of the detections of PCBs exceeded the mandatory excavation criterion of 50 mg/kg.

**Composite Worker Assessment:**

Risk ratios for the estimates of potential EPCs for the Composite Worker scenario are shown in **Table 19** (surface), **Table 20** (subsurface), and **Table 21** (pooled surface and subsurface soils). The results are summarized as follows:

| <b>Worker Scenario</b> | <b>Medium</b>             | <b>Hazard Index (&gt;1)</b> | <b>Total Cancer Risk</b> |
|------------------------|---------------------------|-----------------------------|--------------------------|
| Composite Worker       | Surface Soil              | Dermal System = 5           | 2E-5                     |
|                        | Subsurface Soil           | Dermal System = 2           | 4E-5                     |
|                        | Surface & Subsurface Soil | Dermal System = 2           | 3E-5                     |

The current Composite Worker could potentially be exposed to surface soils. The risk ratios indicated that the cumulative cancer risk for a potential Composite Worker exposure to surface soils was greater than the acceptable limit for no further action (1E-5). When the non-cancer risks were segregated and summed by target organ for cumulative HI, the dermal system exceeded the cumulative HI of 1 (HI=5) primarily due to the additive effect of thallium (HQ=4) and vanadium (HQ=0.4) in surface soils.

Construction activities were assumed to result in the placement of subsurface material over existing surface soils exposing a Composite Worker to a mixture of surface and subsurface soils. This exposure scenario is dependent on any completed or future development proposed for the parcel. The risk ratios indicated that the cumulative cancer risks for a potential Composite Worker exposure to subsurface and pooled soils were greater than the acceptable limit for no further action (1E-5). When the non-cancer risks were segregated and summed by target organ for cumulative hazard, the dermal system exceeded the cumulative HI of 1 in both subsurface and pooled soils (HI=2) primarily due to the additive effect of thallium (HQ=1 in subsurface soil and HQ=2 in pooled soil) and vanadium (HQ=0.3 in both scenarios).

Based on this assessment, mitigative action or further quantitative risk assessment is warranted for the site-wide EU. The risk ratios indicate that capping would be an appropriate remedy to address potential Composite Worker exposures to surface and subsurface soils. Recent development activities, completed in April 2017, included the installation of a paved capping remedy across the entire area (100%) of Parcel B15. Institutional controls to ensure maintenance of the cap and proper oversight and management of any future construction activity that could include disturbances of the existing soil below the cap would be protective of future Composite Workers by limiting potential exposures to material which may be impacted above the acceptable risk criteria.

**Construction Worker Assessment:**

Construction Worker risk ratios were evaluated for several exposure scenarios to determine the exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected exposure duration (35 work days) are shown in **Table 22** (surface), **Table 23** (subsurface), and **Table 24** (pooled surface and subsurface soils). The variables entered for calculation of site-specific SSLs (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific SSLs is included as **Appendix J**. The results for the site-wide 35-day exposure scenario are summarized as follows:

| <b>Worker Scenario</b>                        | <b>Medium</b>             | <b>Hazard Index (&gt;1)</b> | <b>Total Cancer Risk</b> |
|---|---------------------------|-----------------------------|--------------------------|
| Construction Worker<br>(35 work day schedule) | Surface Soil              | none                        | 9E-7                     |
|   | Subsurface Soil           | none                        | 1E-6                     |
|   | Surface & Subsurface Soil | none                        | 1E-6                     |

The Construction Worker may be exposed to only surface soils or a combination of surface and subsurface soils (i.e. pooled) during future excavation or other earth moving activities. Using the 35-day exposure duration, the screening level estimates of Construction Worker cancer risk for exposures to surface soils, subsurface soils, and pooled soils in the parcel-wide EU were all less than the acceptable risk level of 1E-5. In addition, no elevated non-cancer hazards above the HI of 1 were calculated for any target organ for surface soils, subsurface soils, or pooled soils. Based on the site-specific 35-day Construction Worker risk assessment, there are no potentially unacceptable risks/hazards resulting from exposures to on-site soils.

Since the allowable exposure duration (35 days) is less than the default baseline exposure scenario for a Construction Worker (which would be evaluated using a duration of 250 days), institutional controls should be implemented to ensure proper oversight and management of any future construction activity that would include disturbances of the existing soil for more than 35 intrusive work days. These controls will be protective of future Construction Workers by limiting potential exposures to surface and subsurface soils which may be impacted above the acceptable risk criteria. Potential risks and hazards will be re-evaluated in a Response and Development Work Plan if the proposed duration of intrusive work will exceed 35 days for any future construction project.

## 7.0 FINDINGS AND RECOMMENDATIONS

The objective of this Phase II Investigation was to fully characterize the nature and extent of contamination at the Site. During the Phase II Investigation, a total of 49 soil samples (all locations/depths), eight shallow groundwater samples (including those collected for separate groundwater investigations), and three sub-slab soil gas samples were collected and analyzed to define the nature and extent of contamination in Parcel B15. The sampling and analysis plan for the parcel was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment. Soil samples were analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TPH-DRO/GRO, TAL-Metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot bgs) were additionally analyzed for PCBs. Groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TPH-DRO/GRO, TAL-Dissolved Metals, dissolved hexavalent chromium (piezometers only), and total cyanide. The temporary piezometers were additionally analyzed for Oil & Grease. Select permanent monitoring wells were analyzed for PCBs. All permanent monitoring wells were also analyzed for TAL-Total Metals and total hexavalent chromium. Sub-slab soil gas samples were analyzed for TCL-VOCs.

### 7.1. 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. The average lead concentrations in the surface, subsurface, and pooled (surface and subsurface) soils are below the 800 mg/kg RSL, indicating that no further action is needed with respect to lead. In addition, 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 concentrations of total PCBs identified in Parcel B15 above the mandatory delineation criterion of 50 mg/kg, indicating that no further action is needed.

There were no soil PAL exceedances for VOCs, indicating that these compounds are not significant contaminants in soil at the Site. Exceedances of the PALs in soil within Parcel B15 consisted of five inorganics (arsenic, lead, manganese, thallium, and vanadium), six SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene), PCBs (total), DRO, and Oil & Grease. Arsenic exceeded its PAL in the largest proportion of the samples analyzed site-wide. Arsenic was detected in 94% of the soil samples analyzed for this compound, with a maximum detection of 58.1 mg/kg in sample B15-008-SB-9. The remaining inorganic exceedances were less common in comparison. Lead, manganese, thallium, and vanadium exceeded their PALs in seven samples (maximum detection of 5,910 mg/kg), 14 samples (maximum detection of 72,700 mg/kg), nine samples (maximum



detection of 159 mg/kg), and one sample (maximum detection of 10,500 mg/kg), respectively. SVOC PAL exceedances were widespread across Parcel B15. Benzo[a]pyrene was the most common PAL exceedance among the SVOCs (18 total exceedances). Benz[a]anthracene, benzo[b]fluoranthene and dibenz[a,h]anthracene exceeded their PALs in the same six samples (B15-006-SB-4, B15-007-SB-4, B15-008-SB-9, B15-010-SB-5, B15-013-SB-4, and B15-015-SB-1). Indeno[1,2,3-c,d]pyrene and naphthalene PAL exceedances were limited to two samples each. The maximum detections of each listed SVOC, with the exception of naphthalene, were identified in sample B15-008-SB-9. PCBs (total) exceeded the PAL in three soil samples with the maximum detection of 1.267 mg/kg at B15-007-SB-1. Oil & Grease exceeded its PAL in four soil samples with a maximum detection of 24,900 mg/kg at B15-008-SB-9. DRO was detected above its PAL in only one soil sample (B15-008-SB-9), corresponding to the maximum detection of Oil & Grease. Petroleum impacts, including the analytical exceedances of the TPH/Oil & Grease PAL as well as borings with physical evidence of NAPL in the soil cores, are further discussed in Section 7.3.

## 7.2. 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.

As described in detail in Section 3.3, not every groundwater location was analyzed for the same classes of compounds based on the evolving Work Plan requirements between the Area B and Finishing Mills Groundwater Investigations and the Parcel B15 Phase II Investigation. Exceedance of the PALs in groundwater below Parcel B15 (or in close proximity) consisted of two inorganic compounds (thallium and vanadium), two VOCs (chloroform and tetrachloroethene), three SVOCs (1,1-biphenyl, benz[a]anthracene, and naphthalene), Oil & Grease, and DRO. There were no PAL exceedances of any metals in the temporary groundwater sample collection points within Parcel B15 which targeted the Brick Sheds. The thallium and vanadium exceedances were observed at two permanent well locations and five permanent well locations, respectively. The single tetrachloroethene PAL exceedance was observed in B15-014-PZ (which targeted the Brick Sheds) with a detection of 6.3 µg/L. Chloroform exceeded the PAL at two locations with a maximum detection of 4.7 µg/L. Benz[a]anthracene and naphthalene were detected above the PAL in five groundwater locations each; whereas, 1,1-biphenyl exceeded the groundwater PAL in only one sample (TM03-PZM004).

DRO was detected above the aqueous PAL in six of the eight groundwater samples relevant for this Parcel B15 Phase II Investigation. The highest groundwater detection of DRO in Parcel B15 was 583 µg/L at TM03-PZM004. In comparison, Oil & Grease was detected above the PAL in two of the three groundwater samples analyzed for this parameter, with a maximum detection of 3,500 µg/L at B15-018-PZ. GRO was not detected in groundwater at the Site. Each groundwater sample 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 sample locations in Parcel B15.

### **7.3. NON-AQUEOUS PHASE LIQUID**

Elevated detections of TPH/Oil & Grease represent locations which may possibly be impacted by free-phase NAPL that could potentially be mobile, particularly along utility corridors. Elevated Oil & Grease was identified above the PAL (6,200 mg/kg) at four soil boring locations in Parcel B15 (B15-006-SB, B15-008-SB, B15-017-SB, and B15-021-SB). TPH-DRO/GRO were also analyzed at each of the soil boring locations, and these analyses indicated that petroleum was not present above the action limit of 6,200 mg/kg, with the exception of one location which exceeded the DRO PAL (B15-008-SB). This location appeared to be impacted in a possible smear zone above the water table.

The elevated concentrations in B15-008-SB-9 (targeting an open storage area and former scrap yard) detected near the water table were investigated under direct guidance from the agencies. Since the shallow soil sample at B15-008-SB was not impacted by elevated DRO or Oil & Grease, the soil impacts detected at 9 feet bgs may be related to migration in groundwater. In addition, two borings (B15-003-SB and B15-018-SB) had physical evidence of potential NAPL observed in the soil cores during this investigation. A six-inch interval containing visible NAPL was identified in the soil core at sample location B15-003-SB, and a 2-foot interval containing a petroleum sheen was identified in the soil core at sample location B15-018-SB. Based on the relative magnitude of the TPH/Oil & Grease exceedances and the evidence of NAPL in two soil cores, these three locations were identified as the most likely source areas where NAPL could potentially be present at quantities that could migrate. Piezometers were installed and gauged at each of these locations as described in Section 4.3. The Parcel B15 Work Plan had specified that a temporary groundwater sample collection point would be installed at B15-018-SB, and analytical data was also obtained at this location. Based on the gauging measurements completed at these locations, NAPL was not detected and it was determined that free petroleum product is not present in Parcel B15 at quantities that are likely to migrate. No additional delineation is recommended with regard to the remaining three analytical exceedance locations (B15-006-SB, B15-017-SB, and B15-021-SB).

The screening piezometer B15-003-PZ was abandoned on October 13, 2016, and the temporary groundwater sample collection point B15-018-PZ was observed to have been destroyed prior to being abandoned on the same date. Location B15-008-PZ has not been abandoned at this time. This existing screening piezometer was converted to a flush-mount monitoring point during the recent development (capping) of Parcel B15. Since all required NAPL gauging events at B15-008-PZ have been completed, this location is proposed to be abandoned at this time in accordance with COMAR 26.04.04.34 through 36. The screening piezometer will be gauged a final time on the abandonment date in accordance with current MDE guidance.



Since NAPL has not been detected in any groundwater monitoring location (historical wells and temporary points), no additional action is recommended at this time with respect to NAPL within Parcel B15. However, the proximity of all TPH/Oil & Grease impacted borings and NAPL screening piezometers to proposed utilities should be evaluated in any future development planning for Parcel B15. Appropriate protocols should be documented in any future Response and Development Work Plans (as necessary) to prevent the mobilization of any product if future utilities are proposed in the vicinity of these impacts.

#### **7.4. SUB-SLAB SOIL GAS**

The nature and extent of constituents in sub-slab soil gas have been adequately characterized by the Phase II Investigation. The sub-slab samples collected during the investigation of the Brick Sheds did not contain any VOC compounds that exceeded their specified PALs. Further investigation is not recommended based on the documentation of minimal impacts below the building slab, and the apparent insignificant risk for vapor intrusion.

#### **7.5. HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT**

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 or equal to  $1E-5$ , and none of the cumulative VI non-cancer HI values exceeded 1. There were no concerns related to potential VI risks identified at the Site.

The risk ratios indicated that the cumulative cancer risk for the Composite Worker surface exposure scenario was above the allowable limit of  $1E-5$  but below the action limit that would require consideration of toxicity reduction in any proposal for a remedy (with a carcinogenic risk of  $2E-5$ ). A non-cancer cumulative HI of 1 was exceeded for the dermal system ( $HI=5$ ) evaluated for Composite Worker exposure to surface soils due to elevated detections of thallium and vanadium. Since the cumulative cancer risk was greater than  $1E-5$  and the cumulative HI exceeded 1 for the dermal system in surface soil, additional action is required to address potential risks to a Composite Worker performing duties at the Site. A capping remedy is sufficient to protect Composite Workers by restricting exposure to COPCs in surface soil below the cap. Recent development activities, completed in April 2017, included the installation of a paved capping remedy across the entire area (100%) of Parcel B15.

The cumulative carcinogenic risk for the potential future Composite Worker exposure to subsurface soils was also greater than the no further action limit ( $1E-5$ ) but below the action limit that would require consideration of toxicity reduction in any proposal for a remedy (with a carcinogenic risk of  $4E-5$ ). A cumulative HI of 1 was also exceeded for the dermal system ( $HI=2$ ) evaluated for the subsurface scenario due to elevated thallium and vanadium when the non-cancer risks were segregated and summed by target organ. Based on this assessment, additional unacceptable risks/hazards to a future Composite Worker could occur if future disturbances relocated subsurface soils. Institutional controls to ensure maintenance of the cap and proper oversight and management of any future construction activity that could include disturbances of the existing soil below the cap would be protective of future Composite Workers by limiting potential exposures to material which may be impacted above the acceptable risk criteria. Potential risks associated with any future construction activities that would disturb the existing cap should be addressed in a Response and Development Work Plan for that work.

The Construction Worker risk assessment for a site-specific exposure duration (35 work days) indicated that the cumulative cancer risks for surface and subsurface soils were below the allowable risk level of  $1E-5$ . In addition, no elevated non-cancer hazards above the HI of 1 were calculated for any target organ for surface or subsurface soils using the site-specific 35-day exposure duration. These findings indicate that there are no potentially unacceptable risks/hazards resulting from exposures to on-site soils if the duration of intrusive work for future development projects is limited to 35 days. Since the allowable exposure duration (35 days) is less than the default baseline Construction Worker scenario for a (250 days), institutional controls should be implemented to ensure proper oversight and management of any future construction activity that would include disturbances of the existing soil for more than 35 intrusive work days. These controls will be protective of future Construction Workers by limiting potential exposures to surface and subsurface soils which may be impacted above the acceptable risk criteria. Potential risks and hazards will be re-evaluated in a Response and Development Work Plan if the proposed duration of intrusive work will exceed 35 days for any future construction project.

## **7.6. RECOMMENDATIONS**

Sufficient remedial investigation data has been collected to present this evaluation of the nature and extent of possible constituents of concern in Parcel B15. The presence and absence of soil, groundwater, and sub-slab soil gas impacts within Parcel B15 have been adequately described and further investigation is not warranted. Recent development activities, completed in April 2017, included a paved capping remedy which was installed over the entire area (100%) of Parcel B15. Based on the evaluation of risk presented in the SLRA and implementation of the capping remedy on Parcel B15, the Site is currently suitable for use by Composite Workers. Additional action is not required to support occupancy and use of the parcel in its current (capped) condition. Recommendations for the Site are as follows:

- The SLRA presented in this Phase II Investigation Report evaluated the baseline risks for potential Composite Workers for an industrial use scenario. Therefore, unless additional assessment of risk to other potential receptors is conducted as part of a Response and Development Work Plan, the future use of the parcel should be restricted as follows:
  - Deed restriction for industrial Site use only; no portion of the Site should be used for commercial/recreational or residential purposes. A supplemental SLRA in a project-specific Response and Development Work Plan would be required prior to non-industrial use of any portion of the Site.
  - Deed restriction on groundwater use; no subsurface water or groundwater should be extracted from aquifers for any purpose.
- Institutional controls should be implemented for the protection of Composite Workers and Construction Workers to ensure proper oversight and management of any future construction activity that includes disturbances of the existing soil from below the cap. These institutional controls will necessarily include a written notice to the MDE of any future soil disturbance activities, proper management and characterization of any material disturbed at the Site, and health and safety requirements for any excavations of substantial time periods (exceeding 35 intrusive work days). Construction Worker risks for any proposed exposure durations exceeding 35 intrusive work days will be re-evaluated in site-specific Response and Development Work Plans, as necessary.
- The boring locations with physical observations of NAPL in the associated soil cores and/or elevated soil TPH/Oil & Grease detections (B15-003-SB, B15-006-SB, B15-008-SB, B15-017-SB, B15-018-SB, and B15-021-SB) should be considered for proximity to proposed utilities in any future development plans. If future utilities are proposed in the vicinity of these borings, appropriate protocols for the mitigation of potential product mobility should be specified in a Response and Development Work Plan.
- Since all required NAPL gauging events at B15-008-PZ have been completed, this location is proposed to be abandoned at this time. The screening piezometer will be gauged a final time on the abandonment date in accordance with current MDE guidance.
- The capping remedy installed throughout Parcel B15 should be inspected and maintained to minimize degradation of the cap and prevent potential exposures to the underlying soil. Inspection and maintenance requirements shall be specified in closure documentation associated with the recent paving development of Parcel B15.

## 8.0 REFERENCES

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## **FIGURES**

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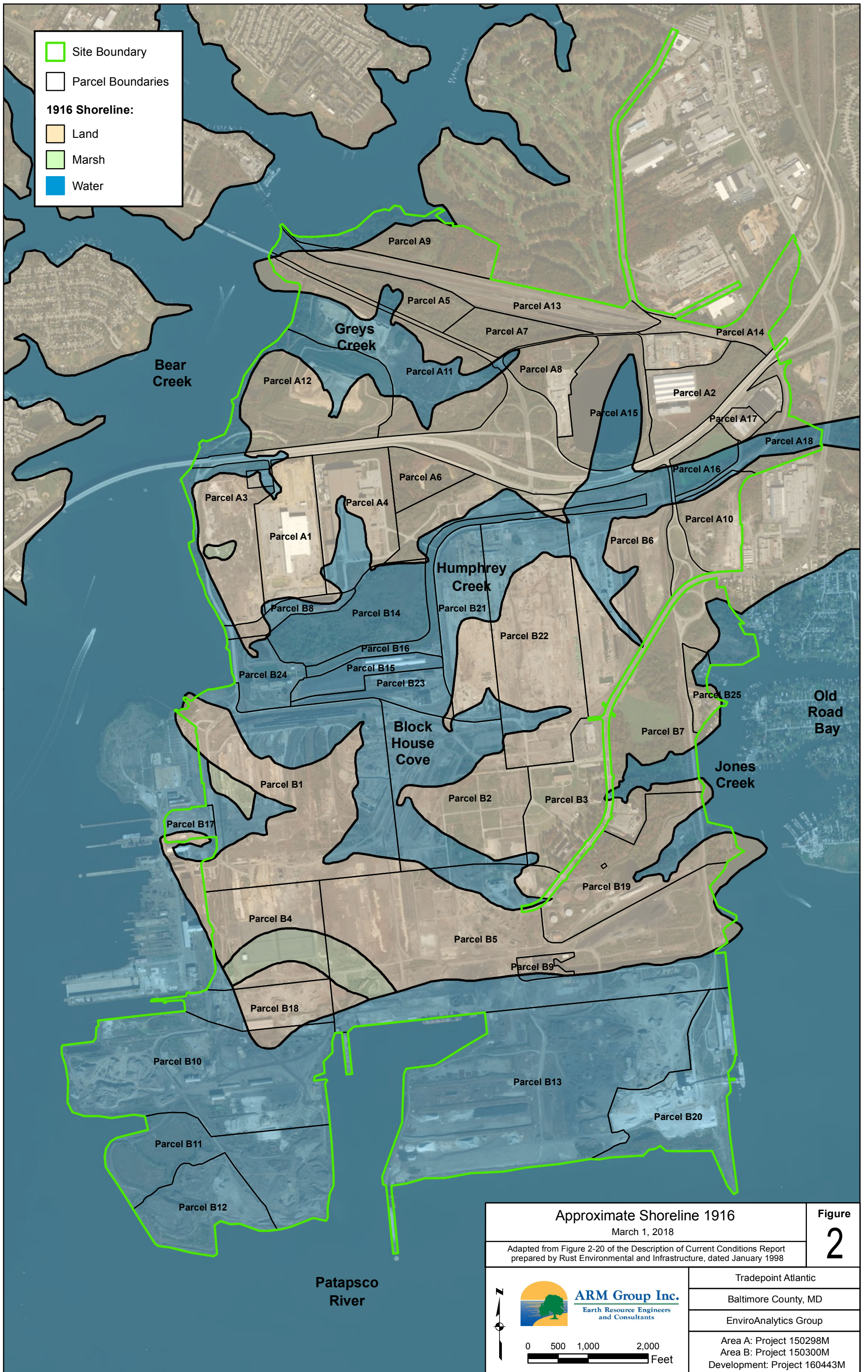




Site Boundary  
 Parcel Boundaries  
 Private Property

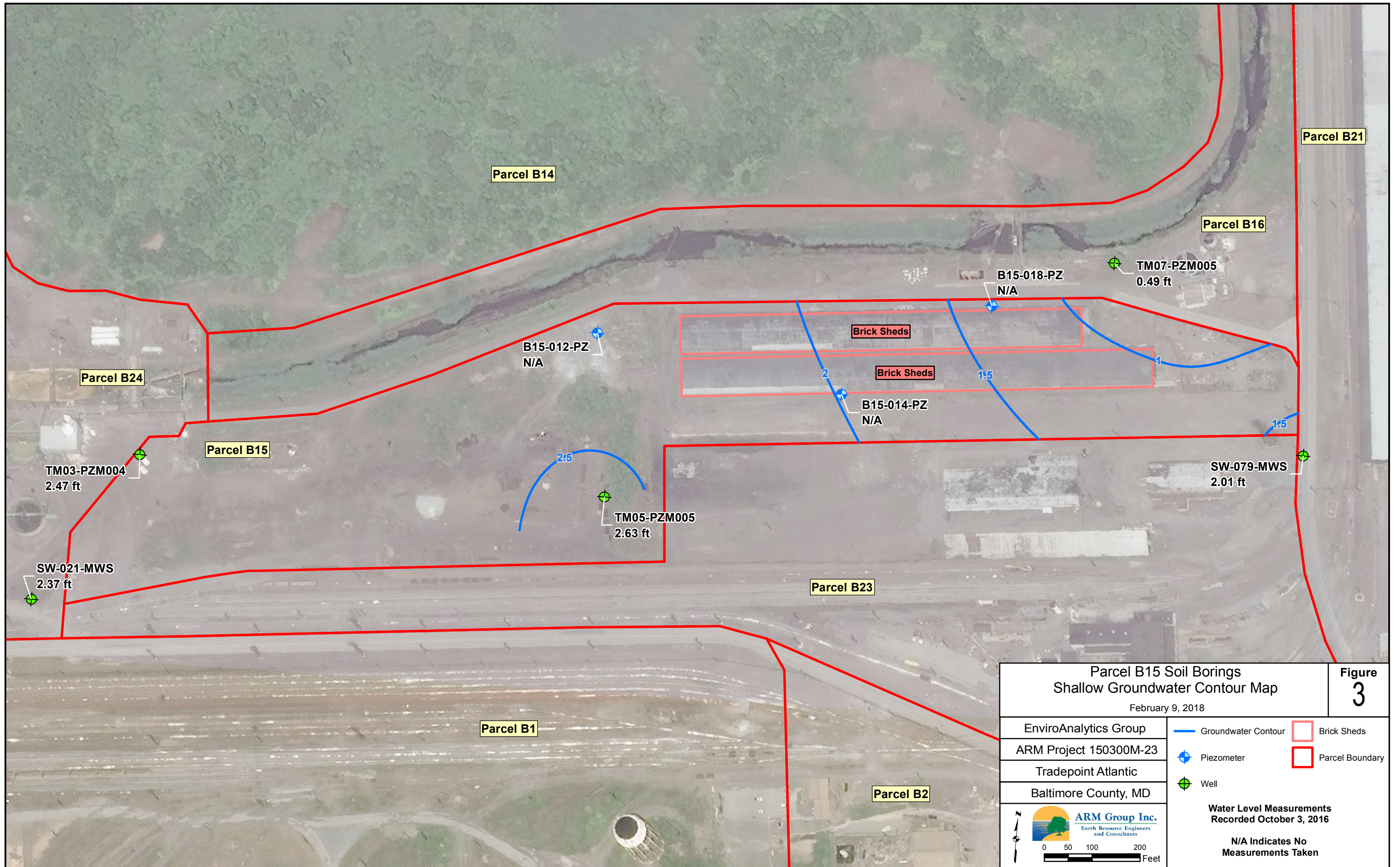
|   |  |  |
|---|--|--|
| <b>Tradepoint Atlantic</b><br><b>Area A and Area B Parcels</b><br>March 1, 2018 |  | <b>Figure</b><br><span style="font-size: 2em; font-weight: bold;">1</span> |
| <br>  | <br><b>ARM Group Inc.</b><br>Earth Resource Engineers<br>and Consultants           | Tradepoint Atlantic<br>Baltimore County, MD<br>EnviroAnalytics Group       |
|   | Area A: Project 150298M<br>Area B: Project 150300M<br>Development: Project 160443M |  |
|   |  |  |
|   |  |  |





|  |  |   |
|--|--|---|
| <b>Approximate Shoreline 1916</b><br>March 1, 2018   |  | <b>Figure</b><br><span style="font-size: 2em;">2</span> |
| Adapted from Figure 2-20 of the Description of Current Conditions Report prepared by Rust Environmental and Infrastructure, dated January 1998 |  |   |
|  | <br><b>ARM Group Inc.</b><br>Earth Resource Engineers and Consultants              | Tradepoint Atlantic                                     |
|  | Baltimore County, MD   |   |
|  | EnviroAnalytics Group  |   |
|  | Area A: Project 150298M<br>Area B: Project 150300M<br>Development: Project 160443M |   |





Parcel B14

Parcel B21

Parcel B16

B15-018-PZ  
N/A

TM07-PZM005  
0.49 ft

Brick Sheds

B15-012-PZ  
N/A

Brick Sheds

B15-014-PZ  
N/A

SW-079-MWS  
2.01 ft

Parcel B24

Parcel B15

TM03-PZM004  
2.47 ft

TM05-PZM005  
2.63 ft

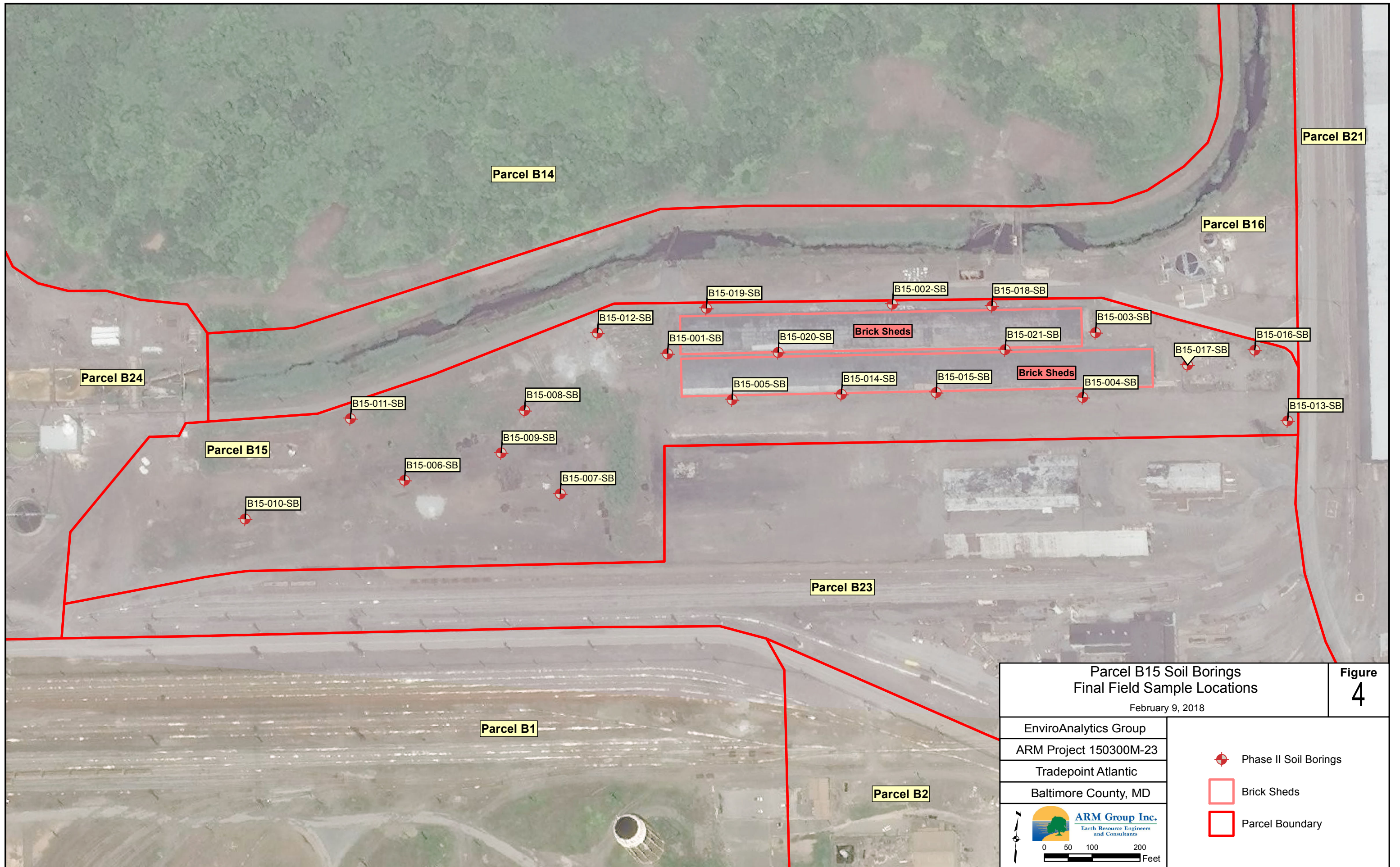
SW-021-MWS  
2.37 ft

Parcel B23

Parcel B1

Parcel B2


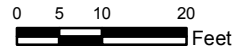





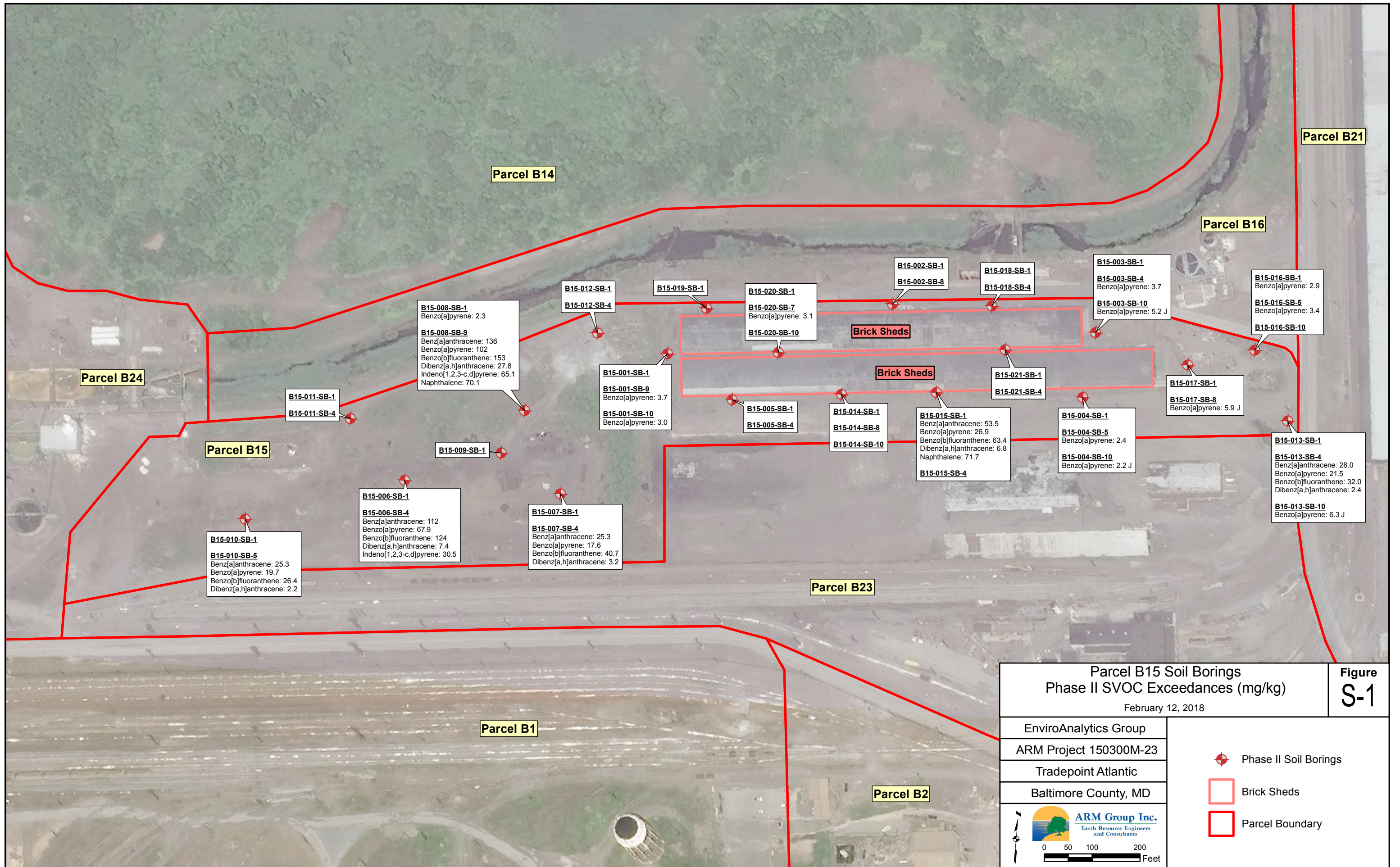
|  |  |  |
|--|--|--|
| <b>Parcel B15 Soil Borings</b><br><b>Final Field Sample Locations</b><br>February 9, 2018  |  | <b>Figure</b><br><b>4</b>  |
| EnviroAnalytics Group<br>ARM Project 150300M-23<br>Tradepoint Atlantic<br>Baltimore County, MD   |  | <ul style="list-style-type: none"> <li><span style="color: red;">◆</span> Phase II Soil Borings</li> <li><span style="border: 1px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Brick Sheds</li> <li><span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Parcel Boundary</li> </ul> |
| <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> <div style="display: flex; align-items: center;"> <div style="font-size: 8px; margin-left: 5px;"> <b>ARM Group Inc.</b><br/>           Earth Resource Engineers<br/>           and Consultants         </div> </div> </div> <div style="margin-top: 5px;"> </div> |  |  |





|   |  |                     |                         |                         |   |   |   |             |
|---|--|---------------------|-------------------------|-------------------------|---|---|---|-------------|
| <b>Parcel B15 Sub-Slab Soil Gas<br/>Final Field Sample Locations</b><br>February 9, 2018  |  | <b>Figure<br/>5</b> |                         |                         |   |   |   |             |
| EnviroAnalytics Group<br>ARM Project 150298M-23<br>Tradepoint Atlantic<br>Baltimore County, MD  | <table border="0"> <tr> <td style="text-align: center;">◆</td> <td>Sub-Slab Soil Gas Point</td> </tr> <tr> <td style="text-align: center;">▨</td> <td>Enclosed Portion of Southern Brick Shed</td> </tr> <tr> <td style="text-align: center;">□</td> <td>Brick Sheds</td> </tr> </table> |                     | ◆                       | Sub-Slab Soil Gas Point | ▨ | Enclosed Portion of Southern Brick Shed | □ | Brick Sheds |
| ◆   |  |                     | Sub-Slab Soil Gas Point |                         |   |   |   |             |
| ▨   | Enclosed Portion of Southern Brick Shed  |                     |                         |                         |   |   |   |             |
| □   | Brick Sheds  |                     |                         |                         |   |   |   |             |
|    |  |                     |                         |                         |   |   |   |             |





**Figure S-1**

**B15-008-SB-1**  
Benzo[a]pyrene: 2.3

**B15-008-SB-9**  
Benz[a]anthracene: 136  
Benzo[a]pyrene: 102  
Benzo[b]fluoranthene: 153  
Dibenz[a,h]anthracene: 27.8  
Indeno[1,2,3-c,d]pyrene: 65.1  
Naphthalene: 70.1

**B15-010-SB-1**

**B15-010-SB-5**  
Benz[a]anthracene: 25.3  
Benzo[a]pyrene: 19.7  
Benzo[b]fluoranthene: 26.4  
Dibenz[a,h]anthracene: 2.2

**B15-006-SB-1**

**B15-006-SB-4**  
Benz[a]anthracene: 112  
Benzo[a]pyrene: 67.9  
Benzo[b]fluoranthene: 124  
Dibenz[a,h]anthracene: 7.4  
Indeno[1,2,3-c,d]pyrene: 30.5

**B15-007-SB-1**

**B15-007-SB-4**  
Benz[a]anthracene: 25.3  
Benzo[a]pyrene: 17.6  
Benzo[b]fluoranthene: 40.7  
Dibenz[a,h]anthracene: 3.2

**B15-001-SB-1**

**B15-001-SB-9**  
Benzo[a]pyrene: 3.7

**B15-001-SB-10**  
Benzo[a]pyrene: 3.0

**B15-020-SB-1**

**B15-020-SB-7**  
Benzo[a]pyrene: 3.1

**B15-020-SB-10**

**B15-015-SB-1**  
Benz[a]anthracene: 53.5  
Benzo[a]pyrene: 26.9  
Benzo[b]fluoranthene: 63.4  
Dibenz[a,h]anthracene: 6.8  
Naphthalene: 71.7

**B15-015-SB-4**

**B15-004-SB-1**

**B15-004-SB-5**  
Benzo[a]pyrene: 2.4

**B15-004-SB-10**  
Benzo[a]pyrene: 2.2 J

**B15-016-SB-1**  
Benzo[a]pyrene: 2.9

**B15-016-SB-5**  
Benzo[a]pyrene: 3.4

**B15-016-SB-10**

**B15-017-SB-1**

**B15-017-SB-8**  
Benzo[a]pyrene: 5.9 J

**B15-013-SB-1**

**B15-013-SB-4**  
Benz[a]anthracene: 28.0  
Benzo[a]pyrene: 21.5  
Benzo[b]fluoranthene: 32.0  
Dibenz[a,h]anthracene: 2.4

**B15-013-SB-10**  
Benzo[a]pyrene: 6.3 J

**Brick Sheds**

**Brick Sheds**

**Parcel B14**

**Parcel B16**

**Parcel B21**

**Parcel B24**

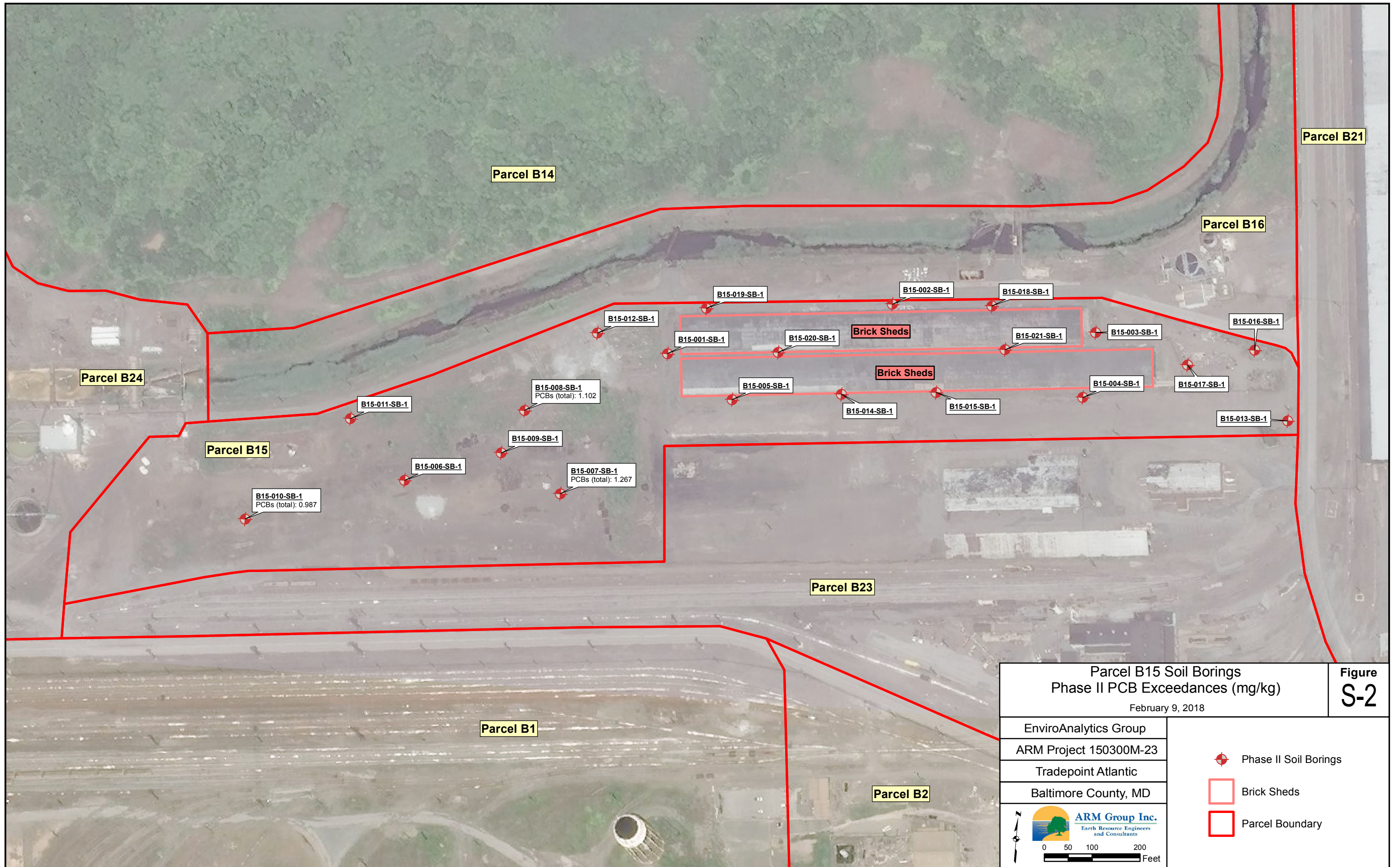
**Parcel B15**

**Parcel B23**

**Parcel B1**

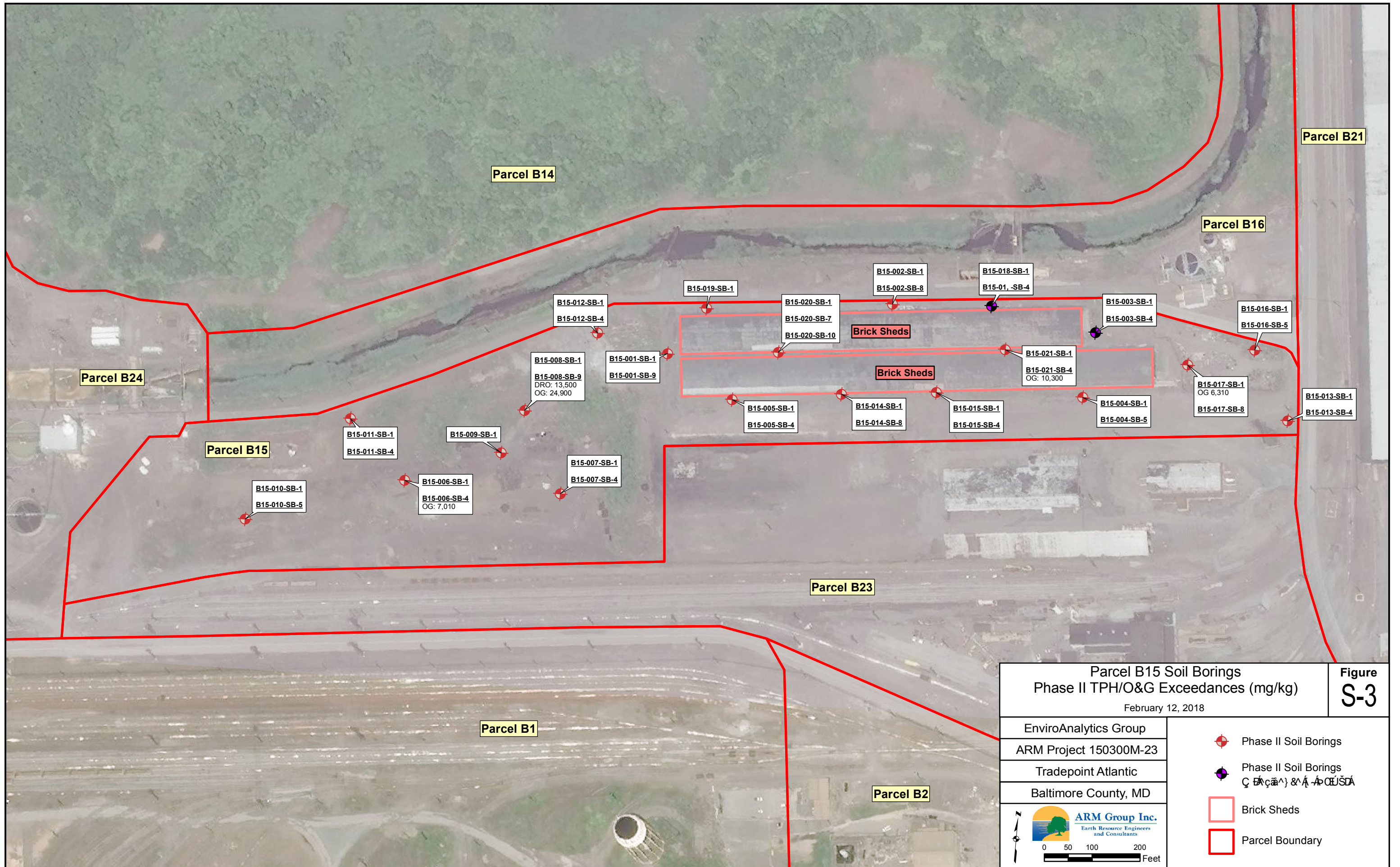
**Parcel B2**





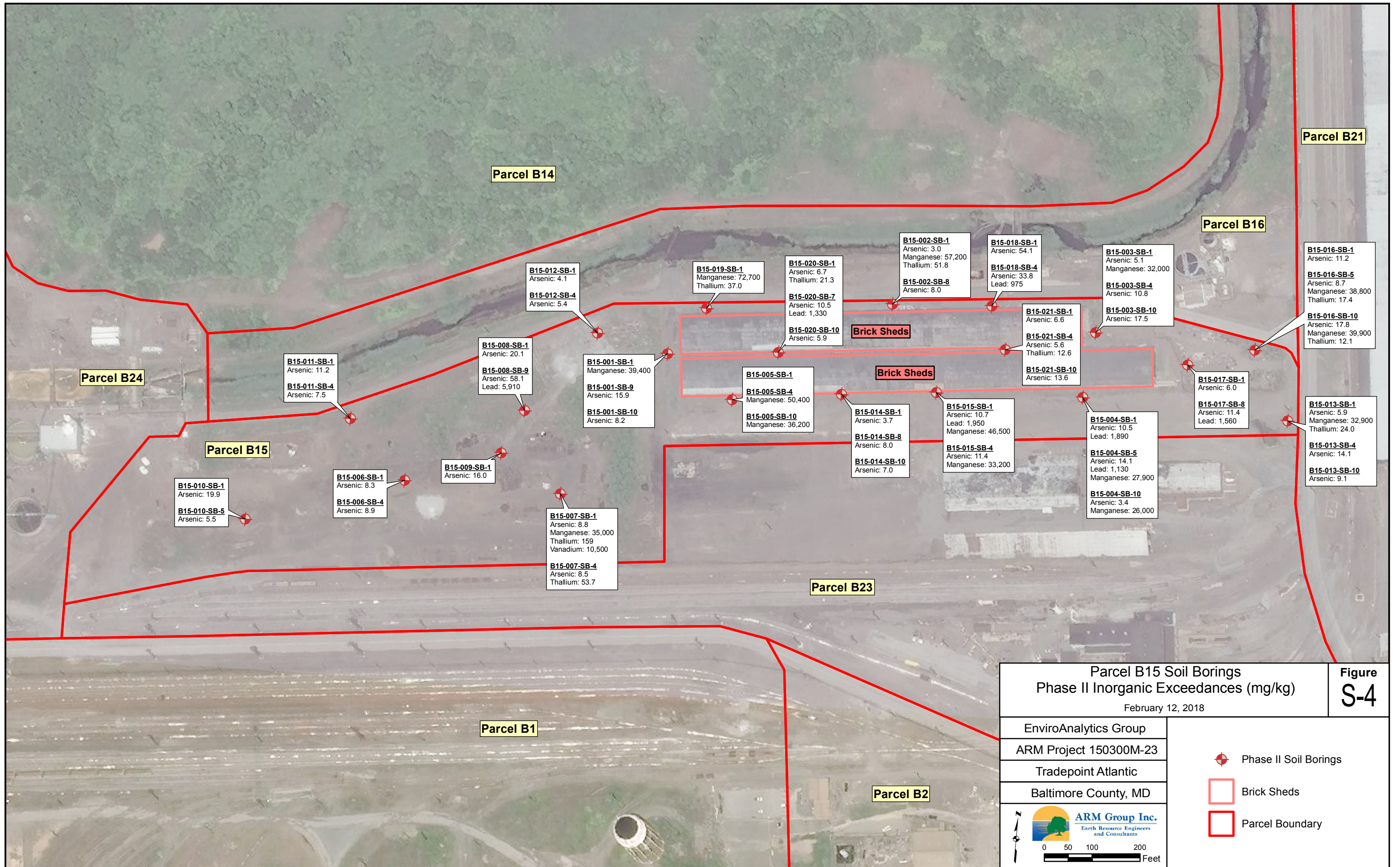
|  |  |  |
|--|--|--|
| <b>Parcel B15 Soil Borings</b><br><b>Phase II PCB Exceedances (mg/kg)</b><br>February 9, 2018  |  | <b>Figure</b><br><b>S-2</b>  |
| EnviroAnalytics Group<br>ARM Project 150300M-23<br>Tradepoint Atlantic<br>Baltimore County, MD |  |  |
|  |  | <ul style="list-style-type: none"> <li> Phase II Soil Borings</li> <li> Brick Sheds</li> <li> Parcel Boundary</li> </ul> |
|  |  |  |





|  |  |  |
|--|--|--|
| <b>Parcel B15 Soil Borings</b><br><b>Phase II TPH/O&amp;G Exceedances (mg/kg)</b><br>February 12, 2018 |  | <b>Figure</b><br><b>S-3</b>  |
| EnviroAnalytics Group<br>ARM Project 150300M-23<br>Tradepoint Atlantic<br>Baltimore County, MD         |  |  |
|  | <b>ARM Group Inc.</b><br>Earth Resource Engineers<br>and Consultants | <ul style="list-style-type: none"> <li> Phase II Soil Borings</li> <li> Phase II Soil Borings</li> <li> Brick Sheds</li> <li> Parcel Boundary</li> </ul> |





**Figure S-4**

**B15-010-SB-1**  
Arsenic: 19.9  
**B15-010-SB-5**  
Arsenic: 5.5

**B15-006-SB-1**  
Arsenic: 8.3  
**B15-006-SB-4**  
Arsenic: 8.9

**B15-009-SB-1**  
Arsenic: 16.0

**B15-007-SB-1**  
Arsenic: 8.8  
Manganese: 35,000  
Thallium: 159  
Vanadium: 10,500  
**B15-007-SB-4**  
Arsenic: 8.5  
Thallium: 53.7

**B15-011-SB-1**  
Arsenic: 11.2  
**B15-011-SB-4**  
Arsenic: 7.5

**B15-008-SB-1**  
Arsenic: 20.1  
**B15-008-SB-9**  
Arsenic: 58.1  
Lead: 5,910

**B15-001-SB-1**  
Manganese: 39,400  
**B15-001-SB-9**  
Arsenic: 15.9  
**B15-001-SB-10**  
Arsenic: 8.2

**B15-005-SB-1**  
**B15-005-SB-4**  
Manganese: 50,400  
**B15-005-SB-10**  
Manganese: 36,200

**B15-014-SB-1**  
Arsenic: 3.7  
**B15-014-SB-8**  
Arsenic: 8.0  
**B15-014-SB-10**  
Arsenic: 7.0

**B15-015-SB-1**  
Arsenic: 10.7  
Lead: 1,950  
Manganese: 46,500  
**B15-015-SB-4**  
Arsenic: 11.4  
Manganese: 33,200

**B15-004-SB-1**  
Arsenic: 10.5  
Lead: 1,890  
**B15-004-SB-5**  
Arsenic: 14.1  
Lead: 1,130  
Manganese: 27,900  
**B15-004-SB-10**  
Arsenic: 3.4  
Manganese: 26,000

**B15-017-SB-1**  
Arsenic: 6.0  
**B15-017-SB-8**  
Arsenic: 11.4  
Lead: 1,560

**B15-013-SB-1**  
Arsenic: 5.9  
Manganese: 32,900  
Thallium: 24.0  
**B15-013-SB-4**  
Arsenic: 14.1  
**B15-013-SB-10**  
Arsenic: 9.1

**B15-012-SB-1**  
Arsenic: 4.1  
**B15-012-SB-4**  
Arsenic: 5.4

**B15-019-SB-1**  
Manganese: 72,700  
Thallium: 37.0

**B15-020-SB-1**  
Arsenic: 6.7  
Thallium: 21.3  
**B15-020-SB-7**  
Arsenic: 10.5  
Lead: 1,330  
**B15-020-SB-10**  
Arsenic: 5.9

**B15-002-SB-1**  
Arsenic: 3.0  
Manganese: 57,200  
Thallium: 51.8  
**B15-002-SB-8**  
Arsenic: 8.0

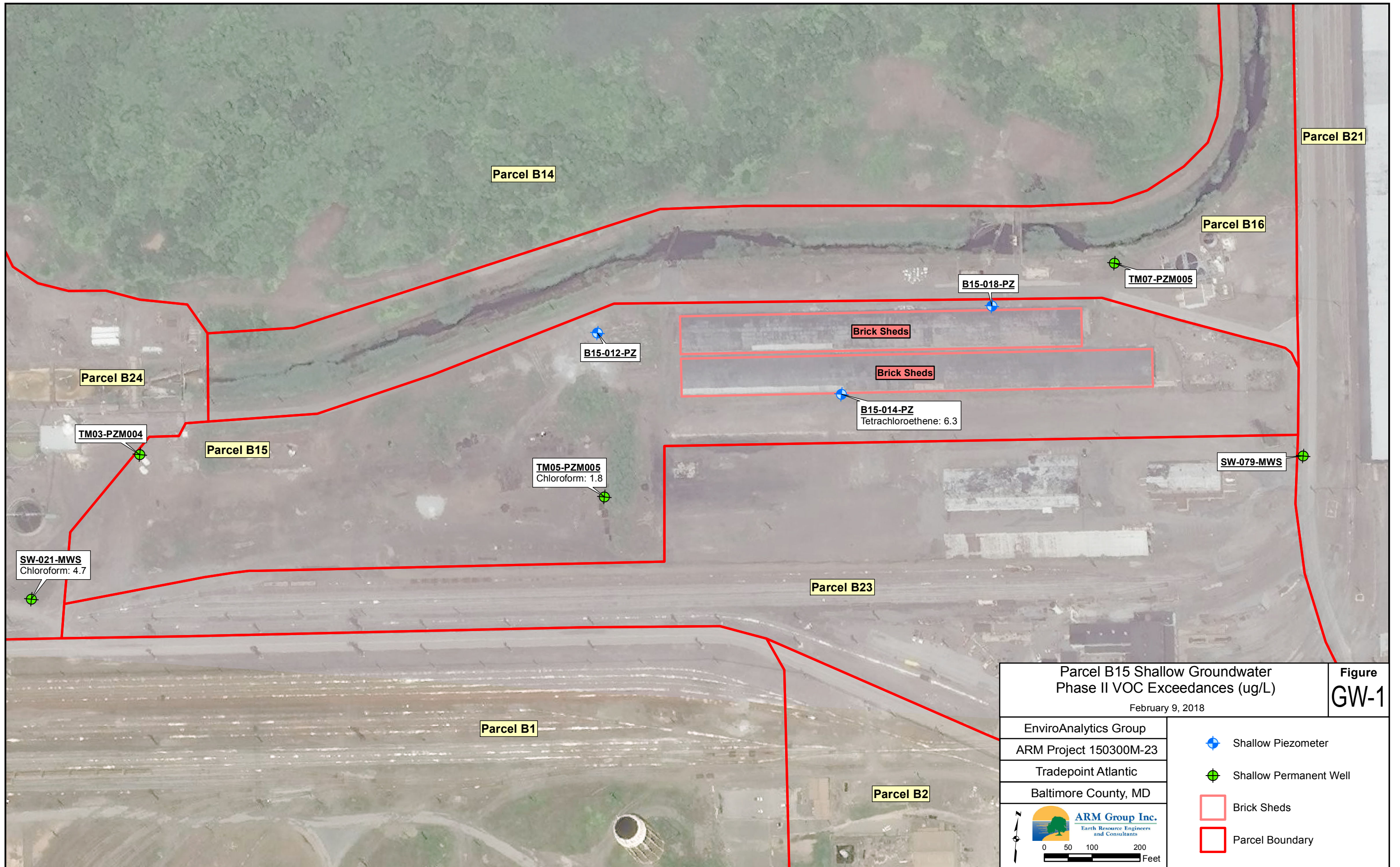
**B15-018-SB-1**  
Arsenic: 54.1  
**B15-018-SB-4**  
Arsenic: 33.8  
Lead: 975

**B15-003-SB-1**  
Arsenic: 5.1  
Manganese: 32,000  
**B15-003-SB-4**  
Arsenic: 10.8  
**B15-003-SB-10**  
Arsenic: 17.5

**B15-021-SB-1**  
Arsenic: 6.6  
**B15-021-SB-4**  
Arsenic: 5.6  
Thallium: 12.6  
**B15-021-SB-10**  
Arsenic: 13.6

**B15-016-SB-1**  
Arsenic: 11.2  
**B15-016-SB-5**  
Arsenic: 8.7  
Manganese: 38,800  
Thallium: 17.4  
**B15-016-SB-10**  
Arsenic: 17.8  
Manganese: 39,900  
Thallium: 12.1





|  |  |  |
|--|--|--|
| <b>Parcel B15 Shallow Groundwater<br/>Phase II VOC Exceedances (ug/L)</b><br>February 9, 2018  |  | <b>Figure<br/>GW-1</b>   |
| EnviroAnalytics Group<br>ARM Project 150300M-23<br>Tradepoint Atlantic<br>Baltimore County, MD |  |  |
|  | <br><b>ARM Group Inc.</b><br>Earth Resource Engineers<br>and Consultants | <ul style="list-style-type: none"> <li> Shallow Piezometer</li> <li> Shallow Permanent Well</li> <li> Brick Sheds</li> <li> Parcel Boundary</li> </ul> |










**Figure GW-2**





|  |   |                                       |
|--|---|---------------------------------------|
| <p align="center"><b>Parcel B15 Shallow Groundwater</b><br/> <b>Phase II TPH/O&amp;G Exceedances (ug/L)</b><br/>         February 9, 2018</p>  |   | <p><b>Figure</b><br/> <b>GW-3</b></p> |
| <p>EnviroAnalytics Group<br/>         ARM Project 150300M-23<br/>         Tradepoint Atlantic<br/>         Baltimore County, MD</p>  | <p>  Shallow Piezometer<br/>  Shallow Permanent Well<br/>  Brick Sheds<br/>  Parcel Boundary         </p> |                                       |
| <p align="center"> <br/> <b>ARM Group Inc.</b><br/>         Earth Resource Engineers<br/>         and Consultants<br/>         0 50 100 200<br/>         Feet</p> |   |                                       |



Notes:  
 (T) = Total Metals  
 (D) = Dissolved Metals



**TM03-PZM004**  
 Vanadium (T): 114

**TM05-PZM005**  
 Vanadium (T): 1,560

**TM07-PZM005**  
 Thallium (T): 4.0 J  
 Vanadium (T): 176

**SW-079-MWS**  
 Thallium (D): 4.8 J  
 Vanadium (T): 217

**SW-021-MWS**  
 Vanadium (T): 391

|   |   |                              |
|---|---|------------------------------|
| <b>Parcel B15 Shallow Groundwater</b><br><b>Phase II Inorganic Exceedances (ug/L)</b><br>February 9, 2018         |   | <b>Figure</b><br><b>GW-4</b> |
| EnviroAnalytics Group<br>ARM Project 150300M-23<br>Tradepoint Atlantic<br>Baltimore County, MD                    | <ul style="list-style-type: none"> <li><span style="color: blue;">◆</span> Shallow Piezometer</li> <li><span style="color: green;">◆</span> Shallow Permanent Well</li> <li><span style="border: 1px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Brick Sheds</li> <li><span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Parcel Boundary</li> </ul> |                              |
| <p>ARM Group Inc.<br/>         Earth Resource Engineers<br/>         and Consultants</p> <p>0 50 100 200 Feet</p> |   |                              |



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## **TABLES**

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**TABLE 1  
GROUNDWATER ELEVATION DATA**

| <u>Location Name</u> | <u>TOC<br/>Elevation<br/>(feet AMSL)</u> | <u>Ground<br/>Elevation<br/>(feet AMSL)</u> | <u>Measured<br/>DTW (ft)</u> | <u>Groundwater<br/>Elevation<br/>(feet AMSL)</u> |
|----------------------|--|---|------------------------------|--|
| TM03-PZM004          | 12.66                                    | 10.34                                       | 10.19                        | 2.47   |
| TM05-PZM005          | 12.76                                    | 10.62                                       | 10.13                        | 2.63   |
| TM07-PZM005          | 13.67                                    | 10.86                                       | 13.18                        | 0.49   |
| SW-021-MWS           | 12.83                                    | 10.42                                       | 10.46                        | 2.37   |
| SW-079-MWS           | 14.21                                    | 11.85                                       | 12.20                        | 2.01   |

DTW = Depth to water

TOC = Top of casing

AMSL = Above mean sea level

**TABLE 2  
HISTORICAL SITE DRAWING DETAILS**

| <u>Set Name</u>   | <u>Typical Features Shown</u>  | <u>Drawing Number</u> | <u>Original Date Drawn</u> | <u>Latest Revision Date</u> |
|-------------------|--|-----------------------|----------------------------|-----------------------------|
| Plant Arrangement | Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.) | 5034                  | 6/23/1958                  | 3/19/1982                   |
|                   |  | 5039                  | 9/1/1958                   | 3/11/1982                   |
|                   |  | 5040                  | 6/15/1958                  | 3/19/1982                   |
| Plant Index       | Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines                             | 5134                  | <i>Unknown</i>             | 1/8/2008                    |
|                   |  | 5139                  | <i>Unknown</i>             | 1/16/2008                   |
|                   |  | 5140                  | <i>Unknown</i>             | 8/15/2008                   |
| Plant Sewer Lines | Same as above plus trenches, sumps, underground piping (includes pipe materials)   | 5534                  | 8/28/1959                  | 3/19/1976                   |
|                   |  | 5539                  | 8/28/1959                  | 2/21/1975                   |
|                   |  | 5540                  | 6/15/1958                  | 7/14/1991                   |
| Drip Legs         | Coke Oven Gas Drip Legs Locations  | 5887                  | <i>Unknown</i>             | Sept. 1988                  |

**TABLE 3  
FIELD SHIFTED BORING LOCATIONS**

| <u>Location ID</u> | <u>Sample Target</u>           | <u>Proposed Location</u> <sup>¥</sup> |                | <u>Final Location</u> <sup>¥</sup> |                | <u>Relocation Distance &amp; Direction</u> |    |
|--------------------|--------------------------------|---------------------------------------|----------------|------------------------------------|----------------|--|----|
|                    |                                | <u>Northing</u>                       | <u>Easting</u> | <u>Northing</u>                    | <u>Easting</u> |  |    |
| B15-006-SB         | Scrap Yard / Open Storage Area | 568,827.59                            | 1,458,173.32   | 568,849.79                         | 1,458,178.59   | 23   | N  |
| B15-009-SB         | Scrap Yard / Open Storage Area | 568,937.91                            | 1,458,371.07   | 568,924.86                         | 1,458,375.16   | 14   | S  |
| B15-013-SB         | Parcel Coverage                | 569,131.87                            | 1,459,995.89   | 569,135.01                         | 1,460,007.45   | 12   | E  |
| B15-014-SB         | Brick Sheds                    | 569,099.27                            | 1,459,051.25   | 569,109.29                         | 1,459,073.09   | 24   | NE |
| B15-015-SB         | Brick Sheds                    | 569,113.29                            | 1,459,340.01   | 569,130.35                         | 1,459,269.81   | 72   | NW |
| B15-016-SB         | Brick Sheds                    | 569,192.45                            | 1,459,910.81   | 569,276.56                         | 1,459,926.16   | 86   | NE |
| B15-017-SB         | Brick Sheds                    | 569,255.56                            | 1,459,835.60   | 569,232.78                         | 1,459,788.82   | 52   | SW |
| B15-018-SB         | Brick Sheds                    | 569,336.07                            | 1,459,471.13   | 569,320.61                         | 1,459,370.53   | 102  | W  |

<sup>¥</sup>Reported northings and eastings are not survey accurate. Coordinates are reported in NAD 1983 Maryland State Plane (US feet).

**TABLE 4  
CHARACTERIZATION RESULTS FOR SOLID IDW**

| <u>Parameter</u>             | <u>Result<br/>(mg/L)</u> | <u>TCLP Limit<br/>(mg/L)</u> | <u>TCLP<br/>Exceedance</u> | <u>Laboratory<br/>Flag</u> | <u>Laboratory<br/>LOQ (mg/L)</u> |
|------------------------------|--------------------------|------------------------------|----------------------------|----------------------------|----------------------------------|
| 1,1-Dichloroethene           | 0.05                     | 0.7                          | no                         | U                          | 0.05                             |
| 1,2-Dichloroethane           | 0.05                     | 0.5                          | no                         | U                          | 0.05                             |
| 1,4-Dichlorobenzene          | 0.5                      | 7.5                          | no                         | U                          | 0.5                              |
| 2,4,5-Trichlorophenol        | 5                        | 400                          | no                         | U                          | 5                                |
| 2,4,6-Trichlorophenol        | 0.1                      | 2                            | no                         | U                          | 0.1                              |
| 2,4-Dinitrotoluene           | 0.1                      | 0.13                         | no                         | U                          | 0.1                              |
| 2-Butanone (MEK)             | 5                        | 200                          | no                         | U                          | 5                                |
| 2-Methylphenol               | 2                        | 200                          | no                         | U                          | 2                                |
| 3&4-Methylphenol(m&p Cresol) | 2                        | 200                          | no                         | U                          | 2                                |
| Arsenic                      | 0.05                     | 5                            | no                         | U                          | 0.05                             |
| Barium                       | 0.15                     | 100                          | no                         | J                          | 1                                |
| Benzene                      | 0.05                     | 0.5                          | no                         | U                          | 0.05                             |
| Cadmium                      | 0.00057                  | 1                            | no                         | J                          | 0.05                             |
| Carbon tetrachloride         | 0.05                     | 0.5                          | no                         | U                          | 0.05                             |
| Chlorobenzene                | 1                        | 100                          | no                         | U                          | 1                                |
| Chloroform                   | 0.5                      | 6                            | no                         | U                          | 0.5                              |
| Chromium                     | 0.0026                   | 5                            | no                         | B                          | 0.05                             |
| Hexachlorobenzene            | 0.1                      | 0.13                         | no                         | U                          | 0.1                              |
| Hexachloroethane             | 0.5                      | 3                            | no                         | U                          | 0.5                              |
| Lead                         | 0.05                     | 5                            | no                         | U                          | 0.05                             |
| Mercury                      | 0.001                    | 0.2                          | no                         | U                          | 0.001                            |
| Nitrobenzene                 | 0.1                      | 2                            | no                         | U                          | 0.1                              |
| Pentachlorophenol            | 5                        | 100                          | no                         | U                          | 5                                |
| Selenium                     | 0.0091                   | 1                            | no                         | B                          | 0.1                              |
| Silver                       | 0.05                     | 5                            | no                         | U                          | 0.05                             |
| Tetrachloroethene            | 0.05                     | 0.7                          | no                         | U                          | 0.05                             |
| Trichloroethene              | 0.05                     | 0.5                          | no                         | U                          | 0.05                             |
| Vinyl chloride               | 0.05                     | 0.2                          | no                         | U                          | 0.05                             |

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

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

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  
CHARACTERIZATION RESULTS FOR LIQUID IDW**

| <u>Parameter</u>     | <u>Result<br/>(mg/L)</u> | <u>TCLP Limit<br/>(mg/L)</u> | <u>TCLP<br/>Exceedance</u> | <u>Laboratory<br/>Flag</u> | <u>Laboratory<br/>LOQ (mg/L)</u> |
|----------------------|--------------------------|------------------------------|----------------------------|----------------------------|----------------------------------|
| 1,1-Dichloroethene   | 0.001                    | 0.7                          | no                         | U                          | 0.001                            |
| 1,2-Dichloroethane   | 0.001                    | 0.5                          | no                         | U                          | 0.001                            |
| 1,4-Dichlorobenzene  | 0.001                    | 7.5                          | no                         | U                          | 0.001                            |
| 2-Butanone (MEK)     | 0.01                     | 200                          | no                         | U                          | 0.01                             |
| Arsenic              | 0.005                    | 5                            | no                         | U                          | 0.005                            |
| Barium               | 0.0466                   | 100                          | no                         |                            | 0.01                             |
| Benzene              | 0.001                    | 0.5                          | no                         | U                          | 0.001                            |
| Cadmium              | 0.003                    | 1                            | no                         | U                          | 0.003                            |
| Carbon tetrachloride | 0.001                    | 0.5                          | no                         | U                          | 0.001                            |
| Chlorobenzene        | 0.001                    | 100                          | no                         | U                          | 0.001                            |
| Chloroform           | 0.001                    | 6                            | no                         | U                          | 0.001                            |
| Chromium             | 0.0011                   | 5                            | no                         | J                          | 0.005                            |
| Lead                 | 0.005                    | 5                            | no                         | U                          | 0.005                            |
| Mercury              | 0.0002                   | 0.2                          | no                         | U                          | 0.0002                           |
| Selenium             | 0.008                    | 1                            | no                         | U                          | 0.008                            |
| Silver               | 0.006                    | 5                            | no                         | U                          | 0.006                            |
| Tetrachloroethene    | 0.0035                   | 0.7                          | no                         |                            | 0.001                            |
| Trichloroethene      | 0.003                    | 0.5                          | no                         |                            | 0.001                            |
| Vinyl chloride       | 0.001                    | 0.2                          | no                         | U                          | 0.001                            |

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 6**  
**Summary of Organics Detected in Soil**  
**Parcel B15**  
**Tradeport Atlantic**  
**Sparrows Point, Maryland**

| Parameter                               | Units | PAL     | B15-001-SB-1   | B15-001-SB-9   | B15-001-SB-10* | B15-002-SB-1*   | B15-002-SB-8*   | B15-003-SB-1*  | B15-003-SB-4*  | B15-003-SB-10 | B15-004-SB-1*   | B15-004-SB-5*  | B15-004-SB-10 | B15-005-SB-1    |
|---|-------|---------|----------------|----------------|----------------|-----------------|-----------------|----------------|----------------|---------------|-----------------|----------------|---------------|-----------------|
| <b>Volatile Organic Compounds</b>       |       |         |                |                |                |                 |                 |                |                |               |                 |                |               |                 |
| 2-Butanone (MEK)                        | mg/kg | 190,000 | 0.012 U        | 0.011 U        | N/A            | N/A             | 0.012 U         | N/A            | 0.0088 U       | N/A           | N/A             | N/A            | N/A           | 0.009 U         |
| Acetone                                 | mg/kg | 670,000 | 0.012 U        | 0.011 U        | N/A            | N/A             | 0.0096 B        | N/A            | 0.0088 U       | N/A           | N/A             | N/A            | N/A           | 0.009 U         |
| Benzene                                 | mg/kg | 5.1     | 0.0058 U       | 0.0053 U       | N/A            | N/A             | 0.0058 U        | N/A            | <b>0.002 J</b> | N/A           | N/A             | N/A            | N/A           | 0.0045 U        |
| Ethylbenzene                            | mg/kg | 25      | 0.0058 U       | 0.0053 U       | N/A            | N/A             | 0.0058 U        | N/A            | 0.0044 U       | N/A           | N/A             | N/A            | N/A           | 0.0045 U        |
| Toluene                                 | mg/kg | 47,000  | 0.0058 U       | 0.0053 U       | N/A            | N/A             | 0.0058 U        | N/A            | 0.0044 U       | N/A           | N/A             | N/A            | N/A           | 0.0045 U        |
| Xylenes                                 | mg/kg | 2,800   | 0.017 U        | 0.016 U        | N/A            | N/A             | 0.017 U         | N/A            | 0.013 U        | N/A           | N/A             | N/A            | N/A           | 0.014 U         |
| <b>Semi-Volatile Organic Compounds^</b> |       |         |                |                |                |                 |                 |                |                |               |                 |                |               |                 |
| 1,1-Biphenyl                            | mg/kg | 200     | 0.071 U        | <b>0.029 J</b> | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | <b>0.024 J</b> | N/A           | <b>0.033 J</b>  | <b>0.049 J</b> | N/A           | 0.072 U         |
| 1,2,4,5-Tetrachlorobenzene              | mg/kg | 350     | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 U         |
| 2,4-Dimethylphenol                      | mg/kg | 16,000  | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 UJ        |
| 2-Methylnaphthalene                     | mg/kg | 3,000   | <b>0.021 J</b> | <b>0.16</b>    | N/A            | <b>0.067</b>    | 0.074 U         | <b>0.028 J</b> | <b>0.14</b>    | N/A           | <b>0.071 J</b>  | <b>0.095</b>   | N/A           | <b>0.025 J</b>  |
| 2-Methylphenol                          | mg/kg | 41,000  | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 UJ        |
| 2-Nitroaniline                          | mg/kg | 8,000   | 0.18 U         | 0.18 U         | N/A            | 0.18 U          | 0.18 U          | 0.18 U         | 0.18 U         | N/A           | 0.19 U          | 0.19 U         | N/A           | 0.18 U          |
| 3&4-Methylphenol(m&p Cresol)            | mg/kg | 41,000  | 0.14 U         | 0.14 U         | N/A            | 0.14 U          | 0.15 U          | 0.14 U         | 0.15 U         | N/A           | 0.15 U          | 0.15 U         | N/A           | 0.14 UJ         |
| Acenaphthene                            | mg/kg | 45,000  | 0.073 U        | <b>0.16</b>    | N/A            | <b>0.0022 J</b> | 0.074 U         | 0.071 U        | <b>0.33</b>    | N/A           | <b>0.026 J</b>  | <b>0.028</b>   | N/A           | <b>0.0058 J</b> |
| Acenaphthylene                          | mg/kg | 45,000  | <b>0.017 J</b> | <b>0.099</b>   | N/A            | <b>0.011</b>    | <b>0.0072 J</b> | <b>0.011 J</b> | <b>0.11</b>    | N/A           | <b>0.061 J</b>  | <b>0.054</b>   | N/A           | <b>0.033 J</b>  |
| Acetophenone                            | mg/kg | 120,000 | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 U         |
| Anthracene                              | mg/kg | 230,000 | <b>0.015 J</b> | <b>0.69</b>    | N/A            | <b>0.02</b>     | <b>0.012 J</b>  | <b>0.015 J</b> | <b>1.7</b>     | N/A           | <b>0.25</b>     | <b>0.28</b>    | N/A           | <b>0.036 J</b>  |
| Benz[a]anthracene                       | mg/kg | 21      | <b>0.07 J</b>  | <b>3.8</b>     | <b>3.4</b>     | <b>0.07</b>     | <b>0.054 J</b>  | <b>0.071</b>   | <b>3.9</b>     | <b>6.4 J</b>  | <b>1.5</b>      | <b>2.7</b>     | <b>2.8 J</b>  | <b>0.068 J</b>  |
| Benzaldehyde                            | mg/kg | 120,000 | 0.071 R        | 0.072 R        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | <b>0.033 J</b> | N/A           | 0.074 U         | <b>0.038 J</b> | N/A           | 0.072 R         |
| Benzo[a]pyrene                          | mg/kg | 2.1     | <b>0.074</b>   | <b>3.7</b>     | <b>3</b>       | <b>0.069</b>    | <b>0.044 J</b>  | <b>0.063 J</b> | <b>3.7</b>     | <b>5.2 J</b>  | <b>1.6</b>      | <b>2.4</b>     | <b>2.2 J</b>  | <b>0.05 J</b>   |
| Benzo[b]fluoranthene                    | mg/kg | 21      | <b>0.16</b>    | <b>5</b>       | <b>4.3</b>     | <b>0.2</b>      | <b>0.12</b>     | <b>0.099</b>   | <b>5.1</b>     | <b>12.3 J</b> | <b>3.3</b>      | <b>6.1</b>     | <b>4.5 J</b>  | <b>0.13</b>     |
| Benzo[g,h,i]perylene                    | mg/kg |         | <b>0.051 J</b> | <b>1</b>       | N/A            | <b>0.025</b>    | <b>0.017 J</b>  | <b>0.042 J</b> | <b>1.6</b>     | N/A           | <b>0.6</b>      | <b>0.65</b>    | N/A           | <b>0.08</b>     |
| Benzo[k]fluoranthene                    | mg/kg | 210     | <b>0.15</b>    | <b>2.1</b>     | N/A            | <b>0.14</b>     | <b>0.086</b>    | <b>0.038 J</b> | <b>1.8</b>     | N/A           | <b>3</b>        | <b>5.5</b>     | N/A           | <b>0.12</b>     |
| bis(2-Ethylhexyl)phthalate              | mg/kg | 160     | 0.023 B        | 0.072 UJ       | N/A            | <b>0.047 J</b>  | 0.074 U         | <b>0.023 J</b> | <b>0.024 J</b> | N/A           | <b>0.02 J</b>   | 0.075 U        | N/A           | 0.055 B         |
| Caprolactam                             | mg/kg | 400,000 | 0.18 U         | 0.18 U         | N/A            | 0.18 U          | 0.18 U          | 0.18 U         | 0.18 U         | N/A           | 0.19 U          | 0.19 U         | N/A           | 0.18 U          |
| Carbazole                               | mg/kg |         | 0.071 U        | <b>0.2</b>     | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | <b>0.075</b>   | N/A           | <b>0.054 J</b>  | <b>0.19</b>    | N/A           | 0.072 U         |
| Chrysene                                | mg/kg | 2,100   | <b>0.071 J</b> | <b>3.7</b>     | N/A            | <b>0.088</b>    | <b>0.047 J</b>  | <b>0.06 J</b>  | <b>3.5</b>     | N/A           | <b>1.6</b>      | <b>3.6</b>     | N/A           | <b>0.07 J</b>   |
| Dibenz[a,h]anthracene                   | mg/kg | 2.1     | 0.073 U        | <b>0.53</b>    | <b>0.42</b>    | <b>0.011</b>    | 0.074 U         | <b>0.014 J</b> | <b>0.61</b>    | <b>0.59 J</b> | <b>0.23</b>     | <b>0.33</b>    | <b>0.3 J</b>  | <b>0.021 J</b>  |
| Di-n-butylphthalate                     | mg/kg | 82,000  | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 U         |
| Fluoranthene                            | mg/kg | 30,000  | <b>0.071 J</b> | <b>6.5</b>     | N/A            | <b>0.13</b>     | <b>0.077</b>    | <b>0.1</b>     | <b>7.5</b>     | N/A           | <b>2.3</b>      | <b>4</b>       | N/A           | <b>0.12</b>     |
| Fluorene                                | mg/kg | 30,000  | <b>0.01 J</b>  | <b>0.11</b>    | N/A            | <b>0.0025 J</b> | 0.074 U         | 0.071 U        | <b>0.4</b>     | N/A           | <b>0.017 J</b>  | <b>0.013</b>   | N/A           | <b>0.016 J</b>  |
| Indeno[1,2,3-c,d]pyrene                 | mg/kg | 21      | <b>0.043 J</b> | <b>1.2</b>     | N/A            | <b>0.025</b>    | <b>0.013 J</b>  | <b>0.039 J</b> | <b>1.7</b>     | N/A           | <b>0.63</b>     | <b>0.81</b>    | N/A           | <b>0.062 J</b>  |
| Isophorone                              | mg/kg | 2,400   | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 U         |
| Naphthalene                             | mg/kg | 17      | <b>0.095</b>   | <b>0.26</b>    | N/A            | <b>0.1</b>      | 0.074 U         | <b>0.048 J</b> | <b>0.38</b>    | N/A           | <b>0.11</b>     | <b>0.29</b>    | N/A           | 0.066 B         |
| Phenanthrene                            | mg/kg |         | <b>0.057 J</b> | <b>2.9</b>     | N/A            | <b>0.08</b>     | <b>0.05 J</b>   | <b>0.072</b>   | <b>5</b>       | N/A           | <b>0.86</b>     | <b>1.9</b>     | N/A           | <b>0.11</b>     |
| Phenol                                  | mg/kg | 250,000 | 0.071 U        | 0.072 U        | N/A            | 0.07 U          | 0.074 U         | 0.07 U         | 0.073 U        | N/A           | 0.074 U         | 0.075 U        | N/A           | 0.072 U         |
| Pyrene                                  | mg/kg | 23,000  | <b>0.064 J</b> | <b>5.5</b>     | N/A            | <b>0.096</b>    | <b>0.069 J</b>  | <b>0.086</b>   | <b>5.9</b>     | N/A           | <b>2.2</b>      | <b>3.6</b>     | N/A           | <b>0.09</b>     |
| <b>PCBs</b>                             |       |         |                |                |                |                 |                 |                |                |               |                 |                |               |                 |
| Aroclor 1248                            | mg/kg | 0.94    | 0.0531 U       | N/A            | N/A            | 0.0521 U        | N/A             | 0.0539 U       | N/A            | N/A           | 0.0545 U        | N/A            | N/A           | 0.0564 U        |
| Aroclor 1254                            | mg/kg | 0.97    | 0.0531 U       | N/A            | N/A            | 0.0521 U        | N/A             | 0.0539 U       | N/A            | N/A           | 0.0545 U        | N/A            | N/A           | 0.0564 U        |
| Aroclor 1260                            | mg/kg | 0.99    | 0.0531 U       | N/A            | N/A            | 0.0521 U        | N/A             | 0.0539 U       | N/A            | N/A           | <b>0.0365 J</b> | N/A            | N/A           | 0.0564 U        |
| Aroclor 1262                            | mg/kg |         | 0.0531 U       | N/A            | N/A            | 0.0521 U        | N/A             | 0.0539 U       | N/A            | N/A           | 0.0545 U        | N/A            | N/A           | 0.0564 U        |
| PCBs (total)                            | mg/kg | 0.97    | 0.0531 U       | N/A            | N/A            | 0.0521 U        | N/A             | 0.0539 U       | N/A            | N/A           | <b>0.0365 J</b> | N/A            | N/A           | 0.0564 U        |
| <b>TPH/Oil and Grease</b>               |       |         |                |                |                |                 |                 |                |                |               |                 |                |               |                 |
| Diesel Range Organics                   | mg/kg | 6,200   | <b>72 J</b>    | <b>83.3 J</b>  | N/A            | <b>27</b>       | <b>64.2</b>     | <b>21.3</b>    | <b>52.7</b>    | N/A           | <b>142</b>      | <b>310</b>     | N/A           | <b>31.8 J</b>   |
| Oil and Grease                          | mg/kg | 6,200   | <b>2,200</b>   | <b>575</b>     | N/A            | <b>398</b>      | <b>787</b>      | <b>545</b>     | <b>725</b>     | N/A           | <b>1,020</b>    | <b>1,480</b>   | N/A           | <b>631</b>      |

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 results

^ 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/preparation or field blank.

R: The results for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

**Table 6  
Summary of Organics Detected in Soil  
Parcel B15  
Tradepoint Atlantic  
Sparrows Point, Maryland**

| Parameter  | Units | PAL     | B15-005-SB-4    | B15-006-SB-1*  | B15-006-SB-4*  | B15-007-SB-1*  | B15-007-SB-4*  | B15-008-SB-1*  | B15-008-SB-9*   | B15-009-SB-1* | B15-010-SB-1*  | B15-010-SB-5*   | B15-011-SB-1*   | B15-011-SB-4*  |
|--|-------|---------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------------|----------------|-----------------|-----------------|----------------|
| <b>Volatile Organic Compounds</b>                  |       |         |                 |                |                |                |                |                |                 |               |                |                 |                 |                |
| 2-Butanone (MEK)                                   | mg/kg | 190,000 | 0.0086 U        | 0.008 U        | 0.012 U        | N/A            | 0.0084 U       | N/A            | 0.017 U         | N/A           | 0.0087 U       | 0.014 U         | N/A             | N/A            |
| Acetone  | mg/kg | 670,000 | 0.0086 U        | <b>0.019</b>   | 0.012 U        | N/A            | 0.0087 B       | N/A            | <b>0.046</b>    | N/A           | 0.0087 U       | 0.014 U         | N/A             | N/A            |
| Benzene  | mg/kg | 5.1     | 0.0043 U        | 0.004 U        | 0.0062 U       | N/A            | 0.0042 U       | N/A            | <b>0.0039 J</b> | N/A           | 0.0043 U       | <b>0.0023 J</b> | N/A             | N/A            |
| Ethylbenzene                                       | mg/kg | 25      | 0.0043 U        | 0.004 U        | 0.0062 U       | N/A            | 0.0042 U       | N/A            | 0.0087 U        | N/A           | 0.0043 U       | 0.007 U         | N/A             | N/A            |
| Toluene  | mg/kg | 47,000  | 0.0043 U        | 0.004 U        | 0.0062 U       | N/A            | 0.0042 U       | N/A            | <b>0.0044 J</b> | N/A           | 0.0043 U       | 0.007 U         | N/A             | N/A            |
| Xylenes  | mg/kg | 2,800   | 0.013 U         | 0.012 U        | 0.019 U        | N/A            | 0.013 U        | N/A            | 0.026 U         | N/A           | 0.013 U        | 0.021 U         | N/A             | N/A            |
| <b>Semi-Volatile Organic Compounds<sup>^</sup></b> |       |         |                 |                |                |                |                |                |                 |               |                |                 |                 |                |
| 1,1-Biphenyl                                       | mg/kg | 200     | <b>0.017 J</b>  | 0.071 U        | <b>2.3</b>     | <b>0.022 J</b> | <b>0.25</b>    | <b>0.031 J</b> | <b>10.7</b>     | 0.07 U        | <b>0.022 J</b> | <b>0.17</b>     | 0.078 U         | <b>0.034 J</b> |
| 1,2,4,5-Tetrachlorobenzene                         | mg/kg | 350     | 0.069 U         | 0.071 U        | 0.072 U        | <b>0.019 J</b> | 0.076 U        | 0.075 U        | 1 U             | 0.07 U        | 0.072 U        | 0.074 U         | 0.078 U         | 0.075 U        |
| 2,4-Dimethylphenol                                 | mg/kg | 16,000  | 0.069 UJ        | 0.071 U        | <b>0.033 J</b> | 0.07 U         | <b>0.016 J</b> | 0.075 U        | <b>0.93</b>     | 0.07 U        | 0.072 U        | 0.074 U         | 0.078 U         | 0.075 U        |
| 2-Methylnaphthalene                                | mg/kg | 3,000   | <b>0.067</b>    | <b>0.028</b>   | <b>5.8</b>     | <b>0.12</b>    | <b>0.36</b>    | <b>0.071 J</b> | <b>18.8</b>     | <b>0.032</b>  | <b>0.061 J</b> | <b>1.3</b>      | <b>0.023</b>    | <b>0.073</b>   |
| 2-Methylphenol                                     | mg/kg | 41,000  | 0.069 UJ        | 0.071 U        | <b>0.028 J</b> | 0.07 U         | <b>0.018 J</b> | 0.075 U        | <b>0.66</b>     | 0.07 U        | 0.072 U        | 0.074 U         | 0.078 U         | 0.075 U        |
| 2-Nitroaniline                                     | mg/kg | 8,000   | 0.17 U          | 0.18 U         | 0.18 U         | 0.18 U         | 0.19 U         | 0.19 U         | 2.6 U           | 0.18 U        | <b>0.016 J</b> | 0.19 U          | 0.19 U          | 0.19 U         |
| 3&4-Methylphenol(m&p Cresol)                       | mg/kg | 41,000  | <b>0.022 J</b>  | 0.14 U         | <b>0.14 J</b>  | 0.14 U         | <b>0.068 J</b> | 0.15 U         | 3               | 0.14 U        | 0.14 U         | <b>0.039 J</b>  | 0.15 U          | 0.15 U         |
| Acenaphthene                                       | mg/kg | 45,000  | <b>0.0041 J</b> | <b>0.0097</b>  | <b>20.1</b>    | <b>0.022 J</b> | <b>1.8</b>     | <b>0.35</b>    | <b>88.7</b>     | <b>0.029</b>  | <b>0.054 J</b> | <b>5.7</b>      | <b>0.011</b>    | <b>0.0086</b>  |
| Acenaphthylene                                     | mg/kg | 45,000  | <b>0.0082</b>   | <b>0.28</b>    | <b>0.42</b>    | <b>0.29</b>    | <b>0.72</b>    | <b>0.053 J</b> | <b>0.95</b>     | <b>0.15</b>   | <b>0.15</b>    | <b>0.094</b>    | <b>0.019</b>    | <b>0.023</b>   |
| Acetophenone                                       | mg/kg | 120,000 | 0.069 U         | 0.071 U        | <b>0.019 J</b> | 0.07 U         | 0.076 U        | 0.075 U        | <b>0.11</b>     | 0.07 U        | 0.072 U        | 0.074 U         | 0.078 U         | <b>0.032 J</b> |
| Anthracene   | mg/kg | 230,000 | <b>0.021</b>    | <b>0.43</b>    | <b>58.6</b>    | <b>0.29</b>    | <b>11</b>      | <b>0.3</b>     | <b>117</b>      | <b>0.31</b>   | <b>0.23</b>    | <b>13</b>       | <b>0.037</b>    | <b>0.066</b>   |
| Benz[a]anthracene                                  | mg/kg | 21      | <b>0.08</b>     | <b>0.76</b>    | <b>112</b>     | <b>1.4</b>     | <b>25.3</b>    | <b>1.4</b>     | <b>136</b>      | <b>0.75</b>   | <b>0.76</b>    | <b>25.3</b>     | <b>0.17</b>     | <b>0.3</b>     |
| Benzaldehyde                                       | mg/kg | 120,000 | 0.069 R         | 0.071 U        | <b>0.068 J</b> | 0.07 U         | <b>0.045 J</b> | <b>0.035 J</b> | <b>0.07 J</b>   | 0.07 U        | <b>0.021 J</b> | <b>0.023 J</b>  | 0.078 U         | <b>0.023 J</b> |
| Benzo[a]pyrene                                     | mg/kg | 2.1     | <b>0.079</b>    | <b>0.98</b>    | <b>67.9</b>    | <b>1.5</b>     | <b>17.6</b>    | <b>2.3</b>     | <b>102</b>      | <b>0.92</b>   | <b>0.91</b>    | <b>19.7</b>     | <b>0.18</b>     | <b>0.33</b>    |
| Benzo[b]fluoranthene                               | mg/kg | 21      | <b>0.2</b>      | <b>3.5</b>     | <b>124</b>     | <b>4.5</b>     | <b>40.7</b>    | <b>3.4</b>     | <b>153</b>      | <b>1.6</b>    | <b>1.7</b>     | <b>26.4</b>     | <b>0.38</b>     | <b>1.1</b>     |
| Benzo[g,h,i]perylene                               | mg/kg |         | <b>0.052</b>    | <b>0.44</b>    | <b>12.1</b>    | <b>0.4</b>     | <b>5.5</b>     | <b>0.73</b>    | <b>58.9</b>     | <b>0.23</b>   | <b>0.41</b>    | <b>4.4</b>      | <b>0.054</b>    | <b>0.12</b>    |
| Benzo[k]fluoranthene                               | mg/kg | 210     | <b>0.18</b>     | <b>0.82</b>    | <b>41.5</b>    | <b>3.3</b>     | <b>29.7</b>    | <b>1.2</b>     | <b>73.9</b>     | <b>1.5</b>    | <b>0.63</b>    | <b>7.5</b>      | <b>0.35</b>     | <b>1</b>       |
| bis(2-Ethylhexyl)phthalate                         | mg/kg | 160     | 0.069 U         | <b>0.026 J</b> | 0.072 U        | <b>0.055 J</b> | 0.076 U        | <b>0.74 J</b>  | 1 U             | 0.07 U        | <b>0.4</b>     | <b>0.017 J</b>  | 0.078 U         | <b>0.078</b>   |
| Caprolactam  | mg/kg | 400,000 | 0.17 U          | 0.18 U         | 0.18 U         | 0.18 U         | 0.19 U         | 0.19 U         | 0.26 U          | 0.18 U        | 0.18 U         | <b>0.021 J</b>  | 0.19 U          | 0.19 U         |
| Carbazole  | mg/kg |         | 0.069 U         | <b>0.035 J</b> | <b>32.7</b>    | <b>0.13</b>    | <b>3.7</b>     | <b>0.19</b>    | <b>120</b>      | <b>0.08</b>   | <b>0.26</b>    | <b>2.7</b>      | <b>0.039 J</b>  | <b>0.035 J</b> |
| Chrysene   | mg/kg | 2,100   | <b>0.12</b>     | <b>1</b>       | <b>97.6</b>    | <b>1.4</b>     | <b>20.2</b>    | <b>1.4</b>     | <b>111</b>      | <b>0.78</b>   | <b>0.85</b>    | <b>22.7</b>     | <b>0.17</b>     | <b>0.51</b>    |
| Dibenz[a,h]anthracene                              | mg/kg | 2.1     | <b>0.02</b>     | <b>0.18</b>    | <b>7.4</b>     | <b>0.18</b>    | <b>3.2</b>     | <b>0.28</b>    | <b>27.8</b>     | <b>0.11</b>   | <b>0.15</b>    | <b>2.2</b>      | <b>0.023</b>    | <b>0.05</b>    |
| Di-n-butylphthalate                                | mg/kg | 82,000  | 0.069 U         | 0.071 U        | 0.072 U        | <b>0.043 J</b> | 0.076 U        | <b>0.18</b>    | 1 U             | 0.07 U        | <b>0.084</b>   | 0.074 U         | 0.078 U         | 0.075 U        |
| Fluoranthene                                       | mg/kg | 30,000  | <b>0.16</b>     | <b>1</b>       | <b>291</b>     | <b>2</b>       | <b>51.2</b>    | <b>1.9</b>     | <b>319</b>      | <b>1.1</b>    | <b>1.2</b>     | <b>60.1</b>     | <b>0.29</b>     | <b>0.46</b>    |
| Fluorene   | mg/kg | 30,000  | <b>0.0043 J</b> | <b>0.02</b>    | <b>20.2</b>    | <b>0.025 J</b> | <b>2.7</b>     | <b>0.07 J</b>  | <b>99.1</b>     | <b>0.032</b>  | <b>0.036 J</b> | <b>5.6</b>      | <b>0.0091</b>   | <b>0.0097</b>  |
| Indeno[1,2,3-c,d]pyrene                            | mg/kg | 21      | <b>0.051</b>    | <b>0.48</b>    | <b>30.5</b>    | <b>0.46</b>    | <b>6.6</b>     | <b>0.81</b>    | <b>65.1</b>     | <b>0.27</b>   | <b>0.41</b>    | <b>5.2</b>      | <b>0.061</b>    | <b>0.14</b>    |
| Isophorone   | mg/kg | 2,400   | 0.069 U         | 0.071 U        | 0.072 U        | 0.07 U         | 0.076 U        | 0.075 U        | 0.1 U           | 0.07 U        | 0.072 U        | 0.074 U         | 0.078 U         | 0.075 U        |
| Naphthalene  | mg/kg | 17      | <b>0.13</b>     | <b>0.045</b>   | <b>11.8</b>    | <b>0.22</b>    | <b>0.64</b>    | <b>0.12</b>    | <b>70.1</b>     | <b>0.041</b>  | <b>0.081</b>   | <b>3.1</b>      | <b>0.064</b>    | <b>0.45</b>    |
| Phenanthrene                                       | mg/kg |         | <b>0.093</b>    | <b>0.13</b>    | <b>243</b>     | <b>0.67</b>    | <b>41.1</b>    | <b>0.83</b>    | <b>328</b>      | <b>0.35</b>   | <b>0.42</b>    | <b>54.4</b>     | <b>0.13</b>     | <b>0.22</b>    |
| Phenol   | mg/kg | 250,000 | <b>0.017 J</b>  | 0.071 U        | <b>0.12</b>    | 0.07 U         | <b>0.063 J</b> | 0.075 U        | <b>1.8</b>      | 0.07 U        | 0.072 U        | <b>0.028 J</b>  | 0.078 U         | 0.075 U        |
| Pyrene   | mg/kg | 23,000  | <b>0.15</b>     | <b>1.2</b>     | <b>215</b>     | <b>1.8</b>     | <b>35.1</b>    | <b>1.7</b>     | <b>244</b>      | <b>1.1</b>    | <b>1.2</b>     | <b>45.5</b>     | <b>0.25</b>     | <b>0.64</b>    |
| <b>PCBs</b>  |       |         |                 |                |                |                |                |                |                 |               |                |                 |                 |                |
| Aroclor 1248                                       | mg/kg | 0.94    | N/A             | 0.0524 U       | N/A            | 0.0635 U       | N/A            | 0.0556 U       | N/A             | 0.0515 U      | 0.0606 U       | N/A             | 0.0563 U        | N/A            |
| Aroclor 1254                                       | mg/kg | 0.97    | N/A             | <b>0.148</b>   | N/A            | <b>0.924</b>   | N/A            | <b>0.641</b>   | N/A             | 0.0515 U      | <b>0.686</b>   | N/A             | 0.0563 U        | N/A            |
| Aroclor 1260                                       | mg/kg | 0.99    | N/A             | <b>0.054</b>   | N/A            | <b>0.343</b>   | N/A            | <b>0.461</b>   | N/A             | 0.0515 U      | <b>0.301</b>   | N/A             | 0.0563 U        | N/A            |
| Aroclor 1262                                       | mg/kg |         | N/A             | 0.0524 U       | N/A            | 0.0635 U       | N/A            | 0.0556 U       | N/A             | 0.0515 U      | 0.0606 U       | N/A             | <b>0.0398 J</b> | N/A            |
| PCBs (total)                                       | mg/kg | 0.97    | N/A             | <b>0.202</b>   | N/A            | <b>1.267</b>   | N/A            | <b>1.102</b>   | N/A             | 0.0515 U      | <b>0.987</b>   | N/A             | <b>0.0398 J</b> | N/A            |
| <b>TPH/Oil and Grease</b>                          |       |         |                 |                |                |                |                |                |                 |               |                |                 |                 |                |
| Diesel Range Organics                              | mg/kg | 6,200   | <b>27.9 J</b>   | <b>33.2</b>    | <b>1,880</b>   | <b>55.8</b>    | <b>385</b>     | <b>86.5</b>    | <b>13,500</b>   | <b>38.6</b>   | <b>56.6</b>    | <b>686</b>      | <b>21.5</b>     | <b>215</b>     |
| Oil and Grease                                     | mg/kg | 6,200   | <b>1,040</b>    | <b>377</b>     | <b>7,010</b>   | <b>756</b>     | <b>1,050</b>   | <b>937</b>     | <b>24,900</b>   | <b>659</b>    | <b>596</b>     | <b>1,680</b>    | <b>377</b>      | <b>853</b>     |

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 results

<sup>^</sup> 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/preparation or field blank.

R: The results for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

**Table 6  
Summary of Organics Detected in Soil  
Parcel B15  
Tradepoint Atlantic  
Sparrows Point, Maryland**

| Parameter                               | Units | PAL     | B15-012-SB-1   | B15-012-SB-4    | B15-013-SB-1*   | B15-013-SB-4* | B15-013-SB-10 | B15-014-SB-1    | B15-014-SB-8   | B15-014-SB-10 | B15-015-SB-1   | B15-015-SB-4    | B15-016-SB-1   | B15-016-SB-5   |
|---|-------|---------|----------------|-----------------|-----------------|---------------|---------------|-----------------|----------------|---------------|----------------|-----------------|----------------|----------------|
| <b>Volatile Organic Compounds</b>       |       |         |                |                 |                 |               |               |                 |                |               |                |                 |                |                |
| 2-Butanone (MEK)                        | mg/kg | 190,000 | N/A            | 0.011 U         | N/A             | 0.014 U       | N/A           | <b>0.0061 J</b> | 0.011 U        | N/A           | 0.019 U        | 0.011 U         | N/A            | 0.1 U          |
| Acetone                                 | mg/kg | 670,000 | N/A            | 0.011 U         | N/A             | 0.014 U       | N/A           | <b>0.027 J</b>  | <b>0.012 J</b> | N/A           | 0.011 B        | 0.0093 B        | N/A            | 0.1 U          |
| Benzene                                 | mg/kg | 5.1     | N/A            | <b>0.0017 J</b> | N/A             | 0.0068 U      | N/A           | 0.0061 U        | 0.0053 U       | N/A           | 0.0095 U       | <b>0.0024 J</b> | N/A            | 0.051 U        |
| Ethylbenzene                            | mg/kg | 25      | N/A            | 0.0054 U        | N/A             | 0.0068 U      | N/A           | 0.0061 U        | 0.0053 U       | N/A           | <b>0.016</b>   | 0.0053 U        | N/A            | 0.051 U        |
| Toluene                                 | mg/kg | 47,000  | N/A            | <b>0.002 J</b>  | N/A             | 0.0068 U      | N/A           | 0.0061 U        | 0.0053 U       | N/A           | 0.0095 U       | <b>0.0033 J</b> | N/A            | 0.051 U        |
| Xylenes                                 | mg/kg | 2,800   | N/A            | 0.016 U         | N/A             | 0.02 U        | N/A           | 0.018 U         | 0.016 U        | N/A           | <b>0.1</b>     | 0.016 U         | N/A            | 0.15 U         |
| <b>Semi-Volatile Organic Compounds^</b> |       |         |                |                 |                 |               |               |                 |                |               |                |                 |                |                |
| 1,1-Biphenyl                            | mg/kg | 200     | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | <b>0.27</b>     | <b>0.041 J</b> | N/A           | <b>10.4</b>    | <b>0.019 J</b>  | <b>0.031 J</b> | <b>0.018 J</b> |
| 1,2,4,5-Tetrachlorobenzene              | mg/kg | 350     | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 U         | 0.076 U        | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| 2,4-Dimethylphenol                      | mg/kg | 16,000  | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 R         | 0.076 UJ       | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| 2-Methylnaphthalene                     | mg/kg | 3,000   | <b>0.013</b>   | <b>0.0032 J</b> | <b>0.045</b>    | <b>0.53</b>   | N/A           | <b>1 J</b>      | <b>0.079 J</b> | N/A           | <b>33.2 J</b>  | <b>0.028 J</b>  | <b>0.077 J</b> | <b>0.039 J</b> |
| 2-Methylphenol                          | mg/kg | 41,000  | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 R         | 0.076 UJ       | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| 2-Nitroaniline                          | mg/kg | 8,000   | 0.2 U          | 0.18 U          | 0.19 U          | 0.2 U         | N/A           | 0.18 U          | 0.19 U         | N/A           | 0.23 U         | 0.17 U          | 0.18 U         | 0.18 U         |
| 3&4-Methylphenol(m&p Cresol)            | mg/kg | 41,000  | 0.16 U         | 0.14 U          | 0.15 U          | 0.16 U        | N/A           | 0.14 R          | 0.15 UJ        | N/A           | <b>0.032 J</b> | 0.14 U          | 0.15 U         | 0.14 U         |
| Acenaphthene                            | mg/kg | 45,000  | <b>0.0079</b>  | <b>0.0016 J</b> | <b>0.0013 J</b> | <b>4</b>      | N/A           | <b>0.97</b>     | <b>0.061 J</b> | N/A           | <b>37.1</b>    | <b>0.06</b>     | <b>0.043</b>   | <b>0.082</b>   |
| Acenaphthylene                          | mg/kg | 45,000  | <b>0.016</b>   | <b>0.0025 J</b> | <b>0.0087</b>   | <b>0.18</b>   | N/A           | <b>0.082</b>    | <b>0.053 J</b> | N/A           | <b>4.6</b>     | <b>0.029</b>    | <b>0.05</b>    | <b>0.29</b>    |
| Acetophenone                            | mg/kg | 120,000 | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 U         | 0.076 U        | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| Anthracene                              | mg/kg | 230,000 | <b>0.036</b>   | <b>0.0069 J</b> | <b>0.01</b>     | <b>12</b>     | N/A           | <b>0.86</b>     | <b>0.39</b>    | N/A           | <b>58.4</b>    | <b>0.39</b>     | <b>0.33</b>    | <b>0.69</b>    |
| Benz[a]anthracene                       | mg/kg | 21      | <b>0.16</b>    | <b>0.056</b>    | <b>0.043</b>    | <b>28</b>     | <b>4 J</b>    | <b>0.74</b>     | <b>1.2</b>     | N/A           | <b>53.5</b>    | <b>1.7</b>      | <b>3.1</b>     | <b>3.6</b>     |
| Benzaldehyde                            | mg/kg | 120,000 | 0.078 R        | 0.072 R         | 0.075 U         | 0.08 U        | N/A           | <b>0.043 J</b>  | <b>0.063 J</b> | N/A           | 0.09 R         | 0.069 R         | 0.073 R        | 0.071 R        |
| Benzo[a]pyrene                          | mg/kg | 2.1     | <b>0.11</b>    | <b>0.034</b>    | <b>0.042</b>    | <b>21.5</b>   | <b>6.3 J</b>  | <b>0.37 J</b>   | <b>1.1</b>     | <b>1.3 J</b>  | <b>26.9</b>    | <b>1.3</b>      | <b>2.9</b>     | <b>3.4</b>     |
| Benzo[b]fluoranthene                    | mg/kg | 21      | <b>0.26</b>    | <b>0.1</b>      | <b>0.13</b>     | <b>32</b>     | <b>11.2 J</b> | <b>1.2 J</b>    | <b>2.1</b>     | N/A           | <b>63.4</b>    | <b>2.1</b>      | <b>5.2</b>     | <b>4.8</b>     |
| Benzo[g,h,i]perylene                    | mg/kg |         | <b>0.049</b>   | <b>0.022</b>    | <b>0.023</b>    | <b>4</b>      | N/A           | <b>0.13 J</b>   | <b>0.47</b>    | N/A           | <b>15.3</b>    | <b>0.52</b>     | <b>2.4</b>     | <b>2</b>       |
| Benzo[k]fluoranthene                    | mg/kg | 210     | <b>0.089</b>   | <b>0.035</b>    | <b>0.097</b>    | <b>10.5</b>   | N/A           | <b>0.85 J</b>   | <b>0.81</b>    | N/A           | <b>56</b>      | <b>0.7</b>      | <b>1.8</b>     | <b>1.8</b>     |
| bis(2-Ethylhexyl)phthalate              | mg/kg | 160     | 0.029 B        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | <b>0.2 J</b>    | 0.076 UJ       | N/A           | 0.09 UJ        | <b>0.029 J</b>  | <b>0.039 J</b> | <b>0.036 J</b> |
| Caprolactam                             | mg/kg | 400,000 | 0.2 U          | 0.18 U          | 0.19 U          | 0.2 U         | N/A           | 0.18 U          | 0.19 U         | N/A           | 0.23 U         | 0.17 U          | 0.18 U         | 0.18 U         |
| Carbazole                               | mg/kg |         | <b>0.036 J</b> | 0.072 U         | 0.075 U         | <b>0.27</b>   | N/A           | <b>0.075</b>    | <b>0.16 J</b>  | N/A           | <b>7.4</b>     | <b>0.44</b>     | <b>0.13</b>    | <b>0.29</b>    |
| Chrysene                                | mg/kg | 2,100   | <b>0.23</b>    | <b>0.092</b>    | <b>0.038</b>    | <b>23.5</b>   | N/A           | <b>0.68</b>     | <b>1.4</b>     | N/A           | <b>63</b>      | <b>1.8</b>      | <b>3.4</b>     | <b>3.7</b>     |
| Dibenz[a,h]anthracene                   | mg/kg | 2.1     | <b>0.02</b>    | <b>0.0085</b>   | <b>0.0086</b>   | <b>2.4</b>    | <b>0.95 J</b> | <b>0.051 J</b>  | <b>0.2</b>     | N/A           | <b>6.8</b>     | <b>0.25</b>     | <b>0.94</b>    | <b>0.82</b>    |
| Di-n-butylphthalate                     | mg/kg | 82,000  | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 U         | 0.076 U        | N/A           | 0.09 UJ        | 0.069 U         | 0.073 U        | 0.071 U        |
| Fluoranthene                            | mg/kg | 30,000  | <b>0.19</b>    | <b>0.071</b>    | <b>0.052</b>    | <b>55.4</b>   | N/A           | <b>2.1</b>      | <b>1.9</b>     | N/A           | <b>176</b>     | <b>3</b>        | <b>4</b>       | <b>6.3</b>     |
| Fluorene                                | mg/kg | 30,000  | <b>0.005 J</b> | 0.0072 U        | <b>0.0014 J</b> | <b>3.5</b>    | N/A           | <b>0.79</b>     | <b>0.034 J</b> | N/A           | <b>37.7</b>    | <b>0.051</b>    | <b>0.033</b>   | <b>0.061</b>   |
| Indeno[1,2,3-c,d]pyrene                 | mg/kg | 21      | <b>0.05</b>    | <b>0.021</b>    | <b>0.023</b>    | <b>5.2</b>    | <b>3.9 J</b>  | <b>0.14 J</b>   | <b>0.49</b>    | N/A           | <b>15.1</b>    | <b>0.58</b>     | <b>2.5</b>     | <b>2.1</b>     |
| Isophorone                              | mg/kg | 2,400   | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 U         | 0.076 U        | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| Naphthalene                             | mg/kg | 17      | <b>0.019</b>   | 0.0034 B        | <b>0.039</b>    | <b>0.69</b>   | N/A           | <b>1.9</b>      | <b>0.26</b>    | N/A           | <b>71.7</b>    | <b>0.07</b>     | <b>0.18</b>    | <b>0.089</b>   |
| Phenanthrene                            | mg/kg |         | <b>0.048</b>   | <b>0.026</b>    | <b>0.03</b>     | <b>38</b>     | N/A           | <b>2.4</b>      | <b>1.1</b>     | N/A           | <b>186</b>     | <b>1.7</b>      | <b>1.2</b>     | <b>2.6</b>     |
| Phenol                                  | mg/kg | 250,000 | 0.078 U        | 0.072 U         | 0.075 U         | 0.08 U        | N/A           | 0.072 R         | 0.076 UJ       | N/A           | 0.09 U         | 0.069 U         | 0.073 U        | 0.071 U        |
| Pyrene                                  | mg/kg | 23,000  | <b>0.31</b>    | <b>0.059</b>    | <b>0.047</b>    | <b>42.5</b>   | N/A           | <b>1.5</b>      | <b>2.3</b>     | N/A           | <b>128</b>     | <b>2.4</b>      | <b>3.7</b>     | <b>5</b>       |
| <b>PCBs</b>                             |       |         |                |                 |                 |               |               |                 |                |               |                |                 |                |                |
| Aroclor 1248                            | mg/kg | 0.94    | 0.0551 U       | N/A             | 0.0584 U        | N/A           | N/A           | 0.064 U         | N/A            | N/A           | 0.0562 U       | N/A             | 0.0529 U       | N/A            |
| Aroclor 1254                            | mg/kg | 0.97    | 0.0551 U       | N/A             | 0.0584 U        | N/A           | N/A           | 0.064 U         | N/A            | N/A           | 0.0562 U       | N/A             | 0.0529 U       | N/A            |
| Aroclor 1260                            | mg/kg | 0.99    | 0.0551 U       | N/A             | 0.0584 U        | N/A           | N/A           | 0.064 U         | N/A            | N/A           | 0.0562 U       | N/A             | 0.0529 U       | N/A            |
| Aroclor 1262                            | mg/kg |         | 0.0551 U       | N/A             | 0.0584 U        | N/A           | N/A           | 0.064 U         | N/A            | N/A           | 0.0562 U       | N/A             | 0.0529 U       | N/A            |
| PCBs (total)                            | mg/kg | 0.97    | 0.0551 U       | N/A             | 0.0584 U        | N/A           | N/A           | 0.064 U         | N/A            | N/A           | 0.0562 U       | N/A             | 0.0529 U       | N/A            |
| <b>TPH/Oil and Grease</b>               |       |         |                |                 |                 |               |               |                 |                |               |                |                 |                |                |
| Diesel Range Organics                   | mg/kg | 6,200   | <b>35.8 J</b>  | <b>21.8 J</b>   | <b>56.6</b>     | <b>81.8</b>   | N/A           | <b>204 J</b>    | <b>265 J</b>   | N/A           | <b>2,530 J</b> | <b>39.8 J</b>   | <b>138 J</b>   | <b>75.1 J</b>  |
| Oil and Grease                          | mg/kg | 6,200   | <b>316</b>     | <b>310</b>      | <b>407</b>      | <b>535</b>    | N/A           | <b>4,220</b>    | <b>1,730</b>   | N/A           | <b>5,130</b>   | <b>290</b>      | <b>702</b>     | <b>527</b>     |

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 results

^ 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/preparation or field blank.

R: The results for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

**Table 6**  
**Summary of Organics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter  | Units | PAL     | B15-016-SB-10 | B15-017-SB-1    | B15-017-SB-8   | B15-018-SB-1*  | B15-018-SB-4*   | B15-019-SB-1*   | B15-020-SB-1    | B15-020-SB-7    | B15-020-SB-10 | B15-021-SB-1    | B15-021-SB-4    |
|--|-------|---------|---------------|-----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|---------------|-----------------|-----------------|
| <b>Volatile Organic Compounds</b>                  |       |         |               |                 |                |                |                 |                 |                 |                 |               |                 |                 |
| 2-Butanone (MEK)                                   | mg/kg | 190,000 | N/A           | N/A             | 0.0094 U       | N/A            | <b>0.0081 J</b> | 0.01 U          | N/A             | <b>0.0082 J</b> | N/A           | N/A             | N/A             |
| Acetone  | mg/kg | 670,000 | N/A           | N/A             | 0.0057 B       | N/A            | 0.044 B         | 0.012 B         | N/A             | <b>0.034 J</b>  | N/A           | N/A             | N/A             |
| Benzene  | mg/kg | 5.1     | N/A           | N/A             | 0.0047 U       | N/A            | 0.0045 U        | 0.0051 U        | N/A             | 0.0044 U        | N/A           | N/A             | N/A             |
| Ethylbenzene                                       | mg/kg | 25      | N/A           | N/A             | 0.0047 U       | N/A            | 0.0045 U        | 0.0051 U        | N/A             | 0.0044 U        | N/A           | N/A             | N/A             |
| Toluene  | mg/kg | 47,000  | N/A           | N/A             | 0.0047 U       | N/A            | 0.0045 U        | 0.0051 U        | N/A             | 0.0044 U        | N/A           | N/A             | N/A             |
| Xylenes  | mg/kg | 2,800   | N/A           | N/A             | 0.014 U        | N/A            | 0.014 U         | <b>0.0032 J</b> | N/A             | 0.013 U         | N/A           | N/A             | N/A             |
| <b>Semi-Volatile Organic Compounds<sup>^</sup></b> |       |         |               |                 |                |                |                 |                 |                 |                 |               |                 |                 |
| 1,1-Biphenyl                                       | mg/kg | 200     | N/A           | 0.075 U         | <b>0.059 J</b> | <b>0.15</b>    | <b>0.042 J</b>  | 0.069 U         | 0.072 U         | <b>0.9</b>      | N/A           | 0.071 U         | 0.073 U         |
| 1,2,4,5-Tetrachlorobenzene                         | mg/kg | 350     | N/A           | 0.075 U         | 0.072 U        | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | 0.076 U         | N/A           | 0.071 U         | 0.073 U         |
| 2,4-Dimethylphenol                                 | mg/kg | 16,000  | N/A           | 0.075 UJ        | 0.072 U        | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | <b>0.032 J</b>  | N/A           | 0.071 U         | 0.073 U         |
| 2-Methylnaphthalene                                | mg/kg | 3,000   | N/A           | <b>0.025 J</b>  | <b>0.069 J</b> | <b>0.39</b>    | <b>0.12</b>     | 0.071 U         | <b>0.021 J</b>  | <b>2 J</b>      | N/A           | <b>0.0048 J</b> | <b>0.029 J</b>  |
| 2-Methylphenol                                     | mg/kg | 41,000  | N/A           | 0.075 UJ        | 0.072 U        | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | <b>0.016 J</b>  | N/A           | 0.071 U         | 0.073 U         |
| 2-Nitroaniline                                     | mg/kg | 8,000   | N/A           | 0.19 U          | 0.18 U         | 0.18 U         | 0.19 U          | 0.17 U          | 0.18 U          | 0.19 U          | N/A           | 0.18 U          | 0.18 U          |
| 3&4-Methylphenol(m&p Cresol)                       | mg/kg | 41,000  | N/A           | 0.15 UJ         | <b>0.022 J</b> | <b>0.022 J</b> | 0.15 U          | 0.14 U          | 0.14 U          | <b>0.06 J</b>   | N/A           | 0.14 U          | 0.15 U          |
| Acenaphthene                                       | mg/kg | 45,000  | N/A           | 0.076 U         | <b>0.15</b>    | <b>0.022 J</b> | <b>0.024 J</b>  | 0.071 U         | <b>0.012</b>    | <b>1.8</b>      | N/A           | <b>0.0055 J</b> | <b>0.0066 J</b> |
| Acenaphthylene                                     | mg/kg | 45,000  | N/A           | <b>0.0067 J</b> | <b>0.018 J</b> | <b>0.28</b>    | <b>0.092</b>    | <b>0.012 J</b>  | <b>0.0062 J</b> | <b>0.64</b>     | N/A           | <b>0.0054 J</b> | 0.074 U         |
| Acetophenone                                       | mg/kg | 120,000 | N/A           | 0.075 U         | 0.072 U        | <b>0.06 J</b>  | 0.076 U         | 0.069 U         | 0.072 U         | 0.076 U         | N/A           | 0.071 U         | 0.073 U         |
| Anthracene   | mg/kg | 230,000 | N/A           | <b>0.021 J</b>  | <b>1.3</b>     | <b>0.25</b>    | <b>0.14</b>     | <b>0.012 J</b>  | <b>0.016</b>    | <b>1.5</b>      | N/A           | <b>0.0072</b>   | <b>0.012 J</b>  |
| Benz[a]anthracene                                  | mg/kg | 21      | <b>1.4 J</b>  | <b>0.11</b>     | <b>6.6</b>     | <b>1.3</b>     | <b>0.44</b>     | <b>0.065 J</b>  | <b>0.089</b>    | <b>3.1</b>      | <b>0.24 J</b> | <b>0.054</b>    | <b>0.015 J</b>  |
| Benzaldehyde                                       | mg/kg | 120,000 | N/A           | 0.075 R         | <b>0.02 J</b>  | <b>0.14</b>    | 0.076 U         | 0.069 U         | 0.072 R         | <b>0.055 J</b>  | N/A           | 0.071 R         | 0.073 R         |
| Benzo[a]pyrene                                     | mg/kg | 2.1     | <b>1.4 J</b>  | <b>0.11 J</b>   | <b>5.9 J</b>   | <b>1.3</b>     | <b>0.42</b>     | <b>0.063 J</b>  | <b>0.14</b>     | <b>3.1</b>      | <b>0.17 J</b> | <b>0.068</b>    | <b>0.019 J</b>  |
| Benzo[b]fluoranthene                               | mg/kg | 21      | <b>2.4 J</b>  | <b>0.36 J</b>   | <b>11.1 J</b>  | <b>3.3</b>     | <b>1.1</b>      | <b>0.18</b>     | <b>0.34</b>     | <b>6.9</b>      | <b>0.28 J</b> | <b>0.17</b>     | <b>0.087 J</b>  |
| Benzo[g,h,i]perylene                               | mg/kg |         | N/A           | <b>0.029 J</b>  | <b>1.4 J</b>   | <b>0.28</b>    | <b>0.11</b>     | <b>0.03 J</b>   | <b>0.073</b>    | <b>1.1</b>      | N/A           | <b>0.051</b>    | 0.074 UJ        |
| Benzo[k]fluoranthene                               | mg/kg | 210     | N/A           | <b>0.26 J</b>   | <b>3.8 J</b>   | <b>2.4</b>     | <b>0.82</b>     | <b>0.13</b>     | <b>0.25</b>     | <b>5</b>        | N/A           | <b>0.13</b>     | <b>0.063 J</b>  |
| bis(2-Ethylhexyl)phthalate                         | mg/kg | 160     | N/A           | <b>0.65 J</b>   | <b>0.029 J</b> | <b>0.096</b>   | <b>0.025 J</b>  | 0.069 U         | <b>0.021 J</b>  | 0.076 UJ        | N/A           | <b>0.069 J</b>  | <b>0.38 J</b>   |
| Caprolactam  | mg/kg | 400,000 | N/A           | 0.19 U          | 0.18 U         | 0.18 U         | 0.19 U          | 0.17 U          | 0.18 U          | 0.19 U          | N/A           | 0.18 U          | 0.18 U          |
| Carbazole  | mg/kg |         | N/A           | 0.075 U         | <b>0.6 J</b>   | <b>0.091</b>   | <b>0.069 J</b>  | 0.069 U         | 0.072 U         | <b>2.7</b>      | N/A           | 0.071 U         | 0.073 U         |
| Chrysene   | mg/kg | 2,100   | N/A           | <b>0.16</b>     | <b>5.9</b>     | <b>1.1</b>     | <b>0.38</b>     | <b>0.05 J</b>   | <b>0.11</b>     | <b>3.3</b>      | N/A           | <b>0.052</b>    | <b>0.057 J</b>  |
| Dibenz[a,h]anthracene                              | mg/kg | 2.1     | <b>0.25 J</b> | 0.076 UJ        | <b>0.63 J</b>  | <b>0.13</b>    | <b>0.042 J</b>  | <b>0.012 J</b>  | <b>0.025</b>    | <b>0.43</b>     | <b>0.03 J</b> | <b>0.016</b>    | 0.074 UJ        |
| Di-n-butylphthalate                                | mg/kg | 82,000  | N/A           | 0.075 UJ        | 0.072 U        | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | 0.076 U         | N/A           | 0.071 U         | 0.073 U         |
| Fluoranthene                                       | mg/kg | 30,000  | N/A           | <b>0.16</b>     | <b>8.8</b>     | <b>2</b>       | <b>0.73</b>     | <b>0.096</b>    | <b>0.17</b>     | <b>5.8</b>      | N/A           | <b>0.058</b>    | <b>0.035 J</b>  |
| Fluorene   | mg/kg | 30,000  | N/A           | 0.076 U         | <b>0.13</b>    | <b>0.031 J</b> | <b>0.054 J</b>  | 0.071 U         | <b>0.004 J</b>  | <b>2.4</b>      | N/A           | <b>0.003 J</b>  | 0.074 U         |
| Indeno[1,2,3-c,d]pyrene                            | mg/kg | 21      | N/A           | <b>0.025 J</b>  | <b>1.6 J</b>   | <b>0.33</b>    | <b>0.1</b>      | <b>0.031 J</b>  | <b>0.07</b>     | <b>1.1</b>      | N/A           | <b>0.039</b>    | 0.074 UJ        |
| Isophorone   | mg/kg | 2,400   | N/A           | <b>0.032 J</b>  | 0.072 U        | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | 0.076 U         | N/A           | 0.071 U         | 0.073 U         |
| Naphthalene  | mg/kg | 17      | N/A           | 0.076 U         | <b>0.11</b>    | <b>0.96</b>    | <b>1.4</b>      | 0.071 U         | <b>0.03</b>     | <b>4.7</b>      | N/A           | <b>0.0086</b>   | <b>0.032 J</b>  |
| Phenanthrene                                       | mg/kg |         | N/A           | <b>0.1</b>      | <b>3.5</b>     | <b>0.73</b>    | <b>0.41</b>     | <b>0.06 J</b>   | <b>0.08</b>     | <b>6.2</b>      | N/A           | <b>0.026</b>    | 0.038 B         |
| Phenol   | mg/kg | 250,000 | N/A           | 0.075 UJ        | <b>0.022 J</b> | 0.074 U        | 0.076 U         | 0.069 U         | 0.072 U         | <b>0.033 J</b>  | N/A           | 0.071 U         | 0.073 U         |
| Pyrene   | mg/kg | 23,000  | N/A           | <b>0.16</b>     | <b>6.9</b>     | <b>1.6</b>     | <b>0.69</b>     | <b>0.067 J</b>  | <b>0.12</b>     | <b>5.7</b>      | N/A           | <b>0.05</b>     | <b>0.028 J</b>  |
| <b>PCBs</b>  |       |         |               |                 |                |                |                 |                 |                 |                 |               |                 |                 |
| Aroclor 1248                                       | mg/kg | 0.94    | N/A           | 0.0569 U        | N/A            | 0.055 U        | N/A             | 0.0523 U        | <b>0.0516 J</b> | N/A             | N/A           | 0.0533 U        | N/A             |
| Aroclor 1254                                       | mg/kg | 0.97    | N/A           | 0.0569 U        | N/A            | 0.055 U        | N/A             | 0.0523 U        | 0.0532 U        | N/A             | N/A           | 0.0533 U        | N/A             |
| Aroclor 1260                                       | mg/kg | 0.99    | N/A           | 0.0569 U        | N/A            | 0.055 U        | N/A             | 0.0523 U        | 0.0532 U        | N/A             | N/A           | 0.0533 U        | N/A             |
| Aroclor 1262                                       | mg/kg |         | N/A           | 0.0569 U        | N/A            | 0.055 U        | N/A             | 0.0523 U        | 0.0532 U        | N/A             | N/A           | 0.0533 U        | N/A             |
| PCBs (total)                                       | mg/kg | 0.97    | N/A           | 0.0569 U        | N/A            | 0.055 U        | N/A             | 0.0523 U        | <b>0.0516 J</b> | N/A             | N/A           | 0.0533 U        | N/A             |
| <b>TPH/Oil and Grease</b>                          |       |         |               |                 |                |                |                 |                 |                 |                 |               |                 |                 |
| Diesel Range Organics                              | mg/kg | 6,200   | N/A           | <b>696 J</b>    | <b>240 J</b>   | <b>110</b>     | <b>219</b>      | <b>23.9</b>     | <b>44.6 J</b>   | <b>3,070 J</b>  | <b>558 J</b>  | <b>11.4 J</b>   | <b>216 J</b>    |
| Oil and Grease                                     | mg/kg | 6,200   | N/A           | <b>6,310</b>    | <b>874</b>     | <b>3,250</b>   | <b>3,950</b>    | 185 B           | <b>387</b>      | <b>4,220</b>    | N/A           | <b>251</b>      | <b>10,300</b>   |

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 results

<sup>^</sup> 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/preparation or field blank.

R: The results for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-001-SB-1   | B15-001-SB-9    | B15-001-SB-10* | B15-002-SB-1*  | B15-002-SB-8* | B15-003-SB-1* |
|---------------|-------|-----------|----------------|-----------------|----------------|----------------|---------------|---------------|
| <b>Metals</b> |       |           |                |                 |                |                |               |               |
| Aluminum      | mg/kg | 1,100,000 | <b>16,900</b>  | <b>14,800</b>   | N/A            | <b>8,340</b>   | <b>6,360</b>  | <b>21,000</b> |
| Antimony      | mg/kg | 470       | 2.7 U          | 2.6 U           | N/A            | 2.7 U          | 2.8 U         | 2.5 U         |
| Arsenic       | mg/kg | 3         | 2.3 U          | <b>15.9</b>     | <b>8.2</b>     | <b>3</b>       | <b>8</b>      | <b>5.1</b>    |
| Barium        | mg/kg | 220,000   | <b>176</b>     | <b>184</b>      | N/A            | <b>159</b>     | <b>64.1</b>   | <b>298</b>    |
| Beryllium     | mg/kg | 2,300     | <b>0.62 J</b>  | <b>1.3</b>      | N/A            | 0.9 U          | <b>0.21 J</b> | <b>2.1</b>    |
| Cadmium       | mg/kg | 980       | 1.7 B          | <b>11</b>       | N/A            | <b>5.7</b>     | 2.6 B         | 1.9 B         |
| Chromium      | mg/kg | 120,000   | <b>1,600</b>   | <b>916</b>      | N/A            | <b>1,220</b>   | <b>163</b>    | <b>437</b>    |
| Chromium VI   | mg/kg | 6.3       | 0.39 B         | 0.3 B           | N/A            | 0.6 B          | 0.35 B        | 0.39 B        |
| Cobalt        | mg/kg | 350       | <b>14</b>      | <b>15.6</b>     | N/A            | <b>14.1</b>    | <b>11.7</b>   | <b>36.4</b>   |
| Copper        | mg/kg | 47,000    | <b>101</b>     | <b>258</b>      | N/A            | <b>101</b>     | <b>213</b>    | <b>62.1</b>   |
| Iron          | mg/kg | 820,000   | <b>154,000</b> | <b>231,000</b>  | N/A            | <b>124,000</b> | <b>82,900</b> | <b>76,500</b> |
| Lead          | mg/kg | 800       | <b>75.2</b>    | <b>444</b>      | N/A            | <b>102</b>     | <b>359</b>    | <b>83.5</b>   |
| Manganese     | mg/kg | 26,000    | <b>39,400</b>  | <b>14,400</b>   | N/A            | <b>57,200</b>  | <b>2,920</b>  | <b>32,000</b> |
| Mercury       | mg/kg | 350       | <b>4.9 J+</b>  | <b>0.088 J+</b> | N/A            | <b>0.053 J</b> | 0.015 B       | 0.1 U         |
| Nickel        | mg/kg | 22,000    | <b>19.8</b>    | <b>96.6</b>     | N/A            | <b>23.1</b>    | <b>57.4</b>   | <b>13.4</b>   |
| Selenium      | mg/kg | 5,800     | 3.6 U          | 3.4 U           | N/A            | 3.6 U          | 3.7 U         | 3.3 U         |
| Silver        | mg/kg | 5,800     | 2.7 U          | 2.6 U           | N/A            | <b>4.5</b>     | <b>1.2 J</b>  | 2.5 U         |
| Thallium      | mg/kg | 12        | 9 U            | 8.6 U           | N/A            | <b>51.8</b>    | 9.3 U         | 8.3 U         |
| Vanadium      | mg/kg | 5,800     | <b>1,670</b>   | <b>422</b>      | N/A            | <b>3,450</b>   | <b>226</b>    | <b>1,760</b>  |
| Zinc          | mg/kg | 350,000   | <b>758</b>     | <b>771</b>      | N/A            | <b>650</b>     | <b>844</b>    | <b>557</b>    |
| <b>Other</b>  |       |           |                |                 |                |                |               |               |
| Cyanide       | mg/kg | 150       | <b>3.4</b>     | <b>1</b>        | N/A            | <b>0.74</b>    | <b>1.2</b>    | <b>0.83</b>   |

**Detections in bold**

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



**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-003-SB-4*  | B15-003-SB-10 | B15-004-SB-1*  | B15-004-SB-5*  | B15-004-SB-10 | B15-005-SB-1    |
|---------------|-------|-----------|----------------|---------------|----------------|----------------|---------------|-----------------|
| <b>Metals</b> |       |           |                |               |                |                |               |                 |
| Aluminum      | mg/kg | 1,100,000 | <b>5,500</b>   | N/A           | <b>16,700</b>  | <b>11,800</b>  | N/A           | <b>13,800</b>   |
| Antimony      | mg/kg | 470       | 2.6 U          | N/A           | 2.6 U          | 2.7 U          | N/A           | 2.8 U           |
| Arsenic       | mg/kg | 3         | <b>10.8</b>    | <b>17.5</b>   | <b>10.5</b>    | <b>14.1</b>    | <b>3.4</b>    | <b>2.6</b>      |
| Barium        | mg/kg | 220,000   | <b>91</b>      | N/A           | <b>331</b>     | <b>135</b>     | N/A           | <b>168</b>      |
| Beryllium     | mg/kg | 2,300     | 0.86 U         | N/A           | <b>1.4</b>     | <b>0.9 J</b>   | N/A           | <b>1</b>        |
| Cadmium       | mg/kg | 980       | 0.75 B         | N/A           | <b>15.7</b>    | <b>7.9</b>     | N/A           | 2 B             |
| Chromium      | mg/kg | 120,000   | <b>550</b>     | N/A           | <b>503</b>     | <b>1,110</b>   | N/A           | <b>913</b>      |
| Chromium VI   | mg/kg | 6.3       | 0.31 B         | N/A           | 0.31 B         | 0.31 B         | N/A           | 0.51 B          |
| Cobalt        | mg/kg | 350       | <b>13.9</b>    | N/A           | <b>12.4</b>    | <b>7.6</b>     | N/A           | <b>8.4</b>      |
| Copper        | mg/kg | 47,000    | <b>278</b>     | N/A           | <b>178</b>     | <b>76.3</b>    | N/A           | <b>146</b>      |
| Iron          | mg/kg | 820,000   | <b>103,000</b> | N/A           | <b>116,000</b> | <b>172,000</b> | N/A           | <b>162,000</b>  |
| Lead          | mg/kg | 800       | <b>111</b>     | N/A           | <b>1,890</b>   | <b>1,130</b>   | <b>315 J</b>  | <b>112</b>      |
| Manganese     | mg/kg | 26,000    | <b>12,900</b>  | N/A           | <b>12,200</b>  | <b>27,900</b>  | <b>26,000</b> | <b>19,200</b>   |
| Mercury       | mg/kg | 350       | <b>0.065 J</b> | N/A           | <b>0.05 J</b>  | <b>0.027 J</b> | N/A           | <b>0.025 J+</b> |
| Nickel        | mg/kg | 22,000    | <b>89.3</b>    | N/A           | <b>61.9</b>    | <b>28.3</b>    | N/A           | <b>34.9</b>     |
| Selenium      | mg/kg | 5,800     | 3.4 U          | N/A           | 3.5 U          | 3.6 U          | N/A           | 3.7 U           |
| Silver        | mg/kg | 5,800     | 2.6 U          | N/A           | 2.6 U          | 2.7 U          | N/A           | 2.8 U           |
| Thallium      | mg/kg | 12        | 8.6 U          | N/A           | 8.7 U          | 9 U            | N/A           | 9.2 U           |
| Vanadium      | mg/kg | 5,800     | <b>2,770</b>   | N/A           | <b>223</b>     | <b>391</b>     | N/A           | <b>911</b>      |
| Zinc          | mg/kg | 350,000   | <b>153</b>     | N/A           | <b>2,910</b>   | <b>3,380</b>   | N/A           | <b>924</b>      |
| <b>Other</b>  |       |           |                |               |                |                |               |                 |
| Cyanide       | mg/kg | 150       | <b>1.2</b>     | N/A           | <b>2.7</b>     | <b>3.3</b>     | N/A           | 0.28 B          |

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-005-SB-4    | B15-005-SB-10* | B15-006-SB-1*  | B15-006-SB-4*  | B15-007-SB-1*  | B15-007-SB-4*  |
|---------------|-------|-----------|-----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Metals</b> |       |           |                 |                |                |                |                |                |
| Aluminum      | mg/kg | 1,100,000 | <b>14,900</b>   | N/A            | <b>17,900</b>  | <b>9,490</b>   | <b>7,340</b>   | <b>7,150</b>   |
| Antimony      | mg/kg | 470       | 2.5 U           | N/A            | 2.5 U          | 2.7 U          | 2.6 U          | 2.7 U          |
| Arsenic       | mg/kg | 3         | 2.1 U           | N/A            | <b>8.3</b>     | <b>8.9</b>     | <b>8.8</b>     | <b>8.5</b>     |
| Barium        | mg/kg | 220,000   | <b>126</b>      | N/A            | <b>194</b>     | <b>1,210</b>   | <b>112</b>     | <b>147</b>     |
| Beryllium     | mg/kg | 2,300     | <b>0.32 J</b>   | N/A            | <b>2.9</b>     | <b>0.8 J</b>   | 0.88 U         | 0.89 U         |
| Cadmium       | mg/kg | 980       | 1.3 B           | N/A            | 1.4 B          | <b>40.7</b>    | <b>5.9</b>     | <b>4.3</b>     |
| Chromium      | mg/kg | 120,000   | <b>1,850</b>    | N/A            | <b>129</b>     | <b>638</b>     | <b>1,480</b>   | <b>1,670</b>   |
| Chromium VI   | mg/kg | 6.3       | 0.38 B          | N/A            | 0.46 B         | 0.62 B         | 0.95 B         | 0.86 B         |
| Cobalt        | mg/kg | 350       | <b>4.7</b>      | N/A            | <b>7.4</b>     | <b>16</b>      | <b>10.7</b>    | <b>26.8</b>    |
| Copper        | mg/kg | 47,000    | <b>56</b>       | N/A            | <b>101</b>     | <b>1,100</b>   | <b>253</b>     | <b>1,820</b>   |
| Iron          | mg/kg | 820,000   | <b>144,000</b>  | N/A            | <b>172,000</b> | <b>160,000</b> | <b>117,000</b> | <b>270,000</b> |
| Lead          | mg/kg | 800       | <b>45.6</b>     | N/A            | <b>86.1</b>    | <b>483</b>     | <b>379</b>     | <b>407</b>     |
| Manganese     | mg/kg | 26,000    | <b>50,400</b>   | <b>36,200</b>  | <b>4,700</b>   | <b>16,200</b>  | <b>35,000</b>  | <b>23,300</b>  |
| Mercury       | mg/kg | 350       | <b>0.014 J+</b> | N/A            | 0.1 U          | <b>0.14</b>    | <b>0.16</b>    | <b>1.2</b>     |
| Nickel        | mg/kg | 22,000    | <b>16.2</b>     | N/A            | <b>77.4</b>    | <b>61.1</b>    | <b>49.3</b>    | <b>64.7</b>    |
| Selenium      | mg/kg | 5,800     | 3.4 U           | N/A            | 3.4 U          | 3.6 U          | 3.5 U          | 3.6 U          |
| Silver        | mg/kg | 5,800     | 2.5 U           | N/A            | 2.5 U          | 2.7 U          | <b>11.1</b>    | <b>4.8</b>     |
| Thallium      | mg/kg | 12        | 8.5 U           | N/A            | 8.4 U          | 9 U            | <b>159</b>     | <b>53.7</b>    |
| Vanadium      | mg/kg | 5,800     | <b>1,880</b>    | N/A            | <b>54.2</b>    | <b>296</b>     | <b>10,500</b>  | <b>4,240</b>   |
| Zinc          | mg/kg | 350,000   | <b>155</b>      | N/A            | <b>272</b>     | <b>12,700</b>  | <b>1,300</b>   | <b>3,460</b>   |
| <b>Other</b>  |       |           |                 |                |                |                |                |                |
| Cyanide       | mg/kg | 150       | <b>0.88</b>     | N/A            | <b>4</b>       | <b>2.6</b>     | <b>0.65</b>    | <b>2.5</b>     |

**Detections in bold**

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-008-SB-1*  | B15-008-SB-9*  | B15-009-SB-1*  | B15-010-SB-1*  | B15-010-SB-5* | B15-011-SB-1* |
|---------------|-------|-----------|----------------|----------------|----------------|----------------|---------------|---------------|
| <b>Metals</b> |       |           |                |                |                |                |               |               |
| Aluminum      | mg/kg | 1,100,000 | <b>13,600</b>  | <b>13,800</b>  | <b>2,460</b>   | <b>13,700</b>  | <b>14,500</b> | <b>15,000</b> |
| Antimony      | mg/kg | 470       | 2.8 U          | <b>5.1</b>     | <b>2.8</b>     | <b>4.3</b>     | 2.7 U         | 2.8 U         |
| Arsenic       | mg/kg | 3         | <b>20.1</b>    | <b>58.1</b>    | <b>16</b>      | <b>19.9</b>    | <b>5.5</b>    | <b>11.2</b>   |
| Barium        | mg/kg | 220,000   | <b>407</b>     | <b>106</b>     | <b>125</b>     | <b>224</b>     | <b>295</b>    | <b>212</b>    |
| Beryllium     | mg/kg | 2,300     | <b>1.6</b>     | <b>1.6</b>     | <b>0.22 J</b>  | <b>1.4</b>     | <b>1.7</b>    | <b>1.7</b>    |
| Cadmium       | mg/kg | 980       | <b>12.8</b>    | <b>23.9</b>    | <b>4.7</b>     | <b>6.6</b>     | <b>6.5</b>    | <b>3.4</b>    |
| Chromium      | mg/kg | 120,000   | <b>293</b>     | <b>73.3</b>    | <b>301</b>     | <b>371</b>     | <b>287</b>    | <b>121</b>    |
| Chromium VI   | mg/kg | 6.3       | 0.31 B         | 0.68 B         | 0.29 B         | 0.26 B         | 0.36 B        | 0.32 B        |
| Cobalt        | mg/kg | 350       | <b>15</b>      | <b>18</b>      | <b>17.1</b>    | <b>18.1</b>    | <b>13.2</b>   | <b>6.8</b>    |
| Copper        | mg/kg | 47,000    | <b>162</b>     | <b>141</b>     | <b>164</b>     | <b>316</b>     | <b>210</b>    | <b>67.8</b>   |
| Iron          | mg/kg | 820,000   | <b>141,000</b> | <b>253,000</b> | <b>353,000</b> | <b>188,000</b> | <b>93,400</b> | <b>89,600</b> |
| Lead          | mg/kg | 800       | <b>584</b>     | <b>5,910</b>   | <b>360</b>     | <b>538</b>     | <b>354</b>    | <b>230</b>    |
| Manganese     | mg/kg | 26,000    | <b>4,830</b>   | <b>3,670</b>   | <b>6,050</b>   | <b>8,420</b>   | <b>7,180</b>  | <b>5,250</b>  |
| Mercury       | mg/kg | 350       | <b>0.39</b>    | <b>0.29</b>    | <b>0.13</b>    | <b>0.39</b>    | <b>0.3</b>    | 0.11 U        |
| Nickel        | mg/kg | 22,000    | <b>101</b>     | <b>36.5</b>    | <b>107</b>     | <b>92.9</b>    | <b>47.5</b>   | <b>21.8</b>   |
| Selenium      | mg/kg | 5,800     | 3.7 U          | 4.3 B          | 2 B            | 3.6 U          | 3.6 U         | 3.8 U         |
| Silver        | mg/kg | 5,800     | 2.8 U          | <b>18.5</b>    | <b>1.7 J</b>   | 2.7 U          | 2.7 U         | 2.8 U         |
| Thallium      | mg/kg | 12        | 9.3 U          | 10.2 U         | 8.3 U          | 9 U            | 9 U           | 9.4 U         |
| Vanadium      | mg/kg | 5,800     | <b>316</b>     | <b>72.6</b>    | <b>627</b>     | <b>291</b>     | <b>176</b>    | <b>209</b>    |
| Zinc          | mg/kg | 350,000   | <b>3,390</b>   | <b>13,400</b>  | <b>589</b>     | <b>1,560</b>   | <b>2,430</b>  | <b>769</b>    |
| <b>Other</b>  |       |           |                |                |                |                |               |               |
| Cyanide       | mg/kg | 150       | <b>2</b>       | <b>11.2</b>    | 0.23 B         | <b>2.3</b>     | <b>0.65</b>   | <b>2.2</b>    |

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-011-SB-4*  | B15-012-SB-1  | B15-012-SB-4    | B15-013-SB-1*  | B15-013-SB-4*  | B15-013-SB-10 |
|---------------|-------|-----------|----------------|---------------|-----------------|----------------|----------------|---------------|
| <b>Metals</b> |       |           |                |               |                 |                |                |               |
| Aluminum      | mg/kg | 1,100,000 | <b>12,700</b>  | <b>21,000</b> | <b>5,370</b>    | <b>29,300</b>  | <b>14,300</b>  | N/A           |
| Antimony      | mg/kg | 470       | 2.7 U          | 2.7 U         | 2.5 U           | 2.8 U          | 3.1 U          | N/A           |
| Arsenic       | mg/kg | 3         | <b>7.5</b>     | <b>4.1</b>    | <b>5.4</b>      | <b>5.9</b>     | <b>14.1</b>    | <b>9.1</b>    |
| Barium        | mg/kg | 220,000   | <b>198</b>     | <b>262</b>    | <b>48</b>       | <b>446</b>     | <b>176</b>     | N/A           |
| Beryllium     | mg/kg | 2,300     | <b>0.45 J</b>  | <b>3.2</b>    | 0.84 U          | <b>2.1</b>     | <b>1.1</b>     | N/A           |
| Cadmium       | mg/kg | 980       | <b>8.6</b>     | <b>2.5</b>    | 1.7 B           | <b>3.5</b>     | <b>11.8</b>    | N/A           |
| Chromium      | mg/kg | 120,000   | <b>699</b>     | <b>230</b>    | <b>275</b>      | <b>644</b>     | <b>906</b>     | N/A           |
| Chromium VI   | mg/kg | 6.3       | 0.53 B         | 0.42 B        | 0.3 B           | 0.48 B         | 0.53 B         | N/A           |
| Cobalt        | mg/kg | 350       | <b>14</b>      | <b>3.7 J</b>  | <b>4.4</b>      | <b>19.1</b>    | <b>12.1</b>    | N/A           |
| Copper        | mg/kg | 47,000    | <b>145</b>     | <b>60</b>     | <b>60.6</b>     | <b>48.4</b>    | <b>188</b>     | N/A           |
| Iron          | mg/kg | 820,000   | <b>162,000</b> | <b>45,300</b> | <b>66,100</b>   | <b>82,200</b>  | <b>140,000</b> | N/A           |
| Lead          | mg/kg | 800       | <b>586</b>     | <b>199</b>    | <b>103</b>      | <b>180</b>     | <b>531</b>     | N/A           |
| Manganese     | mg/kg | 26,000    | <b>20,000</b>  | <b>9,000</b>  | <b>5,500</b>    | <b>32,900</b>  | <b>14,900</b>  | N/A           |
| Mercury       | mg/kg | 350       | <b>0.052 J</b> | 0.11 U        | <b>0.079 J+</b> | <b>0.041 J</b> | <b>0.06 J</b>  | N/A           |
| Nickel        | mg/kg | 22,000    | <b>55.1</b>    | <b>14.8</b>   | <b>28.7</b>     | <b>121</b>     | <b>74.5</b>    | N/A           |
| Selenium      | mg/kg | 5,800     | 3.6 U          | 3.6 U         | 3.4 U           | 3.7 U          | 4.1 U          | N/A           |
| Silver        | mg/kg | 5,800     | 2.7 U          | 2.7 U         | 2.5 U           | <b>1.6 J</b>   | <b>3.1</b>     | N/A           |
| Thallium      | mg/kg | 12        | 9.1 U          | 9.1 U         | 8.4 U           | <b>24</b>      | 10.2 U         | N/A           |
| Vanadium      | mg/kg | 5,800     | <b>1,430</b>   | <b>710</b>    | <b>590</b>      | <b>2,120</b>   | <b>335</b>     | N/A           |
| Zinc          | mg/kg | 350,000   | <b>4,640</b>   | <b>1,240</b>  | <b>962</b>      | <b>453</b>     | <b>956</b>     | N/A           |
| <b>Other</b>  |       |           |                |               |                 |                |                |               |
| Cyanide       | mg/kg | 150       | <b>2.9</b>     | <b>8.6</b>    | <b>3.3</b>      | <b>2.5</b>     | <b>1.1</b>     | N/A           |

**Detections in bold**

**Values in red indicate and exceedance of the Project Action Limit (PAL)**

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-014-SB-1   | B15-014-SB-8   | B15-014-SB-10 | B15-015-SB-1   | B15-015-SB-4   | B15-016-SB-1   | B15-016-SB-5   |
|---------------|-------|-----------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|
| <b>Metals</b> |       |           |                |                |               |                |                |                |                |
| Aluminum      | mg/kg | 1,100,000 | <b>16,400</b>  | <b>9,390</b>   | N/A           | <b>18,700</b>  | <b>8,510</b>   | <b>20,000</b>  | <b>10,900</b>  |
| Antimony      | mg/kg | 470       | 2.7 UJ         | 2.8 UJ         | N/A           | 3.2 UJ         | 2.5 UJ         | 2.7 UJ         | 2.6 UJ         |
| Arsenic       | mg/kg | 3         | <b>3.7</b>     | <b>8</b>       | <b>7</b>      | <b>10.7</b>    | <b>11.4</b>    | <b>11.2</b>    | <b>8.7</b>     |
| Barium        | mg/kg | 220,000   | <b>144</b>     | <b>121</b>     | N/A           | <b>596</b>     | <b>147</b>     | <b>372</b>     | <b>238</b>     |
| Beryllium     | mg/kg | 2,300     | <b>0.69 J</b>  | <b>0.65 J</b>  | N/A           | <b>1.5</b>     | <b>0.62 J</b>  | <b>1.8</b>     | <b>0.44 J</b>  |
| Cadmium       | mg/kg | 980       | 1.8 B          | <b>6.1</b>     | N/A           | <b>49.4</b>    | <b>15.7</b>    | <b>12.7</b>    | <b>14.7</b>    |
| Chromium      | mg/kg | 120,000   | <b>919</b>     | <b>1,100</b>   | N/A           | <b>2,310</b>   | <b>1,610</b>   | <b>946</b>     | <b>1,950</b>   |
| Chromium VI   | mg/kg | 6.3       | 0.3 B          | 0.37 B         | N/A           | 0.44 B         | 0.6 B          | 0.35 B         | 0.47 B         |
| Cobalt        | mg/kg | 350       | <b>4.3 J</b>   | <b>7.5</b>     | N/A           | <b>9.2</b>     | <b>8.1</b>     | <b>11.4</b>    | <b>7</b>       |
| Copper        | mg/kg | 47,000    | <b>46.1 J</b>  | <b>167 J</b>   | N/A           | <b>175 J</b>   | <b>124 J</b>   | <b>137 J</b>   | <b>150 J</b>   |
| Iron          | mg/kg | 820,000   | <b>150,000</b> | <b>111,000</b> | N/A           | <b>152,000</b> | <b>101,000</b> | <b>125,000</b> | <b>129,000</b> |
| Lead          | mg/kg | 800       | <b>58.5</b>    | <b>573</b>     | N/A           | <b>1,950</b>   | <b>516</b>     | <b>679</b>     | <b>704</b>     |
| Manganese     | mg/kg | 26,000    | <b>22,200</b>  | <b>20,800</b>  | N/A           | <b>46,500</b>  | <b>33,200</b>  | <b>20,700</b>  | <b>38,800</b>  |
| Mercury       | mg/kg | 350       | 0.056 B        | 0.036 B        | N/A           | 0.08 B         | 0.056 B        | 0.094 B        | 0.058 B        |
| Nickel        | mg/kg | 22,000    | <b>22.7 J</b>  | <b>39.4 J</b>  | N/A           | <b>71.4 J</b>  | <b>58.3 J</b>  | <b>72.4 J</b>  | <b>54 J</b>    |
| Selenium      | mg/kg | 5,800     | 3.6 U          | 3.7 U          | N/A           | 4.2 U          | 3.4 U          | 3.6 U          | 3.5 U          |
| Silver        | mg/kg | 5,800     | <b>2.2 J</b>   | <b>3.6 J</b>   | N/A           | <b>7.5 J</b>   | <b>5.7 J</b>   | <b>3.7 J</b>   | <b>6.1 J</b>   |
| Thallium      | mg/kg | 12        | <b>10.6</b>    | <b>4.2 J</b>   | N/A           | <b>8.4 J</b>   | <b>6 J</b>     | <b>9.5 J</b>   | <b>17.4</b>    |
| Vanadium      | mg/kg | 5,800     | <b>725</b>     | <b>382</b>     | N/A           | <b>798</b>     | <b>565</b>     | <b>794</b>     | <b>1,380</b>   |
| Zinc          | mg/kg | 350,000   | <b>501 J</b>   | <b>1,030 J</b> | N/A           | <b>3,500 J</b> | <b>1,270 J</b> | <b>1,420 J</b> | <b>1,390 J</b> |
| <b>Other</b>  |       |           |                |                |               |                |                |                |                |
| Cyanide       | mg/kg | 150       | <b>1.1 J-</b>  | <b>2.7 J-</b>  | N/A           | <b>2.6 J-</b>  | <b>0.78 J-</b> | <b>1.7 J-</b>  | <b>1.8 J-</b>  |

**Detections in bold**

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-016-SB-10 | B15-017-SB-1   | B15-017-SB-8   | B15-018-SB-1*  | B15-018-SB-4*  | B15-019-SB-1*  |
|---------------|-------|-----------|---------------|----------------|----------------|----------------|----------------|----------------|
| <b>Metals</b> |       |           |               |                |                |                |                |                |
| Aluminum      | mg/kg | 1,100,000 | N/A           | <b>25,000</b>  | <b>10,500</b>  | <b>10,800</b>  | <b>7,390</b>   | <b>12,100</b>  |
| Antimony      | mg/kg | 470       | N/A           | 2.7 UJ         | 2.7 UJ         | 2.8 U          | 2.7 U          | 2.6 U          |
| Arsenic       | mg/kg | 3         | <b>17.8</b>   | <b>6</b>       | <b>11.4</b>    | <b>54.1</b>    | <b>33.8</b>    | 2.2 U          |
| Barium        | mg/kg | 220,000   | N/A           | <b>613</b>     | <b>405</b>     | <b>175</b>     | <b>87.9</b>    | <b>115</b>     |
| Beryllium     | mg/kg | 2,300     | N/A           | <b>3</b>       | <b>0.98</b>    | <b>0.86 J</b>  | <b>0.39 J</b>  | 0.87 U         |
| Cadmium       | mg/kg | 980       | N/A           | <b>5.8</b>     | <b>5.7</b>     | <b>17.2</b>    | <b>12.8</b>    | 0.95 B         |
| Chromium      | mg/kg | 120,000   | N/A           | <b>421</b>     | <b>1,520</b>   | <b>353</b>     | <b>206</b>     | <b>1,670</b>   |
| Chromium VI   | mg/kg | 6.3       | N/A           | 0.36 B         | 0.26 B         | 0.48 B         | 0.37 B         | 0.58 B         |
| Cobalt        | mg/kg | 350       | N/A           | <b>6.2</b>     | <b>10.7</b>    | <b>199</b>     | <b>39</b>      | <b>3 J</b>     |
| Copper        | mg/kg | 47,000    | N/A           | <b>138 J</b>   | <b>166 J</b>   | <b>610</b>     | <b>362</b>     | <b>43.7</b>    |
| Iron          | mg/kg | 820,000   | N/A           | <b>125,000</b> | <b>172,000</b> | <b>111,000</b> | <b>245,000</b> | <b>152,000</b> |
| Lead          | mg/kg | 800       | N/A           | <b>119</b>     | <b>1,560</b>   | <b>657</b>     | <b>975</b>     | <b>22.6</b>    |
| Manganese     | mg/kg | 26,000    | <b>39,900</b> | <b>14,600</b>  | <b>24,900</b>  | <b>11,200</b>  | <b>4,040</b>   | <b>72,700</b>  |
| Mercury       | mg/kg | 350       | N/A           | 0.019 B        | 0.029 B        | <b>0.29</b>    | <b>0.21</b>    | 0.022 B        |
| Nickel        | mg/kg | 22,000    | N/A           | <b>39 J</b>    | <b>67.1 J</b>  | <b>57.9</b>    | <b>178</b>     | <b>22.2</b>    |
| Selenium      | mg/kg | 5,800     | N/A           | 3.6 U          | 3.6 U          | 3.7 U          | 3.6 U          | 3.5 U          |
| Silver        | mg/kg | 5,800     | N/A           | <b>1.7 J</b>   | <b>4.5 J</b>   | <b>4.6</b>     | <b>5.3</b>     | <b>5.4</b>     |
| Thallium      | mg/kg | 12        | <b>12.1</b>   | 8.9 U          | <b>5.2 J</b>   | <b>9.8</b>     | 9 U            | <b>37</b>      |
| Vanadium      | mg/kg | 5,800     | N/A           | <b>302</b>     | <b>461</b>     | <b>834</b>     | <b>260</b>     | <b>2,410</b>   |
| Zinc          | mg/kg | 350,000   | N/A           | <b>747 J</b>   | <b>1,050 J</b> | <b>6,310</b>   | <b>11,500</b>  | <b>165</b>     |
| <b>Other</b>  |       |           |               |                |                |                |                |                |
| Cyanide       | mg/kg | 150       | N/A           | 0.5 B          | <b>2.8 J+</b>  | <b>1.1</b>     | <b>1.2</b>     | <b>1.4</b>     |

**Detections in bold**

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**Table 7**  
**Summary of Inorganics Detected in Soil**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter     | Units | PAL       | B15-020-SB-1   | B15-020-SB-7   | B15-020-SB-10 | B15-021-SB-1   | B15-021-SB-4  | B15-021-SB-10 |
|---------------|-------|-----------|----------------|----------------|---------------|----------------|---------------|---------------|
| <b>Metals</b> |       |           |                |                |               |                |               |               |
| Aluminum      | mg/kg | 1,100,000 | <b>5,240</b>   | <b>12,200</b>  | N/A           | <b>7,430</b>   | <b>16,000</b> | N/A           |
| Antimony      | mg/kg | 470       | 2.6 UJ         | 2.8 UJ         | N/A           | 2.6 UJ         | 2.8 UJ        | N/A           |
| Arsenic       | mg/kg | 3         | <b>6.7</b>     | <b>10.5</b>    | <b>5.9</b>    | <b>6.6</b>     | <b>5.6</b>    | <b>13.6</b>   |
| Barium        | mg/kg | 220,000   | <b>98.5</b>    | <b>226</b>     | N/A           | <b>91.4</b>    | <b>199</b>    | N/A           |
| Beryllium     | mg/kg | 2,300     | 0.87 U         | <b>0.76 J</b>  | N/A           | <b>0.51 J</b>  | <b>1.3</b>    | N/A           |
| Cadmium       | mg/kg | 980       | 1.3 B          | <b>10.4</b>    | N/A           | <b>2.1</b>     | 1.7 B         | N/A           |
| Chromium      | mg/kg | 120,000   | <b>859</b>     | <b>503</b>     | N/A           | <b>408</b>     | <b>471</b>    | N/A           |
| Chromium VI   | mg/kg | 6.3       | 1.1 B          | 0.31 B         | N/A           | 0.3 B          | 0.84 B        | N/A           |
| Cobalt        | mg/kg | 350       | <b>11.4</b>    | <b>10.4</b>    | N/A           | <b>6.6</b>     | <b>5.4</b>    | N/A           |
| Copper        | mg/kg | 47,000    | <b>112 J</b>   | <b>161 J</b>   | N/A           | <b>53.9 J</b>  | <b>43.6 J</b> | N/A           |
| Iron          | mg/kg | 820,000   | <b>240,000</b> | <b>114,000</b> | N/A           | <b>57,900</b>  | <b>68,700</b> | N/A           |
| Lead          | mg/kg | 800       | <b>141</b>     | <b>1,330</b>   | <b>153</b>    | <b>142</b>     | <b>86</b>     | N/A           |
| Manganese     | mg/kg | 26,000    | <b>12,300</b>  | <b>10,600</b>  | N/A           | <b>5,820</b>   | <b>8,920</b>  | N/A           |
| Mercury       | mg/kg | 350       | 0.029 B        | 0.092 B        | N/A           | 0.016 B        | 0.012 B       | N/A           |
| Nickel        | mg/kg | 22,000    | <b>85.2 J</b>  | <b>40.3 J</b>  | N/A           | <b>52.5 J</b>  | <b>37.1 J</b> | N/A           |
| Selenium      | mg/kg | 5,800     | 3.5 U          | 3.7 U          | N/A           | 3.5 U          | 3.7 U         | N/A           |
| Silver        | mg/kg | 5,800     | <b>3 J</b>     | <b>4.3 J</b>   | N/A           | 2.6 U          | 2.8 U         | N/A           |
| Thallium      | mg/kg | 12        | <b>21.3</b>    | 9.3 U          | N/A           | <b>9.2</b>     | <b>12.6</b>   | <b>12</b>     |
| Vanadium      | mg/kg | 5,800     | <b>1,680</b>   | <b>269</b>     | N/A           | <b>617</b>     | <b>985</b>    | N/A           |
| Zinc          | mg/kg | 350,000   | <b>679 J</b>   | <b>2,400 J</b> | N/A           | <b>1,430 J</b> | <b>811 J</b>  | N/A           |
| <b>Other</b>  |       |           |                |                |               |                |               |               |
| Cyanide       | mg/kg | 150       | <b>2.1 J-</b>  | <b>3 J-</b>    | N/A           | <b>3 J-</b>    | <b>2.7 J-</b> | N/A           |

**Detections in bold**                      **Values in red indicate and exceedance of the Project Action Limit (PAL)**

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**TABLE 8  
SUMMARY OF SOIL PAL EXCEEDANCES**

| <u>Parameter</u>        | <u>CAS#</u> | <u>Frequency of<br/>Detections (%)</u> | <u>Sample ID of<br/>Max Result</u> | <u>Units</u> | <u>PAL Solid</u> | <u>Max Result</u> |
|-------------------------|-------------|--|------------------------------------|--------------|------------------|-------------------|
| Arsenic                 | 7440-38-2   | 94                                     | B15-008-SB-9                       | mg/kg        | 3                | 58.1              |
| Benz[a]anthracene       | 56-55-3     | 100                                    | B15-008-SB-9                       | mg/kg        | 21               | 136               |
| Benzo[a]pyrene          | 50-32-8     | 100                                    | B15-008-SB-9                       | mg/kg        | 2.1              | 102               |
| Benzo[b]fluoranthene    | 205-99-2    | 100                                    | B15-008-SB-9                       | mg/kg        | 21               | 153               |
| Dibenz[a,h]anthracene   | 53-70-3     | 91                                     | B15-008-SB-9                       | mg/kg        | 2.1              | 27.8              |
| Diesel Range Organics   | DRO         | 100                                    | B15-008-SB-9                       | mg/kg        | 6,200            | 13,500            |
| Indeno[1,2,3-c,d]pyrene | 193-39-5    | 98                                     | B15-008-SB-9                       | mg/kg        | 21               | 65.1              |
| Lead                    | 7439-92-1   | 100                                    | B15-008-SB-9                       | mg/kg        | 800              | 5,910             |
| Manganese               | 7439-96-5   | 100                                    | B15-019-SB-1                       | mg/kg        | 26,000           | 72,700            |
| Naphthalene             | 91-20-3     | 88                                     | B15-015-SB-1                       | mg/kg        | 17               | 71.7              |
| Oil & Grease            | O&G         | 98                                     | B15-008-SB-9                       | mg/kg        | 6,200            | 24,900            |
| PCBs (total)            | 1336-36-3   | 33                                     | B15-007-SB-1                       | mg/kg        | 0.97             | 1.267             |
| Thallium                | 7440-28-0   | 43                                     | B15-007-SB-1                       | mg/kg        | 12               | 159               |
| Vanadium                | 7440-62-2   | 100                                    | B15-007-SB-1                       | mg/kg        | 5,800            | 10,500            |



**TABLE 9  
SOIL EXCEEDANCES FOR SPECIFIC TARGETS**

| <u>Target Feature</u> | <u>Boring ID</u> | <u>Sample Depth (ft)</u> | <u>Parameter</u> | <u>PAL</u> | <u>Result (mg/kg)</u> | <u>Flag</u> |
|-----------------------|------------------|--------------------------|------------------|------------|-----------------------|-------------|
| Brick Sheds           | B15-001-SB       | 1                        | Manganese        | 26,000     | 39,400                |             |
|                       |                  | 9                        | Arsenic          | 3          | 15.9                  |             |
|                       |                  | 9                        | Benzo[a]pyrene   | 2.1        | 3.7                   |             |
|                       |                  | 10                       | Arsenic          | 3          | 8.2                   |             |
|                       |                  | 10                       | Benzo[a]pyrene   | 2.1        | 3                     |             |
|                       | B15-002-SB       | 1                        | Arsenic          | 3          | 3                     |             |
|                       |                  | 1                        | Manganese        | 26,000     | 57,200                |             |
|                       |                  | 1                        | Thallium         | 12         | 51.8                  |             |
|                       |                  | 8                        | Arsenic          | 3          | 8                     |             |
|                       | B15-003-SB       | 1                        | Arsenic          | 3          | 5.1                   |             |
|                       |                  | 1                        | Manganese        | 26,000     | 32,000                |             |
|                       |                  | 4                        | Arsenic          | 3          | 10.8                  |             |
|                       |                  | 4                        | Benzo[a]pyrene   | 2.1        | 3.7                   |             |
|                       |                  | 10                       | Arsenic          | 3          | 17.5                  |             |
|                       |                  | 10                       | Benzo[a]pyrene   | 2.1        | 5.2                   | J           |
|                       | B15-004-SB       | 1                        | Arsenic          | 3          | 10.5                  |             |
|                       |                  | 1                        | Lead             | 800        | 1,890                 |             |
|                       |                  | 5                        | Arsenic          | 3          | 14.1                  |             |
|                       |                  | 5                        | Benzo[a]pyrene   | 2.1        | 2.4                   |             |
|                       |                  | 5                        | Lead             | 800        | 1,130                 |             |
|                       |                  | 5                        | Manganese        | 26,000     | 27,900                |             |
|                       |                  | 10                       | Arsenic          | 3          | 3.4                   |             |
|                       |                  | 10                       | Benzo[a]pyrene   | 2.1        | 2.2                   | J           |
|                       |                  | 10                       | Manganese        | 26,000     | 26,000                |             |
|                       | B15-005-SB       | 4                        | Manganese        | 26,000     | 50,400                |             |
| 10                    |                  | Manganese                | 26,000           | 36,200     |                       |             |

**TABLE 9  
SOIL EXCEEDANCES FOR SPECIFIC TARGETS**

| <u>Target Feature</u>                | <u>Boring ID</u> | <u>Sample Depth (ft)</u> | <u>Parameter</u>        | <u>PAL</u> | <u>Result (mg/kg)</u> | <u>Flag</u> |
|--------------------------------------|------------------|--------------------------|-------------------------|------------|-----------------------|-------------|
| Scrap Yard /<br>Open Storage<br>Area | B15-006-SB       | 1                        | Arsenic                 | 3          | 8.3                   |             |
|                                      |                  | 4                        | Arsenic                 | 3          | 8.9                   |             |
|                                      |                  | 4                        | Benz[a]anthracene       | 21         | 112                   |             |
|                                      |                  | 4                        | Benzo[a]pyrene          | 2.1        | 67.9                  |             |
|                                      |                  | 4                        | Benzo[b]fluoranthene    | 21         | 124                   |             |
|                                      |                  | 4                        | Dibenz[a,h]anthracene   | 2.1        | 7.4                   |             |
|                                      |                  | 4                        | Indeno[1,2,3-c,d]pyrene | 21         | 30.5                  |             |
|                                      |                  | 4                        | Oil & Grease            | 6,200      | 7,010                 |             |
|                                      | B15-007-SB       | 1                        | Arsenic                 | 3          | 8.8                   |             |
|                                      |                  | 1                        | Manganese               | 26,000     | 35,000                |             |
|                                      |                  | 1                        | PCBs (total)            | 0.97       | 1.267                 |             |
|                                      |                  | 1                        | Thallium                | 12         | 159                   |             |
|                                      |                  | 1                        | Vanadium                | 5,800      | 10,500                |             |
|                                      |                  | 4                        | Arsenic                 | 3          | 8.5                   |             |
|                                      |                  | 4                        | Benz[a]anthracene       | 21         | 25.3                  |             |
|                                      |                  | 4                        | Benzo[a]pyrene          | 2.1        | 17.6                  |             |
|                                      |                  | 4                        | Benzo[b]fluoranthene    | 21         | 40.7                  |             |
|                                      |                  | 4                        | Dibenz[a,h]anthracene   | 2.1        | 3.2                   |             |
|                                      | B15-008-SB       | 1                        | Arsenic                 | 3          | 20.1                  |             |
|                                      |                  | 1                        | Benzo[a]pyrene          | 2.1        | 2.3                   |             |
|                                      |                  | 1                        | PCBs (total)            | 0.97       | 1.102                 |             |
|                                      |                  | 9                        | Arsenic                 | 3          | 58.1                  |             |
|                                      |                  | 9                        | Benz[a]anthracene       | 21         | 136                   |             |
|                                      |                  | 9                        | Benzo[a]pyrene          | 2.1        | 102                   |             |
|                                      |                  | 9                        | Benzo[b]fluoranthene    | 21         | 153                   |             |
|                                      |                  | 9                        | Dibenz[a,h]anthracene   | 2.1        | 27.8                  |             |
|                                      |                  | 9                        | Diesel Range Organics   | 6,200      | 13,500                |             |
|                                      |                  | 9                        | Indeno[1,2,3-c,d]pyrene | 21         | 65.1                  |             |
|                                      |                  | 9                        | Lead                    | 800        | 5,910                 |             |
|                                      |                  | 9                        | Naphthalene             | 17         | 70.1                  |             |
|                                      | 9                | Oil & Grease             | 6,200                   | 24,900     |                       |             |
|                                      | B15-009-SB       | 1                        | Arsenic                 | 3          | 16                    |             |

**TABLE 9  
SOIL EXCEEDANCES FOR SPECIFIC TARGETS**

| <u>Target Feature</u> | <u>Boring ID</u> | <u>Sample Depth (ft)</u> | <u>Parameter</u>      | <u>PAL</u> | <u>Result (mg/kg)</u> | <u>Flag</u> |
|-----------------------|------------------|--------------------------|-----------------------|------------|-----------------------|-------------|
| Brick Sheds           | B15-014-SB       | 1                        | Arsenic               | 3          | 3.7                   |             |
|                       |                  | 8                        | Arsenic               | 3          | 8                     |             |
|                       |                  | 10                       | Arsenic               | 3          | 7                     |             |
|                       | B15-015-SB       | 1                        | Arsenic               | 3          | 10.7                  |             |
|                       |                  | 1                        | Benz[a]anthracene     | 21         | 53.5                  |             |
|                       |                  | 1                        | Benzo[a]pyrene        | 2.1        | 26.9                  |             |
|                       |                  | 1                        | Benzo[b]fluoranthene  | 21         | 63.4                  |             |
|                       |                  | 1                        | Dibenz[a,h]anthracene | 2.1        | 6.8                   |             |
|                       |                  | 1                        | Lead                  | 800        | 1,950                 |             |
|                       |                  | 1                        | Manganese             | 26,000     | 46,500                |             |
|                       |                  | 1                        | Naphthalene           | 17         | 71.7                  |             |
|                       |                  | 4                        | Arsenic               | 3          | 11.4                  |             |
|                       |                  | 4                        | Manganese             | 26,000     | 33,200                |             |
|                       | B15-016-SB       | 1                        | Arsenic               | 3          | 11.2                  |             |
|                       |                  | 1                        | Benzo[a]pyrene        | 2.1        | 2.9                   |             |
|                       |                  | 5                        | Arsenic               | 3          | 8.7                   |             |
|                       |                  | 5                        | Benzo[a]pyrene        | 2.1        | 3.4                   |             |
|                       |                  | 5                        | Manganese             | 26,000     | 38,800                |             |
|                       |                  | 5                        | Thallium              | 12         | 17.4                  |             |
|                       |                  | 10                       | Arsenic               | 3          | 17.8                  |             |
|                       |                  | 10                       | Manganese             | 26,000     | 39,900                |             |
|                       | B15-017-SB       | 10                       | Thallium              | 12         | 12.1                  |             |
|                       |                  | 1                        | Arsenic               | 3          | 6                     |             |
|                       |                  | 1                        | Oil & Grease          | 6,200      | 6,310                 |             |
|                       |                  | 8                        | Arsenic               | 3          | 11.4                  |             |
|                       |                  | 8                        | Benzo[a]pyrene        | 2.1        | 5.9                   | J           |
|                       | B15-018-SB       | 8                        | Lead                  | 800        | 1,560                 |             |
|                       |                  | 1                        | Arsenic               | 3          | 54.1                  |             |
|                       |                  | 4                        | Arsenic               | 3          | 33.8                  |             |
|                       | B15-019-SB       | 4                        | Lead                  | 800        | 975                   |             |
|                       |                  | 1                        | Manganese             | 26,000     | 72,700                |             |
|                       | B15-020-SB       | 1                        | Thallium              | 12         | 37                    |             |
|                       |                  | 1                        | Arsenic               | 3          | 6.7                   |             |
| 1                     |                  | Thallium                 | 12                    | 21.3       |                       |             |
| 7                     |                  | Arsenic                  | 3                     | 10.5       |                       |             |
| 7                     |                  | Benzo[a]pyrene           | 2.1                   | 3.1        |                       |             |
| 7                     |                  | Lead                     | 800                   | 1,330      |                       |             |
| B15-021-SB            | 10               | Arsenic                  | 3                     | 5.9        |                       |             |
|                       | 1                | Arsenic                  | 3                     | 6.6        |                       |             |
|                       | 4                | Arsenic                  | 3                     | 5.6        |                       |             |
|                       | 4                | Oil & Grease             | 6,200                 | 10,300     |                       |             |
|                       | 4                | Thallium                 | 12                    | 12.6       |                       |             |
|                       |                  | 10                       | Arsenic               | 3          | 7                     |             |

J: The positive result is a quantitative estimate

**Table 10**  
**Summary of Organics Detected in Groundwater**  
**Parcel B15**  
**Tradeport Atlantic**  
**Sparrows Point, Maryland**

| Parameter                               | Units | PAL    | B15-012-PZ      | B15-014-PZ      | B15-018-PZ     | SW-021-MWS     | SW-079-MWS*    | TM03-PZM004    | TM05-PZM005    | TM07-PZM005     |
|---|-------|--------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| <b>Volatile Organic Compounds</b>       |       |        |                 |                 |                |                |                |                |                |                 |
| 1,1-Dichloroethane                      | µg/L  | 2.7    | <b>0.61 J</b>   | <b>0.36 J</b>   | 1 U            | 1 U            | 1 U            | 1 U            | 1 U            | <b>0.65 J</b>   |
| Acetone                                 | µg/L  | 14,000 | 10 U            | 10 U            | 10 U           | 10 U           | <b>3 J</b>     | 10 R           | 10 R           | 10 U            |
| Benzene                                 | µg/L  | 5      | <b>0.66 J</b>   | <b>0.84 J</b>   | 1 U            | 1 U            | <b>0.25 J</b>  | <b>1.1</b>     | 1 U            | 1 U             |
| Chloroform                              | µg/L  | 0.22   | 1 U             | 1 U             | 1 U            | <b>4.7</b>     | 1 U            | 1 U            | <b>1.8</b>     | 1 U             |
| Tetrachloroethene                       | µg/L  | 5      | 1 U             | <b>6.3</b>      | 1 U            | 1 U            | 1 U            | 1 UJ           | 1 UJ           | 1 U             |
| Toluene                                 | µg/L  | 1,000  | <b>0.21 J</b>   | <b>0.6 J</b>    | 1 U            | 1 U            | <b>0.21 J</b>  | <b>0.7 J</b>   | <b>0.36 J</b>  | 1 U             |
| Trichloroethene                         | µg/L  | 5      | 1 U             | 1 U             | <b>0.47 J</b>  | 1 U            | 1 U            | 1 U            | 1 U            | 1 U             |
| Xylenes                                 | µg/L  | 10,000 | 3 U             | <b>0.81 J</b>   | 3 U            | 3 U            | 3 U            | 3 U            | 3 U            | 3 U             |
| <b>Semi-Volatile Organic Compounds^</b> |       |        |                 |                 |                |                |                |                |                |                 |
| 1,1-Biphenyl                            | µg/L  | 0.83   | 1 UJ            | <b>0.33 J</b>   | 1 U            | 1 U            | 1 U            | <b>2.2 J</b>   | <b>0.7 J</b>   | 1 U             |
| 1,4-Dioxane                             | µg/L  | 0.46   | <b>0.07 J</b>   | 0.1 U           | 0.1 U          | 0.1 U          | <b>0.094 J</b> | <b>0.044 J</b> | 0.1 U          | <b>0.085 J</b>  |
| 2,4-Dimethylphenol                      | µg/L  | 360    | 1 U             | 1 U             | 1 U            | 1 U            | 1 U            | <b>0.26 J</b>  | <b>0.36 J</b>  | 1 U             |
| 2-Methylnaphthalene                     | µg/L  | 36     | <b>0.49</b>     | <b>2.6</b>      | 0.1 U          | 0.1 U          | <b>0.26</b>    | <b>11.7</b>    | <b>4.1</b>     | <b>0.022 J</b>  |
| 2-Methylphenol                          | µg/L  | 930    | 1 U             | 1 U             | 1 U            | 1 U            | 1 U            | <b>0.19 J</b>  | 1 U            | 1 U             |
| 3&4-Methylphenol(m&p Cresol)            | µg/L  | 930    | 2.1 U           | 2 U             | 2 U            | 2 U            | 2 U            | <b>0.65 J</b>  | <b>0.96 J</b>  | 2.1 U           |
| Acenaphthene                            | µg/L  | 530    | <b>0.7</b>      | <b>2.8</b>      | <b>0.023 J</b> | 0.1 U          | <b>0.7</b>     | <b>2.6</b>     | <b>4.1</b>     | <b>0.028 J</b>  |
| Acenaphthylene                          | µg/L  | 530    | <b>0.16</b>     | <b>0.56</b>     | <b>0.017 J</b> | 0.1 U          | <b>0.11</b>    | <b>5.3</b>     | <b>0.56</b>    | <b>0.022 J</b>  |
| Anthracene                              | µg/L  | 1,800  | <b>0.088 J</b>  | <b>0.67</b>     | <b>0.036 J</b> | <b>0.038 J</b> | <b>0.22</b>    | <b>2.3</b>     | <b>2.8</b>     | <b>0.021 J</b>  |
| Benz[a]anthracene                       | µg/L  | 0.03   | <b>0.028 J</b>  | <b>0.069 J</b>  | <b>0.07 J</b>  | 0.1 U          | <b>0.037 J</b> | <b>0.33</b>    | <b>0.41</b>    | 0.1 U           |
| Benzo[a]pyrene                          | µg/L  | 0.2    | <b>0.0081 J</b> | <b>0.0083 J</b> | <b>0.045 J</b> | 0.1 U          | 0.1 U          | <b>0.035 J</b> | <b>0.11</b>    | 0.1 U           |
| Benzo[b]fluoranthene                    | µg/L  | 0.25   | <b>0.02 J</b>   | <b>0.017 J</b>  | <b>0.063 J</b> | 0.1 U          | 0.1 U          | <b>0.089 J</b> | <b>0.24</b>    | 0.1 U           |
| Benzo[g,h,i]perylene                    | µg/L  |        | 0.1 U           | 0.1 U           | <b>0.033 J</b> | 0.1 U          | 0.1 U          | 0.1 UJ         | <b>0.04 J</b>  | 0.1 U           |
| Benzo[k]fluoranthene                    | µg/L  | 2.5    | <b>0.019 J</b>  | 0.1 U           | <b>0.027 J</b> | 0.1 U          | <b>0.013 J</b> | <b>0.036 J</b> | <b>0.22</b>    | 0.1 U           |
| bis(2-chloroethoxy)methane              | µg/L  | 59     | 1 U             | <b>0.47 J</b>   | 1 U            | 1 U            | 1 U            | 1 U            | 1 U            | 1 U             |
| bis(2-Ethylhexyl)phthalate              | µg/L  | 6      | <b>1.7</b>      | <b>0.43 J</b>   | <b>4.7</b>     | 1 U            | 1 U            | 0.14 B         | 1 U            | 1 U             |
| Carbazole                               | µg/L  |        | <b>1.5</b>      | <b>5.6</b>      | 1 U            | 1 U            | <b>0.98 J</b>  | <b>15.9</b>    | <b>10.7</b>    | 1 U             |
| Chrysene                                | µg/L  | 25     | <b>0.014 J</b>  | <b>0.07 J</b>   | <b>0.057 J</b> | <b>0.012 J</b> | <b>0.027 J</b> | <b>0.23</b>    | <b>0.31</b>    | 0.1 U           |
| Fluoranthene                            | µg/L  | 800    | <b>0.21 J</b>   | <b>1.8</b>      | <b>0.17</b>    | <b>0.018 J</b> | <b>0.38</b>    | <b>4.9</b>     | <b>3.6</b>     | <b>0.046 J</b>  |
| Fluorene                                | µg/L  | 290    | <b>0.8</b>      | <b>2.2</b>      | 0.1 U          | 0.1 U          | <b>0.53</b>    | <b>8.9 J</b>   | <b>5.2</b>     | <b>0.036 J</b>  |
| Indeno[1,2,3-c,d]pyrene                 | µg/L  | 0.25   | 0.1 U           | 0.1 U           | 0.1 U          | 0.1 U          | 0.1 U          | 0.1 UJ         | <b>0.037 J</b> | 0.1 U           |
| Naphthalene                             | µg/L  | 0.17   | <b>3.3 J</b>    | <b>37.8</b>     | 0.051 B        | 0.092 B        | <b>12</b>      | <b>110</b>     | <b>16.7</b>    | <b>0.14</b>     |
| Pentachlorophenol                       | µg/L  | 1      | 2.6 UJ          | 2.6 UJ          | 2.6 UJ         | 2.5 U          | 2.6 U          | 2.5 U          | 2.5 U          | <b>0.9 J</b>    |
| Phenanthrene                            | µg/L  |        | <b>1.2</b>      | <b>6.4</b>      | <b>0.069 J</b> | <b>0.036 J</b> | <b>0.96</b>    | <b>18.3</b>    | <b>11.1</b>    | <b>0.07 J</b>   |
| Phenol                                  | µg/L  | 5,800  | 1 U             | 1 U             | 1 U            | 1 U            | 1 U            | <b>0.27 J</b>  | <b>0.31 J</b>  | 1 U             |
| Pyrene                                  | µg/L  | 120    | <b>0.13 J</b>   | <b>1.2</b>      | <b>0.13</b>    | <b>0.014 J</b> | <b>0.24</b>    | <b>3.6</b>     | <b>2.3</b>     | <b>0.03 J</b>   |
| <b>PCBs</b>                             |       |        |                 |                 |                |                |                |                |                |                 |
| PCBs (total)                            | µg/L  | 0.5    | N/A             | N/A             | N/A            | 0.025 UJ       | N/A            | N/A            | N/A            | <b>0.008167</b> |
| Trichlorobiphenyl                       | µg/L  | 0.044  | N/A             | N/A             | N/A            | 0.005 UJ       | N/A            | N/A            | N/A            | <b>0.008167</b> |
| <b>TPH/Oil and Grease</b>               |       |        |                 |                 |                |                |                |                |                |                 |
| Diesel Range Organics                   | µg/L  | 47     | <b>214 J</b>    | <b>114 J</b>    | 103 UJ         | 101 UJ         | <b>408</b>     | <b>583 J</b>   | <b>262 J</b>   | <b>237 J</b>    |
| Oil and Grease                          | µg/L  | 47     | 4,770 U         | <b>900 J</b>    | <b>3,500 J</b> | N/A            | N/A            | N/A            | N/A            | N/A             |

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 results

^ 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/preparation or field blank.

R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

**Table 11**  
**Summary of Inorganics Detected in Groundwater**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter                | Units | PAL    | B15-012-PZ   | B15-014-PZ    | B15-018-PZ    | SW-021-MWS    | SW-079-MWS*   | TM03-PZM004   | TM05-PZM005   | TM07-PZM005   |
|--------------------------|-------|--------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Metals, Total</b>     |       |        |              |               |               |               |               |               |               |               |
| Aluminum                 | µg/L  | 20,000 | N/A          | N/A           | N/A           | <b>576</b>    | <b>109</b>    | <b>297 J</b>  | <b>183</b>    | <b>146</b>    |
| Antimony                 | µg/L  | 6      | N/A          | N/A           | N/A           | <b>3.3 J</b>  | <b>3.3 J</b>  | 6 U           | 2.4 B         | 6 U           |
| Arsenic                  | µg/L  | 10     | N/A          | N/A           | N/A           | 5 U           | 5 U           | <b>4.5 J</b>  | <b>3.1 J</b>  | 5 U           |
| Barium                   | µg/L  | 2,000  | N/A          | N/A           | N/A           | <b>71.4</b>   | <b>64.2</b>   | <b>13.1</b>   | <b>12.5</b>   | <b>46.8</b>   |
| Beryllium                | µg/L  | 4      | N/A          | N/A           | N/A           | <b>0.47 J</b> | 1 U           | 1 U           | 1 U           | 1 U           |
| Chromium                 | µg/L  | 100    | N/A          | N/A           | N/A           | 2.5 B         | <b>1.5 J</b>  | <b>1 J</b>    | 1.5 B         | <b>4.2 J</b>  |
| Iron                     | µg/L  | 14,000 | N/A          | N/A           | N/A           | <b>74.8</b>   | <b>110</b>    | <b>44.2 J</b> | <b>114</b>    | <b>21.5 J</b> |
| Lead                     | µg/L  | 15     | N/A          | N/A           | N/A           | 5 U           | 5 U           | 5 U           | 7             | 5 U           |
| Manganese                | µg/L  | 430    | N/A          | N/A           | N/A           | <b>19</b>     | <b>56.2</b>   | <b>1.4 J</b>  | <b>10.1</b>   | 5 U           |
| Nickel                   | µg/L  | 390    | N/A          | N/A           | N/A           | 0.85 B        | <b>0.73 J</b> | 10 U          | <b>0.93 J</b> | 10 U          |
| Selenium                 | µg/L  | 50     | N/A          | N/A           | N/A           | 5.2 B         | 8 U           | <b>3.2 J</b>  | 8 U           | <b>4.2 J</b>  |
| Thallium                 | µg/L  | 2      | N/A          | N/A           | N/A           | 6 B           | 10 U          | 10 U          | 10 U          | <b>4 J</b>    |
| Vanadium                 | µg/L  | 86     | N/A          | N/A           | N/A           | <b>391</b>    | <b>217</b>    | <b>114</b>    | <b>1,560</b>  | <b>176</b>    |
| <b>Metals, Dissolved</b> |       |        |              |               |               |               |               |               |               |               |
| Aluminum, Dissolved      | µg/L  | 20,000 | <b>178</b>   | <b>267</b>    | <b>34.3 J</b> | <b>512</b>    | <b>88.8</b>   | <b>283</b>    | <b>150</b>    | <b>159</b>    |
| Antimony, Dissolved      | µg/L  | 6      | 6 U          | 6 U           | 6 U           | <b>2.8 J</b>  | <b>4.2 J</b>  | 6 U           | 3.2 B         | 6 U           |
| Arsenic, Dissolved       | µg/L  | 10     | <b>7.7</b>   | <b>5</b>      | <b>8.4</b>    | <b>5.4</b>    | <b>2.9 J</b>  | <b>5.3</b>    | <b>4 J</b>    | 5 U           |
| Barium, Dissolved        | µg/L  | 2,000  | <b>18.5</b>  | <b>26.2</b>   | <b>55.7</b>   | <b>62.3</b>   | <b>64.6</b>   | <b>12.5</b>   | <b>11.7</b>   | <b>46.8</b>   |
| Beryllium, Dissolved     | µg/L  | 4      | 1 U          | 1 U           | 1 U           | 1 U           | 1 U           | <b>0.41 J</b> | 1 U           | 1 U           |
| Cadmium, Dissolved       | µg/L  | 5      | 3 U          | 3 U           | <b>0.57 J</b> | 3 U           | 3 U           | 3 U           | 3 U           | 3 U           |
| Chromium, Dissolved      | µg/L  | 100    | 5 U          | <b>1.7 J</b>  | <b>6.7</b>    | 2.1 B         | <b>1.1 J</b>  | 0.95 B        | 1.3 B         | <b>4.4 J</b>  |
| Copper, Dissolved        | µg/L  | 1,300  | 5 U          | 5 U           | <b>1.8 J</b>  | <b>2.1 J</b>  | 5 U           | 5 U           | 5 U           | <b>1.5 J</b>  |
| Iron, Dissolved          | µg/L  | 14,000 | <b>78.8</b>  | <b>49.7 J</b> | <b>134</b>    | 20.4 B        | <b>49.5 J</b> | 33.3 B        | 28.8 B        | <b>19.5 J</b> |
| Manganese, Dissolved     | µg/L  | 430    | 5 U          | 5 U           | <b>117</b>    | <b>13.2</b>   | <b>51.9</b>   | 5 U           | <b>2.3 J</b>  | 5 U           |
| Selenium, Dissolved      | µg/L  | 50     | <b>3.4 J</b> | 8 U           | <b>5 J</b>    | 8 U           | 8 U           | 8 U           | 8 U           | 8 U           |
| Thallium, Dissolved      | µg/L  | 2      | 10 U         | 10 U          | 10 U          | 10 U          | <b>4.8 J</b>  | 10 U          | 6.8 B         | <b>5.5 J</b>  |
| Vanadium, Dissolved      | µg/L  | 86     | <b>13.4</b>  | <b>37.3</b>   | <b>44</b>     | <b>376</b>    | <b>228</b>    | <b>119</b>    | <b>1,560</b>  | <b>182</b>    |
| Zinc, Dissolved          | µg/L  | 6,000  | 10 U         | <b>0.87 J</b> | <b>34.5</b>   | 10 U          | 1.6 B         | 10 U          | 1.5 B         | 1.4 B         |
| <b>Other</b>             |       |        |              |               |               |               |               |               |               |               |
| Cyanide                  | µg/L  | 200    | <b>152</b>   | <b>23.4</b>   | <b>17.5</b>   | 10 U          | <b>31.4</b>   | <b>61.4</b>   | <b>52.2</b>   | <b>31.4</b>   |

**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 results

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.

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

**Table 12**  
**Cumulative Vapor Intrusion Criteria Comparison**

| Parameter                                    | Type  | Organ Systems | VI Screening Criteria (ug/L) | B15-012-PZ   |             | B15-014-PZ   |             | B15-018-PZ   |             | SW-021-MWS   |             |
|--|-------|---------------|------------------------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
|  |       |               |                              | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard |
| <b>Cancer Risk</b>                           |       |               |                              |              |             |              |             |              |             |              |             |
| 1,4-Dioxane                                  | SVOC  |               | 130,000                      | 0.07 J       | 5.4E-12     | 0.1 U        | 0           | 0.1 U        | 0           | 0.1 U        | 0           |
| Naphthalene                                  | SVOC  |               | 200                          | 3.3 J        | 1.7E-07     | 37.8         | 1.9E-06     | 0.051 B      | 0           | 0.092 B      | 0           |
| 1,1-Dichloroethane                           | VOC   |               | 330                          | 0.61 J       | 1.8E-08     | 0.36 J       | 1.1E-08     | 1 U          | 0           | 1 U          | 0           |
| Benzene                                      | VOC   |               | 69                           | 0.66 J       | 9.6E-08     | 0.84 J       | 1.2E-07     | 1 U          | 0           | 1 U          | 0           |
| Chloroform                                   | VOC   |               | 36                           | 1 U          | 0           | 1 U          | 0           | 1 U          | 0           | 4.7          | 1.3E-06     |
| Cumulative Vapor Intrusion Cancer Risk       |       |               |                              | 3E-07        |             | 2E-06        |             | 0E+00        |             | 1E-06        |             |
| <b>Non-Cancer Hazard</b>                     |       |               |                              |              |             |              |             |              |             |              |             |
| Cyanide                                      | Other | Reproductive  | 840                          | 152          | 0.2         | 23.4         | 0.03        | 17.5         | 0.02        | 10 U         | 0           |
| Cumulative Vapor Intrusion Non-Cancer Hazard |       |               |                              | 0            |             | 0            |             | 0            |             | 0            |             |

| Parameter                                    | Type  | Organ Systems | VI Screening Criteria (ug/L) | SW-079-MWS*  |             | TM03-PZM004  |             | TM05-PZM005  |             | TM07-PZM005  |             |
|--|-------|---------------|------------------------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
|  |       |               |                              | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard | Conc. (ug/L) | Risk/Hazard |
| <b>Cancer Risk</b>                           |       |               |                              |              |             |              |             |              |             |              |             |
| 1,4-Dioxane                                  | SVOC  |               | 130,000                      | 0.094 J      | 7.2E-12     | 0.044 J      | 3.4E-12     | 0.1 U        | 0           | 0.085 J      | 6.5E-12     |
| Naphthalene                                  | SVOC  |               | 200                          | 12           | 6.0E-07     | 110          | 5.5E-06     | 16.7         | 8.4E-07     | 0.14         | 7.0E-09     |
| 1,1-Dichloroethane                           | VOC   |               | 330                          | 1 U          | 0           | 1 U          | 0           | 1 U          | 0           | 0.65 J       | 2.0E-08     |
| Benzene                                      | VOC   |               | 69                           | 0.25 J       | 3.6E-08     | 1.1          | 1.6E-07     | 1 U          | 0           | 1 U          | 0           |
| Chloroform                                   | VOC   |               | 36                           | 1 U          | 0           | 1 U          | 0           | 1.8          | 5.0E-07     | 1 U          | 0           |
| Cumulative Vapor Intrusion Cancer Risk       |       |               |                              | 6E-07        |             | 6E-06        |             | 1E-06        |             | 3E-08        |             |
| <b>Non-Cancer Hazard</b>                     |       |               |                              |              |             |              |             |              |             |              |             |
| Cyanide                                      | Other | Reproductive  | 840                          | 31.4         | 0.04        | 61.4         | 0.07        | 52.2         | 0.06        | 31.4         | 0.04        |
| Cumulative Vapor Intrusion Non-Cancer Hazard |       |               |                              | 0            |             | 0            |             | 0            |             | 0            |             |

Highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR > 1E-05 or THI > 1  
 Conc. = Concentration  
 \* indicates non-validated data results

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



**Table 13**  
**Summary of VOCs Detected in Sub-Slab Soil Gas**  
**Parcel B15**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

| Parameter                        | Units | PAL        | B15-022-SG   | B15-023-SG    | B15-024-SG    |
|----------------------------------|-------|------------|--------------|---------------|---------------|
| <b>Volatile Organic Compound</b> |       |            |              |               |               |
| 1,1,1-Trichloroethane            | µg/m3 | 2,200,000  | <b>27.1</b>  | <b>30</b>     | <b>43.9</b>   |
| 1,1-Dichloroethane               | µg/m3 | 7,700      | <b>10.3</b>  | <b>25.8 J</b> | 0.81 U        |
| 1,2,4-Trimethylbenzene*          | µg/m3 | 3,100      | 0.98 U       | <b>1.6</b>    | 0.98 U        |
| 2-Butanone (MEK)                 | µg/m3 | 2,200,000  | <b>70.4</b>  | <b>209 J</b>  | <b>65.3</b>   |
| 2-Hexanone*                      | µg/m3 | 14,000     | <b>0.99</b>  | <b>1.26</b>   | <b>1.19</b>   |
| 4-Methyl-2-pentanone (MIBK)      | µg/m3 | 1,400,000  | <b>2.05</b>  | 0.82 U        | <b>3.21</b>   |
| Acetone                          | µg/m3 | 14,000,000 | <b>169 J</b> | <b>158 J</b>  | <b>275 J</b>  |
| Benzene                          | µg/m3 | 1,600      | <b>2.08</b>  | 0.64 U        | <b>4.03</b>   |
| Bromodichloromethane             | µg/m3 |            | <b>5.95</b>  | 1.34 U        | <b>5.27</b>   |
| Carbon disulfide                 | µg/m3 | 310,000    | <b>52.8</b>  | <b>34.7 J</b> | <b>103</b>    |
| Chloroform                       | µg/m3 | 540        | <b>19.4</b>  | <b>27.5</b>   | <b>35</b>     |
| Chloromethane                    | µg/m3 | 40,000     | 0.41 U       | <b>0.72</b>   | <b>0.83 J</b> |
| Cyclohexane*                     | µg/m3 | 2,700,000  | <b>5.29</b>  | <b>6.6</b>    | <b>6.08</b>   |
| Dichlorodifluoromethane*         | µg/m3 | 44,000     | <b>2.55</b>  | <b>2.5</b>    | <b>2.69</b>   |
| Ethylbenzene                     | µg/m3 | 5,000      | <b>1.31</b>  | <b>1.57</b>   | <b>1.03</b>   |
| Methyl tert-butyl ether (MTBE)   | µg/m3 | 48,000     | 0.72 U       | <b>1.94</b>   | 0.72 U        |
| Methylene Chloride               | µg/m3 | 270,000    | <b>1</b>     | <b>11.7 J</b> | <b>11.6</b>   |
| Toluene                          | µg/m3 | 2,200,000  | <b>5.38</b>  | <b>6.04</b>   | <b>5.91</b>   |
| Trichlorofluoromethane*          | µg/m3 | 310,000    | <b>1.24</b>  | 1.12 U        | <b>1.27</b>   |
| Vinyl chloride                   | µg/m3 | 2,800      | <b>0.75</b>  | <b>0.85</b>   | <b>1.07</b>   |
| Xylenes                          | µg/m3 | 44,000     | <b>5.79</b>  | <b>8.35</b>   | <b>4.65</b>   |

**Detections in bold**                      **Values in red indicate an exceedance of the Project Action Limit (PAL)**

\* indicates non-validated data results

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

J: The positive result reported for this analyte is a quantitative estimate.



## Parcel B15 - Table 14

### Rejected Results for Soil

| Parameter | Result | Units | PAL | Exceeds PAL? | Flag |
|-----------|--------|-------|-----|--------------|------|
|-----------|--------|-------|-----|--------------|------|

**Sample:** *B15-001-SB-1*

|                      |        |       |           |    |   |
|----------------------|--------|-------|-----------|----|---|
| 1,4-Dioxane          | 0.12   | mg/kg | 24        | no | R |
| Benzaldehyde         | 0.071  | mg/kg | 120,000   | no | R |
| Bromodichloromethane | 0.0058 | mg/kg | 1.3       | no | R |
| Bromomethane         | 0.0058 | mg/kg | 30        | no | R |
| Methyl Acetate       | 0.058  | mg/kg | 1,200,000 | no | R |

**Sample:** *B15-001-SB-9*

|                |        |       |           |    |   |
|----------------|--------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.11   | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.072  | mg/kg | 120,000   | no | R |
| Bromomethane   | 0.0053 | mg/kg | 30        | no | R |
| Methyl Acetate | 0.053  | mg/kg | 1,200,000 | no | R |

**Sample:** *B15-005-SB-1*

|                |        |       |           |    |   |
|----------------|--------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.09   | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.072  | mg/kg | 120,000   | no | R |
| Bromomethane   | 0.0045 | mg/kg | 30        | no | R |
| Methyl Acetate | 0.045  | mg/kg | 1,200,000 | no | R |

**Sample:** *B15-005-SB-4*

|                |        |       |           |    |   |
|----------------|--------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.086  | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.069  | mg/kg | 120,000   | no | R |
| Bromomethane   | 0.0043 | mg/kg | 30        | no | R |
| Methyl Acetate | 0.043  | mg/kg | 1,200,000 | no | R |

**Sample:** *B15-012-SB-1*

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.078 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|

**Sample:** *B15-012-SB-4*

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| 1,4-Dioxane  | 0.11  | mg/kg | 24      | no | R |
| Benzaldehyde | 0.072 | mg/kg | 120,000 | no | R |

Rejected Results for Soil

| Parameter | Result | Units | PAL | Exceeds PAL? | Flag |
|-----------|--------|-------|-----|--------------|------|
|-----------|--------|-------|-----|--------------|------|

Sample: **B15-012-SB-4**

|                |        |       |           |    |   |
|----------------|--------|-------|-----------|----|---|
| Bromomethane   | 0.0054 | mg/kg | 30        | no | R |
| Methyl Acetate | 0.054  | mg/kg | 1,200,000 | no | R |

Sample: **B15-014-SB-1**

|                              |       |       |           |    |   |
|------------------------------|-------|-------|-----------|----|---|
| 1,4-Dioxane                  | 0.12  | mg/kg | 24        | no | R |
| 2,3,4,6-Tetrachlorophenol    | 0.072 | mg/kg | 25,000    | no | R |
| 2,4,5-Trichlorophenol        | 0.18  | mg/kg | 82,000    | no | R |
| 2,4,6-Trichlorophenol        | 0.072 | mg/kg | 210       | no | R |
| 2,4-Dichlorophenol           | 0.072 | mg/kg | 2,500     | no | R |
| 2,4-Dimethylphenol           | 0.072 | mg/kg | 16,000    | no | R |
| 2,4-Dinitrophenol            | 0.18  | mg/kg | 1,600     | no | R |
| 2-Chlorophenol               | 0.072 | mg/kg | 5,800     | no | R |
| 2-Methylphenol               | 0.072 | mg/kg | 41,000    | no | R |
| 3&4-Methylphenol(m&p Cresol) | 0.14  | mg/kg | 41,000    | no | R |
| Methyl Acetate               | 0.061 | mg/kg | 1,200,000 | no | R |
| Pentachlorophenol            | 0.18  | mg/kg | 4         | no | R |
| Phenol                       | 0.072 | mg/kg | 250,000   | no | R |

Sample: **B15-014-SB-8**

|                |       |       |           |    |   |
|----------------|-------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.11  | mg/kg | 24        | no | R |
| Methyl Acetate | 0.053 | mg/kg | 1,200,000 | no | R |

Sample: **B15-015-SB-1**

|                |       |       |           |    |   |
|----------------|-------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.19  | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.09  | mg/kg | 120,000   | no | R |
| Methyl Acetate | 0.095 | mg/kg | 1,200,000 | no | R |

Sample: **B15-015-SB-4**

|                |       |       |           |    |   |
|----------------|-------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.11  | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.069 | mg/kg | 120,000   | no | R |
| Methyl Acetate | 0.053 | mg/kg | 1,200,000 | no | R |

Sample: **B15-016-SB-1**

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.073 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|

Rejected Results for Soil

| Parameter | Result | Units | PAL | Exceeds PAL? | Flag |
|-----------|--------|-------|-----|--------------|------|
|-----------|--------|-------|-----|--------------|------|

Sample: **B15-016-SB-5**

|                |       |       |           |    |   |
|----------------|-------|-------|-----------|----|---|
| 1,4-Dioxane    | 1     | mg/kg | 24        | no | R |
| Benzaldehyde   | 0.071 | mg/kg | 120,000   | no | R |
| Methyl Acetate | 0.51  | mg/kg | 1,200,000 | no | R |

Sample: **B15-017-SB-1**

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.075 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|

Sample: **B15-017-SB-8**

|                           |        |       |           |    |   |
|---------------------------|--------|-------|-----------|----|---|
| 1,1,2,2-Tetrachloroethane | 0.0047 | mg/kg | 2.7       | no | R |
| 1,4-Dioxane               | 0.094  | mg/kg | 24        | no | R |
| 2,4-Dinitrophenol         | 0.18   | mg/kg | 1,600     | no | R |
| Hexachlorocyclopentadiene | 0.072  | mg/kg | 7.5       | no | R |
| Methyl Acetate            | 0.047  | mg/kg | 1,200,000 | no | R |
| Pentachlorophenol         | 0.18   | mg/kg | 4         | no | R |

Sample: **B15-020-SB-1**

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.072 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|

Sample: **B15-020-SB-7**

|                |       |       |           |    |   |
|----------------|-------|-------|-----------|----|---|
| 1,4-Dioxane    | 0.088 | mg/kg | 24        | no | R |
| Methyl Acetate | 0.044 | mg/kg | 1,200,000 | no | R |

Sample: **B15-021-SB-1**

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.071 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|

Sample: **B15-021-SB-4**

|              |       |       |         |    |   |
|--------------|-------|-------|---------|----|---|
| Benzaldehyde | 0.073 | mg/kg | 120,000 | no | R |
|--------------|-------|-------|---------|----|---|





## Parcel B15 - Table 15

### Rejected Results for Groundwater

| Parameter | Result | Units | PAL | Exceeds PAL? | Flag |
|-----------|--------|-------|-----|--------------|------|
|-----------|--------|-------|-----|--------------|------|

Sample: *TM03-PZM004*

|         |    |      |        |    |   |
|---------|----|------|--------|----|---|
| Acetone | 10 | µg/L | 14,000 | no | R |
|---------|----|------|--------|----|---|

Sample: *TM05-PZM005*

|         |    |      |        |    |   |
|---------|----|------|--------|----|---|
| Acetone | 10 | µg/L | 14,000 | no | R |
|---------|----|------|--------|----|---|

**Table 16 - Parcel B15  
COPC Screening Analysis**

| Parameter                  | CAS#       | Location of Max Result | Max Detection (mg/kg) | Final Flag | Min Detection (mg/kg) | Average Detection (mg/kg) | Total Samples | Frequency of Detection (%) | Cancer TR=1E-06 (mg/kg) | Non-Cancer HQ=0.1 (mg/kg) | COPC?      |
|----------------------------|------------|------------------------|-----------------------|------------|-----------------------|---------------------------|---------------|----------------------------|-------------------------|---------------------------|------------|
| 1,1-Biphenyl               | 92-52-4    | B15-008-SB-9           | 10.7                  |            | 0.017                 | 1.11                      | 40            | 57.50                      | 410                     | 20                        | no         |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3    | B15-007-SB-1           | 0.019                 | J          | 0.019                 | 0.02                      | 40            | 2.50                       |                         | 35                        | no         |
| 2,4-Dimethylphenol         | 105-67-9   | B15-008-SB-9           | 0.93                  |            | 0.016                 | 0.25                      | 39            | 10.26                      |                         | 1,600                     | no         |
| 2-Butanone (MEK)           | 78-93-3    | B15-020-SB-7           | 0.0082                | J          | 0.0061                | 0.007                     | 23            | 13.04                      |                         | 19,000                    | no         |
| 2-Methylnaphthalene        | 91-57-6    | B15-015-SB-1           | 33.2                  | J          | 0.0032                | 1.71                      | 40            | 95.00                      |                         | 300                       | no         |
| 2-Methylphenol             | 95-48-7    | B15-008-SB-9           | 0.66                  |            | 0.016                 | 0.18                      | 39            | 10.26                      |                         | 4,100                     | no         |
| 2-Nitroaniline             | 88-74-4    | B15-010-SB-1           | 0.016                 | J          | 0.016                 | 0.02                      | 40            | 2.50                       |                         | 800                       | no         |
| Acenaphthene               | 83-32-9    | B15-008-SB-9           | 88.7                  |            | 0.0013                | 4.62                      | 40            | 87.50                      |                         | 4,500                     | no         |
| Acenaphthylene             | 208-96-8   | B15-015-SB-1           | 4.6                   |            | 0.0025                | 0.25                      | 40            | 97.50                      |                         |                           | no         |
| Acetone                    | 67-64-1    | B15-008-SB-9           | 0.046                 |            | 0.012                 | 0.03                      | 23            | 21.74                      |                         | 67,000                    | no         |
| Acetophenone               | 98-86-2    | B15-008-SB-9           | 0.11                  |            | 0.019                 | 0.06                      | 40            | 10.00                      |                         | 12,000                    | no         |
| Aluminum                   | 7429-90-5  | B15-013-SB-1           | 29,300                |            | 2,460                 | 12,957                    | 40            | 100.00                     |                         | 110,000                   | no         |
| Anthracene                 | 120-12-7   | B15-008-SB-9           | 117                   |            | 0.0069                | 7.02                      | 40            | 100.00                     |                         | 23,000                    | no         |
| Antimony                   | 7440-36-0  | B15-008-SB-9           | 5.1                   |            | 2.8                   | 4.07                      | 40            | 7.50                       |                         | 47                        | no         |
| Aroclor 1248               | 12672-29-6 | B15-020-SB-1           | 0.0516                | J          | 0.0516                | 0.05                      | 21            | 4.76                       | 0.95                    |                           | no         |
| Aroclor 1254               | 11097-69-1 | B15-007-SB-1           | 0.924                 |            | 0.148                 | 0.60                      | 21            | 19.05                      | 0.97                    | 1.5                       | no         |
| Aroclor 1260               | 11096-82-5 | B15-008-SB-1           | 0.461                 |            | 0.0365                | 0.24                      | 21            | 23.81                      | 0.99                    |                           | no         |
| Arsenic                    | 7440-38-2  | B15-008-SB-9           | 58.1                  |            | 2.6                   | 12.1                      | 48            | 93.75                      | 3                       | 48                        | YES (C/NC) |
| Barium                     | 7440-39-3  | B15-006-SB-4           | 1,210                 |            | 48                    | 238                       | 40            | 100.00                     |                         | 22,000                    | no         |
| Benz[a]anthracene          | 56-55-3    | B15-008-SB-9           | 136                   |            | 0.015                 | 9.53                      | 46            | 100.00                     | 21                      |                           | YES (C)    |
| Benzaldehyde               | 100-52-7   | B15-018-SB-1           | 0.14                  |            | 0.02                  | 0.05                      | 26            | 53.85                      | 820                     | 12,000                    | no         |
| Benzene                    | 71-43-2    | B15-008-SB-9           | 0.0039                | J          | 0.0017                | 0.002                     | 23            | 21.74                      | 5.1                     | 42                        | no         |
| Benzo[a]pyrene             | 50-32-8    | B15-008-SB-9           | 102                   |            | 0.019                 | 6.69                      | 47            | 100.00                     | 2.1                     | 22                        | YES (C/NC) |
| Benzo[b]fluoranthene       | 205-99-2   | B15-008-SB-9           | 153                   |            | 0.087                 | 12.0                      | 46            | 100.00                     | 21                      |                           | YES (C)    |
| Benzo[g,h,i]perylene       | 191-24-2   | B15-008-SB-9           | 58.9                  |            | 0.017                 | 2.96                      | 40            | 97.50                      |                         |                           | no         |
| Benzo[k]fluoranthene       | 207-08-9   | B15-008-SB-9           | 73.9                  |            | 0.035                 | 6.50                      | 40            | 100.00                     | 210                     |                           | no         |
| Beryllium                  | 7440-41-7  | B15-012-SB-1           | 3.2                   |            | 0.21                  | 1.22                      | 40            | 82.50                      | 6,900                   | 230                       | no         |
| bis(2-Ethylhexyl)phthalate | 117-81-7   | B15-008-SB-1           | 0.74                  | J          | 0.017                 | 0.14                      | 40            | 52.50                      | 160                     | 1,600                     | no         |
| Cadmium                    | 7440-43-9  | B15-015-SB-1           | 49.4                  |            | 2.1                   | 11.7                      | 40            | 70.00                      | 9,300                   | 98                        | no         |
| Caprolactam                | 105-60-2   | B15-010-SB-5           | 0.021                 | J          | 0.021                 | 0.02                      | 40            | 2.50                       |                         | 40,000                    | no         |
| Carbazole                  | 86-74-8    | B15-008-SB-9           | 120                   |            | 0.035                 | 6.39                      | 40            | 67.50                      |                         |                           | no         |
| Chromium                   | 7440-47-3  | B15-015-SB-1           | 2,310                 |            | 73.3                  | 816                       | 40            | 100.00                     |                         | 180,000                   | no         |
| Chrysene                   | 218-01-9   | B15-008-SB-9           | 111                   |            | 0.038                 | 9.49                      | 40            | 100.00                     | 2,100                   |                           | no         |

**Table 16 - Parcel B15  
COPC Screening Analysis**

| Parameter               | CAS#      | Location of Max Result | Max Detection (mg/kg) | Final Flag | Min Detection (mg/kg) | Average Detection (mg/kg) | Total Samples | Frequency of Detection (%) | Cancer TR=1E-06 (mg/kg) | Non-Cancer HQ=0.1 (mg/kg) | COPC?      |
|-------------------------|-----------|------------------------|-----------------------|------------|-----------------------|---------------------------|---------------|----------------------------|-------------------------|---------------------------|------------|
| Cobalt                  | 7440-48-4 | B15-018-SB-1           | 199                   |            | 3                     | 17.0                      | 40            | 100.00                     | 1,900                   | 35                        | YES (NC)   |
| Copper                  | 7440-50-8 | B15-007-SB-4           | 1,820                 |            | 43.6                  | 220                       | 40            | 100.00                     |                         | 4,700                     | no         |
| Cyanide                 | 57-12-5   | B15-008-SB-9           | 11.2                  |            | 0.65                  | 2.43                      | 40            | 92.50                      |                         | 120                       | no         |
| Dibenz[a,h]anthracene   | 53-70-3   | B15-008-SB-9           | 27.8                  |            | 0.0085                | 1.40                      | 46            | 91.30                      | 2.1                     |                           | YES (C)    |
| Di-n-butylphthalate     | 84-74-2   | B15-008-SB-1           | 0.18                  |            | 0.043                 | 0.10                      | 40            | 7.50                       |                         | 8,200                     | no         |
| Ethylbenzene            | 100-41-4  | B15-015-SB-1           | 0.016                 |            | 0.016                 | 0.02                      | 23            | 4.35                       | 25                      | 2,000                     | no         |
| Fluoranthene            | 206-44-0  | B15-008-SB-9           | 319                   |            | 0.035                 | 25.4                      | 40            | 100.00                     |                         | 3,000                     | no         |
| Fluorene                | 86-73-7   | B15-008-SB-9           | 99.1                  |            | 0.0014                | 5.09                      | 40            | 85.00                      |                         | 3,000                     | no         |
| Indeno[1,2,3-c,d]pyrene | 193-39-5  | B15-008-SB-9           | 65.1                  |            | 0.013                 | 3.70                      | 41            | 97.56                      | 21                      |                           | YES (C)    |
| Iron                    | 7439-89-6 | B15-009-SB-1           | 353,000               |            | 45,300                | 143,790                   | 40            | 100.00                     |                         | 82,000                    | YES (NC)   |
| Isophorone              | 78-59-1   | B15-017-SB-1           | 0.032                 | J          | 0.032                 | 0.03                      | 40            | 2.50                       | 2,400                   | 16,000                    | no         |
| Lead^                   | 7439-92-1 | B15-008-SB-9           | 5,910                 |            | 22.6                  | 602                       | 42            | 100.00                     |                         | 800                       | YES (NC)   |
| Manganese               | 7439-96-5 | B15-019-SB-1           | 72,700                |            | 2,920                 | 21,274                    | 43            | 100.00                     |                         | 2,600                     | YES (NC)   |
| Mercury                 | 7439-97-6 | B15-001-SB-1           | 4.9                   | J+         | 0.014                 | 0.41                      | 40            | 55.00                      |                         | 35                        | no         |
| Naphthalene             | 91-20-3   | B15-015-SB-1           | 71.7                  |            | 0.0086                | 4.86                      | 40            | 87.50                      | 17                      | 59                        | YES (C/NC) |
| Nickel                  | 7440-02-0 | B15-018-SB-4           | 178                   |            | 13.4                  | 57.3                      | 40            | 100.00                     | 64,000                  | 2,200                     | no         |
| PCBs (total)*           | 1336-36-3 | B15-007-SB-1           | 1.267                 |            | 0.0365                | 0.53                      | 21            | 33.33                      | 0.94                    |                           | YES (C)    |
| Phenanthrene            | 85-01-8   | B15-008-SB-9           | 328                   |            | 0.026                 | 23.7                      | 40            | 97.50                      |                         |                           | no         |
| Phenol                  | 108-95-2  | B15-008-SB-9           | 1.8                   |            | 0.017                 | 0.30                      | 39            | 17.95                      |                         | 25,000                    | no         |
| Pyrene                  | 129-00-0  | B15-008-SB-9           | 244                   |            | 0.028                 | 19.2                      | 40            | 100.00                     |                         | 2,300                     | no         |
| Silver                  | 7440-22-4 | B15-008-SB-9           | 18.5                  |            | 1.2                   | 4.96                      | 40            | 52.50                      |                         | 580                       | no         |
| Thallium                | 7440-28-0 | B15-007-SB-1           | 159                   |            | 4.2                   | 25.6                      | 42            | 42.86                      |                         | 1.2                       | YES (NC)   |
| Toluene                 | 108-88-3  | B15-008-SB-9           | 0.0044                | J          | 0.002                 | 0.003                     | 23            | 13.04                      |                         | 4,700                     | no         |
| Vanadium                | 7440-62-2 | B15-007-SB-1           | 10,500                |            | 54.2                  | 1,203                     | 40            | 100.00                     |                         | 580                       | YES (NC)   |
| Xylenes                 | 1330-20-7 | B15-015-SB-1           | 0.1                   |            | 0.0032                | 0.05                      | 23            | 8.70                       |                         | 250                       | no         |
| Zinc                    | 7440-66-6 | B15-008-SB-9           | 13,400                |            | 153                   | 2,336                     | 40            | 100.00                     |                         | 35,000                    | no         |

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.

COPC = Constituent of Potential Concern

TR = Target Risk                      C = Compound was identified as a cancer COPC

HQ = Hazard Quotient                NC = Compound was identified as a non-cancer COPC

\*PCBs (total) include the sum of all detected aroclor mixtures, including those without regional screening levels (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.

^The COPC screening level for lead was not adjusted to the HQ=0.1 because lead is not assessed in the SLRA. The 800 mg/kg PAL is relevant to the Adult Lead Model procedure.



**Table 17 - Parcel B15  
Assessment of Lead**

| <b>Exposure Unit</b>    | <b>Surface/Sub-Surface</b> | <b>Arithmetic Mean<br/>(mg/kg)</b> |
|-------------------------|----------------------------|------------------------------------|
| Site-Wide<br>(19.3 ac.) | Surface                    | 409                                |
|                         | Sub-Surface                | 794                                |
|                         | Pooled                     | 602                                |

| <b>Adult Lead Model (ALM) Risk Levels</b> |   |
|---|---|
| <b>Soil Concentration<br/>(mg/kg)</b>     | <b>Probability of Blood<br/>Concentration of 10 ug/dL</b> |
| 2,518 mg/kg                               | 5%  |
| 3,216 mg/kg                               | 10%   |

**Table 18 - Parcel B15  
Soil Exposure Point Concentrations**

| Parameter               | Cancer COPC Screening Level (mg/kg) | Non-Cancer COPC Screening Level (mg/kg) | EPCs - Surface Soils             |                | EPCs - Sub-Surface Soils         |                | EPCs - Pooled Soils              |                |
|-------------------------|-------------------------------------|---|----------------------------------|----------------|----------------------------------|----------------|----------------------------------|----------------|
|                         |                                     |   | EPC Type Site-Wide Exposure Unit | EPC (mg/kg)    | EPC Type Site-Wide Exposure Unit | EPC (mg/kg)    | EPC Type Site-Wide Exposure Unit | EPC (mg/kg)    |
| Arsenic                 | 3.00                                | 48.0                                    | 95% KM (Chebyshev) UCL           | <b>21.2</b>    | 95% KM (Chebyshev) UCL           | <b>21.5</b>    | 95% KM (Chebyshev) UCL           | <b>18.4</b>    |
| Cobalt                  | 1,900                               | 35.0                                    | 95% Chebyshev (Mean, Sd) UCL     | <b>60.2</b>    | 95% Student's-t UCL              | 16.3           | 95% Chebyshev (Mean, Sd) UCL     | <b>38.0</b>    |
| Iron                    |                                     | 82,000                                  | 95% Student's-t UCL              | <b>164,661</b> | 95% Student's-t UCL              | <b>173,326</b> | 95% Adjusted Gamma UCL           | <b>162,519</b> |
| Manganese               |                                     | 2,600                                   | 95% Student's-t UCL              | <b>29,631</b>  | 95% Student's-t UCL              | <b>25,032</b>  | 95% Adjusted Gamma UCL           | <b>26,323</b>  |
| Thallium                |                                     | 1.20                                    | 95% GROS Adjusted Gamma UCL      | <b>50.0</b>    | 95% GROS Adjusted Gamma UCL      | <b>15.3</b>    | 95% KM (% Bootstrap) UCL         | <b>21.4</b>    |
| Vanadium                |                                     | 580                                     | 95% Adjusted Gamma UCL           | <b>2,390</b>   | 95% Chebyshev (Mean, Sd) UCL     | <b>1,967</b>   | 95% H-UCL                        | <b>1,847</b>   |
| PCBs (total)            | 0.94                                |   | 95% KM (t) UCL                   | 0.36           | N/A                              | N/A            | 95% KM (t) UCL                   | 0.36           |
| Benz[a]anthracene       | 21.0                                |   | 95% Chebyshev (Mean, Sd) UCL     | 14.2           | 97.5% Chebyshev (Mean, Sd) UCL   | <b>57.4</b>    | 97.5% Chebyshev (Mean, Sd) UCL   | <b>34.1</b>    |
| Benzo[a]pyrene          | 2.10                                | 22.0                                    | 95% Chebyshev (Mean, Sd) UCL     | <b>7.43</b>    | 95% Adjusted Gamma UCL           | <b>39.0</b>    | 97.5% Chebyshev (Mean, Sd) UCL   | <b>23.1</b>    |
| Benzo[b]fluoranthene    | 21.0                                |   | 95% Chebyshev (Mean, Sd) UCL     | 17.4           | 95% Adjusted Gamma UCL           | <b>35.8</b>    | 97.5% Chebyshev (Mean, Sd) UCL   | <b>39.5</b>    |
| Dibenz[a,h]anthracene   | 2.10                                |   | 99% KM (Chebyshev) UCL           | <b>3.64</b>    | 99% KM (Chebyshev) UCL           | <b>13.2</b>    | 99% KM (Chebyshev) UCL           | <b>7.56</b>    |
| Indeno[1,2,3-c,d]pyrene | 21.0                                |   | 95% Chebyshev (Mean, Sd) UCL     | 4.14           | 95% Adjusted Gamma KM-UCL        | <b>22.2</b>    | 99% KM (Chebyshev) UCL           | <b>21.0</b>    |
| Naphthalene             | 17.0                                | 59.0                                    | 99% KM (Chebyshev) UCL           | <b>37.6</b>    | 99% KM (Chebyshev) UCL           | <b>41.7</b>    | 99% KM (Chebyshev) UCL           | <b>28.9</b>    |

**Bold indicates EPC higher than (or equal to) lowest COPC Screening Level**

COPC = Constituent of Potential Concern

N/A = Not Analyzed

**Table 19 - Parcel B15  
Surface Soils  
Composite Worker Risk Ratios**

| Parameter              | Target Organs          | Site-Wide Exposure Unit (19.3 ac.) |                  |            |              |          |
|------------------------|------------------------|------------------------------------|------------------|------------|--------------|----------|
|                        |                        | EPC<br>(mg/kg)                     | Composite Worker |            |              |          |
|                        |                        |                                    | RSLs (mg/kg)     |            | Risk Ratios  |          |
|                        |                        |                                    | Cancer           | Non-Cancer | Risk         | HQ       |
| Arsenic                | Cardiovascular; Dermal | 21.2                               | 3.00             | 480        | 7.1E-06      | 0.04     |
| Cobalt                 | Thyroid                | 60.2                               | 1,900            | 350        | 3.2E-08      | 0.2      |
| Iron                   | Gastrointestinal       | 164,661                            |                  | 820,000    |              | 0.2      |
| Manganese              | Nervous                | 29,631                             |                  | 26,000     |              | 1        |
| Thallium               | Dermal                 | 50.0                               |                  | 12.0       |              | 4        |
| Vanadium               | Dermal                 | 2,390                              |                  | 5,800      |              | 0.4      |
| PCB, Total             |                        | 0.36                               | 0.94             |            | 3.8E-07      |          |
| Benz(a)anthracene      |                        | 14.2                               | 21.0             |            | 6.8E-07      |          |
| Benzo(a)pyrene         | Developmental          | 7.43                               | 2.10             | 220        | 3.5E-06      | 0.03     |
| Benzo(b)fluoranthene   |                        | 17.4                               | 21.0             |            | 8.3E-07      |          |
| Dibenz(a,h)anthracene  |                        | 3.64                               | 2.10             |            | 1.7E-06      |          |
| Indeno(1,2,3-cd)pyrene |                        | 4.14                               | 21.0             |            | 2.0E-07      |          |
| Naphthalene            | Nervous; Respiratory   | 37.6                               | 17.0             | 590        | 2.2E-06      | 0.06     |
|                        |                        |                                    |                  |            | <b>2E-05</b> | <b>↓</b> |

RSLs were obtained from the EPA Regional Screening Levels at [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 5 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 0 |
|          | Respiratory      | 0 |



**Table 20 - Parcel B15  
Sub-Surface Soils  
Composite Worker Risk Ratios**

| Parameter              | Target Organs          | Site-Wide Exposure Unit (19.3 ac.) |                  |            |              |          |
|------------------------|------------------------|------------------------------------|------------------|------------|--------------|----------|
|                        |                        | EPC<br>(mg/kg)                     | Composite Worker |            | Risk         | HQ       |
|                        |                        |                                    | RSLs (mg/kg)     |            |              |          |
|                        |                        |                                    | Cancer           | Non-Cancer |              |          |
| Arsenic                | Cardiovascular; Dermal | 21.5                               | 3.00             | 480        | 7.2E-06      | 0.04     |
| Cobalt                 | Thyroid                | 16.3                               | 1,900            | 350        | 8.6E-09      | 0.05     |
| Iron                   | Gastrointestinal       | 173,326                            |                  | 820,000    |              | 0.2      |
| Manganese              | Nervous                | 25,032                             |                  | 26,000     |              | 1        |
| Thallium               | Dermal                 | 15.3                               |                  | 12.0       |              | 1        |
| Vanadium               | Dermal                 | 1,967                              |                  | 5,800      |              | 0.3      |
| Benz(a)anthracene      |                        | 57.4                               | 21.0             |            | 2.7E-06      |          |
| Benzo(a)pyrene         | Developmental          | 39.0                               | 2.10             | 220        | 1.9E-05      | 0.2      |
| Benzo(b)fluoranthene   |                        | 35.8                               | 21.0             |            | 1.7E-06      |          |
| Dibenz(a,h)anthracene  |                        | 13.2                               | 2.10             |            | 6.3E-06      |          |
| Indeno(1,2,3-cd)pyrene |                        | 22.2                               | 21.0             |            | 1.1E-06      |          |
| Naphthalene            | Nervous; Respiratory   | 41.7                               | 17.0             | 590        | 2.5E-06      | 0.07     |
|                        |                        |                                    |                  |            | <b>4E-05</b> | <b>↓</b> |

RSLs were obtained from the EPA Regional Screening Levels at [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 2 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 0 |
|          | Respiratory      | 0 |

**Table 21 - Parcel B15  
Pooled Soils  
Composite Worker Risk Ratios**

| Parameter              | Target Organs          | Site-Wide Exposure Unit (19.3 ac.) |                  |            |              |          |
|------------------------|------------------------|------------------------------------|------------------|------------|--------------|----------|
|                        |                        | EPC<br>(mg/kg)                     | Composite Worker |            |              |          |
|                        |                        |                                    | RSLs (mg/kg)     |            | Risk Ratios  |          |
|                        |                        |                                    | Cancer           | Non-Cancer | Risk         | HQ       |
| Arsenic                | Cardiovascular; Dermal | 18.4                               | 3.00             | 480        | 6.1E-06      | 0.04     |
| Cobalt                 | Thyroid                | 38.0                               | 1,900            | 350        | 2.0E-08      | 0.1      |
| Iron                   | Gastrointestinal       | 162,519                            |                  | 820,000    |              | 0.2      |
| Manganese              | Nervous                | 26,323                             |                  | 26,000     |              | 1        |
| Thallium               | Dermal                 | 21.4                               |                  | 12.0       |              | 2        |
| Vanadium               | Dermal                 | 1,847                              |                  | 5,800      |              | 0.3      |
| PCB, Total             |                        | 0.36                               | 0.94             |            | 3.8E-07      |          |
| Benz(a)anthracene      |                        | 34.1                               | 21.0             |            | 1.6E-06      |          |
| Benzo(a)pyrene         | Developmental          | 23.1                               | 2.10             | 220        | 1.1E-05      | 0.1      |
| Benzo(b)fluoranthene   |                        | 39.5                               | 21.0             |            | 1.9E-06      |          |
| Dibenz(a,h)anthracene  |                        | 7.56                               | 2.10             |            | 3.6E-06      |          |
| Indeno(1,2,3-cd)pyrene |                        | 21.0                               | 21.0             |            | 1.0E-06      |          |
| Naphthalene            | Nervous; Respiratory   | 28.9                               | 17.0             | 590        | 1.7E-06      | 0.05     |
|                        |                        |                                    |                  |            | <b>3E-05</b> | <b>↓</b> |

RSLs were obtained from the EPA Regional Screening Levels at [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 2 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 0 |
|          | Respiratory      | 0 |

**Table 22 - Parcel B15  
Surface Soils  
Construction Worker Risk Ratios**

| <b>35 Day</b>                 |                               | <b>Site-Wide Exposure Unit (19.3 ac.)</b> |                            |                   |                    |           |
|-------------------------------|-------------------------------|---|----------------------------|-------------------|--------------------|-----------|
| <b>Parameter</b>              | <b>Target Organs</b>          | <b>EPC<br/>(mg/kg)</b>                    | <b>Construction Worker</b> |                   |                    |           |
|                               |                               |   | <b>SSLs (mg/kg)</b>        |                   | <b>Risk Ratios</b> |           |
|                               |                               |   | <b>Cancer</b>              | <b>Non-Cancer</b> | <b>Risk</b>        | <b>HQ</b> |
| <b>Arsenic</b>                | <b>Cardiovascular; Dermal</b> | 21.2                                      | 108                        | 686               | 2.0E-07            | 0.03      |
| <b>Cobalt</b>                 | <b>Thyroid</b>                | 60.2                                      | 25,332                     | 6,616             | 2.4E-09            | 0.009     |
| <b>Iron</b>                   | <b>Gastrointestinal</b>       | 164,661                                   |                            | 1,718,152         |                    | 0.1       |
| <b>Manganese</b>              | <b>Nervous</b>                | 29,631                                    |                            | 28,586            |                    | 1         |
| <b>Thallium</b>               | <b>Dermal</b>                 | 50.0                                      |                            | 98.2              |                    | 0.5       |
| <b>Vanadium</b>               | <b>Dermal</b>                 | 2,390                                     |                            | 11,329            |                    | 0.2       |
| <b>PCB, Total</b>             |                               | 0.36                                      | 25.5                       |                   | 1.4E-08            |           |
| <b>Benz(a)anthracene</b>      |                               | 14.2                                      | 928                        |                   | 1.5E-08            |           |
| <b>Benzo(a)pyrene</b>         | <b>Developmental</b>          | 7.43                                      | 119                        | 29.4              | 6.2E-08            | 0.3       |
| <b>Benzo(b)fluoranthene</b>   |                               | 17.4                                      | 1,181                      |                   | 1.5E-08            |           |
| <b>Dibenz(a,h)anthracene</b>  |                               | 3.64                                      | 127                        |                   | 2.9E-08            |           |
| <b>Indeno(1,2,3-cd)pyrene</b> |                               | 4.14                                      | 1,231                      |                   | 3.4E-09            |           |
| <b>Naphthalene</b>            | <b>Nervous; Respiratory</b>   | 37.6                                      | 62.2                       | 90.6              | 6.0E-07            | 0.4       |
|                               |                               |   |                            |                   | <b>9E-07</b>       | <b>↓</b>  |

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002

Guidance Equation Input Assumptions:

- 5 cars/day (2 tons/car)
- 5 trucks/day (20 tons/truck)
- 3 meter source depth thickness

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 1 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 0 |
|          | Respiratory      | 0 |



**Table 23 - Parcel B15  
Sub-Surface Soils  
Construction Worker Risk Ratios**

| <b>35 Day</b>                 |                               | <b>Site-Wide Exposure Unit (19.3 ac.)</b> |                            |                   |                    |           |
|-------------------------------|-------------------------------|---|----------------------------|-------------------|--------------------|-----------|
| <b>Parameter</b>              | <b>Target Organs</b>          | <b>EPC<br/>(mg/kg)</b>                    | <b>Construction Worker</b> |                   |                    |           |
|                               |                               |   | <b>SSLs (mg/kg)</b>        |                   | <b>Risk Ratios</b> |           |
|                               |                               |   | <b>Cancer</b>              | <b>Non-Cancer</b> | <b>Risk</b>        | <b>HQ</b> |
| <b>Arsenic</b>                | <b>Cardiovascular; Dermal</b> | 21.5                                      | 108                        | 686               | 2.0E-07            | 0.03      |
| <b>Cobalt</b>                 | <b>Thyroid</b>                | 16.3                                      | 25,332                     | 6,616             | 6.4E-10            | 0.002     |
| <b>Iron</b>                   | <b>Gastrointestinal</b>       | 173,326                                   |                            | 1,718,152         |                    | 0.1       |
| <b>Manganese</b>              | <b>Nervous</b>                | 25,032                                    |                            | 28,586            |                    | 0.9       |
| <b>Thallium</b>               | <b>Dermal</b>                 | 15.3                                      |                            | 98.2              |                    | 0.2       |
| <b>Vanadium</b>               | <b>Dermal</b>                 | 1,967                                     |                            | 11,329            |                    | 0.2       |
| <b>Benz(a)anthracene</b>      |                               | 57.4                                      | 928                        |                   | 6.2E-08            |           |
| <b>Benzo(a)pyrene</b>         | <b>Developmental</b>          | 39.0                                      | 119                        | 29.4              | 3.3E-07            | 1         |
| <b>Benzo(b)fluoranthene</b>   |                               | 35.8                                      | 1,181                      |                   | 3.0E-08            |           |
| <b>Dibenz(a,h)anthracene</b>  |                               | 13.2                                      | 127                        |                   | 1.0E-07            |           |
| <b>Indeno(1,2,3-cd)pyrene</b> |                               | 22.2                                      | 1,231                      |                   | 1.8E-08            |           |
| <b>Naphthalene</b>            | <b>Nervous; Respiratory</b>   | 41.7                                      | 62.2                       | 90.6              | 6.7E-07            | 0.5       |
|                               |                               |   |                            |                   | <b>1E-06</b>       | <b>↓</b>  |

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002

Guidance Equation Input Assumptions:

- 5 cars/day (2 tons/car)
- 5 trucks/day (20 tons/truck)
- 3 meter source depth thickness

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 0 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 1 |
|          | Respiratory      | 0 |

**Table 24 - Parcel B15  
Pooled Soils  
Construction Worker Risk Ratios**

| <b>35 Day</b>                 |                               | <b>Site-Wide Exposure Unit (19.3 ac.)</b> |                            |                   |                    |           |
|-------------------------------|-------------------------------|---|----------------------------|-------------------|--------------------|-----------|
| <b>Parameter</b>              | <b>Target Organs</b>          | <b>EPC<br/>(mg/kg)</b>                    | <b>Construction Worker</b> |                   |                    |           |
|                               |                               |   | <b>SSLs (mg/kg)</b>        |                   | <b>Risk Ratios</b> |           |
|                               |                               |   | <b>Cancer</b>              | <b>Non-Cancer</b> | <b>Risk</b>        | <b>HQ</b> |
| <b>Arsenic</b>                | <b>Cardiovascular; Dermal</b> | 18.4                                      | 108                        | 686               | 1.7E-07            | 0.03      |
| <b>Cobalt</b>                 | <b>Thyroid</b>                | 38.0                                      | 25,332                     | 6,616             | 1.5E-09            | 0.006     |
| <b>Iron</b>                   | <b>Gastrointestinal</b>       | 162,519                                   |                            | 1,718,152         |                    | 0.09      |
| <b>Manganese</b>              | <b>Nervous</b>                | 26,323                                    |                            | 28,586            |                    | 0.9       |
| <b>Thallium</b>               | <b>Dermal</b>                 | 21.4                                      |                            | 98.2              |                    | 0.2       |
| <b>Vanadium</b>               | <b>Dermal</b>                 | 1,847                                     |                            | 11,329            |                    | 0.2       |
| <b>PCB, Total</b>             |                               | 0.36                                      | 25.5                       |                   | 1.4E-08            |           |
| <b>Benz(a)anthracene</b>      |                               | 34.1                                      | 928                        |                   | 3.7E-08            |           |
| <b>Benzo(a)pyrene</b>         | <b>Developmental</b>          | 23.1                                      | 119                        | 29.4              | 1.9E-07            | 0.8       |
| <b>Benzo(b)fluoranthene</b>   |                               | 39.5                                      | 1,181                      |                   | 3.3E-08            |           |
| <b>Dibenz(a,h)anthracene</b>  |                               | 7.56                                      | 127                        |                   | 6.0E-08            |           |
| <b>Indeno(1,2,3-cd)pyrene</b> |                               | 21.0                                      | 1,231                      |                   | 1.7E-08            |           |
| <b>Naphthalene</b>            | <b>Nervous; Respiratory</b>   | 28.9                                      | 62.2                       | 90.6              | 4.6E-07            | 0.3       |
|                               |                               |   |                            |                   | <b>1E-06</b>       | <b>↓</b>  |

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002

Guidance Equation Input Assumptions:

- 5 cars/day (2 tons/car)
- 5 trucks/day (20 tons/truck)
- 3 meter source depth thickness

|          |                  |   |
|----------|------------------|---|
| Total HI | Cardiovascular   | 0 |
|          | Dermal           | 0 |
|          | Thyroid          | 0 |
|          | Gastrointestinal | 0 |
|          | Nervous          | 1 |
|          | Developmental    | 1 |
|          | Respiratory      | 0 |

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## APPENDIX A

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Table 1: Soil Sampling Plan Summary  
Former Sparrows Point Steel Mill  
Sparrows Point, Maryland

| Source Area/<br>Description          | REC &<br>Finding/<br>SWMU/<br>AOC | Figure or<br>Drawing of<br>Reference | RATIONALE   | Number of<br>Locations | Sample<br>Locations           | Boring Depth                                 | Sample Depth  | Analytical<br>Parameters:<br>Soil Samples                 |
|--------------------------------------|-----------------------------------|--------------------------------------|---|------------------------|-------------------------------|--|---|---|
| Brick Sheds                          |                                   | Drawings<br>5039 and<br>5040         | Investigate potential impacts related to storage and activity in the Brick Sheds (potential leaks or releases).                       | 5                      | B15-001<br>through<br>B15-005 | Total depth of 20<br>feet or<br>groundwater. | 0-1', 4-5', 9-10' bgs.<br>4-5' interval may be<br>adjusted in the field<br>based on observations<br>or field screening. | VOC*, SVOC,<br>Metals,<br>DRO/GRO,<br>O&G,<br>PCBs (0-1') |
| Scrap Yard /<br>Open Storage<br>Area |                                   | Drawing<br>5039                      | Investigate potential impacts related to the historical scrap yard area and current open storage area (potential leaks or releases).  | 4                      | B15-006<br>through<br>B15-009 | Total depth of 20<br>feet or<br>groundwater. | 0-1', 4-5', 9-10' bgs.<br>4-5' interval may be<br>adjusted in the field<br>based on observations<br>or field screening. | VOC*, SVOC,<br>Metals,<br>DRO/GRO,<br>O&G,<br>PCBs (0-1') |
| Parcel B15<br>Coverage               |                                   |                                      | Investigate potential impacts related to any historical activities which may have occurred on the site (potential leaks or releases). | 4                      | B15-010 and<br>B15-013        | Total depth of 20<br>feet or<br>groundwater. | 0-1', 4-5', 9-10' bgs.<br>4-5' interval may be<br>adjusted in the field<br>based on observations<br>or field screening. | VOC*, SVOC,<br>Metals,<br>DRO/GRO,<br>O&G,<br>PCBs (0-1') |
| Brick Sheds                          |                                   | Drawings<br>5039 and<br>5040         | Investigate potential impacts related to storage and activity in the Brick Sheds (potential leaks or releases).                       | 8                      | B15-014<br>through<br>B15-021 | Total depth of 20<br>feet or<br>groundwater. | 0-1', 4-5', 9-10' bgs.<br>4-5' interval may be<br>adjusted in the field<br>based on observations<br>or field screening. | VOC*, SVOC,<br>Metals,<br>DRO/GRO,<br>O&G,<br>PCBs (0-1') |
|                                      |                                   |                                      | <b>Total</b>  | 21                     |                               |  |   |   |

Soil Borings Sampling Density Requirements (from **Worksheet 17 - Sampling Design and Rationale**)

*No Engineered Barrier (1-16 acres): 1 boring per acre with no less than 3.*

*Engineered Barrier (1-15 acres): 0.5 boring per acre with no less than 2.*

No Engineered Barrier (8.7 acres) = **9 borings required, 10 proposed**

Engineered Barrier (7.8 acres) = **4 borings required, 11 proposed**

Parking/Roads (4.5 acres)

Buildings (3.3 acres)

VOC - Volatile Organic Compounds (Target Compound List)

SVOCs - Semivolatile Organic Compounds (Target Compound List)

Metals - (Target Analyte List plus Hexavalent Chromium and Cyanide)

DRO/GRO - Diesel Range Organics/Gasoline Range

O&G - Oil and Grease

\*VOCs are only collected if the PID reading exceeds 10 ppm

bgs - Below Ground Surface



Table 2: Groundwater Sampling Plan Summary  
 Former Sparrows Point Steel Mill  
 Sparrows Point, Maryland

| Source Area/<br>Description | REC &<br>Finding/<br>SWMU/<br>AOC | Figure or<br>Drawing of<br>Reference | Condition of<br>Existing Well | Number of<br>Locations | Sample<br>Locations                 | Boring Depth                                   | Screen Interval   | Analytical<br>Parameters:<br>Groundwater<br>Samples†   |
|-----------------------------|-----------------------------------|--------------------------------------|-------------------------------|------------------------|-------------------------------------|--|---|--|
| Brick Sheds<br>(Drainage)   |                                   | MDE<br>Request                       | N/A                           | 3                      | B15-012,<br>B15-014, and<br>B15-018 | Total depth of 7<br>feet below water<br>table. | 7 feet below water<br>table to 3 feet<br>above water table. | VOC, SVOC,<br>Dissolved Metals,<br>Dissovled hexavalent<br>chromium, Total<br>cyanide, DRO/GRO,<br>O&G |
|                             |                                   |                                      | <b>Total:</b>                 | 3                      |                                     |  |   |  |

†Field measurements include pH, DO, ORP, conductivity, temperature.

Table 3: Sub-Slab Soil Gas Sampling Plan Summary  
 Former Sparrows Point Steel Mill  
 Sparrows Point, Maryland

| Source Area/<br>Description          | RATIONALE  | Number<br>of<br>Locations | Sample<br>Locations           | Boring Depth                                 | Sample Depth                                 | Analytical<br>Parameters:<br>Sub-Slab Soil Gas |
|--------------------------------------|--|---------------------------|-------------------------------|--|--|--|
| Enclosed Rooms<br>(South Brick Shed) | Investigate potential impacts related to the storage enclosure of the southern brick shed (potential leaks or releases). | 3                         | B15-022<br>through<br>B15-024 | 6 inches below<br>bottom of<br>concrete slab | 6 inches below<br>bottom of<br>concrete slab | VOCs   |
|                                      | <b>Total</b>   | 3                         |                               |  |  |  |

Soil Gas Sampling Density Requirements (from **Worksheet 17 - Sampling Design and Rationale**)

*Sub-Slab: 1 sample collected per 20,000 ft<sup>2</sup>, with a minimum of 3 per building*

Enclosed Room South Brick Shed (4,725 ft<sup>2</sup>) = **3 Samples**

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## APPENDIX B

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Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : L. Perrin  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 90s, Sunny  
 Northing (US ft) : 569162.520  
 Easting (US ft) : 1458703.479

**Boring ID: B15-001-SB**

(page 1 of 1)

| Depth (ft.)   | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS |
|---------------|------------|-------------------|--------------------|---|-------|---------|
| 0             |            | -                 | B15-001-SB-1       | (0-4') SILT with SAND and GRAVEL grading to SANDY SILT with GRAVEL, soft, brown, dry, no plasticity, no cohesion                                      | ML    |         |
|               | 90         | 21.8              |                    |   |       |         |
|               |            | 49.7              |                    |   |       |         |
|               |            | 54.8              |                    |   |       |         |
|               |            | 54.7              |                    | (4-6') SILTY GRAVEL with SAND, loose, brown, dry, no plasticity, no cohesion  | GW-GM |         |
| 5             |            | -                 |                    |   |       |         |
|               |            | -                 |                    |   |       |         |
|               | 60         | 110.6             |                    | (6-18') GRAVELLY SAND, with SILT (from 7-13' bgs), loose, brown and gray, dry then moist at 9-13' bgs then wet at 13' bgs, no plasticity, no cohesion | SW/GW |         |
|               |            | 311.4             | B15-001-SB-9       |   |       |         |
|               |            | 1.0               | B15-001-SB-10      |   |       |         |
| 10            |            | -                 |                    |   |       |         |
|               |            | -                 |                    |   |       |         |
|               | 40         | -                 |                    |   |       |         |
|               |            | 0.0               |                    |   |       |         |
|               |            | 0.0               |                    |   |       |         |
| 15            |            | -                 |                    |   |       |         |
|               |            | -                 |                    |   |       |         |
|               | 60         | 0.0               |                    |   |       |         |
|               |            | 0.0               |                    |   |       |         |
|               |            | 0.0               |                    | (18-20') SANDY SILT with GRAVEL, soft, dark brown, wet, no plasticity, no cohesion  | ML    |         |
| 20            |            | 0.0               |                    |   |       |         |
| End of boring |            |                   |                    |   |       |         |

Total Borehole Depth: 20' bgs.  
 Boring terminated at 20' bgs due to water and maximum allowable drill depth.





Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : W. Mader P.G., CPSS  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, partly cloudy  
 Northing (US ft) : 569305.981  
 Easting (US ft) : 1459162.954

**Boring ID: B15-002-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS  |
|-------------|------------|-------------------|--------------------|--|-------|--|
| 0           |            |                   |                    | (0-0.2') ASPHALT, loose, gray, dry, no plasticity, no cohesion   | NA    | Some strong brown and yellow brick present at 4' bgs |
|             |            |                   | B15-002-SB-1       | (0.2-0.9') SANDY SLAG, loose, grayish brown, no cohesion, dry, no plasticity   | SW    |  |
|             |            | 0.6               |                    | (0.9-8') SANDY SLAG, medium dense, dark grayish brown to grayish brown, dry then moist at 8' bgs, no plasticity, no cohesion | SW    |  |
|             | 85         | 16.0              |                    |  |       |  |
|             |            | 28.0              |                    |  |       |  |
| 5           |            |                   |                    |  |       |  |
|             |            | 20.2              |                    |  |       |  |
|             |            |                   |                    |  |       |  |
|             |            | 10.5              |                    |  |       |  |
|             | 76         | 29.6              | B15-002-SB-8       |  |       |  |
|             |            | 2.3               |                    | (8-9') SLAG and BRICK SAND and GRAVEL, loose, yellow-brown, moist, no plasticity, no cohesion                                | SW/GW |  |
|             |            | 0.2               |                    | (9-10') SANDY SLAG, medium dense, dark blackish-gray, moist to wet, no plasticity, no cohesion                               | SW    | Wet at 9.5' bgs                                      |
| 10          |            |                   |                    | End of boring  |       |  |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : L. Perrin  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 90s, sunny  
 Northing (US ft) : 569283.862  
 Easting (US ft) : 1459590.988

**Boring ID: B15-003-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS   |
|-------------|------------|-------------------|--------------------|---|-------|---|
| 0           |            | 5.4               | B15-003-SB-1       | (0-0.1') SILT, soft, brown, moist, no plasticity, no cohesion   | ML    | Large black rock  |
|             |            |                   |                    | (0.1-1') SILTY SLAG GRAVEL, loose, brown and light gray, dry, no plasticity, no cohesion                    | GW-GM |   |
|             | 90         | 0.7               |                    | (1-4') SANDY SILT with SLAG and BRICK GRAVEL, soft, brown and red, dry to moist, no plasticity, no cohesion | ML    | Trace lenses of silt  |
|             |            | 32.8              |                    |   | ML    |   |
|             |            | 30.6              | B15-003-SB-4       |   | ML    |   |
| 5           |            | 30.6              |                    | (4-4.5') SILT, hard, yellowish brown, dry, low plasticity, cohesive   | ML    |   |
|             |            | 1.1               |                    | (4.5-5') SANDY SILT, soft, brown and red, dry, no plasticity, no cohesion                                   | ML    |   |
|             | 70         | 0.6               |                    | (5-9') SILT with GRAVEL and SAND, soft, brown, dry then moist at 8.8' bgs, no plasticity, no cohesion       | ML    | Wet at 9.5' bgs   |
|             |            | 23.0              |                    |   | ML    |   |
|             |            | 0.2               |                    |   | ML    |   |
| 10          |            | 0.4               | B15-003-SB-10      | (9-9.2') CONCRETE, loose, white, dry, no plasticity, no cohesion  | NA    | Product present from 10-10.5' bgs. Moderate viscosity, amber color, moderate odor |
|             |            |                   |                    | (9.2-10') SILTY GRAVEL, BRICK and CONCRETE, loose, brown and light gray, moist, no plasticity, no cohesion  | GW-GM |   |
|             | 50         | 0.0               |                    | (10-15') SILTY CLAY, very soft grading to soft, very moist grading to moist, medium plasticity, cohesive    | CL    |   |
|             |            | 0.0               |                    |   | CL    |   |
|             |            | 0.0               |                    |   | CL    |   |
| 15          |            | 0.0               |                    | End of boring   |       |   |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to piezometer installation.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : L. Perrin  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 80s, sunny  
 Northing (US ft) : 569145.830  
 Easting (US ft) : 1459576.283

**Boring ID: B15-004-SB**

(page 1 of 1)

| Depth (ft.)   | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS | REMARKS                          |
|---------------|------------|-------------------|--------------------|--|------|----------------------------------|
| 0             |            | -                 | B15-004-SB-1       | (0-1.4') SLAG GRAVEL, loose, brown, dry, no plasticity, no cohesion                                | GW   |                                  |
|               | 84         | 2.1               |                    | (1.4-2.5') GRAVELLY SILT with SAND, soft, brown, dry to moist, no plasticity, no cohesion          | ML   |                                  |
|               |            | 0.5               |                    | (2.5-6') SILTY SAND with GRAVEL, loose, brown, dry to moist, no plasticity, no cohesion            |      |                                  |
|               |            | 0.8               |                    |  |      |                                  |
| 5             |            | 0.6               | B15-004-SB-5       |  | SM   |                                  |
|               |            | -                 |                    | (6-7.5') GRAVELLY SILT, soft, pale brown, dry, low plasticity, cohesive                            | ML   |                                  |
|               | 60         | 1.1               |                    | (7.5-8.5') GRAVELLY SILT, soft, dark brown, moist to wet, no plasticity, no cohesion               | ML   |                                  |
|               |            | 0.8               |                    | (8.5-9') SLAG GRAVEL, loose, gray, wet, no plasticity, no cohesion                                 | GW   |                                  |
| 10            |            | 0.6               | B15-004-SB-10      | (9-11') GRAVELLY SILT, soft, dark brown, very moist, no plasticity, no cohesion                    | ML   |                                  |
|               |            | -                 |                    | (11-13') SANDY GRAVEL, loose, yellowish brown and dark brown, wet, no plasticity, no cohesion      | GW   |                                  |
|               | 60         | 0.0               |                    |  |      |                                  |
|               |            | 0.0               |                    | (13-16') SILT with some GRAVEL, soft, brown, dry then moist at 15' bgs, no plasticity, no cohesion |      |                                  |
| 15            |            | 0.0               |                    |  | ML   | Small olive green grains present |
|               | 100        | 0.0               |                    |  |      | No water encountered             |
| End of boring |            |                   |                    |  |      |                                  |

Total Borehole Depth: 16' bgs.  
 Boring terminated at 16' bgs due to refusal.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : L. Perrin  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 90s, sunny  
 Northing (US ft) : 569077.765  
 Easting (US ft) : 1458846.104

**Boring ID: B15-005-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS | REMARKS         |
|-------------|------------|-------------------|--------------------|--|------|-----------------|
| 0           |            | -                 | B15-005-SB-1       | (0-2') SANDY SILT with GRAVEL, soft, brown, dry, no plasticity, no cohesion                            | ML   |                 |
|             |            | 33.1              |                    |  |      |                 |
| 90          |            | 71.4              |                    | (2-8') SILTY SAND with GRAVEL SLAG, loose, brown, dry, no plasticity, no cohesion                      |      |                 |
|             |            | 146.6             | B15-005-SB-4       |  |      |                 |
|             |            | 20.4              |                    |  | SM   |                 |
| 5           |            | -                 |                    |  |      |                 |
|             |            | 45.9              |                    |  |      |                 |
| 80          |            | 110.0             |                    |  |      |                 |
|             |            | 21.2              |                    | (8-8.5') SAND, loose, pale brown, moist, no plasticity, no cohesion                                    | SW   |                 |
|             |            | 564.0             | B15-005-SB-10      | (8.5-9.5') SAND with large GRAVEL SLAG, loose, brown and gray, moist, no plasticity, no cohesion       | SW   |                 |
| 10          |            | -                 |                    | (9.5-11.5') SILTY SAND, loose, brown, very moist, no plasticity, no cohesion                           | SM   | Metallic specks |
|             |            | -                 |                    |  |      |                 |
| 40          |            | -                 |                    | (11.5-15') GRAVELLY SAND, trace BRICK, medium dense, brown and yellow, wet, no plasticity, no cohesion | SW   | Wet at 13' bgs  |
|             |            | 0.0               |                    |  |      |                 |
|             |            | 0.0               |                    |  |      |                 |
| 15          |            |                   |                    | End of boring  |      |                 |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to water.





**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yapple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 568849.786  
 Easting (US ft) : 1458178.587

**Boring ID: B15-006-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery    | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS  |
|-------------|---------------|-------------------|--------------------|---|-------|--|
| 0           |               | -                 | B15-006-SB-1       | (0-8') GRAVEL and SAND with some SILT and SLAG, medium-grained to large GRAVEL, loose, very dark gray, dry then moist at 3' bgs, no plasticity, no cohesion | GW/SW | 3" lenses of light tan brick<br>2" lenses of asphalt |
|             | 67            | 12.2              |                    |   |       |  |
|             |               | 18.3              | B15-006-SB-4       |   |       |  |
|             |               | 5.8               |                    |   |       |  |
| 5           |               | -                 |                    | (8-10') GRAVEL and SAND, coarse-grained to large GRAVEL (subrounded), loose, light gray, wet, no plasticity, no cohesion                                    | GW/SW | Wet at 8' bgs  |
|             | 63            | 6.7               |                    |   |       |  |
|             |               | 50.0              |                    |   |       |  |
|             |               | 7.8               |                    |   |       |  |
| 10          | End of boring |                   |                    |   |       |  |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : W. Mader P.G., CPSS  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 70s, mostly clear  
 Northing (US ft) : 568850.797  
 Easting (US ft) : 1458505.476

**Boring ID: B15-007-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS  |
|-------------|------------|-------------------|--------------------|---|-------|--|
| 0           |            | -                 | B15-007-SB-1       | (0-1') SANDY SLAG, loose, dark grayish brown, dry, no plasticity, no cohesion   | SW    | 3" lens of white slag<br><br><br><br><br><br><br>Wet at 7.8' bgs |
|             | 74         | 0.4               |                    | (1-4.7') SANDY SLAG with SLAG GRAVEL, loose to medium dense, dark grayish brown with mixed grayish brown and gray, dry to moist, no plasticity, no cohesion | GW/SW |  |
|             |            | 6.7               |                    |   |       |  |
|             |            | 23.5              | B15-007-SB-4       |   |       |  |
|             |            | 3.6               |                    |   |       |  |
| 5           |            | -                 |                    | (4.7-6.6') CLAYEY SILT, soft, yellow and gray mottling, moist, low plasticity, cohesive   | ML    |  |
|             |            | 7.0               |                    |   |       |  |
|             | 77         | 15.8              |                    | (6.6-7.8') SANDY SLAG, loose, medium dense, dark gray, moist to very moist, no plasticity, no cohesion  | SW    |  |
|             |            | 15.5              |                    | (7.8-8.5') CLAYEY SILT, soft, yellow and gray mottling, very moist to wet, low plasticity, cohesive   | ML    |  |
|             |            | 15.5              |                    | (8.5-9.2') BRICK, loose, yellow, wet, no plasticity, no cohesion  | NA    |  |
|             |            | 0.9               |                    | (9.2-10') SANDY SLAG, medium dense, dark grayish brown, wet, no plasticity, no cohesion   | SW    |  |
| 10          |            |                   |                    | End of boring   |       |  |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 569018.166  
 Easting (US ft) : 1458416.008

**Boring ID: B15-008-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|--|-------|--------------------------|
| 0           |            | -                 | B15-008-SB-1       | (0-10') GRAVEL and SAND with trace SLAG, fine SAND to large subangular GRAVEL-sized, medium dense, dark brownish gray, dry then moist at 5' bgs then wet at 9.5' bgs, no plasticity, no cohesion, with trace wet CLAY lens at 8' bgs | GW/SW | Non-native fill material |
|             |            | -                 |                    |  |       |                          |
|             | 55         | 2.8               |                    |  |       |                          |
|             |            | 8.2               |                    |  |       |                          |
|             |            | 15.8              |                    |  |       |                          |
| 5           |            | -                 |                    |  |       |                          |
|             |            | -                 |                    |  |       |                          |
|             | 47         | 51.0              |                    |  |       |                          |
|             |            | 53.2              | B15-008-SB-9       |  |       |                          |
|             |            | 94.2              |                    |  |       | Wet at 9.5' bgs          |
| 10          |            |                   |                    | End of boring  |       |                          |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yapple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 568924.859  
 Easting (US ft) : 1458375.158

**Boring ID: B15-009-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|---|-------|--------------------------|
| 0           |            |                   |                    | (0-2.5') SAND and GRAVEL, fine-grained to small subangular GRAVEL, with trace SILT and SLAG, loose, dark brown, dry, no plasticity, no cohesion | SW/GW | Non-native fill material |
| 1           | 50         | 1.6               | B15-009-SB-1       |   |       |                          |
| 2           |            | 2.7               |                    |   |       |                          |
| 3           |            | 3.3               |                    | End of boring   |       | No water encountered     |
| 4           |            |                   |                    |   |       |                          |
| 5           |            |                   |                    |   |       |                          |

Total Borehole Depth: 2.5' bgs.  
 Boring terminated at 2.5' bgs due to refusal.





**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 568740.669  
 Easting (US ft) : 1457853.679

**Boring ID: B15-010-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|---|-------|--------------------------|
| 0           |            | -                 | B15-010-SB-1       | (0-10') SAND and GRAVEL (subangular), coarse-grained to large GRAVEL, with trace SILT and SLAG, loose, dark reddish gray, dry then moist at 2 bgs' then wet at 8.5' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material |
|             |            | -                 |                    |   |       |                          |
| 60          | 25.7       | <4.9              |                    |   |       |                          |
|             |            | 237               | B15-010-SB-5       |   |       |                          |
| 5           |            | -                 |                    |   |       |                          |
|             |            | -                 |                    |   |       |                          |
| 60          | 185.4      |                   |                    |   |       |                          |
|             |            | 120.1             |                    |   |       | Wet at 8.5' bgs          |
|             |            | 91.6              |                    |   |       |                          |
| 10          |            |                   |                    | End of boring   |       |                          |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yapple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 568968.789  
 Easting (US ft) : 1458054.673

**Boring ID: B15-011-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|--|-------|--------------------------|
| 0           |            | -                 | B15-011-SB-1       | (0-2') SILTY SAND with trace GRAVEL (subangular) and SLAG, fine to medium grained, medium dense, grayish brown, dry, no plasticity, no cohesion    | SM    | Non-native fill material |
|             |            | <2.1              |                    |  |       |                          |
|             | 80         | 10.7              |                    | (2-8.5') SAND and GRAVEL (subangular), medium-grained to small GRAVEL with trace SILT and SLAG, loose, light gray, dry, no plasticity, no cohesion |       |                          |
|             |            | 8.9               | B15-011-SB-4       |  |       |                          |
|             |            | 5.2               |                    |  |       |                          |
| 5           |            | -                 |                    |  | SW/GW |                          |
|             |            | -                 |                    |  |       |                          |
|             | 62         | 4.2               |                    |  |       |                          |
|             |            | 6.8               |                    |  |       |                          |
|             |            | 10.2              |                    | (8.5-10') SILTY GRAVEL, well-rounded large grains, medium dense, light brown, wet, no plasticity, no cohesion                                      | GW-GM | Wet at 8.5' bgs          |
| 10          |            |                   |                    | End of boring  |       |                          |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : L. Perrin  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/22/2016  
 Weather : 90s, sunny  
 Northing (US ft) : 569192.304  
 Easting (US ft) : 1458553.758

**Boring ID: B15-012-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS       |
|-------------|------------|-------------------|--------------------|---|-------|---------------|
| 0           |            | -                 | B15-012-SB-1       | (0-1.5') SILT with GRAVEL and SAND, soft, brown and gray, dry, no plasticity, no cohesion   | ML    | Wet at 9' bgs |
|             | 60         | 5.4               |                    | (1.5-4') SAND with SILT and GRAVEL, loose, reddish yellow, dry, no plasticity, no cohesion  | SW    |               |
|             |            | 67.1              | B15-012-SB-4       |   |       |               |
| 5           |            | 0.3               |                    | (4-6') SANDY SILT with GRAVEL SLAG, soft, brown and yellow, dry, no plasticity, no cohesion   | ML    |               |
|             | 60         | 3.7               |                    | (6-9') SILTY SAND with GRAVEL SLAG, loose, pale brown and brown, dry, no plasticity, no cohesion                                    | SM    |               |
|             |            | 9.7               |                    |   |       |               |
| 10          |            | 0.4               |                    | (9-11.5') CLAYEY SAND with SLAG GRAVEL and with a SILT lens from 9.6-9.7' bgs, medium dense, brown, wet, no plasticity, no cohesion | SW-SC |               |
|             | 40         | -                 |                    | (11.5-14') SILTY CLAY, soft, brownish gray, moist, low plasticity, cohesive   | CL    |               |
|             |            | 0.0               |                    |   |       |               |
| 15          |            | 0.0               |                    | (14-16') CLAYEY SAND with SLAG GRAVEL, medium dense, brown, wet, no plasticity, no cohesion   | SW-SC |               |
|             | 60         | 0.0               |                    | (16-19.5) CLAY, soft, gray, very moist, medium plasticity, cohesive   | CL    |               |
|             |            | 0.0               |                    |   |       |               |
| 20          |            | 0.0               |                    | (19.5-20') SANDY CLAY with pockets of loose SAND, soft, gray, wet, medium plasticity, cohesive                                      | CL    |               |
|             |            |                   |                    | End of boring   |       |               |

Total Borehole Depth: 20' bgs.  
 Boring terminated at 20' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : W. Mader P.G., CPSS  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, partly cloudy  
 Northing (US ft) : 569135.005  
 Easting (US ft) : 1460007.450

**Boring ID: B15-013-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS        |
|-------------|------------|-------------------|--------------------|--|-------|----------------|
| 0           |            | -                 | B15-013-SB-1       | (0-3.8') SANDY SLAG, loose, light grayish brown to dark grayish brown, dry then moist at 2.7' bgs, no plasticity, no cohesion  | SW    |                |
|             | 67         | 7.2               |                    |  |       |                |
|             |            | 190               |                    |  |       |                |
|             |            | 216               | B15-013-SB-4       |  |       |                |
| 5           |            | 20.0              |                    | (3.7-15') SLAG SAND and GRAVEL, medium dense, brown, light gray, yellow-brown, and yellow, moist grading to very moist then wet at 10' bgs, no plasticity, no cohesion | SW/GW | Wet at 10' bgs |
|             | 47         | -                 |                    |  |       |                |
|             |            | 51.0              |                    |  |       |                |
|             |            | 2.1               | B15-013-SB-10      |  |       |                |
| 10          | 40         | -                 |                    |  |       |                |
|             |            | -                 |                    |  |       |                |
| 15          |            | -                 |                    | End of boring  |       |                |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to water.





**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 569099.268  
 Easting (US ft) : 1459051.247

**Boring ID: B15-014-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS   |
|-------------|------------|-------------------|--------------------|---|-------|---|
| 0           | 90         | <0.3              | B15-014-SB-1       | (0-20') SAND and GRAVEL, fine-grained through medium subrounded GRAVEL, dense, dark brown, dark gray, and red, dry then moist at 9.5' bgs then wet at 12' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material<br>Wood debris with sweet odor from 0-1' bgs |
|             | 86         | 27.9              |                    |   |       |   |
|             |            | 7.8               |                    |   |       |   |
|             |            | 0.7               |                    |   |       |   |
| 5           |            | -                 |                    |   |       |   |
|             | 80         | 13.8              |                    |   |       |   |
|             |            | 33.2              | B15-014-SB-8       |   |       |   |
|             |            | 12.3              |                    |   |       |   |
|             |            | 14.7              | B15-014-SB-10      |   |       |   |
| 10          |            | -                 |                    |   |       |   |
|             | 18         | -                 |                    |   |       |   |
|             |            | -                 |                    |   |       |   |
|             |            | -                 |                    |   |       |   |
| 15          |            | -                 |                    |   |       |   |
|             | 30         | -                 |                    |   |       |   |
|             |            | -                 |                    |   |       |   |
|             |            | -                 |                    |   |       |   |
| 20          |            |                   |                    | End of boring   |       |   |

Total Borehole Depth: 20' bgs.  
 Boring terminated at 20' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 70s, sunny  
 Northing (US ft) : 569130.352  
 Easting (US ft) : 1459269.809

**Boring ID: B15-015-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS  |
|-------------|------------|-------------------|--------------------|---|-------|--|
| 0           |            | -                 | B15-015-SB-1       | (0-10') SAND and GRAVEL, medium grained through large subrounded GRAVEL, with SLAG and some SILT, dense, dark brown and dark gray, moist then wet at 8.5' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material<br>Wood debris from 0-2' bgs<br>Strong sweet odor from 1-2' bgs |
|             |            |                   |                    |   |       |  |
| 70          | 332.2      |                   |                    |   |       |  |
|             |            | 23.4              | B15-015-SB-4       |   |       |  |
|             |            | 0.8               |                    |   |       |  |
| 5           |            | -                 |                    |   |       |  |
|             |            | -                 |                    |   |       |  |
| 40          |            | -                 |                    |   |       |  |
|             |            | 77.1              |                    |   |       | Wet at 8.5' bgs  |
|             |            | 11.7              |                    |   |       |  |
| 10          |            |                   |                    | End of boring   |       |  |

Total Borehole Depth: 10' bgs.  
 Boring terminated at 10' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, sunny  
 Northing (US ft) : 569276.562  
 Easting (US ft) : 1459926.161

**Boring ID: B15-016-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|---|-------|--------------------------|
| 0           |            | -                 | B15-016-SB-1       | (0-15') SAND and GRAVEL, medium-grained through large subrounded to subangular GRAVEL, with trace SLAG and SILT, dense, dark brown, black, and dark gray, dry then wet at 13.5' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material |
|             | 76         | 0.8               |                    |   |       |                          |
|             |            | 3.8               |                    |   |       |                          |
|             |            | 2.6               |                    |   |       |                          |
|             |            | 5.8               | B15-016-SB-5       |   |       |                          |
| 5           |            | -                 |                    |   |       |                          |
|             |            | 2.7               |                    |   |       |                          |
|             | 80         | 1.2               |                    |   |       |                          |
|             |            | 2.8               |                    |   |       |                          |
|             |            | 4.5               | B15-016-SB-10      |   |       |                          |
| 10          |            | -                 |                    |   |       |                          |
|             | 40         | -                 |                    |   |       |                          |
|             |            | -                 |                    |   |       |                          |
|             |            | -                 |                    |   |       |                          |
| 15          |            |                   |                    | End of boring   |       | Wet at 13.5' bgs         |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to water.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yapple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, sunny  
 Northing (US ft) : 569232.776  
 Easting (US ft) : 1459788.820

**Boring ID: B15-017-SB**

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| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|--|-------|--------------------------|
| 0           |            | -                 | B15-017-SB-1       | (0-9.5') SAND and GRAVEL, fine-grained through medium subrounded GRAVEL, with trace SLAG and SILT, dense, dark brown, black, and dark gray, dry then wet at 9.5' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material |
|             |            | 7.5               |                    |  |       |                          |
|             | 86         | 14.2              |                    |  |       |                          |
|             |            | 12.7              |                    |  |       |                          |
|             |            | 1.6               |                    |  |       |                          |
| 5           |            | -                 |                    |  |       |                          |
|             | 69         | 22.2              |                    |  |       |                          |
|             |            | 24.2              | B15-017-SB-8       |  |       |                          |
|             |            | 5.8               |                    |  |       |                          |
| 10          |            |                   | End of boring      |  |       |                          |

Total Borehole Depth: 9.5' bgs.  
 Boring terminated at 9.5' bgs due to refusal and water.





Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : W. Mader P.G., CPSS  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, overcast  
 Northing (US ft) : 569336.073  
 Easting (US ft) : 1459471.133

**Boring ID: B15-018-SB**

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| Depth (ft.)   | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS     | REMARKS                              |
|---------------|------------|-------------------|--------------------|---|----------|--------------------------------------|
| 0             |            | 1.0               | B15-018-SB-1       | (0-0.2') ASPHALT, loose, gray, dry, no plasticity, no cohesion  | NA<br>SW |                                      |
|               | 92         | 7.0               |                    | (0.2-0.6') SANDY SLAG, loose, medium brownish gray, dry, no plasticity, no cohesion   | ML       |                                      |
|               |            | 3.3               |                    | (0.6-4.2') SANDY SLAG, medium dense, dark grayish black, moist, no plasticity, no cohesion  |          |                                      |
|               |            | 13.8              | B15-018-SB-4       |   |          |                                      |
| 5             |            | 3.0               |                    | (4.2-13') BRICK SAND and GRAVEL, with gray SANDY SLAG at depth, loose, yellow and red, moist grading to very moist then wet at 9.8' bgs, no plasticity, no cohesion | SW/GW    | Wet at 9.8' bgs                      |
|               | 67         | -                 |                    |   |          |                                      |
|               |            | 3.2               |                    |   |          |                                      |
|               |            | 3.0               |                    |   |          |                                      |
| 10            |            | 0.2               |                    |   | ML       |                                      |
|               | 67         | -                 |                    | (13-13.5') CLAYEY SILT, soft, blackish gray, wet, low plasticity, cohesive  |          |                                      |
|               |            | -                 |                    | (13.5-16.2') SILTY SAND, loose, dark grayish olive, wet, no plasticity, no cohesion   |          |                                      |
| 15            |            | -                 |                    |   | SM       | Petroleum-like sheen from 13-15' bgs |
|               | 100        | -                 |                    | (16.2-17') CLAYEY SILT, soft, dark grayish olive, wet, low plasticity, cohesive   | ML       |                                      |
| End of boring |            |                   |                    |   |          |                                      |

Total Borehole Depth: 17' bgs.  
 Boring terminated at 17' bgs due to water.



**ARM Group Inc.**  
Earth Resource Engineers  
and Consultants

Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : W. Mader P.G., CPSS  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Kevin Pumphrey  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, mostly clear

Northing (US ft) : 569263.373  
 Easting (US ft) : 1458776.088

**Boring ID: B15-019-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS              |
|-------------|------------|-------------------|--------------------|---|-------|----------------------|
| 0           |            |                   |                    | (0-0.1') ASPHALT, loose, dark gray, dry, no plasticity, no cohesion             | NA    | Sharp chemical odor  |
|             |            | 90.5              | B15-019-SB-1       | (0.1-3') SANDY SLAG, dense, dark brownish gray, dry, no plasticity, no cohesion |       |                      |
| 1           |            |                   |                    |   |       | No water encountered |
|             | 69         | 12.0              |                    |   | SW/GW |                      |
| 2           |            |                   |                    |   |       |                      |
| 3           |            |                   |                    | End of boring   |       |                      |
| 4           |            |                   |                    |   |       |                      |

Total Borehole Depth: 3' bgs.  
 Boring terminated at 3' bgs due to three refusals.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, sunny  
 Northing (US ft) : 569185.005  
 Easting (US ft) : 1458933.563

**Boring ID: B15-020-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery    | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION  | USCS  | REMARKS  |
|-------------|---------------|-------------------|--------------------|--|-------|--|
| 0           |               | -                 | B15-020-SB-1       | (0-12') SAND and GRAVEL, medium-grained through small subrounded GRAVEL, with SILT and trace SLAG with a 3" CLAY lens at 6.5' bgs, loose, dark brown, dry then moist from 6.5-7' bgs then wet at 12' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material                                   |
|             | 72            | 0.7               |                    |  |       |  |
|             |               | 1.4               |                    |  |       |  |
|             |               | 2.7               |                    |  |       |  |
|             |               | 0.9               |                    |  |       |  |
| 5           | 70            | 8.5               |                    |  |       |  |
|             |               | 230.4             | B15-020-SB-7       |  |       |  |
|             |               | -                 |                    |  |       |  |
|             | 100           | 2.5               |                    |  |       |  |
|             |               | 3.5               | B15-020-SB-10      |  |       |  |
| 10          |               | 1.8               |                    | (12-15') SILT, medium soft, brownish black, moist then wet at 14' bgs, no plasticity, no cohesion  | ML    | Strong petroleum odors at 12-15' bgs<br><br>Wet at 14' bgs |
|             | 100           | 1.1               |                    |  |       |  |
|             |               | 1.6               |                    |  |       |  |
|             |               | 1.2               |                    |  |       |  |
|             |               | 1.6               |                    |  |       |  |
| 15          | End of boring |                   |                    |  |       |  |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to water.



Client : EnviroAnalytics Group  
 ARM Project No. : 150300M-23-3  
 Project Description : Sparrows Point - Parcel B15  
 Site Location : Sparrows Point, MD  
 ARM Representative : J. Yaple  
 Checked by : W. Mader P.G., CPSS  
 Drilling Company : Green Services, Inc  
 Driller : Don Marchese  
 Drilling Equipment : Geoprobe 7822DT

Date : 8/25/2016  
 Weather : 80s, sunny  
 Northing (US ft) : 569231.473  
 Easting (US ft) : 1459406.101

**Boring ID: B15-021-SB**

(page 1 of 1)

| Depth (ft.) | % Recovery | PID Reading (PPM) | Sample ID/Interval | DESCRIPTION   | USCS  | REMARKS                  |
|-------------|------------|-------------------|--------------------|---|-------|--------------------------|
| 0           |            | -                 | B15-021-SB-1       | (0-15') SAND and GRAVEL, medium-grained through small subrounded GRAVEL, with trace SLAG, loose, dark brownish black, dry then moist at 4-5' bgs and 8.5-9' bgs, wet at 14.5' bgs, no plasticity, no cohesion | SW/GW | Non-native fill material |
|             | 70         | 3.6               |                    |   |       |                          |
|             |            | 8.1               | B15-021-SB-4       |   |       |                          |
|             |            | 4.2               |                    |   |       |                          |
| 5           |            | -                 |                    |   |       |                          |
|             | 74         | 4.2               |                    |   |       |                          |
|             |            | 3.6               |                    |   |       |                          |
|             |            | 9.6               | B15-021-SB-10      |   |       |                          |
| 10          |            | -                 |                    |   |       |                          |
|             | 34         | -                 |                    |   |       |                          |
|             |            | 0.5               |                    |   |       |                          |
|             |            | <0.4              |                    |   |       |                          |
| 15          |            |                   |                    | End of boring   |       | Wet at 14.5' bgs         |

Total Borehole Depth: 15' bgs.  
 Boring terminated at 15' bgs due to water.



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## **APPENDIX C**

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## **APPENDIX D**

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## **APPENDIX E**

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## LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: B15-012-PZ

Client: EnviroAnalytics Group  
Site: Sparrows Point - Area B Parcel B15  
Sparrows Point, MD  
ARM Project No.: 150300M-23-3  
Page 1 of 1

Date Installed : 8/22/16  
Casing/Riser Type : PVC  
Borehole Diameter : 2.25"  
Drilling Method : 7822DT Geoprobe  
Driller : Kevin Pumphrey

Drilling Company : Green Services, Inc  
TOC Elevation : ---  
0-Hr DTW : 11.62' TOC  
48-Hr DTW : 11.63' TOC  
ARM Representative : L. Perrin

| Depth in Feet | Surf. Elev. | DESCRIPTION  |  | REMARKS  |
|---------------|-------------|--|--|--|
| 0             |             | Riser Type: PVC<br>Riser Diameter: 1"<br>Riser Stickup: 3.10'<br>Riser Amount: 5'          | <p style="font-size: small;">Bentonite seal<br/>1" PVC Riser<br/>Sand Pack<br/>1" PVC Screen</p> | <p>Northing (US ft):<br/>569283.86<br/>Easting (US ft):<br/>1459590.99</p> <p style="text-align: center;">No NAPL detected</p> |
| 1             |             | Screen Type: PVC<br>Screen Diameter: 1"<br>Screen Amount: 15'<br>Slot Size: 0.010"         |  |  |
| 2             |             |  |  |  |
| 3             |             | Sand Pack:<br>Top: 3' bgs<br>Bottom: 20' bgs<br>Grain Size: WG #1                          |  |  |
| 4             |             | Bentonite Seal:<br>Top: 0 (surface)<br>Bottom: 3' bgs<br>Grain Size: granular (30-50 mesh) |  |  |
| 5             |             |  |  |  |
| 6             |             |  |  |  |
| 7             |             |  |  |  |
| 8             |             |  |  |  |
| 9             |             |  |  |  |
| 10            |             |  |  |  |
| 11            |             |  |  |  |
| 12            |             |  |  |  |
| 13            |             |  |  |  |
| 14            |             |  |  |  |
| 15            |             |  |  |  |
| 16            |             |  |  |  |
| 17            |             |  |  |  |
| 18            |             |  |  |  |
| 19            |             |  |  |  |
| 20            |             |  |  |  |
| 21            |             | End of Boring  |  |  |

Total Depth: 20'

TOC: Top of PVC casing  
DTW: Depth to water



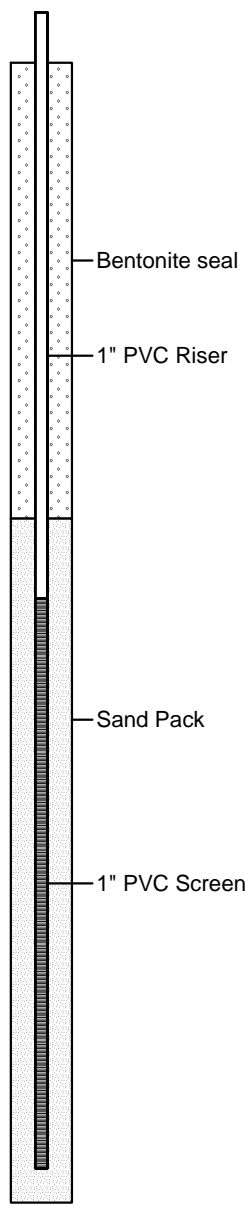
## LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: B15-014-PZ

Client: EnviroAnalytics Group  
Site: Sparrows Point - Area B Parcel B15  
Sparrows Point, MD  
ARM Project No.: 150300M-23-3  
Page 1 of 1

Date Installed : 8/25/16  
Casing/Riser Type : PVC  
Borehole Diameter : 2.25"  
Drilling Method : 7822DT Geoprobe  
Driller : Don Marchese

Drilling Company : Green Services, Inc  
TOC Elevation : ---  
0-Hr DTW : 13.57' TOC  
48-Hr DTW : 13.67' TOC  
ARM Representative : J.Yaple

| Depth in Feet | Surf. Elev. | DESCRIPTION   | REMARKS  |
|---------------|-------------|---|--|
| 0             |             | Riser Type: PVC<br>Riser Diameter: 1"<br>Riser Stickup: 3.0'<br>Riser Amount: 10'                     | Northing (US ft):<br>569099.27<br>Easting (US ft):<br>1459051.25<br><br>No NAPL detected |
| 1             |             |   |  |
| 2             |             |   |  |
| 3             |             | Screen Type: PVC<br>Screen Diameter: 1"<br>Screen Amount: 10'<br>Slot Size: 0.010"                    |  |
| 4             |             |   |  |
| 5             |             | Sand Pack:<br>Top: 8' bgs<br>Bottom: 20' bgs<br>Grain Size: WG #2                                     |  |
| 6             |             |   |  |
| 7             |             |   |  |
| 8             |             | Bentonite Seal:<br>Top: 0 (surface)<br>Bottom: 8' bgs<br>Grain Size: 3/8' chips/granular (30-50 mesh) |  |
| 9             |             |   |  |
| 10            |             | (2-8') granular<br>(0-2') chips   |  |
| 11            |             |   |  |
| 12            |             |   |  |
| 13            |             |   |  |
| 14            |             |   |  |
| 15            |             |   |  |
| 16            |             |   |  |
| 17            |             |   |  |
| 18            |             |   |  |
| 19            |             |   |  |
| 20            |             |   |  |
| 21            |             | End of Boring   |  |



Total Depth: 20'

TOC: Top of PVC casing  
DTW: Depth to water



## LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: B15-018-PZ

Client: EnviroAnalytics Group  
Site: Sparrows Point - Area B Parcel B15  
Sparrows Point, MD  
ARM Project No.: 150300M-23-3  
Page 1 of 1

Date Installed : 8/25/16  
Casing/Riser Type : PVC  
Borehole Diameter : 2.25"  
Drilling Method : 7822DT Geoprobe  
Driller : Kevin Pumphrey

Drilling Company : Green Services, Inc  
TOC Elevation : ---  
0-Hr DTW : 12.41' TOC  
48-Hr DTW : 12.52' TOC  
ARM Representative : L. Perrin

| Depth in Feet | Surf. Elev. | DESCRIPTION   |  | REMARKS  |
|---------------|-------------|---|--|--|
| 0             |             | Riser Type: PVC<br>Riser Diameter: 1"<br>Riser Stickup: 2.6'<br>Riser Amount: 7'                      | <p style="font-size: small;">Bentonite seal<br/>1" PVC Riser<br/>Sand Pack<br/>1" PVC Screen</p> | <p>Northing (US ft):<br/>569336.07<br/>Easting (US ft):<br/>1459471.13</p> <p style="text-align: center;">No NAPL detected</p> |
| 1             |             |   |  |  |
| 2             |             |   |  |  |
| 3             |             | Screen Type: PVC<br>Screen Diameter: 1"<br>Screen Amount: 10'<br>Slot Size: 0.010"                    |  |  |
| 4             |             |   |  |  |
| 5             |             | Sand Pack:<br>Top: 5' bgs<br>Bottom: 17' bgs<br>Grain Size: WG #1                                     |  |  |
| 6             |             |   |  |  |
| 7             |             |   |  |  |
| 8             |             | Bentonite Seal:<br>Top: 0 (surface)<br>Bottom: 5' bgs<br>Grain Size: 3/8' chips/granular (30-50 mesh) |  |  |
| 9             |             |   |  |  |
| 10            |             | (2-5') granular<br>(0-2') chips   |  |  |
| 11            |             |   |  |  |
| 12            |             |   |  |  |
| 13            |             |   |  |  |
| 14            |             |   |  |  |
| 15            |             |   |  |  |
| 16            |             |   |  |  |
| 17            |             | End of Boring   |  |  |

Total Depth: 17'

TOC: Top of PVC casing  
DTW: Depth to water

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## **APPENDIX F**

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# Low Flow Sampling Temporary Piezometers



**ARM Group Inc.**  
Earth Resource Engineers and Consultants

Project Name: Area B Parcel B15 Phase 1 Project Number: 150200M-23-3  
 Piezometer Number: B15-012-PZ Date: 8/30/10  
 Piezometer Diameter (in): 1 One Well Volume (gal):  
 Depth to Product (ft): none QED Controller Settings:  
 Depth to Water (ft): 10.66 Flow Rate (mL/min) 300  
 Product Thickness (ft): none Length of time Purged (min)  
 Depth to Bottom (ft): 22.55

### 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 |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|----------|
| 1127 | 2.0                     | 11.80      | 20.94     | 10.24           | 0.477                             | 0.63                          | -23.4         | 26.9                         | cloudy   |
| 1132 | 2.4                     | 11.66      | 21.05     | 10.21           | 0.471                             | 0.25                          | -42.8         | 73.9                         |          |
| 1137 | 2.75                    | 11.66      | 20.92     | 10.18           | 0.471                             | 0.15                          | -52.8         | 53.4                         |          |
| 1142 | 3.1                     | 11.66      | 21.14     | 10.16           | 0.470                             | 0.11                          | -62.9         | 72.27                        | /        |
| 1147 |                         |            |           |                 |                                   |                               |               |                              |          |

### MONITORING SAMPLE RECORD

| Sample ID  | Time Collected | Parameter/Order   | Container          | Perservative | Collected? |
|------------|----------------|---|--------------------|--------------|------------|
| B15-012-PZ | 1147           | TCL-VOCs  | 3 - 40 mL VOA      | HCl          | y          |
|            |                | 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          |            |
|            |                | Total Cyanide   | 1 - 250 mL Plastic | NaOH         |            |
|            |                | TAL-Metals & Mercury (Dissolved)<br><b>Field Filtered</b> | 1 - 250 mL Plastic | HNO3         |            |
|            |                | Hexavalent Chromium (Dissolved)<br><b>Field Filtered</b>  | 1 - 250 mL Plastic | None         |            |
|            |                | Matrix Spike  |                    |              |            |
|            |                | Duplicate   |                    |              |            |

Sampled By: CMG

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 Temporary Piezometers



**ARM Group Inc.**  
Earth Resource Engineers and Consultants

|   |                                     |
|---|-------------------------------------|
| Project Name: <u>Area B Parcel B15 phase II</u> | Project Number: <u>150200M-23-3</u> |
| Piezometer Number: <u>B15-014-PZ</u>            | Date: <u>8/30/16</u>                |
| Piezometer Diameter (in): <u>1</u>              | One Well Volume (gal):              |
| Depth to Product (ft): <u>none</u>              | QED Controller Settings:            |
| Depth to Water (ft): <u>13.70</u>               | Flow Rate (mL/min) <u>200</u>       |
| Product Thickness (ft): <u>none</u>             | Length of time Purged (min)         |
| Depth to Bottom (ft): <u>22.43</u>              |                                     |

### PURGING RECORD

| Time | Volume Purged (gallons) | DTW (feet) | Temp (°C) | pH (s.u.) ± 0.1 | Specific Conductance (ms/cm) ± 3% | Dissolved Oxygen (mg/L) ± 0.3 | ORP (mV) ± 10 | Turbidity (NTU) ± 10% or < 5 | Comments   |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|------------|
| 0930 | 1.5                     | 13.70      | 18.80     | 10.97           | 0.769                             | -0.35                         | 50.8          | 10.65                        | very clear |
| 0935 | 1.9                     | 13.70      | 18.82     | 10.88           | 0.769                             | 0.44                          | 12.4          | 5.10                         |            |
| 0940 | 2.3                     | 13.70      | 18.89     | 10.92           | 0.763                             | 0.54                          | -8.2          | 5.08                         |            |
| 0945 | 2.6                     | 13.70      | 18.81     | 10.98           | 0.756                             | 0.14                          | -31.0         | 7.20                         |            |
| 0950 | 3.0                     | 13.70      | 18.82     | 11.01           | 0.752                             | 0.35                          | -44.8         | 8.28                         |            |
| 0955 | 3.3                     | 13.70      | 18.80     | 11.05           | 0.750                             | 0.31                          | -57.8         | 10.55                        |            |
| 0958 | 3.5                     | 13.70      | 18.83     | 11.07           | 0.749                             | 0.25                          | -61.0         | 8.28                         |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |

### MONITORING SAMPLE RECORD

| Sample ID  | Time Collected     | Parameter/Order   | Container          | Perservative | Collected? |
|--|--------------------|---|--------------------|--------------|------------|
| B15-014-PZ   | 1001               | TCL-VOCs  | 3 - 40 mL VOA      | HCl          | Y          |
|  |                    | 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          |            |
|  |                    | Total Cyanide   | 1 - 250 mL Plastic | NaOH         |            |
|  |                    | TAL-Metals & Mercury (Dissolved)<br><b>Field Filtered</b> | 1 - 250 mL Plastic | HNO3         |            |
| Hexavalent Chromium (Dissolved)<br><b>Field Filtered</b> | 1 - 250 mL Plastic | None  |                    |              |            |

Matrix Spike

Duplicate YLS

Sampled By: LMG

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 Temporary Piezometers



## ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: Area B Parcel B15 Phase II

Project Number: 15020014-23-3

Piezometer Number: B15-018-P2

Date: 8/30/16

Piezometer Diameter (in): 1

One Well Volume (gal):

Depth to Product (ft): none

QED Controller Settings:

Depth to Water (ft): 12.55

Flow Rate (mL/min) 300

Product Thickness (ft): none

Length of time Purged (min)

Depth to Bottom (ft): 19.32

### 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   |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|------------|
| 1333 | 2.0                     | 12.55      | 21.81     | 7.70            | 0.682                             | 2.39                          | 25.3          | 26.2                         | clear      |
| 1338 | 2.3                     | 12.55      | 21.90     | 7.49            | 0.681                             | 2.28                          | 36.8          | 36.8                         |            |
| 1343 | 2.6                     | 12.55      | 21.75     | 7.40            | 0.687                             | 2.10                          | 39.0          | 11.2                         | very clear |
| 1348 | 3.0                     | 12.55      | 21.75     | 7.41            | 0.683                             | 1.98                          | 33.5          | 4.84                         | 0          |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |
|      |                         |            |           |                 |                                   |                               |               |                              |            |

### MONITORING SAMPLE RECORD

| Sample ID         | Time Collected | Parameter/Order   | Container          | Perservative | Collected? |
|-------------------|----------------|---|--------------------|--------------|------------|
| <u>B15-018-P2</u> | <u>1353</u>    | 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          |            |
|                   |                | Total Cyanide   | 1 - 250 mL Plastic | NaOH         |            |
|                   |                | TAL-Metals & Mercury (Dissolved)<br><b>Field Filtered</b> | 1 - 250 mL Plastic | HNO3         |            |
|                   |                | Hexavalent Chromium (Dissolved)<br><b>Field Filtered</b>  | 1 - 250 mL Plastic | None         |            |

Matrix Spike

Duplicate

Sampled By: LM/g

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



# ARM Group Inc.

Earth Resource Engineers and Consultants

|  |                                       |
|--|---------------------------------------|
| Project Name: <u>Area B GW Investigation</u> | Project Number: <u>150300M</u>        |
| Well Number: <u>SW-021-MWS</u>               | Date: <u>2-4-16</u>                   |
| Well Diameter (in): <u>2</u>                 | One Well Volume (gal):                |
| Total Depth (ft):                            | QED Controller Settings:              |
| Depth to Water (ft) <u>10.60</u>             | Flow Rate (mL/min) <u>500 mL/min</u>  |
| Height of Water Column (ft):                 | Length of time Purged (min) <u>25</u> |

### WELL PURGING RECORD

| Time | Volume Purged (gallons) | Temp (°C) | pH (s.u.) | Specific Conductance (mS/cm) | Dissolved Oxygen (mg/L) | ORP (mV) | Turbidity (NTU) | Comments |
|------|-------------------------|-----------|-----------|------------------------------|-------------------------|----------|-----------------|----------|
| 0820 | 0                       | 15.07     | 10.13     | 1.146                        | 9.43                    | -32.8    | 137             |          |
| 0825 | 0.5                     | 15.25     | 10.79     | 1.230                        | 2.54                    | 81.9     | 69.8            |          |
| 0830 | 1.1                     | 15.10     | 10.81     | 1.197                        | 2.56                    | -103.5   | 26.3            |          |
| 0835 | 1.75                    | 15.08     | 10.89     | 1.197                        | 2.43                    | -120.7   | 12.9            |          |
| 0840 | 2.5                     | 15.09     | 10.93     | 1.198                        | 2.37                    | -129.9   | 9.38            |          |
| 0845 | 3.1                     | 15.09     | 10.601    | 1.207                        | 2.23                    | -135.8   | 6.38            |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |
|      |                         |           |           |                              |                         |          |                 |          |

### MONITORING SAMPLE RECORD

| Sample ID                      | Time Collected | Parameter              | Container          | Perservative | Y/N |
|--------------------------------|----------------|------------------------|--------------------|--------------|-----|
| <u>SW-021-MWS</u>              | <u>0850</u>    | TCL-VOCs               | 3 - 40 mL VOA      | HCL          | y   |
|                                |                | TCL-SVOCs              | 2 - 1 L Amber      | none         | y   |
|                                |                | TAL-Metals (Total)     | 1 - 250 mL Plastic | HNO3         | y   |
|                                |                | TAL-Metals (Dissolved) | 1 - 250 mL Plastic | HNO3         | y   |
|                                |                | TPH-DRO                | 2 - 1 L Amber      | none         | y   |
|                                |                | TPH-GRO                | 3 - 40 mL VOA      | HCL          | y   |
|                                |                | Hexavalent Chromium    | 1 - 250 mL Plastic | None         | y   |
|                                |                | Cyanide                | 1 - 250 mL Plastic | NAOH         | y   |
| PCBs                           | 2 - 1 L Amber  | none                   | y                  |              |     |
| Matrix Spike present?          |                |                        |                    |              |     |
| Duplicate assessed? <u>Y/S</u> |                |                        |                    |              |     |

Sampled By: IMG

Comments: Dissolved metals are Field Filtered

Flowing 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)



# Groundwater Sampling



# ARM Group Inc.

Earth Resource Engineers and Consultants

|   |                                     |
|---|-------------------------------------|
| Project Name: <u>Finishing Mills GW</u> | Project Number: <u>150300M-21-3</u> |
| Well Number: <u>SW-079-MWS</u>          | Date: <u>6-27-16</u>                |
| Well Diameter (in): <u>2</u>            | One Well Volume (gal):              |
| Total Depth (ft):                       | Purge Rate (mL/min) <u>300</u>      |
| Depth to Water (ft) <u>12.84</u>        | Length of time Purged (min)         |
| Condition of Casing: <u>missing</u>     | Condition of Pad: <u>missing</u>    |

### WELL 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 |
|------|-------------------------|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|----------|
| 1428 | 0                       | 12.84      | 19.10     | 7.74            | 1.562                             | 1.45                          | -163.3        | 83.4                         | clear    |
| 1433 | 0.3                     | 12.62      | 18.86     | 8.40            | 1.456                             | 0.44                          | -174.1        | 59.7                         |          |
| 1438 | 0.5                     | 12.62      | 18.66     | 9.22            | 1.368                             | 0.32                          | -132.8        | 25.7                         |          |
| 1443 | 0.8                     | 12.6       | 18.58     | 9.63            | 1.339                             | 0.30                          | -124.3        | 19.2                         |          |
| 1448 | 1.0                     | 12.6       | 18.62     | 9.85            | 1.333                             | 0.25                          | -114.0        | 11.22                        |          |
| 1453 | 1.3                     | 12.58      | 18.57     | 10.01           | 1.330                             | 0.24                          | -111.3        | 6.75                         |          |
| 1458 | 1.7                     | 12.58      | 18.56     | 10.16           | 1.329                             | 0.19                          | -111.1        | 4.28                         |          |
| 1503 | 2.1                     | 12.58      | 18.54     | 10.28           | 1.330                             | 0.20                          | -105.6        | 3.33                         |          |
| 1508 | 2.55                    | 12.58      | 18.30     | 10.35           | 1.328                             | 0.19                          | -102.2        | 2.83                         |          |
| 1513 | 2.9                     | 12.58      | 18.50     | 10.35           | 1.328                             | 0.19                          | -102.9        | 2.81                         |          |

### MONITORING SAMPLE RECORD

| Sample ID  | Time Collected | Parameter/Order                  | Container          | Perservative | Collected? |
|------------|----------------|----------------------------------|--------------------|--------------|------------|
| SW-079-MWS | 1518           | 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         |            |
|            |                | TAL-Metals & Mercury (Total)     | 1 - 250 mL Plastic | HNO3         |            |
|            |                | Hexavalent Chromium              | 1 - 250 mL Plastic | None         |            |
|            |                | Cyanide                          | 1 - 250 mL Plastic | NaOH         |            |
|            |                | TAL-Metals & Mercury (Dissolved) | 1 - 250 mL Plastic | HNO3         |            |

Matrix Spike

Duplicate

Sampled By:

LMW

Comments: **\*\*Dissolved metals are Field Filtered\*\***

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



## ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: Arca B GW Investigation

Project Number: 150300M-10-3

Well Number: TM03-PZM004

Date: 3/29/16

Well Diameter (in): 2

One Well Volume (gal):

Total Depth (ft):

QED Controller Settings:

Depth to Water (ft) 11.20

Flow Rate (mL/min) 400 mL/m

Height of Water Column (ft):

Length of time Purged (min) 40

### WELL PURGING RECORD

| Time | Volume Purged (gallons) | Temp (°C) | pH (s.u.)            | Specific Conductance (µS/cm) | Dissolved Oxygen (mg/L) | ORP (mV) | Turbidity (NTU) | Comments   |
|------|-------------------------|-----------|----------------------|------------------------------|-------------------------|----------|-----------------|------------|
| 0848 | 0                       | 13.90     | 10.94                | 0.733                        | 5.75                    | -264     | 187             |            |
| 0853 | 0.5                     | 13.87     | 9.97                 | 0.639                        | 2.06                    | -158     | 97.0            | gray color |
| 0858 | 1.0                     | 13.88     | 9.28                 | 0.623                        | 1.99                    | -104     | 48.7            |            |
| 0903 | 1.5                     | 13.91     | 9.05                 | 0.610                        | 1.95                    | -75      | 23.9            |            |
| 0908 | 2.0                     | 14.00     | 8.99                 | 0.607                        | 1.92                    | -39      | 16.8            |            |
| 0913 | 2.5                     | 14.07     | 8.97                 | 0.595                        | 1.91                    | -18      | 14.9            |            |
| 0918 | 2.0                     | 14.15     | <del>8.94</del> 8.94 | 0.594                        | 1.98                    | 3        | 14.7            |            |
| 0923 | 3.5                     | 14.22     | 8.89                 | 0.605                        | 1.93                    | 3        | 10.6            |            |
| 0928 | 4.0                     | 14.29     | 9.64                 | 0.589                        | 1.94                    | -128     | 9.1             |            |
|      |                         |           |                      |                              |                         |          |                 |            |
|      |                         |           |                      |                              |                         |          |                 |            |
|      |                         |           |                      |                              |                         |          |                 |            |
|      |                         |           |                      |                              |                         |          |                 |            |

### MONITORING SAMPLE RECORD

| Sample ID             | Time Collected | Parameter              | Container          | Perservative | Y/N |
|-----------------------|----------------|------------------------|--------------------|--------------|-----|
| TM03-PZM004           | 0933           | TCL-VOCs               | 3 - 40 mL VOA      | HCL          | Y   |
|                       |                | TCL-SVOCs              | 2 - 1 L Amber      | none         | Y   |
|                       |                | TAL-Metals (Total)     | 1 - 250 mL Plastic | HNO3         | Y   |
|                       |                | TAL-Metals (Dissolved) | 1 - 250 mL Plastic | HNO3         | Y   |
|                       |                | TPH-DRO                | 2 - 1 L Amber      | none         | Y   |
|                       |                | TPH-GRO                | 3 - 40 mL VOA      | HCL          | Y   |
|                       |                | Hexavalent Chromium    | 1 - 250 mL Plastic | None         | Y   |
|                       |                | Cyanide                | 1 - 250 mL Plastic | NAOH         | Y   |
|                       |                | PCBs                   | 2 - 1 L Amber      | none         | N   |
| Matrix Spike present? |                |                        |                    |              |     |
| Duplicate assessed?   |                |                        |                    |              |     |

Sampled By:

LMG

Comments: Dissolved metals are Field Filtered  
DO was not properly calibrated.  
Values may be inaccurate

MS/MSD

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



# ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample

Project Number: 150300M-21-3

Well Number: TM07-P2M005

Date: 6/27/16 1433

Well Diameter (in): 2

One Well Volume (gal):

Total Depth (ft):

QED Controller Settings:

Depth to Water (ft) 13.55

Flow Rate (mL/min) 500 → 300

Condition of Casing / Pad: OK / OK

Length of time Purged (min) 26

### WELL PURGING RECORD

| Time | Volume Purged (gallons)<br><i>liters</i> | 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 |
|------|--|------------|-----------|-----------------|-----------------------------------|-------------------------------|---------------|------------------------------|----------|
| 1438 | 2  | 13.73      | 17.20     | 9.93            | 0.465                             | 2.31                          | -57.2         | 2.03                         |          |
| 1443 | 3.5                                      | 13.73      | 17.29     | 10.35           | 0.490                             | 1.40                          | -87.9         | 1.40                         |          |
| 1448 | 5.0                                      | 13.73      | 17.09     | 10.54           | 0.500                             | 1.16                          | -102.8        | 1.26                         |          |
| 1453 | 10.0                                     | 13.73      | 17.25     | 10.66           | 0.507                             | 0.92                          | -111.5        | 1.15                         |          |
| 1456 | 11.5                                     | 13.73      | 17.45     | 10.72           | 0.509                             | 0.79                          | -116.9        | 1.10                         |          |
| 1459 | 13.0                                     | 13.73      | 17.50     | 10.74           | 0.511                             | 0.73                          | -119.2        | 1.08                         |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |
|      |  |            |           |                 |                                   |                               |               |                              |          |

### MONITORING SAMPLE RECORD

| Sample ID     | Time Collected | Parameter/Order                  | Container          | Perservative | Collected? |
|---------------|----------------|----------------------------------|--------------------|--------------|------------|
| TM07 - P2M005 | 1510           | TCL-VOCs                         | 3 - 40 mL VOA      | HCl          | X          |
|               |                | TPH-GRO                          | 3 - 40 mL VOA      | HCl          | X          |
|               |                | TPH-DRO                          | 2 - 1 L Amber      | none         | X          |
|               |                | TCL-SVOCs                        | 2 - 1 L Amber      | none         | X          |
|               |                | TAL-Metals & Mercury (Total)     | 1 - 250 mL Plastic | HNO3         | X          |
|               |                | Hexavalent Chromium              | 1 - 250 mL Plastic | None         | X          |
|               |                | Cyanide                          | 1 - 250 mL Plastic | NaOH         | X          |
|               |                | TAL-Metals & Mercury (Dissolved) | 1 - 250 mL Plastic | HNO3         | X          |
| PCBs          | 2 - 1 L Amber  | None                             | X                  |              |            |
| Matrix Spike  |                |                                  |                    |              |            |
| Duplicate     |                |                                  |                    |              |            |

Sampled By: JLJ

Comments: \*\*Dissolved metals are Field Filtered\*\*

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)

TABLE 1  
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M Area B GW Investigation Date 2-4-16  
 Weather Cloudy 40s  
 Calibrated by LMG Instrument YSI/turbidity  
 Serial Number RFW 24631 YSI  
E0007634 turbidity

| Parameters   | Morning Calibration         | Morning Temperature | End of Day Calibration Check | End of Day Temperature |
|--|-----------------------------|---------------------|------------------------------|------------------------|
| Specific Conductance Standard #1                     | 0.720 <sup>‡</sup>          | 47                  | 2.359 <sup>‡</sup>           | 48                     |
| Specific Conductance Standard #2                     | --                          | 47                  | --                           | 48                     |
| pH (7)   | 6.84                        | 47                  | 6.88                         | 48                     |
| pH (4)   | 4.29                        | 47                  | 3.91                         | 48                     |
| pH(10)   | 10.02                       | 47                  | 10.04                        | 48                     |
| ORP Zobel Solution                                   | --                          | 47                  | --                           | 48                     |
| Dissolved Oxygen 100% water saturated air mg/L       | 10.28 <sup>‡</sup>          | 47                  | 10.14 <sup>‡</sup>           | 48                     |
| Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L | --                          | 47                  | --                           | 48                     |
| Barometric Pressure mm Hg                            | 761.75 mm Hg<br>29.99 in Hg | 47                  | 763.78 mm Hg<br>30.07 in Hg  | 48                     |
| Turbidity #1 (0.1 NTU)                               | 0.1                         | 47                  | 0.19                         | 48                     |
| Turbidity #2 (15 NTU)                                | 15                          | 47                  | 15.3                         | 48                     |
| Turbidity #3 (100 NTU)                               | 100                         | 47                  | 102                          | 48                     |
| Turbidity #4 (750 NTU)                               | 750                         | 47                  | 753                          | 48                     |

<sup>‡</sup>Specific conductance and DO is outside of the post-calibration acceptance criteria. Values displayed on field purge logs may be inaccurate.

TABLE 1  
MULTIPARAMETER CALIBRATION LOG

Project Name Area B GW Investigation Date 3/29/16  
 Weather Sunny, windy 40s  
 Calibrated by LMG Instrument Horiba  
 Serial Number U-5000 Series, EAG owned

| Parameters   | Morning Calibration    | Morning Temperature | End of Day Calibration Check | End of Day Temperature |
|--|------------------------|---------------------|------------------------------|------------------------|
| Specific Conductance Standard #1                     | 4.47 mS/cm             | 47 °F               | 1.48 mS/cm <sup>‡</sup>      | 61                     |
| Specific Conductance Standard #2                     | --                     | 47 °F               |                              | 61                     |
| pH (7)   | --                     | 47 °F               | 7.24                         | 61                     |
| pH (4)   | 4.00                   | 47 °F               | 4.12                         | 61                     |
| pH(10)   | --                     | 47 °F               | 10.17                        | 61                     |
| ORP Zobel Solution                                   | --                     | 47 °F               | --                           | 61                     |
| Dissolved Oxygen 100% water saturated air mg/L       | 9.30 mg/L <sup>‡</sup> | 47 °F               | -- <sup>‡</sup>              | 61                     |
| Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L | --                     | 47 °F               | --                           | 61                     |
| Barometric Pressure mm Hg                            | 762.25                 | NA                  | 30.1 in Hg (estimated)       | NA                     |
| Turbidity #1 (0.1 NTU)                               | -                      | 47 °F               | --                           | 61                     |
| Turbidity #2 (15 NTU)                                | --                     | 47 °F               | --                           | 61                     |
| Turbidity #3 (100 NTU)                               | --                     | 47 °F               | --                           | 61                     |
| Turbidity #4 (750 NTU)                               |                        |                     |                              |                        |

**<sup>‡</sup>Specific conductance and DO is outside of the post-calibration acceptance criteria. Values displayed on field purge logs may be inaccurate.**



TABLE 1  
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/27/16  
 Weather Sunny, 70s  
 Calibrated by LMG Instrument YSI/Lamotte  
 Serial Number YSI: 19883  
Lamotte: 2296

| Parameters   | Morning Calibration | Morning Temperature | End of Day Calibration Check | End of Day Temperature |
|--|---------------------|---------------------|------------------------------|------------------------|
| Specific Conductance Standard #1 (1.413 mS/cm)       | 1.413               | 70° F               | 1.393 <sup>‡</sup>           | 82° F                  |
| Specific Conductance Standard #2                     | --                  | 70° F               | --                           | 82° F                  |
| pH (7)   | 7.01                | 70° F               | 6.74                         | 82° F                  |
| pH (4)   | 4.00                | 70° F               | 4.21                         | 82° F                  |
| pH(10)   | 10.00               | 70° F               | 9.86                         | 82° F                  |
| ORP Zobel Solution                                   | 240                 | 70° F               | 235.7                        | 82° F                  |
| Dissolved Oxygen 100% water saturated air mg/L       | 9.41 <sup>‡</sup>   | 70° F               | 9.35 <sup>‡</sup>            | 82° F                  |
| Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L | --                  | 70° F               | --                           | 82° F                  |
| Barometric Pressure mm Hg                            | 764.79              |                     | 29.99 in Hg                  |                        |
| Turbidity #1 (0.00 NTU)                              | 0.00                |                     | 0.09                         |                        |
| Turbidity #2 (1.00 NTU)                              | 1.00                |                     | 1.03                         |                        |
| Turbidity #3 (10.00 NTU)                             | 9.54                |                     | 9.71                         |                        |

<sup>‡</sup> DO is outside of the morning and post-calibration acceptance criteria. Specific conductance is outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1  
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/27/16  
 Weather Sunny, 70s  
 Calibrated by JTY Instrument YSI/Lamotte  
 Serial Number YSI: 11E101551  
Lamotte: 1848-0412

| Parameters   | Morning Calibration | Morning Temperature | End of Day Calibration Check | End of Day Temperature |
|--|---------------------|---------------------|------------------------------|------------------------|
| Specific Conductance Standard #1 (1.413 mS/cm)       | 1.413               | 70° F               | 1.451                        | 82° F                  |
| Specific Conductance Standard #2                     | --                  | 70° F               | --                           | 82° F                  |
| pH (7)   | 7.00                | 70° F               | 7.35                         | 82° F                  |
| pH (4)   | 4.00                | 70° F               | --                           | 82° F                  |
| pH(10)   | 10.06               | 70° F               | --                           | 82° F                  |
| ORP Zobel Solution                                   | 240                 | 70° F               | 236.4                        | 82° F                  |
| Dissolved Oxygen 100% water saturated air mg/L       | 8.59                | 70° F               | 6.93 <sup>‡</sup>            | 82° F                  |
| Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L | --                  | 70° F               | --                           | 82° F                  |
| Barometric Pressure mm Hg                            | 764.79              |                     | 29.99 in Hg                  |                        |
| Turbidity #1 (0.00 NTU)                              | 0.10 <sup>‡</sup>   |                     | 0.82 <sup>‡</sup>            |                        |
| Turbidity #2 (1.00 NTU)                              | 1.00                |                     | 1.82 <sup>‡</sup>            |                        |
| Turbidity #3 (10.00 NTU)                             | 10.00               |                     | 10.46 <sup>‡</sup>           |                        |

<sup>‡</sup> DO and Turbidity are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1  
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel B15 Phase II 150300M-23-3 Date 8/30/16  
 Weather Sunny, 80s  
 Calibrated by LMG Instrument 650 MDE YSI/Lamotte2020we  
 Serial Number YSI: 11403 (Pine)/07A1480AE  
Lamotte: 1844-0412

| Parameters                                     | Morning Calibration | Morning Temperature | End of Day Calibration Check | End of Day Temperature |
|--|---------------------|---------------------|------------------------------|------------------------|
| Specific Conductance Standard #1<br>1413mS/cm  | 1.376               | 75                  | 1.472                        | 87                     |
| pH (7)   | 7.00                |                     | -                            |                        |
| pH (4)   | 4.00                |                     | 4.18                         |                        |
| pH(10)   | 9.99                |                     | -                            |                        |
| ORP Zobel Solution<br>240mV                    | 240                 |                     | 228.8 <sup>¥</sup>           |                        |
| Dissolved Oxygen 100% water saturated air mg/L | 7.89 <sup>¥</sup>   |                     | 7.03                         |                        |
| Barometric Pressure mm Hg                      | 766.32              |                     | 764.29                       |                        |
| Turbidity #1 (0 NTU)                           | 0.00                |                     | 2.08 <sup>¥</sup>            |                        |
| Turbidity #2 (1 NTU)                           | 1.00                |                     | 2.64 <sup>¥</sup>            |                        |
| Turbidity #3 (10 NTU)                          | 10.00               |                     | 10.28                        |                        |

<sup>¥</sup>ORP and low turbidities were outside of the post-calibration acceptance criteria. DO was outside of the initial calibration acceptance criteria. Values displayed on field purge logs may be inaccurate.

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**CRRGF KZ'I "**

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### Parcel B15 - IDW Drum Log

| Drum ID                     | Designation | Activity/Phase                            | Contents    | Open Date |
|-----------------------------|-------------|---|-------------|-----------|
| 273-S-1/15/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Soil        | 1/15/2016 |
| 357-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 358-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 359-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 360-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 361-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 380-GW-3/4/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/4/2016  |
| 381-GW-3/4/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/4/2016  |
| 382-GW-3/4/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/4/2016  |
| 383-GW-3/4/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/4/2016  |
| 384-GW-3/4/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/4/2016  |
| 387-GW-3/1/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/1/2016  |
| 388-GW-3/2/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 3/2/2016  |
| 453-S-2/8/16-B15            | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Soil        | 2/8/2016  |
| 458-S-2/10/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Soil        | 2/10/2016 |
| 459-S-2/11/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Soil        | 2/11/2016 |
| 460-S-2/12/16-B15           | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Soil        | 2/12/2016 |
| 481-GW-2/26/16-B15          | Non-haz.    | Area B: Parcel B15 Phase II Investigation | Water       | 2/26/2016 |
| 702-PPE-8/22/16-B15         | Non-Haz     | Area B: Parcel B15 Phase II Investigation | PPE         | 8/22/2016 |
| 703-Nitric-8/22/16-B15      | Non-Haz     | Area B: Parcel B15 Phase II Investigation | Nitric Acid | 8/22/2016 |
| 704-Liners-8/22/16-B15      | Non-Haz     | Area B: Parcel B15 Phase II Investigation | Liners      | 8/22/2016 |
| 705-Soil-8/22/16-B15        | Non-Haz     | Area B: Parcel B15 Phase II Investigation | Soil        | 8/22/2016 |
| 706-Decon Water-8/22/16-B15 | Non-Haz     | Area B: Parcel B15 Phase II Investigation | Water       | 8/22/2016 |
| 717-GW-8/30/16-B15          | Non-Haz     | Area B: Parcel B15 Phase II Investigation | Water       | 9/2/2016  |



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## **APPENDIX H**

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## QA/QC Tracking Log - Soil

| Trip Blank: | Date:     | Sample IDs        |                         |
|-------------|-----------|-------------------|-------------------------|
| TB-1        | 8/22/2016 | 1) B15-005-SB-1   |                         |
| TB-1        |           | 2) B15-005-SB-4   |                         |
| TB-1        |           | 3) B15-005-SB-10  |                         |
| TB-1        |           | 4) B15-001-SB-1   |                         |
| TB-1        |           | 5) B15-001-SB-9   |                         |
|             |           | 6) B15-001-SB-10  |                         |
|             |           | 7) B15-012-SB-1   | Duplicate: B15-002-SB-8 |
| TB-1        |           | 8) B15-012-SB-4   | Date: 8/25/2016         |
|             |           | 9) B15-007-SB-1   | MS/MSD: B15-007-SB-4    |
| TB-1        |           | 10) B15-007-SB-4  | Date: 8/25/2016         |
| TB-1        | 8/25/2016 | 11) B15-019-SB-1  | Field Blank:            |
|             |           | 12) B15-002-SB-1  | Date: 8/22/2016         |
| TB-1        |           | 13) B15-002-SB-8  | Eq. Blank: 8/22/2016    |
|             |           | 14) B15-018-SB-1  | Date:                   |
| TB-1        |           | 15) B15-018-SB-4  |                         |
|             |           | 16) B15-013-SB-1  |                         |
| TB-1        |           | 17) B15-013-SB-4  |                         |
|             |           | 18) B15-013-SB-10 |                         |
|             |           | 19)               |                         |
|             |           | 20)               |                         |

| Trip Blank: | Date:     | Sample IDs        |  |                         |
|-------------|-----------|-------------------|--|-------------------------|
|             | 8/25/2016 | 1) B15-020-SB-1   |  |                         |
| TB 1        |           | 2) B15-020-SB-7   |  |                         |
|             |           | 3) B15-020-SB-10  |  |                         |
|             |           | 4) B15-021-SB-1   |  |                         |
|             |           | 5) B15-021-SB-4   |  |                         |
|             |           | 6) B15-021-SB-10  |  |                         |
| TB 1        |           | 7) B15-017-SB-1   |  | Duplicate: B15-020-SB-7 |
|             |           | 8) B15-017-SB-8   |  | Date: 8/25/2016         |
|             |           | 9) B15-016-SB-1   |  | MS/MSD: B15-017-SB-8    |
|             |           | 10) B15-016-SB-5  |  | Date: 8/25/2016         |
|             |           | 11) B15-016-SB-10 |  | Field Blank:            |
|             | 12)       | Date: 8/25/2016   |  |                         |
|             | 13)       | Eq. Blank:        |  |                         |
|             | 14)       | Date: 8/25/2016   |  |                         |
|             | 15)       |                   |  |                         |
|             | 16)       |                   |  |                         |
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|             | 19)       |                   |  |                         |
|             | 20)       |                   |  |                         |

|      |           |                   |  |                         |
|------|-----------|-------------------|--|-------------------------|
|      | 8/22/2016 | 1) B15-003-SB-1   |  |                         |
| TB 1 |           | 2) B15-003-SB-4   |  |                         |
|      |           | 3) B15-003-SB-10  |  |                         |
|      |           | 4) B15-004-SB-1   |  |                         |
|      |           | 5) B15-004-SB-5   |  |                         |
|      |           | 6) B15-004-SB-10  |  |                         |
| TB 1 |           | 7) B15-010-SB-1   |  | Duplicate: B15-010-SB-5 |
| TB 1 |           | 8) B15-010-SB-5   |  | Date: 8/22/2016         |
|      |           | 9) B15-006-SB-1   |  | MS/MSD: B15-009-SB-1    |
|      |           | 10) B15-006-SB-4  |  | Date: 8/22/2016         |
|      |           | 11) B15-011-SB-1  |  | Field Blank:            |
|      |           | 12) B15-011-SB-4  |  | Date: 8/22/2016         |
|      |           | 13) B15-008-SB-1  |  | Eq. Blank:              |
| TB 1 |           | 14) B15-008-SB-9  |  | Date: 8/22/2016         |
|      |           | 15) B15-009-SB-1  |  |                         |
| TB 1 | 8/25/2016 | 16) B15-015-SB-1  |  |                         |
| TB 1 |           | 17) B15-015-SB-4  |  |                         |
| TB 1 |           | 18) B15-014-SB-1  |  |                         |
| TB 1 |           | 19) B15-014-SB-8  |  |                         |
| TB 1 |           | 20) B15-014-SB-10 |  |                         |

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|  | 8)  | Date:        |
|  | 9)  | MS/MSD:      |
|  | 10) | Date:        |
|  | 11) | Field Blank: |
|  | 12) | Date:        |
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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.

## QA/QC Tracking Log - Groundwater

| <u>Trip Blank:</u> | <u>Date:</u> | <u>Sample IDs</u>            |
|--------------------|--------------|------------------------------|
| 8/30/2016          | 1)           | B15-014-PZ                   |
|                    | 2)           | B15-012-PZ                   |
|                    | 3)           | B15-018-PZ                   |
|                    | 4)           |                              |
|                    | 5)           |                              |
|                    | 6)           |                              |
|                    | 7)           | <u>Duplicate:</u> B15-014-PZ |
|                    | 8)           | <u>Date:</u> 8/30/2016       |
|                    | 9)           | <u>MS/MSD:</u> B15-012-PZ    |
|                    | 10)          | <u>Date:</u> 8/30/2016       |
|                    | 11)          | <u>Field Blank:</u>          |
|                    | 12)          | <u>Date:</u> 8/30/2016       |
|                    | 13)          | <u>Eq. Blank:</u>            |
|                    | 14)          | <u>Date:</u>                 |
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| <u>Trip Blank:</u> | <u>Date:</u> | <u>Sample IDs</u>   |
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|                    |              | 1)                  |
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|                    |              | <u>Date:</u>        |
|                    |              | 8)                  |
|                    |              | <u>MS/MSD:</u>      |
|                    |              | <u>Date:</u>        |
|                    |              | 9)                  |
|                    |              | <u>Field Blank:</u> |
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|                    |              | <u>Eq. Blank:</u>   |
|                    |              | <u>Date:</u>        |
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| 8)  | <u>Date:</u>        |
| 9)  | <u>MS/MSD:</u>      |
| 10) | <u>Date:</u>        |
| 11) | <u>Field Blank:</u> |
| 12) | <u>Date:</u>        |
| 13) | <u>Eq. Blank:</u>   |
| 14) | <u>Date:</u>        |
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| 9)  | <u>MS/MSD:</u>      |
| 10) | <u>Date:</u>        |
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## QA/QC Tracking Log - Soil Gas

| Date:     | Sample IDs    |                       |
|-----------|---------------|-----------------------|
| 9/20/2016 | 1) B15-023-SG |                       |
|           | 2) B15-022-SG |                       |
|           | 3) B15-024-SG |                       |
|           | 4)            |                       |
|           | 5)            |                       |
|           | 6)            |                       |
|           | 7)            | Duplicate: B15-023-SG |
|           | 8)            | Date: 9/20/2016       |
|           | 9)            | MS/MSD:               |
|           | 10)           | Date:                 |
|           | 11)           | Field Blank:          |
|           | 12)           | Date:                 |
|           | 13)           | Eq. Blank:            |
|           | 14)           | Date: 9/21/2016       |
|           | 15)           |                       |
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| Date: | Sample IDs |
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## **APPENDIX I**

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**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                      | Parameter Group | Matrix | Unit  | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|--------------------------------|-----------------|--------|-------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| 1,1,1-Trichloroethane          | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| 1,1,2,2-Tetrachloroethane      | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,1,2-Trichloroethane          | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,1-Dichloroethane             | VOC             | Air    | ug/m3 | 3                           | 2          | 0                          | 3                              | 100.00%      |
| 1,1-Dichloroethene             | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2,3-Trichlorobenzene         | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2,4-Trichlorobenzene         | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dibromo-3-chloropropane    | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dibromoethane              | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dichlorobenzene            | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dichloroethane             | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dichloroethene (Total)     | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,2-Dichloropropane            | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 1,4-Dichlorobenzene            | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| 2-Butanone (MEK)               | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| 4-Methyl-2-pentanone (MIBK)    | VOC             | Air    | ug/m3 | 3                           | 2          | 0                          | 3                              | 100.00%      |
| Acetone                        | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Benzene                        | VOC             | Air    | ug/m3 | 3                           | 2          | 0                          | 3                              | 100.00%      |
| Bromodichloromethane           | VOC             | Air    | ug/m3 | 3                           | 2          | 0                          | 3                              | 100.00%      |
| Bromoform                      | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Bromomethane                   | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Carbon disulfide               | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Carbon tetrachloride           | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Chlorobenzene                  | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Chloroethane                   | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Chloroform                     | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Chloromethane                  | VOC             | Air    | ug/m3 | 3                           | 2          | 0                          | 3                              | 100.00%      |
| cis-1,2-Dichloroethene         | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| cis-1,3-Dichloropropene        | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Dibromochloromethane           | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Ethylbenzene                   | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Isopropylbenzene               | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Methyl tert-butyl ether (MTBE) | VOC             | Air    | ug/m3 | 3                           | 1          | 0                          | 3                              | 100.00%      |
| Methylene Chloride             | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Styrene                        | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Tetrachloroethene              | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Toluene                        | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| trans-1,2-Dichloroethene       | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| trans-1,3-Dichloropropene      | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Trichloroethene                | VOC             | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Vinyl chloride                 | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| Xylenes                        | VOC             | Air    | ug/m3 | 3                           | 3          | 0                          | 3                              | 100.00%      |
| 1,4-Dioxane                    | VOC/SVOC        | Air    | ug/m3 | 3                           | 0          | 0                          | 3                              | 100.00%      |
| Cyanide                        | CN              | Soil   | mg/kg | 18                          | 16         | 0                          | 18                             | 100.00%      |
| Aluminum                       | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Antimony                       | Metal           | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Arsenic                        | Metal           | Soil   | mg/kg | 25                          | 23         | 0                          | 25                             | 100.00%      |
| Barium                         | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Beryllium                      | Metal           | Soil   | mg/kg | 18                          | 16         | 0                          | 18                             | 100.00%      |
| Cadmium                        | Metal           | Soil   | mg/kg | 18                          | 11         | 0                          | 18                             | 100.00%      |
| Chromium                       | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Chromium VI                    | Metal           | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Cobalt                         | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Copper                         | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Iron                           | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Lead                           | Metal           | Soil   | mg/kg | 20                          | 20         | 0                          | 20                             | 100.00%      |
| Manganese                      | Metal           | Soil   | mg/kg | 20                          | 20         | 0                          | 20                             | 100.00%      |
| Mercury                        | Metal           | Soil   | mg/kg | 18                          | 5          | 0                          | 18                             | 100.00%      |

**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                    | Parameter Group | Matrix | Unit  | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|------------------------------|-----------------|--------|-------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| Nickel                       | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Selenium                     | Metal           | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Silver                       | Metal           | Soil   | mg/kg | 18                          | 10         | 0                          | 18                             | 100.00%      |
| Thallium                     | Metal           | Soil   | mg/kg | 20                          | 12         | 0                          | 20                             | 100.00%      |
| Vanadium                     | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Zinc                         | Metal           | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Aroclor 1016                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1221                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1232                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1242                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1248                 | PCB             | Soil   | mg/kg | 9                           | 1          | 0                          | 9                              | 100.00%      |
| Aroclor 1254                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1260                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1262                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| Aroclor 1268                 | PCB             | Soil   | mg/kg | 9                           | 0          | 0                          | 9                              | 100.00%      |
| PCBs (total)                 | PCB             | Soil   | mg/kg | 9                           | 1          | 0                          | 9                              | 100.00%      |
| 1,1-Biphenyl                 | SVOC            | Soil   | mg/kg | 18                          | 10         | 0                          | 18                             | 100.00%      |
| 1,2,4,5-Tetrachlorobenzene   | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 2,3,4,6-Tetrachlorophenol    | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| 2,4,5-Trichlorophenol        | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| 2,4,6-Trichlorophenol        | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| 2,4-Dichlorophenol           | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| 2,4-Dimethylphenol           | SVOC            | Soil   | mg/kg | 18                          | 1          | 1                          | 17                             | 94.44%       |
| 2,4-Dinitrophenol            | SVOC            | Soil   | mg/kg | 18                          | 0          | 2                          | 16                             | 88.89%       |
| 2,4-Dinitrotoluene           | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 2,6-Dinitrotoluene           | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 2-Chloronaphthalene          | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 2-Chlorophenol               | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| 2-Methylnaphthalene          | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| 2-Methylphenol               | SVOC            | Soil   | mg/kg | 18                          | 1          | 1                          | 17                             | 94.44%       |
| 2-Nitroaniline               | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 3&4-Methylphenol(m&p Cresol) | SVOC            | Soil   | mg/kg | 18                          | 4          | 1                          | 17                             | 94.44%       |
| 3,3'-Dichlorobenzidine       | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 4-Chloroaniline              | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| 4-Nitroaniline               | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Acenaphthene                 | SVOC            | Soil   | mg/kg | 18                          | 16         | 0                          | 18                             | 100.00%      |
| Acenaphthylene               | SVOC            | Soil   | mg/kg | 18                          | 17         | 0                          | 18                             | 100.00%      |
| Acetophenone                 | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Anthracene                   | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Benz[a]anthracene            | SVOC            | Soil   | mg/kg | 23                          | 23         | 0                          | 23                             | 100.00%      |
| Benzaldehyde                 | SVOC            | Soil   | mg/kg | 18                          | 4          | 14                         | 4                              | 22.22%       |
| Benzo[a]pyrene               | SVOC            | Soil   | mg/kg | 24                          | 24         | 0                          | 24                             | 100.00%      |
| Benzo[b]fluoranthene         | SVOC            | Soil   | mg/kg | 23                          | 23         | 0                          | 23                             | 100.00%      |
| Benzo[g,h,i]perylene         | SVOC            | Soil   | mg/kg | 18                          | 17         | 0                          | 18                             | 100.00%      |
| Benzo[k]fluoranthene         | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| bis(2-chloroethoxy)methane   | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| bis(2-Chloroethyl)ether      | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| bis(2-Chloroisopropyl)ether  | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| bis(2-Ethylhexyl)phthalate   | SVOC            | Soil   | mg/kg | 18                          | 9          | 0                          | 18                             | 100.00%      |
| Caprolactam                  | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Carbazole                    | SVOC            | Soil   | mg/kg | 18                          | 10         | 0                          | 18                             | 100.00%      |
| Chrysene                     | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Dibenz[a,h]anthracene        | SVOC            | Soil   | mg/kg | 23                          | 20         | 0                          | 23                             | 100.00%      |
| Diethylphthalate             | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Di-n-butylphthalate          | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Di-n-octylphthalate          | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Fluoranthene                 | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Fluorene                     | SVOC            | Soil   | mg/kg | 18                          | 15         | 0                          | 18                             | 100.00%      |

**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                             | Parameter Group | Matrix | Unit  | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|---------------------------------------|-----------------|--------|-------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| Hexachlorobenzene                     | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Hexachlorobutadiene                   | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Hexachlorocyclopentadiene             | SVOC            | Soil   | mg/kg | 18                          | 0          | 1                          | 17                             | 94.44%       |
| Hexachloroethane                      | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Indeno[1,2,3-c,d]pyrene               | SVOC            | Soil   | mg/kg | 19                          | 18         | 0                          | 19                             | 100.00%      |
| Isophorone                            | SVOC            | Soil   | mg/kg | 18                          | 1          | 0                          | 18                             | 100.00%      |
| Naphthalene                           | SVOC            | Soil   | mg/kg | 18                          | 15         | 0                          | 18                             | 100.00%      |
| Nitrobenzene                          | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| N-Nitroso-di-n-propylamine            | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| N-Nitrosodiphenylamine                | SVOC            | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Pentachlorophenol                     | SVOC            | Soil   | mg/kg | 18                          | 0          | 2                          | 16                             | 88.89%       |
| Phenanthrene                          | SVOC            | Soil   | mg/kg | 18                          | 17         | 0                          | 18                             | 100.00%      |
| Phenol                                | SVOC            | Soil   | mg/kg | 18                          | 3          | 1                          | 17                             | 94.44%       |
| Pyrene                                | SVOC            | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| Diesel Range Organics                 | TPH             | Soil   | mg/kg | 19                          | 19         | 0                          | 19                             | 100.00%      |
| Gasoline Range Organics               | TPH             | Soil   | mg/kg | 18                          | 0          | 0                          | 18                             | 100.00%      |
| Oil and Grease                        | TPH             | Soil   | mg/kg | 18                          | 18         | 0                          | 18                             | 100.00%      |
| 1,1,1-Trichloroethane                 | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,1,2,2-Tetrachloroethane             | VOC             | Soil   | mg/kg | 12                          | 0          | 1                          | 11                             | 91.67%       |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,1,2-Trichloroethane                 | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,1-Dichloroethane                    | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,1-Dichloroethene                    | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2,3-Trichlorobenzene                | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2,4-Trichlorobenzene                | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dibromo-3-chloropropane           | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dibromoethane                     | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dichlorobenzene                   | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dichloroethane                    | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dichloroethene (Total)            | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,2-Dichloropropane                   | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,3-Dichlorobenzene                   | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 1,4-Dichlorobenzene                   | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 2-Butanone (MEK)                      | VOC             | Soil   | mg/kg | 12                          | 2          | 0                          | 12                             | 100.00%      |
| 2-Hexanone                            | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| 4-Methyl-2-pentanone (MIBK)           | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Acetone                               | VOC             | Soil   | mg/kg | 12                          | 3          | 0                          | 12                             | 100.00%      |
| Benzene                               | VOC             | Soil   | mg/kg | 12                          | 2          | 0                          | 12                             | 100.00%      |
| Bromodichloromethane                  | VOC             | Soil   | mg/kg | 12                          | 0          | 1                          | 11                             | 91.67%       |
| Bromoform                             | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Bromomethane                          | VOC             | Soil   | mg/kg | 12                          | 0          | 5                          | 7                              | 58.33%       |
| Carbon disulfide                      | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Carbon tetrachloride                  | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Chlorobenzene                         | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Chloroethane                          | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Chloroform                            | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Chloromethane                         | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| cis-1,2-Dichloroethene                | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| cis-1,3-Dichloropropene               | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Cyclohexane                           | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Dibromochloromethane                  | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Dichlorodifluoromethane               | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Ethylbenzene                          | VOC             | Soil   | mg/kg | 12                          | 1          | 0                          | 12                             | 100.00%      |
| Isopropylbenzene                      | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Methyl Acetate                        | VOC             | Soil   | mg/kg | 12                          | 0          | 12                         | 0                              | 0.00%        |
| Methyl tert-butyl ether (MTBE)        | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Methylene Chloride                    | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Styrene                               | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |

**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                    | Parameter Group | Matrix | Unit  | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|------------------------------|-----------------|--------|-------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| Tetrachloroethene            | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Toluene                      | VOC             | Soil   | mg/kg | 12                          | 2          | 0                          | 12                             | 100.00%      |
| trans-1,2-Dichloroethene     | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| trans-1,3-Dichloropropene    | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Trichloroethene              | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Trichlorofluoromethane       | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Vinyl chloride               | VOC             | Soil   | mg/kg | 12                          | 0          | 0                          | 12                             | 100.00%      |
| Xylenes                      | VOC             | Soil   | mg/kg | 12                          | 1          | 0                          | 12                             | 100.00%      |
| 1,4-Dioxane                  | VOC/SVOC        | Soil   | mg/kg | 12                          | 0          | 12                         | 0                              | 0.00%        |
| Cyanide                      | CN              | Water  | ug/L  | 7                           | 6          | 0                          | 7                              | 100.00%      |
| Aluminum                     | Metal           | Water  | ug/L  | 11                          | 11         | 0                          | 11                             | 100.00%      |
| Antimony                     | Metal           | Water  | ug/L  | 11                          | 2          | 0                          | 11                             | 100.00%      |
| Arsenic                      | Metal           | Water  | ug/L  | 11                          | 8          | 0                          | 11                             | 100.00%      |
| Barium                       | Metal           | Water  | ug/L  | 11                          | 11         | 0                          | 11                             | 100.00%      |
| Beryllium                    | Metal           | Water  | ug/L  | 11                          | 2          | 0                          | 11                             | 100.00%      |
| Cadmium                      | Metal           | Water  | ug/L  | 11                          | 1          | 0                          | 11                             | 100.00%      |
| Chromium                     | Metal           | Water  | ug/L  | 11                          | 5          | 0                          | 11                             | 100.00%      |
| Chromium VI                  | Metal           | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Cobalt                       | Metal           | Water  | ug/L  | 11                          | 0          | 0                          | 11                             | 100.00%      |
| Copper                       | Metal           | Water  | ug/L  | 11                          | 3          | 0                          | 11                             | 100.00%      |
| Iron                         | Metal           | Water  | ug/L  | 11                          | 8          | 0                          | 11                             | 100.00%      |
| Lead                         | Metal           | Water  | ug/L  | 11                          | 1          | 0                          | 11                             | 100.00%      |
| Manganese                    | Metal           | Water  | ug/L  | 11                          | 6          | 0                          | 11                             | 100.00%      |
| Mercury                      | Metal           | Water  | ug/L  | 11                          | 0          | 0                          | 11                             | 100.00%      |
| Nickel                       | Metal           | Water  | ug/L  | 11                          | 1          | 0                          | 11                             | 100.00%      |
| Selenium                     | Metal           | Water  | ug/L  | 11                          | 4          | 0                          | 11                             | 100.00%      |
| Silver                       | Metal           | Water  | ug/L  | 11                          | 0          | 0                          | 11                             | 100.00%      |
| Thallium                     | Metal           | Water  | ug/L  | 11                          | 2          | 0                          | 11                             | 100.00%      |
| Vanadium                     | Metal           | Water  | ug/L  | 11                          | 11         | 0                          | 11                             | 100.00%      |
| Zinc                         | Metal           | Water  | ug/L  | 11                          | 3          | 0                          | 11                             | 100.00%      |
| Dichlorobiphenyl             | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Heptachlorobiphenyl          | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Hexachlorobiphenyl           | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Monochlorobiphenyl           | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Nonachlorobiphenyl           | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Octachlorobiphenyl           | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| PCBs (total)                 | PCB             | Water  | ug/L  | 3                           | 2          | 0                          | 3                              | 100.00%      |
| Pentachlorobiphenyl          | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Tetrachlorobiphenyl          | PCB             | Water  | ug/L  | 2                           | 0          | 0                          | 2                              | 100.00%      |
| Trichlorobiphenyl            | PCB             | Water  | ug/L  | 2                           | 1          | 0                          | 2                              | 100.00%      |
| 1,1-Biphenyl                 | SVOC            | Water  | ug/L  | 7                           | 3          | 0                          | 7                              | 100.00%      |
| 1,2,4,5-Tetrachlorobenzene   | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,3,4,6-Tetrachlorophenol    | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,4,5-Trichlorophenol        | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,4,6-Trichlorophenol        | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,4-Dichlorophenol           | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,4-Dimethylphenol           | SVOC            | Water  | ug/L  | 7                           | 2          | 0                          | 7                              | 100.00%      |
| 2,4-Dinitrophenol            | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,4-Dinitrotoluene           | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2,6-Dinitrotoluene           | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2-Chloronaphthalene          | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2-Chlorophenol               | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2-Methylnaphthalene          | SVOC            | Water  | ug/L  | 7                           | 5          | 0                          | 7                              | 100.00%      |
| 2-Methylphenol               | SVOC            | Water  | ug/L  | 7                           | 1          | 0                          | 7                              | 100.00%      |
| 2-Nitroaniline               | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 3&4-Methylphenol(m&p Cresol) | SVOC            | Water  | ug/L  | 7                           | 2          | 0                          | 7                              | 100.00%      |
| 3,3'-Dichlorobenzidine       | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 4-Chloroaniline              | SVOC            | Water  | ug/L  | 7                           | 0          | 0                          | 7                              | 100.00%      |

**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                             | Parameter Group | Matrix | Unit | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|---------------------------------------|-----------------|--------|------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| 4-Nitroaniline                        | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Acenaphthene                          | SVOC            | Water  | ug/L | 7                           | 6          | 0                          | 7                              | 100.00%      |
| Acenaphthylene                        | SVOC            | Water  | ug/L | 7                           | 6          | 0                          | 7                              | 100.00%      |
| Acetophenone                          | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Anthracene                            | SVOC            | Water  | ug/L | 7                           | 7          | 0                          | 7                              | 100.00%      |
| Benz[a]anthracene                     | SVOC            | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Benzaldehyde                          | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Benzo[a]pyrene                        | SVOC            | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Benzo[b]fluoranthene                  | SVOC            | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Benzo[g,h,i]perylene                  | SVOC            | Water  | ug/L | 7                           | 2          | 0                          | 7                              | 100.00%      |
| Benzo[k]fluoranthene                  | SVOC            | Water  | ug/L | 7                           | 4          | 0                          | 7                              | 100.00%      |
| bis(2-chloroethoxy)methane            | SVOC            | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| bis(2-Chloroethyl)ether               | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| bis(2-Chloroisopropyl)ether           | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| bis(2-Ethylhexyl)phthalate            | SVOC            | Water  | ug/L | 7                           | 3          | 0                          | 7                              | 100.00%      |
| Caprolactam                           | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Carbazole                             | SVOC            | Water  | ug/L | 7                           | 4          | 0                          | 7                              | 100.00%      |
| Chrysene                              | SVOC            | Water  | ug/L | 7                           | 6          | 0                          | 7                              | 100.00%      |
| Dibenz[a,h]anthracene                 | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Diethylphthalate                      | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Di-n-butylphthalate                   | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Di-n-octylphthalate                   | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Fluoranthene                          | SVOC            | Water  | ug/L | 7                           | 7          | 0                          | 7                              | 100.00%      |
| Fluorene                              | SVOC            | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Hexachlorobenzene                     | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Hexachlorobutadiene                   | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Hexachlorocyclopentadiene             | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Hexachloroethane                      | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Indeno[1,2,3-c,d]pyrene               | SVOC            | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| Isophorone                            | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Naphthalene                           | SVOC            | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Nitrobenzene                          | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| N-Nitroso-di-n-propylamine            | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| N-Nitrosodiphenylamine                | SVOC            | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Pentachlorophenol                     | SVOC            | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| Phenanthrene                          | SVOC            | Water  | ug/L | 7                           | 7          | 0                          | 7                              | 100.00%      |
| Phenol                                | SVOC            | Water  | ug/L | 7                           | 2          | 0                          | 7                              | 100.00%      |
| Pyrene                                | SVOC            | Water  | ug/L | 7                           | 7          | 0                          | 7                              | 100.00%      |
| Diesel Range Organics                 | TPH             | Water  | ug/L | 7                           | 5          | 0                          | 7                              | 100.00%      |
| Gasoline Range Organics               | TPH             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Oil and Grease                        | TPH             | Water  | ug/L | 3                           | 2          | 0                          | 3                              | 100.00%      |
| 1,1,1-Trichloroethane                 | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,1,2,2-Tetrachloroethane             | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,1,2-Trichloroethane                 | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,1-Dichloroethane                    | VOC             | Water  | ug/L | 7                           | 3          | 0                          | 7                              | 100.00%      |
| 1,1-Dichloroethene                    | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2,3-Trichlorobenzene                | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2,4-Trichlorobenzene                | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dibromo-3-chloropropane           | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dibromoethane                     | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dichlorobenzene                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dichloroethane                    | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dichloroethene (Total)            | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,2-Dichloropropane                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,3-Dichlorobenzene                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 1,4-Dichlorobenzene                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 2-Butanone (MEK)                      | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |



**EVALUATION OF DATA COMPLETENESS**  
**Percentage of Non-Rejected Results vs. Total Results**  
**(Only data which underwent validation are included)**

| Parameter                      | Parameter Group | Matrix | Unit | Number of Validated Results | Detections | Number of Rejected Results | Number of Non-rejected Results | Completeness |
|--------------------------------|-----------------|--------|------|-----------------------------|------------|----------------------------|--------------------------------|--------------|
| 2-Hexanone                     | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| 4-Methyl-2-pentanone (MIBK)    | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Acetone                        | VOC             | Water  | ug/L | 7                           | 0          | 2                          | 5                              | 71.43%       |
| Benzene                        | VOC             | Water  | ug/L | 7                           | 3          | 0                          | 7                              | 100.00%      |
| Bromodichloromethane           | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Bromoform                      | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Bromomethane                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Carbon disulfide               | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Carbon tetrachloride           | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Chlorobenzene                  | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Chloroethane                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Chloroform                     | VOC             | Water  | ug/L | 7                           | 2          | 0                          | 7                              | 100.00%      |
| Chloromethane                  | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| cis-1,2-Dichloroethene         | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| cis-1,3-Dichloropropene        | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Cyclohexane                    | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Dibromochloromethane           | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Dichlorodifluoromethane        | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Ethylbenzene                   | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Isopropylbenzene               | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Methyl Acetate                 | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Methyl tert-butyl ether (MTBE) | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Methylene Chloride             | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Styrene                        | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Tetrachloroethene              | VOC             | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| Toluene                        | VOC             | Water  | ug/L | 7                           | 4          | 0                          | 7                              | 100.00%      |
| trans-1,2-Dichloroethene       | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| trans-1,3-Dichloropropene      | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Trichloroethene                | VOC             | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| Trichlorofluoromethane         | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Vinyl chloride                 | VOC             | Water  | ug/L | 7                           | 0          | 0                          | 7                              | 100.00%      |
| Xylenes                        | VOC             | Water  | ug/L | 7                           | 1          | 0                          | 7                              | 100.00%      |
| 1,4-Dioxane                    | VOC/SVOC        | Water  | ug/L | 7                           | 3          | 0                          | 7                              | 100.00%      |

Data validation has been completed for a representative 50% of all samples

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## **APPENDIX J**

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**Construction Worker Soil Screening Levels  
35 Work Day Exposure  
Calculation Spreadsheet - Parcel B15**

| Description   | Variable    | Value    |
|---|-------------|----------|
| Days worked per week                                | DW          | 5        |
| Exposure duration (yr)                              | ED          | 1        |
| Hours worked per day                                | ET          | 8        |
| A/constant (unitless) - particulate emission factor | Aconst      | 12.9351  |
| B/constant (unitless) - particulate emission factor | Bconst      | 5.7383   |
| C/constant (unitless) - particulate emission factor | Cconst      | 71.7711  |
| Dispersion correction factor (unitless)             | FD          | 0.185    |
| Days per year with at least .01" precipitation      | P           | 130      |
| Target hazard quotient (unitless)                   | THQ         | 1        |
| Body weight (kg)                                    | BW          | 80       |
| Averaging time - noncancer (yr)                     | ATnc        | 1        |
| Soil ingestion rate (mg/d)                          | IR          | 330      |
| Skin-soil adherence factor (mg/cm <sup>2</sup> )    | AF          | 0.3      |
| Skin surface exposed (cm <sup>2</sup> )             | SA          | 3300     |
| Event frequency (ev/day)                            | EV          | 1        |
| Target cancer risk (unitless)                       | TR          | 01E-06   |
| Averaging time - cancer (yr)                        | ATc         | 70       |
| A/constant (unitless) - volatilization              | Aconstv     | 2.4538   |
| B/constant (unitless) - volatilization              | Bconstv     | 17.566   |
| C/constant (unitless) - volatilization              | Cconstv     | 189.0426 |
| Dry soil bulk density (kg/L)                        | Pb          | 1.5      |
| Average source depth (m)                            | ds          | 3        |
| Soil particle density (g/cm <sup>3</sup> )          | Ps          | 2.65     |
| Total soil porosity                                 | Lpore/Lsoil | 0.43     |
| Air-filled soil porosity                            | Lair/Lsoil  | 0.28     |

**Construction Worker Soil Screening Levels  
35 Work Day Exposure  
Calculation Spreadsheet - Parcel B15**

|  |       |             |
|--|-------|-------------|
| Area of site (ac)  | Ac    | 19.3        |
| Overall duration of construction (wk/yr)   | EW    | 7           |
| Exposure frequency (day/yr)  | EF    | 35          |
| Cars per day   | Ca    | 5           |
| Tons per car   | CaT   | 2           |
| Trucks per day   | Tru   | 5           |
| Tons per truck   | TrT   | 20          |
| Mean vehicle weight (tons)   | w     | 11          |
| Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3) | Q/Csr | 14.4        |
| Overall duration of construction (hr)  | tc    | 1,176       |
| Overall duration of traffic (s)  | Tt    | 1,008,000   |
| Surface area (m2)  | AR    | 78,104      |
| Length (m)   | LR    | 279         |
| Distance traveled (km)   | ΣVKT  | 98          |
| Particulate emission factor (m3/kg)  | PEFsc | 104,105,718 |
| Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)              | Q/Csa | 7.58        |
| Total time of construction (s)   | Tcv   | 1,008,000   |

Input  
Calculation

| Chemical                 | RfD & RfC Sources | ^Ingestion SF (mg/kg-day) <sup>-1</sup> | ^Inhalation Unit Risk (ug/m <sup>3</sup> ) <sup>-1</sup> | ^Subchronic RfD (mg/kg-day) | ^Subchronic RfC (mg/m <sup>3</sup> ) | ^GIABS | Dermally Adjusted RfD (mg/kg-day) | ^ABS | ^RBA | *Dia     | *Diw     | *Henry's Law Constant (unitless) | *Kd      | *Koc     | DA       | Volatilization Factor - Unlimited Reservoir (m <sup>3</sup> /kg) | Carcinogenic Ingestion/ Dermal SL (SLing/der) | Carcinogenic Inhalation SL (SLinh) | Carcinogenic SL (mg/kg) | Non-Carcinogenic Ingestion/ Dermal SL (SLing/der) | Non-Carcinogenic Inhalation SL (SLinh) | Non-Carcinogenic SL (mg/kg) |
|--------------------------|-------------------|---|--|-----------------------------|--------------------------------------|--------|-----------------------------------|------|------|----------|----------|----------------------------------|----------|----------|----------|--|---|------------------------------------|-------------------------|---|--|-----------------------------|
| Arsenic, Inorganic       | I/C               | 1.50E+00                                | 4.30E-03   | 3.00E-04                    | 1.50E-05                             | 1      | 3.00E-04                          | 0.03 | 0.6  |          |          | -                                | 2.90E+01 |          |          |  | 108   | 53,021                             | 108                     | 696   | 48,855                                 | 686                         |
| Cobalt                   | P                 | -                                       | 9.00E-03   | 3.00E-03                    | 2.00E-05                             | 1      | 3.00E-03                          | 0.01 | 1    |          |          | -                                | 4.50E+01 |          |          |  |   | 25,332                             | 25,332                  | 7,364   | 65,140                                 | 6,616                       |
| Iron                     | P                 | -                                       | -  | 7.00E-01                    | -                                    | 1      | 7.00E-01                          | 0.01 | 1    |          |          | -                                | 2.50E+01 |          |          |  |   |                                    |                         | 1,718,152   |  | 1,718,152                   |
| Manganese (Non-diet)     | I                 | -                                       | -  | 2.40E-02                    | 5.00E-05                             | 0.04   | 9.60E-04                          | 0.01 | 1    |          |          | -                                | 6.50E+01 |          |          |  |   |                                    |                         | 34,672  | 162,851                                | 28,586                      |
| Thallium (Soluble Salts) | P                 | -                                       | -  | 4.00E-05                    | -                                    | 1      | 4.00E-05                          | 0.01 | 1    |          |          | -                                | 7.10E+01 |          |          |  |   |                                    |                         | 98.2  |  | 98.2                        |
| Vanadium and Compounds   | A                 | -                                       | -  | 1.00E-02                    | 1.00E-04                             | 0.026  | 2.60E-04                          | 0.01 | 1    |          |          | -                                | 1.00E+03 |          |          |  |   |                                    |                         | 11,738  | 325,702                                | 11,329                      |
| PCB Total                | I                 | 2.00E+00                                | 5.71E-04   | -                           | -                                    | 1      |                                   | 0.14 | 1    | 2.40E-02 | 6.30E-06 | 1.70E-02                         | 4.68E+02 | 7.80E+04 | 4.66E-08 | 1.13E+4  | 62.3  | 43.2                               | 25.5                    |   |  |                             |
| Benz[a]anthracene        | I                 | 1.00E-01                                | 6.00E-05   | -                           | -                                    | 1      |                                   | 0.13 | 1    | 2.60E-02 | 6.70E-06 | 4.91E-04                         | 1.08E+03 | 1.80E+05 | 6.71E-10 | 9.38E+4  | 1,273   | 3,422                              | 928                     |   |  |                             |
| Benzo[a]pyrene           | I                 | 1.00E+00                                | 6.00E-04   | 3.00E-04                    | 2.00E-06                             | 1      | 3.00E-04                          | 0.13 | 1    | 4.80E-02 | 5.60E-06 | 1.87E-05                         | 3.54E+03 | 5.90E+05 | 2.37E-11 | 5.00E+5  | 127   | 1,815                              | 119                     | 546   | 31.1                                   | 29.4                        |
| Benzo[b]fluoranthene     | I                 | 1.00E-01                                | 6.00E-05   | -                           | -                                    | 1      |                                   | 0.13 | 1    | 4.80E-02 | 5.60E-06 | 2.69E-05                         | 3.60E+03 | 6.00E+05 | 2.91E-11 | 4.51E+5  | 1,273   | 16,373                             | 1,181                   |   |  |                             |
| Dibenz[a,h]anthracene    | I                 | 1.00E+00                                | 6.00E-04   | -                           | -                                    | 1      |                                   | 0.13 | 1    | 4.50E-02 | 5.20E-06 | 5.76E-06                         | 1.14E+04 | 1.90E+06 | 4.13E-12 | 1.20E+6  | 127   | 379,986                            | 127                     |   |  |                             |
| Indeno[1,2,3-c,d]pyrene  | I                 | 1.00E-01                                | 6.00E-05   | -                           | -                                    | 1      |                                   | 0.13 | 1    | 4.50E-02 | 5.20E-06 | 1.42E-05                         | 1.20E+04 | 2.00E+06 | 5.62E-12 | 1.03E+6  | 1,273   | 37,078                             | 1,231                   |   |  |                             |
| Naphthalene              | C/I/A             | -                                       | 3.40E-05   | 6.00E-01                    | 3.00E-03                             | 1      | 6.00E-01                          | 0.13 | 1    | 6.00E-02 | 8.40E-06 | 1.80E-02                         | 9.00E+00 | 1.50E+03 | 6.35E-06 | 9.65E+2  |   | 62.2                               | 62.2                    | 1,091,283   | 90.6                                   | 90.6                        |

\*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at <https://www.epa.gov/risk/regional-screening-levels-rsls>

^chemical specific parameters found in Unpaved Road Traffic calculator at [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

I: chemical specific parameters found in the IRIS at <https://www.epa.gov/iris>

C: chemical specific parameters found in Cal EPA at <https://www.dtsc.ca.gov/AssessingRisk>

A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at [https://www.atsdr.cdc.gov/mrls/pdfs/atsdr\\_mrls.pdf](https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf)

P: chemical specific parameters found in the Database of EPA PPRTVs at <https://hhpprtv.ornl.gov/quickview/pprtv.php>