

PHASE II INVESTIGATION REPORT

AREA A: PARCEL A2
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

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Revision 4 – March 14, 2018

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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 A: Parcel A2 (the Site). Parcel A2 is comprised of 41 acres of the approximately 3,100-acre former steel making facility (**Figure 1**), and is bound to the south and east by the Baltimore Beltway. Parcel A2 is partially occupied by the Reservoir Road Warehouse and DACS Building. The remainder of the Site is occupied by roads or undeveloped areas comprised of open space and woods.

The Phase II Investigation was performed in accordance with procedures outlined in the Phase II Investigation Work Plan – Area A: Parcel A2. This Work Plan was approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) via e-mail on September 14, 2015 and issued final on September 15, 2015 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 A2 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.

The most recent version of this Phase II Investigation Report (Revision 3) was last submitted to the agencies on December 15, 2017. This revised Phase II Investigation Report is being submitted in response to comments received from the MDE and USEPA on February 22, 2018. A Comment Response Letter accompanies this document.

1.1. SITE HISTORY

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

Parcel A2 is partially occupied by the Reservoir Road Warehouse, the DACS Building, and roads. The remainder of the Site is comprised of open space and wooded areas. According to the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants dated May 19, 2014, the Reservoir Road Warehouse was formerly used for material storage of refractory supplies, electrical materials, and other parts. This report stated that the DACS Building (also called the In Process Storage Building) was formerly used for storage of materials, most notably several drums containing lubricants. Both the Reservoir Road Warehouse and DACS Building are currently intact. Building improvements have been made to the DACS Building and are expected for the Reservoir Road Warehouse. Tradepoint Atlantic intends to lease the structures for occupancy and use by industrial workers.

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.

2.0 ENVIRONMENTAL SETTING

2.1. LAND USE AND SURFACE FEATURES

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

According to the 1974 Sparrows Point, Maryland, 7.5-minute quadrangle topographic map published by the United States Geological Survey (USGS), the Site is at an elevation of approximately 11 feet above mean sea level (amsl). Elevations in the parcel range from 6 feet amsl within drainage ditches, and up to approximately 28 feet amsl at the highest point in the parcel (a mound in the southwest corner). Surface runoff water from the parcel appears to drain towards several depressions in the central portion of the Site. Along the western edge of the Site, runoff waters may flow towards the large industrial water reservoir located just across the western parcel boundary.

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.

2.3. SITE GEOLOGY/HYDROGEOLOGY

Groundcover at the Site is primarily comprised of natural soils 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 was primarily identified in the western portion of the Site near the roads and buildings, and was encountered at varying depths and thicknesses generally between the surface and as deep as 8.5 feet below ground surface (bgs). Groundwater was encountered in the soil borings at depths ranging from 2 to 18 feet bgs across the Site. Soil boring logs are provided in **Appendix B**.

Temporary groundwater sample collection points (commonly referred to as piezometers) were installed at four locations across the Site to investigate groundwater conditions. The locations of these temporary groundwater sample collection points are indicated on **Figure 3**. The sample collection points were screened within the uppermost, unconfined water bearing unit. The sample collection points were surveyed by a Maryland-licensed surveyor, and supporting documentation from the survey is included as **Appendix C**.

A synoptic round of groundwater level measurements was collected on January 11, 2016 from the four temporary groundwater sample collection points. Surveyed top of casing (TOC) and ground surface elevations 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, and has been included on **Figure 3**. As indicated on the figure, there is an apparent groundwater divide present within the central portion of the Site; with groundwater flowing in both the northeast and southwest directions. Groundwater flow to the southwest is likely influenced by the nearby industrial water reservoir, located just across the parcel boundary to the west.

3.0 SITE INVESTIGATION

A total of 50 soil samples, 4 groundwater samples, and 18 sub-slab soil gas samples were collected and analyzed between September 15 and November 5, 2015 as part of the Parcel A2 Phase II Investigation. This Phase II Investigation utilized methods and protocols that followed the procedures included in the Quality Assurance Project Plan (QAPP) dated October 2, 2015 (updated April 5, 2016) 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 A2 Work Plan dated September 15, 2015, and the QAPP.

All characterization activities were conducted under the site-specific health and safety plan (HASP) provided as Appendix B of the Work Plan.

3.1. SAMPLING 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 10.2.2).

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 historical reports for the Site.

Three sets of historical steel mill plant 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), and the 5500 Set (Plant Sewer Lines). 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.

These drawings only partially cover the Site. The remainder of the Site was primarily occupied by wooded areas. Based on the review of plant drawings, sampling targets were identified at the Site that included a dredge disposal dike/area; an electric substation; and several truck loading

bays. A summary of the areas that were investigated, along with the boring identification number and the analyses performed, has been provided as **Appendix A**.

Additional sample locations were then added to fill in any large spatial gaps between proposed borings to provide complete coverage of the Site. The density of soil borings met the requirements set forth in the QAPP Worksheet 17 – Sampling Design and Rationale. Parcel A2 contained a total of 29.2 acres without engineered barriers. Of the 11.4 acres containing engineered barriers, 3.4 acres contained parking areas and 8.0 acres contained building footprints. In accordance with the relevant sampling density requirements, a minimum of 20 soil borings were required in the area without engineered barriers, and a minimum of 2 soil borings were required in the parking areas. A total of 23 soil boring locations were completed during the field investigation (with one additional location abandoned due to field conditions). The building footprints were covered by a separate sub-slab soil gas investigation, discussed below.

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, refusal, and/or utility conflicts. **Table 3** provides the identification numbers of the field adjusted borings, the rationale for field adjustment, the coordinates of the proposed and final locations, and the distance/direction of the field shifts.

3.2. BUILDING OCCUPANCY ASSESSMENT

A focused Building Occupancy Assessment (BOA) of the Reservoir Road Warehouse and DACS Building was completed as part of this Phase II Investigation to support the occupancy and use of these structures. The purpose of the BOA was to verify that current conditions within, below, and around the buildings would not pose a potentially unacceptable risk to workers occupying the buildings. The BOA included the evaluation of various Site conditions, including soil and groundwater (addressed by the SLRA in Section 6.0), and sub-slab soil gas.

The buildings are served by public water and there is no groundwater use on-site. Therefore, direct exposure to groundwater is not a potential concern. The BOA included an evaluation of the potential for impacts to indoor air to assess the risk to an industrial worker presented by the use of the existing buildings. A total of 18 sub-slab soil gas samples were collected during the field investigation. The density of sub-slab soil gas sampling points met the requirements set forth in QAPP Worksheet 17 – Sampling Design and Rationale. The Reservoir Rd Warehouse consists of 293,295 square feet and the DACS Building consists of 56,458 square feet. In accordance with the relevant sampling density requirements, a minimum of 18 sub-slab soil gas sample locations were required within the buildings themselves, with 15 samples collected from below the Reservoir Road Warehouse and 3 samples collected from below the DACS Building.

3.3. SOIL INVESTIGATION

Continuous core soil borings were advanced at 23 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**). One additional soil location (A2-019-SB) originally proposed in the Work Plan was abandoned after several attempts due to saturated conditions and large slag encountered during boring activities. The continuous core soil borings were advanced to depths between 4.5 and 20 feet bgs, with an average depth of roughly 10 feet bgs, using the Geoprobe[®] MC-7 Macrocore soil sampler (surface to 10 feet bgs) and the Geoprobe[®] D-22 Dual-Tube Sampler (depths >10 feet bgs). At each 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 as **Appendix D**. 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.

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. 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 depth samples at concentrations above the Project Action Limits (PALs). 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 was 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, and the continuous core soil borings that were completed and logged to depths greater than 10 feet were done to facilitate the installation of the temporary groundwater sampling points. Additionally, due to limited access, the following four locations were completed using hand augers: A2-028-SB, A2-029-SB, A2-030-SB, and A2-031-SB. Soil sampling activities were conducted in accordance with the procedures and methods referenced in **Field Standard Operating Procedures (SOPs) Number 009, Number 012, and Number 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.

Soil samples were submitted to Pace Analytical Services, Inc. (PACE), and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) via USEPA Method 8260B, TCL semi-volatile organic compounds (SVOCs) via USEPA Methods 8270D and 8270D SIM, Oil &

Grease via USEPA Method 9071, Target Analyte List (TAL) Metals via 6010C and 7471C, hexavalent chromium via USEPA Method 7196A, and cyanide via USEPA Method 9012. Additionally, the shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were also analyzed for polychlorinated biphenyls (PCBs) via USEPA Method 8082. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times. At the time that the Work Plan for this parcel was approved, Oil & Grease by Method 9071B was being specified for soil analysis rather than Total Petroleum Hydrocarbons (Diesel Range Organics and Gasoline Range Organics). The Oil & Grease method was specified at the time as being more conservative, because it is suitable for identifying non-petroleum hydrocarbon impacts, as well as detecting petroleum impacts.

3.4. GROUNDWATER INVESTIGATION

Four temporary groundwater sample collection points were installed to facilitate the collection of groundwater samples and to support the definition of the potentiometric surface. The soil boring locations where the temporary groundwater sample collection points were installed included A2-013-SB, A2-022-SB, A2-025-SB, and A2-031-SB (**Figure 3**). Due to access issues, A2-031-PZ was installed approximate 140 feet east of soil boring A2-031-SB. The temporary groundwater sample collection point construction logs have been included as **Appendix E**.

At each location the Geoprobe[®] DT22 Dual Tube sampling system was advanced to a depth approximately 10 feet below where groundwater was identified in the associated soil cores, 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 its installation, 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 YSI water quality meter with a flow-through cell. Groundwater samples submitted for TAL-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**. YSI meter calibrations were performed before the start of the groundwater sampling event, and a calibration post-check was completed at the end of the day. Appropriate documentation of the YSI 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, Oil & Grease via USEPA Method 1664A, TAL-Dissolved Metals via 6010C and 7470A, hexavalent chromium via USEPA Method 7196A, and cyanide (total) via USEPA Method 9012A. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times. At the time that the Work Plan for this parcel was approved, Oil & Grease by Method 1664A was being specified for groundwater analysis rather than Total Petroleum Hydrocarbons (Diesel Range Organics and Gasoline Range Organics). The Oil & Grease method was specified at the time as being more conservative, because it is suitable for identifying non-petroleum hydrocarbon impacts, as well as detecting petroleum impacts.

3.5. SUB-SLAB SOIL GAS INVESTIGATION

A total of 18 sub-slab temporary monitoring probes were installed at the locations provided on **Figure 5** to collect sub-slab soil gas samples. 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 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 concrete 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 canister) with a flow restrictor set for an 8-hour intake time was attached to the tubing. The sub-slab soil gas sample was then collected over a period of eight 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 was filled, and the surface was repaired. Sub-slab soil gas samples were submitted to PACE for VOC analysis via USEPA Method TO-15.

3.6. 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 temporary groundwater and sub-slab soil gas sampling points;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

Following the completion of field activities, a composite sample was gathered from the Parcel A2 IDW soil drums for soil TCLP analysis. Following this analysis, the waste soil was characterized as non-hazardous. A list of all results from the soil TCLP procedure can be found in **Table 4**, which indicates no exceedances of TCLP criteria.

IDW drums containing aqueous materials were characterized by preparing composite samples from randomly selected drums. Each composite sample included aliquots from three individual drums that were chosen from a set of 30 drums being staged on-site at the date of collection. A total of eight aqueous samples were collected for TCLP analysis. Following this analysis, the aqueous waste was characterized as non-hazardous. A list of all results from the aqueous TCLP procedure can be found in **Table 5**, which indicates no exceedances of TCLP criteria.

The parcel specific IDW drum log from the Site 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., 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. However, no concentration of any detected VOC compound in any soil sample exceeded its PAL.

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. One SVOC (benzo[a]pyrene) was detected above its PAL, with a maximum detection of 4.1 mg/kg in sample A2-016-SB-1. A summary of the PAL exceedance locations has been provided on **Figure 6**.

Shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were also analyzed for PCBs. **Table 6** provides a summary of the PCBs detected above the laboratory's MDLs. None of the detected concentrations of PCBs in any soil sample exceeded the PALs.

There were detections of Oil & Grease at every location in the parcel at one or more sample depths. **Table 6** provides a summary of the soil detections, indicating no exceedances of the PAL (6,200 mg/kg). The highest detection of Oil & Grease was 4,730 mg/kg at boring location A2-025-SB-5, a site-wide borings with no specific target. Only five soil samples exceeded 1,000 mg/kg (A2-012-SB-1, A2-025-SB-1, A2-025-SB-5, A2-027-SB-6, and A2-031-SB-5), and only A2-012-SB-1 was associated with a specific sampling target (truck loading bay). The deeper sample at this location (A2-012-SB-4) had a negligible detection of 128 mg/kg. During the

completion of the soil borings in Parcel A2, each soil core was screened for evidence of possible NAPL contamination. None of the soil cores exhibited evidence of possible NAPL.

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. Four inorganic compounds (arsenic, manganese, lead, and hexavalent chromium) were detected above their respective PALs. Arsenic was by far the most common inorganic exceedance. A summary of the PAL exceedance locations has been provided on **Figure 7**.

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 **Figures 6** and **7** 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 A2 Work Plan. There were no detections of VOCs, Oil & Grease, or PCBs above the applicable PALs. Exceedances of the PALs in soil within Parcel A2 consisted of four inorganics (arsenic, manganese, lead, and hexavalent chromium) and benzo[a]pyrene. Arsenic was detected above the PAL in most soil samples, and the highest detection (15.8 mg/kg) was observed in sample A2-027-SB-1. Manganese was detected above its PALs in only eight samples. Lead and hexavalent chromium were detected above their PALs in only one soil sample each (A2-024-SB-4 and A2-021-SB-5, respectively). The maximum detection of benzo[a]pyrene was 4.1 mg/kg in sample A2-016-SB-1. 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 aqueous PALs in **Table 10** (Organics) and **Table 11** (Inorganics). 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 tables.

4.2.1. Groundwater Conditions: Organic Compounds

As provided on **Table 10**, several VOCs were identified above the laboratory's MDLs in groundwater samples collected from across the Site. No concentration of any VOC compound exceeded its specified groundwater PAL.

Table 10 provides a summary of SVOCs reported in 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. Several SVOCs were detected at low levels in groundwater across the Site, and only 1,4-dioxane was detected at a concentration that exceeded its PAL. The single aqueous PAL exceedance location (A2-013-PZ) is shown in **Figure 8**.

Table 10 provides a summary of the Oil & Grease PAL exceedances. Detections of Oil & Grease ranged from 1,000 to 1,500 µg/L among the four groundwater samples. All results for this class of compounds were “J” flagged during data validation, indicating that they are estimated values. A summary of the PAL exceedance locations has been provided as **Figure 9**.

4.2.2. Groundwater Conditions: Inorganic Constituents

Table 11 provides a summary of inorganic constituents detected above the MDLs in the shallow groundwater samples collected from across the Site. Four inorganic compounds (arsenic, manganese, cobalt, and iron) were detected above their respective PALs. A summary of the PAL exceedance locations has been provided as **Figure 10**. Sample location A2-013-PZ exhibited PAL exceedances of each of the four inorganic groundwater compounds, while only one other sample location (A2-031-PZ) had any aqueous PAL exceedances.

4.2.3. Groundwater Conditions: Results Summary

There is no potential for human exposure 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. There is no direct discharge of groundwater to surface water on Parcel A2, other than the industrial reservoir.

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.

There were no parameters that exceeded the individual VI TCR or THQ criteria. None of the cumulative VI cancer risks were greater than or equal to 1E-5 when the results were summed by sample location and none of the VI non-cancer hazard estimates exceeded 1. All groundwater detections were used in the evaluation of the cumulative cancer risk, and all detections exceeding 10% of the THQ level were included in the evaluation of non-cancer risk. (There were no

detections exceeding 10% of the THQ levels.) The results of the cumulative VI screening evaluation are provided in **Table 12**.

The presence and absence of groundwater impacts within the Site boundaries have been adequately described. Based on the sporadic and relatively low-level results identified during this effort, significant ongoing sources of groundwater contamination have not been identified within the Site boundaries.

4.2.4. Non-Aqueous Phase Liquid

Immediately after the installation of each temporary groundwater sampling point (A2-013-PZ, A2-022-PZ, A2-025-PZ, and A2-031-PZ), 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 temporary groundwater sample collection point. An additional NAPL check was completed on January 11, 2016, and again NAPL was not detected in any temporary groundwater sample collection point.

4.3. SUB-SLAB SOIL GAS CONDITIONS

The detected VOC parameters are summarized and compared to the sub-slab soil gas PALs in **Table 13** (Reservoir Road Warehouse) and **Table 14** (DACS Building). While there were VOCs detected in the sub-slab soil gas samples, none of the detections exceeded the respective PALs in any of the sub-slab soil gas samples submitted for analysis. The laboratory Certificate of Analysis (including the Chain of Custody) and corresponding DVR have been included as electronic attachments.

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, or Oil & Grease) 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 and MDE soil vapor screening levels) 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, in accordance with the approved parcel Work Plan:

- Trip Blank – at a rate of one per day
 - Water – VOCs only
- Blind Field Duplicate – at a rate of one duplicate per twenty samples
 - Water – VOCs, SVOCs, Metals
 - Soil – VOCs, SVOCs, Metals
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
 - Water – VOCs, SVOCs, Metals
 - Soil – VOCs, SVOCs, Metals

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 and/or checked once per day, as documented in **Appendix D** (PID calibration log) and **Appendix F** (YSI calibration log).

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 by Environmental Data Quality Inc. (EDQI) for 100% of the environmental sample analyses performed by PACE and the supporting Level IV Data Package information, with the exception of select sub-slab soil gas analytical results. As outlined in the Preliminary Responses to MDE/USEPA Comments Letter dated November 14, 2017 (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 #30164310) 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 tables.

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 QAPP dated October 2, 2015 (updated 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.

Data Validation has been completed for the Parcel A2 data. The DVRs, as provided by EDQI, have been included as electronic attachments.

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. A summary of the results that were rejected during data validation has been provided on **Table 15** (soil) and **Table 16** (groundwater). There were no rejected results for sub-slab soil gas analysis, so a 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 Number 002; Field SOP Number 006; Field SOP Number 007; Field SOP Number 008; Field SOP Number 009; Field SOP Number 010; Field SOP Number 011; Field SOP Number 017; and Field SOP Number 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 the 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 deviations from the QAPP were noted in the data set.

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**. As indicated in this table, the completeness goal was met for all but a few individual compounds.

In soils, the completeness goal was met for all compounds except bromomethane, chloroethane, and 1,4-dioxane. In the groundwater samples, only 3,3'-dichlorobenzidine and methyl acetate were below the goal of 90% completeness. The results for these compounds were rejected due to poor recoveries. This is not uncommon for these compounds. Completeness goals were met for all sub-slab soil gas results.

Overall, the data can be used as intended. The only limitations identified in the soil data were the number of rejected sample results for bromomethane, chloroethane and 1,4-dioxane. However, adequate data for groundwater and sub-slab soil gas were available to determine that these are not significant contaminants at the Site. The lack of groundwater data for 3,3'-dichlorobenzidine and methyl acetate are not considered to be significant data gaps as these compounds were infrequently detected in other media and are not expected to be site-related contaminants.

6.0 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT (SLRA)

6.1. ANALYSIS PROCESS

A human health Screening Level Risk Assessment (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 A2 (40.6 acres) 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 17** to identify compounds above the relevant screening levels in Parcel A2.

Exposure Point Concentrations (EPCs): The COPC soil datasets 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 A2 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 was calculated for comparison to the Adult Lead Model (ALM)-based values, and any individual results exceeding 10,000 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 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 18**. For lead, any results equaling or exceeding 10,000 mg/kg would be identified to be delineated for possible excavation and removal (if applicable).

Assessment of Oil & Grease: EPCs were not calculated for Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). There were no Oil & Grease exceedances at the Site and no locations where evidence of NAPL was identified in the soil cores.

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 cancer and/or non-cancer risks 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 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 A2 SLRA RESULTS AND RISK CHARACTERIZATION

Soil data were divided into three datasets (surface, subsurface, and pooled) for the Parcel A2 EU to evaluate potential current and future exposure scenarios. The current Composite Worker 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 future 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 A2 had a detection frequency less than 5%; thus, no COPCs were removed due to low detection frequencies.

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 19**. 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 18**, 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). 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. There were no soil exceedances of the Oil & Grease PAL (6,200 mg/kg) or evidence of possible NAPL in any soil cores which would warrant additional evaluation.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker scenario are shown in **Table 20** (surface), **Table 21** (subsurface), and **Table 22** (pooled surface and subsurface soils). The results are summarized as follows:

Worker Scenario	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	Surface Soil	none	4E-6
	Subsurface Soil	Nervous System = 2	3E-6
	Surface & Subsurface Soil	none	3E-6

The current Composite Worker will be exposed only to surface soils. The risk ratios indicated that the cumulative cancer risk for a potential Composite Worker exposure to surface soils was equal to 4E-6. When the non-cancer risks were segregated and summed by target organ for cumulative HI, no target organ exceeded a cumulative HI of 1 in surface soils. The calculated total cancer risk and cumulative HI for a Composite Worker exposure to surface soils did not exceed the regulatory standards identified in the Risk Characterization Approach.

Future construction activities were assumed to result in the placement of subsurface material over existing surface soils exposing a future Composite Worker to a mixture of surface and subsurface soils. This exposure scenario is dependent on any future development proposed for the parcel. The risk ratios indicated that the cumulative cancer risks for the Composite Worker scenario were equal to 3E-6 for both subsurface and pooled soils in the parcel. An elevated hazard above the HI of 1 was calculated for the nervous system (HI=2) due to elevated manganese (HQ=2) for a potential future Composite Worker exposure to subsurface soils. No other target organs exceeded a cumulative HI of 1 in subsurface soils. Supplemental analysis evaluating the Composite Worker exposure to pooled soils (which may be applicable depending on any proposed development) resulted in no elevated hazards above the HI of 1.

Based on this assessment, unacceptable risk to a future Composite Worker may be encountered if soil disturbances occur which relocate manganese-impacted subsurface soils to the surface. Potential hazards resulting from such a development scenario should be addressed by institutional controls to ensure proper notification and management of any future disturbance of subsurface soil to provide protection for the future Composite Worker.

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 23** (surface), **Table 24** (subsurface), and **Table 25** (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 Construction Worker SSLs is included as **Appendix J**. The results for the site-wide 35-day exposure scenario are summarized as follows:

Worker Scenario	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker (35 work day schedule)	Surface Soil	none	1E-7
	Subsurface Soil	none	7E-8
	Surface & Subsurface Soil	none	7E-8

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. A total of 18 sub-slab soil gas samples, 4 groundwater samples, and 50 soil samples were collected and analyzed to define the nature and extent of contamination in Parcel A2. 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. Sub-slab soil gas samples were analyzed for VOCs. Groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TAL-Dissolved Metals, hexavalent chromium, and cyanide. Soil samples were analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TAL-Metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot bgs) were also analyzed for PCBs.

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, PCB, and Oil & Grease concentrations are well below the levels that would warrant evaluation of a removal remedy. The average lead concentrations in both the surface and sub-surface 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 PCB concentrations identified in Parcel A2 above the PALs (or the mandatory excavation criterion of 50 mg/kg) indicating that no further action is needed. There were no exceedances of the Oil & Grease PAL which would warrant additional evaluation of any existing impacts. Furthermore, NAPL was not observed in any soil cores (or groundwater piezometers) during this investigation; thus, significant existing sources of NAPL are not suspected to be present at the Site.

There were no soil PAL exceedances for VOCs or PCBs, indicating that these parameter groups are not significant soil contaminants at the Site. Soil PAL exceedances included four metals (arsenic, manganese, lead, and hexavalent chromium) and benzo[a]pyrene. Iron and vanadium were identified as additional COPCs to be included in the SLRA, despite a lack of PAL exceedances for these compounds.

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.

There were no VOCs that exceeded their respective PALs, and these contaminant groups were determined to not be significant groundwater contaminants at the Site. None of the temporary

groundwater sample collection points showed any detections of NAPL. Four sample locations exceeded the Oil & Grease PAL with the highest concentration (1,500 µg/L) identified in groundwater sample A2-022-PZ, but all detections were flagged with the “J” qualifier indicating that they are estimated values. Analysis of the groundwater samples identified concentrations of four metals (iron, arsenic, cobalt, and manganese) that exceeded their PALs. There was only one PAL exceedance of both iron and arsenic in groundwater (A2-013-PZ), and only two exceedances of cobalt and manganese (A2-013-PZ and A2-022-PZ). Only one SVOC compound (1,4-dioxane) was identified as an exceedance of its PAL at sample location A2-013-PZ.

7.3. SUB-SLAB SOIL GAS

The sub-slab soil gas samples collected at the Reservoir Road Warehouse and DACS Building did not contain any VOC compounds at concentrations that exceeded their specified PALs. Further investigation is not recommended based on the documentation of no significant impacts below the building slabs, indicating an insignificant risk for the vapor intrusion to indoor air exposure pathway. The current buildings are suitable for occupancy/use by industrial workers.

7.4. 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 evaluation of the potential for exposure via vapor intrusion indicated no potentially unacceptable risks. 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 cumulative VI cancer risks were greater than or equal to 1E-5 and none of the VI non-cancer hazard estimates exceeded 1. The results of the VI evaluation indicated insignificant risks associated with the observed concentrations in groundwater.

The current Composite Worker will be exposed to surface soils. The risk ratios indicated that the cumulative cancer risk for the Composite Worker scenario was equal to 4E-6 for surface soils. A non-cancer cumulative HI of 1 was not exceeded for any organ system evaluated for Composite Worker exposure to surface soils. Since the cumulative HI did not exceed 1 for any target organ and the estimate of cumulative cancer risk was less than 1E-5, no additional action is required to address potential risks to a current Composite Worker.

The cumulative carcinogenic risk for the potential Composite Worker exposure to subsurface soils was equal to 3E-6 (below the target benchmark). An elevated hazard above the HI of 1 was calculated for the nervous system (HI=2) due to elevated manganese for a potential future Composite Worker exposure to subsurface soils. Based on this assessment, unacceptable risk to a future Composite Worker may be encountered if soil disturbances occur that relocate

manganese-impacted soils to the surface. Institutional controls to prevent disturbance and to ensure proper notification and management of subsurface soils within the parcel are necessary to protect the Composite Worker, and the hazard related to manganese requires further evaluation in a Response and Development Work Plan for any future development of Parcel A2 that could relocate subsurface materials for placement at the surface.

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.

7.5. RECOMMENDATIONS

Sufficient remedial investigation data has been collected to evaluate the nature and extent of possible constituents of concern in Parcel A2. The presence and absence of soil, groundwater, and sub-slab soil gas impacts within Parcel A2 have been adequately described and further investigation is not warranted. Based in the evaluation of risk presented in the SLRA for potential exposure to surface soils, the Site is suitable for use by industrial workers; remedial action is not required to support occupancy and use of the parcel in its current condition. Recommendations for the parcel are as follows:

- Based on the risk assessment presented in this Phase II Investigation Report, 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 agricultural, recreational, or residential purposes.
 - 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 and Construction Workers to ensure proper oversight and management of any future construction activity that includes disturbances of the existing soil. 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 removed from 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.

8.0 REFERENCES

- ARM Group, Inc. (2015). *Phase II Investigation Work Plan Area A: Parcel A2*. Final Draft. September 15, 2015.
- ARM Group, Inc. (2015). *Quality Assurance Project Plan: Sparrows Point Terminal Site*. Revision 2. October 2, 2015.
- Rust Environment & Infrastructure (1998). *Description of Current Conditions: Bethlehem Steel Corporation*. Final Draft. January 1998.
- USEPA (2002). *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*. OSWER 9355.4-24. December 2002.
- USEPA (2017). Vapor Intrusion Screening Level (VISL) Calculator version 3.5. (<https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls>).
- Weaver Boos Consultants (2014). *Phase I Environmental Site Assessment: Former RG Steel Facility*. Final Draft. May 19, 2014.

FIGURES



Tradeport Atlantic
Area A and Area B Parcels

July 25, 2017

Figure

1



ARM Group Inc.
Earth Resource Engineers
and Consultants

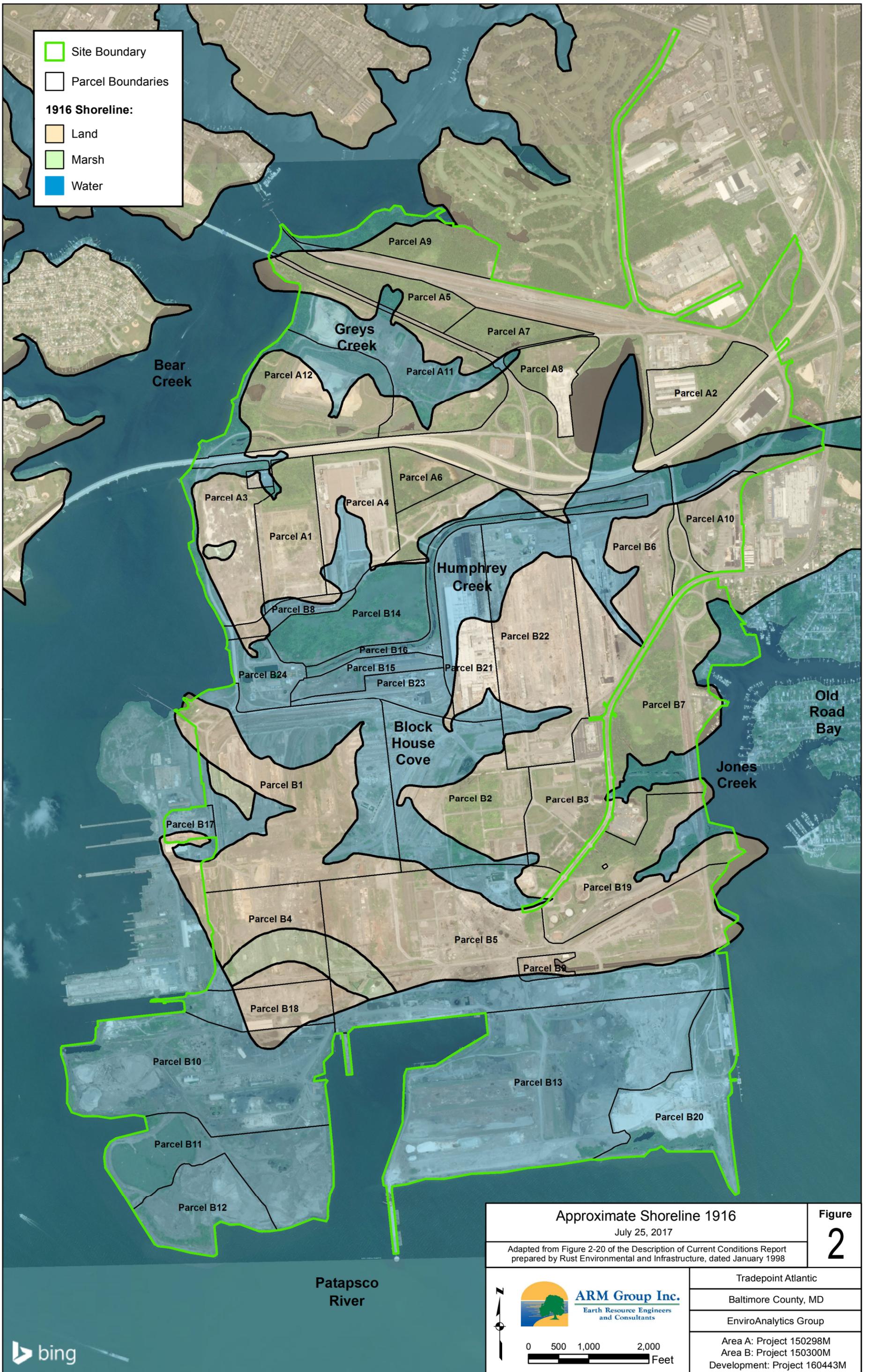
0 500 1,000 2,000
Feet

Tradeport Atlantic

Baltimore County, MD

EnviroAnalytics Group

Area A: Project 150298M
Area B: Project 150300M
Development: Project 160443M



Site Boundary
 Parcel Boundaries
1916 Shoreline:
 Land
 Marsh
 Water

Approximate Shoreline 1916		Figure 2
July 25, 2017		
Adapted from Figure 2-20 of the Description of Current Conditions Report prepared by Rust Environmental and Infrastructure, dated January 1998		
	Tradepoint Atlantic Baltimore County, MD	
	EnviroAnalytics Group	
	Area A: Project 150298M Area B: Project 150300M Development: Project 160443M	



A2-013-PZ
(6.11 ft)

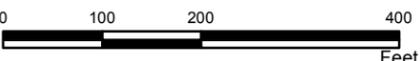
A2-031-PZ
(3.99 ft)

Parcel A2

A2-025-PZ
(6.68 ft)

A2-022-PZ
(5.39 ft)

Building Areas
Reservoir Rd Warehouse:
293,295 square feet
DACs Building:
56,458 square feet

Parcel A2 Groundwater Map Groundwater Elevation Contours - 1/11/2016 April 28, 2016		Figure 3
EnviroAnalytics Group ARM Project 150298M	Tradepoint Atlantic Baltimore County, MD	
 ARM Group Inc. Earth Resource Engineers and Consultants	<ul style="list-style-type: none"> ◆ Piezometer (GW Elevation) — Groundwater Contour (0.5 ft) □ Parcel A2 Boundary 	
		



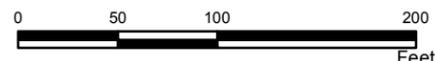
Building Areas
 Reservoir Rd Warehouse:
 293,295 square feet
 DACS Building:
 56,458 square feet

Parcel A2 Soil Borings Final Field Sample Locations April 28, 2016		Figure 4
EnviroAnalytics Group ARM Project 150298M	Tradepoint Atlantic Baltimore County, MD	
	<ul style="list-style-type: none">  Soil Boring  Existing Buildings  Parcel A2 Boundary 	
		



Parcel A2

Building Areas
 Reservoir Rd Warehouse:
 293,295 square feet
 DACS Building:
 56,458 square feet

Parcel A2 Soil Gas Locations (No PAL Exceedances) April 28, 2016		Figure 5
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150298M	Baltimore County, MD	
 ARM Group Inc. Earth Resource Engineers and Consultants	 Soil Gas Sample  Parcel A2 Boundary	
 0 50 100 200 Feet		



Building Areas
 Reservoir Rd Warehouse:
 293,295 square feet
 DACS Building:
 56,458 square feet

Parcel A2 Soil Borings Phase II SVOC Exceedances (mg/kg) March 12, 2018		Figure 6
EnviroAnalytics Group ARM Project 150298M	Tradepoint Atlantic Baltimore County, MD	



Parcel A2

A2-031-SB-1
Arsenic: 9.4

A2-031-SB-5
Arsenic: 5.8

A2-031-SB-10
Arsenic: 4.2

A2-030-SB-1
Arsenic: 6.4

A2-030-SB-5
Arsenic: 4.8

A2-028-SB-1

A2-028-SB-5

A2-027-SB-1
Arsenic: 15.8

A2-027-SB-6
Arsenic: 9.2

A2-026-SB-1
Arsenic: 8.0

A2-026-SB-5
Arsenic: 9.8

A2-029-SB-1
Arsenic: 6.8

A2-029-SB-5
Arsenic: 5.5

A2-013-SB-1
Arsenic: 3.2

A2-013-SB-5
Arsenic: 5.8

A2-012-SB-1

A2-012-SB-4

A2-032-SB-4
Arsenic: 4.1 J

A2-032-SB-5

A2-015-SB-1
Arsenic: 13.5

A2-042-SB-1
Arsenic: 6.8

A2-015-SB-5

A2-042-SB-6

A2-034-SB-1
Arsenic: 11.0
Manganese: 32,800

A2-034-SB-3
Arsenic: 5.1
Manganese: 30,300

A2-034-SB-5
Arsenic: 5.6

A2-014-SB-1

A2-014-SB-5
Arsenic: 5.0

A2-014-SB-9
Arsenic: 5.2

A2-025-SB-1
Arsenic: 3.1

A2-025-SB-5
Arsenic: 8.5

A2-016-SB-1
Arsenic: 3.0

A2-016-SB-5
Arsenic: 7.5
Manganese: 51,200

A2-016-SB-8
Arsenic: 9.6
Manganese: 29,800

A2-018-SB-1
Arsenic: 4.6 J

A2-018-SB-4
Manganese: 42,700

A2-033-SB-1
Arsenic: 4.4

A2-033-SB-4
Arsenic: 6.0

A2-017-SB-1
Arsenic: 5.5

A2-017-SB-5
Manganese: 42,200 J

A2-024-SB-1
Arsenic: 4.0

A2-024-SB-4
Arsenic: 7.5
Lead: 954
Manganese: 28,600

A2-020-SB-1
Arsenic: 4.3

A2-020-SB-5
Arsenic: 9.8

A2-021-SB-1

A2-021-SB-5
Arsenic: 5.8 J
Chromium VI: 9.0

A2-022-SB-1
Arsenic: 3.0

A2-022-SB-5
Arsenic: 4.0

A2-023-SB-1
Arsenic: 6.7
Manganese: 59,900

A2-023-SB-5
Arsenic: 6.2

Building Areas

Reservoir Rd Warehouse:
293,295 square feet

DACS Building:
56,458 square feet

Parcel A2 Soil Borings Phase II Inorganic Exceedances (mg/kg) <small>UN 01 2011</small>		Figure 7
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150298M	Baltimore County, MD	
 ARM Group Inc. <small>Earth Resource Engineers and Consultants</small>	 Soil Boring  Parcel A2 Boundary	
		



A2-013-PZ
1,1-Dioxane: 1.3

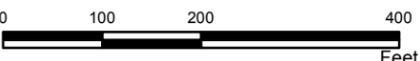
A2-031-PZ

Parcel A2

A2-025-PZ

A2-022-PZ

Building Areas
Reservoir Rd Warehouse:
293,295 square feet
DACs Building:
56,458 square feet

Parcel A2 Groundwater Samples Phase II SVOC Exceedances (ug/L) June 3, 2016		Figure 8
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150298M	Baltimore County, MD	
 ARM Group Inc. Earth Resource Engineers and Consultants	 Piezometer (Shallow)  Parcel A2 Boundary	
		



Building Areas
 Reservoir Rd Warehouse:
 293,295 square feet
 DACS Building:
 56,458 square feet

Parcel A2 Groundwater Samples
Phase II Oil and Grease Exceedances (ug/L)
 December 7, 2016 **Figure 9**

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150298M	Baltimore County, MD

	Piezometer (Shallow)
	Parcel A2 Boundary

0 100 200 400 Feet



TABLES

**TABLE 1
GROUNDWATER ELEVATION DATA**

<u>Location Name</u>	<u>TOC Elevation (feet AMSL)</u>	<u>Ground Elevation (feet AMSL)</u>	<u>Measured DTW (ft)</u>	<u>Groundwater Elevation (feet AMSL)</u>
A2-013-PZ	16.17	12.38	10.06	6.11
A2-022-PZ	12.58	9.68	7.19	5.39
A2-025-PZ	11.23	8.51	4.55	6.68
A2-031-PZ	22.88	20.78	18.89	3.99

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.)	5057	4/27/1959	3/11/1982
		5062	2/8/1962	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5157	<i>Unknown</i>	11/10/2008
		5162	<i>Unknown</i>	3/6/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5557	<i>Unknown</i>	2/2/1976
		5562	3/15/1976	3/15/1976

**TABLE 3
FIELD SHIFTED BORING LOCATIONS**

<u>Location ID</u>	<u>Sample Target</u>	<u>Proposed Location</u> [‡]		<u>Final Location</u> [‡]		<u>Relocation Distance & Direction</u>		<u>Rationale</u>
		<u>Northing</u>	<u>Easting</u>	<u>Northing</u>	<u>Easting</u>			
A2-013-SB/PZ	None (site coverage)	574,029	1,463,772	574,018	1,463,785	17 ft	SE	Utility conflict
A2-014-SB	None (site coverage)	573,814	1,464,252	573,824	1,464,244	13 ft	NW	Access restrictions and standing water
A2-016-SB	None (site coverage)	573,411	1,464,188	573,411	1,464,149	39 ft	W	Access restrictions and standing water
A2-017-SB	None (site coverage)	573,282	1,463,869	573,318	1,463,888	41 ft	NE	Access restrictions and standing water
A2-018-SB	None (site coverage)	573,307	1,463,552	573,300	1,463,552	7 ft	S	Refusal
A2-019-SB*	Dredge Disposal Dike	573,182	1,463,563	573,208	1,463,525	47 ft	NW	Standing water
A2-020-SB	Dredge Disposal Dike	573,085	1,463,603	572,981	1,463,501	145 ft	SW	Access restrictions and standing water
A2-021-SB	Dredge Disposal Dike	573,154	1,463,668	573,195	1,463,669	41 ft	N	Access restrictions and standing water
A2-022-SB/PZ	None (site coverage)	572,772	1,463,556	572,915	1,463,476	164 ft	NW	Access restrictions and utility conflict
A2-023-SB	None (site coverage)	572,997	1,463,877	573,033	1,463,858	41 ft	NW	Access restrictions and standing water
A2-024-SB	None (site coverage)	573,216	1,464,144	573,139	1,464,109	85 ft	SW	Access restrictions
A2-027-SB	None (site coverage)	574,100	1,464,408	574,016	1,464,517	138 ft	SE	Access restrictions
A2-030-SB	None (site coverage)	574,394	1,465,202	574,367	1,465,256	60 ft	SE	Access restrictions
A2-031-PZ	None (site coverage)	574,497	1,464,846	574,485	1,464,939	94 ft	E	Access restrictions
A2-031-SB	None (site coverage)	574,497	1,464,846	574,512	1,464,802	47 ft	NW	Access restrictions
A2-032-SB	Truck Loading Bay	573,695	1,463,536	573,692	1,463,534	3 ft	SW	Concrete
A2-033-SB	Truck Loading Bay	573,431	1,463,819	573,427	1,463,786	33 ft	W	Refusal/Concrete
A2-034-SB	Truck Loading Bay	573,441	1,463,895	573,448	1,463,939	44 ft	E	Refusal/Concrete

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

*No sample was collected from the final boring location due to the recovery of only saturated slag fill

**TABLE 4
TCLP RESULTS FOR SOLID IDW**

<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory</u> <u>LOQ</u> (mg/L)
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	0.0056	5	no	J	0.05
Barium	0.26	100	no	J	1
Benzene	0.05	0.5	no	U	0.05
Cadmium	0.0041	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	0.0043	5	no	J	0.05
Hexachlorobenzene	0.1	0.13	no	U	0.1
Hexachloroethane	0.5	3	no	U	0.5
Lead	0.057	5	no	J	0.25
Mercury	0.001	0.2	no	U	0.001
Nitrobenzene	0.1	2	no	U	0.1
Pentachlorophenol	5	100	no	U	5
Selenium	0.1	1	no	U	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.

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
TCLP RESULTS FOR LIQUID IDW**

<u>Location ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory</u> <u>LOQ (mg/L)</u>
Water Disposal 1	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 1	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 1	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 1	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 1	Arsenic	0.005	5	no	U	0.005
Water Disposal 1	Barium	0.0338	100	no		0.01
Water Disposal 1	Benzene	0.001	0.5	no	U	0.001
Water Disposal 1	Cadmium	0.0006	1	no	J	0.003
Water Disposal 1	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 1	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 1	Chloroform	0.001	6	no	U	0.001
Water Disposal 1	Chromium	0.0016	5	no	J	0.005
Water Disposal 1	Lead	0.005	5	no	U	0.005
Water Disposal 1	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 1	Selenium	0.008	1	no	U	0.008
Water Disposal 1	Silver	0.006	5	no	U	0.006
Water Disposal 1	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 1	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 1	Vinyl chloride	0.001	0.2	no	U	0.001
Water Disposal 2	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 2	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 2	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 2	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 2	Arsenic	0.005	5	no	U	0.005
Water Disposal 2	Barium	0.0811	100	no		0.01
Water Disposal 2	Benzene	0.001	0.5	no	U	0.001
Water Disposal 2	Cadmium	0.003	1	no	U	0.003
Water Disposal 2	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 2	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 2	Chloroform	0.0029	6	no		0.001
Water Disposal 2	Chromium	0.0012	5	no	J	0.005
Water Disposal 2	Lead	0.005	5	no	U	0.005
Water Disposal 2	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 2	Selenium	0.008	1	no	U	0.008
Water Disposal 2	Silver	0.006	5	no	U	0.006
Water Disposal 2	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 2	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 2	Vinyl chloride	0.001	0.2	no	U	0.001

**TABLE 5
TCLP RESULTS FOR LIQUID IDW**

<u>Location ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory</u> <u>LOQ (mg/L)</u>
Water Disposal 3	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 3	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 3	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 3	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 3	Arsenic	0.005	5	no	U	0.005
Water Disposal 3	Barium	0.0051	100	no	J	0.01
Water Disposal 3	Benzene	0.001	0.5	no	U	0.001
Water Disposal 3	Cadmium	0.003	1	no	U	0.003
Water Disposal 3	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 3	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 3	Chloroform	0.0016	6	no		0.001
Water Disposal 3	Chromium	0.00085	5	no	J	0.005
Water Disposal 3	Lead	0.005	5	no	U	0.005
Water Disposal 3	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 3	Selenium	0.008	1	no	U	0.008
Water Disposal 3	Silver	0.006	5	no	U	0.006
Water Disposal 3	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 3	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 3	Vinyl chloride	0.001	0.2	no	U	0.001
Water Disposal 4	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 4	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 4	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 4	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 4	Arsenic	0.0094	5	no		0.005
Water Disposal 4	Barium	0.101	100	no		0.01
Water Disposal 4	Benzene	0.001	0.5	no	U	0.001
Water Disposal 4	Cadmium	0.003	1	no	U	0.003
Water Disposal 4	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 4	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 4	Chloroform	0.0024	6	no		0.001
Water Disposal 4	Chromium	0.0012	5	no	J	0.005
Water Disposal 4	Lead	0.005	5	no	U	0.005
Water Disposal 4	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 4	Selenium	0.008	1	no	U	0.008
Water Disposal 4	Silver	0.006	5	no	U	0.006
Water Disposal 4	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 4	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 4	Vinyl chloride	0.001	0.2	no	U	0.001

**TABLE 5
TCLP RESULTS FOR LIQUID IDW**

<u>Location ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory</u> <u>LOQ (mg/L)</u>
Water Disposal 5	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 5	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 5	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 5	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 5	Arsenic	0.005	5	no	U	0.005
Water Disposal 5	Barium	0.398	100	no		0.01
Water Disposal 5	Benzene	0.001	0.5	no	U	0.001
Water Disposal 5	Cadmium	0.00058	1	no	J	0.003
Water Disposal 5	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 5	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 5	Chloroform	0.0039	6	no		0.001
Water Disposal 5	Chromium	0.0012	5	no	J	0.005
Water Disposal 5	Lead	0.005	5	no	U	0.005
Water Disposal 5	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 5	Selenium	0.008	1	no	U	0.008
Water Disposal 5	Silver	0.006	5	no	U	0.006
Water Disposal 5	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 5	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 5	Vinyl chloride	0.001	0.2	no	U	0.001
Water Disposal 6	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 6	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 6	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 6	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 6	Arsenic	0.005	5	no	U	0.005
Water Disposal 6	Barium	2.14	100	no		0.01
Water Disposal 6	Benzene	0.001	0.5	no	U	0.001
Water Disposal 6	Cadmium	0.001	1	no	J	0.003
Water Disposal 6	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 6	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 6	Chloroform	0.00058	6	no	J	0.001
Water Disposal 6	Chromium	0.005	5	no	U	0.005
Water Disposal 6	Lead	0.005	5	no	U	0.005
Water Disposal 6	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 6	Selenium	0.008	1	no	U	0.008
Water Disposal 6	Silver	0.006	5	no	U	0.006
Water Disposal 6	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 6	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 6	Vinyl chloride	0.001	0.2	no	U	0.001

**TABLE 5
TCLP RESULTS FOR LIQUID IDW**

<u>Location ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory</u> <u>LOQ (mg/L)</u>
Water Disposal 7	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 7	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 7	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 7	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 7	Arsenic	0.005	5	no	U	0.005
Water Disposal 7	Barium	0.0889	100	no		0.01
Water Disposal 7	Benzene	0.001	0.5	no	U	0.001
Water Disposal 7	Cadmium	0.00067	1	no	J	0.003
Water Disposal 7	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 7	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 7	Chloroform	0.00075	6	no	J	0.001
Water Disposal 7	Chromium	0.005	5	no	U	0.005
Water Disposal 7	Lead	0.005	5	no	U	0.005
Water Disposal 7	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 7	Selenium	0.008	1	no	U	0.008
Water Disposal 7	Silver	0.006	5	no	U	0.006
Water Disposal 7	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 7	Trichloroethene	0.00065	0.5	no	J	0.001
Water Disposal 7	Vinyl chloride	0.001	0.2	no	U	0.001
Water Disposal 8	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal 8	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal 8	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal 8	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal 8	Arsenic	0.005	5	no	U	0.005
Water Disposal 8	Barium	0.01	100	no	J	0.01
Water Disposal 8	Benzene	0.001	0.5	no	U	0.001
Water Disposal 8	Cadmium	0.003	1	no	U	0.003
Water Disposal 8	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal 8	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal 8	Chloroform	0.001	6	no	U	0.001
Water Disposal 8	Chromium	0.005	5	no	U	0.005
Water Disposal 8	Lead	0.005	5	no	U	0.005
Water Disposal 8	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal 8	Selenium	0.008	1	no	U	0.008
Water Disposal 8	Silver	0.006	5	no	U	0.006
Water Disposal 8	Tetrachloroethene	0.001	0.7	no	U	0.001
Water Disposal 8	Trichloroethene	0.001	0.5	no	U	0.001
Water Disposal 8	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 PQL.

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
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-012-SB-1	A2-012-SB-4	A2-013-SB-1	A2-013-SB-5	A2-014-SB-1	A2-014-SB-5	A2-014-SB-9	A2-015-SB-1	A2-015-SB-5	A2-016-SB-1	A2-016-SB-5	A2-016-SB-8	A2-017-SB-1
Volatile Organic Compounds															
1,2-Dibromo-3-chloropropane	mg/kg	0.064	0.0049 UJ	0.0044 UJ	0.0048 U	0.0054 UJ	0.0059 U	0.0045 U	0.0047 U	0.0066 U	0.0047 U	0.0052 U	0.0053 U	0.0042 U	0.0051 U
2-Butanone (MEK)	mg/kg	190,000	0.0098 U	0.0089 U	0.0097 U	0.0098 J	0.012 U	0.0089 U	0.0094 U	0.0078 J	0.0072 J	0.0088 J	0.011 U	0.0085 U	0.018
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	0.0098 U	0.0089 U	0.0097 U	0.011 U	0.012 U	0.0089 U	0.0094 U	0.013 U	0.0095 U	0.01 U	0.011 U	0.0085 U	0.01 U
Acetone	mg/kg	670,000	0.0054 J	0.0069 J	0.022	0.057	0.022	0.022	0.0094 U	0.034	0.027	0.057	0.043	0.017	0.11
Benzene	mg/kg	5.1	0.0049 U	0.0044 U	0.0048 U	0.0054 U	0.0059 U	0.0045 U	0.0047 U	0.0066 U	0.0047 U	0.0052 U	0.0014 J	0.0042 U	0.0033 J
Carbon disulfide	mg/kg	3,500	0.013	0.0046	0.005	0.0054 U	0.013	0.003 J	0.0077	0.027 J	0.018	0.012	0.0053 U	0.0035 J	0.0051 U
Cyclohexane	mg/kg	27,000	0.0098 U	0.0089 U	0.0097 U	0.011 U	0.012 U	0.0089 U	0.0094 U	0.013 UJ	0.004 J	0.01 U	0.011 U	0.0085 U	0.01 U
Ethylbenzene	mg/kg	25	0.0049 U	0.0044 U	0.0048 U	0.0054 U	0.0059 U	0.0045 U	0.0047 U	0.0066 U	0.0047 U	0.0052 U	0.0053 U	0.0042 U	0.0051 U
Methyl Acetate	mg/kg	1,200,000	0.049 UJ	0.044 UJ	0.048 UJ	0.054 UJ	0.059 UJ	0.045 UJ	0.047 UJ	0.066 U	0.047 U	0.052 U	0.053 U	0.042 U	0.051 UJ
Methylene Chloride	mg/kg	1,000	0.0049 U	0.0044 U	0.0048 U	0.0054 U	0.0044 J	0.0045 U	0.0047 U	0.0066 U	0.0047 U	0.0052 U	0.0053 U	0.0042 U	0.0043 J
Toluene	mg/kg	47,000	0.0049 U	0.0044 U	0.0048 U	0.0054 UJ	0.0059 U	0.0045 U	0.0047 U	0.0066 U	0.0047 U	0.0052 U	0.0053 U	0.0042 U	0.0021 J
Semi-Volatile Organic Compounds^															
2-Methylnaphthalene	mg/kg	3,000	0.15 U	0.0087	0.023	0.011	0.012	0.0075 J	0.0085 U	0.11	0.044	0.057	0.23	0.038	0.055
Acenaphthene	mg/kg	45,000	0.15 U	0.0078 U	0.0067 J	0.003 J	0.048	0.0079 U	0.0085 U	0.0035 J	0.0021 J	0.34	0.11	0.031	0.057
Acenaphthylene	mg/kg	45,000	0.15 U	0.0078 U	0.0033 J	0.0022 J	0.0029 J	0.0045 J	0.0085 U	0.0083	0.03	0.022	0.042	0.0083	0.018
Acetophenone	mg/kg	120,000	1.8 U	0.39 U	0.39 U	0.42 U	0.35 U	0.39 U	0.42 U	0.35 U	0.35 U	0.36 U	0.36 U	0.37 U	0.35 U
Anthracene	mg/kg	230,000	0.15 U	0.0078 U	0.072	0.0059 J	0.014	0.0082	0.0085 U	0.027	0.031	0.24	0.17	0.049	0.062
Benz[a]anthracene	mg/kg	21	0.15 U	0.0078 U	0.42	0.018	0.089	0.023	0.0085 U	0.093 J	0.13	2	0.48	0.21	0.26
Benzaldehyde	mg/kg	120,000	1.8 U	0.39 U	0.39 U	0.24 J	0.35 U	0.39 U	0.42 U	0.21 J	0.23 J	0.36 U	0.36 U	0.37 U	0.35 U
Benzo[a]pyrene	mg/kg	2.1	0.15 U	0.0078 U	0.56	0.017	0.21	0.025	0.0085 U	0.061	0.079	4.1	0.73	0.28	0.41
Benzo[b]fluoranthene	mg/kg	21	0.15 U	0.0078 U	0.89	0.047	0.26	0.047	0.0052 J	0.17	0.15	4.5	1.3	0.49	0.76
Benzo[g,h,i]perylene	mg/kg		0.032 J	0.0078 U	0.24	0.0084 U	0.15	0.0079 U	0.0026 J	0.039 J	0.048	0.73	0.16	0.055	0.35
Benzo[k]fluoranthene	mg/kg	210	0.15 U	0.0078 U	0.28	0.018	0.12	0.021	0.0022 J	0.056	0.059	1.2	0.44	0.23	0.26
Carbazole	mg/kg		1.8 U	0.39 U	0.39 U	0.42 U	0.35 U	0.39 U	0.42 U	0.35 U	0.35 U	0.36 U	0.36 U	0.37 U	0.35 U
Chrysene	mg/kg	2,100	0.15 U	0.0078 U	0.54	0.032	0.11	0.031	0.0019 J	0.15 J	0.15	2	0.5	0.25	0.32
Dibenz[a,h]anthracene	mg/kg	2.1	0.15 U	0.0078 U	0.14	0.0084 U	0.047	0.0079 U	0.0085 U	0.018 J	0.021	0.5	0.077	0.031	0.15
Fluoranthene	mg/kg	30,000	0.15 U	0.0078 U	0.61	0.05	0.12	0.057	0.0085 U	0.23 J	0.27	2	0.81	0.34	0.43
Fluorene	mg/kg	30,000	0.15 U	0.0078 U	0.013	0.0096	0.0053 J	0.005 J	0.00087 J	0.0025 J	0.0025 J	0.084	0.044	0.012	0.014
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.15 U	0.0078 U	0.25	0.0043 J	0.15	0.013	0.002 J	0.04 J	0.051	0.95	0.2	0.073	0.35
Naphthalene	mg/kg	17	0.15 U	0.0023 J	0.016	0.014	0.014	0.012	0.0085 U	0.084	0.23	0.16	0.27	0.045	0.095
Phenanthrene	mg/kg		0.15 U	0.0078 U	0.16	0.045	0.065	0.029	0.0085 U	0.14	0.12	0.86	0.59	0.23	0.27
Pyrene	mg/kg	23,000	0.15 U	0.0078 U	0.75	0.042	0.11	0.05	0.0031 J	0.22 J	0.2	1.9	0.7	0.33	0.36
PCBs															
Aroclor 1254	mg/kg	0.97	0.019 U	N/A	0.019 U	N/A	0.017 U	N/A	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.018 U
Aroclor 1260	mg/kg	0.99	0.019 U	N/A	0.019 UJ	N/A	0.012 J	N/A	N/A	0.018 U	N/A	0.03 J	N/A	N/A	0.043 J
PCBs (total)	mg/kg	0.97	0.13 U	N/A	0.14 U	N/A	0.12 U	N/A	N/A	0.12 U	N/A	0.13 U	N/A	N/A	0.043 J
TPH/Oil and Grease															
Oil and Grease	mg/kg	6,200	1,860	128	203	568	234	427	192	545	644	396	400	280	318

Detections in bold

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.

N/A: This parameter was not analyzed for this sample.

Values in Red indicate an exceedance of the Project Action Limit (PAL)

^PAH compounds were analyzed via SIM

Table 6
Summary of Organics Detected in Soil
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-017-SB-5	A2-018-SB-1	A2-018-SB-4	A2-020-SB-1	A2-020-SB-5	A2-021-SB-1	A2-021-SB-5	A2-022-SB-1	A2-022-SB-5	A2-023-SB-1	A2-023-SB-5	A2-024-SB-1
Volatile Organic Compounds														
1,2-Dibromo-3-chloropropane	mg/kg	0.064	0.005 U	0.0046 UJ	0.0053 UJ	0.0048	0.0052 U	0.0055 UJ	0.0053 UJ	0.0072 U	0.0042 U	0.0094 U	0.0057 U	0.012 U
2-Butanone (MEK)	mg/kg	190,000	0.01 U	0.0091 U	0.011 U	0.0089 U	0.01 U	0.011 U	0.011 U	0.014 U	0.0084 U	0.019 U	0.011 U	0.024 U
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	0.01 U	0.0091 U	0.011 U	0.0089 U	0.01 U	0.011 U	0.011 U	0.014 U	0.0084 U	0.019 U	0.011 U	0.024 U
Acetone	mg/kg	670,000	0.027	0.023	0.019	0.04	0.012	0.021	0.011	0.014 U	0.0084 U	0.037	0.018	0.028
Benzene	mg/kg	5.1	0.0024 J	0.0046 U	0.0053 U	0.0044 U	0.0052 U	0.0055 U	0.0053 U	0.0072 U	0.0042 U	0.0094 U	0.0057 U	0.012 U
Carbon disulfide	mg/kg	3,500	0.005 U	0.011	0.034	0.0044 U	0.0052 U	0.0055 U	0.0053 U	0.045	0.0042 U	0.0056 J	0.013	0.012 U
Cyclohexane	mg/kg	27,000	0.01 U	0.0091 U	0.011 U	0.0089 U	0.01 U	0.011 U	0.011 U	0.014 U	0.0084 U	0.019 U	0.011 U	0.024 U
Ethylbenzene	mg/kg	25	0.005 U	0.0046 U	0.0053 U	0.0044 U	0.0052 U	0.0055 U	0.0053 U	0.0072 U	0.0042 U	0.0094 U	0.0057 U	0.012 U
Methyl Acetate	mg/kg	1,200,000	0.05 UJ	0.046 UJ	0.053 UJ	0.044 U	0.052 U	0.055 UJ	0.053 UJ	0.072 UJ	0.042 UJ	0.094 U	0.057 U	0.12 U
Methylene Chloride	mg/kg	1,000	0.005 U	0.0046 U	0.0053 U	0.0044 U	0.0052 U	0.0055 U	0.0044 J	0.0072 U	0.0042 U	0.0094 U	0.0057 U	0.012 U
Toluene	mg/kg	47,000	0.0016 J	0.0046 U	0.0053 U	0.0044 U	0.0052 U	0.0055 U	0.0053 U	0.0072 U	0.0042 U	0.0094 U	0.0057 U	0.012 U
Semi-Volatile Organic Compounds[^]														
2-Methylnaphthalene	mg/kg	3,000	0.075	1.8	0.056	0.0055 J	0.008 U	0.03	0.0072 J	0.025	0.0012 J	0.068	0.21	0.1
Acenaphthene	mg/kg	45,000	0.064	0.12	0.011	0.0077 U	0.008 U	0.0076 U	0.0074 U	0.0032 J	0.0076 U	0.013	0.25	0.012
Acenaphthylene	mg/kg	45,000	0.015	0.67	0.015	0.0077 U	0.008 U	0.02	0.0074 U	0.14	0.0076 U	0.098	0.025	0.18
Acetophenone	mg/kg	120,000	0.36 U	0.35 U	0.37 U	0.39 U	0.4 U	0.38 U	0.37 U	0.37 U	0.38 U	0.36 U	0.39 U	0.37 U
Anthracene	mg/kg	230,000	0.068	0.76	0.03	0.0033 J	0.008 U	0.0074 J	0.0029 J	0.03	0.0076 U	0.044	0.46	0.046
Benz[a]anthracene	mg/kg	21	0.24	3.8	0.14	0.021	0.008 U	0.035	0.0069 J	0.081	0.0076 U	0.14	0.96	0.076
Benzaldehyde	mg/kg	120,000	0.36 U	0.35 U	0.37 U	0.39 U	0.4 U	0.38 U	0.37 U	0.37 U	0.38 U	0.36 U	0.39 U	0.37 U
Benzo[a]pyrene	mg/kg	2.1	0.38	3.6	0.14	0.025	0.008 U	0.078	0.0074 U	0.052	0.0076 U	0.12	0.93	0.069
Benzo[b]fluoranthene	mg/kg	21	0.61	5.5	0.27	0.041	0.008 U	0.11	0.013	0.13	0.0076 U	0.29	1.4	0.17
Benzo[g,h,i]perylene	mg/kg		0.3	0.57	0.059	0.014	0.008 U	0.042	0.0036 J	0.012	0.0076 U	0.06	0.26	0.046
Benzo[k]fluoranthene	mg/kg	210	0.23	2.4	0.096	0.015	0.008 U	0.035	0.0052 J	0.047	0.0076 U	0.099	0.53	0.056
Carbazole	mg/kg		0.36 U	0.35 U	0.37 U	0.39 U	0.4 U	0.38 U	0.37 U	0.37 U	0.38 U	0.36 U	0.2 J	0.37 U
Chrysene	mg/kg	2,100	0.28	3.5	0.18	0.024	0.008 U	0.051	0.011	0.097	0.0008 J	0.25	0.9	0.11
Dibenz[a,h]anthracene	mg/kg	2.1	0.11	0.35	0.027	0.0077 U	0.008 U	0.012	0.0074 U	0.0064 J	0.0076 U	0.028	0.12	0.019
Fluoranthene	mg/kg	30,000	0.39	5.5	0.26	0.04	0.008 U	0.054	0.032	0.2	0.002 J	0.81	2.7	0.19
Fluorene	mg/kg	30,000	0.015	0.13	0.0053 J	0.0016 J	0.008 U	0.0011 J	0.0074 U	0.015	0.00071 J	0.016	0.25	0.031
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.28	0.89	0.067	0.014	0.008 U	0.04	0.0074 U	0.012	0.0076 U	0.065	0.32	0.039
Naphthalene	mg/kg	17	0.09	2.8	0.22	0.0057 J	0.0029 J	0.046	0.011	0.21	0.0076 U	0.16	0.26	0.31
Phenanthrene	mg/kg		0.22	3.1	0.13	0.017	0.008 U	0.041	0.042	0.13	0.0076 U	0.51	2	0.23
Pyrene	mg/kg	23,000	0.46	4.7	0.27	0.036	0.008 U	0.056	0.024	0.18	0.0023 J	0.58	2.2	0.17
PCBs														
Aroclor 1254	mg/kg	0.97	N/A	0.017 U	N/A	0.019 U	N/A	0.019 U	N/A	0.019 U	N/A	0.018 U	N/A	0.019 U
Aroclor 1260	mg/kg	0.99	N/A	0.038	N/A	0.019 UJ	N/A	0.019 U	N/A	0.019 UJ	N/A	0.018 UJ	N/A	0.037 J
PCBs (total)	mg/kg	0.97	N/A	0.038 J	N/A	0.14 U	N/A	0.13 U	N/A	0.13 U	N/A	0.12 U	N/A	0.037 J
TPH/Oil and Grease														
Oil and Grease	mg/kg	6,200	739	282	226	199	264	219	184	201	274	130	857	151

Detections in bold

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.

N/A: This parameter was not analyzed for this sample.

Values in Red indicate an exceedance of the Project Action Limit (PAL)

[^]PAH compounds were analyzed via SIM

Table 6
Summary of Organics Detected in Soil
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-024-SB-4	A2-025-SB-1	A2-025-SB-5	A2-026-SB-1	A2-026-SB-5	A2-027-SB-1	A2-027-SB-6	A2-028-SB-1	A2-028-SB-5	A2-029-SB-1	A2-029-SB-5	A2-030-SB-1
Volatile Organic Compounds														
1,2-Dibromo-3-chloropropane	mg/kg	0.064	0.0062 U	0.0083 U	0.0049 U	0.0059 U	0.0046 U	0.0051 U	0.0049 U	0.0056 U	0.0051 U	0.0053 U	0.005 U	0.0057 U
2-Butanone (MEK)	mg/kg	190,000	0.012 U	0.017 U	0.0098 U	0.007 J	0.0092 U	0.0039 J	0.0098 U	0.0097 J	0.01 U	0.0065 J	0.01 U	0.011 U
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	0.012 U	0.017 U	0.0098 U	0.0023 J	0.0092 U	0.01 U	0.0098 U	0.011 U	0.01 U	0.011 U	0.01 U	0.011 U
Acetone	mg/kg	670,000	0.028	0.015 J	0.014	0.045	0.019	0.045	0.0093 J	0.26	0.014	0.061	0.0091 J	0.043
Benzene	mg/kg	5.1	0.0042 J	0.0083 U	0.0049 U	0.0059 U	0.0046 U	0.0051 U	0.0049 U	0.0056 U	0.0051 U	0.0053 U	0.005 U	0.0057 U
Carbon disulfide	mg/kg	3,500	0.0067	0.025	0.0029 J	0.019	0.0052	0.0051 U	0.0049 U	0.0033 J	0.0051 U	0.033	0.005 U	0.0057 U
Cyclohexane	mg/kg	27,000	0.012 U	0.017 U	0.0098 U	0.012 U	0.0092 U	0.01 U	0.0098 U	0.011 U	0.01 U	0.011 U	0.01 U	0.011 U
Ethylbenzene	mg/kg	25	0.0021 J	0.0083 U	0.0049 U	0.0059 U	0.0046 U	0.0051 U	0.0049 U	0.0056 U	0.0051 U	0.0053 U	0.005 U	0.0057 U
Methyl Acetate	mg/kg	1,200,000	0.062 U	0.083 U	0.049 U	0.059 U	0.002 J	0.051 U	0.049 U	0.056 U	0.051 U	0.053 U	0.05 U	0.057 U
Methylene Chloride	mg/kg	1,000	0.0062 U	0.0083 U	0.0049 U	0.0059 U	0.0062	0.0047 J	0.0048 J	0.0056 U	0.0051 U	0.0053 U	0.005 U	0.0057 U
Toluene	mg/kg	47,000	0.0051 J	0.0083 U	0.0049 U	0.0059 U	0.0046 U	0.0051 U	0.0049 U	0.0056 U	0.0051 U	0.0053 U	0.005 U	0.0057 U
Semi-Volatile Organic Compounds[^]														
2-Methylnaphthalene	mg/kg	3,000	0.054	0.0073 U	0.0082 U	0.073 U	0.026	0.0077 U	0.0081 U	0.0031 J	0.0077 U	0.0025 J	0.0084 U	0.0067 J
Acenaphthene	mg/kg	45,000	0.04	0.0073 U	0.0082 U	0.098	0.066	0.0077 U	0.0081 U	0.0078 U	0.0077 U	0.008 U	0.0084 U	0.0075 U
Acenaphthylene	mg/kg	45,000	0.038	0.0073 U	0.0082 U	0.073 U	0.0061 J	0.0077 U	0.0081 U	0.0078 U	0.0077 U	0.008 U	0.0084 U	0.024
Acetophenone	mg/kg	120,000	0.37 U	0.36 U	0.41 U	0.36 U	0.4 U	0.38 U	0.4 U	0.39 U	0.38 U	0.39 U	0.42 U	0.37 U
Anthracene	mg/kg	230,000	0.2	0.0065 J	0.0082 U	0.073 U	0.025	0.0077 U	0.0081 U	0.0018 J	0.0077 U	0.0023 J	0.0084 U	0.023
Benz[a]anthracene	mg/kg	21	0.77	0.038	0.0082 U	0.2	0.12	0.0077	0.0046 J	0.0081	0.0077 U	0.0077 J	0.0084 U	0.069
Benzaldehyde	mg/kg	120,000	0.37 U	0.22 J	0.24 J	0.36 U	0.26 J	0.38 U	0.4 U	0.39 U	0.38 U	0.39 U	0.42 U	0.37 U
Benzo[a]pyrene	mg/kg	2.1	0.79	0.038	0.097	0.39	0.23	0.0062 J	0.0081 U	0.012	0.0077 U	0.0099	0.0084 U	0.14
Benzo[b]fluoranthene	mg/kg	21	1.5	0.075	0.0082 U	0.44	0.27	0.012	0.0055 J	0.023	0.0077 U	0.021	0.0084 U	0.33
Benzo[g,h,i]perylene	mg/kg		0.35	0.03	0.0082 U	0.32	0.17	0.008	0.0028 J	0.0055 J	0.0077 UJ	0.0039 J	0.0084 U	0.034
Benzo[k]fluoranthene	mg/kg	210	0.46	0.032	0.0082 U	0.19	0.1	0.0064 J	0.0023 J	0.01	0.0077 U	0.0094	0.0084 U	0.098
Carbazole	mg/kg		0.37 U	0.36 U	0.41 U	0.36 U	0.4 U	0.38 U	0.4 U	0.39 U	0.38 U	0.39 U	0.42 U	0.37 U
Chrysene	mg/kg	2,100	0.79	0.056	0.0082 U	0.2	0.13	0.0067 J	0.0037 J	0.011	0.0077 U	0.01	0.0084 U	0.1
Dibenz[a,h]anthracene	mg/kg	2.1	0.16	0.013	0.0082 U	0.085	0.061	0.0077 U	0.0081 U	0.0078 U	0.0077 UJ	0.008 U	0.0084 U	0.02
Fluoranthene	mg/kg	30,000	1.4	0.066	0.0082 U	0.17	0.12	0.0088	0.006 J	0.014	0.0077 U	0.014	0.0084 U	0.078
Fluorene	mg/kg	30,000	0.053	0.0073 U	0.0082 U	0.0094 J	0.013	0.0077 U	0.0081 U	0.0013 J	0.0077 U	0.008 U	0.0084 U	0.0037 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.42	0.028	0.0082 U	0.28	0.17	0.0077 U	0.0081 U	0.0078 U	0.0077 UJ	0.0034 J	0.0084 U	0.037
Naphthalene	mg/kg	17	0.19	0.0023 J	0.0082 U	0.073 U	0.21	0.0017 J	0.0014 J	0.0045 J	0.0077 U	0.0037 J	0.0084 U	0.0084
Phenanthrene	mg/kg		0.81	0.0088	0.0082 U	0.073 U	0.091	0.0077 U	0.0081 U	0.0074 J	0.0077 U	0.0085	0.0084 U	0.027
Pyrene	mg/kg	23,000	1.3	0.059	0.0082 U	0.18	0.13	0.0076 J	0.0054 J	0.013	0.0077 U	0.013	0.0084 U	0.089
PCBs														
Aroclor 1254	mg/kg	0.97	N/A	0.018 U	N/A	0.018 U	N/A	0.019 U	N/A	0.019 U	N/A	0.02 U	N/A	0.018 U
Aroclor 1260	mg/kg	0.99	N/A	0.018 U	N/A	0.02	N/A	0.019 U	N/A	0.019 U	N/A	0.021	N/A	0.018 U
PCBs (total)	mg/kg	0.97	N/A	0.13 U	N/A	0.13 U	N/A	0.14 U	N/A	0.13 U	N/A	0.14 U	N/A	0.13 U
TPH/Oil and Grease														
Oil and Grease	mg/kg	6,200	462	4,180	4,730	475	478	354	2,360	329	515	314	880	422

Detections in bold

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.

N/A: This parameter was not analyzed for this sample.

Values in Red indicate an exceedance of the Project Action Limit (PAL)

[^]PAH compounds were analyzed via SIM

Table 6
Summary of Organics Detected in Soil
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-030-SB-5	A2-031-SB-1	A2-031-SB-5	A2-032-SB-4	A2-032-SB-5	A2-033-SB-1	A2-033-SB-4	A2-034-SB-1	A2-034-SB-3	A2-034-SB-5	A2-042-SB-1	A2-042-SB-6
Volatile Organic Compounds														
1,2-Dibromo-3-chloropropane	mg/kg	0.064	0.0056 U	0.0053 U	0.0049 U	0.0052 UJ	0.0051 UJ	0.0053 U	0.0061 U	0.0048 U	0.0048 U	0.0048 U	0.0057 U	0.0061 U
2-Butanone (MEK)	mg/kg	190,000	0.011 U	0.0066 J	0.0098 U	0.01 U	0.01 U	0.0087 J	0.012 U	0.0096 U	0.01	0.0096 U	0.012	0.025
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	0.011 U	0.011 U	0.0098 U	0.01 U	0.01 U	0.011 U	0.012 U	0.0096 U	0.0096 U	0.0096 U	0.011 U	0.012 U
Acetone	mg/kg	670,000	0.022	0.2	0.0098 J	0.013	0.013	0.038	0.033	0.031	0.041 J	0.031	0.059	0.031
Benzene	mg/kg	5.1	0.0056 U	0.0053 U	0.0049 U	0.0052 U	0.0051 U	0.0053 U	0.0019 J	0.0048 U	0.0027 J	0.0014 J	0.0057 U	0.0043 J
Carbon disulfide	mg/kg	3,500	0.0056 U	0.0053 U	0.0049 U	0.055	0.014	0.0098	0.007	0.0048 U	0.0048 U	0.0048 U	0.0078	0.055
Cyclohexane	mg/kg	27,000	0.011 U	0.011 U	0.0098 U	0.01 U	0.01 U	0.011 U	0.012 U	0.0096 U	0.0096 U	0.0096 U	0.011 U	0.016
Ethylbenzene	mg/kg	25	0.0056 U	0.0053 U	0.0049 U	0.0052 U	0.0051 U	0.0053 U	0.0061 U	0.0048 U	0.0048 U	0.0048 U	0.0057 U	0.0019 J
Methyl Acetate	mg/kg	1,200,000	0.056 U	0.053 U	0.049 U	0.052 UJ	0.051 UJ	0.053 U	0.061 U	0.048 U	0.048 U	0.048 U	0.057 U	0.061 U
Methylene Chloride	mg/kg	1,000	0.0052 B	0.0049 B	0.0049 U	0.0052 U	0.0051 U	0.0053 U	0.0061 U	0.0048 U	0.0048 U	0.0048 U	0.0057 U	0.0062
Toluene	mg/kg	47,000	0.0056 U	0.0053 U	0.0049 U	0.0052 U	0.0051 U	0.003 J	0.0061 U	0.0048 U	0.0048 U	0.0048 U	0.0057 U	0.0044 J
Semi-Volatile Organic Compounds[^]														
2-Methylnaphthalene	mg/kg	3,000	0.0072 U	0.0032 J	0.0083 U	0.29	0.017	0.032	0.18	0.092	0.14	0.14	0.022	0.0058 J
Acenaphthene	mg/kg	45,000	0.0072 U	0.0086 U	0.0083 U	0.075 U	0.0077 U	0.03	0.1	0.009	0.11	0.087	0.0071 U	0.0072 U
Acenaphthylene	mg/kg	45,000	0.0072 U	0.0086 U	0.0083 U	0.075 U	0.0077 U	0.022	0.035	0.017	0.032 J	0.024	0.02	0.0057 J
Acetophenone	mg/kg	120,000	0.36 U	0.43 U	0.42 U	0.081 J	0.38 U	0.35 U	0.35 U	0.36 U	0.36 U	0.36 U	0.35 U	0.36 U
Anthracene	mg/kg	230,000	0.0072 U	0.0053 J	0.0083 U	0.022 J	0.0077 U	0.044	0.4	0.024	0.19 J	0.19	0.015	0.0022 J
Benz[a]anthracene	mg/kg	21	0.0023 J	0.0085 J	0.0083 U	0.063 J	0.005 J	0.22	0.72	0.071	0.96	0.42	0.086	0.0072 U
Benzaldehyde	mg/kg	120,000	0.36 U	0.43 U	0.42 U	0.37 U	0.38 U	0.35 U	0.35 U	0.36 U	0.36 U	0.36 U	0.27 J	0.25 J
Benzo[a]pyrene	mg/kg	2.1	0.0028 J	0.01	0.0083 U	0.075 U	0.0077 U	0.35	0.68	0.081	1.3	0.69	0.089	0.0072 U
Benzo[b]fluoranthene	mg/kg	21	0.0053 J	0.026	0.0083 U	0.075 U	0.0077 U	0.51	1.3	0.17	1.9	1.1	0.16	0.0072 U
Benzo[g,h,i]perylene	mg/kg		0.0015 J	0.0043 J	0.0083 U	0.027 J	0.0023 J	0.16	0.16	0.033	0.17 J	0.15	0.062	0.0017 J
Benzo[k]fluoranthene	mg/kg	210	0.0029 J	0.011	0.0083 U	0.075 U	0.0077 U	0.22	0.48	0.061	1.6	0.46	0.059	0.0072 U
Carbazole	mg/kg		0.36 U	0.43 U	0.42 U	0.37 U	0.38 U	0.35 U	0.35 U	0.36 U	0.17 J	0.36 U	0.35 U	0.36 U
Chrysene	mg/kg	2,100	0.0031 J	0.013	0.0083 U	0.067 J	0.0054 J	0.24	0.69	0.097	0.93	0.44	0.1	0.0072 U
Dibenz[a,h]anthracene	mg/kg	2.1	0.0072 U	0.0086 U	0.0083 U	0.075 U	0.0077 U	0.064	0.08	0.014	0.09 J	0.073	0.026	0.0072 U
Fluoranthene	mg/kg	30,000	0.0038 J	0.015	0.0083 U	0.15	0.01	0.26	1.6	0.15	1.3	0.64	0.12	0.015
Fluorene	mg/kg	30,000	0.0072 U	0.0014 J	0.0083 U	0.026 J	0.00073 J	0.0092	0.14	0.0048 J	0.052	0.053	0.0037 J	0.002 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0072 U	0.0086 U	0.0083 U	0.075 U	0.0077 U	0.18	0.19	0.034	0.24 J	0.2	0.062	0.0072 U
Naphthalene	mg/kg	17	0.0072 U	0.0034 J	0.0083 U	0.24	0.022	0.065	0.25	0.42	0.29 J	0.096	0.054	0.021
Phenanthrene	mg/kg		0.0072 U	0.0084 J	0.0083 U	0.12	0.0077 U	0.13	1.3	0.14	0.81 J	0.7	0.08	0.0092
Pyrene	mg/kg	23,000	0.0037 J	0.015	0.0083 U	0.11	0.0077 J	0.22	1.3	0.1	1.4	0.59	0.092	0.012
PCBs														
Aroclor 1254	mg/kg	0.97	N/A	0.0095 J	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.018 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.021 U	N/A	0.018 U	N/A	0.023 J	N/A	0.022 J	N/A	N/A	0.034 J	N/A
PCBs (total)	mg/kg	0.97	N/A	0.15 U	N/A	0.13 U	N/A	0.12 U	N/A	0.13 U	N/A	N/A	0.12 U	N/A
TPH/Oil and Grease														
Oil and Grease	mg/kg	6,200	231	627	1,010	717	282	204	682	241	N/A	668	462	829

Detections in bold

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.

N/A: This parameter was not analyzed for this sample.

Values in Red indicate an exceedance of the Project Action Limit (PAL)

[^]PAH compounds were analyzed via SIM

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

Parameter	Units	PAL	A2-012-SB-1	A2-012-SB-4	A2-013-SB-1	A2-013-SB-5	A2-014-SB-1	A2-014-SB-5	A2-014-SB-9	A2-015-SB-1	A2-015-SB-5
Metal											
Aluminum	mg/kg	1,100,000	42,300	14,600	33,700	8,340	24,500	15,100	20,000	12,000	32,200
Antimony	mg/kg	470	2.5 UJ	2.7 UJ	3 B	3.1 UJ	2.8 UJ	3.4 UJ	3.2 UJ	2.9 UJ	2.5 UJ
Arsenic	mg/kg	3	2.4 J	2.3 J	3.2	5.8	2.7	5	5.2	13.5	2.9
Barium	mg/kg	220,000	526 J	83.2 J	388	40.4	277	72.4	62.1	155	394
Beryllium	mg/kg	2,300	5.2	0.62 B	3.8	0.36 B	4	0.67 B	1 B	0.92 B	3.7
Cadmium	mg/kg	980	0.37 B	1.4 U	1.3 J	1.6 U	0.65 B	0.23 J	1.6 U	1.4 B	0.59 B
Chromium	mg/kg	120,000	28.7 J	17.1 J	149	19	410	28.6	37.2	679 J	292 J
Chromium VI	mg/kg	6.3	1.1 U	1.2 U	1.2 UJ	1.3 UJ	1.1 UJ	1.2 UJ	1.3 UJ	1.1 U	1.1 U
Cobalt	mg/kg	350	5.1	5.8	3.2 J	5.3	4.7 B	8.9	6.7	19.6 J	6.1 J
Copper	mg/kg	47,000	19	7.8	30.3	22.5	46.7	15.3	18.4	124 J	34.6 J
Iron	mg/kg	820,000	31,900 J	13,000 J	34,100	13,300	62,000	20,800	19,800	171,000 J	102,000 J
Lead	mg/kg	800	6.7	8.8	65.9 J	64.1 J	123 J	37 J	18.6 J	109 J	81.5 J
Manganese	mg/kg	26,000	6,530	135	9,200 J	77.7 J	9,510 J	509 J	218 J	25,200	13,200
Mercury	mg/kg	350	0.11 R	0.0043 J-	0.038 J-	0.058 J-	0.0033 J-	0.057 J-	0.041 J-	0.039 J	0.0083 J
Nickel	mg/kg	22,000	7.1 J	12.9	7.6 J	10.1 J	34	12.8	17.8	39.1 J	19.8 J
Selenium	mg/kg	5,800	5.3	3.7 U	3.7 B	4.2 U	2.9 B	4.5 U	4.3 U	3.9 U	3.3 U
Vanadium	mg/kg	5,800	96 J	21 J	348 J	24.9 J	1,030 J	46.1 J	39.6 J	1,480	772
Zinc	mg/kg	350,000	21.7 J	30.3 J	303	76.7	163	82	60.8	594	123
Other											
Cyanide	mg/kg	150	0.73 J	0.62 UJ	1.1	0.64 U	0.094 J	0.72 U	0.74 U	0.59	1.4

Detections in bold

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.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.

J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

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

Parameter	Units	PAL	A2-016-SB-1	A2-016-SB-5	A2-016-SB-8	A2-017-SB-1	A2-017-SB-5	A2-018-SB-1	A2-018-SB-4	A2-020-SB-1	A2-020-SB-5
Metal											
Aluminum	mg/kg	1,100,000	24,100	6,420	7,420	6,200	7,270	12,000	14,600	15,100	11,100
Antimony	mg/kg	470	2.8 U	2.8 U	3.2 U	2.6 UJ	2.4 UJ	3 UJ	3.2 UJ	3.1 U	2.8 U
Arsenic	mg/kg	3	3	7.5	9.6	5.5	1.8 B	4.6 J	2.7 U	4.3	9.8
Barium	mg/kg	220,000	227	100	44.7	74.2	69.4	115 J	286 J	133	24.4
Beryllium	mg/kg	2,300	3.4	0.45 B	0.29 B	0.37 B	0.31 J	0.89 B	1.7	0.95 B	0.58 B
Cadmium	mg/kg	980	0.57 B	1 B	0.77 B	0.68 B	1.3	0.65 B	1.2 B	0.31 B	1.4 U
Chromium	mg/kg	120,000	591	724	1,770	943	1,120	819 J	227 J	22.7	27.5
Chromium VI	mg/kg	6.3	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1 J-	1 U	1.1 U	1.2 U	0.53 J
Cobalt	mg/kg	350	6.2	16.5	7.2	12.9	5.8	11.4	5.3 J	6.4	3.7 B
Copper	mg/kg	47,000	51.2	92.8	61.2	86	58.6	120	58.5	17.3	13.7
Iron	mg/kg	820,000	89,100	175,000	313,000	154,000	196,000	132,000 J	109,000 J	18,900	32,700
Lead	mg/kg	800	93.9	120	141	112 J	210 J	150	173	32.9	12.4
Manganese	mg/kg	26,000	14,000	51,200	29,800	21,100 J	42,200 J	17,300	42,700	1,060	72.4
Mercury	mg/kg	350	0.02 J-	0.33 J-	0.021 J-	0.12 J-	0.35 J-	0.079 J-	0.0052 J-	0.11 J-	0.12 UJ
Nickel	mg/kg	22,000	18.9	41.6	38.5	46	31.7	35.2	20	11.8	8.9 B
Selenium	mg/kg	5,800	3.7 U	3.7 U	4.2 U	3.5 U	3.2 U	4 U	4.3 U	4.1 U	3.7 U
Vanadium	mg/kg	5,800	923	1,570	4,160	2,820 J	3,320 J	1,830 J	1,010 J	36.6	35.3
Zinc	mg/kg	350,000	182	262	98.7	228	142	346 J	301 J	132	34.9
Other											
Cyanide	mg/kg	150	0.72	0.17 J	0.56 J	0.68	0.37 J	1.2 J	0.7 J	0.67 UJ	0.66 UJ

Detections in bold

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.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.

J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

Table 7
Summary of Inorganics Detected in Soil
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-021-SB-1	A2-021-SB-5	A2-022-SB-1	A2-022-SB-5	A2-023-SB-1	A2-023-SB-5	A2-024-SB-1	A2-024-SB-4
Metal										
Aluminum	mg/kg	1,100,000	6,330	5,770	34,300	10,600	8,660	16,100	5,510	14,200
Antimony	mg/kg	470	3.1 UJ	2.8 UJ	1.4 B	3.5 UJ	2.7 U	2.9 U	2.9 U	3.1 U
Arsenic	mg/kg	3	2.7 J	5.8 J	3	4	6.7	6.2	4	7.5
Barium	mg/kg	220,000	71.6 J	72.9 J	369	29.3	131	236	112	237
Beryllium	mg/kg	2,300	0.42 B	0.22 B	5.5	0.39 B	0.53 B	1.3	1.2	0.97 B
Cadmium	mg/kg	980	0.81 B	0.46 B	0.35 J	1.7 U	0.73 B	5	1.4 U	3.9
Chromium	mg/kg	120,000	984 J	1,100 J	7.5	18	1,070	732	17	1,160
Chromium VI	mg/kg	6.3	3.6	9	1.1 UJ	1.2 UJ	1.1 U	1.2 U	1.1 U	1.1 U
Cobalt	mg/kg	350	1.8 J	2.6 B	1.9 B	2.9 J	4 J	9.2	5.3	6.7
Copper	mg/kg	47,000	19.3	44.1	8	6.5	45.1	107	24.9	80.6
Iron	mg/kg	820,000	136,000 J	185,000 J	7,920	13,600	139,000	81,700	19,100	109,000
Lead	mg/kg	800	34.3	17.5	10 J	7.4 J	33	289	17.4	954
Manganese	mg/kg	26,000	23,900	22,500	2,590 J	94.1 J	59,900	20,800	417	28,600
Mercury	mg/kg	350	0.0083 J-	0.11 R	0.11 R	0.11 R	0.0073 J-	0.039 J-	0.027 J-	0.019 J-
Nickel	mg/kg	22,000	12.4	17.6	3.8 J	6.1 J	17.4	32.6	15.2	23.7
Selenium	mg/kg	5,800	4.1 U	3.7 U	2.8 B	4.6 U	3.2 B	3.9 U	3.9 U	4.1 U
Vanadium	mg/kg	5,800	734 J	601 J	28.5 J	28.9 J	3,490	2,450	45.7	3,550
Zinc	mg/kg	350,000	281 J	136 J	31.5	22.1	166	930	86.9	782
Other										
Cyanide	mg/kg	150	0.53 J	0.09 J	0.67 U	0.63 U	0.092 J-	1.7 J-	0.53 J-	0.89 J-

Detections in bold

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

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

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

Parameter	Units	PAL	A2-025-SB-1	A2-025-SB-5	A2-026-SB-1	A2-026-SB-5	A2-027-SB-1	A2-027-SB-6	A2-028-SB-1	A2-028-SB-5
Metal										
Aluminum	mg/kg	1,100,000	42,000	16,600	14,900	14,900	13,700	13,400	11,300	12,000
Antimony	mg/kg	470	1.3 J	3.1 UJ	2.4 UJ	3.6 UJ	2.1 UJ	3.2 UJ	3 UJ	2.6 UJ
Arsenic	mg/kg	3	3.1	8.5	8	9.8	15.8	9.2	2.5 B	2.4
Barium	mg/kg	220,000	717	41.2	132	62.3	39.7	51.7	39.6	28.8
Beryllium	mg/kg	2,300	5.2	0.7 B	0.66 B	0.49 B	0.63 J	0.65 B	0.38 B	0.5 B
Cadmium	mg/kg	980	0.39 J	0.21 B	0.52 B	1.8 U	1.1 U	1.6 U	1.5 U	1.3 U
Chromium	mg/kg	120,000	8.9 J	36.7 J	255 J	70.3 J	26 J	21.9 J	22	21.6
Chromium VI	mg/kg	6.3	1.1 U	1.2 U	1.1 U	0.82 J	1.2 U	1.2 U	1.2 U	1.1 U
Cobalt	mg/kg	350	2.3 J	5.2 J	6.4 J	6.9 J	4.1 J	6.3 J	3.8 J	5.1
Copper	mg/kg	47,000	8.5 J	23.8 J	29.1 J	23.4 J	14.7 J	18.1 J	9	9.6
Iron	mg/kg	820,000	9,920 J	18,400 J	53,400 J	31,900 J	17,500 J	20,700 J	12,100	8,980
Lead	mg/kg	800	4.4 J	17.7 J	48.3 J	24.1 J	13.6 J	13.9 J	14.6	7.6
Manganese	mg/kg	26,000	5,170	65	10,700	867	72	74.8	189 J	60 J
Mercury	mg/kg	350	0.0032 J	0.019 J	0.04 J	0.025 J	0.048 J	0.035 J	0.02 J-	0.013 J-
Nickel	mg/kg	22,000	4.8 B	13.2 J	18.4 J	17.5 J	11.7 J	16.9 J	9.5 J	12.9
Selenium	mg/kg	5,800	4.8	4.1 U	3.2 U	4.8 U	2.8 U	4.3 U	4.1 U	3.4 U
Vanadium	mg/kg	5,800	29.2	36.3	1,100	100	36.1	29.9	39.2 J	19.2 J
Zinc	mg/kg	350,000	26.6	52.2	231	145	35.8	53.3	53.9	44.8
Other										
Cyanide	mg/kg	150	0.12 J	0.74 U	0.48 J	0.3 J	0.67 U	0.61 U	0.57 U	0.13 J+

Detections in bold

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

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J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.

J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

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

Parameter	Units	PAL	A2-029-SB-1	A2-029-SB-5	A2-030-SB-1	A2-030-SB-5	A2-031-SB-1	A2-031-SB-5	A2-031-SB-10	A2-032-SB-4
Metal										
Aluminum	mg/kg	1,100,000	14,800	13,400	15,900	14,700	22,400	16,900	N/A	27,100
Antimony	mg/kg	470	3.2 UJ	2.5 UJ	2.9 UJ	2.7 UJ	3.3 UJ	2.9 UJ	N/A	3.3 UJ
Arsenic	mg/kg	3	6.8	5.5	6.4	4.8	9.4	5.8	4.2	4.1 J
Barium	mg/kg	220,000	55.5	37.5	88.1	38.9	70.1	51.7	N/A	347 J
Beryllium	mg/kg	2,300	0.58 B	0.35 B	0.64 B	0.42 B	0.81 B	0.59 B	N/A	3.1
Cadmium	mg/kg	980	1.6 U	1.2 U	0.26 J	1.4 U	0.24 J	1.5 U	N/A	1.4 B
Chromium	mg/kg	120,000	38.1	19.6	28.5	31.3	34.9	37.8	N/A	318 J
Chromium VI	mg/kg	6.3	1.2 U	1.3 U	1.1 U	1.1 U	1.3 U	0.76 J	N/A	1.1 U
Cobalt	mg/kg	350	4.9 J	4.1	7.7	6.3	7.7	6.1	N/A	6.7
Copper	mg/kg	47,000	15.4	10.6	25	14.1	20.5	14.2	N/A	38
Iron	mg/kg	820,000	21,200	15,100	19,500	17,800	25,900	18,200	N/A	72,500 J
Lead	mg/kg	800	25	10.3	78.9	13.4	33.7	13.9	N/A	69.8
Manganese	mg/kg	26,000	230 J	64.3 J	222 J	173 J	560 J	83.6 J	N/A	12,200
Mercury	mg/kg	350	0.033 J-	0.017 J-	0.59 J-	0.042 J-	0.058 J-	0.02 J-	N/A	0.0099 J-
Nickel	mg/kg	22,000	12.6	11.3	14.2	17.6	17.8	15.5	N/A	14.2
Selenium	mg/kg	5,800	4.2 U	3.3 U	3.9 U	3.6 U	4.4 U	3.9 U	N/A	2.7 B
Vanadium	mg/kg	5,800	61.7 J	22.8 J	35.7 J	27.9 J	72 J	31 J	N/A	517 J
Zinc	mg/kg	350,000	73.7	34.4	117	41	121	43.4	N/A	602 J
Other										
Cyanide	mg/kg	150	0.46 J+	0.73 U	0.68 U	0.19 J+	0.68 U	0.61 U	N/A	0.3 J

Detections in bold

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

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J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

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

Parameter	Units	PAL	A2-032-SB-5	A2-033-SB-1	A2-033-SB-4	A2-034-SB-1	A2-034-SB-3	A2-034-SB-5	A2-042-SB-1	A2-042-SB-6
Metal										
Aluminum	mg/kg	1,100,000	13,200	19,000	7,240	15,300	8,940	11,100	15,700	36,600
Antimony	mg/kg	470	2.9 UJ	2.9 U	2.7 U	2.1 UJ	2.9 UJ	3 UJ	3.2 UJ	2.8 UJ
Arsenic	mg/kg	3	2.7 J	4.4	6	11	5.1	5.6	6.8	2.3 U
Barium	mg/kg	220,000	183 J	176	65.1	184 J	72.3 J	124 J	223	490
Beryllium	mg/kg	2,300	0.68 B	2.8	0.33 B	0.85	0.61 B	0.72 B	1.2	5
Cadmium	mg/kg	980	1.5 U	1.1 B	0.48 B	1.8	0.81 B	0.77 J	2.4	0.51 B
Chromium	mg/kg	120,000	22.6 J	636	986	1,040	608	863	448 J	27.5 J
Chromium VI	mg/kg	6.3	1.1 U	1.1 U	1.1 U	1.1 UJ	1.1 UJ	1.1 UJ	1.1 U	1.1 U
Cobalt	mg/kg	350	6.2	9.4	14.4	16.7	17.5	6.4	7.3 J	2 B
Copper	mg/kg	47,000	9.4	67.1	80.3	159	90.6	60	75.3 J	6.2 J
Iron	mg/kg	820,000	12,200 J	93,700	187,000	208,000	160,000	164,000	105,000 J	25,900 J
Lead	mg/kg	800	10.5	134	85.5	304	163	65.4	175 J	5.3 J
Manganese	mg/kg	26,000	148	16,800	23,100	32,800	30,300	18,700	17,000	6,550
Mercury	mg/kg	350	0.0033 J-	0.02 J-	0.084 J-	0.066 J-	0.1 J-	0.027 J-	0.041 J	0.1 U
Nickel	mg/kg	22,000	14.7	28	41.7	84	27	58.5	25.7 J	3.6 B
Selenium	mg/kg	5,800	3.9 U	2.3 B	3.6 U	1.9 J	3.8 U	4 U	4.3 U	3.8
Vanadium	mg/kg	5,800	27.2 J	1,800	3,700	2,030 J	2,090 J	2,540 J	994	115
Zinc	mg/kg	350,000	42 J	348	167	530	308	264	719	38.6
Other										
Cyanide	mg/kg	150	0.56 UJ	0.45 J-	0.23 J	0.7	N/A	0.62	0.36 J	0.36 J

Detections in bold

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

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J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

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

N/A: This parameter was not analyzed for this sample.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

TABLE 8
SUMMARY OF SOIL PAL EXCEEDANCES

<u>Parameter</u>	<u>CAS#</u>	<u>Frequency of Detections (%)</u>	<u>Sample ID of Max Result</u>	<u>Unit</u>	<u>PAL Solid</u>	<u>Max Result</u>
Arsenic	7440-38-2	92	A2-027-SB-1	mg/kg	3.0	15.8
Benzo[a]pyrene	50-32-8	73	A2-016-SB-1	mg/kg	2.10	4.1
Chromium VI	18540-29-9	12	A2-021-SB-5	mg/kg	6.3	9
Lead	7439-92-1	100	A2-024-SB-4	mg/kg	800	954
Manganese	7439-96-5	100	A2-023-SB-1	mg/kg	26,000	59,900

**TABLE 9
SOIL PAL EXCEEDANCES FOR SPECIFIC TARGETS**

<u>Target Feature</u>	<u>Boring ID</u>	<u>Sample Depth (ft)</u>	<u>Parameter</u>	<u>PAL (mg/kg)</u>	<u>Result (mg/kg)</u>	<u>Final Flag</u>
Dredge Disposal Dike	A2-020-SB	1	Arsenic	3	4.3	
		5	Arsenic	3	9.8	
	A2-021-SB	5	Arsenic	3	5.8	J
		5	Chromium VI	6.3	9.0	
Electric Substation	A2-015-SB	1	Arsenic	3	13.5	
	A2-042-SB	1	Arsenic	3	6.8	
Truck Loading Bays	A2-032-SB	4	Arsenic	3	4.1	J
	A2-033-SB	1	Arsenic	3	4.4	
		4	Arsenic	3	6.0	
	A2-034-SB	1	Arsenic	3	11.0	
		1	Manganese	26,000	32,800	
		3	Arsenic	3	5.1	
		3	Manganese	26,000	30,300	
5	Arsenic	3	5.6			

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

Table 10
Summary of Organics Detected in Groundwater
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-013-PZ	A2-022-PZ	A2-025-PZ	A2-031-PZ
Volatile Organic Compounds						
1,1-Dichloroethane	µg/L	2.7	2.4	1 U	1 U	1 U
Carbon disulfide	µg/L	810	0.45 J	1 U	1 U	1
Methyl tert-butyl ether (MTBE)	µg/L	14	0.79 J	1 U	1 U	1 U
Semi-Volatile Organic Compounds[^]						
1,4-Dioxane	µg/L	0.46	1.3	0.37	0.1 U	0.048 J
Acenaphthene	µg/L	530	0.1 U	1.1	0.1 U	0.1 U
Anthracene	µg/L	1,800	0.1 U	0.026 J	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	0.26 J	0.29 J	0.22 J	0.26 J
Fluoranthene	µg/L	800	0.1 U	0.26	0.1 U	0.1 U
Fluorene	µg/L	290	0.1 U	1.2	0.1 U	0.1 U
Naphthalene	µg/L	0.17	0.034 J	0.033 J	0.034 J	0.1 U
Phenanthrene	µg/L		0.1 U	0.14	0.1 U	0.1 U
Pyrene	µg/L	120	0.1 U	0.15	0.1 U	0.1 U
TPH/Oil and Grease						
Oil and Grease	µg/L	47	1,000 J	1,500 J	1,000 J	1,200 J

Detections in bold

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, but may be biased low.

Values in Red indicate an exceedance of the Project Action Limit (PAL)

[^]PAH compounds were analyzed via SIM

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

Parameter	Units	PAL	A2-013-PZ	A2-022-PZ	A2-025-PZ	A2-031-PZ
Metal, Dissolved						
Aluminum, Dissolved	µg/L	20,000	50 U	50 U	25.9 B	19.3 B
Arsenic, Dissolved	µg/L	10	12.5 J	9.4 J	5 U	5.9 J
Barium, Dissolved	µg/L	2,000	77.2	46	76.6	28.4
Cadmium, Dissolved	µg/L	5	0.61 J	0.52 B	0.76 B	3 U
Chromium, Dissolved	µg/L	100	5 U	5 U	3 J	5 U
Cobalt, Dissolved	µg/L	6	8.6	5 U	5 U	6.6
Copper, Dissolved	µg/L	1,300	2.5 B	5 U	6.3 B	5 U
Iron, Dissolved	µg/L	14,000	96,300	12,000	92.6	12,100
Manganese, Dissolved	µg/L	430	9,140	365	22.8	984
Nickel, Dissolved	µg/L	390	5.7 J	1.5 J	1.8 J	9.8 J
Selenium, Dissolved	µg/L	50	8 U	8 U	8.2	8 U
Silver, Dissolved	µg/L	94	2.1 B	6 U	6 U	6 U
Vanadium, Dissolved	µg/L	86	3.3 J	0.85 B	11.1	0.6 B
Zinc, Dissolved	µg/L	6,000	6.7 B	1.1 B	1.6 B	6.8 B

Detections in bold

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, but may be biased low.

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

Values in Red indicate an exceedance of the Project Action Limit (PAL)

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	A2-013-PZ		A2-022-PZ		A2-025-PZ		A2-031-PZ	
				Conc. (ug/L)	Cancer Risk						
Cancer Risk											
1,4-Dioxane	SVOC		130,000	1.3	1.0E-10	0.37	2.8E-11	0.1 U	0	0.048 J	3.7E-12
Naphthalene	SVOC		200	0.034 J	1.7E-09	0.033 J	1.7E-09	0.034 J	1.7E-09	0.1 U	0
1,1-Dichloroethane	VOC		330	2.4	7.3E-08	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether (MTBE)	VOC		20,000	0.79 J	4.0E-10	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Cancer Risk				7E-08		2E-09		2E-09		4E-12	

Highlighted values indicate exceedances of the cumulative vapor intrusion criteria $TCR > 1E-05$ (none)

Conc. = Concentration

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

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

Table 13
Summary of VOCs Detected in Sub-Slab Soil Gas
Reservoir Road Warehouse
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-001-SG	A2-002-SG	A2-003-SG	A2-004-SG	A2-005-SG
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/m3	2,200,000	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
1,2,4-Trimethylbenzene*	µg/m3	3,100	5.59	1.01	0.98 U	0.98 U	0.98 U
1,3,5-Trimethylbenzene*	µg/m3	2,200	1.19	0.98 U	0.98 U	0.98 U	0.98 U
2-Butanone (MEK)	µg/m3	2,200,000	32.1	12.4	24.7	33.9	15.1
4-Methyl-2-pentanone (MIBK)	µg/m3	1,400,000	0.82 U	0.86	0.82 U	1.27	0.82 U
Acetone	µg/m3	14,000,000	149	87.9	177	136	108
Benzene	µg/m3	1,600	5.75	2.08	9.81	1.82	5.43
Bromodichloromethane	µg/m3		2.88	6.97	2.81	2.61	3.55
Carbon disulfide	µg/m3	310,000	110	47.7	159	107	39
Chloroform	µg/m3	540	17.7	51.8	26.8	15	31.6
Chloromethane	µg/m3	40,000	0.43	0.41 U	0.58	0.41	0.41 U
Dichlorodifluoromethane*	µg/m3	44,000	6.8	6.24	2.75	2.66	2.66
Ethylbenzene	µg/m3	5,000	5.82	1.56	0.91	0.87 U	0.91
Methyl tert-butyl ether (MTBE)	µg/m3	48,000	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Methylene Chloride	µg/m3	270,000	22.9	22.9	4.93	7.3	5.2
Naphthalene*	µg/m3	370	2.62 U	1.65 J	2.62 U	1.62 J	1.14 J
Tetrachloroethene	µg/m3	18,000	1.36 U	1.36 U	1.36 U	1.36 U	1.36 U
Toluene	µg/m3	2,200,000	21.3	14.4	42	9.53	57
Trichloroethene	µg/m3	880	1.07 U	3.01	2.58	1.07 U	1.07 U
Trichlorofluoromethane*	µg/m3	310,000	1.52	1.62	1.42	1.26	1.97
Xylenes	µg/m3	44,000	19.5	6.82	3.82	2.74	3.52

Detections in bold

* indicates non-validated data result

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.

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

Table 13
Summary of VOCs Detected in Sub-Slab Soil Gas
Reservoir Road Warehouse
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-006-SG	A2-007-SG	A2-008-SG	A2-035-SG	A2-036-SG
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/m3	2,200,000	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
1,2,4-Trimethylbenzene*	µg/m3	3,100	0.98 U	0.98 U	0.98 U	1.46	0.98 U
1,3,5-Trimethylbenzene*	µg/m3	2,200	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
2-Butanone (MEK)	µg/m3	2,200,000	32.4	25.1	24.9	72.2	38.3
4-Methyl-2-pentanone (MIBK)	µg/m3	1,400,000	1.68	0.82 U	0.82 U	0.82 U	0.82 U
Acetone	µg/m3	14,000,000	154	134	134	210	194
Benzene	µg/m3	1,600	4.09	2.91	4.82	2.97	2.62
Bromodichloromethane	µg/m3		2.14	1.54	5.03	2.01	2.95
Carbon disulfide	µg/m3	310,000	42.9	30.9	57.6	72.9	71.4
Chloroform	µg/m3	540	12.7	4.59	42	16	22.6
Chloromethane	µg/m3	40,000	0.43	0.41 U	0.41 U	0.41 U	0.43
Dichlorodifluoromethane*	µg/m3	44,000	8.88	2.72	2.65	6.41	2.64
Ethylbenzene	µg/m3	5,000	1.04	1.09	0.96	1.91	0.87 U
Methyl tert-butyl ether (MTBE)	µg/m3	48,000	1.69	0.72 U	0.72 U	0.72 U	0.72 U
Methylene Chloride	µg/m3	270,000	30.9	3.81	8.93	22.8	8.19
Naphthalene*	µg/m3	370	2.62 U	2.62 U	1.45 J	1.63 J	2.24 J
Tetrachloroethene	µg/m3	18,000	1.36 U	1.36 U	1.36 U	1.36 U	1.36 U
Toluene	µg/m3	2,200,000	15.6	20.3	30.8	42.6	17.9
Trichloroethene	µg/m3	880	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U
Trichlorofluoromethane*	µg/m3	310,000	2.04	1.23	1.42	1.53	1.28
Xylenes	µg/m3	44,000	3.78	4.3	3.69	8.03	2.69

Detections in bold

* indicates non-validated data result

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.

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

Table 13
Summary of VOCs Detected in Sub-Slab Soil Gas
Reservoir Road Warehouse
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-037-SG	A2-038-SG	A2-039-SG	A2-040-SG	A2-041-SG
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/m3	2,200,000	1.09 U	1.09 U	3.55	1.09 U	1.09 U
1,2,4-Trimethylbenzene*	µg/m3	3,100	0.98 U	0.99	0.98 U	0.98 U	0.98 U
1,3,5-Trimethylbenzene*	µg/m3	2,200	0.98 U				
2-Butanone (MEK)	µg/m3	2,200,000	23.3	54.5	24	34.6	22.3
4-Methyl-2-pentanone (MIBK)	µg/m3	1,400,000	1.43	0.9	0.82 U	0.82 U	0.82 U
Acetone	µg/m3	14,000,000	175	215	137	160	165
Benzene	µg/m3	1,600	3.16	2.65	3	5.24	4.38
Bromodichloromethane	µg/m3		4.96	3.82	2.01	3.69	3.02
Carbon disulfide	µg/m3	310,000	47.1	74.5	28.4	64.9	46.2
Chloroform	µg/m3	540	30.2	23.6	12.1	16.1	13.3
Chloromethane	µg/m3	40,000	0.5	0.45	0.41 U	0.45	0.41 U
Dichlorodifluoromethane*	µg/m3	44,000	4.41	3.67	5.24	2.71	2.58
Ethylbenzene	µg/m3	5,000	0.96	1.35	1.17	0.91	1.04
Methyl tert-butyl ether (MTBE)	µg/m3	48,000	1.26	0.72 U	0.72 U	0.72 U	0.72 U
Methylene Chloride	µg/m3	270,000	20.3	10.9	15.5	3.46	3.57
Naphthalene*	µg/m3	370	2.61 J	2.24 J	1.59 J	2.01 J	1.62 J
Tetrachloroethene	µg/m3	18,000	1.9	1.36 U	1.36 U	1.36 U	1.36 U
Toluene	µg/m3	2,200,000	16.4	43.3	45.9	34	48.7
Trichloroethene	µg/m3	880	1.07 U				
Trichlorofluoromethane*	µg/m3	310,000	1.58	1.31	1.79	1.26	1.52
Xylenes	µg/m3	44,000	4.39	5.21	4.65	3.47	4.39

Detections in bold

* indicates non-validated data result

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.

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

Table 14
Summary of VOCs Detected in Sub-Slab Soil Gas
DACS Building
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A2-009-SG	A2-010-SG	A2-011-SG
Volatile Organic Compounds					
2-Butanone (MEK)	µg/m3	2,200,000	20.9	6.69	21
4-Methyl-2-pentanone (MIBK)	µg/m3	1,400,000	1.76	0.82 U	1.68
Acetone	µg/m3	14,000,000	146	54.5	130
Benzene	µg/m3	1,600	5.53	1.76	9.58
Bromodichloromethane	µg/m3		7.5	3.62	3.48
Carbon disulfide	µg/m3	310,000	40.4	33.6	76.9
Chloroform	µg/m3	540	46.1	43.7	20.3
Chloromethane	µg/m3	40,000	0.54	0.43	0.52
Dichlorodifluoromethane*	µg/m3	44,000	2.8	2.9	10.1
Ethylbenzene	µg/m3	5,000	8.21	4.34	7.3
Methyl tert-butyl ether (MTBE)	µg/m3	48,000	1.77	1.37	1.87
Methylene Chloride	µg/m3	270,000	16.3	14.7	31.8
Tetrachloroethene	µg/m3	18,000	1.42	1.36 U	1.36 U
Toluene	µg/m3	2,200,000	19.4	14.3	21.1
Trichloroethene	µg/m3	880	2.47	1.18	1.07 U
Trichlorofluoromethane*	µg/m3	310,000	6.47	3.42	3.32
Xylenes	µg/m3	44,000	32.8	16.2	29.1

Detections in bold

* indicates non-validated data result

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

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



Parcel A2 - Table 15

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *A2-012-SB-1*

Mercury	0.11	mg/kg	350	no	R
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Sample: *A2-015-SB-1*

1,4-Dioxane	0.13	mg/kg	24	no	R
2,4-Dinitrophenol	0.88	mg/kg	1,600	no	R
3,3'-Dichlorobenzidine	0.35	mg/kg	5.1	no	R
Bromomethane	0.0066	mg/kg	30	no	R
Chloroethane	0.0066	mg/kg	57,000	no	R

Sample: *A2-015-SB-5*

1,4-Dioxane	0.095	mg/kg	24	no	R
Bromomethane	0.0047	mg/kg	30	no	R
Chloroethane	0.0047	mg/kg	57,000	no	R

Sample: *A2-021-SB-5*

Mercury	0.11	mg/kg	350	no	R
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Sample: *A2-022-SB-1*

Mercury	0.11	mg/kg	350	no	R
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Sample: *A2-022-SB-5*

Mercury	0.11	mg/kg	350	no	R
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Sample: *A2-025-SB-1*

1,4-Dioxane	0.17	mg/kg	24	no	R
Bromomethane	0.0083	mg/kg	30	no	R
Chloroethane	0.0083	mg/kg	57,000	no	R

Sample: *A2-025-SB-5*

1,4-Dioxane	0.098	mg/kg	24	no	R
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Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *A2-025-SB-5*

Bromomethane	0.0049	mg/kg	30	no	R
Chloroethane	0.0049	mg/kg	57,000	no	R

Sample: *A2-026-SB-1*

1,4-Dioxane	0.12	mg/kg	24	no	R
Bromomethane	0.0059	mg/kg	30	no	R
Chloroethane	0.0059	mg/kg	57,000	no	R

Sample: *A2-026-SB-5*

1,4-Dioxane	0.092	mg/kg	24	no	R
Bromomethane	0.0046	mg/kg	30	no	R
Chloroethane	0.0046	mg/kg	57,000	no	R

Sample: *A2-027-SB-1*

1,4-Dioxane	0.1	mg/kg	24	no	R
Bromomethane	0.0051	mg/kg	30	no	R
Chloroethane	0.0051	mg/kg	57,000	no	R

Sample: *A2-027-SB-6*

1,4-Dioxane	0.098	mg/kg	24	no	R
Bromomethane	0.0049	mg/kg	30	no	R
Chloroethane	0.0049	mg/kg	57,000	no	R

Sample: *A2-028-SB-1*

1,4-Dioxane	0.11	mg/kg	24	no	R
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Sample: *A2-028-SB-5*

1,4-Dioxane	0.1	mg/kg	24	no	R
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Sample: *A2-029-SB-1*

1,4-Dioxane	0.11	mg/kg	24	no	R
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Sample: *A2-029-SB-5*

1,4-Dioxane	0.1	mg/kg	24	no	R
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Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *A2-030-SB-1*

1,4-Dioxane	0.11	mg/kg	24	no	R
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Sample: *A2-030-SB-5*

1,4-Dioxane	0.11	mg/kg	24	no	R
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Sample: *A2-031-SB-1*

1,4-Dioxane	0.11	mg/kg	24	no	R
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Sample: *A2-031-SB-5*

1,4-Dioxane	0.098	mg/kg	24	no	R
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Sample: *A2-034-SB-3*

2,4-Dinitrophenol	0.89	mg/kg	1,600	no	R
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Sample: *A2-042-SB-1*

1,4-Dioxane	0.11	mg/kg	24	no	R
Bromomethane	0.0057	mg/kg	30	no	R
Chloroethane	0.0057	mg/kg	57,000	no	R

Sample: *A2-042-SB-6*

1,4-Dioxane	0.12	mg/kg	24	no	R
Chloroethane	0.0061	mg/kg	57,000	no	R



Parcel A2 - Table 16

Rejected Results for Groundwater

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *A2-013-PZ*

3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R

Sample: *A2-022-PZ*

3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R

Sample: *A2-025-PZ*

3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R

Sample: *A2-031-PZ*

3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R

**Table 17 - Parcel A2
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?
1,2-Dibromo-3-chloropropane	96-12-8	A2-020-SB-1	0.0048		0.0048	0.005	49	2.04	0.064	2.5	no
2-Butanone (MEK)	78-93-3	A2-042-SB-6	0.025		0.0039	0.010	49	28.57		19,000	no
2-Methylnaphthalene	91-57-6	A2-018-SB-1	1.8		0.0012	0.11	49	75.51		300	no
4-Methyl-2-pentanone (MIBK)	108-10-1	A2-026-SB-1	0.0023	J	0.0023	0.002	49	2.04		14,000	no
Acenaphthene	83-32-9	A2-016-SB-1	0.34		0.0021	0.07	49	48.98		4,500	no
Acenaphthylene	208-96-8	A2-018-SB-1	0.67		0.0022	0.05	49	57.14			no
Acetone	67-64-1	A2-028-SB-1	0.26		0.0054	0.04	49	93.88		67,000	no
Acetophenone	98-86-2	A2-032-SB-4	0.081	J	0.081	0.08	49	2.04		12,000	no
Aluminum	7429-90-5	A2-012-SB-1	42,300		5,510	16,316	49	100.00		110,000	no
Anthracene	120-12-7	A2-018-SB-1	0.76		0.0018	0.09	49	71.43		23,000	no
Antimony	7440-36-0	A2-025-SB-1	1.3	J	1.3	1.30	49	2.04		47	no
Aroclor 1254	11097-69-1	A2-031-SB-1	0.0095	J	0.0095	0.010	23	4.35	0.97	1.5	no
Aroclor 1260	11096-82-5	A2-017-SB-1	0.043	J	0.012	0.03	23	43.48	0.99		no
Arsenic	7440-38-2	A2-027-SB-1	15.8		2.3	5.93	50	92.00	3	48	YES (C)
Barium	7440-39-3	A2-025-SB-1	717		24.4	156	49	100.00		22,000	no
Benz[a]anthracene	56-55-3	A2-018-SB-1	3.8		0.0023	0.33	49	79.59	21		no
Benzaldehyde	100-52-7	A2-042-SB-1	0.27	J	0.21	0.24	49	16.33	820	12,000	no
Benzene	71-43-2	A2-042-SB-6	0.0043	J	0.0014	0.003	49	16.33	5.1	42	no
Benzo[a]pyrene	50-32-8	A2-016-SB-1	4.1		0.0028	0.47	49	73.47	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	A2-018-SB-1	5.5		0.0052	0.66	49	77.55	21		no
Benzo[g,h,i]perylene	191-24-2	A2-016-SB-1	0.73		0.0015	0.12	49	81.63			no
Benzo[k]fluoranthene	207-08-9	A2-018-SB-1	2.4		0.0022	0.26	49	77.55	210		no
Beryllium	7440-41-7	A2-022-SB-1	5.5		0.31	2.88	49	34.69	6,900	230	no
Cadmium	7440-43-9	A2-023-SB-5	5		0.23	1.50	49	24.49	9,300	98	no
Carbazole	86-74-8	A2-023-SB-5	0.2	J	0.17	0.19	49	4.08			no
Carbon disulfide	75-15-0	A2-032-SB-4 & A2-042-SB-6	0.055		0.0029	0.02	49	57.14		350	no
Chromium	7440-47-3	A2-016-SB-8	1,770		7.5	379	49	100.00		180,000	no
Chromium VI	18540-29-9	A2-021-SB-5	9		0.53	2.62	49	12.24	6.3	350	YES (C)
Chrysene	218-01-9	A2-018-SB-1	3.5		0.0008	0.33	49	83.67	2,100		no
Cobalt	7440-48-4	A2-015-SB-1	19.6	J	1.8	7.36	49	89.80	1,900	35	no
Copper	7440-50-8	A2-034-SB-1	159		6.2	41.5	49	100.00		4,700	no
Cyanide	57-12-5	A2-023-SB-5	1.7	J-	0.09	0.54	48	64.58		120	no
Cyclohexane	110-82-7	A2-042-SB-6	0.016		0.004	0.010	49	4.08		2,700	no
Dibenz[a,h]anthracene	53-70-3	A2-016-SB-1	0.5		0.0064	0.09	49	55.10	2.1		no
Ethylbenzene	100-41-4	A2-024-SB-4	0.0021	J	0.0019	0.002	49	4.08	25	2,000	no
Fluoranthene	206-44-0	A2-018-SB-1	5.5		0.002	0.52	49	83.67		3,000	no
Fluorene	86-73-7	A2-023-SB-5	0.25		0.00071	0.03	49	73.47		3,000	no

**Table 17 - Parcel A2
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?
Indeno[1,2,3-c,d]pyrene	193-39-5	A2-016-SB-1	0.95		0.002	0.18	49	65.31	21		no
Iron	7439-89-6	A2-016-SB-8	313,000		7,920	75,466	49	100.00		82,000	YES (NC)
Lead^	7439-92-1	A2-024-SB-4	954		4.4	86.8	49	100.00		800	YES (NC)
Manganese	7439-96-5	A2-023-SB-1	59,900		60	12,631	49	100.00		2,600	YES (NC)
Mercury	7439-97-6	A2-030-SB-1	0.59	J-	0.0032	0.06	45	95.56		35	no
Methyl Acetate	79-20-9	A2-026-SB-5	0.002	J	0.002	0.002	49	2.04		120,000	no
Methylene Chloride	75-09-2	A2-026-SB-5 & A2-042-SB-6	0.0062		0.0043	0.005	49	14.29	1,000	320	no
Naphthalene	91-20-3	A2-018-SB-1	2.8		0.0014	0.17	49	81.63	17	59	no
Nickel	7440-02-0	A2-034-SB-1	84		3.8	22.1	49	93.88	64,000	2,200	no
PCBs (total)*	1336-36-3	A2-017-SB-1	0.043	J	0.037	0.04	23	13.04	0.94		no
Phenanthrene	85-01-8	A2-018-SB-1	3.1		0.0074	0.38	49	71.43			no
Pyrene	129-00-0	A2-018-SB-1	4.7		0.0023	0.45	49	85.71		2,300	no
Selenium	7782-49-2	A2-012-SB-1	5.3		1.9	3.95	49	8.16		580	no
Toluene	108-88-3	A2-024-SB-4	0.0051	J	0.0016	0.003	49	10.20		4,700	no
Vanadium	7440-62-2	A2-016-SB-8	4,160		19.2	938	49	100.00		580	YES (NC)
Zinc	7440-66-6	A2-023-SB-5	930		21.7	198	49	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 low.

COPC = Constituent of Potential Concern

C = Compound was identified as a cancer COPC

NC = Compound was identified as a non-cancer COPC

TR = Target Risk

HQ = Hazard Quotient

*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 18 - Parcel A2
Assessment of Lead**

Exposure Unit	Surface/Sub-Surface	Arithmetic Mean (mg/kg)
Site-Wide EU (40.6 ac.)	Surface	73.6
	Sub-Surface	97.6
	Pooled	86.8

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

**Table 19 - Parcel A2
Exposure Point Concentrations**

			Site-Wide Exposure Unit (40.6 ac.)					
			Surface Soil EPCs		Sub-Surface Soil EPCs		Pooled Soil EPCs	
Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	EPC Type Site-Wide	EPC Site-Wide (mg/kg)	EPC Type Site-Wide	EPC Site-Wide (mg/kg)	EPC Type Site-Wide	EPC Site-Wide (mg/kg)
Arsenic	3.00	48.0	95% KM (t) UCL	7.26	95% KM (t) UCL	6.19	95% KM (t) UCL	6.34
Chromium VI	6.30	350	Maximum Value	3.60	95% KM (BCA) UCL	1.78	95% KM (Percentile Bootstrap) UCL	1.35
Iron		82,000	95% Adjusted Gamma UCL	105,300	95% Chebyshev (Mean, Sd) UCL	147,300	95% Chebyshev (Mean, Sd) UCL	120,600
Manganese		2,600	95% Adjusted Gamma UCL	23,079	99% Chebyshev (Mean, Sd) UCL	43,368	97.5% Chebyshev (Mean, Sd) UCL	26,119
Vanadium		580	95% Chebyshev (Mean, Sd) UCL	1,803	97.5% Chebyshev (Mean, Sd) UCL	2,653	95% Chebyshev (Mean, Sd) UCL	1,695
Benzo[a]pyrene	2.10	22.0	99% KM (Chebyshev) UCL	2.82	95% KM (Percentile Bootstrap) UCL	0.36	95% KM (Chebyshev) UCL	0.84

Bold indicates EPC higher than lowest COPC SL
COPC = Constituent of Potential Concern

**Table 20 - Parcel A2
Surface Soils
Composite Worker Risk Ratios**

		Site-Wide Exposure Unit (40.6 ac.)				
		EPC mg/kg	Composite Worker			
			RSLs		Risk Estimates	
Parameter	Target Organ		Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	7.26	3.00	480	2.4E-06	0.02
Chromium VI	Respiratory	3.60	6.30	3,500	5.7E-07	0.001
Iron	Gastrointestinal	105,300		820,000		0.1
Manganese	Nervous	23,079		26,000		0.9
Vanadium	Dermal	1,803		5,800		0.3
Benzo[a]pyrene	Developmental	2.82	2.10	220	1.3E-06	0.01
					4E-06	↓

Bold indicates maximum value used

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

**Table 21 - Parcel A2
Sub-Surface Soils
Composite Worker Risk Ratios**

		Site-Wide Exposure Unit (40.6 ac.)				
		Composite Worker				
		RSLs		Risk Estimates		
Parameter	Target Organ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal		6.19	3.00	480	2.1E-06
Chromium VI	Respiratory	1.78	6.30	3,500	2.8E-07	0.0005
Iron	Gastrointestinal	147,300		820,000		0.2
Manganese	Nervous	43,368		26,000		2
Vanadium	Dermal	2,653		5,800		0.5
Benzo[a]pyrene	Developmental	0.36	2.10	220	1.7E-07	0.002
					3E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.onrl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Gastrointestinal	0
	Nervous	2
	Developmental	0

**Table 22 - Parcel A2
Pooled Soils
Composite Worker Risk Ratios**

		Site-Wide Exposure Unit (40.6 ac.)				
		Composite Worker				
		RSLs		Risk Estimates		
Parameter	Target Organ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.34	3.00	480	2.1E-06	0.01
Chromium VI	Respiratory	1.35	6.30	3,500	2.1E-07	0.0004
Iron	Gastrointestinal	120,600		820,000		0.1
Manganese	Nervous	26,119		26,000		1
Vanadium	Dermal	1,695		5,800		0.3
Benzo[a]pyrene	Developmental	0.84	2.10	220	4.0E-07	0.004
					3E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

**Table 23 - Parcel A2
Surface Soils
Construction Worker Risk Ratios**

35 Day		Site-Wide Exposure Unit (40.6 ac.)				
		EPC mg/kg	Construction Worker		Risk Estimates	
Parameter	Target Organ		SSLs		Risk	HQ
			Cancer	Non-Cancer		
Arsenic	Cardiovascular; Dermal	7.26	108	689	6.7E-08	0.01
Chromium VI	Respiratory	3.60	154	5,721	2.3E-08	0.0006
Iron	Gastrointestinal	105,300		1,718,152		0.06
Manganese	Nervous	23,079		30,037		0.8
Vanadium	Dermal	1,803		11,439		0.2
Benzo[a]pyrene	Developmental	2.82	118	26.5	2.4E-08	0.1
					1E-07	↓

Bold indicates maximum value used

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
	Respiratory	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

**Table 24 - Parcel A2
Sub-Surface Soils
Construction Worker Risk Ratios**

35 Day		Site-Wide Exposure Unit (40.6 ac.)				
		EPC mg/kg	Construction Worker			
SSLs			Risk Estimates			
Cancer	Non-Cancer		Risk	HQ		
Parameter	Target Organ					
Arsenic	Cardiovascular; Dermal	6.19	108	689	5.7E-08	0.009
Chromium VI	Respiratory	1.78	154	5,721	1.2E-08	0.0003
Iron	Gastrointestinal	147,300		1,718,152		0.09
Manganese	Nervous	43,368		30,037		1
Vanadium	Dermal	2,653		11,439		0.2
Benzo[a]pyrene	Developmental	0.36	118	26.5	3.1E-09	0.01
					7E-08	↓

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
	Respiratory	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

**Table 25 - Parcel A2
Pooled Soils
Construction Worker Risk Ratios**

35 Day		Site-Wide Exposure Unit (40.6 ac.)				
		EPC mg/kg	Construction Worker			
SSLs			Risk Estimates			
Cancer	Non-Cancer		Risk	HQ		
Parameter	Target Organ					
Arsenic	Cardiovascular; Dermal	6.34	108	689	5.9E-08	0.009
Chromium VI	Respiratory	1.35	154	5,721	8.8E-09	0.0002
Iron	Gastrointestinal	120,600		1,718,152		0.07
Manganese	Nervous	26,119		30,037		0.9
Vanadium	Dermal	1,695		11,439		0.1
Benzo[a]pyrene	Developmental	0.84	118	26.5	7.1E-09	0.03
					7E-08	↓

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
	Respiratory	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

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APPENDIX A

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Parcel A2 Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Table 1 - Soil Gas Samples

Sample Location(s)	Source Area/Description	Number of Borings	REC & Finding/ SWMU/AOC	Boring Depth	Sample Depth	Analytical Parameters		RATIONALE
						Soil Gas Samples		
A2-001, A2-003 through A2-008, A2-035 through A2-041	Reservoir Warehouse	14		6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs		Investigate potential impacts related to historical activities or materials stored in Reservoir Warehouse.
A2-002	Reservoir Warehouse "Fuel Room"	1		6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs		Investigate potential impacts from releases from Fuel Room.
A2-009 through A2-011	DACS Building	3		6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs		Investigate potential impacts related to historical activities or materials stored in DACS Building.
Total:		18						

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

Sub-Slab: 1 sample collected per 20,000 ft², with a minimum of 3 per building

Reservoir Warehouse (293,295 ft²) = **15 Samples**

DACS Building (56,458 ft²) = **3 Samples**

VOCs - Volatile Organic Compounds (Target Compound List)

Table 2 - Soil Borings

Sample Location(s)	Source Area/Description	Number of Borings	REC & Finding/ SWMU/AOC	Boring Depth	Sample Depth	Analytical Parameters		RATIONALE
						Soil Samples	Groundwater Samples†	
A2-019 through A2-021	Dredge Disposal Dike	3		Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. Last interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs		Investigate potential impacts related to dredging/dredged material.
A2-012, A2-032 through A2-034	Truck Loading Bay	4		Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. Last interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs		Investigate potential impacts related to loading/unloading of materials in truck bays.
A2-015, A2-042	Electric Substation	2		Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. Last interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs		Investigate potential impacts related to presence of electric substation.
A2-013, A2-014, A2-016 through A2-018, A2-022 through A2-031	Parcel A2 coverage	15		Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. Last interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs	VOC, SVOC, O&G, Dissolved Metals	Investigate potential impacts related to historical activities, and characterize soil and groundwater in areas not previously sampled.
Total:		24						

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

No Engineered Barrier (16-40 acres): 1 boring per 1.5 acres with no less than 15 borings

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

No Engineered Barrier (29.2 acres) = **20 Samples**

Engineered Barrier - Parking/Buildings (11.4 acres)

Parking (3.4 acres) = **2 Samples**

Building Footprints (8.0 acres) = **N/A** (Covered by Soil Gas, see Table 1)

VOCs - Volatile Organic Compounds (Target Compound List)

SVOCs - Semivolatile Organic Compounds (Target Compound List)

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

O&G - Oil and Grease

PCBs - Polychlorinated Biphenyls

bgs - Below Ground Surface

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

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APPENDIX B

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Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date : 9/15/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,776.38
 Easting (US ft) : 1,463,526.79

Boring ID: A2-012-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		2.7		(0-1') ASPHALT with slag, black, fractured, moist, hard, low cohesion, no plasticity	GW/GM	
		24.2	A2-012-SB-1	(1-4') SILT, gray and brown, moist, hard, medium cohesion, low plasticity		
100		29.6			ML	
		26.7	A2-012-SB-4			
		0.2		(4-5') Sandy CLAY, brown and orange, very wet, very soft and loose, high cohesion, medium plasticity	CL/CH	Saturated conditions encountered at 4' bgs
5						Boring terminated at 5' bgs

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok-Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/17/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 574,018.11
 Easting (US ft) : 1,463,785.38

Boring ID: A2-013-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-013-SB-1	(0-0.3') Topsoil and organic matter, brown, loose, medium cohesion, low plasticity	ML	
		0.0		(0.3-2') Slag, gravel sized, gray, moist, hard, no cohesion, no plasticity	GM	
		0.0				
100		0.0		(2-4.6') SILT, brown to gray, dry, hard, low cohesion, no plasticity	ML	
		0.0	A2-013-SB-5	(4.6-5') Large chunks of tree root	-	
5				(5-10') No Recovery		No Recovery - Geoprobe liner full of water
		-				
		-				
		-				
		-				
10						Boring terminated at 10' bgs

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok-Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/17/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,823.75
 Easting (US ft) : 1,464,243.71

Boring ID: A2-014-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.3') Topsoil, brown, dry, loose, low cohesion, no plasticity	ML	
		0.0	A2-014-SB-1	(0.3-1') Slag, gravel sized, dark gray, hard, no cohesion, no plasticity	GM	
		0.0		(1-3.5') Sandy SILT, light brown, dry, hard, low cohesion, no plasticity	ML	
100		0.0				
		0.3		(3.5-5') Clayey SILT, brown, dry, firm, medium cohesion, low plasticity	ML	
		0.0	A2-014-SB-5			
5		0.0		(5-6') Slag, gravel sized, dark gray, hard, no cohesion, no plasticity	GM	
		0.0		(6-8') CLAY, gray, dry, firm, high cohesion, high plasticity	CH	
100		0.0				
		0.0		(8-10') CLAY, gray, moist 8-9', wet 9-10', soft, high cohesion, high plasticity	CH	
		0.0	A2-014-SB-9			Water at 9' bgs
10						Boring terminated at 10' bgs

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 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 : 9/24/2015
 Weather : Sunny, 70s
 Northing (US ft) : 573,514.92
 Easting (US ft) : 1,463,769.79

Boring ID: A2-015-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A2-015-SB-1	(0-7') Slag, gravel sized (up to 1") with medium to coarse grained sand, black to brown, loose, no cohesion, no plasticity	GM	
60	0.0	-				
	0.0	-				
5	0.0	-	A2-015-SB-5			
80	0.0	-				
	0.0	-		(7-8') Sandy CLAY, orange and gray, hard, high cohesion, medium plasticity	CH/CL	Wet at 13' bgs
	0.0	-		(8-10') CLAY, gray, hard, high cohesion, medium plasticity	CH	
10	0.0	-	A2-015-SB-10			
60	-	-		(10-15') CLAY, gray, wet at 13', soft, high cohesion, high plasticity	CH	
	-	-				
15	-	-		(15-16') Sandy CLAY, orange, wet, semi-firm, high cohesion, medium plasticity	CL/CH	Boring terminated at 20' bgs
40	-	-		(16-20') SAND, orange, wet, soft	SW	
20	-	-				

Total Borehole Depth: 20' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok - Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : Sunny, 80 F
 Northing (US ft) : 573,410.97
 Easting (US ft) : 1,464,149.04

Boring ID: A2-016-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.2') Topsoil, organics, dry	ML	
		-	A2-016-SB-1	(0.2-8.3') Slag, fine-grained with some gravel, black, dry, loose, no cohesion, no plasticity		
		0.6				
80		2.3				
		1.7				
		0.0	A2-016-SB-5		GM	
5		0.3				
	80	0.4				
		0.0	A2-016-SB-8			
		0.0		(8.3-9') CLAY, gray, moist, hard, high cohesion, high plasticity	CH	Refusal at 9' bgs, boring terminated
End of Boring						
10						

Total Borehole Depth: 9' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok - Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/17/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,317.88
 Easting (US ft) : 1,463,888.15

Boring ID: A2-017-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-017-SB-1	(0-0.2') Topsoil and organic matter, brown, dry, loose, no cohesion, no plasticity	ML	
				(0.2-5') Slag, sand and gravel sized, black, dry, loose, no cohesion, no plasticity		
		33.6				
90		74.0			GM	
			A2-017-SB-5			
		73.9				
5				(5-8.5') Slag, black, sand and gravel sized, dry, loose, no cohesion, no plasticity	GM	Moist 6-7' bgs
						Wet 7-8.5' bgs
				(8.5-10') Silty CLAY, gray and orange, dry, hard, medium cohesion, medium plasticity	ML/CL	Refusal at 10' bgs, boring terminated
10						

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Don Marchese
 Drilling Equipment : Geoprobe 7822DT

Date : 9/15/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,300.03
 Easting (US ft) : 1,463,551.75

Boring ID: A2-018-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.2') Topsoil, brown, dry, loose, low cohesion, low plasticity	ML	
		-	A2-018-SB-1	(0.2-5') Slag, black, dense, dry, no cohesion, no plasticity		
		0.4				
80		2.6			GM	
		1.3				
		3.1	A2-018-SB-4			
5						Saturated conditions encountered at 3.5' bgs Boring terminated at 5' bgs

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Don Marchese
 Drilling Equipment : Geoprobe 7822DT

Date : 9/15/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,207.80
 Easting (US ft) : 1,463,524.83

Boring ID: A2-019-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-5') Slag, gray, wet, no cohesion, no plasticity		
60	60	2.7	N/A		GM	Saturated conditions throughout liner. No Geoprobe samples taken from this boring location.
5		-				Boring terminated at 5' bgs

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok-Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : 80 F, Sunny
 Northing (US ft) : 572,981.32
 Easting (US ft) : 1,463,501.13

Boring ID: A2-020-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A2-020-SB-1	(0-0.5') Topsoil, clayey with large roots and fibers, dark brown, firm, high cohesion, medium plasticity	CL	
				(0.5-3') SILT, gray and orange, dry, hard, low cohesion, no plasticity	ML	
	90	0.0				
		0.0		(3-10') Silty CLAY, orange, moist, high cohesion, medium plasticity		
		0.0	A2-020-SB-5			
5		0.0				Water at 5.5' bgs
		-			CL/CH	
100		-				
		-				
		-				
10						Boring terminated at 10' bgs

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Don Marchese
 Drilling Equipment : Geoprobe 7822DT

Date : 9/15/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,195.45
 Easting (US ft) : 1,463,669.41

Boring ID: A2-021-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A2-021-SB-1	(0-0.5') Topsoil and slag, brown, dry, loose, no cohesion, low plasticity	ML/GM	
				(0.5-5') Slag, black, loose, dry, no cohesion, no plasticity	GM	
	70	0.0				
		0.0				
		0.0	A2-021-SB-5			
5		-		(5-10') No Recovery		Empty wet liner, saturated conditions likely at 5' bgs
		-				
	0	-				
		-				
		-				
10						Boring terminated at 10' bgs

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok- Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/17/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 572,915.42
 Easting (US ft) : 1,463,475.55

Boring ID: A2-022-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/ Interval	DESCRIPTION	USCS	REMARKS
0		0.0	A2-022-SB-1	(0-1') Slag, black and gray, sand sized with trace gravel sized, dry, loose, no cohesion, no plasticity	GW	
		0.7		(1-2') Slag, black, gravel sized, moist, hard, no cohesion, no plasticity	GW	
	100	0.4		(2-5') CLAY, orange and gray, moist, firm, high cohesion, high plasticity	CH	
		0.5				
		0.0	A2-022-SB-5			
5		-		(5-7.83') Slag, black, wet, gravel sized, hard, no cohesion, no plasticity	GW	Wet at 7.5' bgs
	50	-		(7.83-10') Clayey SAND, orange and gray, very wet, firm to hard, medium to high cohesion, low plasticity	SC	
10		-				Boring terminated at 10' bgs

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Jeff Green
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : Sunny, 80 F
 Northing (US ft) : 573,033.08
 Easting (US ft) : 1,463,857.94

Boring ID: A2-023-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-023-SB-1	(0-1.3') Cinder ballast, black, dry, loose, low cohesion, no plasticity	GW/GM	
		12.7		(1.3-5') Slag, gray, gravel sized, moist except as noted below in "Remarks", low cohesion, no plasticity		
80		9.6			GW/GM	
		42.5				
		151.5	A2-023-SB-5			Wet 4-4.5' bgs
5						Boring terminated at refusal at 5' bgs

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Jeff Green
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : Sunny, 80 F
 Northing (US ft) : 573,139.12
 Easting (US ft) : 1,464,108.51

Boring ID: A2-024-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-024-SB-1	(0-1.3') Cinder ballast, black, coarse grained, dry, loose, low cohesion, no plasticity	GW/GM	
		0.5		(1.3-5') Slag, gray, gravel sized, moist, hard, low cohesion, no plasticity		
80		29.3	A2-024-SB-4		GW/GM	
						Saturated conditions encountered at 4' bgs
5						Boring terminated at refusal at 5' bgs

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 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 : 9/24/2015
 Weather : Sunny, 70s F
 Northing (US ft) : 573,627.52
 Easting (US ft) : 1,464,566.29

Boring ID: A2-025-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A2-025-SB-1	(0-4') Slag, black, gravel sized with coarse grained sand, loose, no cohesion, no plasticity	GW/GM	
60		0.0				
5		0.0	A2-025-SB-5	(4-5') CLAY, dark brown to gray, very firm, high cohesion, low plasticity	CL	
100		0.0		(5-9.5') CLAY, light gray, firm, high cohesion, high plasticity	CH	
10		0.0		(9.5-10') SAND, medium grained, beige, slightly firm, medium cohesion, no plasticity	SW-SM	Wet at 9.42' Boring terminated at 10' due to encountering water

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 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 : 9/24/2015
 Weather : Sunny, 70s F
 Northing (US ft) : 573,939.69
 Easting (US ft) : 1,464,671.31

Boring ID: A2-026-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/interval	DESCRIPTION	USCS	REMARKS
0		-	A2-026-SB-1	(0-3') Topsoil with some organic material, brown, slight cohesion, no plasticity; grading to sand with some silt and clay.	ML to SM	
	80	0.0				
		2.8			ML	
		1.9		(3-5') Sandy SILT, dark brown, dry, firm, low cohesion, no plasticity		
		1.8	A2-026-SB-5			
5		0.0		(5-6') Sandy CLAY, dark brown, very firm, low cohesion, low plasticity	CL	
		0.0		(6-7') CLAY, with trace sand, dark brown, slightly moist, high cohesion, high plasticity	CH	
	100	0.7		(7-8') Sandy CLAY, reddish brown, moist, firm, high cohesion, medium plasticity	CL	
		0.0		(8-10') Clayey SAND, reddish brown, wet, slightly firm, high cohesion, very low plasticity	SM	
10		0.5				

Boring terminated at 10' due to encountering water

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 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 : 9/24/2015
 Weather : Sunny, 70s F
 Northing (US ft) : 574,015.55
 Easting (US ft) : 1,464,517.13

Boring ID: A2-027-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		0.0	A2-027-SB-1	(0-2.5') Clayey SILT, brown, dry, hard, no to low plasticity	ML	Boring terminated at 10' due to encountering groundwater
		0.0			ML	
80		0.0		(2.5-5') Silty CLAY, brown, slightly moist, very firm, high cohesion, low plasticity	CL	
		0.0			CL	
		0.2	A2-027-SB-5			
5		1.0		(5-7') Silty CLAY, light brown, moist, firm, high cohesion, low plasticity	CL	
		0.0			CL	
		0.0		(7-8') Sandy CLAY, light brown, wet, slightly firm, high cohesion, high plasticity	CH	
100		0.0		(8-10') SAND, medium grained, light beige, soft, medium cohesion, no plasticity	SW-SM	
		0.0			SW-SM	

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : W. Mader P.G., CPSS
 ARM Technician : S. Kabis
 Boring Equipment : 2" Hand Auger

Date : 9/18/2015
 Weather : Sunny/Hot, 80s F
 Northing (US ft) : 574,244.19
 Easting (US ft) : 1,464,769.07

Boring ID: A2-028-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-028-SB-1	(0-0.25') Topsoil, brown, dry, loose, low cohesion, low plasticity	ML	Boring terminated at 6' bgs due to encountering groundwater
		0.0		(0.25-0.5') SILT, fine grained, light brown, dry, loose, low cohesion, no plasticity	ML	
		0.0		(0.5-3.5') Sandy SILT, light brown, dry, loose, low cohesion, no plasticity	ML	
100		0.0		(3.5-4') Silty CLAY, orange, slight plasticity	ML/CL	
		0.0	A2-028-SB-5	(4-6') Silty CLAY, gray, moist, medium cohesion, medium plasticity	CL	
5		0.0				
10	100	0.0		End of Boring		

Total Borehole Depth: 6' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : W. Mader P.G., CPSS
 ARM Technician : S. Kabis
 Boring Equipment : 2" Hand Auger

Date : 9/18/2015
 Weather : Sunny/Hot, 80s F

Northing (US ft) : 574,102.52
 Easting (US ft) : 1,465,010.74

Boring ID: A2-029-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.5') Topsoil, medium brown, dry, dense to very dense, medium cohesion, low plasticity	CL	
		0.0	A2-029-SB-1	(0.5-4.4') Silty CLAY, light brown, dry, very dense, orange mottling, high cohesion, medium plasticity		
		0.0				
100		0.0			CL	
		0.0				
		0.0	A2-029-SB-5	(4.4-5') Clayey SAND, fine grained, reddish brown, wet, low plasticity	SC	Moist 4.5-5.0' bgs Boring terminated at 5' bgs due to encountering groundwater
5						

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : W. Mader P.G., CPSS
 ARM Technician : S. Kabis
 Boring Equipment : 2" Hand Auger

Date : 9/18/2015
 Weather : Sunny/Hot, 80s F

Northing (US ft) : 574,367.33
 Easting (US ft) : 1,465,255.61

Boring ID: A2-030-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.5') Clayey SILT, with some root material, brown, loose, low cohesion, low plasticity	ML	
		0.0	A2-030-SB-1	(0.5-5') Clayey SILT, with some root material, light brown, dry, loose, low cohesion, low plasticity		
		0.0				
100		0.0			ML	
		0.0				
		0.0	A2-030-SB-5			
5						Boring terminated at 5' bgs due to auger refusal

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 ARM Technician : N. Kurtz
 Boring Equipment : 2" Hand Auger

Date : 9/18/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 574,497.20
 Easting (US ft) : 1,464,846.28

Boring ID: A2-031-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-031-SB-1	(0-0.3') Topsoil with organic matter, black, dry, loose, low cohesion, no plasticity	ML	
		0.0		(0.3-1') CLAY, tan, moist, soft, high cohesion, high plasticity	CH	
				(1-1.5') SAND, tan, moist, loose, low cohesion, no plasticity	SM	
		0.0		(1.5-9') CLAY, tan, dry, firm, high cohesion, high plasticity		
100		0.0				
		0.0				
		0.0	A2-031-SB-5			
5		0.0			CH	
		0.0				
		0.0				
		0.0				
		0.0				
		0.0	A2-031-SB-10	(9-10') SAND, fine to coarse grained, tan, loose, low cohesion, no plasticity	SM	
10						Wet at 10' bgs, boring terminated

Total Borehole Depth: 10' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Don Marchese
 Drilling Equipment : Geoprobe 7822DT

Date : 9/15/2015
 Weather : Sunny, 85 F
 Northing (US ft) : 573,692.21
 Easting (US ft) : 1,463,534.26

Boring ID: A2-032-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No./Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.5') Topsoil and fractured asphalt	ML/GW	
		77		(1.5-3') Concrete, dark gray	N/A	
80		1333				
		2166	A2-032-SB-4	(3-4') Slag, black, dry, hard, no cohesion, no plasticity	GW/GM	
		1380	A2-032-SB-5	(4-7.5') SILT, gray, dry, hard, low cohesion, low plasticity		
5		-			ML	
		-				
6.6		-		(7.5-10') CLAY, gray, wet, soft, high cohesion, high plasticity	CL	
		1.0				
10		-		(10-15') No Recovery		
		-				
	0	-			-	Empty wet liner
		-				
		-				
15						Boring terminated at 15' bgs

Total Borehole Depth: 15' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok-Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : Sunny, 80 F
 Northing (US ft) : 573,427.27
 Easting (US ft) : 1,463,785.69

Boring ID: A2-033-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			A2-033-SB-1	(0-0.7') Topsoil and Slag, brown, dry, loose, low cohesion, no plasticity	ML/GM	
				(0.7-2.5') Slag and clay, gray, firm, hard, medium cohesion, low plasticity	GM/CL	
		0.0				
80		0.0	A2-033-SB-4	(2.5-3.5') CLAY, gray, dry, firm, high cohesion, high plasticity	CH	
		0.0		(3.5-4.5') Slag, sand to gravel sized, black, no cohesion, no plasticity	GW-GM	
		0.0				Boring terminated at 4.5' bgs due to refusal
End of Boring						
5						

Total Borehole Depth: 4.5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 Site Location : Sparrows Point, MD
 ARM Representative : S. Kabis
 Checked by : W. Mader P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Ali Berenerok-Niblett
 Drilling Equipment : Geoprobe 7822DT

Date : 9/16/2015
 Weather : Sunny, 80 F
 Northing (US ft) : 573,447.60
 Easting (US ft) : 1,463,938.52

Boring ID: A2-034-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.2') Topsoil, brown, dry, loose, low cohesion, no plasticity	ML	
		-	A2-034-SB-1	(0.2-5') Slag, sand to gravel sized, black, dry loose, low cohesion		
		-				
60		0.0			GW-GM	
		0.6				
		0.0	A2-034-SB-5			
5						Boring terminated at 5' bgs due to refusal

Total Borehole Depth: 5' bgs.



Client : EnviroAnalytics Group
 ARM Project No. : 150298M-1-3
 Project Description : Sparrows Point - Parcel A2
 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 : 9/24/2015
 Weather : Sunny, 70s F
 Northing (US ft) : 573,515.84
 Easting (US ft) : 1,463,789.51

Boring ID: A2-042-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A2-042-SB-1	(0-0.25') Topsoil with organic matter, brown, dry, soft, loose, no cohesion, no plasticity	ML	
	80	0.2		(0.25-5') SAND, medium to coarse grained with slag gravels up to 1", dark brown, loose, soft, no plasticity	SW	
		0.0				
		0.0				
5		0.0	A2-042-SB-6	(5-7') CLAY, gray, dry, dense, high cohesion, high plasticity	CH	
		8.0				
	100	0.0		(7-8') Sandy CLAY, red, dry, firm, medium cohesion, high plasticity	CH	
		0.0		(8-9') Sandy CLAY, red, dry, hard, high cohesion, medium plasticity	CL	
10		0.0	A2-042-SB-10	(9-10.5') SAND, coarse grained with gravel sized slag, dark brown, dry, loose, soft, no plasticity	SW	
		-				
	80	0.0		(10.5-15') CLAY, gray, moist, soft to very soft, high cohesion, high plasticity	CH	
		0.0				
		0.0				
15		-		(15-17') CLAY, with trace sand, grayish tan, wet, very soft, high cohesion, high plasticity	CH	Wet at 15' bgs
		-				
	60	-		17-20' SAND, with trace clay, reddish orange, wet, soft, high cohesion, no plasticity	SW-SM	
		-				
		-				
20		-				Boring terminated at 20' bgs

Total Borehole Depth: 20' bgs.

APPENDIX C

APPENDIX D

APPENDIX E



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: A2-013-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area A Parcel A2
Sparrows Point, MD
ARM Project No.: 150298M-1-3
Page 1 of 1

Date Installed : 10-12-15
Casing/Riser Type : PVC
Borehole Diameter : 2.25"
Drilling Method : 7822DT Geoprobe
Driller : Don Marchese

Drilling Company : Green Services, Inc
TOC Elevation : 10.33'
0-Hr DTW : 6.85' bgs
24-Hr DTW : 4.35' bgs
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 12.38	DESCRIPTION	PZM Name: A2-013-PZ	REMARKS
0	12	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 41.75" above ground surface	<p>Granular bentonite seal 1" PVC Riser 24-hour DTW: 4.35' bgs 0-hour DTW: 6.85' bgs Sand Pack 1" PVC Screen</p>	
1	11			
2	10			
3	9			
4	8			
5	7	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
6	6			
7	5			
8	4			
9	3			
10	2	Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
11	1			
12	0			
13	-1			
14	-2			
15	-3	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16	-4			
17	-5			
18	-6	End of Boring		
19	-7			
20				

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: A2-022-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area A Parcel A2
Sparrows Point, MD
ARM Project No.: 150298M-1-3
Page 1 of 1

Date Installed : 10-12-15
Casing/Riser Type : PVC
Borehole Diameter : 2.25"
Drilling Method : 7822DT Geoprobe
Driller : Don Marchese

Drilling Company : Green Services, Inc
TOC Elevation : 10.10'
0-Hr DTW : 4.91' bgs
24-Hr DTW : 4.85' bgs
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.68	DESCRIPTION	PZM Name: A2-022-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 32.50" above ground surface	<p>Granular bentonite seal 1" PVC Riser 24-hour DTW: 4.85' bgs 0-hour DTW: 4.91' bgs Sand Pack 1" PVC Screen</p>	
1				
2				
3				
4				
5		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
6				
7				
8				
9				
10		Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #2		
11				
12				
13				
14				
15		Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16				
17				
18		End of Boring		
19				
20				

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: A2-025-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area A Parcel A2
Sparrows Point, MD
ARM Project No.: 150298M-1-3
Page 1 of 1

Date Installed : 10-12-15
Casing/Riser Type : PVC
Borehole Diameter : 2.25"
Drilling Method : 7822DT Geoprobe
Driller : Don Marchese

Drilling Company : Green Services, Inc
TOC Elevation : 4.525'
0-Hr DTW : 2.10' bgs
24-Hr DTW : 1.93' bgs
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 8.51	DESCRIPTION	PZM Name: A2-025-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 31.50" above ground surface	<p>Granular bentonite seal 1" PVC Riser 24-hour DTW: 1.93' bgs 0-hour DTW: 2.10' bgs Sand Pack 1" PVC Screen</p>	
8				
1				
7				
2				
6				
3				
5				
4				
4				
5		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
3				
6				
2				
7				
1				
8				
0				
9				
-1				
10		Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
-2				
11				
-3				
12				
-4				
13				
-5				
14				
-6				
15				
-7		Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16				
-8				
17				
-9				
18		End of Boring		
-10				
19				
-11				
20				

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: A2-031-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area A Parcel A2
Sparrows Point, MD
ARM Project No.: 150298M-1-3
Page 1 of 1

Date Installed : 10-13-15
Casing/Riser Type : PVC
Borehole Diameter : 2.25"
Drilling Method : 7822DT Geoprobe
Driller : Kevin Pumphrey

Drilling Company : Green Services, Inc
TOC Elevation : 22.88'
0-Hr DTW : 16.95' bgs
24-Hr DTW : 17.98' bgs
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 20.78	DESCRIPTION	PZM Name: A2-031-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 31.50" above ground surface		
1	20			
2	19			
3	18			
4	17			
5	16			
6	15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 20 feet Slot Size: 0.010"		
7	14			
8	13			
9	12			
10	11	Filter Pack: Top: 2' bgs Bottom: 23' bgs Grain Size: WG #1		
11	10			
12	9			
13	8			
14	7			
15	6			
16	5	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
17	4			
18	3			
19	2			
20	1			
21	0			
22	-1			
23	-2	End of Boring		
24	-3			
25	-4			

Total Depth: 23'

APPENDIX F

Parcel
A2

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: A2-013-P2 Name(s) of Sampler(s): _____

Description of Sample: Water _____ X _____ Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-29-15

Air Temperature: 60 ^{°F}/_{°C}

Weather Sunny _____ Rain _____

Conditions Overcast X Other _____

Depth to Water: 10.60 ft

Total Well Depth: 18 ft

Height of Water Column: _____ ft

Well 1-inch X 4-inch _____

Diameter: 2-inch _____ 6-inch _____

Well Volume Calculation:

_____ ft x _____ gal/ft = _____ gal

Purge Volume = _____ x _____ = _____ gal

Purging Method: Pump _____ Bailed _____ Other _____

Gallons Removed: _____ gal

Length of Time Purged _____ min

Yield at End of Purging: _____ gpm

How was yield measured? _____

Color _____ Odor _____

Turbidity _____

Was well cavitated? Yes _____ No _____

SAMPLING

Time/Date Started: _____ / 8:55

Air Temperature: _____ (°F/°C)

Weather Sunny _____ Rain _____

Conditions Overcast _____ Other _____

Depth to Water: _____ ft

Sampling Method: Bailer _____

Submersible Pump _____

Peristaltic Pump X

Other _____

Number of Bottles Filled: _____

Date Sent To Lab: _____

Laboratory Name: _____

Parameters to Analyze: _____

Chain of Custody Number: _____

Other: _____

FIELD DATA

Time	8:36	8:41	8:46	8:51			
Volume of water purged	2.2	2.8	3.4	4.0			gal
pH	6.02	6.18	6.21	6.22			s.u.
Conductance	1.03	0.997	0.993	0.991			umhos/cm <i>ms/cm</i>
Temperature	17.98	17.99	17.97	17.97			°C
DO	0.25	0.25	0.21	0.20			mg/l
Redox	-92.0	-120.2	-128.9	-120.7			mV
Turbidity	2149AU	690AU	162	147			NTU
Other - <i>SPC</i>	1165	1150	1146	1145			<i>ms/cm</i>

Remarks: _____

Pipe 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

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: A2-022-PZ Name(s) of Sampler(s): B Gebman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-29-15
 Air Temperature: 65 (°F/°C)
 Weather Sunny Rain _____
 Conditions Overcast _____ Other _____
 Depth to Water: _____ ft
 Total Well Depth: _____ ft
 Height of Water Column: _____ ft
 Well Diameter: 1-inch 4-inch _____
 2-inch _____ 6-inch _____
 Well Volume Calculation:
 _____ ft x _____ gal/ft = _____ gal
 Purge Volume = _____ x _____ = _____ gal
 Purging Method: Pump _____ Bailed _____ Other _____
 Gallons Removed: _____ gal
 Length of Time Purged _____ min
 Yield at End of Purging: _____ gpm
 How was yield measured? _____
 Color _____ Odor _____
 Turbidity _____
 Was well cavitated? Yes _____ No _____

SAMPLING

Time/Date Started: _____ / 10:55
 Air Temperature: _____ (°F/°C)
 Weather Sunny _____ Rain _____
 Conditions Overcast _____ Other _____
 Depth to Water: _____ ft
 Sampling Method: Bailer _____
 Submersible Pump _____
 Peristaltic Pump _____
 Other _____
 Number of Bottles Filled: _____
 Date Sent To Lab: _____
 Laboratory Name: _____
 Parameters to Analyze: _____

 Chain of Custody Number: _____
 Other: _____

FIELD DATA

Time	10:42	10:47	10:52				
Volume of water purged	2.5	3.0	3.5				gal
pH	6.97 6.69	6.69	6.63				s.u.
Conductance	0.629	0.624	0.623				µmhos/cm <small>ms/cm</small>
Temperature	17.49	17.28	17.18				°C
DO	0.25	0.14	0.15				mg/l
Redox	-135.6	-134.9	-134.0				mV
Turbidity	1478 AU	1006 AU	622 AU				NTU
Other - <u>spc</u>	735	732	731				As/cm

Remarks: _____

Pipe 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

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: A2-025-PZ Name(s) of Sampler(s): B. Gelman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-29-15

Air Temperature: 60° (°F/°C)

Weather Sunny Rain _____

Conditions Overcast _____ Other _____

Depth to Water: 4.56 ft

Total Well Depth: 18 ft

Height of Water Column: _____ ft

Well 1-inch 4-inch _____

Diameter: 2-inch _____ 6-inch _____

Well Volume Calculation:

_____ ft x _____ gal/ft = _____ gal 165 = 3 NV

Purge Volume = _____ x _____ = _____ gal

Purging Method: Pump Bailed Other _____

Gallons Removed: _____ gal

Length of Time Purged _____ min

Yield at End of Purging: _____ gpm

How was yield measured? _____

Color _____ Odor _____

Turbidity _____

Was well cavitated? Yes No

SAMPLING

Time/Date Started: _____ / 9:50

Air Temperature: _____ (°F/°C)

Weather Sunny _____ Rain _____

Conditions Overcast _____ Other _____

Depth to Water: _____ ft

Sampling Method: Bailer _____

Submersible Pump _____

Peristaltic Pump _____

Other _____

Number of Bottles Filled: _____

Date Sent To Lab: _____

Laboratory Name: _____

Parameters to Analyze: _____

Chain of Custody Number: _____

Other: _____

FIELD DATA

Time	9:38	9:43	9:48				
Volume of water purged	1.6	2.0	2.5				gal
pH	7.06	7.24	7.33				s.u.
Conductance	0.823	0.821	0.820				umhos/cm ^{ms/cm}
Temperature	16.95	16.83	16.79				°C
DO	2.73	2.26	2.18				mg/l
Redox	-52.3	-64.9	-71.1				mV
Turbidity	44.4	12.2	8.52				NTU
Other - <u>SPC</u>	972	972	972				<u>ns/cm</u>

Remarks: _____

Pipe 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

1979
240

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: A2-051-PZ Name(s) of Sampler(s): B. Gehman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-29-15

Air Temperature: 60 (Ⓡ)°C

Weather Sunny _____ Rain _____

Conditions Overcast Other _____

Depth to Water: _____ ft

Total Well Depth: _____ ft

Height of Water Column: _____ ft

Well Diameter: 1-inch 4-inch _____

2-inch _____ 6-inch _____

Well Volume Calculation:
_____ ft x _____ gal/ft = _____ gal

Purge Volume = _____ x _____ = _____ gal

Purging Method: Pump Bailed Other _____

Gallons Removed: _____ gal

Length of Time Purged _____ min

Yield at End of Purging: _____ gpm

How was yield measured? _____

Color _____ Odor _____

Turbidity _____

Was well cavitated? Yes No

SAMPLING

Time/Date Started: _____ / 12:10

Air Temperature: _____ (°F/°C)

Weather Sunny _____ Rain _____

Conditions Overcast _____ Other _____

Depth to Water: _____ ft

Sampling Method: Bailer _____

Submersible Pump _____

Peristaltic Pump _____

Other _____

Number of Bottles Filled: _____

Date Sent To Lab: _____

Laboratory Name: _____

Parameters to Analyze: _____

Chain of Custody Number: _____

Other: _____

FIELD DATA

Time	1.6	2.0	2.6				
Volume of water purged	11:58	12:03	12:08				gal
pH	6.64	6.44	6.35				s.u.
Conductance	0.431	0.430	0.422				umhos/cm ^{microhm}
Temperature	16.41	16.34	16.14				°C
DO	0.48	0.42	0.44				mg/l
Redox	-110.7	-118.2	-112.6				mV
Turbidity	117	59.5	32.3				NTU
Other - spc	515	515	507				AS/cm

Remarks: _____

Pipe 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

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel A2 Date 10/29/15
 Weather Sunny 60s-70s
 Calibrated by B. Gehman Instrument YSI Meter
 Serial Number NA

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check*	End of Day Temperature
Specific Conductance Standard #1	1.409 standard	61 F	1.495 [‡]	67 F
Specific Conductance Standard #2	NA	NA	NA	NA
pH (7)	7.00 standard	61 F	7.29	67 F
pH (4)	4.00 standard	61 F	3.97	67 F
pH(10)	10.00 standard	61 F	9.82	67 F
ORP Zobel Solution	240 standard	61 F	240	67 F
Dissolved Oxygen 100% water saturated air mg/L	8.92	61 F	9.31	67 F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	NA	61 F	NA	67 F
Barometric Pressure mm Hg	753.37	NA	753.61	NA
Turbidity Standard #1	NA	NA	NA	NA
Turbidity Standard #2	NA	NA	NA	NA
Turbidity Standard #3	NA	NA	NA	NA

*For each Parameter, chose one standard as your check standard. If possible, choose the one that is closest to the ambient measurement value.

‡Specific conductance is outside of the post-calibration acceptance criteria. Values displayed on field purge logs may be biased high.

CRRGPFKZ'I "

Parcel A2 - IDW Drum Log

Drum ID	Designation	Activity/Phase	Contents	Open Date
1-Liners-9/15/15-A2	Non-haz	Parcel A2	Liners	9/15/2015
2-PPE-9/15/15-A2	Non-haz	Parcel A2	PPE	9/15/2015
3-Soil-9/15/15-A2	Non-haz	Parcel A2	Soil	9/15/2015
4-Decon.Water-9/15/15-A2	Non-haz	Parcel A2	Decon/Purge Water	9/15/2015
5-N.Acid-9/15/15-A	Non-haz	Area A	Nitric Acid	9/15/2015
6-Hexane-9/15/15-A	Hazardous	Area A	Hexane	9/15/2015
7-Soil-9/18/15-A2	Non-haz	Parcel A2	Soil	9/18/2015
333-PVC-2/2/16-A2	Non-haz	Parcel A2	PVC	2/2/2016

APPENDIX H

Summary of QA/QC Samples Collected

Soil QA/QC:

- Trip Blank on 9/15/2016.
- A2-034-MS and A2-034-MSD collected on 9/16/2015.
- Duplicate sample collected at A2-020-SB-5 on 9/16/2015.
- A2-014-SB-9MS and A2-014-SB-9MSD collected on 9/17/2015.
- Duplicate sample collected at A2-013-SB-5 on 9/17/2016.
- Trip Blank on 9/18/2015.
- A2-015-SB-1MS and A2-015-SB-1MSD collected on 9/24/2015.
- Duplicate collected at A2-042-SB-6 on 9/24/2015.
- Equipment Blank, Field Blank, Trip Blank done on 9/24/2015.

Groundwater QA/QC:

- Trip Blank 10/29/2015.
- A duplicate groundwater sample was collected from a piezometer in a different parcel (B8-013-PZ) as part of a group of 20. This group of 20 contained all four A2 groundwater samples, along with 8 RWM piezometers and 8 B8 piezometers.
- A groundwater MS and MSD were collected from a piezometer in a different parcel (B8-010-PZ) as part of a group of 20. This group of 20 contained all four A2 groundwater samples, along with 8 RWM piezometers and 8 B8 piezometers.
- No field blank was collected as part of this group of 20.

Sub-Slab Soil Gas QA/QC:

- No QA/QC samples were gathered for sub-slab soil gas during the completion of A2 field activities.

APPENDIX I

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Cyanide	CN	Soil	mg/kg	48	31	0	48	100.00%
Aluminum	Metal	Soil	mg/kg	49	49	0	49	100.00%
Antimony	Metal	Soil	mg/kg	49	1	0	49	100.00%
Arsenic	Metal	Soil	mg/kg	50	46	0	50	100.00%
Barium	Metal	Soil	mg/kg	49	49	0	49	100.00%
Beryllium	Metal	Soil	mg/kg	49	17	0	49	100.00%
Cadmium	Metal	Soil	mg/kg	49	12	0	49	100.00%
Chromium	Metal	Soil	mg/kg	49	49	0	49	100.00%
Chromium VI	Metal	Soil	mg/kg	49	6	0	49	100.00%
Cobalt	Metal	Soil	mg/kg	49	44	0	49	100.00%
Copper	Metal	Soil	mg/kg	49	49	0	49	100.00%
Iron	Metal	Soil	mg/kg	49	49	0	49	100.00%
Lead	Metal	Soil	mg/kg	49	49	0	49	100.00%
Manganese	Metal	Soil	mg/kg	49	49	0	49	100.00%
Mercury	Metal	Soil	mg/kg	49	43	4	45	91.84%
Nickel	Metal	Soil	mg/kg	49	46	0	49	100.00%
Selenium	Metal	Soil	mg/kg	49	4	0	49	100.00%
Silver	Metal	Soil	mg/kg	49	0	0	49	100.00%
Thallium	Metal	Soil	mg/kg	49	0	0	49	100.00%
Vanadium	Metal	Soil	mg/kg	49	49	0	49	100.00%
Zinc	Metal	Soil	mg/kg	49	49	0	49	100.00%
Aroclor 1016	PCB	Soil	mg/kg	23	0	0	23	100.00%
Aroclor 1221	PCB	Soil	mg/kg	23	0	0	23	100.00%
Aroclor 1232	PCB	Soil	mg/kg	23	0	0	23	100.00%
Aroclor 1242	PCB	Soil	mg/kg	23	0	0	23	100.00%
Aroclor 1248	PCB	Soil	mg/kg	23	0	0	23	100.00%
Aroclor 1254	PCB	Soil	mg/kg	23	1	0	23	100.00%
Aroclor 1260	PCB	Soil	mg/kg	23	10	0	23	100.00%
PCBs (total)	PCB	Soil	mg/kg	23	3	0	23	100.00%
1,1-Biphenyl	SVOC	Soil	mg/kg	49	0	0	49	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,4,5-Trichlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,4,6-Trichlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,4-Dichlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,4-Dimethylphenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,4-Dinitrophenol	SVOC	Soil	mg/kg	49	0	2	47	95.92%
2,4-Dinitrotoluene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2,6-Dinitrotoluene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2-Chloronaphthalene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2-Chlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2-Methylnaphthalene	SVOC	Soil	mg/kg	49	37	0	49	100.00%
2-Methylphenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
2-Nitroaniline	SVOC	Soil	mg/kg	49	0	0	49	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Soil	mg/kg	49	0	0	49	100.00%
3,3'-Dichlorobenzidine	SVOC	Soil	mg/kg	49	0	1	48	97.96%
4-Chloroaniline	SVOC	Soil	mg/kg	49	0	0	49	100.00%
4-Nitroaniline	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Acenaphthene	SVOC	Soil	mg/kg	49	24	0	49	100.00%
Acenaphthylene	SVOC	Soil	mg/kg	49	28	0	49	100.00%
Acetophenone	SVOC	Soil	mg/kg	49	1	0	49	100.00%
Anthracene	SVOC	Soil	mg/kg	49	35	0	49	100.00%
Benz[a]anthracene	SVOC	Soil	mg/kg	49	39	0	49	100.00%
Benzaldehyde	SVOC	Soil	mg/kg	49	8	0	49	100.00%
Benzo[a]pyrene	SVOC	Soil	mg/kg	49	36	0	49	100.00%
Benzo[b]fluoranthene	SVOC	Soil	mg/kg	49	38	0	49	100.00%
Benzo[g,h,i]perylene	SVOC	Soil	mg/kg	49	40	0	49	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Benzo[k]fluoranthene	SVOC	Soil	mg/kg	49	38	0	49	100.00%
bis(2-chloroethoxy)methane	SVOC	Soil	mg/kg	49	0	0	49	100.00%
bis(2-Chloroethyl)ether	SVOC	Soil	mg/kg	49	0	0	49	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Soil	mg/kg	49	0	0	49	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Caprolactam	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Carbazole	SVOC	Soil	mg/kg	49	2	0	49	100.00%
Chrysene	SVOC	Soil	mg/kg	49	41	0	49	100.00%
Dibenz[a,h]anthracene	SVOC	Soil	mg/kg	49	27	0	49	100.00%
Diethylphthalate	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Di-n-butylphthalate	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Di-n-octylphthalate	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Fluoranthene	SVOC	Soil	mg/kg	49	41	0	49	100.00%
Fluorene	SVOC	Soil	mg/kg	49	36	0	49	100.00%
Hexachlorobenzene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Hexachlorobutadiene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Hexachlorocyclopentadiene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Hexachloroethane	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Soil	mg/kg	49	32	0	49	100.00%
Isophorone	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Naphthalene	SVOC	Soil	mg/kg	49	40	0	49	100.00%
Nitrobenzene	SVOC	Soil	mg/kg	49	0	0	49	100.00%
N-Nitroso-di-n-propylamine	SVOC	Soil	mg/kg	49	0	0	49	100.00%
N-Nitrosodiphenylamine	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Pentachlorophenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Phenanthrene	SVOC	Soil	mg/kg	49	35	0	49	100.00%
Phenol	SVOC	Soil	mg/kg	49	0	0	49	100.00%
Pyrene	SVOC	Soil	mg/kg	49	42	0	49	100.00%
Oil and Grease	TPH	Soil	mg/kg	48	48	0	48	100.00%
1,1,1-Trichloroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,1,2,2-Tetrachloroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,1,2-Trichloroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,1-Dichloroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,1-Dichloroethene	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2,3-Trichlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2,4-Trichlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2-Dibromo-3-chloropropane	VOC	Soil	mg/kg	49	1	0	49	100.00%
1,2-Dibromoethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2-Dichlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2-Dichloroethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2-Dichloroethene (Total)	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,2-Dichloropropane	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,3-Dichlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,4-Dichlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
2-Butanone (MEK)	VOC	Soil	mg/kg	49	14	0	49	100.00%
2-Hexanone	VOC	Soil	mg/kg	49	0	0	49	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Soil	mg/kg	49	1	0	49	100.00%
Acetone	VOC	Soil	mg/kg	49	46	0	49	100.00%
Benzene	VOC	Soil	mg/kg	49	8	0	49	100.00%
Bromodichloromethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
Bromoform	VOC	Soil	mg/kg	49	0	0	49	100.00%
Bromomethane	VOC	Soil	mg/kg	49	0	9	40	81.63%
Carbon disulfide	VOC	Soil	mg/kg	49	28	0	49	100.00%
Carbon tetrachloride	VOC	Soil	mg/kg	49	0	0	49	100.00%
Chlorobenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Chloroethane	VOC	Soil	mg/kg	49	0	10	39	79.59%
Chloroform	VOC	Soil	mg/kg	49	0	0	49	100.00%
Chloromethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
cis-1,2-Dichloroethene	VOC	Soil	mg/kg	49	0	0	49	100.00%
cis-1,3-Dichloropropene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Cyclohexane	VOC	Soil	mg/kg	49	2	0	49	100.00%
Dibromochloromethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
Dichlorodifluoromethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
Ethylbenzene	VOC	Soil	mg/kg	49	2	0	49	100.00%
Isopropylbenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Methyl Acetate	VOC	Soil	mg/kg	49	1	0	49	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Soil	mg/kg	49	0	0	49	100.00%
Methylene Chloride	VOC	Soil	mg/kg	49	7	0	49	100.00%
Styrene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Tetrachloroethene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Toluene	VOC	Soil	mg/kg	49	5	0	49	100.00%
trans-1,2-Dichloroethene	VOC	Soil	mg/kg	49	0	0	49	100.00%
trans-1,3-Dichloropropene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Trichloroethene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Trichlorofluoromethane	VOC	Soil	mg/kg	49	0	0	49	100.00%
Vinyl chloride	VOC	Soil	mg/kg	49	0	0	49	100.00%
Xylenes	VOC	Soil	mg/kg	49	0	0	49	100.00%
1,4-Dioxane	VOC/SVOC	Soil	mg/kg	49	0	18	31	63.27%
1,1,1-Trichloroethane	VOC	Soil Gas	ug/m3	18	1	0	18	100.00%
1,1,1,2-Tetrachloroethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,1,2-Trichloroethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,1-Dichloroethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,1-Dichloroethene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2,3-Trichlorobenzene	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
1,2,4-Trichlorobenzene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2-Dibromo-3-chloropropane	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
1,2-Dibromoethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2-Dichlorobenzene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2-Dichloroethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2-Dichloroethene (Total)	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,2-Dichloropropane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
1,4-Dichlorobenzene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
2-Butanone (MEK)	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Soil Gas	ug/m3	18	7	0	18	100.00%
Acetone	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Benzene	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Bromodichloromethane	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Bromoform	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Bromomethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Carbon disulfide	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Carbon tetrachloride	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Chlorobenzene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Chloroethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Chloroform	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Chloromethane	VOC	Soil Gas	ug/m3	18	11	0	18	100.00%
cis-1,2-Dichloroethene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
cis-1,3-Dichloropropene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Dibromochloromethane	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Ethylbenzene	VOC	Soil Gas	ug/m3	18	16	0	18	100.00%
Isopropylbenzene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Soil Gas	ug/m3	18	5	0	18	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Methylene Chloride	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
Styrene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Tetrachloroethene	VOC	Soil Gas	ug/m3	18	2	0	18	100.00%
Toluene	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
trans-1,2-Dichloroethene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
trans-1,3-Dichloropropene	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Trichloroethene	VOC	Soil Gas	ug/m3	18	4	0	18	100.00%
Vinyl chloride	VOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Xylenes	VOC	Soil Gas	ug/m3	18	18	0	18	100.00%
1,4-Dioxane	VOC/SVOC	Soil Gas	ug/m3	18	0	0	18	100.00%
Cyanide	CN	Water	ug/L	4	0	0	4	100.00%
Aluminum	Metal	Water	ug/L	4	0	0	4	100.00%
Antimony	Metal	Water	ug/L	4	0	0	4	100.00%
Arsenic	Metal	Water	ug/L	4	3	0	4	100.00%
Barium	Metal	Water	ug/L	4	4	0	4	100.00%
Beryllium	Metal	Water	ug/L	4	0	0	4	100.00%
Cadmium	Metal	Water	ug/L	4	1	0	4	100.00%
Chromium	Metal	Water	ug/L	4	1	0	4	100.00%
Chromium VI	Metal	Water	ug/L	4	0	0	4	100.00%
Cobalt	Metal	Water	ug/L	4	2	0	4	100.00%
Copper	Metal	Water	ug/L	4	0	0	4	100.00%
Iron	Metal	Water	ug/L	4	4	0	4	100.00%
Lead	Metal	Water	ug/L	4	0	0	4	100.00%
Manganese	Metal	Water	ug/L	4	4	0	4	100.00%
Mercury	Metal	Water	ug/L	4	0	0	4	100.00%
Nickel	Metal	Water	ug/L	4	4	0	4	100.00%
Selenium	Metal	Water	ug/L	4	1	0	4	100.00%
Silver	Metal	Water	ug/L	4	0	0	4	100.00%
Thallium	Metal	Water	ug/L	4	0	0	4	100.00%
Vanadium	Metal	Water	ug/L	4	2	0	4	100.00%
Zinc	Metal	Water	ug/L	4	0	0	4	100.00%
1,1-Biphenyl	SVOC	Water	ug/L	4	0	0	4	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Water	ug/L	4	0	0	4	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4,5-Trichlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4,6-Trichlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4-Dichlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4-Dimethylphenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4-Dinitrophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2,4-Dinitrotoluene	SVOC	Water	ug/L	4	0	0	4	100.00%
2,6-Dinitrotoluene	SVOC	Water	ug/L	4	0	0	4	100.00%
2-Chloronaphthalene	SVOC	Water	ug/L	4	0	0	4	100.00%
2-Chlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2-Methylnaphthalene	SVOC	Water	ug/L	4	0	0	4	100.00%
2-Methylphenol	SVOC	Water	ug/L	4	0	0	4	100.00%
2-Nitroaniline	SVOC	Water	ug/L	4	0	0	4	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Water	ug/L	4	0	0	4	100.00%
3,3'-Dichlorobenzidine	SVOC	Water	ug/L	4	0	4	0	0.00%
4-Chloroaniline	SVOC	Water	ug/L	4	0	0	4	100.00%
4-Nitroaniline	SVOC	Water	ug/L	4	0	0	4	100.00%
Acenaphthene	SVOC	Water	ug/L	4	1	0	4	100.00%
Acenaphthylene	SVOC	Water	ug/L	4	0	0	4	100.00%
Acetophenone	SVOC	Water	ug/L	4	0	0	4	100.00%
Anthracene	SVOC	Water	ug/L	4	1	0	4	100.00%
Benz[a]anthracene	SVOC	Water	ug/L	4	0	0	4	100.00%
Benzaldehyde	SVOC	Water	ug/L	4	0	0	4	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Benzo[a]pyrene	SVOC	Water	ug/L	4	0	0	4	100.00%
Benzo[b]fluoranthene	SVOC	Water	ug/L	4	0	0	4	100.00%
Benzo[g,h,i]perylene	SVOC	Water	ug/L	4	0	0	4	100.00%
Benzo[k]fluoranthene	SVOC	Water	ug/L	4	0	0	4	100.00%
bis(2-chloroethoxy)methane	SVOC	Water	ug/L	4	0	0	4	100.00%
bis(2-Chloroethyl)ether	SVOC	Water	ug/L	4	0	0	4	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Water	ug/L	4	0	0	4	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Water	ug/L	4	4	0	4	100.00%
Caprolactam	SVOC	Water	ug/L	4	0	0	4	100.00%
Carbazole	SVOC	Water	ug/L	4	0	0	4	100.00%
Chrysene	SVOC	Water	ug/L	4	0	0	4	100.00%
Dibenz[a,h]anthracene	SVOC	Water	ug/L	4	0	0	4	100.00%
Diethylphthalate	SVOC	Water	ug/L	4	0	0	4	100.00%
Di-n-butylphthalate	SVOC	Water	ug/L	4	0	0	4	100.00%
Di-n-octylphthalate	SVOC	Water	ug/L	4	0	0	4	100.00%
Fluoranthene	SVOC	Water	ug/L	4	1	0	4	100.00%
Fluorene	SVOC	Water	ug/L	4	1	0	4	100.00%
Hexachlorobenzene	SVOC	Water	ug/L	4	0	0	4	100.00%
Hexachlorobutadiene	SVOC	Water	ug/L	4	0	0	4	100.00%
Hexachlorocyclopentadiene	SVOC	Water	ug/L	4	0	0	4	100.00%
Hexachloroethane	SVOC	Water	ug/L	4	0	0	4	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Water	ug/L	4	0	0	4	100.00%
Isophorone	SVOC	Water	ug/L	4	0	0	4	100.00%
Naphthalene	SVOC	Water	ug/L	4	3	0	4	100.00%
Nitrobenzene	SVOC	Water	ug/L	4	0	0	4	100.00%
N-Nitroso-di-n-propylamine	SVOC	Water	ug/L	4	0	0	4	100.00%
N-Nitrosodiphenylamine	SVOC	Water	ug/L	4	0	0	4	100.00%
Pentachlorophenol	SVOC	Water	ug/L	4	0	0	4	100.00%
Phenanthrene	SVOC	Water	ug/L	4	1	0	4	100.00%
Phenol	SVOC	Water	ug/L	4	0	0	4	100.00%
Pyrene	SVOC	Water	ug/L	4	1	0	4	100.00%
Oil and Grease	TPH	Water	ug/L	4	4	0	4	100.00%
1,1,1-Trichloroethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,1,2,2-Tetrachloroethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,1,2-Trichloroethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,1-Dichloroethane	VOC	Water	ug/L	4	1	0	4	100.00%
1,1-Dichloroethene	VOC	Water	ug/L	4	0	0	4	100.00%
1,2,3-Trichlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
1,2,4-Trichlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dibromo-3-chloropropane	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dibromoethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dichlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dichloroethane	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dichloroethene (Total)	VOC	Water	ug/L	4	0	0	4	100.00%
1,2-Dichloropropane	VOC	Water	ug/L	4	0	0	4	100.00%
1,3-Dichlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
1,4-Dichlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
2-Butanone (MEK)	VOC	Water	ug/L	4	0	0	4	100.00%
2-Hexanone	VOC	Water	ug/L	4	0	0	4	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Water	ug/L	4	0	0	4	100.00%
Acetone	VOC	Water	ug/L	4	0	0	4	100.00%
Benzene	VOC	Water	ug/L	4	0	0	4	100.00%
Bromodichloromethane	VOC	Water	ug/L	4	0	0	4	100.00%
Bromoform	VOC	Water	ug/L	4	0	0	4	100.00%
Bromomethane	VOC	Water	ug/L	4	0	0	4	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Carbon disulfide	VOC	Water	ug/L	4	2	0	4	100.00%
Carbon tetrachloride	VOC	Water	ug/L	4	0	0	4	100.00%
Chlorobenzene	VOC	Water	ug/L	4	0	0	4	100.00%
Chloroethane	VOC	Water	ug/L	4	0	0	4	100.00%
Chloroform	VOC	Water	ug/L	4	0	0	4	100.00%
Chloromethane	VOC	Water	ug/L	4	0	0	4	100.00%
cis-1,2-Dichloroethene	VOC	Water	ug/L	4	0	0	4	100.00%
cis-1,3-Dichloropropene	VOC	Water	ug/L	4	0	0	4	100.00%
Cyclohexane	VOC	Water	ug/L	4	0	0	4	100.00%
Dibromochloromethane	VOC	Water	ug/L	4	0	0	4	100.00%
Dichlorodifluoromethane	VOC	Water	ug/L	4	0	0	4	100.00%
Ethylbenzene	VOC	Water	ug/L	4	0	0	4	100.00%
Isopropylbenzene	VOC	Water	ug/L	4	0	0	4	100.00%
Methyl Acetate	VOC	Water	ug/L	4	0	4	0	0.00%
Methyl tert-butyl ether (MTBE)	VOC	Water	ug/L	4	1	0	4	100.00%
Methylene Chloride	VOC	Water	ug/L	4	0	0	4	100.00%
Styrene	VOC	Water	ug/L	4	0	0	4	100.00%
Tetrachloroethene	VOC	Water	ug/L	4	0	0	4	100.00%
Toluene	VOC	Water	ug/L	4	0	0	4	100.00%
trans-1,2-Dichloroethene	VOC	Water	ug/L	4	0	0	4	100.00%
trans-1,3-Dichloropropene	VOC	Water	ug/L	4	0	0	4	100.00%
Trichloroethene	VOC	Water	ug/L	4	0	0	4	100.00%
Trichlorofluoromethane	VOC	Water	ug/L	4	0	0	4	100.00%
Vinyl chloride	VOC	Water	ug/L	4	0	0	4	100.00%
Xylenes	VOC	Water	ug/L	4	0	0	4	100.00%
1,4-Dioxane	VOC/SVOC	Water	ug/L	4	3	0	4	100.00%

Evaluation of Data Completeness includes validated data only.
 (Select sub-slab soil gas parameters are excluded.)

APPENDIX J

**Construction Worker Soil Screening Levels
35 Work Day Exposure
Calculation Spreadsheet - Parcel A2**

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 ²)	AF	0.3
Skin surface exposed (cm ²)	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 ³)	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 A2**

Area of site (ac)	Ac	40.6
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/m ² -s per kg/m ³)	Q/Csr	13.7
Overall duration of traffic (s)	Tt	1,008,000
Surface area (m ²)	AR	164,303
Length (m)	LR	405
Distance traveled (km)	ΣVKT	142
Particulate emission factor (m ³ /kg)	PEFsc	143,648,719
Derivation of dispersion factor - volatilization (g/m ² -s per kg/m ³)	Q/Csa	6.78
Total time of construction (s)	Tcv	1,008,000

Input
Calculation

Chemical	Toxicity Criteria Source	[^] Ingestion SF (mg/kg-day) ⁻¹	[^] Inhalation Unit Risk (ug/m ³) ⁻¹	[^] Subchronic RfD (mg/kg-day)	[^] Subchronic RFC (mg/m ³)	[^] GIABS	Dermally Adjusted RfD (mg/kg-day)	[^] ABS	[^] RBA	[*] Dia	[*] Diw	[*] Henry's Law Constant (unitless)	[*] Kd	[*] Koc	DA	Volatilization Factor - Unlimited Reservoir (m ³ /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	73,161	108	696	67,412	689
Chromium(VI)	A/N/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	0.01	1			-	1.90E+01				161	3,745	154	5,746	1,348,246	5,721
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	224,708	30,037
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							11,738	449,415	11,439
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	4.47E+5	127	1,626	118	546	27.9	26.5

*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.onrl.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

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

N: chemical specific parameters found in NJDEP