

PHASE II INVESTIGATION REPORT

AREA B: PARCEL B8
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

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Revision 1 – March 16, 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 B: Parcel B8 (the Site). Parcel B8 is comprised of 13.5 acres of the approximately 3,100-acre former steel making facility (**Figure 1**). The Site is bounded to the west by Riverside Drive and Bear Creek, to the north by the former Rod and Wire Mill (currently designated Parcel A3), Pipe Mill Area (currently designated as Parcel A1), and the New Cold Mill Complex (currently designated as Parcel A4), and to the east and south by the Humphrey Impoundment (currently designated as Parcel B14) and the Humphrey Creek Wastewater Treatment Plant (HCWWTP; currently designated as Parcel B24). Parcel B8 includes an approximately 69,000 square foot building that was the former Billet Building and approximately 4.2 acres of existing pavement (roads/parking). The Site has been cleared of all significant vegetation and is proposed for industrial redevelopment.

The Phase II Investigation was performed in accordance with procedures outlined in the approved Phase II Investigation Work Plan – Parcel B8. This Work Plan (dated September 25, 2015) was approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on October 5, 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.

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. Parcel B8 is also part of the acreage that remains subject to the requirements of the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from USEPA on September 12, 2014.

This revised Phase II Investigation Report is being submitted in response to comments received from the MDE and USEPA, as well as to revise the Screening Level Risk Assessment (SLRA) procedure presented in Section 6.0. The original Phase II Investigation Report (Revision 0) was previously submitted to the agencies dated February 7, 2017. A transmittal letter listing the recent updates made to the Phase II Investigation Report 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 B8 is partially occupied by the Billet Building, which has also been historically referred to as the Billet Conditioning Building, the Billet Prep Building, and the Billet Record Building. According to the Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure, dated January 1998, the Billet Prep Area was the location of the Billet Prep Trenches and Blind Sumps; which was designated as SWMU 53. This unit was associated with piping designed to transport non-hazardous process wastewater to the Tin Mill Canal (TMC) Discharge Pipes (SWMU 2) and ultimately to the TMC. This unit began operating in the 1960's and was discontinued sometime around 1993 or 1994. There are currently no discharges from this unit, and the trenches and sumps were filled in when the building was converted to an area used for steel plate storage and shipping. Historically, the portion of Parcel B8 that was not occupied by the Billet Building was utilized as parking lots and railroads.

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

According to topographic maps provided by EAG, the Site is at an elevation of approximately 11 feet above mean sea level (amsl). Elevations in the parcel are fairly uniform between 10 and 12 feet over the majority of the central parcel area. Along the western edge, the parcel slopes sharply downward to the adjacent Bear Creek. Surface runoff water from central areas of the parcel does not appear to have a clear drainage direction. According to Figure B-2 of the Stormwater Pollution Prevention Plan (SWPPP) Revision 5 dated June 1, 2017, Parcel B8 drains to the HCWWTP. Surface waters which are collected at the HCWWTP ultimately flow through the National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014, which discharges to Bear Creek. Along the western edge of the property, runoff waters flow towards Bear Creek down the steep grade.

2.2. REGIONAL GEOLOGY

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

The unconsolidated sediments beneath the Site belong to the Talbot Formation (Pleistocene), which is then underlain by the Cretaceous formations which comprise the Potomac Group (Patapsco Formation, Arundel Formation and the Patuxent Formation). The Potomac Group formations are comprised of unconsolidated sediments of varying thicknesses and types, which may be several hundred feet to several thousand feet thick. These unconsolidated formations

may overlie deeper Mesozoic and/or Precambrian bedrock. Depth to bedrock is approximately 700 feet within the Site.

2.3. SITE GEOLOGY/HYDROGEOLOGY

Groundcover at the Site is comprised of approximately 36% natural soils and 64% slag-fill based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (adapted from Figure 2-20 in the DCC Report prepared by Rust Environment and Infrastructure).

In general, the encountered subsurface geology included slag fill materials overlying natural soils, which included fine-grained sediments (clays and silts) and coarse grained sediments (sands). Slag fill materials were encountered at depths of up to 12.5 feet below the ground surface (bgs), with slag thicknesses ranging from 1 to 10 feet bgs (often underlying pavement). The shallow groundwater was observed in the soil borings at depths ranging from 7 to 19 feet bgs across the Site. Soil boring logs are provided in **Appendix B**. Please note that unless otherwise indicated, all Unified Soil Classification System (USCS) group symbols provided on the attached boring logs are from visual observations, and not from laboratory testing.

Temporary groundwater sample collection points were installed at eight locations across the Site to investigate shallow groundwater conditions. In addition to the temporary groundwater sample collection points, two existing shallow hydrogeologic zone wells were sampled (HI02-PZM006 and HI07-PZM005). The locations of the groundwater sampling points are given on **Figure 3**. The temporary groundwater sample collection points and existing wells were surveyed by a Maryland-licensed surveyor. Supporting documentation from the surveys is included as **Appendix C**.

A synoptic round of groundwater level measurements was collected on April 8, 2016 from each of the groundwater points included in the parcel-specific sampling plan. Surveyed top of casing (TOC) and ground surface elevations for all applicable locations can be found in **Table 1**, along with the depth to water (DTW) measurements from this date.

A groundwater potentiometric surface map was constructed for the shallow hydrogeologic zone based on the field measurements from this date. The potentiometric map for shallow groundwater has been included on **Figure 3**. Groundwater in the shallow zone at the Site appears to flow radially in all directions from the central portion of the Site (with the highest recorded groundwater elevation of 7.08 feet amsl observed at B8-016-PZ). In the eastern half of the Site, shallow groundwater appears to flow to the east and south towards the Humphrey Impoundment (currently designated as Parcel B14). In the western half of the Site, groundwater generally flows in a southwest direction toward the coastline (Bear Creek) or the HCWWTP.

3.0 SITE INVESTIGATION

A total of 71 soil samples (from 43 boring locations), 10 groundwater samples, and eight sub-slab soil gas samples were collected for analysis between October 13, 2015 and April 12, 2016 as part of the Parcel B8 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 B8 Work Plan dated September 25, 2015, and the QAPP.

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

3.1. SAMPLE TARGET IDENTIFICATION

Previous activities within and around the buildings and facilities located on the Tradepoint Atlantic property may have been historical sources of environmental contamination. If present, source areas were identified as targets for sampling through a careful review of historical documents. When a sampling target was identified, a boring was placed at or next to its location using Geographic Information Systems (GIS) software (ArcMap Version 10.2.2).

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. There were no RECs (or additional non-REC findings) identified at the Site outside of features related to the Billet Building. The following SWMUs or AOCs were identified in the Parcel B8 Work Plan: Billet Prep Trenches and Blind Sumps, Billet Prep Waste Oil Storage Tank (SWMU 50), Billet Prep Rinsewater Collection Tanks (SWMU 51), and Billet Prep Baghouse (SWMU 52). However, the specific locations of these features were not identified.

Four 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), the 5500 Set (Plant Sewer Lines), and a set of drawings indicating coke oven gas distribution drip leg locations. Drip legs are points throughout the distribution system where coke oven gas condensate was removed from the gas pipelines. The condensate from the drip

legs was typically discharged to drums, although it is possible some spilled out of the drums and on to the ground. There were no drip legs identified inside the boundary of Parcel B8. 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.

Additional Findings (non-RECs) from the Phase I ESA or features on the historical drawings which were identified as potential environmental concerns were also reviewed and targeted as applicable. Sampling target locations were identified if the historical site drawings depicted industrial activities or a specific feature at a location that may have been a source of environmental contamination that impacted the Site. Based on the review of plant drawings, there were no additional sampling targets identified at the Site. A summary of the areas that were investigated, along with the applicable boring identification numbers and the analyses performed, has been provided as **Appendix A**. Additional sample locations were then added to fill in spatial gaps between proposed borings to provide complete coverage of the Site. During the completion of fieldwork, it was necessary to shift some borings from the approved locations given in the Work Plan, primarily due to access restrictions and/or refusal. **Table 3** provides the identification numbers of the field adjusted borings, the rationale for field adjustment, the coordinates of the proposed and final locations, and the distance/direction of the field shifts.

The density of soil borings met the requirements set forth in QAPP Worksheet 17 – Sampling Design and Rationale. Parcel B8 contained a total of 7.6 acres without engineered barriers. Of the 5.8 acres with engineered barriers, the Billet Building covered roughly 1.6 acres, and 4.2 acres consisted of paved parking/roads. In accordance with the relevant sampling density requirements, a minimum of 8 soil borings were required to cover the area without engineered barriers, and a minimum of 3 soil borings were required to cover areas with barriers. A total of 11 borings were required to meet the density specification; however, 16 soil borings were completed during the Phase II Investigation. An additional 16 surficial soil samples were collected from the interior of the Billet Building, and 11 surficial samples were collected from the building exterior. (Three additional exterior samples were cancelled due to refusal/paving encountered at the sampling site without an available sampling location in the vicinity.) The Billet Building footprint was covered by a separate soil gas investigation, discussed below.

A sub-slab soil gas survey of the Billet Building was completed as part of the Phase II Investigation. The purpose of the investigation was to verify that conditions within, below, and around the building would not pose a potentially unacceptable risk to current and future workers occupying the buildings.

The Billet Building has an area of approximately 69,000 ft². According to the density requirement given in QAPP Worksheet 17 – Sampling Design and Rationale, four sampling

locations were required in the structure; however, eight soil gas samples were completed. Two of the sample locations were originally proposed in the Work Plan as deep soil gas samples because part of the floor did not have an apparent slab. After revisiting the sample locations, a floor slab was identified throughout the Billet Building, and the locations originally proposed for deep soil gas sampling (B8-007-SB and B8-008-SG) were replaced with sub-slab soil gas collection points, as appropriate for the floor coverage.

3.2. SOIL INVESTIGATION

Continuous core soil borings were advanced at 16 locations across the Site to assess the presence or absence of soil contamination, and to assess the vertical distribution of any encountered contamination (**Figure 4**). The continuous core soil borings were advanced to depths between 10 and 20 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 has been included as **Appendix D**. Unless otherwise indicated, all USCS group symbols provided on the attached boring logs are from visual observations.

One shallow sample was collected from the 0 to 1 foot depth interval, and a deeper sample was collected from the 4 to 5 foot depth interval from each continuous core soil boring. 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. Soil sampling activities were conducted in accordance with the procedures and methods referenced in **Field Standard Operating Procedure (SOP) Numbers 008, 009, 012, and 013** provided in Appendix A of the QAPP.

A total of 30 surficial soil samples were proposed for collection in the interior and exterior of the Billet Building in accordance with the Work Plan dated September 25, 2015. The interior and exterior soil samples were added in response to a previously completed lead-based paint (LBP) survey. The completion letter report for the LBP survey of the Billet Building is included as **Appendix E**. Of the 30 surficial soil samples, 16 samples (0 to 0.5 foot depth interval) were collected within the interior of the Billet Building. Three surficial soil samples were collected along each of the main interior walls, and two additional samples were collected from a stained soil area observed during the initial walk through inspection. An additional two surface soil

samples were then collected from the building interior in the large open floor area without asphalt/concrete coverage. In addition to the interior samples, 11 exterior surficial soil samples (0 to 1 foot depth interval) were gathered surrounding the outlying buildings (OBs) of the main Billet Building. Three additional exterior surficial soil locations (B8-048-SB, B8-049-SB, and B8-051-SB) originally proposed in the Work Plan were abandoned after several attempts due to refusal/paving encountered at the sampling site without a viable sampling location nearby. The locations of the surficial soil samples are given on **Figure 5**.

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.

The Phase II Investigation soil samples were submitted to Pace Analytical Services, Inc. (PACE), and analyzed for (excluding the exterior surficial soil samples) 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. The building interior surficial soil samples were tested for total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) via USEPA Methods 8015B and 8015D, in lieu of Oil & Grease. The Work Plan requirements for analysis of TPH-DRO/GRO and/or Oil & Grease have evolved throughout the investigation process and changed several times since late-2015 under agency guidance. Oil & Grease was initially included in the parameter list for the interior samples, but this analysis was removed based on direct guidance from the MDE. (Oil & Grease analysis was halted in November 2015 based on agency preference for TPH-DRO/GRO.) The exterior surficial soil samples were analyzed for TAL-Metals only. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.3. GROUNDWATER INVESTIGATION

Eight temporary groundwater sample collection points (piezometers) were installed in the shallow hydrogeologic zone to facilitate the collection of groundwater samples, and to support the definition of the groundwater potentiometric surface. The soil boring locations where shallow piezometers were installed during the investigation included B8-009-SB, B8-010-SB, B8-013-SB, B8-016-SB, B8-017-SB, B8-018-SB, B8-019-SB and B8-020-SB (**Figure 3**). The temporary groundwater sample collection point construction logs have been included as **Appendix F**. Additionally, two existing shallow wells present within the parcel boundaries (HI02-PZM006 and HI07-PZM005) were inspected and incorporated into the Work Plan scope.

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 the installation of each sample collection point, the 0-hour depth to water was documented and the collection point was checked for the presence of non-aqueous phase liquid (NAPL) using an oil-water interface probe in accordance with the methods referenced in **Field SOP Number 019** provided in Appendix A of the QAPP.

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

Groundwater samples were collected in accordance with methods referenced in **Field SOP Number 007** provided in Appendix A of the QAPP; which employed the use of a 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 analysis of TAL-Metals which were collected from temporary groundwater sample collection points were filtered in the field with an in-line 0.45 micron filter. The sampling and purge logs have been included in **Appendix G**. Calibration of the YSI meter was performed before the start of each day of the sampling event, and a calibration post-check was completed at the end of the day. Appropriate documentation of the YSI calibration has also been included in **Appendix G**.

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-Metals (total) or Dissolved Metals via 6010C and 7470A, hexavalent chromium (total) 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.

3.4. SUB-SLAB SOIL GAS INVESTIGATION

A total of eight temporary monitoring probes were installed at the locations shown on **Figure 6** to collect sub-slab soil gas samples. Two of the sample locations were originally proposed in the Work Plan as deep soil gas samples (B8-007-SG and B8-008-SG), but were replaced with sub-slab soil gas samples when an intact floor slab was identified at the proposed locations. The sub-slab soil gas samples were collected according to procedures and methods referenced in **Field SOP Number 002** provided in Appendix A of the QAPP.

A core-drill was used to create a pilot-hole approximately three-inches in diameter that extended through the concrete floor to facilitate the collection of each sub-slab soil gas sample. A hand auger and/or Geoprobe® was then used to create a borehole that extended through the subgrade

and into the soil to a depth of at least eight inches below the bottom of the floor slab. A six inch soil gas implant, constructed of double woven stainless steel wire screen, was then attached to an appropriate length of polyethylene tubing and lowered to the bottom of the borehole. Once the implant and tubing were installed, the tubing was capped with a three-way valve, and clean sand was added around the implant to create a permeable layer that extended at least two inches above the implant. Bentonite was then added and hydrated to create a seal above the sand pack that extended to the surface. Once installed, each sub-slab soil gas monitoring probe was allowed to equilibrate for at least 24 hours.

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

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

As stated in **Field SOP Number 002**, if less than 10% of the starting concentration of the tracer gas within the shroud was observed in the Tedlar bag sample, the seal could be considered competent and sampling would continue. During fieldwork, the concentration of helium measured in the Tedlar bag was always significantly less than 10%, and each seal was deemed adequate to proceed.

Prior to sampling, a syringe was attached to the three-way valve and three purge volumes of air were removed. After the probe had been purged of any ambient air, an evacuated stainless steel canister (summa canisters) with a flow restrictor set for an 8-hour intake time was attached to the tubing. The 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 filled, and the surface repaired. Sub-slab soil gas samples were submitted to PACE, and analyzed for VOCs via USEPA Method TO-15.

3.5. MANAGEMENT OF INVESTIGATION-DERIVED WASTE (IDW)

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

- soil cuttings generated from soil borings or the installation of the temporary groundwater 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 B8 Phase II IDW soil drums for 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 a subset of individual drums being staged on-site at the date of collection. A total of eight aqueous composite samples were collected from the drums containing aqueous materials 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 Phase II investigation is included as **Appendix H**. All IDW procedures were carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP.

4.0 ANALYTICAL RESULTS

4.1. SOIL CONDITIONS

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

The analytical results for the detected parameters are summarized and compared to the PALs in **Table 6** (Soil Boring – Organics), **Table 7** (Billet Building Surficial Soil – Organics), **Table 8** (Soil Boring – Inorganics), and **Table 9** (Billet Building Surficial Soil – 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 provided in the attached summary tables.

4.1.1. Soil Conditions: Organic Compounds

As provided on **Table 6** and **Table 7**, several VOCs were identified above the laboratory's method detection limits (MDLs) in the soil boring samples collected from across the Site and from the Billet Building interior surficial soil samples. There were no VOCs detected above their respective PALs.

Table 6 provides a summary of SVOCs detected above the laboratory's MDLs in the 16 soil boring samples collected from across the Site. The PALs for relevant polynuclear aromatic hydrocarbons (PAHs) have been adjusted upward based on revised toxicity data published in the USEPA RSL Composite Worker Soil Table. Therefore, exceedances for PAHs are based on the adjusted PALs rather than those presented in the QAPP. Four SVOCs, all PAHs, were detected above their PALs among the 16 soil boring samples. These SVOCs were benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene. Benzo[a]pyrene exceeded its PAL at four boring locations in one or more sample depths. The three remaining SVOCs (benz[a]anthracene, benzo[b]fluoranthene, and dibenz[a,h]anthracene) each exceeded their respective PALs in only one sample each (B8-021-SB-5). A summary of the PAL exceedance locations and results has been provided as **Figure SB-1**. **Table 7** provides a summary of SVOCs detected above the laboratory's MDLs in the surficial soil samples collected from the interior of the Billet Building. The same four SVOCs were detected above their adjusted PALs among the surficial samples. Exceedances were noted in two of the Billet Building surficial soil samples.

Benzo[a]pyrene exceeded its PAL at both locations (B8-026-SB-0.5 and B8-031-SB-0.5), while the other three listed SVOCs were limited to one exceedance each (B8-031-SB-0.5). A summary of the PAL exceedance locations and results for the Billet Building interior has been provided as **Figure SB-2**.

Shallow soil samples collected across the Site from the 0 to 1 foot bgs interval were also analyzed for PCBs (excluding the Billet Building exterior surficial soil samples). **Table 6** provides a summary of the PCBs detected above the laboratory's MDLs in the 16 soil boring samples collected outside of the Billet Building. Aroclor 1248 and total PCBs both exceeded their respective PALs at one sample location (B8-013-SB-1) with a detection of 1.6 mg/kg. This PAL exceedance location has been provided on **Figure SB-3**. **Table 7** provides a summary of the PCBs detected above the laboratory MDLs in the Billet Building interior surficial soil samples. There were no PCBs detected above their respective PALs.

Table 6 provides a summary of the Oil & Grease detections above the laboratory MDLs in soil borings completed in the parcel. The highest detection of Oil & Grease (17,900 mg/kg) was identified in sample B8-014-SB-1. Two other samples (B8-012-SB-1 and B8-016-SB-1) had Oil & Grease detections above the PAL of 6,200 mg/kg. All three of the elevated detections were from samples providing general site coverage. A summary of the PAL exceedance locations has been provided on **Figure SB-4**. **Table 7** provides a summary of DRO detections above the laboratory MDLs in the Billet Building interior surficial soil samples. GRO was not detected above the laboratory MDLs in any sample. The interior samples were originally proposed for Oil & Grease analysis, but this parameter was removed from the analyte list based on direct guidance from the MDE. DRO was detected above the PAL in only one interior Billet Building surficial soil sample (B8-034-SB-0.5) with a detection of 7,840 mg/kg. This PAL exceedance location has been provided on **Figure SB-5**.

4.1.2. Soil Conditions: Inorganic Constituents

Table 8 provides a summary of inorganic constituents detected above the laboratory's MDLs in the soil boring samples collected from across the Site. Six inorganic compounds (arsenic, hexavalent chromium, lead, manganese, thallium, and vanadium) were detected above their respective PALs. Arsenic was by far the most common inorganic exceedance, and was detected above the PAL in 26 soil samples from the 16 soil boring locations across the Site. Lead was only detected above its PAL at a single isolated location (B8-022-SB-5). A summary of the inorganic PAL exceedance locations has been provided on **Figure SB-6**. **Table 9** provides a summary of inorganic constituents detected above the laboratory's MDLs in the surficial soil samples collected from the interior and exterior of the Billet Building. Only two inorganic compounds (arsenic and manganese) were detected above their respective PALs in these surficial soil samples. Arsenic was by far the most common inorganic exceedance, and was detected above the PAL in 67% (18 samples) of the Billet Building surficial soil samples analyzed for this

compound. In comparison, manganese was only detected above the PAL in 11% of the samples (or 3 samples total). A summary of the inorganic PAL exceedances among the surficial soil samples is given on **Figure SB-7**.

4.1.3. Soil Conditions: Results Summary

Table 6 through **Table 9** provide a summary of the detected organic and inorganic compounds in the soil boring samples and surficial soil samples submitted for laboratory analysis, and **Figure SB-1** through **Figure SB-7** present a summary of the sample results that exceeded the PALs. **Table 10** provides a summary of results for all PAL exceedances in soil, including maximum values and detection frequencies. **Table 11** indicates which soil impacts (PAL exceedances) are associated with the specific targets listed in the Parcel B8 Work Plan. There were no detections of VOCs above the applicable PALs. Exceedances of the PALs in Parcel B8 soils (borings and surficial samples) consisted of six inorganics (arsenic, hexavalent chromium, lead, manganese, thallium, and vanadium), four SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene), two PCB groups (Aroclor 1248 and total PCBs), DRO, and Oil & Grease. The soil analytical results are further evaluated in the SLRA provided in Section 6.0.

Arsenic was detected above the PAL in most soil samples. The highest arsenic detection was 81.2 mg/kg (flagged with a “J” qualifier) at sample location B8-010-SB-1. Hexavalent chromium was detected above its PAL in four subsurface samples collected from soil borings. Manganese was detected above the applicable PAL in nine samples total (six samples from exterior soil borings and three surficial soil samples). Vanadium was detected above its PAL in five samples from soil borings (no surficial samples). In each soil boring location where vanadium exceeded its PAL, thallium also exceeded its PAL. In addition, thallium exceeded its PAL in sample B8-021-SB-5, where vanadium did not exceed its PAL. Lead was only detected above its PAL in one soil sample (B8-022-SB-5) with a detection of 1,920 mg/kg. The maximum detections of each of the listed SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene) were associated with a single surficial soil sample (B8-031-SB-0.5). Oil & Grease was detected above its PAL in three soil samples (B8-012-SB-1, B8-014-SB-1, and B8-016-SB-1) with a maximum detection of 17,900 mg/kg at B8-014-SB-1. DRO and GRO were only analyzed in the surficial soil samples collected from within the Billet Building. Only one sample exceeded the PAL for DRO (B8-034-SB-0.5) with a detection of 7,840 mg/kg.

4.1.4. Summary of NAPL Observations in Soil Cores

Soil cores were screened for evidence of possible NAPL contamination during the completion of the Phase II soil borings in Parcel B8. Field screening indicated that one location (B8-020-SB) had physical evidence of possible product noted on the boring log. This boring is highlighted on **Figure SB-4**, which also displays Oil & Grease PAL exceedances in the parcel. Sample location

B8-020-SB had the appearance of a black sheen in the core from 7 to 11 feet bgs and 12.2 to 15 feet bgs. A petroleum odor was also noted accompanying the sheen from 7 to 11 feet bgs. An intermediate soil sample (B8-020-SB-5) collected from the 4 to 5 foot bgs interval had an Oil & Grease detection of 4,610 mg/kg. A piezometer was installed at this location in accordance with the parcel-specific sampling plan, and product was later identified and delineated in the vicinity of B8-020-SB. The analytical samples from this location were not analyzed for TPH-DRO/GRO based on the sampling plan at the time of Work Plan approval which did not require these analyses. However, samples from this soil boring were analyzed for Oil & Grease.

4.2. GROUNDWATER CONDITIONS

The analytical results for the detected parameters are summarized and compared to the PALs in **Table 12** (Organics) and **Table 13** (Inorganics). The laboratory's Certificates of Analysis (including Chains of Custody) and the DVRs have been included as electronic attachments. The DVRs contain a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.2.1. Groundwater Conditions: Organic Compounds

As provided on **Table 12**, several VOCs were identified above the laboratory's MDLs in groundwater samples collected from across the Site. Only chloroform and benzene were detected above their PALs at one location each (B8-019-PZ and HI07-PZM005, respectively). Benzene was detected in well HI07-PZM005 at 16.2 µg/L. Chloroform was detected in sample location B8-019-PZ with a "J" flagged detection of 0.22 µg/L (equal to the PAL). The chloroform analytical result may be suspect because chloroform is a common laboratory artifact. A summary of the PAL exceedance locations and results has been provided as **Figure GW-1**.

Table 12 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. Eight SVOCs (1,1-biphenyl, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, naphthalene, and pentachlorophenol) were detected above their respective PALs. Each groundwater location except B8-010-PZ had at least one SVOC exceedance. Four analytes were detected above the PAL in more than one sample (benz[a]anthracene, dibenz[a,h]anthracene, naphthalene, and pentachlorophenol). Naphthalene was detected above its PAL in eight groundwater samples with a maximum detection of 29.3 µg/L at B8-018-PZ (which was observed to be impacted by trace levels of light non-aqueous phase liquid (LNAPL)). Benz[a]anthracene exceeded its PAL in six groundwater samples, with the highest detection of 1.3 µg/L observed at B8-013-PZ. Pentachlorophenol was detected above its PAL in four sample locations, and dibenz[a,h]anthracene exceeded its applicable PAL in only two samples. The remaining four SVOCs (1,1-biphenyl, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-c,d]pyrene) were co-located at a single groundwater sample location (B8-013-

PZ). B8-013-PZ appeared to be the location which was most heavily impacted by SVOC contamination, despite LNAPL detections in B8-018-PZ and B8-020-PZ. A summary of the PAL exceedance locations and results has been provided as **Figure GW-2**.

Table 12 provides a summary of the Oil & Grease groundwater detections. There were detections of Oil & Grease in eight of the 10 samples, and all eight of the detections exceeded the applicable PAL (47 µg/L). The highest detection of Oil & Grease was 3,400 µg/L at B8-020-PZ, with the result flagged with a “J” qualifier. This groundwater sample location was impacted by measureable LNAPL (discussed below). The product present at this groundwater location influences and invalidates the Oil & Grease detection (as well as other parameters) at B8-020-PZ. The observed LNAPL has been delineated around B8-020-PZ, as discussed in other sections of this Phase II Investigation Report. Aside from the Oil & Grease exceedance in B8-020-PZ, the next highest detection of Oil & Grease in groundwater was at sample location B8-010-PZ (2,100 µg/L). All of the Oil & Grease detections were flagged with the “J” qualifier, indicating that they are estimated values. A summary of Oil & Grease PAL exceedance locations has been provided as **Figure GW-3**.

4.2.2. Groundwater Conditions: Inorganic Constituents

Table 13 provides a summary of inorganic constituents detected above the MDLs in the groundwater samples collected from across the Site. A total of seven inorganic compounds (arsenic, cobalt, iron, manganese, thallium, vanadium, and hexavalent chromium) were detected above their respective PALs. Cobalt (dissolved) exceeded its PAL in only one sample (B8-017-PZ) with a detection of 33.8 µg/L. Iron (dissolved) also only exceeded its PAL in one sample (B8-009-PZ) with a detection of 25,700 µg/L, which is less than two times the PAL (14,000 µg/L). Hexavalent chromium (total) and manganese (dissolved) both exceeded their PALs in two samples each. The maximum detections of hexavalent chromium and manganese were 9 µg/L at B8-013-PZ and 1,810 µg/L at location B8-009-PZ, respectively. The two hexavalent chromium PAL exceedances were both flagged with the “J” qualifier, indicating that they are estimated values below the laboratory quantitation limit. Arsenic (dissolved) exceeded its PAL in three groundwater samples (B8-016-PZ, B8-018-PZ, and B8-020-PZ). Thallium and vanadium were the most common inorganic exceedances in groundwater. Thallium (dissolved) and vanadium (dissolved) each exceeded the PAL in four samples (B8-010-PZ, B8-013-PZ, B8-016-PZ, and B8-019-PZ). A summary of the inorganic PAL exceedance locations and results has been provided as **Figure GW-4**.

4.2.3. Groundwater Conditions: Results Summary

Groundwater data were screened to determine whether individual sample results may exceed the USEPA Vapor Intrusion (VI) Screening Levels (Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient (THQ) of 1) as determined by the Vapor Intrusion Screening Level (VISL) Calculator version 3.5 (<https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels->

visls). The PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site.

None of the aqueous results exceeded the individual VI TCR or THQ criteria as specified by the VISL Calculator. Following the initial screening, a cumulative VI risk assessment was also performed for each individual sample location, with the results separated by cancer versus non-cancer risk. All compounds with detections were included in the computation of the cumulative cancer risk, and all compounds with detections exceeding 10% of the THQ level were included in the evaluation of non-cancer hazard. None of the cumulative VI cancer risks were greater than $1E-5$, and there were no compounds that were identified above the 10% THQ level to be included in the cumulative VI evaluation for non-cancer hazard. The results of the cumulative VI comparisons are provided in **Table 14**.

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

4.2.4. Summary of NAPL Observations in Piezometers

Two temporary groundwater monitoring points (B8-018-PZ and B8-020-PZ) were installed on October 13 and October 14, 2015 in Parcel B8. Petroleum odors/PID detections were noted while screening the associated soil cores during the installation of these monitoring points. A sheen was also identified in the soil core during the installation of B8-020-PZ, but no physical evidence of NAPL was observed in any other boring locations. LNAPL measurements were completed using an oil-water interface probe following the installation of piezometers B8-018-PZ and B8-020-PZ.

LNAPL was identified in B8-020-PZ, screened from 3 to 18 feet bgs, and determined to be approximately 0.58 feet thick. Nine additional shallow temporary piezometers (screen intervals of 3 to 13 feet bgs) were installed at varying distances around B8-020-PZ to delineate the extent of the LNAPL. During the initial measurement of NAPL in B8-018-PZ, which is screened 3 to 18 feet bgs, a trace amount of LNAPL was observed on the oil-water interface probe upon withdrawing it from the piezometer. Four additional shallow temporary piezometers (screen intervals of 3 to 13 feet bgs) were installed approximately 25 feet to the north, south, east, and west of B8-018-PZ to delineate the extent of the LNAPL. The locations of each piezometer installed for LNAPL delineation are provided on **Figure 7**. Boring logs documenting soil core observations were completed for all delineation piezometers installed in the vicinity of B8-018-PZ and B8-020-PZ. Soil boring observation logs and typical piezometer construction logs relevant for the LNAPL delineation areas are given in **Appendix I**.

The delineation of the observed LNAPL has been sufficiently completed at both locations. LNAPL has been periodically monitored and removed from B8-020-PZ and its associated delineation piezometers (removal from B8-018-PZ was not necessary). The LNAPL mass appears to be primarily limited to four piezometers (B8-020-PZ, B8-020D-PZ, B8-020E-PZ, and B8-020G-PZ). Product thickness measurements (and recovery volumes) recorded through December 2016 have been included in **Appendix J**. The delineation of LNAPL in Parcel B8 has been determined to be complete, and additional response actions have been implemented at this time, as described in detail in the Notification of Well Installation and Piezometer Abandonment Letter for B8-18-PZ and B8-020-PZ (dated August 8, 2017) and a subsequent Comment Response Letter – NAPL Gauging Activities for Permanent Wells in Parcel B8 and Parcel A3 (dated September 25, 2017). These letters provided a summary of the completed LNAPL delineation work in Parcel B8, including a comprehensive set of LNAPL gauging measurements with recent data collected since December 2016. These letters also provided a path forward for ongoing response actions including product removal. The MDE approved these documents in an email received on September 27, 2017.

At this time, the response actions outlined in the above-referenced documents have been implemented in Parcel B8. The delineation piezometer network has been properly abandoned, and three permanent groundwater wells (B8-001-MWS through B8-003-MWS) have been constructed in the vicinity of the former piezometer B8-020-PZ. A periodic monitoring and manual recovery program has been implemented. Documentation of the implementation of these activities was provided to the agencies for review in the Completion of Well Installation Activities and Piezometer Abandonments Letter dated February 16, 2018. This letter also reported the initial results of the ongoing product monitoring and recovery program for the three new wells. All future monitoring and response actions related to LNAPL in Parcel B8 will be coordinated with the MDE authorities as appropriate.

4.3. SUB-SLAB SOIL GAS CONDITIONS

Detected sub-slab soil gas constituents are summarized and compared to the PALs in **Table 15**. While there were VOCs detected in the sub-slab samples, none of the detections exceeded the PAL for the respective compound in any of the soil gas samples submitted for analysis. These results indicate that potential impacts by VOCs below the building slab appear to be minimal, and there is an apparent insignificant risk for vapor intrusion due to VOCs. The laboratory Certificate of Analysis (including the Chain of Custody) and corresponding DVR have been included as electronic attachments. The DVR contains a glossary of qualifiers for the final flags assigned to individual results in the attached summary table.

5.0 DATA USABILITY ASSESSMENT

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

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

- Trip Blank – at a rate of one per day
 - Soil – VOCs only
 - Water – VOCs only
- Blind Field Duplicate – at a rate of one per twenty samples
 - Soil – VOCs, SVOCs, Metals, Oil & Grease, TPH-DRO, TPH-GRO, PCBs, Hexavalent Chromium, and Cyanide
 - Water – VOCs, SVOCs, Metals, Oil & Grease, Hexavalent Chromium, and Cyanide
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
 - Soil – VOCs, SVOCs, Metals, Oil & Grease, TPH-DRO, TPH-GRO, PCBs, and Hexavalent Chromium
 - Water – VOCs, SVOCs, Metals, Oil & Grease, and Hexavalent Chromium
- Field Blank and Equipment Blank – at a rate of one per twenty samples
 - Soil – VOCs, SVOCs, Metals, Oil & Grease, TPH-DRO, TPH-GRO, Hexavalent Chromium, and Cyanide
 - Water (field blank only) – VOCs, SVOCs, Metals, Oil & Grease, Hexavalent Chromium, and Cyanide
 - Air – VOCs

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. The logs have been provided in **Appendix D** (PID calibration log) and **Appendix G** (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 Parcel A2 Phase II Investigation Report – Preliminary Responses to MDE/USEPA Comments Letter (dated November 14 and approved on November 30, 2017), the analytical laboratory was able to re-evaluate their archived analytical runs in order to report the sub-slab vapor concentrations for a supplemental list of soil gas constituents. The relevant laboratory report (Job ID #30171168) states that the report was reissued to add analytes. Since these supplemental compounds were recovered from archived analytical runs and represent estimated values, they were not validated by EDQI. Thus, they are reported as non-validated data in the detection summary table.

Sample analyses have undergone an analytical quality assurance review to ensure adherence to the required protocols. The Stage 2B review was performed as outlined in “Guide for Labeling Externally Validated Laboratory Analytical Data for Superfund Use”, EPA-540-R-08-005. Results have been validated or qualified according to general guidance provided in “USEPA National Functional Guidelines for Inorganic Superfund Data Review (ISM02.1)”, USEPA October 2013. Region III references this guidance for validation requirements. This document specifies procedures for validating data generated for Contract Laboratory Program (CLP) analyses. The approved 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 B8 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. The results that were rejected during data validation have been provided in **Table 16** (soil) and **Table 17** (groundwater). No sub-slab soil gas results were rejected during data validation, so an additional table is not warranted. A discussion of data completeness (the proportion of valid data) is included below.

Representativeness is a measure of how accurately and precisely the data describe the Site conditions. Representativeness of the samples submitted for analysis was ensured by adherence to standard sampling techniques and protocols, as well as appropriate sample preservation prior to analysis. Sampling was conducted in accordance with the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. Specific Field SOPs applicable to the assessment of representativeness include **Field SOP Numbers 002, 007, 008, 009, 010, 011, 017, and 024**. Review of the field notes and laboratory sample receipt records indicated that collection of soil, groundwater, and sub-slab soil gas at the Site was representative, with no significant deviations from the SOPs.

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

Sensitivity is a determination of whether the analytical methods and quantitation limits will satisfy the requirements of the project. The laboratory reports were reviewed to verify that reporting limits met the quantitation limits for specific analytes provided in QAPP Worksheet

#15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits. In general the laboratory reporting limits met the detection and quantitation limits specified in the QAPP.

Completeness is expressed as a ratio of the number of valid data points to the total number of analytical data results. Non-usable (“R” flagged) data results were determined through the data validation process. The approved QAPP specifies that the completeness of data is assessed by professional judgement, but should be greater than or equal to 90%. Data completeness for each compound is provided in **Appendix L**. As a result of dilutions due to matrix interferences, some of the initial soil samples had limited value for characterization of SVOCs. As a corrective measure, and to improve the accuracy and precision of the dataset, an additional round of soil samples were collected and analyzed for the SVOCs by USEPA Method 8270D (microwave) at each of the affected boring locations and the results of the second round of samples were used in lieu of the original results for applicable SVOCs. Because the sample extracts for one laboratory set of samples from Parcel B8 (Laboratory Job #30170849) were still within hold time, resampling did not occur for the applicable set of samples, but the laboratory did re-analyze the existing soil sample extracts for three specific SVOCs (3,3-dichlorobenzidine, n-nitroso-di-n-propyl amine, and pentachlorophenol) by USEPA Method 8270D (SIM) to provide results with acceptable reporting limits at or below the PALs. The revised data for 3,3-dichlorobenzidine, n-nitroso-di-n-propyl amine, and pentachlorophenol were used in lieu of the original data. The resampling event is further described in detail in the SVOC Soil Resample Analysis Clarification Letter: Parcels A3, A4, A8, B5, and B8 which was submitted to the agencies dated June 1, 2017.

The only soil SVOCs with overall completeness values below 90% were benzaldehyde, 2,3,4,6-tetrachlorophenol, 2,4-dinitrophenol, and pentachlorophenol. Since 2,3,4,6-tetrachlorophenol, 2,4-dinitrophenol, and pentachlorophenol each had completeness scores very close to the 90% goal (>85%), these are not considered to be significant data gaps. Among the SVOCs, only benzaldehyde had a completeness value below 85%. However, adequate data for groundwater was available to determine that benzaldehyde does not appear to be a significant concern at the Site, with no detections (100% completeness) in this media. Excluding the SVOCs, the completeness goal was met for all but a few individual compounds in soil, limited to bromomethane, mercury, and 1,4-dioxane. Each of these compounds had 100% completeness in groundwater. Bromomethane had a completeness value of 67% in soil, and there were no soil detections in the non-rejected (valid) dataset. There were three low-level detections of bromomethane in groundwater, all less than half of the PAL. Mercury had a completeness value of 85% in soil, and there were no detections in groundwater. The majority of the 1,4-dioxane soil dataset was rejected, but the groundwater results indicated only very low detections in four samples.

In the groundwater dataset, only methyl acetate and 3,3'-dichlorobenzidine were below the completeness goal, with all results rejected for these two compounds. Adequate data for soil was available to determine that 3,3'-dichlorobenzidine and methyl acetate do not appear to be

significant contaminants at the Site. 3,3'-dichlorobenzidine was not detected in any soil samples, and methyl acetate had only three low-level detections, all flagged with the “J” qualifier.

Overall, the soil and groundwater data can be used as intended, and no significant data gaps were identified. While a limited set of compounds did not meet the completeness goal, the results from alternative site media indicated that these compounds do not appear to be significant contaminants in Parcel B8.

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 B8 (13.5 ac) was divided into two EUs based on the approximate footprint of the existing Billet Building. These EUs consisted of the areas Outside of the Building Footprint (11.9 ac) and Inside of the Building Footprint (1.5 ac). Surficial soil data was available from the EU Inside the Building Footprint, but no subsurface samples were collected from within the Billet Building.

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 18** to identify compounds above the relevant screening levels in Parcel B8.

Exposure Point Concentrations (EPCs): The COPC soil datasets for each 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. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth category was calculated for comparison to the Adult Lead Model (ALM)-based values, and any individual results exceeding 10,000 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. Risk ratios were calculated with a cancer risk of $1E-6$ and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline 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 baseline cumulative non-cancer hazard. 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).

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for each 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 19**. 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 TPH-DRO/GRO and Oil & Grease: EPCs were not calculated for TPH-DRO/GRO or Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). Three surface soil samples exceeded the specified limit for Oil & Grease (B8-012-SB-1 at 11,600 mg/kg, B8-014-SB-1 at 17,900 mg/kg, and B8-016-SB-1 at 10,200 mg/kg) and one surficial soil location exceeded the DRO limit (B8-034-SB-0.5 at 7,840 mg/kg). In addition, two piezometers (B8-018-PZ and B8-020-PZ) had physical presence of LNAPL in the piezometers which represent additional exceedances of the TPH/Oil & Grease PAL. An evaluation of the potential for product mobility based on these detections and response actions is presented following the SLRA in Section 7.3.

Risk Characterization Approach: For each 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 comparison to determine the need for possible remedial action will be the Composite Worker comparison to the surface soil EPCs. However, no further action will only be approvable if subsurface soil EPCs are also compared to the Composite Worker RSLs, and the cancer and non-cancer risk estimates are equal to or less than 1E-5 and 1, respectively. Pooled soil data have 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. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of the exceedance and other factors such as bioavailability of the COPC. Similarly, for lead, if the ALM results indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 10 ug/dL for the EU, then capping of the EU would be an acceptable presumptive remedy. The mean soil lead concentrations corresponding to ALM probabilities of 5% and 10% are 2,518 mg/kg, and 3,216 mg/kg, respectively. If capping of the identified area is not proposed, additional more detailed quantitative evaluation of risk will be required for the EU. This supplemental risk evaluation may include a selective removal (excavation) remedy to reduce site-wide risks/hazards to acceptable levels.

The USEPA's acceptable risk range is between $1E-6$ and $1E-4$. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of $1E-4$, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of non-carcinogen hazard exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy. In addition, if the ALM indicates that the mean 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 B8 SLRA RESULTS AND RISK CHARACTERIZATION

Soil data were divided into three datasets (surface, subsurface, and pooled) for each of the Parcel B8 EUs 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. No subsurface data was available from the EU Inside the Building Footprint based on the sampling plan.

The results for Aroclor 1248 were removed from the overall soil dataset for risk assessment purposes because only one detection was identified (1.6 mg/kg at sample location B8-013-SB-1) out of the 32 samples analyzed for PCBs. 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. In this case it is reasonable to remove Aroclor 1248 from the risk assessment based on the relatively low magnitude of the detection. Furthermore, Aroclor 1248 would also be omitted from the

carcinogenic risk assessment to avoid double-counting the carcinogenic risk associated with PCBs. The total PCB values include the sum of all aroclor mixtures, and the carcinogenic screening level for total PCBs is as conservative as Aroclor 1248. Total PCBs have been retained for the risk assessment based on the number of detections (three) in the overall soil dataset. All remaining COPCs listed in **Table 18** have been retained for the risk assessment.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled surface/subsurface) for each applicable 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 relevant datasets (surface, subsurface, and pooled) for both EUs. 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 20**. The supplemental EPCs generated from the pooled surface and subsurface soils are also included in the EPC table.

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 two EUs, is also included as an electronic attachment. The average lead concentrations are presented for each dataset in **Table 19**, 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.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker scenario are shown in **Table 21** (surface), **Table 22** (subsurface), and **Table 23** (pooled surface and subsurface soils). No subsurface soil samples were collected from the EU Inside the Building Footprint. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	Outside Building (11.9 ac.)	Surface Soil	none	1E-5
		Subsurface Soil	Dermal System = 4	2E-5
		Surface & Subsurface Soil	Dermal System = 2	1E-5
	Inside Building (1.5 ac.)	Surface Soil	none	1E-5
		Subsurface Soil	NS	NS
		Surface & Subsurface Soil	NS	NS

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

The current Composite Worker will be exposed only to surface soils. The risk ratios indicated that the cumulative cancer risks for the Composite Worker exposures to surface soil were equal to 1E-5 in both EUs. When the non-cancer risks were segregated and summed by target organ for cumulative Hazard Index (HI), no target organ exceeded a cumulative HI of 1 in surface soils in either EU.

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. No subsurface soil samples were collected from within the Billet Building, thus risk ratios were not available for evaluation of the subsurface (or pooled) scenario for the EU Inside the Building Footprint. The risk ratios indicated that the cumulative cancer risks for the Composite Worker scenario were equal to 2E-5 for subsurface soils and 1E-5 for pooled soils in the EU Outside the Building Footprint. An elevated hazard above the HI of 1 was calculated for the dermal system (HI=4) due to the cumulative effects of thallium and vanadium for a potential future Composite Worker exposure to subsurface soils Outside the Building Footprint. Supplemental analysis evaluating the exposure to pooled soils (which may be applicable depending on future proposed development) also resulted in an elevated hazard above the HI of 1 for the dermal system (HI=2) in the EU Outside of the Building Footprint.

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

7.0 FINDINGS AND RECOMMENDATIONS

The objective of this Phase II Investigation was to fully characterize the nature and extent of contamination at the Site. During the Phase II Investigation, a total of 71 soil samples (all locations/depths), 10 groundwater samples, and eight sub-slab soil gas samples were collected and analyzed to define the nature and extent of contamination in Parcel B8. The sampling and analysis plan for the parcel was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment. Soil boring samples were analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TAL-Metals, hexavalent chromium, and cyanide. Billet Building interior surficial soil samples were analyzed for TPH-DRO/GRO in lieu of Oil & Grease. Shallow soil samples collected from across the site (0 to 1 foot bgs) and from within the Billet Building were analyzed for PCBs. The Billet Building exterior surficial soil samples were analyzed for metals only. Groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TAL-Metals (total or dissolved), hexavalent chromium, and cyanide. Sub-slab soil gas samples were analyzed for VOCs.

7.1. SOIL

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

Lead and PCB concentrations are below the levels that would warrant evaluation of a mandatory removal remedy. None of the individual lead detections exceeded the mandatory delineation threshold of 10,000 mg/kg. The average lead concentrations in the surface, subsurface, and pooled (surface and subsurface) soils are below the 800 mg/kg RSL in both EUs, indicating that no further action is needed with respect to lead. Only one soil sample (B8-013-SB-1) exceeded any of the PALs specified for PCBs. The exceedances were relatively minor, as Aroclor 1248 and total PCBs were detected at 1.6 mg/kg in this sample.

There were no soil PAL exceedances of VOCs in either EU indicating that these compounds are not significant contaminants in soil at the Site. SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene) and inorganics (arsenic, hexavalent chromium, lead, manganese, thallium, and vanadium) were responsible for most PAL exceedances in soil at the Site. The maximum detections of all four listed SVOCs were associated with a single sample (B8-031-SB-0.5) which targeted the interior surficial soils inside the Billet Building. The maximum detections for thallium, vanadium, and manganese were all associated with sample location B8-024-SB-5 which targeted the Rail Area. Arsenic exceeded its PAL in 26 soil boring samples (from 16 locations) and 18 surficial soil locations, with a maximum detection of 81.2 mg/kg at sample location B8-010-SB-1 (general coverage).

While TPH-DRO/GRO were not analyzed at every location in the parcel, adequate Oil & Grease data was available to indicate that TPH contamination does not appear to be significant at the Site. Elevated TPH/Oil & Grease results above the PAL of 6,200 mg/kg which may represent locations that could potentially be impacted by NAPL are discussed in Section 7.3.

7.2. GROUNDWATER

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

Analysis of the groundwater samples identified concentrations of seven inorganic compounds that exceeded their PALs (arsenic, cobalt, hexavalent chromium, iron, manganese, thallium, and vanadium). Thallium and vanadium were the most widespread exceedances, with four PAL exceedances each. Two hexavalent chromium exceedances were noted; however, these results were both flagged with the “J” qualifier as estimated values below the laboratory quantitation limit. The only VOC compounds to exceed their respective PALs were benzene and chloroform detected at relatively low concentrations in one sample each (HI07-PZM005 and B8-019-PZ, respectively). A total of eight SVOCs (1,1-biphenyl, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, naphthalene, and pentachlorophenol) were detected at concentrations above the aqueous PALs. B8-013-PZ appeared to be the location which was most heavily impacted by SVOC contamination, despite LNAPL detections in B8-018-PZ and B8-020-PZ.

Eight out of the 10 groundwater samples exceeded the PAL for Oil & Grease, with a maximum detection of 3,400 µg/L at sample location B8-020-PZ. This maximum detection was identified in a piezometer location where LNAPL was identified and delineation was later completed. All of the Oil & Grease detections were flagged with the “J” qualifier because they are estimated values below the laboratory quantitation limit.

7.3. NON-AQUEOUS PHASE LIQUID

One temporary groundwater sample collection point (B8-020-PZ) was observed to contain measureable LNAPL during groundwater gauging. A sheen was observed in the soil core associated with B8-020-PZ during field screening, but no other soil borings had visible indications of the presence of petroleum product. No other groundwater sample collection points contained any measureable LNAPL, although trace amounts were observed in B8-018-PZ. The delineation of LNAPL in Parcel B8 has been determined to be complete in the vicinity of both impacted piezometers, and additional response actions have been implemented at location B8-020-PZ. The completed delineation work and path forward for the proposed response actions were described in detail in the Notification of Well Installation and Piezometer Abandonment Letter for B8-18-PZ and B8-020-PZ (dated August 8, 2017) and a subsequent Comment Response Letter – NAPL Gauging Activities for Permanent Wells in Parcel B8 and Parcel A3

(dated September 25, 2017). The MDE approved these documents in an email received on September 27, 2017. At this time, the proposed response actions have been implemented: the delineation piezometer network has been properly abandoned; three permanent groundwater wells have been constructed; and a periodic monitoring and recovery program has been implemented. Documentation of these activities was provided to the agencies for review in the Completion of Well Installation Activities and Piezometer Abandonments Letter dated February 16, 2018. This letter also reported the initial results of the ongoing monitoring/recovery program for the three new wells. All future monitoring and response actions related to LNAPL in Parcel B8 will be coordinated with the MDE authorities as appropriate.

Although TPH-DRO/GRO were not analyzed at every soil boring location in the parcel, adequate Oil & Grease data is available to indicate that TPH contamination does not appear to be widespread at the Site. DRO was detected above the PAL in only one interior Billet Building surficial soil sample (B8-034-SB-0.5) with a detection of 7,840 mg/kg. The LNAPL impacted temporary groundwater sample collection point B8-020-PZ was located directly outside of the Billet Building to the east of this elevated location, and these impacts may be related. There were three boring locations with Oil & Grease PAL exceedances (B8-012-SB-1, B8-014-SB-1, and B8-016-SB-1), all less than three times the PAL. These elevated detections of Oil & Grease represent locations which may possibly be impacted by NAPL that could potentially migrate along utility corridors.

Soils potentially impacted by TPH/Oil & Grease have been present for many years and migration pathways associated with existing utilities that may cause off-site migration or surface discharges should be apparent by now. The proximity of Oil & Grease impacted borings (and LNAPL delineation piezometers) to proposed utilities should be evaluated in any future development planning for Parcel B8. Appropriate protocols should be documented in a Response and Development Work Plan (as necessary) to prevent the mobilization of any product if future utilities are proposed in the vicinity of these impacts.

7.4. SUB-SLAB SOIL GAS

The sub-slab soil gas samples collected during the investigation of the Billet 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 pathway. The sub-slab soil gas samples indicate that the Billet Building is suitable for occupancy and use by indoor workers.

7.5. HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

Groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized), therefore there is no potential for direct human exposure for a Composite Worker. The

groundwater data were screened to determine whether any cumulative (or individual) sample results exceeded the USEPA VI TCR (carcinogen) or THQ (non-carcinogen) Screening Levels. None of the individual sample results exceeded the VI TCR or THQ criteria. When the aqueous results were summed by sample location, none of the cumulative VI cancer risks were greater than or equal to $1E-5$, and none of the cumulative VI non-cancer HI values exceeded 1. There were no concerns related to potential VI risks at the Site.

The current Composite Worker may be exposed to surface soils. The risk ratios indicated that the cumulative cancer risks for the Composite Worker scenario were equal to $1E-5$ for surface soils in each EU. When the non-cancer risks were segregated and summed by target organ, a cumulative HI of 1 was not exceeded for any target organ system evaluated for Composite Worker exposure to surface soils in either EU. Therefore, no further action is required for surface soils in either EU. Subsurface soil samples were not collected from Inside the Building Footprint. The cumulative carcinogenic risk computed for the potential future Composite Worker exposure to subsurface soils Outside the Building Footprint was equal to $2E-5$. An elevated hazard above the HI of 1 was calculated for the dermal system (HI=4) for the same Composite Worker subsurface exposure scenario. Based on this assessment, unacceptable risk to a future Composite Worker may be encountered if soil disturbances occur that relocate subsurface soils to the surface. Institutional controls should be implemented for the protection of Composite Workers to ensure proper oversight and management of any future intrusive construction activity that may include disturbances of subsurface material. If future development of Parcel B8 would relocate subsurface materials to the surface, the potential risks would require further evaluation in a Response and Development Work Plan.

7.6. RECOMMENDATIONS

Sufficient remedial investigation data has been collected to evaluate the nature and extent of possible constituents of concern in Parcel B8. The presence and absence of soil, groundwater, and sub-slab soil gas impacts have been adequately described and further investigation is not warranted. Based on the evaluation of surface risk presented in the SLRA, the Site is suitable for use by industrial workers; remedial action is not required to support occupancy and use of Parcel B8 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 Workers 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 need to include a written notice to the MDE of any future soil disturbance activities, proper management and characterization of any material disturbed at the Site, and may require health and safety requirements for any excavations of substantial time periods. Construction Worker risks will be evaluated in site-specific Response and development Work Plans.
- Soil boring locations with elevated detections of TPH/Oil & Grease (B8-012-SB, B8-014-SB, B8-016-SB, and B8-034-SB) and piezometers/wells with past detections of NAPL (areas surrounding B8-018-PZ and B8-020-PZ) should be considered for proximity to proposed utilities in any future development planning. If future utilities are proposed in the vicinity of these borings/piezometers, appropriate protocols for the mitigation of potential product (NAPL) mobility should be addressed in a Response and Development Work Plan.
- Continued LNAPL monitoring and free product removal activities are recommended in the vicinity of B8-020-PZ. Additional remediation to more aggressively remove the LNAPL mass in the vicinity of B8-020-PZ may also be appropriate depending on the implications of future development. All future monitoring and response actions related to LNAPL in Parcel B8 will be coordinated with the MDE authorities as appropriate, and will be covered by separate documents.

8.0 REFERENCES

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FIGURES



Site Boundary
 Parcel Boundaries
 Private Property

Tradeport Atlantic
Area A and Area B Parcels

July 25, 2017

Figure

1



ARM Group Inc.
Earth Resource Engineers
and Consultants



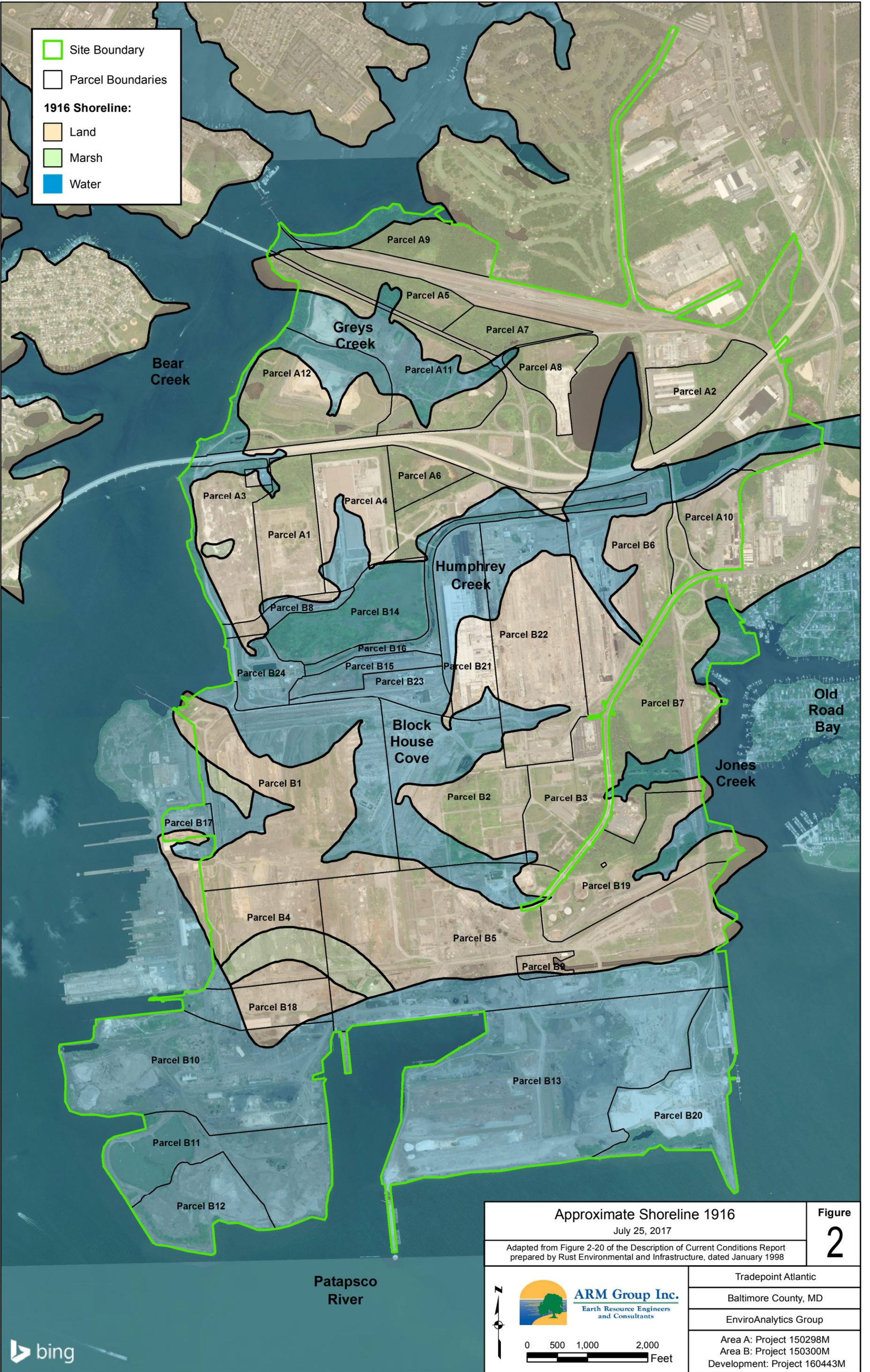
Tradeport Atlantic

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 July 25, 2017		Figure 2
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	



Parcel B8 Piezometers
Groundwater Contour Map
December 21, 2017

Figure
H

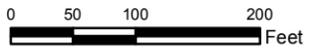
EnviroAnalytics Group		Tradepoint Atlantic	
ARM Project 150300M-2		Baltimore County, MD	
  ARM Group Inc. Earth Resource Engineers and Consultants		 Existing Well	Water Level Measurements Recorded April 8, 2016
		 Piezometer	
 Groundwater Contour		 Parcel Boundary	

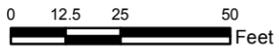


Figure 4

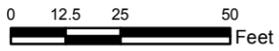


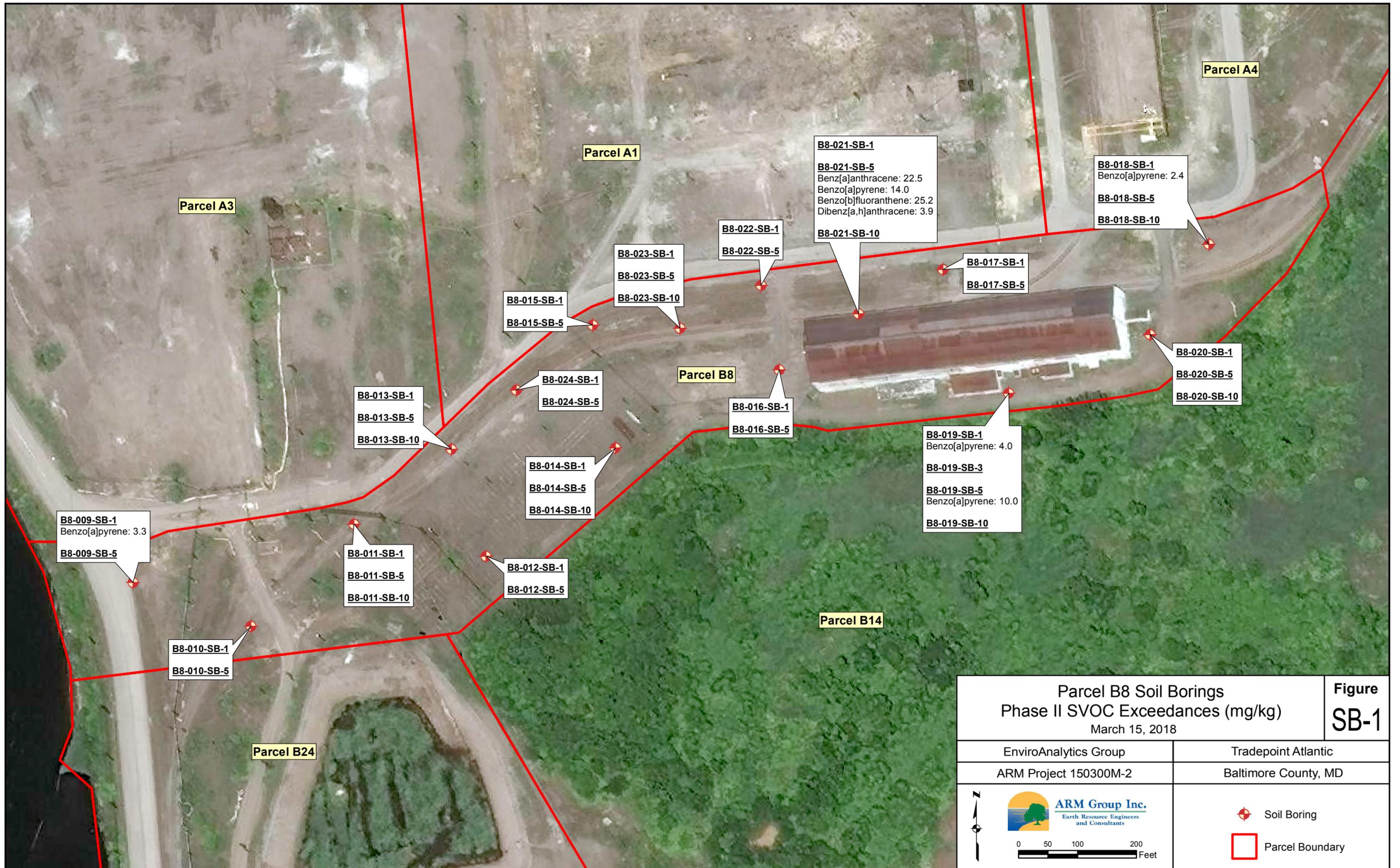
Exterior surficial soil locations B8-048, B8-049, and B8-051 were not sampled. Other surficial soil locations were sampled only.

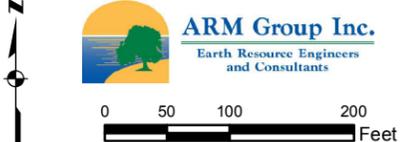
Parcel B8 Billet Building (Surficial) Soil Borings
Final Field Sample Locations
 July 28, 2016 **Figure 5**

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-2	Baltimore County, MD
 	<ul style="list-style-type: none">  Surficial Soil  Surficial Soil (exterior)  Surficial Soil (exterior - not sampled)  Parcel Boundary
	

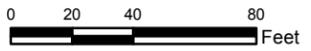


<p align="center">Parcel B8 Sub-Slab Soil Gas Samples Final Field Sample Locations July 28, 2016</p>		<p>Figure 6</p>
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
 	 Sub-Slab Soil Gas Sample  Parcel Boundary	
		

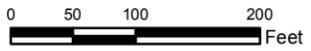


Parcel B8 Soil Borings Phase II SVOC Exceedances (mg/kg) March 15, 2018		Figure SB-1
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
		 Soil Boring  Parcel Boundary
		



<p align="center">Parcel B8 Billet Building Surficial Soil Phase II SVOC Exceedances (mg/kg) March 13, 2018</p>		<p align="center">Figure SB-2</p>
<p>EnviroAnalytics Group</p>	<p>Tradeport Atlantic</p>	
<p>ARM Project 150300M-2</p>	<p>Baltimore County, MD</p>	
<p align="center">   ARM Group Inc. <small>Earth Resource Engineers and Consultants</small> </p>	<p align="center">  Surficial Soil  Parcel Boundary </p>	
<p align="center">  </p>		



Parcel B8 Soil Borings Phase II PCB Exceedances (mg/kg) December 21, 2017		Figure SB-3
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
 		 Soil Boring  Parcel Boundary



Parcel B8 Soil Borings Phase II O&G Exceedances (mg/kg) December 21, 2017		Figure SB-4
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
		<ul style="list-style-type: none"> Soil Boring Soil Boring (C&A) & A-A-C&SD Parcel Boundary



Parcel B8 Billet Building Surficial Soil Phase II TPH Exceedances (mg/kg) November 1, 2016		Figure SB-5
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
		Surficial Soil Parcel Boundary



Figure
SB-6

Parcel A3

Parcel A1

Parcel A4

Parcel B8

Parcel B14

Parcel B24

B8-009-SB-1
Arsenic: 7.0 J

B8-009-SB-5
Arsenic: 3.6 J

B8-009-SB-10
Arsenic: 20.1 J

B8-011-SB-1
Arsenic: 17.7 J

B8-011-SB-5
Arsenic: 10.2 J

B8-010-SB-1
Arsenic: 81.2 J

B8-010-SB-5
Arsenic: 3.3 J
Chromium VI: 14.9 J-
Manganese: 32,600
Thallium: 59.4
Vanadium: 14,300 J

B8-010-SB-10
Thallium: 36.4
Vanadium: 6,920

B8-013-SB-1
Arsenic: 24.8

B8-013-SB-5
Manganese: 30,200
Thallium: 41.0
Vanadium: 11,000 J-

B8-024-SB-1
Arsenic: 20.2

B8-024-SB-5
Chromium VI: 18.8 J-
Manganese: 48,300
Thallium: 60.3
Vanadium: 17,200 J-

B8-014-SB-1

B8-014-SB-5
Arsenic: 3.2

B8-012-SB-1

B8-012-SB-5
Arsenic: 8.1 J

B8-015-SB-1
Arsenic: 17.3

B8-015-SB-5
Chromium VI: 9.2 J-
Manganese: 39,400
Thallium: 41.3
Vanadium: 12,300 J-

B8-023-SB-1
Arsenic: 12.1

B8-023-SB-5
Arsenic: 5.4

B8-022-SB-1
Arsenic: 6.2

B8-022-SB-5
Arsenic: 79.6
Chromium VI: 22.5 J-
Lead: 1,920

B8-016-SB-1
Arsenic: 4.2 J

B8-016-SB-5
Arsenic: 35.5 J
Manganese: 27,600

B8-021-SB-1
Arsenic: 10.7

B8-021-SB-5
Arsenic: 6.8
Thallium: 18.5

B8-017-SB-1

B8-017-SB-5
Arsenic: 6.7

B8-017-SB-10
Arsenic: 15.5

B8-019-SB-1

B8-019-SB-3

B8-019-SB-5
Arsenic: 3.8

B8-018-SB-1
Manganese: 27,400 J

B8-018-SB-5
Arsenic: 10.1

B8-020-SB-1

B8-020-SB-5
Arsenic: 7.9

B8-020-SB-10
Arsenic: 28.0

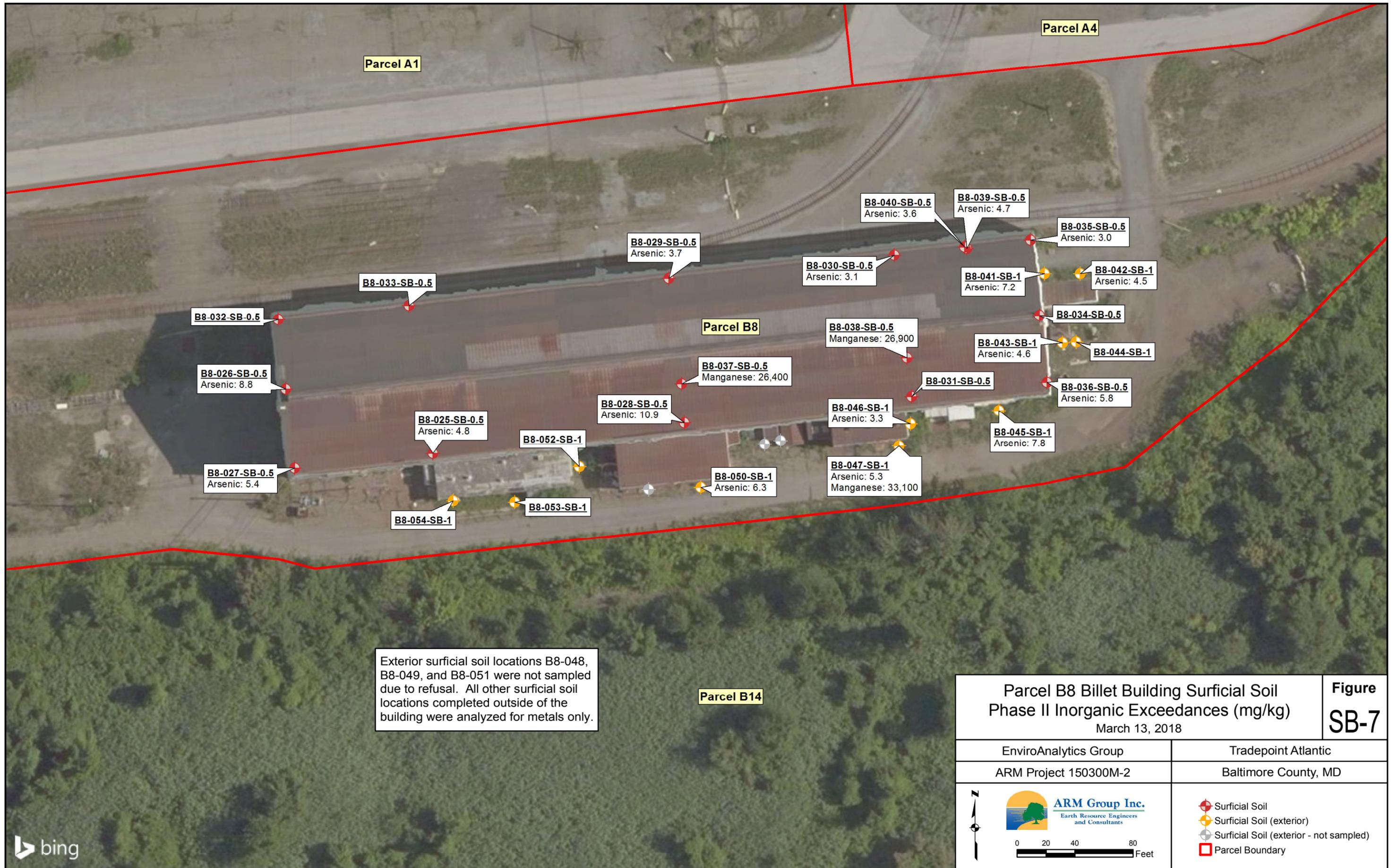


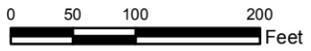
Figure SB-7

EnviroAnalytics Group		Tradepoint Atlantic	
ARM Project 150300M-2		Baltimore County, MD	
		<ul style="list-style-type: none"> ◆ Surficial Soil ◆ Surficial Soil (exterior) ◆ Surficial Soil (exterior - not sampled) Parcel Boundary 	



Parcel B8 Piezometers
 Phase II VOC Exceedances (ug/L)
 March 13, 2018

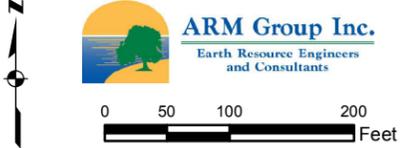
Figure
 GW-1

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-2	Baltimore County, MD
  	 Existing Well  Piezometer  Parcel Boundary

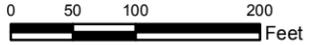


Parcel B8 Piezometers Phase II SVOC Exceedances (ug/L) March 15, 2018		Figure GW-2
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	



Parcel B8 Piezometers Phase II O&G Exceedances (ug/L) December 21, 2017		Figure GW-3
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-2	Baltimore County, MD	
		
		
		 Existing Well  Piezometer  Parcel Boundary



Parcel B8 Piezometers Phase II Inorganic Exceedances (ug/L) March 13, 2018		Figure GW-4
EnviroAnalytics Group ARM Project 150300M-2	Tradepoint Atlantic Baltimore County, MD	
 ARM Group Inc. Earth Resource Engineers and Consultants	 Existing Well  Piezometer  Parcel Boundary	(T) = Total (D) = Dissolve
 		



**Figure
7**

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>
B8-009-PZ	13.99	11.76	11.27	2.72
B8-010-PZ	12.73	10.52	11.91	0.82
B8-013-PZ	13.56	9.80	9.47	4.09
B8-016-PZ	13.99	10.54	6.91	7.08
B8-017-PZ	12.00	9.81	7.30	4.70
B8-018-PZ	11.79	9.21	7.70	4.09
B8-019-PZ	13.60	9.97	9.57*	4.03
B8-020-PZ	12.50	9.88	9.19**	3.31
HI02-PZM006	10.11	10.42	6.15	3.96
HI07-PZM005	12.66	9.64	8.96	3.70

DTW = Depth to water

TOC = Top of casing

AMSL = Above mean sea level

* Measurement may vary due to slight bent in piezometer

** Product present above DTW measurement

**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.)	5043	8/3/1959	3/11/1982
		5044	8/3/1959	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5143	<i>Unknown</i>	8/15/2008
		5144	<i>Unknown</i>	8/5/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5543	9/16/1959	4/1/1975
		5544	9/16/1959	2/27/1976

**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>			
B8-009-SB	Parcel B8 Coverage	569737.15	1456538.65	569732.21	1456540.64	6	SE	Refusal
B8-010-SB	Parcel B8 Coverage	569654.97	1456765.51	569657.78	1456741.04	24	W	Refusal
B8-016-SB	Parcel B8 Coverage	570098.53	1457635.87	570091.95	1457637.26	7	S	Refusal
B8-017-SB	Parcel B8 Coverage	570259.48	1457921.76	570261.64	1457637.26	8	NW	Refusal
B8-018-SB	Parcel B8 Coverage	570307.82	1458364.64	570304.18	1458366.07	4	S	Refusal
B8-021-SB	Rail Area Investigation	570210.97	1457769.09	570186.95	1457771.72	24	S	Refusal
B8-052-SB	Billet Building (Exterior)	570063.15	1457915.21	570058.82	1457902.27	14	SW	Asphalt surface

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

**TABLE 4
TCLP RESULTS FOR SOLID IDW**

<u>Parameter</u>	<u>Result</u> <u>(mg/L)</u>	<u>TCLP Limit</u> <u>(mg/L)</u>	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>Laboratory LOQ</u> <u>(mg/L)</u>
1,1-Dichloroethene	0.05	0.7	no	U	0.05
1,2-Dichloroethane	0.05	0.5	no	U	0.05
1,4-Dichlorobenzene	0.5	7.5	no	U	0.5
2,4,5-Trichlorophenol	5	400	no	U	5
2,4,6-Trichlorophenol	0.1	2	no	U	0.1
2,4-Dinitrotoluene	0.1	0.13	no	U	0.1
2-Butanone (MEK)	0.0055	200	no	JB	5
2-Methylphenol	2	200	no	U	2
3&4-Methylphenol(m&p Cresol)	2	200	no	U	2
Arsenic	0.014	5	no	J	0.05
Barium	0.16	100	no	J	1
Benzene	0.05	0.5	no	U	0.05
Cadmium	0.0011	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	0.0027	5	no	J	0.05
Hexachlorobenzene	0.1	0.13	no	U	0.1
Hexachloroethane	0.5	3	no	U	0.5
Lead	0.25	5	no	U	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	0.008	1	no	J	0.1
Silver	0.05	5	no	U	0.05
Tetrachloroethene	0.05	0.7	no	U	0.05
Trichloroethene	0.05	0.5	no	U	0.05
Vinyl chloride	0.05	0.2	no	U	0.05

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

JB = The positive result reported for this analyte is an estimate with evidence of blank contamination.

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

TCLP = Toxicity characterization 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
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-009-SB-1	B8-009-SB-5	B8-010-SB-1	B8-010-SB-5	B8-011-SB-1	B8-011-SB-5	B8-011-SB-10	B8-012-SB-1	B8-012-SB-5	B8-013-SB-1	B8-013-SB-5	B8-013-SB-10	B8-014-SB-1	B8-014-SB-5
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	0.0054 J	0.0081 U	0.0055 J	0.0078 U	0.0064 J	0.023 U	N/A-M	0.009 J	0.0079 J	0.01 U	0.0028 J	N/A-M	0.011 J	0.005 J
Acetone	mg/kg	670,000	0.027	0.012	0.036	0.011	0.031	0.023 U	N/A-M	0.053	0.019	0.013	0.019	N/A-M	0.13	0.027
Benzene	mg/kg	5.1	0.0045 U	0.0041 U	0.0048 U	0.005	0.0045 U	0.011 U	N/A-M	0.0056 U	0.0048	0.0052 U	0.002 J	N/A-M	0.00062 J	0.002 J
Carbon disulfide	mg/kg	3,500	0.0047	0.0041 U	0.0048 U	0.0039 U	0.0034 J	0.011 U	N/A-M	0.03	0.0046 U	0.0052 U	0.0034 J	N/A-M	0.053	0.021
Cyclohexane	mg/kg	27,000	0.0091 U	0.0081 U	0.0097 U	0.0078 U	0.0089 U	0.023 U	N/A-M	0.011 U	0.0092 U	0.01 U	0.011 U	N/A-M	0.012 U	0.00048 J
Ethylbenzene	mg/kg	25	0.0045 U	0.0041 U	0.0048 U	0.0039 U	0.0045 U	0.011 U	N/A-M	0.0056 U	0.0046 U	0.0052 U	0.0055 U	N/A-M	0.0062 U	0.005 U
Methyl Acetate	mg/kg	1,200,000	0.045 U	0.041 U	0.048 U	0.039 U	0.045 U	0.11 U	N/A-M	0.056 U	0.046 U	0.052 U	0.055 U	N/A-M	0.062 U	0.0025 J
Methylene Chloride	mg/kg	1,000	0.0045 U	0.0041 U	0.0048 U	0.0039 U	0.0045 U	0.011 U	N/A-M	0.0056 U	0.0046 U	0.0052 U	0.0022 J	N/A-M	0.004 J	0.0019 J
Toluene	mg/kg	47,000	0.0045 U	0.0041 U	0.0048 U	0.0039 U	0.0045 U	0.011 U	N/A-M	0.0056 U	0.0024 B	0.0052 U	0.00071 J	N/A-M	0.00055 J	0.00098 J
Xylenes	mg/kg	2,800	0.014 U	0.012 U	0.014 U	0.012 U	0.013 U	0.034 U	N/A-M	0.017 U	0.014 U	0.016 U	0.017 U	N/A-M	0.018 U	0.015 U
Semi-Volatile Organic Compounds *																
1,1-Biphenyl	mg/kg	200	0.07 J	0.075 U	0.076 U	0.071 U	0.063 J	0.076 J	0.077 U	0.054 J	0.071 U	0.079 U	0.073 U	5.1	0.073 U	0.028 J
2,4-Dimethylphenol	mg/kg	16,000	0.02 J	0.075 U	0.076 U	0.071 R	0.018 J	0.042 J	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.8	0.073 U	0.079 R
2-Chloronaphthalene	mg/kg	60,000	0.023 J	0.075 U	0.076 U	0.071 U	0.072 U	0.084 U	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.075 U	0.073 U	0.079 U
2-Methylnaphthalene	mg/kg	3,000	0.42	0.15 U	0.26	0.023	0.051	0.62	N/A-M	0.14 U	0.14 U	0.086	0.032	N/A-M	0.36 U	0.069 J
2-Methylphenol	mg/kg	41,000	0.075 U	0.075 U	0.076 U	0.071 R	0.072 U	0.028 J	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.56	0.073 U	0.079 R
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.038 J	0.15 U	0.15 U	0.14 R	0.028 J	0.091 J	0.15 U	0.14 U	0.14 U	0.16 U	0.15 U	2	0.15 U	0.16 R
Acenaphthene	mg/kg	45,000	1.2	0.15 U	0.024	0.0074 U	0.03	0.038	N/A-M	0.14 U	0.11 J	0.013 J	0.0055 J	N/A-M	0.36 U	0.12 J
Acenaphthylene	mg/kg	45,000	0.19	0.15 U	0.2	0.0074 U	0.27	0.35	N/A-M	0.14 U	0.14 U	0.22	0.021	N/A-M	0.36 U	0.055
Acetophenone	mg/kg	120,000	0.081	0.075 U	0.076 U	0.071 U	0.032 J	0.023 J	0.077 U	0.024 J	0.071 U	0.079 U	0.073 U	0.021 J	0.073 U	0.079 U
Anthracene	mg/kg	230,000	2.6	0.15 U	0.19	0.009	0.48	0.49	N/A-M	0.14 U	0.37	0.29	0.091	N/A-M	0.36 U	0.54 J
Benzaldehyde	mg/kg	120,000	0.099 J	0.075 R	0.076 R	0.071 R	0.049 J	0.09 J	0.077 U	0.018 J	0.071 R	0.079 R	0.073 R	0.075 U	0.073 R	0.079 R
Benz[a]anthracene	mg/kg	21	3.6	0.15 U	0.63	0.084	1.3	0.61	N/A-M	0.054 J	0.83	0.71	0.49	N/A-M	0.14 B	1.4
Benzo[a]pyrene	mg/kg	2.1	3.3	0.016 J	0.82	0.077	1.2	0.43	N/A-M	0.045 J	0.57	0.87	0.39	N/A-M	0.1 B	0.99
Benzo[b]fluoranthene	mg/kg	21	8.2	0.15 U	3.3	0.21	2.3	1	N/A-M	0.11 J	0.93	2.2	0.87	N/A-M	0.3 B	1.9
Benzo[g,h,i]perylene	mg/kg		1.2	0.15 U	0.35	0.035	0.3	0.22	N/A-M	0.028 J	0.35	0.62	0.2	N/A-M	0.067 B	0.42 J
Benzo[k]fluoranthene	mg/kg	210	5.6	0.15 U	1.1	0.12	1.1	0.44	N/A-M	0.067 J	0.45	1	0.43	N/A-M	0.11 B	0.8
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.018 J	0.075 U	0.076 U	0.071 U	0.072 U	0.084 U	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.75 U	0.073 U	0.079 U
Carbazole	mg/kg		0.12	0.075 U	0.076 U	0.071 U	0.33	0.12	0.077 U	0.27	0.071 U	0.079 U	0.056 J	42	0.073 U	0.15
Chrysene	mg/kg	2,100	4.8	0.029 J	0.81	0.12	1.3	0.66	N/A-M	0.14 J	0.71	1.1	0.54	N/A-M	0.34 B	1.3
Dibenz[a,h]anthracene	mg/kg	2.1	0.65	0.15 U	0.16	0.022	0.16	0.12	N/A-M	0.14 U	0.15	0.26	0.12	N/A-M	0.36 U	0.24
Di-n-octylphthalate	mg/kg	8,200	0.075 U	0.075 U	0.076 U	0.071 U	0.072 U	0.084 U	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.75 U	0.073 U	0.079 U
Fluoranthene	mg/kg	30,000	6.7	0.037 J	0.73	0.13	1.5	0.95	N/A-M	0.088 J	1.8	0.76	0.72	N/A-M	0.18 B	2.2
Fluorene	mg/kg	30,000	0.98	0.15 U	0.02	0.0013 J	0.041	0.092	N/A-M	0.032 J	0.11 J	0.018 B	0.0065 B	N/A-M	0.36 U	0.15 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	1.5	0.15 U	0.41	0.043	0.38	0.25	N/A-M	0.14 U	0.35	0.67	0.25	N/A-M	0.36 U	0.49 J
Naphthalene	mg/kg	17	0.4	0.15 U	0.22	0.02	0.062	0.97	N/A-M	0.14 U	0.063 J	0.097	0.13	N/A-M	0.36 U	0.14 J
Phenanthrene	mg/kg		3.3	0.15 U	0.47	0.09	0.39	1.9	N/A-M	0.14 U	1.2	0.23	0.42	N/A-M	0.36 U	1.6
Phenol	mg/kg	250,000	0.023 J	0.075 U	0.076 U	0.071 R	0.072 U	0.051 J	0.077 U	0.071 U	0.071 U	0.079 U	0.073 U	0.85	0.073 U	0.079 R
Pyrene	mg/kg	23,000	6.7	0.033 J	0.68	0.082	1.7	0.78	N/A-M	0.081 J	1.4	0.77	0.54	N/A-M	0.19 J	1.8
PCBs																
Aroclor 1248	mg/kg	0.94	0.088 U	N/A	0.091 U	N/A	0.089 U	N/A	N/A-M	0.18 U	N/A	1.6	N/A	N/A-M	0.35 U	N/A
Aroclor 1260	mg/kg	0.99	0.081 J	N/A	0.065 J	N/A	0.051 J	N/A	N/A-M	0.18 U	N/A	0.086 U	N/A	N/A-M	0.35 U	N/A
PCBs (total)	mg/kg	0.97	0.62 U	N/A	0.64 U	N/A	0.62 U	N/A	N/A-M	1.3 U	N/A	1.6	N/A	N/A-M	2.5 U	N/A
Oil and Grease																
Oil and Grease	mg/kg	6,200	1,830	312	751	305	868	484	N/A-M	11,600	350	390	214	N/A-M	17,900	514

Detections in bold

*PAH compounds were analyzed via SIM

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

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

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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

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

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

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

N/A-M: This parameter was not analyzed for this sample due to the SVOC Microwave method resampling event.

Table 6
Summary of Organics Detected in Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-014-SB-10	B8-015-SB-1	B8-015-SB-5	B8-016-SB-1	B8-016-SB-5	B8-017-SB-1	B8-017-SB-5	B8-018-SB-1	B8-018-SB-5	B8-018-SB-10	B8-019-SB-1	B8-019-SB-3	B8-019-SB-5	B8-019-SB-10
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	N/A-M	0.021 J	0.0062 J	0.0049 J	0.01 U	0.0053 J	0.0041 J	0.012	0.0017 J	N/A-M	0.012 U	0.47 U	0.0091 J	N/A-M
Acetone	mg/kg	670,000	N/A-M	0.17	0.028	0.03	0.038	0.024	0.058	0.034	0.0095	N/A-M	0.01 J	0.47 R	0.041	N/A-M
Benzene	mg/kg	5.1	N/A-M	0.0011 J	0.0018 J	0.0051 U	0.014	0.00054 J	0.0046 U	0.0045 J	0.0033 U	N/A-M	0.006 U	0.23 U	0.0021 J	N/A-M
Carbon disulfide	mg/kg	3,500	N/A-M	0.0039 J	0.005 U	0.0059	0.0075	0.025	0.024	0.0052	0.0017 J	N/A-M	0.013	0.23 U	0.015	N/A-M
Cyclohexane	mg/kg	27,000	N/A-M	0.012 U	0.0016 J	0.01 U	0.01 U	0.011 U	0.0091 U	0.0092 J	0.0067 U	N/A-M	0.012 U	0.47 U	0.0049 J	N/A-M
Ethylbenzene	mg/kg	25	N/A-M	0.0061 U	0.005 U	0.0051 U	0.0024 J	0.0054 U	0.0046 U	0.00066 J	0.0033 U	N/A-M	0.006 U	0.23 U	0.006 U	N/A-M
Methyl Acetate	mg/kg	1,200,000	N/A-M	0.011 J	0.05 UJ	0.051 U	0.051 U	0.054 UJ	0.046 UJ	0.051 U	0.033 U	N/A-M	0.06 U	2.3 R	0.06 U	N/A-M
Methylene Chloride	mg/kg	1,000	N/A-M	0.0034 J	0.005 U	0.0051 U	0.0051 U	0.0054 U	0.0049	0.0051 U	0.0027 J	N/A-M	0.0036 J	0.1 J	0.006 U	N/A-M
Toluene	mg/kg	47,000	N/A-M	0.00081 J	0.0015 J	0.0051 U	0.011	0.0054 U	0.0046 U	0.0033 B	0.00024 B	N/A-M	0.00042 B	0.017 B	0.0015 B	N/A-M
Xylenes	mg/kg	2,800	N/A-M	0.018 U	0.015 U	0.015 U	0.015 U	0.016 U	0.014 U	0.0021 J	0.01 U	N/A-M	0.018 U	0.7 U	0.018 U	N/A-M
Semi-Volatile Organic Compounds *																
1,1-Biphenyl	mg/kg	200	0.022 J	0.026 J	0.071 U	0.078 U	0.076 U	0.023 J	0.082 U	0.063 J	0.1	0.11	0.044 J	0.075 U	0.071 U	0.08 U
2,4-Dimethylphenol	mg/kg	16,000	0.08 U	0.077 U	0.071 U	0.078 U	0.076 U	0.078 U	0.082 U	0.072 UJ	0.075 R	0.054 J	0.073 U	0.075 R	0.071 UJ	0.026 J
2-Chloronaphthalene	mg/kg	60,000	0.08 U	0.038 J	0.071 U	0.078 U	0.076 U	0.034 J	0.082 U	0.072 U	0.075 U	0.087 U	0.073 U	0.075 U	0.071 U	0.08 U
2-Methylnaphthalene	mg/kg	3,000	N/A-M	0.15	0.01	0.15 U	0.02	0.02 B	0.0081 U	0.16	0.016	N/A-M	0.079	0.0072 U	0.11	N/A-M
2-Methylphenol	mg/kg	41,000	0.08 U	0.077 U	0.071 U	0.078 U	0.076 U	0.078 U	0.082 U	0.072 UJ	0.075 R	0.087 U	0.073 U	0.075 R	0.071 UJ	0.08 UJ
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.037 J	0.15 U	0.14 U	0.16 U	0.15 U	0.023 J	0.16 U	0.024 J	0.15 R	0.031 J	0.021 J	0.15 R	0.14 UJ	0.044 J
Acenaphthene	mg/kg	45,000	N/A-M	0.023 J	0.016	0.15 U	0.029	0.036 U	0.0081 U	0.077	0.0028 J	N/A-M	0.51	0.0072 U	1.1	N/A-M
Acenaphthylene	mg/kg	45,000	N/A-M	0.32	0.0024 J	0.15 U	0.024	0.062	0.0081 U	0.37	0.0087	N/A-M	0.017	0.0072 U	0.013	N/A-M
Acetophenone	mg/kg	120,000	0.08 U	0.077 U	0.071 U	0.078 U	0.076 U	0.078 U	0.082 U	0.072 U	0.023 J	0.033 J	0.073 U	0.075 U	0.071 U	0.08 U
Anthracene	mg/kg	230,000	N/A-M	0.39	0.061	0.15 U	0.12	0.082	0.0081 U	0.41	0.009	N/A-M	0.13	0.0072 U	0.24 J	N/A-M
Benzaldehyde	mg/kg	120,000	0.08 UJ	0.037 J	0.071 R	0.078 R	0.076 R	0.03 J	0.082 R	0.072 R	0.075 R	0.027 J	0.073 R	0.018 J	0.016 J	0.08 UJ
Benz[a]anthracene	mg/kg	21	N/A-M	0.81	0.1	0.089 J	0.65	0.099	0.0029 J	2.9	0.08	N/A-M	1	0.0024 J	4.4	N/A-M
Benzo[a]pyrene	mg/kg	2.1	N/A-M	1.1	0.06	0.11 J	0.51	0.12	0.0019 B	2.4	0.086	N/A-M	4	0.0027 J	10	N/A-M
Benzo[b]fluoranthene	mg/kg	21	N/A-M	4.3	0.12	0.18	1.2	0.4	0.0041 J	4.7	0.15	N/A-M	5.8	0.0037 J	14.4	N/A-M
Benzo[g,h,i]perylene	mg/kg		N/A-M	0.36	0.028	0.056 J	0.12	0.13	0.0081 U	0.74	0.051	N/A-M	1.1	0.0027 J	5.4	N/A-M
Benzo[k]fluoranthene	mg/kg	210	N/A-M	4.1	0.063	0.11 J	0.58	0.19	0.0018 B	1	0.069	N/A-M	1	0.0016 J	4.9	N/A-M
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.063 B	0.17 J	0.071 U	0.078 UJ	0.076 UJ	0.078 UJ	0.082 U	0.072 U	0.075 U	0.087 UJ	0.025 B	0.075 UJ	0.052 B	0.08 UJ
Carbazole	mg/kg		0.18	0.084 J	0.071 U	0.078 U	0.076 U	0.077 J	0.082 U	0.083	0.057 J	0.77 J	0.14	0.11	0.059 J	0.21
Chrysene	mg/kg	2,100	N/A-M	1.2	0.096	0.089 J	0.7	0.16	0.0021 B	3.1	0.085	N/A-M	1	0.0018 J	4.4	N/A-M
Dibenz[a,h]anthracene	mg/kg	2.1	N/A-M	0.21	0.016	0.15 U	0.076	0.051	0.0081 U	0.38	0.018	N/A-M	0.49	0.0072 U	1.1 J	N/A-M
Di-n-octylphthalate	mg/kg	8,200	0.08 UJ	0.077 UJ	0.071 U	0.078 UJ	0.076 UJ	0.078 UJ	0.082 U	0.072 U	0.075 U	0.087 UJ	0.073 UJ	0.075 UJ	0.071 UJ	0.08 UJ
Fluoranthene	mg/kg	30,000	N/A-M	1.1	0.2	0.091 J	1	0.17	0.0026 B	5.4	0.15	N/A-M	1.3	0.0029 J	4.2	N/A-M
Fluorene	mg/kg	30,000	N/A-M	0.026 J	0.018	0.02 J	0.028	0.0063 B	0.0081 U	0.053	0.0046 J	N/A-M	0.053	0.0072 U	0.12	N/A-M
Indeno[1,2,3-c,d]pyrene	mg/kg	21	N/A-M	0.4	0.033	0.15 U	0.16	0.15	0.0081 U	0.97	0.052	N/A-M	1.2	0.0072 U	5.6	N/A-M
Naphthalene	mg/kg	17	N/A-M	0.18	0.012	0.15 U	0.04	0.039	0.0015 B	0.55	0.031	N/A-M	0.11	0.0072 U	0.15 J	N/A-M
Phenanthrene	mg/kg		N/A-M	0.54	0.22	0.15 U	0.48	0.072	0.0081 U	2.8	0.046	N/A-M	0.54	0.0072 U	0.94 J	N/A-M
Phenol	mg/kg	250,000	0.08 U	0.077 U	0.071 U	0.078 U	0.076 U	0.078 U	0.082 U	0.025 J	0.075 R	0.087 U	0.018 J	0.075 R	0.071 UJ	0.029 J
Pyrene	mg/kg	23,000	N/A-M	1	0.14	0.081 J	0.89	0.18	0.0023 J	4.5	0.15	N/A-M	1.2	0.0024 J	4.4	N/A-M
PCBs																
Aroclor 1248	mg/kg	0.94	N/A-M	0.096 U	N/A	0.18 U	N/A	0.091 U	N/A	0.18 U	N/A	N/A-M	0.36 U	N/A	N/A	N/A-M
Aroclor 1260	mg/kg	0.99	N/A-M	0.13	N/A	0.18 U	N/A	0.039 J	N/A	0.056 J	N/A	N/A-M	0.34 J	N/A	N/A	N/A-M
PCBs (total)	mg/kg	0.97	N/A-M	0.67 U	N/A	1.3 U	N/A	0.64 U	N/A	1.2 U	N/A	N/A-M	2.5 U	N/A	N/A	N/A-M
Oil and Grease																
Oil and Grease	mg/kg	6,200	N/A-M	738	240	10,200	590	365	205	618	140	N/A-M	1,270	216	301	N/A-M

Detections in bold

*PAH compounds were analyzed via SIM

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

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

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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

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

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

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

N/A-M: This parameter was not analyzed for this sample due to the SVOC Microwave method resampling event.

Table 6
Summary of Organics Detected in Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-020-SB-1	B8-020-SB-5	B8-020-SB-10	B8-021-SB-1	B8-021-SB-5	B8-021-SB-10	B8-022-SB-1	B8-022-SB-5	B8-023-SB-1	B8-023-SB-5	B8-023-SB-10	B8-024-SB-1	B8-024-SB-5
Volatile Organic Compounds															
2-Butanone (MEK)	mg/kg	190,000	0.0036 J	0.0039 J	N/A	0.017 J	0.0086 J	N/A-M	0.0075 J	0.0083 J	0.013 J	0.003 J	N/A-M	0.019 J	0.0062 J
Acetone	mg/kg	670,000	0.02	0.017	N/A	0.15	0.038	N/A-M	0.042	0.038	0.13	0.02	N/A-M	0.17	0.035
Benzene	mg/kg	5.1	0.0013 J	0.0025 J	N/A	0.0012 J	0.0045 J	N/A-M	0.00059 J	0.0048	0.00078 J	0.0012 J	N/A-M	0.00093 J	0.005 U
Carbon disulfide	mg/kg	3,500	0.0067	0.022	N/A	0.0076	0.012	N/A-M	0.013	0.0026 J	0.0047 J	0.016	N/A-M	0.007	0.0028 J
Cyclohexane	mg/kg	27,000	0.0097 U	0.0036 J	N/A	0.0016 J	0.0028 J	N/A-M	0.012 U	0.0032 J	0.0006 J	0.0015 J	N/A-M	0.00079 J	0.01 U
Ethylbenzene	mg/kg	25	0.0048 U	0.0046 U	N/A	0.0062 U	0.0057 U	N/A-M	0.0058 U	0.0044 U	0.005 U	0.0059 U	N/A-M	0.0049 U	0.005 U
Methyl Acetate	mg/kg	1,200,000	0.048 U	0.046 U	N/A	0.062 UJ	0.057 UJ	N/A-M	0.058 UJ	0.044 UJ	0.05 UJ	0.059 UJ	N/A-M	0.049 UJ	0.05 UJ
Methylene Chloride	mg/kg	1,000	0.0048 U	0.0029 J	N/A	0.0062 U	0.0035 J	N/A-M	0.0037 J	0.0044 U	0.0028 J	0.0059 U	N/A-M	0.0049 U	0.0046 J
Toluene	mg/kg	47,000	0.0011 B	0.002 B	N/A	0.00098 J	0.0029 J	N/A-M	0.00051 J	0.0031 J	0.00044 J	0.0011 J	N/A-M	0.00054 J	0.005 U
Xylenes	mg/kg	2,800	0.014 U	0.014 U	N/A	0.019 U	0.017 U	N/A-M	0.018 U	0.013 U	0.015 U	0.018 U	N/A-M	0.015 U	0.015 U
Semi-Volatile Organic Compounds *															
1,1-Biphenyl	mg/kg	200	0.039 J	0.036 J	0.028 J	0.017 J	0.13	0.078 R	0.037 J	0.068 U	0.02 J	0.072 U	0.073 U	0.02 J	0.074 U
2,4-Dimethylphenol	mg/kg	16,000	0.071 U	0.023 J	0.017 J	0.071 U	0.073 UJ	0.078 U	0.074 U	0.068 U	0.077 U	0.072 U	0.073 U	0.08 U	0.074 UJ
2-Chloronaphthalene	mg/kg	60,000	0.071 U	0.021 J	0.076 U	0.071 U	0.073 U	0.078 R	0.02 J	0.068 U	0.13 J	0.072 U	0.073 U	0.23	0.074 U
2-Methylnaphthalene	mg/kg	3,000	0.045	0.098 J	0.98	0.082	0.25	N/A-M	0.066	0.0081 U	0.12 J	0.014 B	N/A-M	0.14 B	0.0029 B
2-Methylphenol	mg/kg	41,000	0.071 U	0.017 J	0.076 U	0.071 U	0.073 UJ	0.078 U	0.074 U	0.068 U	0.077 U	0.072 U	0.073 U	0.08 U	0.074 UJ
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	0.045 J	0.15 U	0.14 U	0.15 UJ	0.16 U	0.15 U	0.14 U	0.15 U	0.14 U	0.14 U	0.16 U	0.15 UJ
Acenaphthene	mg/kg	45,000	0.02	0.42	0.43	0.025 J	0.76	N/A-M	0.026 J	0.0081 U	0.15 U	0.037 U	N/A-M	0.14 U	0.0072 U
Acenaphthylene	mg/kg	45,000	0.0058 J	0.14 U	0.09	0.16	0.25	N/A-M	0.13	0.0081 U	0.17	0.021 J	N/A-M	0.23	0.0072 U
Acetophenone	mg/kg	120,000	0.071 U	0.031 J	0.076 U	0.071 U	0.073 U	0.078 R	0.024 J	0.068 U	0.077 U	0.072 U	0.073 U	0.08 U	0.074 U
Anthracene	mg/kg	230,000	0.027	0.2	0.39	0.19	6.3	N/A-M	0.25	0.0081 U	0.3	0.32	N/A-M	0.23	0.0025 J
Benzaldehyde	mg/kg	120,000	0.071 R	0.073 R	0.076 UJ	0.071 R	0.073 R	0.078 R	0.04 J	0.068 R	0.036 J	0.072 R	0.073 UJ	0.022 J	0.074 R
Benz[a]anthracene	mg/kg	21	0.091	0.96	0.64	0.58	22.5	N/A-M	0.4	0.0029 B	1	1.2	N/A-M	0.93	0.012
Benzo[a]pyrene	mg/kg	2.1	0.11	2	0.52	0.7	14	N/A-M	0.51	0.0014 B	1	0.83	N/A-M	1.1	0.012
Benzo[b]fluoranthene	mg/kg	21	0.19	2.9	0.92	1.7	25.2	N/A-M	2.2	0.0064 B	2.6	1.8	N/A-M	2.8	0.028
Benzo[g,h,i]perylene	mg/kg		0.11	1	0.29	0.53	6.3	N/A-M	0.21	0.002 B	0.74	0.35	N/A-M	0.66	0.008
Benzo[k]fluoranthene	mg/kg	210	0.067	0.98	0.48	0.83	14.4	N/A-M	1	0.0035 B	0.92	0.86	N/A-M	1.7	0.012
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.071 U	0.041 B	0.076 UJ	0.071 UJ	0.073 UJ	0.078 R	0.036 B	0.068 UJ	0.017 B	0.019 B	0.073 U	0.08 U	0.074 U
Carbazole	mg/kg		0.024 J	0.21	0.14	0.14	2.1	0.078 R	0.47 J	0.068 U	0.035 J	0.11 J	0.073 U	0.08 U	0.02 J
Chrysene	mg/kg	2,100	0.11	1	0.67	0.76	20.5	N/A-M	0.71	0.0028 B	1.4	1.2	N/A-M	1.2	0.016
Dibenz[a,h]anthracene	mg/kg	2.1	0.038	0.34	0.11	0.22	3.9	N/A-M	0.09	0.0081 U	0.29	0.2	N/A-M	0.28	0.0072 U
Di-n-octylphthalate	mg/kg	8,200	0.071 U	0.073 UJ	0.076 UJ	0.071 UJ	0.073 UJ	0.078 R	0.074 UJ	0.068 UJ	0.077 UJ	0.028 J	0.073 U	0.08 U	0.074 U
Fluoranthene	mg/kg	30,000	0.16	1.3	1.5	0.84	46.3	N/A-M	0.64	0.0038 B	1.8	1.7	N/A-M	1.1	0.019
Fluorene	mg/kg	30,000	0.004 J	0.09 J	0.73	0.018 J	0.5	N/A-M	0.021 B	0.0081 U	0.06 B	0.011 B	N/A-M	0.022 B	0.00067 B
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.11	1	0.31	0.54	7.7	N/A-M	0.23	0.0081 U	0.67	0.43	N/A-M	0.68	0.0067 J
Naphthalene	mg/kg	17	0.11	0.15	10.2	0.1	0.6	N/A-M	0.081	0.0016 B	0.16	0.04	N/A-M	0.16	0.0025 B
Phenanthrene	mg/kg		0.12	0.74	1.8	0.32	21.6	N/A-M	0.28	0.0081 U	1.2	0.95	N/A-M	0.43	0.0097
Phenol	mg/kg	250,000	0.071 U	0.093 J	0.076 U	0.071 U	0.073 UJ	0.078 U	0.074 U	0.068 U	0.077 U	0.072 U	0.073 U	0.08 U	0.074 UJ
Pyrene	mg/kg	23,000	0.14	1.2	1.2	0.76	35.9	N/A-M	0.59	0.003 J	1.7	1.3	N/A-M	1.1	0.016
PCBs															
Aroclor 1248	mg/kg	0.94	0.086 U	N/A	N/A	0.09 U	N/A	N/A-M	0.089 U	N/A	0.18 U	N/A	N/A-M	0.089 U	N/A
Aroclor 1260	mg/kg	0.99	0.01 J	N/A	N/A	0.059 J	N/A	N/A-M	0.063 J	N/A	0.18 U	N/A	N/A-M	0.061 J	N/A
PCBs (total)	mg/kg	0.97	0.6 U	N/A	N/A	0.63 U	N/A	N/A-M	0.62 U	N/A	1.3 U	N/A	N/A-M	0.62 U	N/A
Oil and Grease															
Oil and Grease	mg/kg	6,200	166	4,610	N/A	466	1,060	N/A-M	663	131	989	326	N/A-M	537	624

Detections in bold

*PAH compounds were analyzed via SIM

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

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

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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

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

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

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

N/A-M: This parameter was not analyzed for this sample due to the SVOC Microwave method resampling event.

Table 7
Summary of Organics Detected in Billet Building Surficial Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-025-SB-0.5	B8-026-SB-0.5	B8-027-SB-0.5	B8-028-SB-0.5	B8-029-SB-0.5	B8-030-SB-0.5	B8-031-SB-0.5	B8-032-SB-0.5	B8-033-SB-0.5	B8-034-SB-0.5	B8-035-SB-0.5	B8-036-SB-0.5	B8-037-SB-0.5	B8-038-SB-0.5	B8-039-SB-0.5	B8-040-SB-0.05
Volatile Organic Compounds																		
1,1,1-Trichloroethane	mg/kg	36,000	0.0052 UJ	0.0052 UJ	0.0052 UJ	0.0045 UJ	0.0051 UJ	0.0044 U	0.022 J	0.0052 UJ	0.0054 UJ	0.28 U	0.0046 UJ	0.006 UJ	0.0046 UJ	0.0046 U	0.0049 UJ	0.0051 UJ
2-Butanone (MEK)	mg/kg	190,000	0.01 U	0.01 U	0.01 U	0.009 U	0.01 U	0.0089 U	0.011 U	0.01 U	0.011 U	0.56 U	0.0092 U	0.012 U	0.0092 U	0.0091 U	0.028	0.3
4-Methyl-2-Pentanone (MIBK)	mg/kg	56,000	0.01 U	0.01 U	0.01 U	0.009 U	0.01 U	0.0089 U	0.011 U	0.01 U	0.011 U	0.56 U	0.0092 U	0.012 U	0.0092 U	0.0091 U	0.0098 U	0.016
Acetone	mg/kg	670,000	0.01 UJ	0.01 J	0.01 UJ	0.009 UJ	0.01 UJ	0.0089 U	0.12 J	0.12 J	0.011 UJ	0.56 UJ	0.064 J	0.012 UJ	0.0092 UJ	0.0091 U	0.11 J	0.62 UJ
Chloroethane	mg/kg	57,000	0.0052 U	0.0052 U	0.0052 U	0.0045 U	0.0051 U	0.0044 U	0.0057 U	0.0052 U	0.0054 U	0.28 U	0.0046 U	0.006 U	0.0046 U	0.0046 U	0.0049 U	0.014
Cyclohexane	mg/kg	27,000	0.01 U	0.01 U	0.01 U	0.009 U	0.01 U	0.0089 U	0.011 U	0.01 U	0.011 U	0.56 U	0.0092 U	0.012 U	0.0092 U	0.0091 U	0.0098 U	0.004 J
Ethylbenzene	mg/kg	25	0.0052 U	0.0052	0.0052 U	0.0045 U	0.0051 U	0.0044 U	0.0057 U	0.0052 U	0.0054 U	0.28 U	0.0046 U	0.006 U	0.0046 U	0.0046 U	0.0049 U	0.0051 U
Methyl Acetate	mg/kg	1,200,000	0.052 U	0.052 U	0.052 U	0.045 U	0.051 U	0.044 U	0.057 U	0.052 U	0.054 U	1.3 J	0.046 U	0.06 U	0.046 U	0.046 U	0.049 U	0.051 U
Toluene	mg/kg	47,000	0.0052 U	0.0052	0.0052 U	0.0045 U	0.0051 U	0.0044 U	0.0057 U	0.0052 U	0.0054 U	0.28 U	0.0046 U	0.006 U	0.0046 U	0.0046 U	0.0049 U	0.0051 U
Xylenes	mg/kg	2,800	0.016 U	0.48	0.016 U	0.013 U	0.015 U	0.013 U	0.017 U	0.015 U	0.016 U	0.084 U	0.014 U	0.018 U	0.014 U	0.014 U	0.015 U	0.015 U
Semi-Volatile Organic Compounds*																		
2-Methylnaphthalene	mg/kg	3,000	0.13 J	0.15	0.062 J	0.12	0.04 J	0.55	4.1	0.14 U	0.033 J	0.044 J	0.056	0.0034 J	0.061	0.061	0.076 J	0.054 J
Acenaphthene	mg/kg	45,000	0.095 J	0.24	0.13 J	0.02	0.14 U	0.042	2.2	0.14 U	0.022 J	0.14 U	0.016	0.0011 J	0.0069 J	0.0081	0.044 J	0.14 U
Acenaphthylene	mg/kg	45,000	0.048 J	0.14	0.035 J	0.03	0.027 J	0.022	20.5	0.14 U	0.022 J	0.1 J	0.027	0.0024 J	0.02	0.021	0.053 J	0.12 J
Anthracene	mg/kg	230,000	0.21	0.43	0.35 J	0.062	0.071 J	0.051	22.7	0.14 U	0.059 J	0.037 J	0.076	0.0028 J	0.045	0.053	0.53	0.052 J
Benz[a]anthracene	mg/kg	21	0.63	1.8	0.8	0.16	0.34	0.13	44.7	0.048 J	0.25	0.11 J	0.2	0.0067 J	0.12	0.12	2.1	0.1 J
Benzo[a]pyrene	mg/kg	2.1	0.75	2.3	0.87	0.18	0.29	0.11	23.4	0.029 J	0.25	0.074 J	0.19	0.0068 J	0.096	0.1	1.9	0.12 J
Benzo[b]fluoranthene	mg/kg	21	1.4	3.8	2.7	0.43	0.48	0.28	47.3	0.088 J	0.46	0.41	0.39	0.015	0.25	0.24	3.5	0.3
Benzo[g,h,i]perylene	mg/kg		0.43	1.7	0.31 J	0.086	0.15	0.044	13.5	0.031 J	0.18	0.027 J	0.079	0.007 J	0.044	0.097	0.68	0.06 J
Benzo[k]fluoranthene	mg/kg	210	0.58	1.4	0.74	0.17	0.23	0.13	22.3	0.076 J	0.19	0.41	0.17	0.006 J	0.12	0.085	1.5	0.11 J
Chrysene	mg/kg	2,100	0.8	1.9	0.71	0.19	0.34	0.16	26.9	0.14	0.26	0.092 J	0.22	0.0089	0.15	0.15	1.9	0.21
Dibenz[a,h]anthracene	mg/kg	2.1	0.17	0.72	0.17	0.037	0.051 J	0.02	5.9	0.14 UJ	0.055 J	0.14 U	0.038	0.002 J	0.02	0.037	0.3	0.021 J
Fluoranthene	mg/kg	30,000	1.3	3.5	3.3	0.4	0.5	0.38	98.9	0.069 J	0.38	0.16	0.5	0.013	0.33	0.34	3.9	0.18
Fluorene	mg/kg	30,000	0.024 J	0.099 J	0.082 J	0.012	0.014 J	0.023	13.2	0.14 U	0.016 J	0.14 U	0.011	0.0012 J	0.0079	0.0071 J	0.026 J	0.14 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.42	1.6	0.37 J	0.089	0.14 J	0.049	17.1	0.14 UJ	0.17	0.14 U	0.091	0.0059 J	0.047	0.095	0.74	0.049 J
Naphthalene	mg/kg	17	0.21	0.25	0.082 J	0.15	0.082 B	0.19	3.9	0.14 U	0.04 B	0.073 B	0.11	0.0072 B	0.15	0.13	0.1 B	0.071 B
Phenanthrene	mg/kg		0.63	1.1	1.3	0.32	0.23	0.32	60.1	0.053 J	0.19	0.13 J	0.36	0.0097	0.27	0.27	1.9	0.17
Pyrene	mg/kg	23,000	1.1	3.5	2.6	0.32	0.43	0.3	78	0.067 J	0.33	0.11 J	0.4	0.011	0.26	0.28	3.4	0.17
PCBs																		
Aroclor 1254	mg/kg	0.97	0.086 U	0.088 U	0.062 J	0.017 U	0.086 U	0.018 U	0.017 U	0.087 U	0.086 U	0.086 U	0.018 U	0.018 U	0.018 U	0.018 U	0.086 U	0.089 U
Aroclor 1260	mg/kg	0.99	0.086 U	0.088 U	0.063 J	0.017 U	0.086 U	0.018 U	0.017 U	0.087 U	0.086 U	0.086 U	0.018 U	0.0095 J	0.018 U	0.018 U	0.086 U	0.19 J
PCBs (total)	mg/kg	0.97	0.6 U	0.62 U	0.12	0.12 U	0.6 U	0.12 U	0.12 U	0.61 U	0.6 U	0.6 U	0.12 U	0.12 U	0.13 U	0.13 U	0.6 U	0.19 J
TPH-DRO/GRO																		
Diesel Range Organics	mg/kg	6,200	299	174	82.1	68.3	111	68.8	418	145	97.3	7,840	48	60.8	64.2	52.5	508	939

Detections in bold
*PAH compounds were analyzed via SIM
Values in Red indicate an exceedance of the Project Action Limit (PAL)

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.

Table 8
Summary of Inorganics Detected in Soil
Parcel B8
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-009-SB-1	B8-009-SB-10	B8-009-SB-5	B8-010-SB-1	B8-010-SB-10	B8-010-SB-5	B8-011-SB-1	B8-011-SB-5	B8-012-SB-1	B8-012-SB-5	B8-013-SB-1	B8-013-SB-5	B8-014-SB-1
Metals															
Aluminum	mg/kg	1,100,000	35,900	N/A	9,300	9,870	N/A	7,830	30,300	2,410	43,800	3,320	20,000	10,000	26,100
Antimony	mg/kg	470	2.8 UJ	N/A	2.4 UJ	4.9 J	N/A	3 UJ	2.6 UJ	3.2 UJ	2.2 UJ	2.1 UJ	1.9 UJ	1.9 UJ	2.2 UJ
Arsenic	mg/kg	3	7 J	20.1 J	3.6 J	81.2 J	2.5 J	3.3 J	17.7 J	10.2 J	1.8 U	8.1 J	24.8	2	2.1
Barium	mg/kg	220,000	318 J	N/A	32.2 J	242 J	N/A	103 J	308 J	65 J	363 J	35.3 J	191 J	107 J	248 J
Beryllium	mg/kg	2,300	6	N/A	0.38 B	0.91 B	N/A	1 U	5.1	1.1 U	7.1	0.71 U	2.8	0.64 U	4.4
Cadmium	mg/kg	980	1.4	N/A	0.14 B	12.9	N/A	0.78 B	1.8	0.41 J	0.38 J	1.3 B	3.1	0.48 J	0.87 J
Chromium (total)	mg/kg	120,000	98 J	N/A	13.7 J	112 J	N/A	2,240 J	68 J	34.1 J	9.8 J	530 J	195	3,320	52.7
Chromium VI	mg/kg	6.3	1.1 UJ	N/A	1.1 UJ	1.1 UJ	3.8 J-	14.9 J-	1.1 UJ	0.75 J-	1.1 UJ	1.1 UJ	1 UJ	2.1 J-	1.1 UJ
Cobalt	mg/kg	350	4.8	N/A	3.6 J	18.6	N/A	10.7	8.3	4.9 B	0.83 J	8.4	13.2	15.8	4.9
Copper	mg/kg	47,000	42.9 J	N/A	7.8 J	244 J	N/A	58.9 J	241 J	36.9 J	4.4 J	47.7 J	123 J	84.9 J	14.4 J
Iron	mg/kg	820,000	86,900 J	N/A	11,800 J	176,000 J	N/A	144,000 J	114,000 J	29,100 J	7,560 J	52,900 J	134,000 J	188,000 J	22,800 J
Lead	mg/kg	800	118 J	N/A	10.4 J	347 J	N/A	89 J	77 J	115 J	9.3 J	124 J	203	13	29.8
Manganese	mg/kg	26,000	4,590	N/A	68.9	2,790	18,100 J	32,600	3,690	484	2,880	6,290	4,250	30,200	2,560
Mercury	mg/kg	350	0.099 R	N/A	0.062 J-	0.13 J-	N/A	0.11 R	0.024 J-	0.055 J-	0.11 R	0.1 R	0.1 UJ	0.1 UJ	0.1 UJ
Nickel	mg/kg	22,000	63.3 J	N/A	7.2 B	54.7 J	N/A	31.7 J	127 J	14.8 J	2.3 B	74.5 J	39.5 J	36.6 J	10.9 J
Selenium	mg/kg	5,800	2.1 J	N/A	3.2 U	4.4 U	N/A	4 U	2.6 J	4.2 U	2.1 J	2.8 U	2.2 B	2.5 U	2.7 B
Silver	mg/kg	5,800	2.8 U	N/A	2.4 U	2.1 B	N/A	3 U	0.79 B	3.2 U	2.2 U	2.1 U	0.66 J	1.9 U	2.2 U
Thallium	mg/kg	12	9.3 U	N/A	7.9 U	11 U	36.4	59.4	8.8 U	2.4 B	7.3 U	1.3 B	6.2 U	41	7.3 U
Vanadium	mg/kg	5,800	79.5 J	N/A	20.3 J	151 J	6,920	14,300 J	47.5 J	485 J	30.5 J	631 J	362 J-	11,000 J-	165 J-
Zinc	mg/kg	350,000	437 J	N/A	32.9 J	922 J	N/A	77.7 J	417 J	217 J	91.1 J	985 J	1,070	42.3	237
Other															
Cyanide	mg/kg	150	1.1	N/A	0.59 U	0.48 J	N/A	0.23 J	0.65 U	0.53 J	0.15 J	0.46 J	0.53 J-	0.34 J-	0.34 J-

Detections in bold

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

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

UJ: This analyte as 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.

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

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

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

Table 8
Summary of Inorganics Detected in Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-014-SB-5	B8-015-SB-1	B8-015-SB-5	B8-016-SB-1	B8-016-SB-5	B8-017-SB-1	B8-017-SB-10	B8-017-SB-5	B8-018-SB-1	B8-018-SB-5	B8-019-SB-1	B8-019-SB-3
Metals														
Aluminum	mg/kg	1,100,000	6,140	9,770	13,500	29,600	8,410	32,300	N/A	15,500	8,340	1,600	10,900	194
Antimony	mg/kg	470	2.3 UJ	4.1 J	3.2 UJ	1.8 UJ	3.2 UJ	2.1 UJ	N/A	2.2 UJ	3 UJ	2 UJ	2.9 UJ	2.9 UJ
Arsenic	mg/kg	3	3.2	17.3	2.6 U	4.2 J	35.5 J	2.6	15.5	6.7	2.9	10.1	2.9	2.4 U
Barium	mg/kg	220,000	61.2 J	192 J	427 J	250 J	120 J	355 J	N/A	59 J	68.3 J	13 J	89.6 J	1.5 B
Beryllium	mg/kg	2,300	0.51 J	1	1.1 U	4.4	0.28 B	6.3	N/A	0.74 B	0.99 U	0.66 U	0.5 B	0.98 U
Cadmium	mg/kg	980	1.1 B	29.8	0.65 J	1.2 B	1.8	1.2 B	N/A	1.1 U	0.85 B	0.4 B	0.82 B	1.5 U
Chromium (total)	mg/kg	120,000	304	134	4,700	74.3 J	942 J	12.7	N/A	25.8	1,410	553	664	0.61 J
Chromium VI	mg/kg	6.3	1.1 UJ	1.2 UJ	9.2 J-	1.1 UJ	1.1 UJ	1.1 UJ	N/A	1.2 UJ	1.1 U	1.1 UJ	1.1 U	1 U
Cobalt	mg/kg	350	6.8	32.7	7.2	4.4	18.8	1.9 B	N/A	10.4	7	12.1	9.6	4.9 U
Copper	mg/kg	47,000	37.9 J	264 J	66.7 J	41.8 J	104 J	18.2 J	N/A	9.9 J	55	31.9	75.1	7.2
Iron	mg/kg	820,000	41,100 J	221,000 J	201,000 J	44,600 J	83,700 J	12,200 J	N/A	24,000 J	188,000	63,600	157,000	263
Lead	mg/kg	800	93.3	523	13	72.3 J	149 J	38.2	N/A	17.5	145	12	117	2.4 U
Manganese	mg/kg	26,000	2,640	2,910	39,400	3,190	27,600	2,390	N/A	110	27,400 J	2,300 J	14,900 J	15.7 J
Mercury	mg/kg	350	0.057 J-	0.19	0.0031 J-	0.2 J-	0.055 J-	0.11 UJ	N/A	0.13 J-	0.043 J	0.0039 J	0.02 J	0.0025 J
Nickel	mg/kg	22,000	32.6 J	87.6 J	28.3 J	21.4 J	71.3 J	5.8 J	N/A	13.7 J	24.8	74.2	52.6	9.8 U
Selenium	mg/kg	5,800	3 U	3.8 U	4.2 U	2.4 U	4.3 U	2.5 B	N/A	2.9 U	4 U	2.7 U	3.9 U	3.9 U
Silver	mg/kg	5,800	2.3 U	4.6	3.2 U	1.8 U	0.64 B	2.1 U	N/A	2.2 U	3 U	2 U	2.9 U	2.9 U
Thallium	mg/kg	12	2.3 J	9.4 U	41.3	6 U	10.7 U	6.8 U	N/A	7.4 U	10.9 J	1.5 J	4.1 B	9.8 UJ
Vanadium	mg/kg	5,800	591 J-	154 J-	12,300 J-	125 J	1,580 J	29 J-	N/A	36.5 J-	3,180 J	481 J	1,800 J	1.4 B
Zinc	mg/kg	350,000	560	6,130	25.2	535 J	624 J	416	N/A	172	244 J	1,070 J	199 J	4.9 U
Other														
Cyanide	mg/kg	150	1.2 J-	6 J-	0.16 J-	0.46 J	1.3	0.32 J-	N/A	0.59 UJ	1.1 J-	0.57 UJ	2.5 J-	0.13 J-

Detections in bold

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

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

UJ: This analyte as 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.

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

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

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

Table 8
Summary of Inorganics Detected in Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-019-SB-5	B8-020-SB-1	B8-020-SB-10	B8-020-SB-5	B8-021-SB-1	B8-021-SB-5	B8-022-SB-1	B8-022-SB-5	B8-023-SB-1	B8-023-SB-5	B8-024-SB-1	B8-024-SB-5
Metals														
Aluminum	mg/kg	1,100,000	12,300	3,820	N/A	9,240	19,900	14,400	32,000	22,000	9,890	26,000	6,200	9,160
Antimony	mg/kg	470	2.4 UJ	1.8 UJ	N/A	2.1 UJ	3 UJ	2.3 UJ	2.5 UJ	16.7 J	1.3 J	1.9 UJ	4.3 J	36.7 UJ
Arsenic	mg/kg	3	3.8	1.5 U	28	7.9	10.7	6.8	6.2	79.6	12.1	5.4	20.2	1.5 U
Barium	mg/kg	220,000	97.1 J	31.7 J	N/A	66.1 J	209 J	165 J	264 J	66.5 J	166 J	647 J	156 J	127 J
Beryllium	mg/kg	2,300	0.72 B	0.61 U	N/A	0.31 B	2.4	0.75 U	4.7	1.1 U	0.76 B	0.66	0.77 B	0.61 U
Cadmium	mg/kg	980	0.49 B	0.49 B	N/A	1.3	3.1	0.5 J	2.6	12.1	2.9	14.4	5.3	0.55 J
Chromium (total)	mg/kg	120,000	823	558	N/A	355	199	1,920	93.4	1,140	153	518	126	3,730
Chromium VI	mg/kg	6.3	1.2 UJ	1 U	N/A	1.1 U	1.1 UJ	4.9 J-	1.1 UJ	22.5 J-	1.1 UJ	0.56 J-	1.1 UJ	18.8 J-
Cobalt	mg/kg	350	5.2	7.8	N/A	7.7	14.1	26.5	5.3	46.6	22.6	8.5	34.9	4.7
Copper	mg/kg	47,000	9,600	95.5	N/A	462	495 J	250 J	111 J	525 J	260 J	647 J	293 J	34.2 J
Iron	mg/kg	820,000	114,000	142,000	N/A	130,000	154,000 J	228,000 J	98,600 J	105,000 J	118,000 J	61,400 J	276,000 J	139,000 J
Lead	mg/kg	800	82.2	19.7	N/A	224	194	39.9	96.8	1,920	190	150	350	6.7
Manganese	mg/kg	26,000	14,800 J	15,400 J	N/A	11,000 J	4,420	17,200	4,500	5,250	2,210	10,200	2,300	48,300
Mercury	mg/kg	350	0.023 J	0.023 J	N/A	0.038 J	0.097 J-	0.0079 J-	0.0045 J-	0.12 UJ	0.059 J-	0.11 UJ	0.1 J-	0.0062 J-
Nickel	mg/kg	22,000	29.5	20.2	N/A	47.3	48.3 J	71.7 J	27.5 J	150 J	63.8 J	20 J	81.4 J	11.4 J
Selenium	mg/kg	5,800	3.2 U	2.5 U	N/A	2.8 U	4 U	3 U	3.1 B	4.6 U	3.9 U	2.5 U	3.6 U	2.4 U
Silver	mg/kg	5,800	2.4 U	1.8 U	N/A	2.1 U	1 J	2.3 U	2.5 U	22.2	1.1 J	1.9 U	3.9	1.8 U
Thallium	mg/kg	12	6.6 J	3.8 J	N/A	6.9 UJ	10 U	18.5	8.4 U	10.5 J	9.8 U	11.8	9.1 U	60.3
Vanadium	mg/kg	5,800	1,940 J	1,440 J	N/A	997 J	346 J-	4,730 J-	60.6 J-	2,510 J-	300 J-	2,020 J-	90.1 J-	17,200 J-
Zinc	mg/kg	350,000	115 J	74.6 J	N/A	253 J	2,350	94.4	1,080	8,840	1,190	1,670	2,170	10.9
Other														
Cyanide	mg/kg	150	0.83 J-	0.2 J-	N/A	1.7 J-	0.54 J-	0.63 J-	0.54 J-	0.55 J-	0.48 J-	0.4 J-	0.35 J-	0.15 J-

Detections in bold

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

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

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

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

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

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

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

Table 9
 Summary of Inorganics Detected in Billet Building Surficial Soil
 Parcel B8
 Tradepoint Atlantic
 Sparrows Point, Maryland

Parameter	Units	PAL	B8-025-SB-0.5	B8-026-SB-0.5	B8-027-SB-0.5	B8-028-SB-0.5	B8-029-SB-0.5	B8-030-SB-0.5	B8-031-SB-0.5	B8-032-SB-0.5	B8-033-SB-0.5	B8-034-SB-0.5	B8-035-SB-0.5	B8-036-SB-0.5	B8-037-SB-0.5
Metals															
Aluminum	mg/kg	1,100,000	11,800	17,600	9,270	8,920	32,000	27,800	40,600	35,900	29,800	22,100	37,000	32,600	17,300
Arsenic	mg/kg	3	4.8	8.8	5.4	10.9	3.7	3.1	2.3	1.7 U	2.4	2.9	3	5.8	2.5 U
Barium	mg/kg	220,000	118 J	143 J	75.9 J	85.5 J	280 J	349 J	334 J	301 J	228 J	210 J	372 J	314 J	95.4 J
Beryllium	mg/kg	2,300	1.4	2	0.8	0.36 B	4.5	4.5	6.5	5.4	4.1	4.8	5.3	4.7	0.52 B
Cadmium	mg/kg	980	1.2 J	2	0.8 J	0.47 J	4.5	1.3	6.7	0.44 J	0.56 J	0.74 J	6.6	1 J	0.7 J
Chromium	mg/kg	120,000	830	513	627	481	240	309	36.7	47	473	487	89.9	75.5	1,070
Chromium VI	mg/kg	6.3	0.2 B	1.1 U	1 U	0.21 B	0.21 B	1.1 U	1 U	1 U	0.17 J	0.21 B	1.1 U	1.1 U	0.31 B
Cobalt	mg/kg	350	9.3	9.7	5.6	8	3.4 J	2.5 J	0.98 J	1.3 J	2.6 J	3.9 J	1.7 J	4.6	0.96 J
Copper	mg/kg	47,000	64.8 J	80.7 J	78.2 J	36.3 J	27.6 J	32.9 J	9.3 J	9.5 J	27.9 J	84.1 J	17.3 J	24.5 J	42.7 J
Iron	mg/kg	820,000	124,000 J	95,900 J	130,000 J	312,000 J	43,700 J	68,800 J	14,000 J	29,100 J	79,300 J	116,000 J	34,900 J	66,400 J	172,000 J
Lead	mg/kg	800	110 J	117 J	165 J	11.7 J	202 J	36.2 J	19.2 J	17.1 J	39.8 J	44.5 J	82.5 J	100 J	14.3 J
Manganese	mg/kg	26,000	18,900	12,700	15,600	12,000	9,500	8,680	3,180	3,460	9,240	16,000	4,220	3,640	26,400
Mercury	mg/kg	350	0.1 U	0.1 U	0.0026 J+	0.099 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.098 U	0.1 U	0.099 U	0.016 J+
Nickel	mg/kg	22,000	38.5 J	46.8 J	27.7 J	56.7 J	14.2 J	15.8 J	2.1 J	6.4 J	9.5 J	16.4 J	8.7 J	13.1 J	16.3 J
Selenium	mg/kg	5,800	3.9 U	3.8 U	3 U	4 U	3.1 J	2.9 U	3.8	3.6	2.3 B	1.9 J	4 U	2.9 J	4.1 U
Silver	mg/kg	5,800	3 U	2.8 U	2.2 U	3.6	2.5 U	2.1 U	2.7 U	2 U	2.2 U	0.67 B	3 U	2.6 U	1.3 B
Vanadium	mg/kg	5,800	1,580 J	1,170 J	1,690 J	307 J	882 J	349 J	74.5 J	44.2 J	776 J	384 J	92.6 J	128 J	725 J
Zinc	mg/kg	350,000	340 J	678 J	455 J	123 J	396 J	256 J	416 J	59.3 J	115 J	569 J	559 J	90.9 J	227 J
Other															
Cyanide	mg/kg	150	0.45 J	0.67	0.46 J	0.15 J	0.45 J	0.17 J	0.63 U	0.5 U	0.083 J	0.26 J	0.23 J	0.52 U	0.66 U

Detections in bold

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

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

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 for field blank.

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

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

Table 9
Summary of Inorganics Detected in Billet Building Surficial Soil
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-038-SB-0.5	B8-039-SB-0.5	B8-040-SB-0.5	B8-041-SB-1	B8-042-SB-1	B8-043-SB-1	B8-044-SB-1	B8-045-SB-1	B8-046-SB-1	B8-047-SB-1	B8-050-SB-1	B8-052-SB-1	B8-053-SB-1	B8-054-SB-1
Metals																
Aluminum	mg/kg	1,100,000	10,900	35,400	32,000	19,300	28,200	36,000	39,400	25,200	23,700	16,600	31,100	33,700	12,700	9,390
Arsenic	mg/kg	3	2 U	4.7	3.6	7.2	4.5	4.6	2.5	7.8	3.3	5.3	6.3	2.1 J	3.8	2.7
Barium	mg/kg	220,000	73.6 J	347 J	321 J	151	223	317	339	215	211	204	235	334	94.4	54.3
Beryllium	mg/kg	2,300	0.79 U	5.1	5.1	1.9	4.1	6.2	6.7	3.7	3.7	2.2	4.2	5.4	0.73 B	0.42 B
Cadmium	mg/kg	980	0.57 J	6	19.9	3.3	2.9	1.1 B	1.4	3.5	0.88 B	8	52.2	2.6	0.92 B	0.69 B
Chromium	mg/kg	120,000	1,100	49.3	46.4	250	278	100	157	187	311	758	139	142	54.6	24.7
Chromium VI	mg/kg	6.3	0.91 B	1.1 U	1.1 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt	mg/kg	350	0.4 J	2.8 J	3.7 J	5.3 B	5.2	3.5 B	2 J	5.4	3.2 J	4.4	12.7	3.4 B	5.2 J	4.5 J
Copper	mg/kg	47,000	26.8 J	42.1 J	37.6 J	848	45.6	39	27.3	399	44.3	311	138	58.1	59.6	21
Iron	mg/kg	820,000	193,000 J	64,800 J	56,400 J	63,700	140,000	77,300	50,100	67,300	82,000	181,000	74,100	58,800	25,700	15,700
Lead	mg/kg	800	67.7 J	18.6 J	59.4 J	274	48.7	25.7	44.4	272	198	67.6	168	113	45	25.5
Manganese	mg/kg	26,000	26,900	2,630	2,830	10,300	8,110	4,610	8,250	6,980	7,800	33,100	4,710	6,190	1,010	279
Mercury	mg/kg	350	0.011 J+	0.1 U	0.1 U	0.0042 J-	0.11 R	0.098 R	0.1 R	0.1 R	0.011 J-	0.09 J-	0.21 J-	0.11 R	0.14 J-	0.059 J-
Nickel	mg/kg	22,000	13.4 J	23.9 J	15.6 J	27	31.8	19.9	11.4	25.8	21.8	32.6	74.1	16.3	13.8	9.8 B
Selenium	mg/kg	5,800	3.2 U	3.9 U	3.7 U	4.3 U	3.8 U	2.2 J	2.7 B	3 U	4.3 U	3.5 U	2.5 B	3.6 U	4.3 U	4 U
Silver	mg/kg	5,800	2.5	3 U	2.8 U	3.2 U	2.8 U	2.6 U	2 U	2.3 U	3.2 U	2.6 U	4.6	2.7 U	3.2 U	3 U
Vanadium	mg/kg	5,800	625 J	44.3 J	47.2 J	755	803	154	449	500	620	3,500	192	309	74.2	28.2
Zinc	mg/kg	350,000	219 J	315 J	1,600 J	366	689	131	246	420	265	3,880	17,700	1,420	306	183
Other																
Cyanide	mg/kg	150	0.081 J	0.12 J	0.3 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold

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

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

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 for field blank.

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

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

TABLE 10
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>
Aroclor 1248	12672-29-6	3	B8-013-SB-1	mg/kg	0.94	1.6
Arsenic	7440-38-2	88	B8-010-SB-1	mg/kg	3	81.2
Benzo[a]anthracene	56-55-3	94	B8-031-SB-0.5	mg/kg	21	44.7
Benzo[a]pyrene	50-32-8	94	B8-031-SB-0.5	mg/kg	2.1	23.4
Benzo[b]fluoranthene	205-99-2	94	B8-031-SB-0.5	mg/kg	21	47.3
Chromium VI	18540-29-9	20	B8-022-SB-5	mg/kg	6.3	22.5
Dibenz[a,h]anthracene	53-70-3	80	B8-031-SB-0.5	mg/kg	2.1	5.9
Diesel Range Organics*	DRO	100	B8-034-SB-0.5	mg/kg	6,200	7,840
Lead	7439-92-1	98	B8-022-SB-5	mg/kg	800	1,920
Manganese	7439-96-5	100	B8-024-SB-5	mg/kg	26,000	48,300
Oil & Grease*	O&G	100	B8-014-SB-1	mg/kg	6,200	17,900
PCBs (total)	1336-36-3	9	B8-013-SB-1	mg/kg	0.97	1.6
Thallium	7440-28-0	21	B8-024-SB-5	mg/kg	12	60.3
Vanadium	744-62-2	98	B8-024-SB-5	mg/kg	5,800	17,200

*DRO and Oil & Grease were not analyzed at every sample location. The specific samples analyzed for these compounds are specified in the Phase II Investigation Report text as well as the Sampling Plan Summary provided in **Appendix A**.

**TABLE 11
SOIL PAL EXCEEDANCES FOR SPECIFIC TARGETS**

<u>Target Feature</u>	<u>Boring ID</u>	<u>Sample Depth</u>	<u>Parameter</u>	<u>PAL (mg/kg)</u>	<u>Result (mg/kg)</u>	<u>Final Flag</u>	
Rail Area Investigation	B8-021-SB	1	Arsenic	3	10.7		
		5	Arsenic	3	6.8		
		5	Benz[a]anthracene	21	22.5		
		5	Benzo[a]pyrene	2.1	14		
		5	Benzo[b]fluoranthene	21	25.2		
		5	Dibenz[a,h]anthracene	2.1	3.9		
		5	Thallium	12	18.5		
	B8-022-SB	1	Arsenic	3	6.2		
		5	Arsenic	3	79.6		
		5	Chromium VI	6.3	22.5	J-	
		5	Lead	800	1,920		
	B8-023-SB	1	Arsenic	3	12.1		
		5	Arsenic	3	5.4		
	B8-024-SB	1	Arsenic	3	20.2		
		5	Chromium VI	6.3	18.8	J-	
		5	Manganese	26,000	48,300		
		5	Thallium	12	60.3		
		5	Vanadium	5,800	17,200	J-	
	Billet Building (Interior)	B8-025-SB	0.5	Arsenic	3	4.8	
		B8-026-SB	0.5	Arsenic	3	8.8	
0.5			Benzo[a]pyrene	2.1	2.3		
B8-027-SB		0.5	Arsenic	3	5.4		
B8-028-SB		0.5	Arsenic	3	10.9		
B8-029-SB		0.5	Arsenic	3	3.7		
B8-030-SB		0.5	Arsenic	3	3.1		
B8-031-SB		0.5	Benz[a]anthracene	21	44.7		
		0.5	Benzo[a]pyrene	2.1	23.4		
		0.5	Benzo[b]fluoranthene	21	47.3		
		0.5	Dibenz[a,h]anthracene	2.1	5.9		
B8-034-SB		0.5	Diesel Range Organics	6,200	7,840		
B8-035-SB		0.5	Arsenic	3	3		
B8-036-SB		0.5	Arsenic	3	5.8		
B8-037-SB	0.5	Manganese	26,000	26,400			
B8-038-SB	0.5	Manganese	26,000	26,900			

**TABLE 11
SOIL PAL EXCEEDANCES FOR SPECIFIC TARGETS**

<u>Target Feature</u>	<u>Boring ID</u>	<u>Sample Depth</u>	<u>Parameter</u>	<u>PAL (mg/kg)</u>	<u>Result (mg/kg)</u>	<u>Final Flag</u>
Billet Building (Interior) Staining	B8-039-SB	0.5	Arsenic	3	4.7	
	B8-040-SB	0.5	Arsenic	3	3.6	
Billet Building (Exterior)	B8-041-SB	1	Arsenic	3	7.2	
	B8-042-SB	1	Arsenic	3	4.5	
	B8-043-SB	1	Arsenic	3	4.6	
	B8-045-SB	1	Arsenic	3	7.8	
	B8-046-SB	1	Arsenic	3	3.3	
	B8-047-SB	1	Arsenic	3	5.3	
		1	Manganese	26,000	33,100	
	B8-050-SB	1	Arsenic	3	6.3	
B8-053-SB	1	Arsenic	3	3.8		

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

Table 12
Summary of Organics Detected in Groundwater
Parcel B8
Tradeport Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-009-PZ	B8-010-PZ	B8-013-PZ	B8-016-PZ	B8-017-PZ	B8-018-PZ	B8-019-PZ	B8-020-PZ	HI02-PZM006	HI07-PZM005
Volatile Organic Compounds												
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	0.45 J	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	1 U	1 U	0.22 J	1 U	1 U	1.1	0.22 J	2.7 U	1 U
Benzene	µg/L	5	1 U	1 U	2.6 J	0.8 J	1 U	4.3	0.52 J	2.3	0.88 J	16.2
Bromomethane	µg/L	7.5	1 U	1 U	3.3	1.5	1 U	1 U	2.6	1 U	1 U	1 U
Carbon disulfide	µg/L	810	1 U	1 U	1 U	1 U	1 U	1 U	0.57 J	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	1 U	1 U	0.22 J	1 U	1 U	1 U
Ethylbenzene	µg/L	700	1 U	1 U	0.47 J	0.26 J	1 U	0.45 J	1 U	0.39 J	1 U	0.36 J
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	1 U	1 U	0.96 J	0.53 J	1 U	1.8	0.28 J	1.1	0.32 J	5.5
Xylenes	µg/L	10,000	3 U	3 U	4.2	1.2 J	3 U	3.4	0.59 J	2.6 J	3 U	6
Semi-Volatile Organic Compounds*												
1,1-Biphenyl	µg/L	0.83	1 U	1 U	2.1	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J
1,4-Dioxane	µg/L	0.46	0.1 U	0.1 U	0.035 J	0.1 U	0.1 U	0.029 J	0.14	0.045 J	0.1 UJ	0.1 U
2,4-Dimethylphenol	µg/L	360	1 U	1 U	18.1	5.4	1 U	5.4	18.3	1.7	22.2	9.2
2-Methylnaphthalene	µg/L	36	0.095 J	0.1 U	12.3	1.3	0.1 U	1.5	0.19	1.3	0.64	1.7
2-Methylphenol	µg/L	930	1 U	1 U	13.2	1 U	1 U	0.88 J	0.54 J	0.48 J	0.97 J	0.45 J
3&4-Methylphenol(m&p Cresol)	µg/L	930	1.4 J	2.1 U	37.5	1.9 J	2.1 U	3.8	6.6	1.2 J	8.8	3.9
Acenaphthene	µg/L	530	0.35	0.1 U	10	1.2	0.1 U	1.1	0.36	1.3	0.81	0.6
Acenaphthylene	µg/L	530	0.1 U	0.1 U	1.6	0.48	0.019 J	0.19	0.04 J	0.3	0.1 U	0.65
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.61 J
Anthracene	µg/L	1,800	0.043 J	0.027 J	5.6	0.41	0.043 J	0.21	0.13	0.4	0.12	0.27
Benz[a]anthracene	µg/L	0.03	0.1 U	0.016 J	1.3	0.048 J	0.051 J	0.1 U	0.09 J	0.21	0.1 U	0.058 J
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	0.75 J	0.1 U	0.041 J	0.1 U	0.16 J	0.14	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.1 U	0.1 U	1.1	0.1 U	0.11	0.1 U	0.19	0.24	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		0.1 U	0.1 U	0.29	0.1 U	0.048 J	0.1 U	0.12	0.048 J	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	0.1 U	0.1 U	0.42	0.1 U	0.041 J	0.1 U	0.078 J	0.11	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	0.31 J	0.23 J	0.36 J	0.29 J	0.3 J	0.27 J	1 U	1 U	1 U	0.21 J
Carbazole	µg/L		1 U	1 U	24.7	2.7	1 U	4.1	0.3 J	3.7	1.3	2.4
Chrysene	µg/L	25	0.1 U	0.1 U	1.2	0.02 J	0.034 J	0.1 U	0.073 J	0.2	0.1 U	0.03 J
Dibenz[a,h]anthracene	µg/L	0.025	0.1 U	0.1 U	0.17	0.1 U	0.1 U	0.1 U	0.033 J	0.1 U	0.1 U	0.1 U
Fluoranthene	µg/L	800	0.028 J	0.015 J	5.5	0.68	0.048 J	0.11	0.16	0.74	0.19	0.63
Fluorene	µg/L	290	0.15	0.1 U	11.2	1.6	0.1 U	1.2	0.16	1.4	0.63	0.9
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	0.1 U	0.1 U	0.33	0.1 U	0.042 J	0.1 U	0.11	0.1 U	0.1 U	0.1 U
Naphthalene	µg/L	0.17	0.2	0.061 B	25.3	13.9	0.05 B	29.3	2	29.2	5.1	26.1
Pentachlorophenol	µg/L	1	2.6 U	2.6 U	2.6 U	1.2 J	2.6 U	1.7 J	0.81 J	1.1 J	2.6 U	2.8
Phenanthrene	µg/L		0.16	0.023 J	19.5	2.3	0.028 J	1	0.32	1.9	0.95	1.9
Phenol	µg/L	5,800	1 U	1 U	10.5	1 U	1 U	0.22 J	0.33 J	1 U	1 U	1 U
Pyrene	µg/L	120	0.02 J	0.017 J	3.9	0.49	0.051 J	0.067 J	0.15	0.51	0.13	0.38
Oil and Grease												
Oil and Grease	µg/L	47	1,300 J	2,100 J	1,200 J	1,000 J	4,820 U	1,400 J	1,100 J	3,400 J	4,820 U	1,200 J

Detections in bold

*PAH compounds were analyzed via SIM

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

U: The analyte was not detected in the sample. The numeric value represents the sample quantitative/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 substantally above the level of the assoicated method blank/preparation or field blank.

Table 13
Summary of Inorganics Detected in Groundwater
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-009-PZ	B8-010-PZ	B8-013-PZ	B8-016-PZ	B8-017-PZ	B8-018-PZ	B8-019-PZ	B8-020-PZ	HI02-PZM006	HI07-PZM005
Metals (total)												
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	137	162
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	41.4	74
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.9 J	2 J
Chromium VI	µg/L	0.035	10 U	8 J	9 J	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	68.9	53
Metals (dissolved)												
Aluminum, Dissolved	µg/L	20,000	23 B	25.4 B	366	302	28.1 B	165	514	356	N/A	N/A
Arsenic, Dissolved	µg/L	10	5 U	5.8	5 U	13.1	5 U	18.6	5 U	18.3	N/A	N/A
Barium, Dissolved	µg/L	2,000	62.8	18.9	23.7	30.6	20.6	43.6	38.9	35.2	N/A	N/A
Chromium, Dissolved	µg/L	100	1.4 J	6.9	6.8	1.3 B	0.97 B	0.81 J	1.3 B	3.9 J	N/A	N/A
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	5 U	33.8	5 U	5 U	5 U	N/A	N/A
Copper, Dissolved	µg/L	1,300	5 U	1.5 J	5 U	5 U	5 U	5 U	5 U	5 U	N/A	N/A
Iron, Dissolved	µg/L	14,000	25,700	87.2	14.4 B	19.1 B	2,440	42.6 B	19.1 J	36.4 B	N/A	N/A
Manganese, Dissolved	µg/L	430	1,810	59	5 U	5 U	782	5 U	5 U	1.7 J	N/A	N/A
Nickel, Dissolved	µg/L	390	10 U	10 U	10 U	10 U	36	10 U	0.88 B	10 U	N/A	N/A
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	6.8 J	8 U	8 U	8 U	8 U	N/A	N/A
Thallium, Dissolved	µg/L	2	10 U	5 J	18.4	4.1 J	10 U	10 U	4.3 J	10 U	N/A	N/A
Vanadium, Dissolved	µg/L	86	2.9 B	1,040	3,530	265	14.4	7.4	452	30.4	N/A	N/A
Zinc, Dissolved	µg/L	6,000	10 U	4.7 B	0.87 B	10 U	41.7	1.4 B	10 U	1.8 B	N/A	N/A
Other												
Cyanide	µg/L	200	10 U	10 U	7.7 J	14	10 U	59.2	13.5	18.2	10 U	10 U

Detections in bold

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

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

Although the laboratory reports for HI02-PZM006 and HI07-PZM005 indicate the analysis of dissolved metals, these groundwater samples were not field filtered. The results have been correctly listed in the table as total metals for these two groundwater sample locations.

Table 14
Cumulative Vapor Intrusion Criteria Comparison

Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	B8-009-PZ		B8-010-PZ		B8-013-PZ		B8-016-PZ		B8-017-PZ	
				Conc. (ug/L)	Risk/Hazard								
Cancer Risk													
1,4-Dioxane	SVOC		130,000	0.1 U	0	0.1 U	0	0.035 J	2.7E-12	0.1 U	0	0.1 U	0
Naphthalene	SVOC		200	0.2	1.0E-08	0.061 B	0	25.3	1.3E-06	13.9	7.0E-07	0.05 B	0
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	0.22 J	6.7E-09	1 U	0
Benzene	VOC		69	1 U	0	1 U	0	2.6 J	3.8E-07	0.8 J	1.2E-07	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Ethylbenzene	VOC		150	1 U	0	1 U	0	0.47 J	3.1E-08	0.26 J	1.7E-08	1 U	0
Cumulative Vapor Intrusion Cancer Risk				1E-08		0E+00		2E-06		8E-07		0E+00	
Non-Cancer Hazard													
Cumulative Vapor Intrusion Non-Cancer Hazard				0		0		0		0		0	

Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	B8-018-PZ		B8-019-PZ		B8-020-PZ		HI02-PZM006		HI07-PZM005	
				Conc. (ug/L)	Risk/Hazard								
Cancer Risk													
1,4-Dioxane	SVOC		130,000	0.029 J	2.2E-12	0.14	1.1E-11	0.045 J	3.5E-12	0.1 UJ	0	0.1 U	0
Naphthalene	SVOC		200	29.3	1.5E-06	2	1.0E-07	29.2	1.5E-06	5.1	2.6E-07	26.1	1.3E-06
1,1-Dichloroethane	VOC		330	1 U	0	1.1	3.3E-08	0.22 J	6.7E-09	1 U	0	1 U	0
Benzene	VOC		69	4.3	6.2E-07	0.52 J	7.5E-08	2.3	3.3E-07	0.88 J	1.3E-07	16.2	2.3E-06
Chloroform	VOC		36	1 U	0	0.22 J	6.1E-08	1 U	0	1 U	0	1 U	0
Ethylbenzene	VOC		150	0.45 J	3.0E-08	1 U	0	0.39 J	2.6E-08	1 U	0	0.36 J	2.4E-08
Cumulative Vapor Intrusion Cancer Risk				2E-06		3E-07		2E-06		4E-07		4E-06	
Non-Cancer Hazard													
Cumulative Vapor Intrusion Non-Cancer Hazard				0		0		0		0		0	

Highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR > 1E-05 or THI > 1

Conc. = Concentration

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

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

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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

Table 15
Summary of VOCs Detected in Soil Gas
Parcel B8
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B8-001-SG	B8-002-SG	B8-003-SG	B8-004-SG	B8-005-SG	B8-006-SG	B8-007-SG	B8-008-SG
Volatile Organic Compound										
1,1,1-Trichloroethane	µg/m ³	2,200,000	44.1	1.09 U	1.09 U	9.39	1.09 U	1.36	2.51	64.7
1,1-Dichloroethane	µg/m ³	7,700	13.1	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	1.21
2-Butanone (MEK)	µg/m ³	2,200,000	16.9	11.7	11	9.76	12.2	9.56	11	6.58
Acetone	µg/m ³	14,000,000	247 J	78 J	148 J	61.9 J	106 J	29.5 J	127 J	79.7 J
Benzene	µg/m ³	1,600	0.99	2.49	3.45	7.64	0.89	1.31	3.19	1.09
Carbon disulfide	µg/m ³	310,000	15.4	23	31	50.7	5.73	21.5	41.3	9.9
Chloroethane	µg/m ³	4,400,000	0.58	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Chloroform	µg/m ³	540	5.57	2.69	5.47	4.88	17.4	11.9	6.59	1.81
Chloromethane	µg/m ³	40,000	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.52
Dichlorodifluoromethane*	µg/m ³	44,000	4.96	4.87	4.39	3.48	5.97	4.02	4.06	2.5
Methylene Chloride	µg/m ³	270,000	4.89	3.73	7.49	6.91	4.74	7.38	13.9	1.44
Toluene	µg/m ³	2,200,000	3.5	1.17	1.24	3.8	0.75 U	0.83	1.02	0.75 U
Trichlorofluoromethane*	µg/m ³	310,000	2.02	1.79	1.78	1.79	1.92	2.32	1.93	1.37

Detections in bold

* indicates non-validated data result

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

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

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



Parcel B8 - Table 16

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *B8-009-SB-1*

1,4-Dioxane	0.091	mg/kg	24	no	R
Mercury	0.099	mg/kg	350	no	R

Sample: *B8-009-SB-5*

1,4-Dioxane	0.081	mg/kg	24	no	R
Benzaldehyde	0.075	mg/kg	120,000	no	R

Sample: *B8-010-SB-1*

1,4-Dioxane	0.097	mg/kg	24	no	R
Benzaldehyde	0.076	mg/kg	120,000	no	R

Sample: *B8-010-SB-5*

1,4-Dioxane	0.078	mg/kg	24	no	R
2,3,4,6-Tetrachlorophenol	0.071	mg/kg	25,000	no	R
2,4,5-Trichlorophenol	0.18	mg/kg	82,000	no	R
2,4,6-Trichlorophenol	0.071	mg/kg	210	no	R
2,4-Dichlorophenol	0.071	mg/kg	2,500	no	R
2,4-Dimethylphenol	0.071	mg/kg	16,000	no	R
2,4-Dinitrophenol	0.18	mg/kg	1,600	no	R
2-Chlorophenol	0.071	mg/kg	5,800	no	R
2-Methylphenol	0.071	mg/kg	41,000	no	R
3&4-Methylphenol(m&p Cresol)	0.14	mg/kg	41,000	no	R
Benzaldehyde	0.071	mg/kg	120,000	no	R
Mercury	0.11	mg/kg	350	no	R
Pentachlorophenol	0.18	mg/kg	4	no	R
Phenol	0.071	mg/kg	250,000	no	R

Sample: *B8-011-SB-1*

1,4-Dioxane	0.089	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: **B8-011-SB-5**

1,4-Dioxane	0.23	mg/kg	24	no	R
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Sample: **B8-012-SB-1**

1,4-Dioxane	0.11	mg/kg	24	no	R
Mercury	0.11	mg/kg	350	no	R

Sample: **B8-012-SB-5**

1,4-Dioxane	0.092	mg/kg	24	no	R
Benzaldehyde	0.071	mg/kg	120,000	no	R
Mercury	0.1	mg/kg	350	no	R

Sample: **B8-013-SB-1**

1,4-Dioxane	0.1	mg/kg	24	no	R
Benzaldehyde	0.079	mg/kg	120,000	no	R

Sample: **B8-013-SB-10**

2,3,4,6-Tetrachlorophenol	0.075	mg/kg	25,000	no	R
2,4-Dinitrophenol	0.19	mg/kg	1,600	no	R
2,4-Dinitrotoluene	0.075	mg/kg	7.4	no	R
2,6-Dinitrotoluene	0.075	mg/kg	1.5	no	R
4-Chloroaniline	0.075	mg/kg	11	no	R
4-Nitroaniline	0.19	mg/kg	110	no	R
Benzaldehyde	0.075	mg/kg	120,000	no	R
Hexachlorocyclopentadiene	0.075	mg/kg	7.5	no	R
Pentachlorophenol	1.9	mg/kg	4	no	R

Sample: **B8-013-SB-5**

1,4-Dioxane	0.11	mg/kg	24	no	R
Benzaldehyde	0.073	mg/kg	120,000	no	R
Bromomethane	0.0055	mg/kg	30	no	R

Sample: **B8-014-SB-1**

1,4-Dioxane	0.12	mg/kg	24	no	R
Benzaldehyde	0.073	mg/kg	120,000	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: **B8-014-SB-1**

Bromomethane	0.0062	mg/kg	30	no	R
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Sample: **B8-014-SB-5**

1,4-Dioxane	0.099	mg/kg	24	no	R
2,3,4,6-Tetrachlorophenol	0.079	mg/kg	25,000	no	R
2,4,5-Trichlorophenol	0.2	mg/kg	82,000	no	R
2,4,6-Trichlorophenol	0.079	mg/kg	210	no	R
2,4-Dichlorophenol	0.079	mg/kg	2,500	no	R
2,4-Dimethylphenol	0.079	mg/kg	16,000	no	R
2,4-Dinitrophenol	0.2	mg/kg	1,600	no	R
2-Chlorophenol	0.079	mg/kg	5,800	no	R
2-Methylphenol	0.079	mg/kg	41,000	no	R
3&4-Methylphenol(m&p Cresol)	0.16	mg/kg	41,000	no	R
Benzaldehyde	0.079	mg/kg	120,000	no	R
Bromomethane	0.005	mg/kg	30	no	R
Hexachlorocyclopentadiene	0.079	mg/kg	7.5	no	R
Pentachlorophenol	0.2	mg/kg	4	no	R
Phenol	0.079	mg/kg	250,000	no	R

Sample: **B8-015-SB-1**

1,4-Dioxane	0.12	mg/kg	24	no	R
Bromomethane	0.0061	mg/kg	30	no	R

Sample: **B8-015-SB-5**

1,4-Dioxane	0.1	mg/kg	24	no	R
Benzaldehyde	0.071	mg/kg	120,000	no	R
Bromomethane	0.005	mg/kg	30	no	R

Sample: **B8-016-SB-1**

1,4-Dioxane	0.1	mg/kg	24	no	R
Benzaldehyde	0.078	mg/kg	120,000	no	R

Sample: **B8-016-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: **B8-016-SB-5**

Benzaldehyde	0.076	mg/kg	120,000	no	R
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Sample: **B8-017-SB-1**

1,4-Dioxane	0.11	mg/kg	24	no	R
Bromomethane	0.0054	mg/kg	30	no	R

Sample: **B8-017-SB-5**

1,4-Dioxane	0.091	mg/kg	24	no	R
Benzaldehyde	0.082	mg/kg	120,000	no	R
Bromomethane	0.0046	mg/kg	30	no	R

Sample: **B8-018-SB-1**

1,4-Dioxane	0.1	mg/kg	24	no	R
Benzaldehyde	0.072	mg/kg	120,000	no	R

Sample: **B8-018-SB-5**

1,4-Dioxane	0.067	mg/kg	24	no	R
2,3,4,6-Tetrachlorophenol	0.075	mg/kg	25,000	no	R
2,4,5-Trichlorophenol	0.19	mg/kg	82,000	no	R
2,4,6-Trichlorophenol	0.075	mg/kg	210	no	R
2,4-Dichlorophenol	0.075	mg/kg	2,500	no	R
2,4-Dimethylphenol	0.075	mg/kg	16,000	no	R
2,4-Dinitrophenol	0.19	mg/kg	1,600	no	R
2-Chlorophenol	0.075	mg/kg	5,800	no	R
2-Methylphenol	0.075	mg/kg	41,000	no	R
3&4-Methylphenol(m&p Cresol)	0.15	mg/kg	41,000	no	R
Benzaldehyde	0.075	mg/kg	120,000	no	R
Pentachlorophenol	0.19	mg/kg	4	no	R
Phenol	0.075	mg/kg	250,000	no	R

Sample: **B8-019-SB-1**

1,4-Dioxane	0.12	mg/kg	24	no	R
Benzaldehyde	0.073	mg/kg	120,000	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: **B8-019-SB-3**

1,4-Dioxane	4.7	mg/kg	24	no	R
2,3,4,6-Tetrachlorophenol	0.075	mg/kg	25,000	no	R
2,4,5-Trichlorophenol	0.19	mg/kg	82,000	no	R
2,4,6-Trichlorophenol	0.075	mg/kg	210	no	R
2,4-Dichlorophenol	0.075	mg/kg	2,500	no	R
2,4-Dimethylphenol	0.075	mg/kg	16,000	no	R
2,4-Dinitrophenol	0.19	mg/kg	1,600	no	R
2-Chlorophenol	0.075	mg/kg	5,800	no	R
2-Methylphenol	0.075	mg/kg	41,000	no	R
3&4-Methylphenol(m&p Cresol)	0.15	mg/kg	41,000	no	R
Acetone	0.47	mg/kg	670,000	no	R
Bromomethane	0.23	mg/kg	30	no	R
Methyl Acetate	2.3	mg/kg	1,200,000	no	R
Pentachlorophenol	0.19	mg/kg	4	no	R
Phenol	0.075	mg/kg	250,000	no	R

Sample: **B8-019-SB-5**

1,4-Dioxane	0.12	mg/kg	24	no	R
2,3,4,6-Tetrachlorophenol	0.071	mg/kg	25,000	no	R
2,4-Dinitrophenol	0.18	mg/kg	1,600	no	R
Hexachlorocyclopentadiene	0.071	mg/kg	7.5	no	R
Pentachlorophenol	0.18	mg/kg	4	no	R

Sample: **B8-020-SB-1**

1,4-Dioxane	0.097	mg/kg	24	no	R
Benzaldehyde	0.071	mg/kg	120,000	no	R

Sample: **B8-020-SB-5**

1,4-Dioxane	0.093	mg/kg	24	no	R
Benzaldehyde	0.073	mg/kg	120,000	no	R

Sample: **B8-021-SB-1**

1,4-Dioxane	0.12	mg/kg	24	no	R
Benzaldehyde	0.071	mg/kg	120,000	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: **B8-021-SB-1**

Bromomethane	0.0062	mg/kg	30	no	R
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Sample: **B8-021-SB-10**

1,1-Biphenyl	0.078	mg/kg	200	no	R
1,2,4,5-Tetrachlorobenzene	0.078	mg/kg	350	no	R
2,4-Dinitrotoluene	0.078	mg/kg	7.4	no	R
2,6-Dinitrotoluene	0.078	mg/kg	1.5	no	R
2-Chloronaphthalene	0.078	mg/kg	60,000	no	R
2-Nitroaniline	0.2	mg/kg	8,000	no	R
3,3'-Dichlorobenzidine	0.078	mg/kg	5.1	no	R
4-Chloroaniline	0.078	mg/kg	11	no	R
4-Nitroaniline	0.2	mg/kg	110	no	R
Acenaphthene	0.078	mg/kg	45,000	no	R
Acenaphthylene	0.078	mg/kg	45,000	no	R
Acetophenone	0.078	mg/kg	120,000	no	R
Benzaldehyde	0.078	mg/kg	120,000	no	R
bis(2-chloroethoxy)methane	0.078	mg/kg	2,500	no	R
bis(2-Chloroethyl)ether	0.078	mg/kg	1	no	R
bis(2-Chloroisopropyl)ether	0.078	mg/kg	22	no	R
bis(2-Ethylhexyl)phthalate	0.078	mg/kg	160	no	R
Caprolactam	0.2	mg/kg	400,000	no	R
Carbazole	0.078	mg/kg		no	R
Dibenz[a,h]anthracene	0.078	mg/kg	2.1	no	R
Diethylphthalate	0.078	mg/kg	660,000	no	R
Di-n-butylphthalate	0.078	mg/kg	82,000	no	R
Di-n-ocetylphthalate	0.078	mg/kg	8,200	no	R
Fluorene	0.078	mg/kg	30,000	no	R
Hexachlorobenzene	0.078	mg/kg	0.96	no	R
Hexachlorobutadiene	0.078	mg/kg	5.3	no	R
Hexachlorocyclopentadiene	0.078	mg/kg	7.5	no	R
Hexachloroethane	0.078	mg/kg	8	no	R
Isophorone	0.078	mg/kg	2,400	no	R
Nitrobenzene	0.078	mg/kg	22	no	R
N-Nitroso-di-n-propylamine	0.078	mg/kg	0.33	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: **B8-021-SB-10**

N-Nitrosodiphenylamine	0.078	mg/kg	470	no	R
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Sample: **B8-021-SB-5**

1,4-Dioxane	0.11	mg/kg	24	no	R
Benzaldehyde	0.073	mg/kg	120,000	no	R
Bromomethane	0.0057	mg/kg	30	no	R

Sample: **B8-022-SB-1**

1,4-Dioxane	0.12	mg/kg	24	no	R
Bromomethane	0.0058	mg/kg	30	no	R

Sample: **B8-022-SB-5**

1,4-Dioxane	0.088	mg/kg	24	no	R
Benzaldehyde	0.068	mg/kg	120,000	no	R
Bromomethane	0.0044	mg/kg	30	no	R

Sample: **B8-023-SB-1**

1,4-Dioxane	0.1	mg/kg	24	no	R
Bromomethane	0.005	mg/kg	30	no	R

Sample: **B8-023-SB-5**

1,4-Dioxane	0.12	mg/kg	24	no	R
Benzaldehyde	0.072	mg/kg	120,000	no	R
Bromomethane	0.0059	mg/kg	30	no	R

Sample: **B8-024-SB-1**

1,4-Dioxane	0.099	mg/kg	24	no	R
Bromomethane	0.0049	mg/kg	30	no	R

Sample: **B8-024-SB-5**

1,4-Dioxane	0.1	mg/kg	24	no	R
Benzaldehyde	0.074	mg/kg	120,000	no	R
Bromomethane	0.005	mg/kg	30	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
Sample: B8-025-SB-0.5					
1,4-Dioxane	0.1	mg/kg	24	no	R
Sample: B8-026-SB-0.5					
1,4-Dioxane	0.1	mg/kg	24	no	R
Sample: B8-027-SB-0.5					
1,4-Dioxane	0.1	mg/kg	24	no	R
Sample: B8-028-SB-0.5					
1,4-Dioxane	0.09	mg/kg	24	no	R
Sample: B8-029-SB-0.5					
1,4-Dioxane	0.1	mg/kg	24	no	R
Sample: B8-031-SB-0.5					
1,4-Dioxane	0.11	mg/kg	24	no	R
Sample: B8-032-SB-0.5					
1,4-Dioxane	0.1	mg/kg	24	no	R
Sample: B8-033-SB-0.5					
1,4-Dioxane	0.11	mg/kg	24	no	R
Sample: B8-035-SB-0.5					
1,4-Dioxane	0.092	mg/kg	24	no	R
Sample: B8-036-SB-0.5					
1,4-Dioxane	0.12	mg/kg	24	no	R
Sample: B8-037-SB-0.5					
1,4-Dioxane	0.092	mg/kg	24	no	R
Sample: B8-039-SB-0.5					
1,4-Dioxane	0.098	mg/kg	24	no	R

Rejected Results for Soil

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: *B8-040-SB-0.5*

1,4-Dioxane	0.1	mg/kg	24	no	R
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Sample: *B8-042-SB-1*

Mercury	0.11	mg/kg	350	no	R
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Sample: *B8-043-SB-1*

Mercury	0.098	mg/kg	350	no	R
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Sample: *B8-044-SB-1*

Mercury	0.1	mg/kg	350	no	R
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Sample: *B8-045-SB-1*

Mercury	0.1	mg/kg	350	no	R
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Sample: *B8-052-SB-1*

Mercury	0.11	mg/kg	350	no	R
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Parcel B8 - Table 17

Rejected Results for Groundwater

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
Sample: B8-009-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-010-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-013-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-016-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-017-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-018-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-019-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: B8-020-PZ					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Methyl Acetate	5	µg/L	20,000	no	R

Rejected Results for Groundwater

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
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Sample: **HI02-PZM006**

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

Sample: **HI07-PZM005**

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

**Table 18 - Parcel B8
COPC Screening Analysis**

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR = 1E-06 (mg/kg)	Non-Cancer HQ = 0.1 (mg/kg)	COPC?
1,1,1-Trichloroethane	71-55-6	B8-031-SB-0.5	0.022	J	0.022	0.022	49	2.04		3,600	no
1,1-Biphenyl	92-52-4	B8-013-SB-10	5.1		0.017	0.29	56	37.50	410	20	no
2,4-Dimethylphenol	105-67-9	B8-013-SB-10	0.8		0.017	0.13	53	15.09		1,600	no
2-Butanone (MEK)	78-93-3	B8-040-SB-0.5	0.3		0.0017	0.019	49	57.14		19,000	no
2-Chloronaphthalene	91-58-7	B8-024-SB-1	0.23		0.02	0.071	56	12.50		6,000	no
2-Methylnaphthalene	91-57-6	B8-031-SB-0.5	4.1		0.0034	0.25	50	74.00		300	no
2-Methylphenol	95-48-7	B8-013-SB-10	0.56		0.017	0.20	53	5.66		4,100	no
4-Methyl-2-pentanone (MIBK)	108-10-1	B8-040-SB-0.5	0.016		0.016	0.016	49	2.04		14,000	no
Acenaphthene	83-32-9	B8-031-SB-0.5	2.2		0.0011	0.24	50	66.00		4,500	no
Acenaphthylene	208-96-8	B8-031-SB-0.5	20.5		0.0024	0.64	50	76.00			no
Acetone	67-64-1	B8-026-SB-0.5	0.39	J	0.0095	0.063	48	75.00		67,000	no
Acetophenone	98-86-2	B8-009-SB-1	0.081		0.021	0.032	56	16.07		12,000	no
Aluminum	7429-90-5	B8-012-SB-1	43,800		194	19,605	60	100.00		110,000	no
Anthracene	120-12-7	B8-031-SB-0.5	22.7		0.0025	0.94	50	84.00		23,000	no
Antimony	7440-36-0	B8-022-SB-5	16.7	J	1.3	6.26	60	8.33		47	no
Aroclor 1248	12672-29-6	B8-013-SB-1	1.6		1.6	1.60	32	3.13	0.95		YES (C)
Aroclor 1254	11097-69-1	B8-027-SB-0.5	0.062	J	0.062	0.062	32	3.13	0.97	1.5	no
Aroclor 1260	11096-82-5	B8-019-SB-1	0.34	J	0.0095	0.087	32	43.75	0.99		no
Arsenic	7440-38-2	B8-010-SB-1	81.2	J	2	10.3	64	87.50	3	48	YES (C/NC)
Barium	7440-39-3	B8-023-SB-5	647	J	13	198	60	98.33		22,000	no
Benz[a]anthracene	56-55-3	B8-031-SB-0.5	44.7		0.0024	2.12	50	94.00	21		YES (C)
Benzaldehyde	100-52-7	B8-009-SB-1	0.099	J	0.016	0.040	33	36.36	820	12,000	no
Benzene	71-43-2	B8-016-SB-5	0.014		0.00054	0.0028	49	40.82	5.1	42	no
Benzo[a]pyrene	50-32-8	B8-031-SB-0.5	23.4		0.0027	1.67	50	94.00	2.1	22	YES (C/NC)
Benzo[b]fluoranthene	205-99-2	B8-031-SB-0.5	47.3		0.0037	3.29	50	94.00	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	B8-031-SB-0.5	13.5		0.0027	0.86	50	92.00			no
Benzo[k]fluoranthene	207-08-9	B8-031-SB-0.5	22.3		0.0016	1.58	50	92.00	210		no
Beryllium	7440-41-7	B8-012-SB-1	7.1		0.66	4.16	60	55.00	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B8-015-SB-1	0.17	J	0.018	0.094	56	3.57	160	1,600	no
Cadmium	7440-43-9	B8-050-SB-1	52.2		0.38	4.86	60	78.33	9,300	98	no
Carbazole	86-74-8	B8-013-SB-10	42		0.02	1.85	56	46.43			no
Carbon disulfide	75-15-0	B8-014-SB-1	0.053		0.0017	0.012	49	51.02		350	no
Chloroethane	75-00-3	B8-040-SB-0.5	0.014		0.014	0.014	49	2.04		5,700	no
Chromium	7440-47-3	B8-015-SB-5	4,700		0.61	566	60	100.00		180,000	no
Chromium VI	18540-29-9	B8-022-SB-5	22.5	J-	0.17	7.77	50	20.00	6.3	350	YES (C)
Chrysene	218-01-9	B8-031-SB-0.5	26.9		0.0018	1.79	50	94.00	2,100		no
Cobalt	7440-48-4	B8-022-SB-5	46.6		0.4	9.00	60	90.00	1,900	35	YES (NC)
Copper	7440-50-8	B8-019-SB-5	9,600		4.4	284	60	100.00		4,700	YES (NC)
Cyanide	57-12-5	B8-015-SB-1	6	J-	0.081	0.66	49	83.67		120	no
Cyclohexane	110-82-7	B8-018-SB-1	0.0092	J	0.00048	0.0029	49	24.49		2,700	no

**Table 18 - Parcel B8
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?
Dibenz[a,h]anthracene	53-70-3	B8-031-SB-0.5	5.9		0.002	0.43	50	80.00	2.1		YES (C)
Di-n-octylphthalate	117-84-0	B8-023-SB-5	0.028	J	0.028	0.028	56	1.79		820	no
Ethylbenzene	100-41-4	B8-026-SB-0.5	0.056		0.00066	0.020	49	6.12	25	2,000	no
Fluoranthene	206-44-0	B8-031-SB-0.5	98.9		0.0029	4.23	50	94.00		3,000	no
Fluorene	86-73-7	B8-031-SB-0.5	13.2		0.0012	0.49	50	68.00		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B8-031-SB-0.5	17.1		0.0059	1.11	50	82.00	21		no
Iron	7439-89-6	B8-028-SB-0.5	312,000	J	263	100,092	60	100.00		82,000	YES (NC)
Lead^	7439-92-1	B8-022-SB-5	1,920		6.7	135	60	98.33		800	YES (NC)
Manganese	7439-96-5	B8-024-SB-5	48,300		15.7	10,396	61	100.00		2,600	YES (NC)
Mercury	7439-97-6	B8-050-SB-1	0.21	J-	0.0025	0.059	51	62.75		35	no
Methyl Acetate	79-20-9	B8-034-SB-0.5	1.3	J	0.0025	0.44	48	6.25		120,000	no
Methylene Chloride	75-09-2	B8-019-SB-3	0.1	J	0.0019	0.011	49	26.53	1,000	320	no
Naphthalene	91-20-3	B8-020-SB-10	10.2		0.012	0.57	50	70.00	17	59	no
Nickel	7440-02-0	B8-022-SB-5	150	J	2.1	36.4	60	93.33	64,000	2,200	no
PCBs (total)*	1336-36-3	B8-013-SB-1	1.6		0.12	0.64	32	9.38	0.94		YES (C)
Phenanthrene	85-01-8	B8-031-SB-0.5	60.1		0.0097	2.56	50	86.00			no
Phenol	108-95-2	B8-013-SB-10	0.85		0.018	0.16	53	13.21		25,000	no
Pyrene	129-00-0	B8-031-SB-0.5	78		0.0024	3.32	50	98.00		2,300	no
Selenium	7782-49-2	B8-031-SB-0.5	3.8		1.9	2.70	60	15.00		580	no
Silver	7440-22-4	B8-022-SB-5	22.2		0.66	4.91	60	15.00		580	no
Thallium	7440-28-0	B8-024-SB-5	60.3		1.5	23.4	61	21.31		1.2	YES (NC)
Toluene	108-88-3	B8-026-SB-0.5	0.04		0.00044	0.0047	49	28.57		4,700	no
Vanadium	7440-62-2	B8-024-SB-5	17,200	J-	20.3	1,707	61	98.36		580	YES (NC)
Xylenes	1330-20-7	B8-026-SB-0.5	0.48		0.0021	0.24	49	4.08		250	no
Zinc	7440-66-6	B8-050-SB-1	17,700		10.9	1,091	60	98.33		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 19 - Parcel B8
Assessment of Lead**

Exposure Unit	Surface/Sub-Surface	Arithmetic Mean (mg/kg)
Outside Building Footprint (11.9 ac.)	Surface	141
	Sub-Surface	180
	Pooled	156
Inside Building Footprint (1.5 ac.)	Surface	69.1
	Sub-Surface	NS
	Pooled	NS

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%

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

**Table 20 - Parcel B8
Soil Exposure Point Concentrations**

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer Screening Level (mg/kg)	EPCs - Surface Soils			
			EPC Type Outside Building Footprint	EPC Outside Building Footprint (mg/kg)	EPC Type Inside Building Footprint	EPC Inside Building Footprint (mg/kg)
Arsenic	3.00	48.0	95% KM (Chebyshev) UCL	22.9	95% KM (t) UCL	5.32
Chromium VI	6.30	350	N/A	N/A	Maximum Value	0.17
Cobalt	1,900	35.0	95% GROS Adjusted Gamma UCL	14.3	95% Student's-t UCL	5.13
Copper		4,700	95% Adjusted Gamma UCL	244	95% Student's-t UCL	50.8
Iron		82,000	95% Student's-t UCL	125,830	95% Student's-t UCL	133,209
Manganese		2,600	95% H-UCL	11,954	95% Student's-t UCL	14,513
Thallium		1.20	Maximum Value	10.9	N/A	N/A
Vanadium		580	95% Adjusted Gamma UCL	943	95% Student's-t UCL	796
PCBs (total)	0.94		Maximum Value	1.60	Maximum Value	0.19
Benz[a]anthracene	21.0		95% KM (Chebyshev) UCL	1.99	99% Chebyshev (Mean, Sd) UCL	30.8
Benzo[a]pyrene	2.10	22.0	95% KM (Chebyshev) UCL	2.37	99% Chebyshev (Mean, Sd) UCL	16.3
Benzo[b]fluoranthene	21.0		95% KM (t) UCL	3.58	99% Chebyshev (Mean, Sd) UCL	32.8
Dibenz[a,h]anthracene	2.10		95% KM (t) UCL	0.30	99% KM (Chebyshev) UCL	4.12

Bold indicates EPC exceedance of the lowest COPC SL

COPC = Constituent of Potential Concern

N/A indicates no detection in specified exposure unit

**Table 20 - Parcel B8
Soil Exposure Point Concentrations**

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer Screening Level (mg/kg)	EPCs - Sub-Surface Soils			
			EPC Type Outside Building Footprint	EPC Outside Building Footprint (mg/kg)	EPC Type Inside Building Footprint	EPC Inside Building Footprint (mg/kg)
Arsenic	3.00	48.0	95% KM (Chebyshev) UCL	29.3	NS	NS
Chromium VI	6.30	350	95% KM (t) UCL	7.58	NS	NS
Cobalt	1,900	35.0	95% GROS Adjusted Gamma UCL	20.7	NS	NS
Copper		4,700	99% Chebyshev (Mean, Sd) UCL	6,258	NS	NS
Iron		82,000	95% Student's-t UCL	124,254	NS	NS
Manganese		2,600	95% Student's-t UCL	20,956	NS	NS
Thallium		1.20	95% KM (t) UCL	25.8	NS	NS
Vanadium		580	95% GROS Adjusted Gamma UCL	10,360	NS	NS
PCBs (total)	0.94		NS*	NS*	NS	NS
Benz[a]anthracene	21.0		95% Adjusted Gamma KM-UCL	9.69	NS	NS
Benzo[a]pyrene	2.10	22.0	95% Adjusted Gamma KM-UCL	5.89	NS	NS
Benzo[b]fluoranthene	21.0		95% Adjusted Gamma KM-UCL	9.90	NS	NS
Dibenz[a,h]anthracene	2.10		99% KM (Chebyshev) UCL	2.54	NS	NS

Bold indicates EPC exceedance of the lowest COPC SL

COPC = Constituent of Potential Concern

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

*Subsurface PCB data was not collected (in accordance with Work Plan procedures).

**Table 20 - Parcel B8
Soil Exposure Point Concentrations**

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer Screening Level (mg/kg)	EPCs - Pooled Soils			
			EPC Type Outside Building Footprint	EPC Outside Building Footprint (mg/kg)	EPC Type Inside Building Footprint	EPC Inside Building Footprint (mg/kg)
Arsenic	3.00	48.0	95% KM (Chebyshev) UCL	21.3	NS	NS
Chromium VI	6.30	350	95% KM (Percentile Bootstrap) UCL	4.44	NS	NS
Cobalt	1,900	35.0	95% GROS Adjusted Gamma UCL	13.7	NS	NS
Copper		4,700	95% H-UCL	489	NS	NS
Iron		82,000	95% Student's-t UCL	117,371	NS	NS
Manganese		2,600	95% Adjusted Gamma UCL	14,163	NS	NS
Thallium		1.20	95% KM (t) UCL	12.5	NS	NS
Vanadium		580	97.5% KM (Chebyshev) UCL	5,786	NS	NS
PCBs (total)	0.94		Maximum Value	1.60	NS	NS
Benz[a]anthracene	21.0		99% KM (Chebyshev) UCL	8.02	NS	NS
Benzo[a]pyrene	2.10	22.0	95% KM (Chebyshev) UCL	3.57	NS	NS
Benzo[b]fluoranthene	21.0		95% KM (Chebyshev) UCL	6.40	NS	NS
Dibenz[a,h]anthracene	2.10		97.5% KM (Chebyshev) UCL	1.02	NS	NS

Bold indicates EPC exceedance of the lowest COPC SL

COPC = Constituent of Potential Concern

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

**Table 21 - Parcel B8
Composite Worker Surface Soils
Risk Ratios**

Parameter	Target Organs	Outside Building Footprint (11.9 ac.)					Inside Building Footprint (1.5 ac.)				
		EPC (mg/kg)	Composite Worker				EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ		Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	22.9	3.00	480	7.6E-06	0.05	5.32	3.00	480	1.8E-06	0.01
Chromium VI	Respiratory	N/A	6.30	3,500			0.17	6.30	3,500	2.7E-08	0.00005
Cobalt	Thyroid	14.3	1,900	350	7.5E-09	0.04	5.13	1,900	350	2.7E-09	0.01
Copper	Gastrointestinal	244		47,000		0.005	50.8		47,000		0.001
Iron	Gastrointestinal	125,830		820,000		0.2	133,209		820,000		0.2
Manganese	Nervous	11,954		26,000		0.5	14,513		26,000		0.6
Thallium	Dermal	10.9		12.0		0.9	N/A		12.0		
Vanadium	Dermal	943		5,800		0.2	796		5,800		0.1
PCBs (total)		1.60	0.94		1.7E-06		0.19	0.94		2.0E-07	
Benz[a]anthracene		1.99	21.0		9.5E-08		30.8	21.0		1.5E-06	
Benzo[a]pyrene	Developmental	2.37	2.10	220	1.1E-06	0.01	16.3	2.10	220	7.8E-06	0.07
Benzo[b]fluoranthene		3.58	21.0		1.7E-07		32.8	21.0		1.6E-06	
Dibenz[a,h]anthracene		0.30	2.10		1.4E-07		4.12	2.10		2.0E-06	
					1E-05	↓				1E-05	↓

Bold indicates maximum values was used instead of UCL due to to few detections

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

N/A indicates no detections in specified exposure unit

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

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

**Table 22 - Parcel B8
Composite Worker Sub-Surface Soils
Risk Ratios**

Parameter	Target Organs	Outside Building Footprint (11.9 ac.)					Inside Building Footprint (1.5 ac.)				
		EPC (mg/kg)	Composite Worker				EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ		Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	29.3	3.00	480	9.8E-06	0.06	NS	3.00	480		
Chromium VI	Respiratory	7.58	6.30	3,500	1.2E-06	0.002	NS	6.30	3,500		
Cobalt	Thyroid	20.7	1,900	350	1.1E-08	0.06	NS	1,900	350		
Copper	Gastrointestinal	6,258		47,000		0.1	NS		47,000		
Iron	Gastrointestinal	124,254		820,000		0.2	NS		820,000		
Manganese	Nervous	20,956		26,000		0.8	NS		26,000		
Thallium	Dermal	25.8		12.0		2	NS		12.0		
Vanadium	Dermal	10,360		5,800		2	NS		5,800		
Benz[a]anthracene		9.69	21.0		4.6E-07		NS	21.0			
Benzo[a]pyrene	Developmental	5.89	2.10	220	2.8E-06	0.03	NS	2.10	220		
Benzo[b]fluoranthene		9.90	21.0		4.7E-07		NS	21.0			
Dibenz[a,h]anthracene		2.54	2.10		1.2E-06		NS	2.10			
					2E-05	↓				0E+00	↓

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

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

Total HI	Cardiovascular	0
	Dermal	4
	Respiratory	0
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

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

**Table 23 - Parcel B8
Composite Worker Pooled Soils
Risk Ratios**

Parameter	Target Organs	Outside Building Footprint (11.9 ac.)					Inside Building Footprint (1.5 ac.)				
		EPC (mg/kg)	Composite Worker				EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ		Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	21.3	3.00	480	7.1E-06	0.04	NS	3.00	480		
Chromium VI	Respiratory	4.44	6.30	3,500	7.0E-07	0.001	NS	6.30	3,500		
Cobalt	Thyroid	13.7	1,900	350	7.2E-09	0.04	NS	1,900	350		
Copper	Gastrointestinal	489		47,000		0.01	NS		47,000		
Iron	Gastrointestinal	117,371		820,000		0.1	NS		820,000		
Manganese	Nervous	14,163		26,000		0.5	NS		26,000		
Thallium	Dermal	12.5		12.0		1	NS		12.0		
Vanadium	Dermal	5,786		5,800		1	NS		5,800		
PCBs (total)		1.60	0.94		1.7E-06		NS	0.94			
Benz[a]anthracene		8.02	21.0		3.8E-07		NS	21.0			
Benzo[a]pyrene	Developmental	3.57	2.10	220	1.7E-06	0.02	NS	2.10	220		
Benzo[b]fluoranthene		6.40	21.0		3.0E-07		NS	21.0			
Dibenz[a,h]anthracene		1.02	2.10		4.9E-07		NS	2.10			
					1E-05	↓				0E+00	↓

Bold indicates maximum values was used instead of UCL due to few detections

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

NS = Not Sampled. Subsurface soil data was not collected from Inside the Building Footprint.

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

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

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APPENDIX A

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Parcel B8 Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Table 1 - Soil Gas Samples

Sample Location(s)	Number of Locations	Source Area/ Description	REC & Finding/ SWMU/AOC	Boring Depth Sample Depth	Analytical Parameters	RATIONALE
B8-001 through B8-008	8	Billet Building	SWMU 53	6 inches below bottom of concrete slab	VOCs	Investigate potential impacts related to historical activities within and around the Billet Building.
Total:	8					

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

Billet Building (69,356 ft²) = **4 Samples**

VOCs - Volatile Organic Compounds (Target Compound List)

Table 2 - Groundwater Samples

Sample Location(s)	Number of Locations	Source Area/ Description	REC & Finding/ SWMU/AOC	Boring Depth Sample Depth	Analytical Parameters	RATIONALE
B8-009, B8-010, B8-013, and B8-016 through B8-020	8	Parcel B8 Coverage		Total depth of 7 feet below water table.	VOC, SVOC, O&G, Dissolved Metals, Total Hexavalent Chromium, Total Cyanide	Investigate potential impacts related to historical activities, and characterize groundwater in areas not previously sampled.
HI02-PZM006, HI07-PZM005	2 (currently existing)	Parcel-wide groundwater		17 and 14 feet bgs, respectively.	VOC, SVOC, O&G, Total Metals	Investigate potential impacts related to historical activities, and characterize groundwater
Total:	10					

VOCs - Volatile Organic Compounds (Target Compound List)

SVOCs - Semivolatile Organic Compounds (Target Compound List)

Metals - Target Analyte List

O&G - Oil and Grease

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

Parcel B8 Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Table 3 - Soil Borings

Sample Location(s)	Number of Locations	Source Area/Description	REC & Finding/SWMU/AOC	Boring Depth Sample Depth	Analytical Parameters	RATIONALE
B8-009 through B8-020	12	Parcel B8 Coverage		Total depth of 20 feet bgs or groundwater. Soil samples from 0-1', 4-5', 9-10' bgs. May be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs (0-1')	Investigate potential impacts related to historical activities, and characterize soil in areas not previously sampled.
B8-021 through B8-024	4	Rail Area Investigation		Total depth of 20 feet bgs or groundwater. Soil samples from 0-1', 4-5', 9-10' bgs. May be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, O&G, PCBs (0-1')	Investigate potential impacts related to railroads and railcars.
B8-025 through B8-038	14	Billet Building (Interior)		0 to 0.5 feet bgs	VOC, SVOC, Metals, PCBs, DRO/GRO	Investigate potential impacts related to historical activities within the Billet Building.
B8-039 and B8-040	2	Billet Building (Interior)		0 to 0.5 feet bgs	VOC, SVOC, Metals, PCBs, DRO/GRO	Investigate stained floor area within the Billet Building.
*B8-041 through B8-054	11	Billet Building (Exterior)		0 to 0.5 feet bgs	Metals	Investigate potential impacts of lead-based paint or other unknown materials on outlying buildings.
Total:	43					

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

No Engineered Barrier (1-15 acres): 1 boring per acre with no less than 3 borings

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

No Engineered Barrier (7.6 acres) = **8 Samples**

Engineered Barrier - Parking/Buildings (5.8 acres)

Parking (4.2 acres) = **3 Samples**

Building Footprints (1.6 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

DRO/GRO - Diesel Range Organics/Gasoline Range Organics

bgs - Below Ground Surface

* Three samples (B8-048, B8-049, and B8-051) were not collected due to refusal.

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APPENDIX B

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Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/15/2015
 Weather : Sunny, 60s
 Northing (US ft) : 569,732.210
 Easting (US ft) : 1,456,540.640

Boring ID: B8-009-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-009-SB-1	(0-2') SLAG, medium grained to GRAVEL sized, large railroad tie, soft, loose, brown to gray, dry, no plasticity, no cohesion	SW/GW	Petroleum odor throughout
	80	160.4		(2-3') SLAG, medium grained to GRAVEL sized, soft, black, dry, low plasticity, no cohesion, strong petroleum smell	SW/GW	
		5.1		(3-6') SILTY SAND, slightly firm, beige with gray mottling, moist, no plasticity, cohesive		Petroleum odor throughout
		0.5				
5		0.1	B8-009-SB-5		SM	
		-		(6-8') SILTY CLAY, hard, grayish brown, very dry, low plasticity, cohesive	CL	
	60	5.1				Petroleum odor throughout
		7.0		(8-11') CLAY, soft, grayish brown, moist, medium plasticity, cohesive		
		7.1				
		5.2	B8-009-SB-10		CL	
		-		(11-14.7') CLAY, soft, gray to black, moist, high plasticity, cohesive		Wet at 14'.1 bgs
	40	0.1			CH	
		-				
		-				
15				(14.7-15') SAND, medium grained, soft, brownish gray, wet, no plasticity, no cohesion	SW	

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



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/15/2015
 Weather : Sunny, 60s
 Northing (US ft) : 569,657.780
 Easting (US ft) : 1,456,741.040

Boring ID: B8-010-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS	
0		-	B8-010-SB-1	(0-1.3') TOPSOIL, trace GRAVEL SLAG, soft, brown, dry, no plasticity, cohesive	ML		
80		0.9		(1.3-6') SLAG, gravel sized up to 1", with dark brown medium to coarse grained SAND, soft, loose, gray, dry, moist at 4.5' bgs, no plasticity, no cohesion	GW/SW	Wet at 9.66' bgs	
1.5		1.5					
5		1.1	B8-010-SB-5				
60		-		(6-11') SLAG, coarse grained SAND sized, loose, soft to hard, gray to reddish brown, dry, wet at 9.66' bgs, no plasticity, no cohesion	SW		
15.5		2.4					
10		34.4	B8-010-SB-10				
60		-		(11-12.5') SLAG, GRAVEL sized with coarse SAND, loose, hard, gray, wet, no plasticity, no cohesion	GW		
15		-					
		-		(12.5-15') SAND, medium grained, soft, loose, black to gray, very wet, no plasticity, no cohesion, petroleum odor	SW		Petroleum odor

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/15/2015
 Weather : Sunny, 60s
 Northing (US ft) : 569,830.634
 Easting (US ft) : 1,456,915.577

Boring ID: B8-011-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-011-SB-1	(0-3.5') SLAG, metallic GRAVEL with brown medium grained SAND, soft, loose, brown, dry, no plasticity, no cohesion	GW/SW	
0.5						
4.5	60					
1.5				(3.5-4') GRAVEL, metallic silver, with medium grained black SAND, soft, moist, no plasticity, no cohesion	GW	
0.8			B8-011-SB-5	(4-9.8') CINDER BALLAST, soft, black, moist, no plasticity, cohesive	GW	
5						
40		0.0				
10				(9.8-10') SILTY SAND with GRAVEL, hard to soft, brownish orange, wet, no plasticity, cohesive	SM	Wet at 9.7' bgs
				End of Boring		

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



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/15/2015
 Weather : Sunny, 60s
 Northing (US ft) : 569,776.572
 Easting (US ft) : 1,457,139.640

Boring ID: B8-012-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0			B8-012-SB-1	(0-0.5') TOPSOIL, hard, platy, dark brown, dry, no plasticity, cohesive	ML	3-4" diameter fragments of white/beige granular substance present Wet at 7.8' bgs
				(0.5-3.2') SLAG, medium grained SAND to GRAVEL sized, loose, light gray, dry, no plasticity, no cohesion	SW/GW	
					SW/GW	
60		1.3		(3.2-4') SLAG, fine grained SAND to GRAVEL sized, dark brown, dry, no plasticity, no cohesion	SW/GW	
		52.5			SW/GW	
		38.4	B8-012-SB-5	(4-6') SLAG, fine to medium grained, black, metallic sheen, with hard chunks of fine white to beige granular substance, loose, no plasticity	GW	
5				(6-7.7') SLAG, hard, off-white to light yellow, dry, no plasticity, cohesive	GW	
		35.4		(7.7-8.5') SLAG, hard, orange to tan, wet, no plasticity, cohesive	GW	
				(8.5-10') SLAG, coarse SAND sized, black, with yellow granular substance, loose, hard, wet, no plasticity, no cohesion	GW	
10						

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 Started : 10/14/2015
 Weather : Sunny, 50s
 Northing (US ft) : 569,957.710
 Easting (US ft) : 1,457,081.010

Boring ID: B8-013-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-013-SB-1	(0-6') SLAG, medium grained to GRAVEL sized up to 3", loose, soft, SAND lenses throughout, light gray to white, dry, no plasticity, no cohesion	SW/GW	
		0.1				
80		0.8				
		1.0				
5		1.9	B8-013-SB-5			
		-				
		-		(6-10') SLAG, coarse grained SAND to GRAVEL sized, loose, dark brown to black, dry then wet at 7.4', no plasticity, no cohesion	SW/GW	Petroleum odor
60		-				Wet at 7.4' bgs
		-				White/beige granular substance present at 10' bgs
10		-				

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 50s
 Northing (US ft) : 569,959.481
 Easting (US ft) : 1,457,359.264

Boring ID: B8-014-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-014-SB-1	(0-2') SLAG, coarse grained SAND sized, loose, soft, brownish gray, dry, no plasticity, no cohesion	SP	
		4.5				
	80	2.2		(2-3.8') SLAG, medium grained to GRAVEL sized, soft, brown, dry, lenses of red/beige sand throughout, no plasticity, cohesive	SW/GW	
		1.4				
		0.2	B8-014-SB-5	(3.8-6') SILTY SAND, with GRAVELLY SLAG, soft, brown, dry, no plasticity, cohesive	SM	White/beige granular substance at 4' bgs
5		-				
		-		(6-7.5') SILTY SAND, loose, soft, brown, dry, no plasticity, cohesive	SM	
	60	0.1		(7.5-10') CLAYEY SAND, with GRAVEL SLAG, soft, brown, wet, slight plasticity, cohesive		
		-		3" pieces of white/beige granular substance and brick present at 9' bgs	SC	3" pieces of brick and white/beige granular substance at 9' bgs
10		-				

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 60s
 Northing (US ft) : 570,167.808
 Easting (US ft) : 1,457,320.690

Boring ID: B8-015-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-015-SB-1	(0-1') TOPSOIL and GRAVEL SLAG up to 1", soft, loose, dark brown, dry, no plasticity, no cohesion	ML	White/beige granular substance
		-		(1-4.5') SLAG, SAND to GRAVEL sized, loose dark brown, tan in spots, dry, no plasticity, no cohesion	SW/GW	
80		3.7				
		7.0				
5		1.3	B8-015-SB-5	(4.5-6') SLAG, SAND to GRAVEL sized, loose brown and gray, tan in spots, dry, no plasticity, no cohesion	SW/GW	White/beige granular substance
		-				
		-		(6-10') SLAG, coarse grained to gravel sized, loose, tan, moist, no plasticity, no cohesion		
80		2.1			SW/GW	Wet at 8' bgs
		53.5				
		-				
10						

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 60s
 Northing (US ft) : 570,261.640
 Easting (US ft) : 1,457,914.690

Boring ID: B8-017-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-017-SB-1	(0-0.7') TOPSOIL, with SLAG GRAVEL up to 1", soft, loose, brown, dry, no plasticity, no cohesion	ML	
	80	0.5		(0.7-3.6') SLAG, SAND sized, loose, soft, dark brown, moist, no plasticity, no cohesion	SW	
		1.4				
		36.5				
5		3.9	B8-017-SB-5	(3.6-5.5') SILTY CLAY, soft, brown, medium plasticity, cohesive	CL	
		-		(5.5-10') CLAY, very firm, light gray and orange, mottled, dry, medium plasticity, cohesive		
	80	6.7				
		8.6			CL	
		1.4				
		2.0	B8-017-SB-10			
10		0.0		(10-15') CLAY, firm, light brown, dry, high plasticity, cohesive		
		0.0		Slightly soft and moist at 13' bgs		
	100	0.0			CH	
		0.0				
		0.0				
15		0.0		(15-19') CLAY, very soft, light gray, moist, high plasticity, cohesive		
		0.0			CH	
	100	-				
		-				
20		-		(19-20') SAND, poorly graded, soft, dark beige, wet, no plasticity, no cohesion	SW	Wet at 19' bgs

Total Borehole Depth: 20' bgs; terminated due to maximum allowable depth.



ARM Group Inc.
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Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/13/2015
 Weather : Sunny, 70s
 Northing (US ft) : 570,304.180
 Easting (US ft) : 1,458,366.070

Boring ID: B8-018-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-5.5') SAND, medium to coarse grained with GRAVEL SLAG (<15%), loose, soft, dark brown, dry, no plasticity, no cohesion		
		4.5	B8-018-SB-1			
		6.0				
100		2.5			SW	
		6.1				
		6.0	B8-018-SB-5			
5		-				
		-		(5.5-6.5') SLAG, GRAVEL sized with medium grained SAND, loose, soft, brown, dry, no plasticity, no cohesion	SW/GW	
		-		(6.5-6.8') SILT, with GRAVEL up to 2", firm, grayish brown, dry, no plasticity, cohesive	ML	
		0.0		(6.8-10') SLAG, black, coarse grained to GRAVEL sized, no cohesion; some SILT, cohesive; some BRICK fragments		Slight petroleum odor Wet at 7.4' bgs
		0.2			SW/GW	
10		-				

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/13/2015
 Weather : Sunny, 70s
 Northing (US ft) : 570,052.180
 Easting (US ft) : 1,458,026.660

Boring ID: B8-019-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		0.4	B8-019-SB-1	(0-1.5') SLAG, with fine to coarse SAND, soft, loose, light brown to gray, dry, no plasticity, no cohesion	SW	White/beige granular substance present
		8.8		(1.5-3') SAND, medium to coarse grained with GRAVEL, dark brown, dry, no plasticity, no cohesion	SW/GW	
	100	11.4		(3-3.3') SAND, medium grained, hard, off-white, dry; chunks, spots of pure white, no plasticity, no cohesion	SP	
		5.0		(3.3-5') SAND, medium to coarse grained, soft, loose, dark brown, dry, no plasticity, no cohesion	SW	
		2.0	B8-019-SB-5		SW	
5		-		(5-6.5') SAND, medium to coarse, and GRAVEL (<30%), soft, loose, dark brown, moist, no plasticity, no cohesion	SW	
		0.1		(6.5-9.5') SAND, medium to coarse, and GRAVEL (<30%), soft, loose, dark brown, wet, no plasticity, no cohesion	SW	Wet at 7.5' bgs
	10	0.0			SW	
		0.0			SW	
		0.0		(9.5-10') GRAVEL, chunks up to 1" with thin maroon coating, hard, loose, metallic silver, wet, no plasticity, no cohesion	GW	
10						

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



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/13/2015
 Weather : Sunny, 70s
 Northing (US ft) : 570,151.960
 Easting (US ft) : 1,458,265.970

Boring ID: B8-020-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-020-SB-1	(0-0.3') TOPSOIL with CLAY and SAND, soft, loose, black, no plasticity, cohesive	ML	Wet at 10' White/beige granular substance
4.8				(0.3-2.3') SAND, with GRAVEL up to 1", loose, soft, brown, no plasticity, no cohesion	SW	
100		3.9		(2.3-2.7') SAND, fine to coarse grained with GRAVEL up to 2", loose, light beige, no plasticity, no cohesion	SW	
		2.3		(2.7-5') SLAG, medium grained to GRAVEL sized up to 2", hard, dark brown, no plasticity, no cohesion	SW/GW	
5		12.2	B8-020-SB-5	(5-6.7') SLAG, GRAVEL sized up to 3", loose, black, no plasticity, no cohesion	GW	
		6.3		(6.7-7') CONCRETE, light beige, up to 3" fragments, loose, no plasticity, no cohesion	N/A	
60		0.4		(7-11') SAND, GRAVEL up to 4" with coarse SAND and chunks of WOOD, dark black, wet, no plasticity, cohesive, oily, petroleum odor	SW/GW	
		6.0				
10		8.1	B8-020-SB-10			
		-		(11-12.2') SAND, medium grained, black, wet, no plasticity, cohesive	SP	
60		-		(12.2-15') SAND, medium to coarse grained with GRAVEL SLAG, loose, black, wet, no plasticity, cohesive, oily sheen	SW	
15		-				

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



ARM Group Inc.
Earth Resource Engineers
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Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 50s
 Northing (US ft) : 570,186.950
 Easting (US ft) : 1,457,771.720

Boring ID: B8-021-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-021-SB-1	(0-1.5') SLAG, GRAVEL sized with fine grained TOPSOIL, and SLAG pieces up to 1.5", loose, hard, dark brown, dry, no plasticity, no cohesion	GM	
		0.7		(1.5-5.5') CINDER BALLAST, medium to coarse grained sized, with GRAVEL SLAG up to 1", loose, soft, black, moist, no plasticity, no cohesion		
80		24.7			SW-GW	
		26.9				
		23.7	B8-021-SB-5			
5		-		(5.5-10') CINDER BALLAST, coarse SAND sized with SLAG up to 3", loose, hard, black, dry, wet at 7' bgs, no plasticity, no cohesion		
		0.0		6" pocket of clay at 9' bgs		
80		-			SW-GW	Wet at 7'
		-				
		-				
10						

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



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 60s
 Northing (US ft) : 570,234.756
 Easting (US ft) : 1,457,606.064

Boring ID: B8-022-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-022-SB-1	(0-3.3') SLAG, SAND to GRAVEL sized, loose, dark brown, some white spots, dry, no plasticity, no cohesion		
		-			SW-GW	
70		0.9				
		107.6		(3.3-4') SLAG, brown, metallic with platy crystals and rusty colored SAND, dry, loose, soft, no plasticity, no cohesion	SW-GW	
		219.5	B8-022-SB-5	(4-5.5') SILTY SAND, very fine grained, soft, black, moist, no plasticity, cohesive	SM	
5		127.6		(5.5-6.7') SLAG, medium grained to GRAVEL sized up to 3", loose, dark black, moist, no plasticity, no cohesion	SW-GW	
		-		(6.7-7.2') SAND, medium to coarse grained, soft, brownish red, no plasticity, no cohesion	SW	
80		-		(7.2-8.7') SLAG, SAND to GRAVEL sized, soft, loose, brown, wet, no plasticity, no cohesion	SW-GW	Wet at 7.5'
		-		(8.7-9') SANDY SILT, firm, brown, wet, low plasticity, cohesive	ML	
		-		(9-10') SLAG, SAND to GRAVEL sized, soft, loose, brown, wet, no plasticity, cohesive	SW-GW	
10						

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



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 50s
 Northing (US ft) : 570,162.358
 Easting (US ft) : 1,457,468.898

Boring ID: B8-023-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-023-SB-1	(0-0.7') TOPSOIL, with SLAG GRAVEL, loose, soft, dark brown, dry, no plasticity, cohesive	ML	
		-		(0.7-6') SLAG, medium SAND to GRAVEL sized up to 3", loose, soft, hard, dark brown, gray to tan in spots, dry, no plasticity, no cohesion		
80	6.8	31.4			SW-GW	White/beige granular substance present
		5.2	B8-023-SB-5			
5		-				
		-		(6-10') SLAG, with coarse grained SAND, loose, black, wet, with semi-rounded gray to tan GRAVEL up to 3" in spots		
80		-			SW-GW	Wet at 6.5'
		-				
		-				White/beige granular substance near 10' bgs
10						

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



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 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 : 10/14/2015
 Weather : Sunny, 50s
 Northing (US ft) : 570,058.005
 Easting (US ft) : 1,457,191.127

Boring ID: B8-024-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B8-024-SB-1	(0-1') TOPSOIL, with SLAG GRAVEL, loose, dark brown, dry, no plasticity, cohesive	ML	
		0.2		(1-3.5') SLAG, coarse SAND to GRAVEL sized, loose, dark brown, dry, no plasticity, no cohesion	SW-GW	
	70	0.5				
		2.9		(3.5-4') SLAG, coarse SAND to GRAVEL sized, loose, light gray, dry, no plasticity, no cohesion	SW-GW	
		0.4	B8-024-SB-5	(4-6') SLAG, coarse SAND to GRAVEL sized, loose, brown to gray, dry, no plasticity, no cohesion	SW-GW	
5		-				Gravel coated by white/beige granular substance
		-		(6-10') GRAVEL, coarse to pebble sized, dark brown, wet, white/beige granular substance (>50%), loose, hard, no plasticity, no cohesion		
	60	-				
		-			GW	
10		-				Wet at 8' + bgs

Total Borehole Depth: 10' bgs; terminated due to water

APPENDIX C

FM-006-PZI	571251.68	1461510.81	16.03	13.12
FM-006-PZS	571246.35	1461514.90	15.79	13.08
FM-007-PZI	570961.80	1461784.57	14.77	11.38
FM-007-PZS	570960.51	1461781.24	13.40	11.37
FM-008-PZI	570624.99	1462721.88	14.72	11.51
FM-008-PZS	570624.50	1462707.78	14.20	11.35
FM-009-PZI	569968.89	1462819.29	17.98	14.91
FM-009-PZS	569980.51	1462820.63	17.66	14.97
FM-010-PZS	571826.42	1462218.46	9.87	6.81
FM-011-PZI	571620.40	1463013.18	12.39	9.30
FM-011-PZS	571622.76	1463015.69	12.00	9.28
FM-012-PZI	570732.06	1463341.74	14.64	11.56
FM-012-PZS	570734.98	1463340.86	13.97	11.42
FM-013-PZI	570271.36	1461726.85	14.90	11.71
FM-013-PZS	570268.11	1461727.93	14.26	11.76
FM-014-PZI	569541.35	1462083.52	13.97	11.61
FM-014-PZS	569536.31	1462083.86	15.00	11.63
FM-015-PZI	568440.69	1462479.04	16.89	13.22
FM-015-PZS	568438.52	1462482.27	15.80	13.64
FM-016-PZI	568827.21	1461007.05	15.26	11.95
FM-016-PZS	568829.88	1461007.58	14.69	11.95
FM-017-PZS	569903.20	1461148.43	13.44	11.66
FM02-PZM002	569903.68	1461163.61	11.37	11.32
HI02-PZM0006	569966.88	1457454.45	10.11	10.42
HIO7-PZM005	570206.14	1458428.32	12.66	9.64
SG06-PDM001	572030.13	1464372.48	12.04	12.42
SW-075 MWI	571472.28	1459393.74	13.09	10.00
SW-075-MWS	571466.89	1459390.63	12.53	10.27
SW-076-MWI	571138.83	1463610.23	16.45	13.93
SW-076-MWS	571145.33	1463609.59	16.36	13.79
SW-077-MWI	572224.85	1463610.87	12.34	9.97
SW-077-MWS	572228.44	1463614.02	12.14	9.80
SW-078 MWI	572112.30	1460690.77	13.47	11.00
SW-078 MWS	572115.04	1460695.61	13.44	11.13
SW-079-MWI	569137.43	1460072.19	14.19	11.91
SW-079 MWS	569137.88	1460079.67	14.21	11.85
SW-080-MWI	570166.41	1463672.56	13.85	12.01
SW-080-MWS	570161.03	1463670.60	14.07	11.96
SW-081 MWI	569928.64	1459928.00	12.49	10.02
SW-081 MWS	569933.18	1459925.44	12.53	10.03

SW-082-MWI	572474.23	1457891.67	15.07	12.63
SW-082-MWS	572476.95	1457898.99	15.02	12.64
TM07-PZM005	569431.15	1459618.10	13.67	10.86
TM07-PZM045	569436.02	1459630.08	13.77	10.90
TM09-PZM007	570392.29	1459871.53	11.28	8.44
TM09-PZM047	570392.35	1459878.19	11.19	8.81
TM10-PZM007	571262.48	1459888.20	11.21	8.25
TM11-PZM034	571172.04	1460045.01	12.81	10.61
TM12-PZM006	571646.49	1460941.70	12.26	9.64
TM13-PZM007	571540.52	1460920.92	12.24	9.28
TM13-PZM046	571536.04	1460925.99	11.70	9.29
TM14-PZM005	571771.23	1461793.30	10.18	10.75
TM15-PZM007	571623.86	1461800.43	10.53	7.52
TM15-PZM011	571632.21	1461796.67	10.02	7.31
TM15-PZM031	571627.81	1461814.80	11.04	7.54
TM16-PZM007	571856.99	1462548.95	12.29	9.78
TM17-PZM005	571752.86	1462658.08	11.19	8.39
TM18-PZM005	571885.60	1463340.92	10.64	8.54

B8-009-PZ	569732.21	1456540.64	13.99	11.76
B8-010-PZ	569657.78	1456741.04	12.73	10.52
B8-013-PZ	569957.71	1457081.01	13.56	9.80
B8-016-PZ	570091.95	1457637.26	13.99	10.54
B8-017-PZ	570261.64	1457914.69	12.00	9.81
B8-018-PZ	570304.18	1458366.07	11.79	9.21
B8-019-PZ	570052.18	1458026.66	13.60	9.97
B8-020-PZ	570151.96	1458265.97	12.50	9.88
RW-002-PZ	572319.86	1456268.80	12.62	9.56
RW-006-PZ	572066.50	1457083.26	14.28	10.87
RW-011-PZ	570954.75	1456139.80	15.15	11.34
RW-021-PZ	570224.93	1456882.30	13.88	10.25
RW-025-PZ	570048.83	1456512.07	15.28	11.61
RW-027-PZ	570825.85	1456912.97	14.77	11.17
RW-048-PZ	571686.96	1456530.55	14.28	11.56
RW-050-PZ	570853.87	1456545.21	15.47	11.40
RW-057-PZ	572112.71	1456434.62	13.14	10.17
RW-063-PZ	572433.51	1456825.40	14.19	11.07
RW-067-PZ	572214.11	1456680.41	13.37	10.68
RW-070-PZ	572063.81	1457082.09	14.14	10.84
RW22 50FT	571963.73	1456061.85	11.25	11.25
RW23 50FT	572002.55	1456257.38	11.46	11.46
RW24 50FT	572055.46	1456360.62	11.05	11.05

APPENDIX D

APPENDIX E



ARM Group Inc.

Earth Resource Engineers and Consultants

August 14, 2015

Mr. Chuck MacMahon
Sparrows Point Terminal, LLC
1600 Sparrows Point Blvd.
Sparrows Point, MD 21219

Re: Lead Based Paint Survey – Billet Building
Sparrows Point Terminal - Area B
Sparrows Point, Baltimore County
ARM Project 150300M-12-4

Dear Mr. MacMahon:

ARM Group Inc. (ARM) was engaged by Sparrows Point Terminal, LLC to conduct a Lead-Based Paint (LBP) survey of the Billet Building; which is located in Area B of the Sparrows Point Terminal property (the Site). During a site walk conducted by the MDE, paint chips were observed on the ground surrounding the Billet Building, prompting their request to assess whether or not building components contained lead paint above acceptable levels. The criteria to be considered LBP in Maryland is set at $>0.7 \text{ mg/cm}^2$. Exposure to lead concentrations above this threshold may pose risks to human and/or environmental health. The testing of the Billet Building was completed by ARM personnel on July 20, 2015, in accordance with the relevant Standard Operating Procedures (SOPs) in the site Quality Assurance Project Plan (QAPP).

Materials & Methods

ARM used a handheld X-Ray Fluorescence (XRF) detector to conduct the LBP inspection on all accessible components of the Billet Building. The XRF detector emits high-energy X-rays which bombard the sample, causing it to fluoresce and emit secondary X-rays which are detected. Secondary X-rays are characteristic of each specific element, allowing for quantification of the materials in the sample.

The XRF was operated according to SOP No. 023. Results were recorded in the field logbook for Area B of the Sparrows Point site. The field logbook was maintained according to the guidelines prescribed in SOP No. 010. Over the exterior and interior of the Billet Building, test locations were selected to be representative of the numerous paints and underlying materials of the structure. Areas with the thickest application of paint were selected for the test. In the event of a positive test result (i.e. $>0.7 \text{ mg/cm}^2$), a secondary measurement was taken from an adjacent location to confirm the presence of lead above the accepted threshold.

An inconclusive range from 0.6-1.1 mg/cm² existed for the XRF instrument, meaning samples within this measurement range could not confirm either the presence or absence of lead in the sample paint. For samples where the surface was not smooth (e.g. peeling paint), the instrument would give a reading of >0.7 mg/cm² rather than a specific value. When samples were measured within the inconclusive range, a scraping of paint chips was gathered and submitted for further laboratory analysis. For samples with very high lead concentrations, a measurement of >5.0 mg/cm² was reported from the XRF, indicating that the concentration was above the instrument's upper limit of quantification.

Testing generally proceeded from the southeast corner of the building in a clockwise direction around the exterior, with the outlying buildings included in this exterior analysis. The ancillary buildings were analyzed in the order encountered, and given identification names Outlying Building (OB) #1 through OB #8. An aerial view of the Billet Building that identifies the outlying buildings has been provided as **Figure 1** (attached). This exterior analysis was followed by entry into the building, and the survey continued in a similar clockwise loop through the interior of the building; beginning from the west bay doors. The interiors of the outlying buildings (where accessible) were the last areas to be tested.

Standardization of the instrument was performed before any measurements were recorded, and calibration checks were completed at the onset and close of testing. An additional check was performed during the middle of the investigation period (following the completion of exterior building analysis). These calibration checks did not indicate concerns with the XRF performance.

Summary of Results

The vast majority of components on the building were unpainted or tested negative for LBP, including the exterior walls of the main building and interior sheeting. These non-detections made up the bulk of the surface area of the structure. Several smaller areas were identified with positive detections throughout the Billet Building.

With the use of the XRF instrument, the following exterior components exceeded the acceptable level of LBP in the state of Maryland: yellow ladders, yellow bay door frames, and yellow transformer bollards. In addition, the following interior components also exceeded the acceptable level of LBP in the state of Maryland: yellow walkway railings, large support beams in the main room coated in grey (or overlying blue), blue walls in the outlying buildings, and miscellaneous doors and storage cabinets. These structures represent a small fraction of the overall painted surfaces of the structure. It is evident that characteristic paint colors, such as the yellow paint used on interior and exterior components and grey paint covering the support beams, were responsible for most of the LBP exceedances.

During the survey, eight surfaces either could not be properly read with the XRF instrument or were in the inconclusive range of 0.6-1.1 mg/cm². Seven of the eight surfaces contained detectable levels of lead and were presumed to exceed the acceptable level of LBP in Maryland. Laboratory results are included as **Attachment 1**.

Most structures containing LBP were observed to be in good or fair condition, with little evidence of flaking or peeling paint. Inside the facility, each of the components with lead exceedances (large wall columns, walkway railings, inner walls of outlying buildings, and miscellaneous doors and cabinets) showed very little wear. Concerning the outdoor exceedances, the transformer bollards and large ladders on the eastern and western walls appeared to be in good/fair condition, while two small ladders on the south face of the building showed more weathering and moderate peeling. The outer walls of OB #5 and OB #6 contained paint in poor condition, with severe flaking. Laboratory analysis indicated that the exterior paints of OB #5 contained some lead, while a combination of XRF and laboratory analysis did not identify lead associated with OB #6.

A summary of testing locations and results can be found in **Table 1**. The Billet Building and notable exceedances were photographed, and have been provided as **Attachment 2**.

If you have any questions or would like any further information, please do not hesitate to contact the undersigned at 410-290-7775.

Respectfully Submitted,
ARM Group Inc.



Eric S. Magdar
Senior Geologist

Enclosures: Figure 1 – Aerial View of Billet Building and OBs
Table 1 – Summary of Testing Locations and Results
Attachment 1 – Laboratory Report
Attachment 2 – Photo Log

FIGURES

S PIPE

Sparrows Point Industrial Complex

OB #2

OB #1

OB #5

OB #8

OB #4

OB #6

OB #7

OB #3

Billet Building
Lead-Based Paint Survey
Surveyed on 7/20/2015

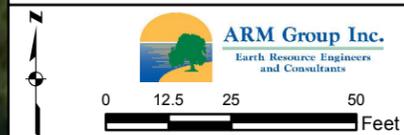
Figure
1

EnviroAnalytics Group

Sparrows Point Terminal

ARM Project 150300M

Baltimore County, MD



● Outlying Building (OB) Location

TABLES

Table 1
Lead Based Paint Survey
Sparrows Point - Billet Building

Sample Location	Component Description	Lead Concentration Reading (mg/cm²) Maryland Limit >0.7
SE building corner	corner sheeting	0.01 ± 0.02
E wall, 20 feet N	wall sheeting	0.00 ± 0.00
Outlying Building (OB #1)	no paint interior/exterior	-
E ladder to roof	yellow location #1	>5.0
E ladder to roof	yellow location #2 (confirmation)	>5.0
OB #2 S wall	wall sheeting	0.00 ± 0.00
OB #2 E wall	wall sheeting	0.00 ± 0.00
OB #2 N wall	wall sheeting	0.00 ± 0.00
E wall, 10 feet S	wall sheeting	0.00 ± 0.02
E former bay door	fiberglass	0.00 ± 0.00
E wall door	green	0.05 ± 0.03
E wall door	red	0.00 ± 0.00
NE building corner	corner sheeting	0.01 ± 0.03
N wall, 20 feet W	wall sheeting	0.00 ± 0.00
N wall, 180 feet W	wall sheeting	0.00 ± 0.01
N wall, 360 feet W	wall sheeting	0.00 ± 0.00
N wall, 20 feet E	wall sheeting	0.00 ± 0.00
NW building corner	corner sheeting	0.00 ± 0.00
W wall, 10 feet S	wall sheeting	0.00 ± 0.02
W bay door exterior	white	0.00 ± 0.00
W bay door frame	yellow	2.82 ± 0.29
W bay door frame	grey	2.17 ± 0.24
W bay door interior	green	0.00 ± 0.00
W ladder to roof	yellow location #1	>5.0
W ladder to roof	yellow location #2 (confirmation)	>5.0
W wall door exterior	grey	0.00 ± 0.00
W wall door interior	blue	0.00 ± 0.00
W wall door interior frame	yellow location #1	2.68 ± 0.32
W wall door interior frame	yellow location #2 (confirmation)	4.40 ± 0.47
W wall, 10 feet N	wall sheeting	0.00 ± 0.00
SW building corner	corner sheeting	0.00 ± 0.00
S wall, 20 feet E	wall sheeting	0.00 ± 0.02
S wall exterior plate (2"x16")	3rd plate E	0.00 ± 0.00
S wall, 90 feet E	wall sheeting	0.00 ± 0.00
OB #3 W wall	wall sheeting	0.18 ± 0.06
OB #3 W wall door	black	0.00 ± 0.00
OB #3 W wall door	grey	0.00 ± 0.00
OB #3 S wall, 45 feet E	wall sheeting	0.08 ± 0.04
OB #3 S wall window sill	black	0.31 ± 0.07

Table 1
Lead Based Paint Survey
Sparrows Point - Billet Building

Sample Location	Component Description	Lead Concentration Reading (mg/cm ²) Maryland Limit >0.7
OB #3 E wall, 10 feet N	wall sheeting	0.11 ± 0.05
OB #3 E wall window sill	green	0.41 ± 0.07
S wall ladder	yellow location #1	>5.0
S wall ladder	yellow location #2 (confirmation)	>5.0
S wall door	grey location #1	0.63 ± 0.06
S wall door	grey location #2 (confirmation)	0.78 ± 0.07
S wall transformer bollards	yellow location #1	>5.0
S wall transformer bollards	yellow location #2 (confirmation)	>5.0
S wall transformer	black, potentially active	-
S wall transformer	grey, active	-
OB #4 W wall, 3 feet N	wall sheeting	0.00 ± 0.00
OB #4 SW corner	corner sheeting	0.00 ± 0.00
OB #4 S wall door	grey	1.81 ± 0.17
OB #4 S wall, 30 feet E	wall sheeting	0.00 ± 0.00
OB #4 bay door frame	grey location #1	3.19 ± 0.26
OB #4 bay door frame	grey location #2 (confirmation)	3.47 ± 0.34
OB #4 S wall door #2	grey	0.44 ± 0.08
OB #4 E wall, 10 feet N	wall sheeting	0.00 ± 0.00
OB #4 SE corner	corner sheeting	0.00 ± 0.00
S wall, 20 feet W	wall sheeting	0.00 ± 0.00
S wall, 220 feet W	wall sheeting	0.00 ± 0.01
OB #5 W wall	wall sheeting	>0.7 ¹
OB #5 S wall	wall sheeting	>0.7 ¹
OB #5 E wall	wall sheeting	>0.7 ¹
OB #6 W wall	wall sheeting	>0.7 ²
OB #6 double doors	wall sheeting	0.00 ± 0.00
OB #6 E wall	wall sheeting	0.00 ± 0.00
OB #7 W wall	wall sheeting	0.00 ± 0.00
OB #7 double doors	wall sheeting	0.00 ± 0.00
OB #8 ladder	yellow location #1	3.88 ± 0.33
OB #8 ladder	yellow location #2 (confirmation)	2.29 ± 0.23
OB #8 W wall	wall sheeting	0.00 ± 0.00
OB #8 SW corner	corner sheeting	0.00 ± 0.00
OB #8 S wall, 10 feet E	wall sheeting	0.00 ± 0.00
OB #8 S wall, 10 feet W	wall sheeting	0.00 ± 0.00
OB #8 S wall bay door	dark grey, left	0.02 ± 0.02
OB #8 S wall bay door	dark grey, right	0.00 ± 0.00
OB #8 E wall	wall sheeting	0.00 ± 0.00
OB #8 E wall bay door	grey location #1	3.40 ± 0.26

Table 1
Lead Based Paint Survey
Sparrows Point - Billet Building

Sample Location	Component Description	Lead Concentration Reading (mg/cm²) Maryland Limit >0.7
OB #8 E wall bay door	grey location #2 (confirmation)	2.83 ± 0.31
S wall	acetylene storage area	0.00 ± 0.01
E wall door interior	green	0.28 ± 0.27
E wall door exterior	green	0.09 ± 0.04
E railing to 2nd level	yellow location #1	4.91 ± 0.28
E railing to 2nd level	yellow location #2 (confirmation)	4.69 ± 0.32
W wall cabinet	green location #1	2.95 ± 0.31
W wall cabinet	green location #2 (confirmation)	2.17 ± 0.30
W railing to 2nd level	yellow location #1	4.64 ± 0.42
W railing to 2nd level	yellow location #2 (confirmation)	>5.0
W wall booth	green	0.46 ± 0.08
W wall ladder	yellow	>5.0
S wall column #2 W	grey location #1	4.66 ± 0.40
S wall column #2 W	grey location #2 (confirmation)	2.99 ± 0.34
S wall column #6 W	grey location #1	>5.0
S wall column #6 W	grey location #2 (confirmation)	2.20 ± 0.27
S wall column #12 W	grey location #1	>5.0
S wall column #12 W	grey location #2 (confirmation)	4.92 ± 0.44
S wall column #18 W	grey location #1	>5.0
S wall column #18 W	grey location #2 (confirmation)	4.87 ± 0.47
Central bollards	yellow	0.00 ± 0.00
E wall column	grey location #1	3.53 ± 0.47
E wall column	grey location #2 (confirmation)	1.92 ± 0.24
Crane hook	yellow location #1	1.18 ± 0.17
Crane hook	yellow location #2 (confirmation)	1.94 ± 0.22
N wall column #4 E	blue (over grey) location #1	4.69 ± 0.46
N wall column #4 E	blue location #2 (confirmation)	3.36 ± 0.33
N wall column #10 E	grey location #1	2.77 ± 0.33
N wall column #10 E	grey location #2 (confirmation)	>5.0
N wall column #16 E	grey location #1	4.11 ± 0.43
N wall column #16 E	grey location #2 (confirmation)	>5.0
N wall column #20 E	grey location #1	>5.0
N wall column #20 E	grey location #2 (confirmation)	4.52 ± 0.45
N wall inner sheet,200 feet E	wall sheeting (unpainted)	0.00 ± 0.01
W wall column	grey location #1	2.55 ± 0.24
W wall column	grey location #2 (confirmation)	3.33 ± 0.28
OB #3 large room	W wall	>0.7 ¹
OB #3 large room	S wall	0.16 ± 0.17
OB #3 large room	E wall	0.30 ± 0.30

Table 1
 Lead Based Paint Survey
 Sparrows Point - Billet Building

Sample Location	Component Description	Lead Concentration Reading (mg/cm ²) Maryland Limit >0.7
OB #3 large room	N wall	>0.7 ¹
OB #3 N office	W wall	0.06 ± 0.05
OB #3 N office	S wall	0.10 ± 0.06
OB #3 N office	E wall location #1	1.99 ± 0.27
OB #3 N office	E wall location #2 (confirmation)	1.28 ± 0.19
OB #3 N office	N wall	0.22 ± 0.03
OB #3 S office	W wall	0.89 ¹ ± 0.13
OB #3 S office	S wall	1.32 ± 0.18
OB #3 S office	E wall	1.45 ± 0.22
OB #3 S office	N wall	1.34 ± 0.22
OB #3 N office	N door interior	1.30 ± 0.23
OB #3 small exit room	W wall	0.01 ± 0.02
OB #3 small exit room	E wall	0.02 ± 0.02
OB #3 Ladies Bathroom	S wall, blue	0.03 ± 0.03
OB #3 Ladies Bathroom	S wall, black	0.03 ± 0.03
OB #3 Ladies Bathroom	W wall, beige	0.12 ± 0.12
OB #3 Ladies Bathroom	W wall, blue	0.03 ± 0.04
OB #3 Ladies Bathroom	W wall, black	0.02 ± 0.03
OB #3 Ladies Bathroom	locker	0.02 ± 0.03
OB #3 Ladies Bathroom	stall wall	0.00 ± 0.00
OB #3 Mens Bathroom	entryway, beige	0.01 ± 0.02
OB #3 Mens Bathroom	entryway, brown	0.01 ± 0.03
OB #3 Mens Bathroom	electrical, restroom, radiation sign, authorized personnel sign	-
OB #4	dark, high voltage sign, asbestos	-
OB #5 door	green location #1	4.21 ± 0.54
OB #5 door	green location #2 (confirmation)	>5.0
OB #7	interior of double doors (ext.)	0.00 ± 0.00
OB #7 exterior door	green location #1	3.52 ± 0.30
OB #7 exterior door	green location #2 (confirmation)	2.13 ± 0.31
OB #8 access sliding door	grey location #1	4.99 ± 0.53
OB #8 access sliding door	grey location #2 (confirmation)	1.58 ± 0.23
OB #8 small door	green	0.01 ± 0.02
Exterior door	green	0.05 ± 0.03
N wall interior sheeting	blue sections	0.00 ± 0.00

Notes:

- = No sample tested or collected

N = North

E = East

> = Greater than

S = South

W = West

¹ = Tested positive for lead >0.010 % per laboratory analysis

² = Tested non-detect for lead >0.010 % per laboratory analysis

ATTACHMENT 1
Laboratory Report



EMSL Analytical, Inc.

10768 Baltimore Avenue, Beltsville, MD 20705

Phone/Fax: (301) 937-5700 / (301) 937-5701

<http://www.EMSL.com>

beltsvillelab@emsl.com

EMSL Order: 191508775

CustomerID: ARMG62

CustomerPO:

ProjectID:

Attn: **Nicholas Kurtz**
ARM Group, Inc.
9175 Guilford Rd.
Suite 310
Columbia, MD 21046

Phone: (410) 740-0840
Fax: (410) 740-0841
Received: 07/24/15 10:10 AM
Collected: 7/20/2015

Project: 150300M-12-3

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
1	191508775-0001	7/20/2015	7/27/2015	0.23 % wt
Site: SHED 3 INT. LARGE RM W. WALL				
2	191508775-0002	7/20/2015	7/27/2015	0.21 % wt
Site: SHED 3 INT. LARGE RM N. WALL				
3	191508775-0003	7/20/2015	7/27/2015	4.0 % wt
Site: SHED 3 INT. S OFFICE W. WALL				
4	191508775-0004	7/20/2015	7/27/2015	0.51 % wt
Site: SHED 5 EXT. E. WALL				
5	191508775-0005	7/20/2015	7/27/2015	0.29 % wt
Site: SHED 5 EXT. W. WALL				
6	191508775-0006	7/20/2015	7/27/2015	0.65 % wt
Site: SHED 5 EXT. S. WALL				
7	191508775-0007	7/20/2015	7/27/2015	<0.010 % wt
Site: SHED 6 EXT. W. WALL				
8	191508775-0008	7/20/2015	7/27/2015	3.1 % wt
Site: S.W ALL EXT. DOOR 2 FROM WEST				

Joe Centifonti, Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA-LAP, unless specifically indicated otherwise.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD A2LA Accredited Environmental Testing Cert #2845.02

Initial report from 07/27/2015 15:03:33



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Lead (Pb) Chain of Custody

EMSL Order ID (Lab Use Only):

191508775

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Company: <u>ARM Group</u>		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: <u>9175 Guilford Rd., Suite 310</u>		Third Party Billing requires written authorization from third party	
City: <u>Columbia</u>	State/Province: <u>MD</u>	Zip/Postal Code:	Country:
Report To (Name): <u>Nick Kurtz</u>		Telephone #:	
Email Address: <u>nkurtz@armgroup.net</u>		Fax #:	Purchase Order:
Project Name/Number: <u>ISO 300M-12-3</u>		Please Provide Results: <input type="checkbox"/> Fax <input type="checkbox"/> Email	
U.S. State Samples Taken: <u>Maryland</u>		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Price Guide

Matrix	Method	Instrument	Reporting Limit	Check
Chips <input type="checkbox"/> % by wt. <input checked="" type="checkbox"/> mg/cm ² <input type="checkbox"/> ppm	SW846-7000B	Flame Atomic Absorption	0.01%	<input checked="" type="checkbox"/>
Air	NIOSH 7082	Flame Atomic Absorption	4 µg/filter	<input type="checkbox"/>
	NIOSH 7105	Graphite Furnace AA	0.03 µg/filter	<input type="checkbox"/>
	NIOSH 7300 modified	ICP-AES/ICP-MS	0.5 µg/filter	<input type="checkbox"/>
Wipe* ASTM <input type="checkbox"/> non ASTM <input type="checkbox"/> *If no box is checked, non-ASTM Wipe is assumed	SW846-7000B	Flame Atomic Absorption	10 µg/wipe	<input type="checkbox"/>
	SW846-6010B or C	ICP-AES	1.0 µg/wipe	<input type="checkbox"/>
TCLP	SW846-1311/7000B/SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW846-1131/SW846-6010B or C	ICP-AES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW846-7000B	Flame Atomic Absorption	40 mg/kg (ppm)	<input type="checkbox"/>
	SW846-6010B or C	ICP-AES	2 mg/kg (ppm)	<input type="checkbox"/>
Wastewater Unpreserved <input type="checkbox"/> Preserved with HNO ₃ pH < 2 <input type="checkbox"/>	SM3111B/SW846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.7	ICP-AES	0.020 mg/L (ppm)	<input type="checkbox"/>
Drinking Water Unpreserved <input type="checkbox"/> Preserved with HNO ₃ pH < 2 <input type="checkbox"/>	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
TSP/SPM Filter	40 CFR Part 50 (2013)	ICP-MS	1.2 µg/filter	<input type="checkbox"/>
Other:				<input type="checkbox"/>

Name of Sampler: Nick Kurtz Signature of Sampler: [Signature]

Sample #	Location	Volume/Area	Date/Time Sampled
1	Shed 3 Interior-Large Room W. wall		7/20/15 1120
2	Shed 3 Interior-Large Room N. Wall		7/20/15 1128
3	Shed 3 Interior-S. Office W. Wall		7/20/15 1134
4	Shed 5 Exterior- E. Wall		7/20/15 1146
5	Shed 5 Exterior- W. wall		7/20/15 1148

Client Sample #'s: - Total # of Samples: 8

Relinquished (Client): [Signature] Date: 7/23/15 Time: 1545

Received (Lab): [Signature] Date: 7/24/15 Time: 10:10AM

Comments: Run stop positive for sample # 4, 5 and 6.

ATTACHMENT 2
Photo Log



Photo 1: View of east side of building, Outlying Building (OB) #1, and OB #2, facing northwest



Photo 2: View of east side of building and OB #2, facing west



Photo 3: View of west side of building, facing east



Photo 4: View of south side of building and OB #3, facing east



Photo 5: View of south side of building and OB #4, facing northeast



Photo 6: View of south side of building, OB #5, OB #6, OB #7, and OB #8, facing northeast



Photo 7: View of acetylene storage area along south wall, facing northeast



Photo 8: Close-up view of acetylene storage area, facing north



Photo 9: View of north side of building, facing southwest



Photo 10: View of main inner room from bay doors, facing east



Photo 11: View of west bay door frame, facing north



Photo 12: View of wall cabinet adjacent to west bay doors, facing west

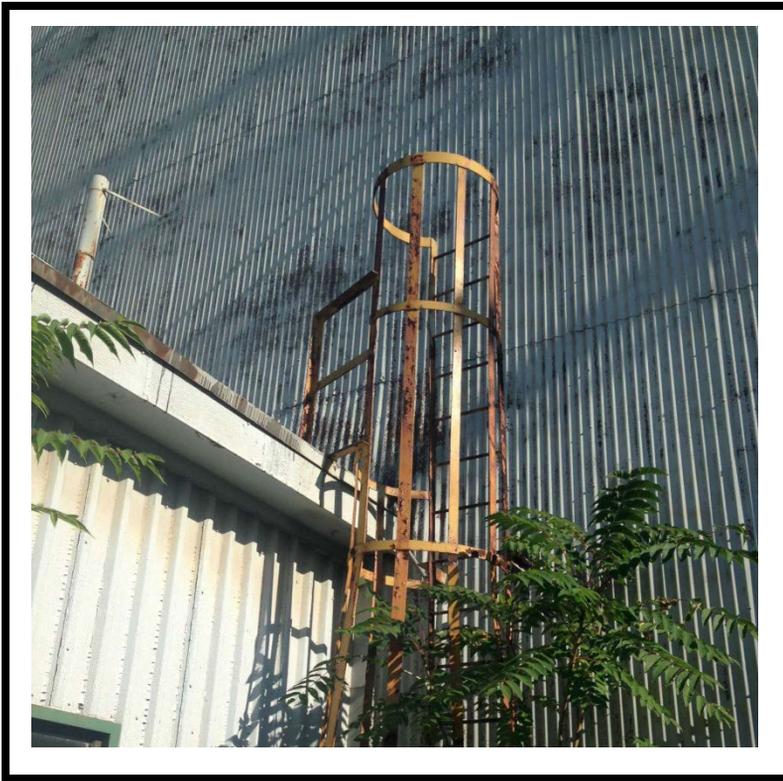


Photo 13: View of wall ladder on south wall, facing northwest



Photo 14: View of south wall door, facing north



Photo 15: View of active grey transformer on south wall, facing north



Photo 16: View of possibly active black transformer on south wall, facing east

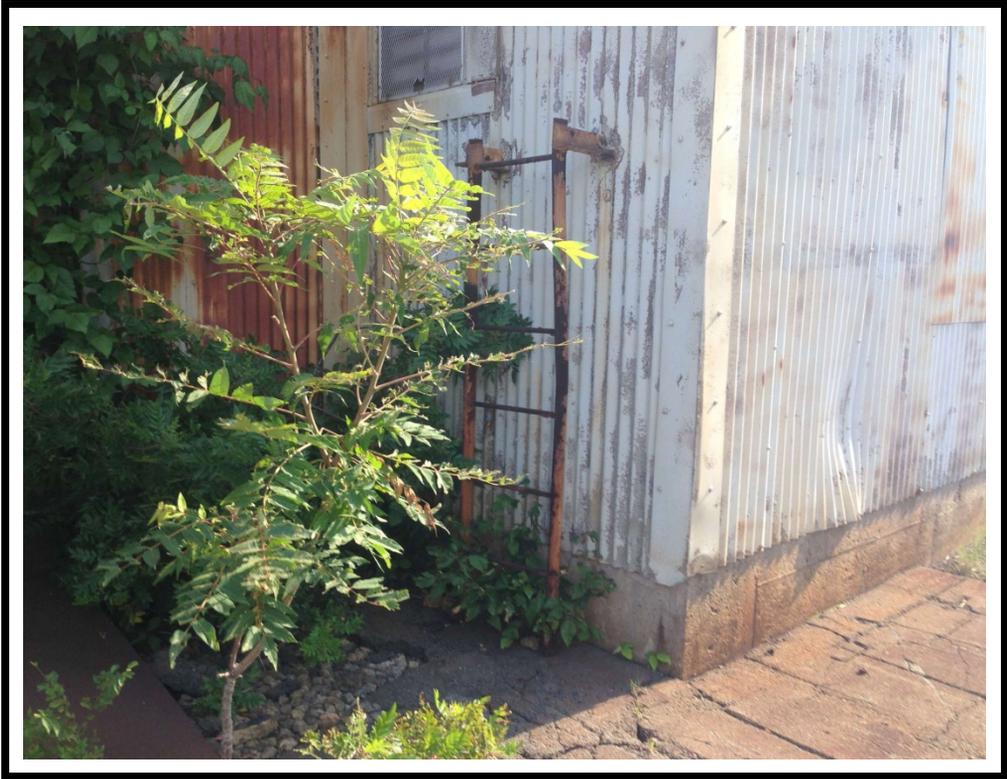


Photo 17: View of OB #8 ladder, facing northeast



Photo 18: View of OB #5 with peeling paint (inconclusive reading), facing north



Photo 19: View of OB #8 bay doors, facing west



Photo 20: View of support columns inside building on north wall, facing east



Photo 21: View of railing to second level on east wall, facing north

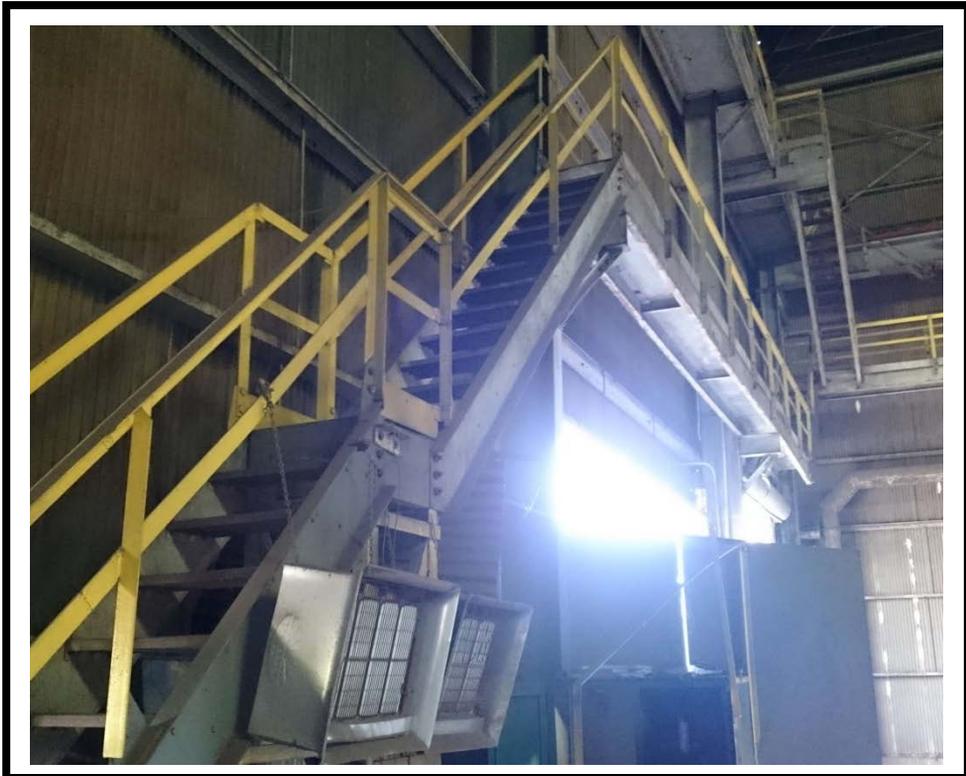


Photo 22: View of railing to second level on west wall, facing north



Photo 23: View of restricted access door within men's restroom, facing south

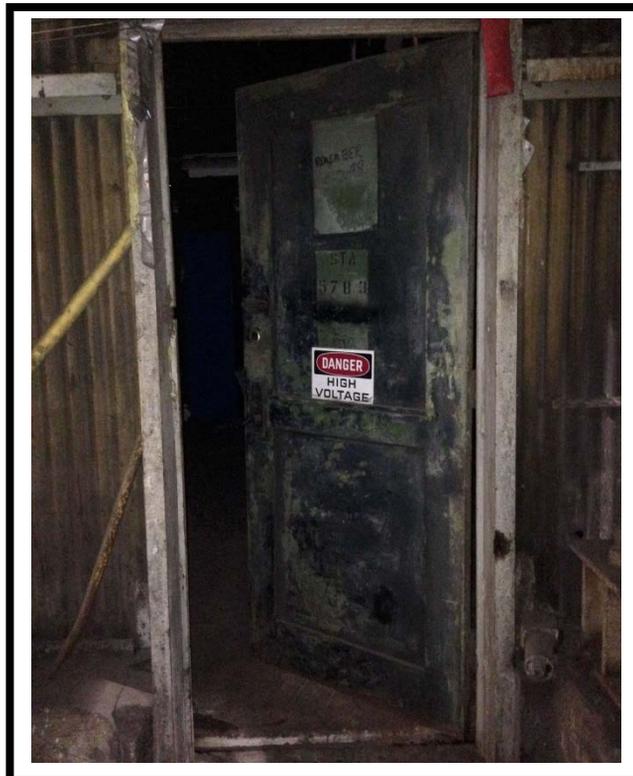


Photo 24: View of high voltage sign on OB #4 access door, facing south



Photo 25: View of west and south walls in OB #3, facing southwest



Photo 26: View of OB #7 door, facing southwest



Photo 27: View of OB #8 access sliding door, facing south

APPENDIX F



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-009-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

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

Drilling Company : Green Services, Inc
TOC Elevation : 13.99
0-Hr DTW : 12.81' TOC
24-Hr DTW : 10.84' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 11.76	DESCRIPTION	PZM Name: B8-009-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 22.75"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 569,764.59 Easting (US ft): 1,456,765.51
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	-8			

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-010-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

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

Drilling Company : Green Services, Inc
TOC Elevation : 12.73
0-Hr DTW : 12.05' TOC
24-Hr DTW : 12.08' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 10.52	DESCRIPTION	PZM Name: B8-010-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 24"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 569,654.97 Easting (US ft): 1,457,082.85
10				
1				
9				
2				
8				
3				
7				
4				
6				
5		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
5				
6				
4				
7				
3				
8				
2				
9				
1				
10		Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
11				
-1				
12				
-2				
13				
-3				
14				
-4				
15		Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
-5				
16				
-6				
17				
-7				
18		End of Boring		
-8				
19				
-9				
20				

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-013-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

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

Drilling Company : Green Services, Inc
TOC Elevation : 13.56
0-Hr DTW : 12.05' TOC
24-Hr DTW : 12.08' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.80	DESCRIPTION	PZM Name: B8-013-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 39"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 569,956.24 Easting (US ft): 1,457,082.85
1	9			
2	8			
3	7			
4	6	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"		
5	5			
6	4			
7	3			
8	2	Filter Pack: Top: 3' bgs Bottom: 15' bgs Grain Size: WG #1		
9	1			
10	0			
11	-1			
12	-2			
13	-3	Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
14	-4			
15	-5	End of Boring		

Total Depth: 15'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-016-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

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

Drilling Company : Green Services, Inc
TOC Elevation : 13.99
0-Hr DTW : 9.45' TOC
24-Hr DTW : 9.50' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 10.54	DESCRIPTION	PZM Name: B8-016-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 38.5"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft):570,098.53 Easting (US ft): 1,457,635.87
10				
1				
9				
2				
8		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"		
3				
7				
4				
6		Filter Pack: Top: 3' bgs Bottom: 15' bgs Grain Size: WG #1		
5				
5				
6				
4				
7				
3				
8				
2				
9				
1				
10				
0				
11				
-1				
12		Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
-2				
13				
-3				
14				
-4				
15		End of Boring		

Total Depth: 15'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-017-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

Date Installed : 10-14-15
Casing/Riser Type : PVC
Borehole Diameter : 2.25"
Drilling Method : 7822DT Geoprobe
Driller : Kevin Pumphrey

Drilling Company : Green Services, Inc
TOC Elevation : 12.00
0-Hr DTW : 7.26' TOC
24-Hr DTW : 5.80' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.81	DESCRIPTION	PZM Name: B8-017-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 22.5"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 570,259.48 Easting (US ft): 1,457,921.76
1	9			
2	8			
3	7			
4	6			
5	5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 20 feet Slot Size: 0.010"		
6	4			
7	3			
8	2			
9	1			
10	0	Filter Pack: Top: 2' bgs Bottom: 23' bgs Grain Size: WG #1		
11	-1			
12	-2			
13	-3			
14	-4			
15	-5			
16	-6	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
17	-7			
18	-8			
19	-9			
20	-10			
21	-11			
22	-12			
23	-13	End of Boring		
24	-14			
25	-15			

Total Depth: 23'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-018-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
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 : 11.79
0-Hr DTW : 7.24' TOC
24-Hr DTW : 7.34' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.21	DESCRIPTION	PZM Name: B8-018-PZ	REMARKS
0	9	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 25.5"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 570,307.82 Easting (US ft): 1,458,364.64
1	8			
2	7			
3	6			
4	5			
5	4	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
6	3			
7	2			
8	1			
9	0			
10	-1	Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
11	-2			
12	-3			
13	-4			
14	-5			
15	-6	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16	-7			
17	-8			
18	-9	End of Boring		
19	-10			
20				

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-019-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
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 : 13.60
0-Hr DTW : 5.72' bgs
24-Hr DTW : 5.70' bgs
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.97	DESCRIPTION	PZM Name: B8-019-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 41"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	<p>Northing (US ft): 570,051.05 Easting (US ft): 1,458,025.29</p>
1	9			
2	8			
3	7			
4	6			
5	5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
6	4			
7	3			
8	2			
9	1			
10	0	Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
11	-1			
12	-2			
13	-3			
14	-4			
15	-5	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16	-6			
17	-7			
18	-8	End of Boring		
19	-9			
20	-10			

Total Depth: 18'



**LOG OF TEMPORARY GROUNDWATER SAMPLE
COLLECTION POINT: B8-020-PZ**

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
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 : 12.50
0-Hr DTW : 8.48' TOC
24-Hr DTW : 7.86' TOC
ARM Representative : L. Perrin

Depth in Feet	Surf. Elev. 9.88	DESCRIPTION	PZM Name: B8-020-PZ	REMARKS
0		Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 41"	<p>Bentonite seal 1" PVC Riser Sand Pack 1" PVC Screen</p>	Northing (US ft): 570,160.21 Easting (US ft): 1,458,265.37 LNAPL - gold colored product encountered
1	9			
2	8			
3	7			
4	6			
5	5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"		
6	4			
7	3			
8	2			
9	1			
10	0	Filter Pack: Top: 2' bgs Bottom: 18' bgs Grain Size: WG #1		
11	-1			
12	-2			
13	-3			
14	-4			
15	-5	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/ granular 30-50 mesh		
16	-6			
17	-7			
18	-8	End of Boring		
19	-9			
20	-10			

Total Depth: 18'

CRRGP FİZİ "

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: B8-09-P2 Name(s) of Sampler(s): B. Geiman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-30-15

Air Temperature: 70 (°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: _____ / _____

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							
Volume of water purged							gal
pH							s.u.
Conductance							umhos/cm
Temperature							°C
DO							mg/l
Redox							mV
Turbidity							NTU
Other -							

Remarks: _____

Dry @ 1 gal → sample

@ adequate recovery

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: B8 010 PZ Name(s) of Sampler(s): B. Gehman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / _____

Air Temperature: 60 (°F/°C) windy

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: _____ / 12:15

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	12:01	12:06	12:11				
Volume of water purged	2.5	3.1	3.7				gal
pH	8.86	8.50	8.41				s.u.
Conductance	0.536	0.534	0.534				µmhos/cm ^{ms/cm}
Temperature	19.95	19.98	20.02				°C
DO	1.14	1.12	1.12				mg/l
Redox	-129.6	-138.0	-140.9				mV
Turbidity	0	0	0				NTU
Other - <u>spc</u>	592	590	590				µs/cm

Remarks: ms/msd
here

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: BB-013-P2 Name(s) of Sampler(s): B. Gohman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / _____

Air Temperature: _____ (°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: _____ / 11:15

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	11:04	11:09	11:14				
Volume of water purged	2.5	3.0	3.0				gal
pH	10.68	10.93	10.99				s.u.
Conductance	0.790	0.828	0.827				umhos/cm
Temperature	19.82	19.98	20.13				°C
DO	0.48	0.29	0.24				mg/l
Redox	-75.2	-109.1	-119.2				mV
Turbidity	10.90	3.20	1.91				NTU
Other - <u>SPC</u>	879	8715	912				<u>ug/cm</u>

Remarks: Duplicate here
check for VOCs, SVOCs, metals

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: B8-016-PZ Name(s) of Sampler(s): B. Gebman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-30-15
 Air Temperature: 50 (°F/°C)
 Weather Sunny Rain _____
 Conditions Overcast _____ Other _____
 Depth to Water: _____ ft
 Total Well Depth: 15 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: _____ / 9:05
 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	8:54	8:59	9:04				
Volume of water purged	2.0	2.6	3.2				gal
pH	11.10	11.10	11.10				s.u.
Conductance	0.638	0.642	0.642				umhos/cm ^{ms/cm}
Temperature	18.77	19.07	19.15				°C
DO	0.48	0.24	0.19				mg/l
Redox	-173.5	-191.7	-200.7				mV
Turbidity	2.93	1.97	0.98				NTU
Other - <u>SPC</u>	724	724	722				<u>ms/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

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number _____ of _____

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: B8-017-PZ Name(s) of Sampler(s): B Gebman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / 10-30-15

Air Temperature: _____ (°F/°C)

Weather Sunny _____ Rain _____

Conditions Overcast _____ Other _____

Depth to Water: 6.78 ft

Total Well Depth: 23 ft

Height of Water Column: 14.52 ft

Well 1-inch 4-inch _____

Diameter: 2-inch _____ 6-inch _____

Well Volume Calculation:
 _____ ft x _____ gal/ft = _____ gal 2.06
3 in

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: _____ / _____

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	9:58	10:03	10:08				
Volume of water purged	2.0	2.6	3.2				gal
pH	9.37	7.09	7.06				s.u.
Conductance	0.706	0.729	0.733				umhos/cm ms/cm
Temperature	17.29	17.28	17.30				°C
DO	1.04	0.65	0.55				mg/l
Redox	-92.0	-108.0	-113.2				mV
Turbidity	34	92.3	88.9				NTU
Other - spc	834	856	861				us/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

B8

GROUNDWATER SAMPLING RECORD SHEET

Sheet Number ___ of ___

Job Name: _____ Job Location: _____

Job Number: _____ Phase: _____ Task: _____

Sample Location: B8-018-PZ Name(s) of Sampler(s): B. Gehman

Description of Sample: Water X Soil _____ Other _____

PURGING

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

Air Temperature: 70s (°F/°C)

Weather Sunny X Rain _____

Conditions Overcast _____ Other _____

Depth to Water: 7.64 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 *1.27 = 3WV*

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: _____ / 13:50

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	<u>13:38</u>	<u>13:43</u>	<u>13:48</u>				
Volume of water purged	<u>1.7</u>	<u>2.3</u>	<u>2.9</u>				gal
pH	<u>10.80</u>	<u>10.95</u>	<u>11.01</u>				s.u.
Conductance	<u>0.733</u>	<u>0.749</u>	<u>0.752</u>				$\mu\text{mhos/cm}$ <i>ms/cm</i>
Temperature	<u>19.48</u>	<u>19.33</u>	<u>19.34</u>				°C
DO	<u>0.43</u>	<u>0.29</u>	<u>0.28</u>				mg/l
Redox	<u>-210.4</u>	<u>-223.2</u>	<u>-230.9</u>				mV
Turbidity	<u>3.20</u>	<u>2.58</u>	<u>2.22</u>				NTU
Other - <i>spc</i>	<u>823</u>	<u>841</u>	<u>844</u>				<i>ns/cm</i>

Remarks: Leachate-like odor

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: B8-019-P2 Name(s) of Sampler(s): B. Gehman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / _____

Air Temperature: _____ (°F/°C)

Weather Sunny _____ Rain _____

Conditions Overcast _____ Other _____

Depth to Water: 9.57 ft

Total Well Depth: 18 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: _____ / 8:10

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	7:58	8:03	8:08				
Volume of water purged	2.1	2.7	3.3				gal
pH	10.92	11.26	11.35				s.u.
Conductance	1.035	1.065	1.067				umhos/cm ^{ms/cm}
Temperature	17.86	17.99	17.96				°C
DO	0.28	0.22	0.18				mg/l
Redox	-178.2	-195.6	-202.8				mV
Turbidity	7.37	5.60	3.00				NTU
Other - <u>SPC</u>	1205	1230	1233				

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: B3-02-P2 Name(s) of Sampler(s): B. Gehman

Description of Sample: Water Soil _____ Other _____

PURGING

Time/Date Started: _____ / _____

Air Temperature: 70s (°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: _____ / 14:50

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	14:32	14:37	14:42				
Volume of water purged	2.2	2.8	3.4				gal
pH	10.94	10.99	10.99				s.u.
Conductance	0.645	0.645	0.645				µmhos/cm ^{ms/cm}
Temperature	19.58	19.32	19.32				°C
DO	0.24	0.11	0.10				mg/l
Redox	-195.3	-202.8	-203.8				mV
Turbidity	12.2	7.06	4.04				NTU
Other - <u>spc</u>	720	724	724				µs/cm

Remarks: Product in well
(Turbid)
Block with screen

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 1 of 1

Job Name: Area B, Parcel BB Job Location: SPT
 Job Number: 150300m Phase: II Task: GW Sampling
 Sample Location: H102-P2m006 Name(s) of Sampler(s): Lisa Ferraz
 Description of Sample: Water X Soil _____ Other _____

PURGING

Time/Date Started: 1435 / 11-16-15
 Air Temperature: 41 (°F/°C)
 Weather Sunny X Rain _____
 Conditions Overcast _____ Other _____
 Depth to Water: 7.54 ft
 Total Well Depth: _____ ft
 Height of Water Column: _____ ft
 Well Diameter: 1-inch _____ 4-inch _____
 2-inch X 6-inch _____
 Well Volume Calculation:
 _____ ft x _____ gal/ft = _____ gal
 Purge Volume = _____ x _____ = _____ gal
 Purging Method: Pump X Bailed _____ Other _____
 Gallons Removed: 1.00 gal
 Length of Time Purged 19 min
 Yield at End of Purging: 0.0526 gpm
 How was yield measured? _____
 Color Clear Odor petroleum smell
 Turbidity low
 Was well cavitating? Yes _____ No _____

SAMPLING

Time/Date Started: 1500 / 11-16-15
 Air Temperature: 41 (°F/°C)
 Weather Sunny X Rain _____
 Conditions Overcast _____ Other _____
 Depth to Water: _____ ft
 Sampling Method: Bailer _____
 Submersible Pump _____
 Peristaltic Pump X
 Other _____
 Number of Bottles Filled: 9
 Date Sent To Lab: 11-16-15
 Laboratory Name: PACE
 Parameters to Analyze: See CDC
 Chain of Custody Number: _____
 Other: _____

FIELD DATA

Time	1439	1444	1449	1454			
Volume of water purged	0.25	0.50	0.75	1.00			gal
pH ± 0.1	15.77	15.46	15.39	15.34			s.u.
Conductance	0.752	0.742	0.737	0.729			ms/cm
Temperature 3%	19.02	18.97	18.86	18.80			°C
DO 70.5, 10%	0.33	0.21	0.17	0.14			mg/l
Redox ± 10 mV	-282.6	-281.0	-279.4	-276.7			mV
Turbidity 75, 10%	9.47	8.47	4.71	6.47			NTU
SpC 3%	848	840	835	827			us/cm

Remarks: _____
Well had oily odor

permanent well

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

Low Flow Sampling



ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: Area B, Parcel 88

Project Number: 150300m

Well Number: 150300m

Date: 11-16-15

Well Diameter (in): 2

One Well Volume (gal):

Total Depth (ft):

QED Controller Settings:

Depth to Water (ft) 9.57

Flow Rate (mL/min) (gal/min) 0.0234

Height of Water Column (ft):

Length of time Purged (min) 42

WELL PURGING RECORD

Start
1313

Time	Volume Purged (gallons)	Temp (°C)	pH (s.u.)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1315	0.25	19.67	15.07	1.304	0.79	-244.2	3.02	clear
1320	0.50	19.97	15.50	1.346	0.63	-237.0	4.89	no odor
1325	0.75	19.94	15.75	1.356	0.50	-239.8	7.13	
1330	1.00	20.02	15.91	1.357	0.47	-248.6	4.53	
1335	1.25	20.29	16.04	1.361	0.36	-253.0	2.24	
1340	1.50	20.40	16.18	1.367	0.28	-259.2	1.11	
1345	1.75	20.51	16.31	1.373	0.24	-269.7	1.26	
1350	2.00	20.54	16.34	1.375	0.23	-273.4	1.95	
1355	2.40	20.67	16.40	1.381	0.23	-276.1	1.78	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter	Container	Perservative	Y/N
H107-P2M005	1400	TCL-VOCs	3 - 40 mL VOA	HCL	Y
		TCL-SVOCs	2 - 1 L Amber	none	Y
		TAL-Metals	1 - 250 mL Plastic	HNO₃ none	Y
		Oil and Grease	1 - 1 L Amber	HCL	Y
		TPH-DRO	1 - 1 L Amber	none	N
		TPH-GRO	3 - 40 mL VOA	HCL	N
		Hexavalent Chromium	1 - 250 mL Plastic	none	Y
		Cyanide	1 - 250 mL Plastic	NaOH none	Y
Matrix Spike present?	NO				
Duplicate assessed?	NO				

Sampled By: Lisa Perrin Comments: permanent well

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

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel B8 Date 10/29/15
 Weather Sunny 60s to 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	1.413	61 F	1.495 [‡]	67 F
Specific Conductance Standard #2	NA	NA	NA	NA
pH (7)	7.00	61 F	7.29	67 F
pH (4)	4.00	61 F	3.97	67 F
pH(10)	10.00	61 F	9.82	67 F
ORP Zobel Solution	240.0	61 F	240.0	67 F
Dissolved Oxygen 100% water saturated air mg/L	100.0%	61 F	29.67 [‡]	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	67 F
Turbidity #1 (10 NTU)	calibrated before each sample	NA	NA	NA
Turbidity #2 (0.0 NTU)	calibrated before each sample	NA	NA	NA
Turbidity Standard #3	NA	NA	NA	NA

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

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel B8 Date 10/30/15
 Weather Sunny 50s to 60s
 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	1.413	46 °F (est.)	NA [‡]	NA
Specific Conductance Standard #2	NA	NA	NA [‡]	NA
pH (7)	7.00	46 °F (est.)	NA [‡]	NA
pH (4)	4.00	46 °F (est.)	NA [‡]	NA
pH(10)	10.00	46 °F (est.)	NA [‡]	NA
ORP Zobel Solution	240.0	46 °F (est.)	NA [‡]	NA
Dissolved Oxygen 100% water saturated air mg/L	29.96 [‡]	46 °F (est.)	NA [‡]	NA
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	NA	46 °F (est.)	NA [‡]	NA
Barometric Pressure mm Hg	760.99	NA	NA [‡]	NA
Turbidity #1 (10 NTU)	calibrated before each sample	NA	NA [‡]	NA
Turbidity #2 (0.0 NTU)	calibrated before each sample	NA	NA [‡]	NA
Turbidity Standard #3	NA	NA	NA [‡]	NA

[‡] DO is outside of the morning calibration acceptance criteria. A post-calibration check was not performed on this date. Values displayed on field purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel B8 Date 11/16/15
 Weather Sunny 60s
 Calibrated by N. Kurtz & L. Perrin Instrument YSI Meter
 Serial Number NA

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1	1.451	50 F (est.)	1.363 [‡]	60 F (est.)
Specific Conductance Standard #2	NA	NA	NA	NA
pH (7)	7.01	50 F (est.)	6.89	60 F (est.)
pH (4)	3.99	50 F (est.)	2.89 [‡]	60 F (est.)
pH(10)	10.03	50 F (est.)	10.62	60 F (est.)
ORP Zobel Solution	240.0	50 F (est.)	216.2 [‡]	60 F (est.)
Dissolved Oxygen 100% water saturated air mg/L	100.3%	50 F (est.)	91.1% [‡]	60 F (est.)
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	NA	50 F (est.)	NA	60 F (est.)
Barometric Pressure mm Hg	NA	NA	NA	NA
Turbidity #1 (10 NTU)	NA	NA	NA	NA
Turbidity #2 (0.0 NTU)	NA	NA	NA	NA
Turbidity Standard #3	NA	NA	NA	NA

[‡]ORP, DO and pH = 4 are outside of the post-calibration acceptance criteria. Values displayed on field purge logs may be inaccurate.

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APPENDIX H

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Parcel B8 - IDW Drum Log

Drum ID	Designation	Activity/Phase	Parcel	Contents	Open Date
23-Soil-10/13/15-B8	Non-haz.	Parcel B8	Parcel B8	Soil	10/13/2015
27-N. Acid-10/13/15-B	Non-haz.	Area B	Area B	Nitric Acid	10/13/2015
28-Hexane-10/13/15-B	Hazardous	Area B	Area B	Hexane	10/13/2015
302-Soil-12/16/15-B8/A8	Non-haz.	LNAPL Delineation	Parcel B8/A8	Soil	12/16/2012
303-Liners-12/16/15-B8/A8	Non-haz.	LNAPL Delineation	Parcel B8/A8	Liner	12/16/2015
304-Decon water-12/16/15-B8/A8	Non-haz.	LNAPL Delineation	Parcel B8/A8	Decon water	12/16/2015

APPENDIX I



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 13:00
 Weather : Cloudy, 50F
 Northing (US ft) : 570332.8015
 Easting (US ft) : 1458364.737

Boring ID: B8-018A-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		0.5	(0-7.5') Silty SAND, coarse grained, brown grading to grayish black with depth	SM	
		2.4			
92		1.0			
		0.7			
5		0.7			
		1.0	(7.5-8.5') SILTY CLAY, firm	CL	
		0.5			
92		0.1			
		-	(8.5-10') SAND and GRAVEL, gray, wet; with BRICK/WOOD and black SAND and GRAVEL	SP-GP	Slight Petroleum Odor
10		-	(10-13') SAND and GRAVEL, gray and black, saturated	SP-GP	Strong Petroleum Odor Sheen present 10-11' bgs
		-			
		-		SP-GP	Heavy sheen 12-13' bgs
		-	End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 12:22
 Weather : Cloudy, 50F
 Northing (US ft) : 570307.8216
 Easting (US ft) : 1458389.640

Boring ID: B8-018B-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		0.0	(0-5') SILTY SAND, some GRAVEL, coarse grained, loose, dark brown	SM	
		0.0			
80		0.2			
		0.3			
5		1.7	(5-10') SILTY SAND, coarse grained, with SLAG, black and brown, wet at 8.5', saturated 9.5-10'	SM	
		-			
40		-			
		0.1			
10		0.1	(10-13') SAND and GRAVEL, black, saturated	SP-GP	Strong Petroleum Odor
		-			
33		-			
		-			
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 12:00
 Weather : Cloudy, 50F
 Northing (US ft) : 570282.8216
 Easting (US ft) : 1458364.640

Boring ID: B8-018C-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-8') SILTY SAND, trace CLAY with depth, light to dark brown		
	80	0.0 1.4 1.3 1.1		SM	
5		-	(8-10') SAND and GRAVEL, black, trace olive green and brown CLAY from 8.5-9.5' bgs, saturated at 8' bgs		Mothball odor
	40	-		SP-GP	
10		-	(10-13') SAND and GRAVEL, black, with bluish-green colored SLAG with depth, black, saturated		Strong Petroleum Odor
	66	-		SP-GP	
		-	End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 13:25
 Weather : Cloudy, 50F
 Northing (US ft) : 570307.8216
 Easting (US ft) : 1458339.640

Boring ID: B8-018D-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-5') SAND, trace SILT and SLAG, loose, dark brown		
		0.3			
90		4.4		SP	
		1.0			
		1.4			
5		-	(5-10') SAND and GRAVEL with BRICK, gray; grading to GRAVEL, black, moist, grading to SAND and GRAVEL, black, saturated at 8' bgs		Mothball odor
		-			
60		0.8		SP-GP	
		-			
		-			
10		-	(10-13') SAND, black and gray, saturated		Strong Petroleum Odor
		-		SP	
52		-			
		-	(12-13') SLAG, firm, bluish-green		
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 8:55
 Weather : Cloudy, 50F
 Northing (US ft) : 570176.6016
 Easting (US ft) : 1458263.993

Boring ID: B8-020A-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-5') TOPSOIL and SLAG with SAND and GRAVEL, coarse grained, brown		
	80	0.2			
		1.7		SP-GP	
		3.9			
		3.2			
5		-	(5-8.5') SILT and SAND, coarse grained sand, brown		
		-		SM	
	53	0.7			
		1.2	(8.5-9.5') SAND, coarse grained, with trace SILT, black, wet at 9' bgs	SP	Strong petroleum odor
		1.9	(9.5-10') GRAVEL and SAND, gray, saturated	GP-SP	
10		-	(10-12.5') SAND, coarse grained with BRICK, black, saturated with sheen		Strong petroleum odor
	66	-		SW	
		-	(12.5-13') CLAY, soft, black and green, medium plasticity, cohesive	CL	
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 8:15
 Weather : Cloudy, 50F
 Northing (US ft) : 570154.2016
 Easting (US ft) : 1458284.221

Boring ID: B8-020B-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-7') TOPSOIL and SLAG, trace SAND and GRAVEL		
		0.0			
80		0.1			
		0.8		ML/GW	
		1.7			
5		-			
		2.1			
80		2.4	(7-10') SILTY SAND, with WOOD, trace small GRAVEL, firm, black, wet at 7' bgs	SM	Strong petroleum odor 8-14' bgs
		2.5			
10		-			
		-	(10-14') SAND with small GRAVEL, black, saturated; SILTY SAND, soft, at bottom of boring		Sheen present in water
		-		SP-GW	
		-			
		-			
		-	End of Boring		
15					

Total Borehole Depth: 14' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 10:00
 Weather : Cloudy, 50F
 Northing (US ft) : 570126.9997
 Easting (US ft) : 1458268.543

Boring ID: B8-020C-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-8') SANDY SILT, soft, brown		
	76	0.0			
		0.3			
		0.3			
		1.4		SW	
5		-			
		1.6			
	80	2.0			
		4.7	(8-10') SAND and GRAVEL to SANDY SILT, black, wet at 8' bgs	SP-GP SW	Strong petroleum odor 8-13' bgs
10		13.1			
		-	(10-13') SAND and GRAVEL, black, saturated, WOOD chunks at bottom of boring	SP-GP	
		-			
100		-			
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 9:30
 Weather : Cloudy, 50F
 Northing (US ft) : 570146.2213
 Easting (US ft) : 1458241.862

Boring ID: B8-020D-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	0-8' TOPSOIL and SAND, coarse grained, with SILT, soft, light brown to brown		
60	2.2	0.7		SW-ML	
5		0.9			
60	1.6	-			
		1.6	8-9' SANDY SILT, firm, gray and brown, no plasticity, no cohesion	SP	
10	2.0		9-10' SAND with GRAVEL, black, wet at 9' bgs	SP-GP	Faint petroleum odor
		-	10-13' SAND and GRAVEL, chunks of WOOD with depth, black		Strong petroleum odor
50	-			SP-GP	FREE PRODUCT OBSERVED IN PVC SLEEVE
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/16/15 10:55
 Weather : Cloudy, 50F
 Northing (US ft) : 570143.7722
 Easting (US ft) : 1458226.826

Boring ID: B8-020E-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-4') SANDY SILT, brown	SP/ML	
60	0.7	1.7			
5	0.9		(4-5') SLAG, dark brown to black, moist	GW	
60	1.7		(5-9') SANDY SILT, dark brown, moist	SM	
	2.3				
10	1.2		(9-9.5') SAND and GRAVEL, black, wet at 9' bgs	SP-GP	Faint petroleum odor
			(9.5-10') SLAG, black	GW	
			(10-13') SAND, coarse grained, with GRAVEL, black, saturated	SP-GP	Strong petroleum odor
66					Sheen/trace LNAPL observed
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/18/15 10:30
 Weather : Cloudy, 40s F
 Northing (US ft) : 570167.9085
 Easting (US ft) : 1458241.436

Boring ID: B8-020F-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-6') SAND and GRAVEL with SLAG, trace SAND, coarse grained, brown; black, moist		
	80	1.3			
		1.6		SP-GW	
		1.3			
5		1.3			
		-			
		-	(6-7') FILL	---	
	80	4.5	(7-10') SAND and GRAVEL with SLAG, pitch black, moist, saturated 9.5-10' bgs		
		1.1		SP-GW	
10		3.1			Strong petroleum odor 9.5-13' bgs
		-	(10-13') GRAVEL and SAND, coarse grained, pitch black, saturated		
		-		GP-SP	Heavy sheen, streaks of LNAPL
	100	-			
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/18/15 14:00
 Weather : Cloudy, 40s F
 Northing (US ft) : 570121.4045
 Easting (US ft) : 1458243.956

Boring ID: B8-020G-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-5') SAND and GRAVEL with SLAG, trace chunks of WOOD at 5' bgs, black		
	83	1.9			
		7.4		SP-GP	
		7.6			
5		2.2			
		-	(5-7') CLAY, firm, olive green	CL	
	70	0.7	(7-9.5') SAND, coarse grained and GRAVEL, dark brown, saturated at 8' bgs	SW-GP	streaks of LNAPL 7-9.5' bgs
		-			
10		-	(9.5-11') SLAG, bluish-green	GM	10-11' LNAPL in core - dark gold colored oil
		-			
	100	-	(11-13') SAND and SLAG, coarse grained, gray to black to dark brown, wet	SW	Strong petroleum odor 9.5-13' bgs
		-			
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



ARM Group Inc.
Earth Resource Engineers
and Consultants

Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/18/15 14:45
 Weather : Cloudy, 40s F
 Northing (US ft) : 570096.5795
 Easting (US ft) : 1458245.956

Boring ID: B8-020H-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-5') SAND and SLAG, coarse grained, brown to black		
	93	0.0			
		0.9		SP-AR	
		1.1			
5		0.0	(5-10') SAND and GRAVEL, trace CLAY, black, wet at 7' bgs		
	80	-			
		0.1		SP-GP	
		0.1			
10		-	(10-13') SLAG, black, wet		
	100	-			
		-		GW	
		-			
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



Client : EnviroAnalytics Group
 ARM Project No. : 150300M-2-3
 Project Description : Sparrows Point - Parcel B8
 Site Location : Sparrows Point, MD
 ARM Representative : N. Kurtz
 Checked by : B. Mader, P.G., CPSS
 Drilling Company : Green Services, Inc
 Driller : Kevin Pumphrey
 Drilling Equipment : Geoprobe 7822DT

Date Started : 12/18/15 15:20
 Weather : Sunny, 40s F
 Northing (US ft) : 570192.7801
 Easting (US ft) : 1458239.968

Boring ID: B8-020I-PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	DESCRIPTION	USCS	REMARKS
0		-	(0-5') SAND, coarse grained, and GRAVEL with black SLAG with depth, dark brown		
	80	0.0		SW-GP	
		1.3			
		1.9			
5		-	(5-9.5') SLAG with BRICK and FILL, black		
	50	1.2		GP/GW	
		-			
		-			
10		-	(9.5-11') GRAVEL with SAND, coarse grained, dark brown, saturated at 9.5'		
		-		GP-SW	slight sheen from 10-11'
		-			
	100	-	(11-13') CLAYEY SAND, coarse grained, trace GRAVEL, bluish-green		
		-		SC	
			End of Boring		
15					

Total Borehole Depth: 13' bgs. Target depth achieved.



TYPICAL LOG OF TEMPORARY NAPL DELINEATION PIEZOMETER

Installed in the Vicinity of B8-018-PZ

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

Depth in Feet	Surf. Elev.	DESCRIPTION	
0		Riser Type: PVC Riser Diameter: 1" Riser Stickup: 26" Riser Amount: 3'	<p>Bentonite seal</p> <p>1" PVC Riser</p> <p>Sand Pack</p> <p>1" PVC Screen</p>
1			
2			
3		Screen Type: PVC Screen Diameter: 1" Screen Amount: 10' Slot Size: 0.010"	
4			
5			
6		Sand Pack: Top: 2' bgs Bottom: 13' bgs Grain Size: WG #2	
7			
8			
9			
10		Bentonite Seal: Top: 0' (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular (30-50 mesh)	
11			
12			
13			

Total Depth: 13'
Borehole Diameter: 2.25"
Driller: Green Services, Inc.
Drilling Method: 7822DT Geoprobe



TYPICAL LOG OF TEMPORARY NAPL DELINEATION PIEZOMETER

Installed in the Vicinity of B8-020-PZ

Client: EnviroAnalytics Group
Site: Sparrows Point - Area B Parcel B8
Sparrows Point, MD
ARM Project No.: 150300M-2-3
Page 1 of 1

Depth in Feet	Surf. Elev.	DESCRIPTION	
0		Riser Type: PVC Riser Diameter: 1" Riser Stickup: 24" Riser Amount: 3'	<p>Bentonite seal</p> <p>1" PVC Riser</p> <p>Sand Pack</p> <p>1" PVC Screen</p>
1			
2			
3		Screen Type: PVC Screen Diameter: 1" Screen Amount: 10' Slot Size: 0.010"	
4			
5			
6		Sand Pack: Top: 2' bgs Bottom: 13' bgs Grain Size: WG #2	
7			
8			
9			
10		Bentonite Seal: Top: 0' (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular (30-50 mesh)	
11			
12			
13			

Total Depth: 13'
Borehole Diameter: 2.25"
Driller: Green Services, Inc.
Drilling Method: 7822DT Geoprobe

APPENDIX J

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	10/15/2015				10/29/2015				11/25/2015				12/16/2015				12/18/2015			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	trace	7.34	trace	NA	-	7.64	-	NA	-	8.13	-	NA	NM	NM	NM	NA	trace	7.67	trace	NA
B8-018A-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.36	-	NA	-	8.27	-	NA
B8-018B-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	7.60	-	NA	-	7.51	-	NA
B8-018C-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	7.83	-	NA	-	7.79	-	NA
B8-018D-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	7.61	-	NA	-	7.51	-	NA
B8-020-PZ	7.90	8.48	0.58	NA	8.21	8.75	0.54	NA	8.77	9.42	0.65	NA	NM	NM	NM	NA	8.30	8.67	0.37	NA
B8-020A-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.31	-	NA	-	8.24	-	NA
B8-020B-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.27	-	NA	-	8.18	-	NA
B8-020C-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	7.79	-	NA	-	7.69	-	NA
B8-020D-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.18	8.19	0.01	NA	8.05	8.88	0.83	NA
B8-020E-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.18	-	NA	8.07	8.37	0.30	NA
B8-020F-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	trace	8.18	trace	NA
B8-020G-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	trace	7.85	trace	NA
B8-020H-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.06	-	NA
B8-020I-PZ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	8.65	-	NA

NA = Not Applicable
 NM = Not Measured
RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	12/21/2015				12/22/2015				12/30/2015				1/7/2016				1/15/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	NM	NM	NM	NA	-	7.74	-	NA	-	6.65	-	NA	-	7.13	-	NA	-	7.25	-	NA
B8-018A-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	7.27	-	NA	-	7.75	-	NA	-	7.84	-	NA
B8-018B-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	6.52	-	NA	-	6.97	-	NA	-	7.07	-	NA
B8-018C-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	6.79	-	NA	-	7.25	-	NA	-	7.35	-	NA
B8-018D-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	6.50	-	NA	-	6.99	-	NA	-	7.08	-	NA
B8-020-PZ	NM	NM	NM	NA	8.38	9.56	1.18	NA	7.25	8.55	1.30	NA	7.70	8.40	0.70	NA	7.85	8.80	0.95	NA
B8-020A-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	7.23	-	NA	-	7.68	-	NA	-	7.81	-	NA
B8-020B-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	7.23	-	NA	-	7.65	-	NA	-	7.75	-	NA
B8-020C-PZ	NM	NM	NM	NA	NM	NM	NM	NA	-	6.75	-	NA	-	7.15	-	NA	-	7.26	-	NA
B8-020D-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B8-020E-PZ	NM	NM	NM	NA	NM	NM	NM	NA	7.05	7.25	0.20	NA	7.53	8.26	0.73	NA	7.65	7.80	0.15	NA
B8-020F-PZ	trace	8.21	trace	NA	NM	NM	NM	NA	-	7.14	-	NA	-	7.63	-	NA	-	7.74	-	NA
B8-020G-PZ	7.87	8.31	0.44	NA	NM	NM	NM	NA	6.80	8.15	1.35	NA	7.23	8.25	1.02	NA	7.33	8.30	0.97	NA
B8-020H-PZ	-	7.93	-	NA	NM	NM	NM	NA	-	7.00	-	NA	-	7.35	-	NA	-	7.44	-	NA
B8-020I-PZ	-	8.67	-	NA	NM	NM	NM	NA												

NA = Not Applicable

NM = Not Measured

RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	1/19/2016				1/28/2016				2/4/2016				2/12/2016				2/23/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.40	-	NA	-	6.99	-	NA	-	7.30	-	NA	-	7.47	-	NA	-	7.19	-	NA
B8-018A-PZ	-	7.99	-	NA	-	7.42	-	NA	-	6.72	-	NA	-	6.82	-	NA	-	7.68	-	NA
B8-018B-PZ	-	7.20	-	NA	-	6.87	-	NA	-	6.42	-	NA	-	6.53	-	NA	-	7.09	-	NA
B8-018C-PZ	-	7.50	-	NA	-	7.07	-	NA	-	6.71	-	NA	-	6.87	-	NA	-	7.02	-	NA
B8-018D-PZ	-	7.25	-	NA	-	7.46	-	NA	-	6.58	-	NA	-	6.78	-	NA	-	6.99	-	NA
B8-020-PZ	8.04	8.40	0.36	NA	7.75	8.24	0.49	NA	7.35	8.60	1.25	NA	7.81	8.65	0.84	NA	7.76	8.49	0.73	NA
B8-020A-PZ	-	7.95	-	NA	-	7.64	-	NA	-	7.35	-	NA	-	7.59	-	NA	-	7.72	-	NA
B8-020B-PZ	-	7.89	-	NA	-	7.62	-	NA	-	7.26	-	NA	-	7.55	-	NA	-	7.69	-	NA
B8-020C-PZ	-	7.38	-	NA	-	7.03	-	NA	-	6.83	-	NA	-	7.06	-	NA	-	7.17	-	NA
B8-020D-PZ	NA	NA	NA	NA	NA	NA	NA	NA	7.07	8.45	1.38	NA	7.32	8.58	1.26	NA	7.5	8.54	1.04	2.5
B8-020E-PZ	7.79	8.40	0.61	NA	7.31	7.6	0.29	NA	7.18	7.50	0.32	NA	7.41	8.82	1.41	NA	7.59	7.74	0.15	1
B8-020F-PZ	-	7.90	-	NA	-	7.46	-	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA
B8-020G-PZ	7.50	8.40	0.90	NA	6.96	8.30	1.34	NA	6.87	8.25	1.38	NA	7.14	8.39	1.25	NA	7.27	8.68	1.41	2.5
B8-020H-PZ	-	7.57	-	NA	-	7.08	-	NA	-	7.06	-	NA	-	7.26	-	NA	-	7.34	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

NA = Not Applicable

NM = Not Measured

RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	3/1/2016				3/11/2016				3/18/2016				3/24/2016				3/29/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.02	-	NA	NM	NM	NM	NA	-	7.25	-	NA	-	7.41	-	NA	-	7.59	-	NA
B8-018A-PZ	-	7.61	-	NA	NM	NM	NM	NA	-	7.94	-	NA	-	8.04	-	NA	-	8.17	-	NA
B8-018B-PZ	-	6.87	-	NA	NM	NM	NM	NA	-	7.18	-	NA	-	7.25	-	NA	-	7.39	-	NA
B8-018C-PZ	-	7.13	-	NA	NM	NM	NM	NA	-	7.39	-	NA	-	7.52	-	NA	-	7.67	-	NA
B8-018D-PZ	-	6.89	-	NA	NM	NM	NM	NA	-	7.22	-	NA	-	7.30	-	NA	-	7.43	-	NA
B8-020-PZ	7.62	8.49	0.87	2.5	8.02	8.62	0.60	1	7.92	8.90	0.98	1.5	8.07	8.59	0.52	0.25	8.2	8.65	0.45	0.5
B8-020A-PZ	-	7.59	-	NA	NM	NM	NM	NA	-	7.86	-	NA	-	8.02	-	NA	-	8.14	-	NA
B8-020B-PZ	-	7.56	-	NA	NM	NM	NM	NA	-	7.81	-	NA	-	7.93	-	NA	-	8.07	-	NA
B8-020C-PZ	-	7.04	-	NA	NM	NM	NM	NA	-	7.42	-	NA	-	7.42	-	NA	-	7.52	-	NA
B8-020D-PZ	7.36	8.49	1.13	0.5	7.76	8.54	0.78	1.5	6.66	8.44	1.78	1	7.83	8.42	0.59	0.5	7.96	8.52	0.56	0.5
B8-020E-PZ	7.44	7.69	0.25	0.5	7.76	8.42	0.66	2	7.71	8.00	0.29	0.5	7.85	8.13	0.28	0.5	7.98	8.16	0.18	0.5
B8-020F-PZ	-	7.54	-	NA	NM	NM	NM	NA	-	7.82	-	NA	-	7.91	-	NA	-	8.08	-	NA
B8-020G-PZ	7.10	8.29	1.19	1	7.49	8.40	0.91	2	7.38	8.23	0.85	1	7.54	8.38	0.84	1	7.67	8.13	0.46	1
B8-020H-PZ	-	7.25	-	NA	NM	NM	NM	NA	-	7.41	-	NA	-	7.61	-	NA	-	7.74	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

NA = Not Applicable

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RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	4/6/2016				4/8/2016				4/14/2016				4/25/2016				5/2/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.67	-	NA	-	7.70	-	NA	-	7.73	-	NA	-	7.81	-	NA	-	7.87	-	NA
B8-018A-PZ	-	8.26	-	NA	-	8.30	-	NA	-	8.32	-	NA	-	8.40	-	NA	-	8.48	-	NA
B8-018B-PZ	-	7.48	-	NA	-	7.55	-	NA	-	7.56	-	NA	-	7.62	-	NA	-	7.72	-	NA
B8-018C-PZ	-	7.76	-	NA	-	7.79	-	NA	-	7.83	-	NA	-	7.90	-	NA	-	8.00	-	NA
B8-018D-PZ	-	7.51	-	NA	-	7.57	-	NA	-	7.57	-	NA	-	7.62	-	NA	-	7.71	-	NA
B8-020-PZ	8.28	8.62	0.34	NA	8.28	9.19	0.91	NA	8.33	8.72	0.39	0.5	8.42	8.87	0.45	0.5	8.48	8.98	0.50	0.5
B8-020A-PZ	-	8.21	-	NA	-	8.15	-	NA	-	8.27	-	NA	-	8.35	-	NA	-	8.42	-	NA
B8-020B-PZ	-	8.15	-	NA	-	7.16	-	NA	-	8.21	-	NA	-	8.30	-	NA	-	8.37	-	NA
B8-020C-PZ	-	7.65	-	NA	-	7.69	-	NA	-	7.72	-	NA	-	7.80	-	NA	-	7.90	-	NA
B8-020D-PZ	8.04	8.62	0.58	NA	8.07	9.07	1.00	NA	8.11	8.64	0.53	0.5	8.19	8.73	0.54	0.5	8.25	8.85	0.60	0.5
B8-020E-PZ	8.07	8.13	0.06	NA	8.07	8.95	0.88	NA	8.12	8.21	0.09	0.5	8.19	8.29	0.10	0.25	8.27	8.47	0.20	0.5
B8-020F-PZ	-	8.12	-	NA	NM	NM	NM	NA	-	8.21	-	NA	-	8.30	-	NA	-	8.41	-	NA
B8-020G-PZ	7.77	8.23	0.46	NA	7.80	9.84	2.04	NA	7.88	8.23	0.35	0.5	7.95	8.23	0.28	1	8.00	8.26	0.26	0.5
B8-020H-PZ	-	7.84	-	NA	-	7.84	-	NA	-	7.91	-	NA	-	7.99	-	NA	-	8.07	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

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NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	5/9/2016				5/16/2016				5/23/2016				6/1/2016				6/7/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.42	-	NA	-	7.51	-	NA	-	7.25	-	NA	-	7.39	-	NA	-	7.52	-	NA
B8-018A-PZ	-	8.01	-	NA	-	8.08	-	NA	-	7.82	-	NA	-	7.97	-	NA	-	8.10	-	NA
B8-018B-PZ	-	7.22	-	NA	-	7.33	-	NA	-	7.03	-	NA	-	7.20	-	NA	-	7.33	-	NA
B8-018C-PZ	-	7.50	-	NA	-	7.61	-	NA	-	7.32	-	NA	-	7.48	-	NA	-	7.60	-	NA
B8-018D-PZ	-	7.26	-	NA	-	7.34	-	NA	-	7.10	-	NA	-	7.23	-	NA	-	7.34	-	NA
B8-020-PZ	8.03	8.53	0.50	1	8.1	8.53	0.43	2	7.90	8.07	0.17	1	8.00	9.02	1.02	0.5	8.11	8.65	0.54	0.5
B8-020A-PZ	7.97	8.01	0.04	NA	8.05	8.05	trace	NA	trace	7.84	trace	NA	7.94	7.95	0.01	NA	trace	8.06	trace	NA
B8-020B-PZ	-	7.91	-	NA	-	8.00	-	NA	-	7.79	-	NA	DAMAGED				-	-	-	-
B8-020C-PZ	-	7.40	-	NA	-	7.50	-	NA	-	7.30	-	NA	-	7.39	-	NA	-	7.68	-	NA
B8-020D-PZ	7.77	8.63	0.86	1	7.85	8.57	0.72	1	7.63	8.63	1.00	1	7.78	8.61	0.83	0.5	8.05	8.65	0.60	0.25
B8-020E-PZ	7.79	8.25	0.46	1	7.86	8.26	0.40	0.5	7.70	7.89	0.19	1	7.77	8.05	0.28	0.25	8.07	8.13	0.06	0.25
B8-020F-PZ	-	7.92	-	NA	-	7.98	-	NA	-	7.79	-	NA	-	7.88	-	NA	-	8.17	-	NA
B8-020G-PZ	7.50	8.35	0.85	1	7.60	8.31	0.71	1	7.32	7.84	0.52	2	7.52	8.37	0.85	0.5	7.83	8.35	0.52	0.5
B8-020H-PZ	-	7.57	-	NA	-	7.68	-	NA	-	7.50	-	NA	-	7.57	-	NA	-	7.88	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

NA = Not Applicable

NM = Not Measured

RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	6/13/2016				6/20/2016				6/29/2016				7/7/2016				7/15/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.70	-	NA	-	7.76	-	NA	-	7.93	-	NA	-	7.69	-	NA	-	7.71	-	NA
B8-018A-PZ	-	8.28	-	NA	-	8.35	-	NA	-	8.50	-	NA	-	8.25	-	NA	-	8.30	-	NA
B8-018B-PZ	-	7.31	-	NA	-	7.59	-	NA	-	7.67	-	NA	-	7.45	-	NA	-	7.55	-	NA
B8-018C-PZ	-	7.81	-	NA	-	7.86	-	NA	-	7.94	-	NA	-	7.72	-	NA	-	7.82	-	NA
B8-018D-PZ	-	7.52	-	NA	-	7.57	-	NA	-	7.78	-	NA	-	7.54	-	NA	-	7.52	-	NA
B8-020-PZ	8.28	8.77	0.49	0.25	8.35	8.83	0.48	0.5	8.56	9.03	0.47	0.25	8.32	8.79	0.47	0.5	8.30	8.74	0.44	0.25
B8-020A-PZ	trace	8.22	trace	NA	-	8.27	-	NA	8.50	8.52	0.02	0.25	8.24	8.31	0.07	0.25	8.21	8.25	0.04	0.25
B8-020B-PZ																				
B8-020C-PZ	-	7.68	-	NA	-	7.73	-	NA	-	7.83	-	NA	-	7.66	-	NA	-	7.69	-	NA
B8-020D-PZ	8.05	8.65	0.60	0.25	8.10	8.66	0.56	0.5	8.33	8.87	0.54	0.75	8.06	8.68	0.62	0.25	7.49	8.71	1.22	1
B8-020E-PZ	8.07	8.13	0.06	0.25	8.13	8.31	0.18	0.25	8.33	8.53	0.20	0.25	8.06	8.48	0.42	0.25	7.59	7.64	0.05	0.25
B8-020F-PZ	-	8.17	-	NA	-	8.22	-	NA	-	8.44	-	NA	-	8.19	-	NA	-	8.16	-	NA
B8-020G-PZ	7.83	8.35	0.52	0.5	7.91	8.32	0.41	0.5	7.99	8.36	0.37	0.25	7.76	8.32	0.56	0.25	7.27	8.27	1.00	0.5
B8-020H-PZ	-	7.88	-	NA	-	7.95	-	NA	-	8.00	-	NA	-	7.81	-	NA	-	7.87	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

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NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	7/26/2016				8/2/2016				8/8/2016				8/16/2016				8/23/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	7.51	-	NA	-	6.81	-	NA	-	7.2	-	NA	-	8.12	-	NA	-	7.73	-	NA
B8-018A-PZ	-	8.10	-	NA	-	7.36	-	NA	-	7.82	-	NA	-	8.57	-	NA	-	8.27	-	NA
B8-018B-PZ	-	7.33	-	NA	-	6.58	-	NA	-	7.06	-	NA	-	7.58	-	NA	-	7.38	-	NA
B8-018C-PZ	-	7.62	-	NA	-	6.86	-	NA	-	7.33	-	NA	-	7.86	-	NA	-	7.67	-	NA
B8-018D-PZ	-	7.33	-	NA	-	6.65	-	NA	-	7.03	-	NA	-	8.06	-	NA	-	7.62	-	NA
B8-020-PZ	8.08	8.66	0.58	1.5	7.39	8.46	1.07	0.5	7.77	8.54	0.77	0.25	8.90	9.33	0.43	0.25	8.45	8.80	0.35	0.25
B8-020A-PZ	8.02	8.04	0.02	trace	-	7.39	-	NA	-	7.73	-	NA	-	8.82	-	NA	-	8.36	-	NA
B8-020B-PZ																				
B8-020C-PZ	-	7.50	-	NA	-	6.91	-	NA	-	7.24	-	NA	-	7.98	-	NA	-	7.73	-	NA
B8-020D-PZ	7.83	8.59	0.76	0.5	7.12	8.57	1.45	0.25	7.47	8.38	0.91	0.5	8.65	9.06	0.41	0.25	8.20	8.69	0.49	0.25
B8-020E-PZ	7.85	8.35	0.50	0.5	7.21	7.83	0.62	0.25	7.60	7.66	0.06	0.25	8.64	8.88	0.24	-	8.20	8.54	0.34	0.25
B8-020F-PZ	-	7.97	-	NA	-	7.32	-	NA	-	7.68	-	NA	-	8.78	-	NA	-	8.33	-	NA
B8-020G-PZ	7.62	8.34	0.72	2	6.93	8.34	1.41	0.5	7.34	8.34	1.00	0.5	8.03	8.38	0.35	0.25	7.85	8.35	0.50	0.25
B8-020H-PZ	-	7.68	-	NA	-	7.13	-	NA	-	7.45	-	NA	-	7.94	-	NA	-	7.88	-	NA
B8-020I-PZ	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA	NM	NM	NM	NA

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NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	8/29/2016				10/6/2016				10/12/2016				10/19/2016				10/26/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	8.11	-	NA	-	7.68	-	NA	-	7.79	-	NA	-	9.03	-	NA	-	9.58	-	NA
B8-018A-PZ	-	8.65	-	NA	-	8.26	-	NA	-	8.37	-	NA	-	9.40	-	NA	-	9.97	-	NA
B8-018B-PZ	-	7.77	-	NA	-	7.50	-	NA	-	7.62	-	NA	-	8.32	-	NA	-	8.86	-	NA
B8-018C-PZ	-	8.05	-	NA	-	7.77	-	NA	-	7.90	-	NA	-	8.60	-	NA	-	9.14	-	NA
B8-018D-PZ	-	7.99	-	NA	-	7.50	-	NA	-	7.63	-	NA	-	9.02	-	NA	-	9.56	-	NA
B8-020-PZ	8.80	9.28	0.48	0.25	8.34	8.50	0.16	NA	8.46	8.78	0.32	NA	9.94	10.38	0.44	NA	10.43	10.86	0.43	NA
B8-020A-PZ	-	8.74	-	trace	-	8.25	-	NA	-	8.37	-	NA	-	9.90	-	NA	-	10.37	-	NA
B8-020B-PZ																				
B8-020C-PZ	-	8.09	-	NA	-	7.89	-	NA	-	7.98	-	NA	-	8.90	-	NA	-	9.42	-	NA
B8-020D-PZ	8.57	9.00	0.43	0.25	8.13	8.15	0.02	NA	8.24	8.50	0.26	NA	9.68	10.22	0.54	NA	10.17	10.74	0.57	NA
B8-020E-PZ	8.57	8.94	0.37	<0.25	8.07	8.65	0.58	NA	8.19	8.76	0.57	NA	9.63	10.45	0.82	NA	10.14	10.90	0.76	NA
B8-020F-PZ	-	8.67	-	NA	-	8.20	-	NA	-	8.31	-	NA	-	9.81	-	NA	-	10.32	-	NA
B8-020G-PZ	8.23	8.46	0.23	0.25	8.12	8.26	0.14	NA	8.18	8.31	0.13	NA	8.89	9.25	0.36	NA	9.45	9.85	0.40	NA
B8-020H-PZ	-	8.23	-	NA	-	8.20	-	NA	-	8.23	-	NA	-	8.87	-	NA	-	9.38	-	NA
B8-020I-PZ	NM	NM	NM	NA	-	8.64	-	NA	-	8.77	-	NA	-	6.37	-	NA	-	10.78	-	NA

NA = Not Applicable

NM = Not Measured

RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	11/1/2016				11/11/2016				11/18/2016				12/2/2016				12/9/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	9.71	-	NA	-	9.64	-	NA	-	9.71	-	NA	-	9.54	-	NA	-	9.26	-	NA
B8-018A-PZ	-	10.06	-	NA	-	10.15	-	NA	-	10.25	-	NA	-	10.05	-	NA	-	9.76	-	NA
B8-018B-PZ	-	9.03	-	NA	-	9.18	-	NA	-	9.31	-	NA	-	9.14	-	NA	-	8.81	-	NA
B8-018C-PZ	-	9.29	-	NA	-	9.47	-	NA	-	9.59	-	NA	-	9.43	-	NA	-	9.10	-	NA
B8-018D-PZ	-	9.54	-	NA	-	9.57	-	NA	-	9.62	-	NA	-	9.43	-	NA	-	9.19	-	NA
B8-020-PZ	10.41	11.20	0.79	NA	10.41	11.52	1.11	NA	10.43	11.11	0.68	NA	10.30	10.70	0.40	NA	10.05	10.33	0.28	NA
B8-020A-PZ	-	10.34	-	NA	-	10.34	-	NA	-	10.39	-	NA	-	10.21	-	NA	-	9.97	-	NA
B8-020B-PZ																				
B8-020C-PZ	-	9.54	-	NA	-	9.68	-	NA	-	9.73	-	NA	-	9.58	-	NA	-	9.31	-	NA
B8-020D-PZ	10.16	11.10	0.94	NA	10.14	11.23	1.09	NA	10.19	11.23	1.04	NA	10.02	10.65	0.63	NA	9.81	10.25	0.44	NA
B8-020E-PZ	10.10	11.26	1.16	NA	10.14	11.33	1.19	NA	10.16	11.46	1.30	NA	10.01	10.61	0.60	NA	9.77	10.38	0.61	NA
B8-020F-PZ	-	10.31	-	NA	-	10.29	-	NA	-	10.34	-	NA	-	10.16	-	NA	-	9.91	-	NA
B8-020G-PZ	9.58	10.32	0.74	NA	9.70	10.44	0.74	NA	9.85	10.49	0.64	NA	9.72	9.78	0.06	NA	9.47	9.55	0.08	NA
B8-020H-PZ	-	9.55	-	NA	-	9.74	-	NA	-	9.88	-	NA	-	9.72	-	NA	-	9.45	-	NA
B8-020I-PZ	-	10.76	-	NA	-	10.75	-	NA	-	10.80	-	NA	-	10.62	-	NA	-	10.38	-	NA

NA = Not Applicable
 NM = Not Measured
RED = NAPL Detection

NAPL MEASUREMENT AND REMOVAL ACTIVITIES
Parcel B8

Sample ID	12/16/2016				12/22/2016				12/29/2016			
	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)	Depth to NAPL (Feet)	Depth to Water (Feet)	NAPL Thickness (Feet)	NAPL Removed (Gallons)
B8-018-PZ	-	9.35	-	NA	-	9.18	-	NA	-	9.17	-	NA
B8-018A-PZ	-	9.88	-	NA	-	9.70	-	NA	-	9.69	-	NA
B8-018B-PZ	-	8.97	-	NA	-	8.76	-	NA	-	8.77	-	NA
B8-018C-PZ	-	9.24	-	NA	-	9.05	-	NA	-	9.05	-	NA
B8-018D-PZ	-	9.25	-	NA	-	9.10	-	NA	-	9.08	-	NA
B8-020-PZ	10.09	11.33	1.24	NA	9.86	10.91	1.05	NA	9.95	10.91	0.96	NA
B8-020A-PZ	-	10.01	-	NA	-	9.87	-	NA	-	9.86	-	NA
B8-020B-PZ												
B8-020C-PZ	-	9.38	-	NA	-	9.21	-	NA	-	9.20	-	NA
B8-020D-PZ	9.86	11.50	1.64	NA	9.70	10.65	0.95	NA	9.71	10.40	0.69	NA
B8-020E-PZ	9.82	10.83	1.01	NA	9.68	11.20	1.52	NA	9.65	10.64	0.99	NA
B8-020F-PZ	-	9.97	-	NA	-	9.82	-	NA	-	9.79	-	NA
B8-020G-PZ	9.54	10.23	0.69	NA	9.31	10.17	0.86	NA	9.30	9.85	0.55	NA
B8-020H-PZ	-	9.53	-	NA	-	9.37	-	NA	-	9.38	-	NA
B8-020I-PZ	-	10.40	-	NA	-	10.29	-	NA	-	10.26	-	NA

NA = Not Applicable

NM = Not Measured

RED = NAPL Detection

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CRRGP F KZ 'M'

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QA/QC Tracking Log (Soil)

Date:	Sample IDs		
10/13/2015	1)	B8-020-SB-1	
	2)	B8-020-SB-5	
	3)	B8-020-SB-10	
	4)	B8-018-SB-1	
	5)	B8-018-SB-5	
	6)	B8-019-SB-1	
	7)	B8-019-SB-5	Duplicate: B8-018-SB-1
	8)	B8-019-SB-3	Date: 10/13/2015
	9)	B8-021-SB-1	MS/MSD: B8-019-SB-5
	10)	B8-021-SB-5	Date: 10/13/2015
10/14/2015	11)	B8-022-SB-1	Field Blank:
	12)	B8-022-SB-5	Date: 10/13/2015
	13)	B8-017-SB-1	Eq. Blank:
	14)	B8-017-SB-5	Date: 10/13/2015
	15)	B8-017-SB-10	
	16)	B8-015-SB-1	
	17)	B8-015-SB-5	
	18)	B8-023-SB-1	
	19)	B8-023-SB-5	
	20)	B8-024-SB-1	

Date:	Sample IDs		
10/16/2015	1)	B8-044-SB-1	
	2)	B8-045-SB-1	
	3)	B8-046-SB-1	
	4)	B8-047-SB-1	
	5)	B8-027-SB-0.5	
	6)	B8-026-SB-0.5	
	7)	B8-032-SB-0.5	Duplicate: B8-044-SB-1
	8)	B8-033-SB-0.5	Date: 10/16/2015
	9)	B8-025-SB-0.5	MS/MSD: B8-045-SB-1
	10)	B8-028-SB-0.5	Date: 10/16/2015
1/18/2016	11)	B8-051-SB-0.5	Field Blank:
	12)	B8-029-SB-0.5	Date: 1/18/2016
	13)	B8-031-SB-0.5	Eq. Blank:
	14)	B8-038-SB-0.5	Date: 1/18/2016
	15)	B8-036-SB-0.5	
	16)	B8-034-SB-0.5	
	17)	B8-035-SB-0.5	
	18)	B8-039-SB-0.5	
	19)	B8-040-SB-0.5	
	20)	B8-030-SB-0.5	

10/14/2015	1)	B8-024-SB-5	
	2)	B8-013-SB-1	
	3)	B8-013-SB-5	
	4)	B8-014-SB-1	
	5)	B8-014-SB-5	
10/15/2015	6)	B8-012-SB-1	
	7)	B8-012-SB-5	Duplicate: B8-011-SB-5
	8)	B8-016-SB-1	Date: 10/15/2015
	9)	B8-016-SB-5	MS/MSD: B8-014-SB-5
	10)	B8-011-SB-1	Date: 10/14/2015
	11)	B8-011-SB-5	Field Blank:
	12)	B8-010-SB-1	Date: 10/14/2015
	13)	B8-010-SB-5	Eq. Blank:
	14)	B8-010-SB-10	Date: 10/14/2015
	10/16/2015	15)	B8-009-SB-1
16)		B8-009-SB-1	
17)		B8-009-SB-10	
18)		B8-041-SB-1	
19)		B8-042-SB-1	
20)		B8-043-SB-1	

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6)	
7)	Duplicate:
8)	Date:
9)	MS/MSD:
10)	Date:
11)	Field Blank:
12)	Date:
13)	Eq. Blank:
14)	Date:
15)	
16)	
17)	
18)	
19)	
20)	

Trip Blanks: 10/13/2015, 10/14/2015, 10/16/2015, 1/18/2016

QA/QC Tracking Log (Soil)

Date:	Sample IDs		
*3/15/2016	1)	B8-020-SB-1	
	2)	B8-020-SB-5	
	3)	B8-018-SB-1	
	4)	B8-018-SB-5	
	5)	B8-019-SB-1	
	6)	B8-019-SB-3	
	7)	B8-019-SB-5	Duplicate: B8-018-SB-1
	8)	B8-016-SB-1	Date: 3/15/2016
	9)	B8-016-SB-5	MS/MSD: B8-019-SB-5
	10)	B8-022-SB-1	Date: 3/15/2016
	11)	B8-022-SB-5	Field Blank:
	12)	B8-021-SB-1	Date: 3/15/2016
	13)	B8-021-SB-5	Eq. Blank:
	14)	B8-017-SB-1	Date: 3/15/2016
	15)	B8-017-SB-5	
	16)	B8-015-SB-1	
	17)	B8-015-SB-5	
	18)	B8-023-SB-1	
	19)	B8-023-SB-5	
	20)	B8-024-SB-1	

Date:	Sample IDs		
*4/12/2016	1)	B8-011-SB-10	
	2)		
	3)		
	4)		
	5)		
	6)		
	7)		Duplicate: B8-014-SB-10
	8)		Date: 4/12/2016
	9)		MS/MSD: B8-013-SB-10
	10)		Date: 4/12/2016
	11)		Field Blank:
	12)		Date: 4/12/2016
	13)		Eq. Blank:
	14)		Date: 4/12/2016
	15)		
	16)		
	17)		
	18)		
	19)		
	20)		

*3/15/2016	1)	B8-024-SB-5	
	2)	B8-013-SB-1	
	3)	B8-013-SB-5	
	4)	B8-014-SB-1	
	5)	B8-014-SB-5	
	6)	B8-012-SB-1	
*3/16/2016	7)	B8-012-SB-5	Duplicate: B8-011-SB-5
	8)	B8-010-SB-1	Date: 3/16/2016
	9)	B8-010-SB-5	MS/MSD: B8-009-SB-5
	10)	B8-009-SB-1	Date: 3/16/2016
	11)	B8-009-SB-5	Field Blank:
	12)	B8-011-SB-1	Date: 3/15/2016
	13)	B8-011-SB-5	Eq. Blank:
*4/12/2016	14)	B8-021-SB-1	Date: 3/15/2016
	15)	B8-023-SB-10	
	16)	B8-013-SB-10	
	17)	B8-014-SB-10	
	18)	B8-019-SB-10	
	19)	B8-020-SB-10	
	20)	B8-018-SB-10	

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6)	
7)	Duplicate:
8)	Date:
9)	MS/MSD:
10)	Date:
11)	Field Blank:
12)	Date:
13)	Eq. Blank:
14)	Date:
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16)	
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18)	
19)	
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Trip Blanks: None

Note: Samples were collected for SVOCs only - no trip blanks needed.

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APPENDIX L

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
1,1,1-Trichloroethane	VOC	Air	ug/m3	8	5	0	8	100.00%
1,1,2,2-Tetrachloroethane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,1,2-Trichloroethane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,1-Dichloroethane	VOC	Air	ug/m3	8	2	0	8	100.00%
1,1-Dichloroethene	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2,3-Trichlorobenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2,4-Trichlorobenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dibromo-3-chloropropane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dibromoethane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dichlorobenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dichloroethane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dichloroethene (Total)	VOC	Air	ug/m3	8	0	0	8	100.00%
1,2-Dichloropropane	VOC	Air	ug/m3	8	0	0	8	100.00%
1,4-Dichlorobenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
2-Butanone (MEK)	VOC	Air	ug/m3	8	8	0	8	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Air	ug/m3	8	0	0	8	100.00%
Acetone	VOC	Air	ug/m3	8	8	0	8	100.00%
Benzene	VOC	Air	ug/m3	8	8	0	8	100.00%
Bromodichloromethane	VOC	Air	ug/m3	8	0	0	8	100.00%
Bromoform	VOC	Air	ug/m3	8	0	0	8	100.00%
Bromomethane	VOC	Air	ug/m3	8	0	0	8	100.00%
Carbon disulfide	VOC	Air	ug/m3	8	8	0	8	100.00%
Carbon tetrachloride	VOC	Air	ug/m3	8	0	0	8	100.00%
Chlorobenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
Chloroethane	VOC	Air	ug/m3	8	1	0	8	100.00%
Chloroform	VOC	Air	ug/m3	8	8	0	8	100.00%
Chloromethane	VOC	Air	ug/m3	8	1	0	8	100.00%
cis-1,2-Dichloroethene	VOC	Air	ug/m3	8	0	0	8	100.00%
cis-1,3-Dichloropropene	VOC	Air	ug/m3	8	0	0	8	100.00%
Dibromochloromethane	VOC	Air	ug/m3	8	0	0	8	100.00%
Ethylbenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
Isopropylbenzene	VOC	Air	ug/m3	8	0	0	8	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Air	ug/m3	8	0	0	8	100.00%
Methylene Chloride	VOC	Air	ug/m3	8	8	0	8	100.00%
Styrene	VOC	Air	ug/m3	8	0	0	8	100.00%
Tetrachloroethene	VOC	Air	ug/m3	8	0	0	8	100.00%
Toluene	VOC	Air	ug/m3	8	6	0	8	100.00%
trans-1,2-Dichloroethene	VOC	Air	ug/m3	8	0	0	8	100.00%
trans-1,3-Dichloropropene	VOC	Air	ug/m3	8	0	0	8	100.00%
Trichloroethene	VOC	Air	ug/m3	8	0	0	8	100.00%
Vinyl chloride	VOC	Air	ug/m3	8	0	0	8	100.00%
Xylenes	VOC	Air	ug/m3	8	0	0	8	100.00%
1,4-Dioxane	VOC/SVOC	Air	ug/m3	8	0	0	8	100.00%
Cyanide	CN	Soil	mg/kg	49	41	0	49	100.00%
Aluminum	Metal	Soil	mg/kg	60	60	0	60	100.00%
Antimony	Metal	Soil	mg/kg	60	5	0	60	100.00%
Arsenic	Metal	Soil	mg/kg	64	56	0	64	100.00%
Barium	Metal	Soil	mg/kg	60	59	0	60	100.00%
Beryllium	Metal	Soil	mg/kg	60	33	0	60	100.00%
Cadmium	Metal	Soil	mg/kg	60	47	0	60	100.00%
Chromium	Metal	Soil	mg/kg	60	60	0	60	100.00%
Chromium VI	Metal	Soil	mg/kg	50	10	0	50	100.00%
Cobalt	Metal	Soil	mg/kg	60	54	0	60	100.00%
Copper	Metal	Soil	mg/kg	60	60	0	60	100.00%
Iron	Metal	Soil	mg/kg	60	60	0	60	100.00%
Lead	Metal	Soil	mg/kg	60	59	0	60	100.00%
Manganese	Metal	Soil	mg/kg	61	61	0	61	100.00%
Mercury	Metal	Soil	mg/kg	60	32	9	51	85.00%
Nickel	Metal	Soil	mg/kg	60	56	0	60	100.00%

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Selenium	Metal	Soil	mg/kg	60	9	0	60	100.00%
Silver	Metal	Soil	mg/kg	60	9	0	60	100.00%
Thallium	Metal	Soil	mg/kg	61	13	0	61	100.00%
Vanadium	Metal	Soil	mg/kg	61	60	0	61	100.00%
Zinc	Metal	Soil	mg/kg	60	59	0	60	100.00%
Aroclor 1016	PCB	Soil	mg/kg	32	0	0	32	100.00%
Aroclor 1221	PCB	Soil	mg/kg	32	0	0	32	100.00%
Aroclor 1232	PCB	Soil	mg/kg	32	0	0	32	100.00%
Aroclor 1242	PCB	Soil	mg/kg	32	0	0	32	100.00%
Aroclor 1248	PCB	Soil	mg/kg	32	1	0	32	100.00%
Aroclor 1254	PCB	Soil	mg/kg	32	1	0	32	100.00%
Aroclor 1260	PCB	Soil	mg/kg	32	14	0	32	100.00%
PCBs (total)	PCB	Soil	mg/kg	32	3	0	32	100.00%
1,1-Biphenyl	SVOC	Soil	mg/kg	41	21	1	40	97.56%
1,2,4,5-Tetrachlorobenzene	SVOC	Soil	mg/kg	41	0	1	40	97.56%
2,3,4,6-Tetrachlorophenol	SVOC	Soil	mg/kg	41	0	6	35	85.37%
2,4,5-Trichlorophenol	SVOC	Soil	mg/kg	41	0	4	37	90.24%
2,4,6-Trichlorophenol	SVOC	Soil	mg/kg	41	0	4	37	90.24%
2,4-Dichlorophenol	SVOC	Soil	mg/kg	41	0	4	37	90.24%
2,4-Dimethylphenol	SVOC	Soil	mg/kg	41	8	4	37	90.24%
2,4-Dinitrophenol	SVOC	Soil	mg/kg	41	0	6	35	85.37%
2,4-Dinitrotoluene	SVOC	Soil	mg/kg	41	0	2	39	95.12%
2,6-Dinitrotoluene	SVOC	Soil	mg/kg	41	0	2	39	95.12%
2-Chloronaphthalene	SVOC	Soil	mg/kg	41	7	1	40	97.56%
2-Chlorophenol	SVOC	Soil	mg/kg	41	0	4	37	90.24%
2-Methylnaphthalene	SVOC	Soil	mg/kg	50	37	0	50	100.00%
2-Methylphenol	SVOC	Soil	mg/kg	41	3	4	37	90.24%
2-Nitroaniline	SVOC	Soil	mg/kg	41	0	1	40	97.56%
3&4-Methylphenol(m&p Cresol)	SVOC	Soil	mg/kg	41	11	4	37	90.24%
3,3'-Dichlorobenzidine	SVOC	Soil	mg/kg	57	0	1	56	98.25%
4-Chloroaniline	SVOC	Soil	mg/kg	41	0	2	39	95.12%
4-Nitroaniline	SVOC	Soil	mg/kg	41	0	2	39	95.12%
Acenaphthene	SVOC	Soil	mg/kg	50	33	0	50	100.00%
Acenaphthylene	SVOC	Soil	mg/kg	50	38	0	50	100.00%
Acetophenone	SVOC	Soil	mg/kg	41	9	1	40	97.56%
Anthracene	SVOC	Soil	mg/kg	50	42	0	50	100.00%
Benz[a]anthracene	SVOC	Soil	mg/kg	50	47	0	50	100.00%
Benzaldehyde	SVOC	Soil	mg/kg	41	12	24	17	41.46%
Benzo[a]pyrene	SVOC	Soil	mg/kg	50	47	0	50	100.00%
Benzo[b]fluoranthene	SVOC	Soil	mg/kg	50	47	0	50	100.00%
Benzo[g,h,i]perylene	SVOC	Soil	mg/kg	50	46	0	50	100.00%
Benzo[k]fluoranthene	SVOC	Soil	mg/kg	50	46	0	50	100.00%
bis(2-chloroethoxy)methane	SVOC	Soil	mg/kg	41	0	1	40	97.56%
bis(2-Chloroethyl)ether	SVOC	Soil	mg/kg	41	0	1	40	97.56%
bis(2-Chloroisopropyl)ether	SVOC	Soil	mg/kg	41	0	1	40	97.56%
bis(2-Ethylhexyl)phthalate	SVOC	Soil	mg/kg	41	2	1	40	97.56%
Caprolactam	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Carbazole	SVOC	Soil	mg/kg	41	26	1	40	97.56%
Chrysene	SVOC	Soil	mg/kg	50	47	0	50	100.00%
Dibenz[a,h]anthracene	SVOC	Soil	mg/kg	50	40	0	50	100.00%
Diethylphthalate	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Di-n-butylphthalate	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Di-n-octylphthalate	SVOC	Soil	mg/kg	41	1	1	40	97.56%
Fluoranthene	SVOC	Soil	mg/kg	50	47	0	50	100.00%
Fluorene	SVOC	Soil	mg/kg	50	34	0	50	100.00%
Hexachlorobenzene	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Hexachlorobutadiene	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Hexachlorocyclopentadiene	SVOC	Soil	mg/kg	41	0	4	37	90.24%
Hexachloroethane	SVOC	Soil	mg/kg	41	0	1	40	97.56%

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Indeno[1,2,3-c,d]pyrene	SVOC	Soil	mg/kg	50	41	0	50	100.00%
Isophorone	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Naphthalene	SVOC	Soil	mg/kg	50	35	0	50	100.00%
Nitrobenzene	SVOC	Soil	mg/kg	41	0	1	40	97.56%
N-Nitroso-di-n-propylamine	SVOC	Soil	mg/kg	57	0	1	56	98.25%
N-Nitrosodiphenylamine	SVOC	Soil	mg/kg	41	0	1	40	97.56%
Pentachlorophenol	SVOC	Soil	mg/kg	57	0	6	51	89.47%
Phenanthrene	SVOC	Soil	mg/kg	50	43	0	50	100.00%
Phenol	SVOC	Soil	mg/kg	41	7	4	37	90.24%
Pyrene	SVOC	Soil	mg/kg	50	49	0	50	100.00%
Diesel Range Organics	TPH	Soil	mg/kg	16	16	0	16	100.00%
Gasoline Range Organics	TPH	Soil	mg/kg	32	0	0	32	100.00%
Oil and Grease	TPH	Soil	mg/kg	33	33	0	33	100.00%
1,1,1-Trichloroethane	VOC	Soil	mg/kg	49	1	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	0	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	28	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	36	1	48	97.96%
Benzene	VOC	Soil	mg/kg	49	20	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	16	33	67.35%
Carbon disulfide	VOC	Soil	mg/kg	49	25	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%
Chloroethane	VOC	Soil	mg/kg	49	1	0	49	100.00%
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	12	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	3	0	49	100.00%
Isopropylbenzene	VOC	Soil	mg/kg	49	0	0	49	100.00%
Methyl Acetate	VOC	Soil	mg/kg	49	3	1	48	97.96%
Methyl tert-butyl ether (MTBE)	VOC	Soil	mg/kg	49	0	0	49	100.00%
Methylene Chloride	VOC	Soil	mg/kg	49	13	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	14	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%

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
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	2	0	49	100.00%
1,4-Dioxane	VOC/SVOC	Soil	mg/kg	49	0	46	3	6.12%
Cyanide	CN	Water	ug/L	10	5	0	10	100.00%
Aluminum	Metal	Water	ug/L	10	7	0	10	100.00%
Antimony	Metal	Water	ug/L	10	0	0	10	100.00%
Arsenic	Metal	Water	ug/L	10	4	0	10	100.00%
Barium	Metal	Water	ug/L	10	10	0	10	100.00%
Beryllium	Metal	Water	ug/L	10	0	0	10	100.00%
Cadmium	Metal	Water	ug/L	10	0	0	10	100.00%
Chromium	Metal	Water	ug/L	10	6	0	10	100.00%
Chromium VI	Metal	Water	ug/L	10	2	0	10	100.00%
Cobalt	Metal	Water	ug/L	10	1	0	10	100.00%
Copper	Metal	Water	ug/L	10	1	0	10	100.00%
Iron	Metal	Water	ug/L	10	4	0	10	100.00%
Lead	Metal	Water	ug/L	10	0	0	10	100.00%
Manganese	Metal	Water	ug/L	10	4	0	10	100.00%
Mercury	Metal	Water	ug/L	10	0	0	10	100.00%
Nickel	Metal	Water	ug/L	10	1	0	10	100.00%
Selenium	Metal	Water	ug/L	10	1	0	10	100.00%
Silver	Metal	Water	ug/L	10	0	0	10	100.00%
Thallium	Metal	Water	ug/L	10	4	0	10	100.00%
Vanadium	Metal	Water	ug/L	10	9	0	10	100.00%
Zinc	Metal	Water	ug/L	10	1	0	10	100.00%
1,1-Biphenyl	SVOC	Water	ug/L	10	2	0	10	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Water	ug/L	10	0	0	10	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2,4,5-Trichlorophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2,4,6-Trichlorophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2,4-Dichlorophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2,4-Dimethylphenol	SVOC	Water	ug/L	10	7	0	10	100.00%
2,4-Dinitrophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2,4-Dinitrotoluene	SVOC	Water	ug/L	10	0	0	10	100.00%
2,6-Dinitrotoluene	SVOC	Water	ug/L	10	0	0	10	100.00%
2-Chloronaphthalene	SVOC	Water	ug/L	10	0	0	10	100.00%
2-Chlorophenol	SVOC	Water	ug/L	10	0	0	10	100.00%
2-Methylnaphthalene	SVOC	Water	ug/L	10	8	0	10	100.00%
2-Methylphenol	SVOC	Water	ug/L	10	6	0	10	100.00%
2-Nitroaniline	SVOC	Water	ug/L	10	0	0	10	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Water	ug/L	10	8	0	10	100.00%
3,3'-Dichlorobenzidine	SVOC	Water	ug/L	10	0	10	0	0.00%
4-Chloroaniline	SVOC	Water	ug/L	10	0	0	10	100.00%
4-Nitroaniline	SVOC	Water	ug/L	10	0	0	10	100.00%
Acenaphthene	SVOC	Water	ug/L	10	8	0	10	100.00%
Acenaphthylene	SVOC	Water	ug/L	10	7	0	10	100.00%
Acetophenone	SVOC	Water	ug/L	10	1	0	10	100.00%
Anthracene	SVOC	Water	ug/L	10	10	0	10	100.00%
Benz[a]anthracene	SVOC	Water	ug/L	10	7	0	10	100.00%
Benzaldehyde	SVOC	Water	ug/L	10	0	0	10	100.00%
Benzo[a]pyrene	SVOC	Water	ug/L	10	4	0	10	100.00%
Benzo[b]fluoranthene	SVOC	Water	ug/L	10	4	0	10	100.00%
Benzo[g,h,i]perylene	SVOC	Water	ug/L	10	4	0	10	100.00%
Benzo[k]fluoranthene	SVOC	Water	ug/L	10	4	0	10	100.00%
bis(2-chloroethoxy)methane	SVOC	Water	ug/L	10	0	0	10	100.00%
bis(2-Chloroethyl)ether	SVOC	Water	ug/L	10	0	0	10	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Water	ug/L	10	0	0	10	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Water	ug/L	10	7	0	10	100.00%
Caprolactam	SVOC	Water	ug/L	10	0	0	10	100.00%

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Carbazole	SVOC	Water	ug/L	10	7	0	10	100.00%
Chrysene	SVOC	Water	ug/L	10	6	0	10	100.00%
Dibenz[a,h]anthracene	SVOC	Water	ug/L	10	2	0	10	100.00%
Diethylphthalate	SVOC	Water	ug/L	10	0	0	10	100.00%
Di-n-butylphthalate	SVOC	Water	ug/L	10	0	0	10	100.00%
Di-n-octylphthalate	SVOC	Water	ug/L	10	0	0	10	100.00%
Fluoranthene	SVOC	Water	ug/L	10	10	0	10	100.00%
Fluorene	SVOC	Water	ug/L	10	8	0	10	100.00%
Hexachlorobenzene	SVOC	Water	ug/L	10	0	0	10	100.00%
Hexachlorobutadiene	SVOC	Water	ug/L	10	0	0	10	100.00%
Hexachlorocyclopentadiene	SVOC	Water	ug/L	10	0	0	10	100.00%
Hexachloroethane	SVOC	Water	ug/L	10	0	0	10	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Water	ug/L	10	3	0	10	100.00%
Isophorone	SVOC	Water	ug/L	10	0	0	10	100.00%
Naphthalene	SVOC	Water	ug/L	10	8	0	10	100.00%
Nitrobenzene	SVOC	Water	ug/L	10	0	0	10	100.00%
N-Nitroso-di-n-propylamine	SVOC	Water	ug/L	10	0	0	10	100.00%
N-Nitrosodiphenylamine	SVOC	Water	ug/L	10	0	0	10	100.00%
Pentachlorophenol	SVOC	Water	ug/L	10	5	0	10	100.00%
Phenanthrene	SVOC	Water	ug/L	10	10	0	10	100.00%
Phenol	SVOC	Water	ug/L	10	3	0	10	100.00%
Pyrene	SVOC	Water	ug/L	10	10	0	10	100.00%
Oil and Grease	TPH	Water	ug/L	10	8	0	10	100.00%
1,1,1-Trichloroethane	VOC	Water	ug/L	10	1	0	10	100.00%
1,1,2,2-Tetrachloroethane	VOC	Water	ug/L	10	0	0	10	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Water	ug/L	10	0	0	10	100.00%
1,1,2-Trichloroethane	VOC	Water	ug/L	10	0	0	10	100.00%
1,1-Dichloroethane	VOC	Water	ug/L	10	3	0	10	100.00%
1,1-Dichloroethene	VOC	Water	ug/L	10	0	0	10	100.00%
1,2,3-Trichlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
1,2,4-Trichlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dibromo-3-chloropropane	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dibromoethane	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dichlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dichloroethane	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dichloroethene (Total)	VOC	Water	ug/L	10	0	0	10	100.00%
1,2-Dichloropropane	VOC	Water	ug/L	10	0	0	10	100.00%
1,3-Dichlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
1,4-Dichlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
2-Butanone (MEK)	VOC	Water	ug/L	10	0	0	10	100.00%
2-Hexanone	VOC	Water	ug/L	10	0	0	10	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Water	ug/L	10	0	0	10	100.00%
Acetone	VOC	Water	ug/L	10	0	0	10	100.00%
Benzene	VOC	Water	ug/L	10	7	0	10	100.00%
Bromodichloromethane	VOC	Water	ug/L	10	0	0	10	100.00%
Bromoform	VOC	Water	ug/L	10	0	0	10	100.00%
Bromomethane	VOC	Water	ug/L	10	3	0	10	100.00%
Carbon disulfide	VOC	Water	ug/L	10	1	0	10	100.00%
Carbon tetrachloride	VOC	Water	ug/L	10	0	0	10	100.00%
Chlorobenzene	VOC	Water	ug/L	10	0	0	10	100.00%
Chloroethane	VOC	Water	ug/L	10	0	0	10	100.00%
Chloroform	VOC	Water	ug/L	10	1	0	10	100.00%
Chloromethane	VOC	Water	ug/L	10	0	0	10	100.00%
cis-1,2-Dichloroethene	VOC	Water	ug/L	10	0	0	10	100.00%
cis-1,3-Dichloropropene	VOC	Water	ug/L	10	0	0	10	100.00%
Cyclohexane	VOC	Water	ug/L	10	0	0	10	100.00%
Dibromochloromethane	VOC	Water	ug/L	10	0	0	10	100.00%
Dichlorodifluoromethane	VOC	Water	ug/L	10	0	0	10	100.00%
Ethylbenzene	VOC	Water	ug/L	10	5	0	10	100.00%

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

Parameter	Parameter Group	Matrix	Unit	Number of Result	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Isopropylbenzene	VOC	Water	ug/L	10	1	0	10	100.00%
Methyl Acetate	VOC	Water	ug/L	10	0	10	0	0.00%
Methyl tert-butyl ether (MTBE)	VOC	Water	ug/L	10	0	0	10	100.00%
Methylene Chloride	VOC	Water	ug/L	10	0	0	10	100.00%
Styrene	VOC	Water	ug/L	10	0	0	10	100.00%
Tetrachloroethene	VOC	Water	ug/L	10	0	0	10	100.00%
Toluene	VOC	Water	ug/L	10	7	0	10	100.00%
trans-1,2-Dichloroethene	VOC	Water	ug/L	10	0	0	10	100.00%
trans-1,3-Dichloropropene	VOC	Water	ug/L	10	0	0	10	100.00%
Trichloroethene	VOC	Water	ug/L	10	0	0	10	100.00%
Trichlorofluoromethane	VOC	Water	ug/L	10	0	0	10	100.00%
Vinyl chloride	VOC	Water	ug/L	10	0	0	10	100.00%
Xylenes	VOC	Water	ug/L	10	6	0	10	100.00%
1,4-Dioxane	VOC/SVOC	Water	ug/L	10	4	0	10	100.00%

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