Phase II Investigation
Work Plan

Area B: Parcel B4, Sub-Parcel B4-1 and Sub-Parcel B4-2
Tradepoint Atlantic
Sparrows Point, Maryland

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Revision 1
July 8, 2016

ARM Project 150300M-7

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1.0 INTRODUCTION

1.1. INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared the following Work Plan to complete a Phase II site investigation on a portion of the Tradepoint Atlantic property that has been designated as Area B, Parcel B4 (the Site). Parcel B4 is comprised of approximately 72 acres of the approximately 3,100-acre former plant property located as shown on **Figure 1**. For scheduling purposes, Parcel B4 has been divided into Sub-Parcels B4-1 and B4-2 to facilitate a phased Work Plan review to expedite the investigation of Sub-Parcel B4-1. Sub-Parcel B4-1 is specifically addressed in the Area B: Parcel B4, Sub-Parcel B4-1 (Expedited Area) Work Plan, submitted separately. This Work Plan addresses the entirety of Parcel B4, including both Sub-Parcel B4-1 (the expedited area) and Sub-Parcel B4-2 (all remaining area).

Site characterization of Parcel B4 will be performed in compliance with requirements pursuant to the following:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

An application to enter the Site into the Maryland Department of the Environment Voluntary Cleanup Program (MDE-VCP) was submitted to MDE on September 10, 2014. The Site's current and anticipated future use is Tier 3 (Industrial), and plans for the Site include demolition and redevelopment over the next several years.

Parcel B4 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the United States Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE) (effective October 8, 1997) as documented in correspondence received from EPA on September 12, 2014. Based on this agreement, EPA has determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the EPA's RCRA Corrective Action authorities.

1.2. SITE BACKGROUND

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 the Facility ceased in fall 2012.

Groundcover at the Site is comprised of approximately 66% natural soils and 34% slag based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (Adapted from Figure 2-20 on the Description of Current Conditions (DCC) report prepared by Rust Environmental and Infrastructure, dated January 1998). Parcel B4 was formerly occupied by part of the Former Steel Making Area. The major components present within the parcel boundaries are discussed in greater detail below. All buildings have been demolished, with the exception of a maintenance shop. According to EAG, the maintenance shop located in the southwestern area of Sub-Parcel B4-1 was formerly occupied by the Phoenix Aggregate and Industrial Minerals Company. Based on historic aerial images available through Google Earth Pro, the building was constructed between August 2006 and September 2007. The company was active while the steel facility was operational, and primarily served to process slag into aggregate for resale. It is our understanding that the building was used for the maintenance of equipment. Processing operations took place elsewhere on the property. There were no aggregate stockpiles observed nearby the building in the historic images. More recently, the building has been occupied by MCM Management Corporation (MCM) as an equipment maintenance and repair facility. A site visit was completed on March 2, 2016 in order to observe current conditions and storage within the building. The building has an intact concrete slab in fair condition, with some surface pitting and small cracks present. A photographic log from this site visit has been included as **Appendix A**.

Several small pits remain across the site, some of which have been targeted based on their former functions, as discussed in the Sampling Design and Rationale Section. The locations of these pits are highlighted on all site-specific figures contained in this Work Plan. Locations and dimensions of subgrade structures have been identified from a list and outlines provided by MCM. The outlines provided by MCM are approximate, and several of the identified features may be viewed on other historical drawings. Some MCM outlines were adjusted according to historical information, as appropriate. A table including the function of each subgrade structure, estimated dimensions, and field-verified status (by MCM) has been included as **Appendix B**. Based on previous site visits and aerial images, there are several open pits still present in Parcel B4. A site visit was completed on February 19, 2016 to characterize the existing pits, and a photographic log from this event is included in **Appendix C**.

Several iron and steel work processes were completed within the boundary of Parcel B4. Descriptions of the main facilities and processes are provided below:

Basic Oxygen Furnace (BOF):
Basic oxygen steel making replaced the older open hearth furnace method. Basic oxygen steel making is a method of primary steel making in which carbon-rich molten pig iron is made into steel. Blowing oxygen through molten pig iron lowers the carbon content of the alloy and changes it into low-carbon steel. The process is known as basic because fluxes of burnt lime or dolomite, which are chemical bases, are added to promote the removal of impurities and protect the lining of the converter. The BOF received hot metal from the blast furnaces, scrap steel, and additional recyclable additives. After it was removed from the blast furnaces, the hot metal was passed through a desulfurization process or sent directly to the BOF. Pure oxygen was blown through a water-cooled lance to produce carbon monoxide, which accelerates the metallurgical reactions in the iron. After completion, the molten steel was poured into a ladle, where other alloying agents could be added.

Mould Yard:
When the BOF facilities were unable to receive the hot metals produced from the blast furnaces, the iron could be temporarily stored in the Mould Yard. The hot metal was poured on the ground and allowed to cool. Once it was cooled it could be broken into smaller pieces and then transferred to the BOF.

Continuous Caster:
Ladles of steel from the BOF are taken to the Continuous Caster Ladle Metallurgy Station where they may be first reheated with an oxygen lance and/or the chemistry adjusted by adding alloys and other materials and argon stirred. The steel then is moved by crane to the Slab Caster. Steel then is poured into the water-jacketed strand mould of the Slab Caster, from which a continuous slab is formed. The slab enters a roller containment area within the Slab Caster, where it is cooled with water sprays. The slabs then are cut to size by using a torch and then transferred to slab storage or the Hot Strip Mill. Fumes generated by the reactions are controlled by baghouses. Fugitive emissions are generated through material-transfer operations at the ladle metallurgy bin.

Prior to the Area B Groundwater Investigation (conducted in accordance with the approved Work Plan dated October 6, 2015) there were no site-wide groundwater wells located within the Parcel B4 boundaries to provide relevant historical groundwater data. Five wells (SW-027-MWS, SW-028-MWS, SW-029-MWS, SW-063-MWS, and SW-064-MWS) were installed within the parcel. These five new shallow wells were sampled during the Area B groundwater field investigation. The results from the recent groundwater sampling events (January 2016 through March 2016) are provided in **Appendix D**. Note that these results have not undergone

data validation. Aqueous Project Action Limit (PAL) exceedances in the non-validated groundwater data are highlighted. The appendix also indicates the screened interval for each of the wells, as well as the hydrogeologic zone. There is no historical soil or soil gas sampling data available from this parcel.

1.3. FUTURE DEVELOPMENT (EXPEDITED AREA)

This Work Plan provides a description of the sampling and investigation plan for the entire Parcel B4 (Sub-Parcel B4-1 and Sub-Parcel B4-2). Within the Site, it is the desire of EAG to expedite the investigation and closure of Sub-Parcel B4-1 consisting of an area of approximately 21 acres. Sub-Parcel B4-1 was submitted in a separate work plan, and is governed by the same requirements and standard operating procedures as the remaining area of Parcel B4. Field sampling and laboratory analysis was prioritized to complete this sub-parcel before allocating resources to investigate the remaining area. In addition, an initial exceedance report was prepared for the expedited area, in order to characterize the current environmental conditions and proceed with development and/or any necessary remediation activities.

EAG has provided ARM with the boundary of the expedited Sub-Parcel B4-1, as well as a proprietary site planning document which shows the proposed development for Parcel B4 and several other areas of the property. This document indicates that roughly 98% of the complete parcel will be paved, and 100% of the smaller expedited area. **Figure 3** shows the proposed engineered barriers within Parcel B4, and highlights the expedited Sub-Parcel B4-1. This sub-parcel is shown on all subsequent figures contained in this Work Plan. **Figure 4** shows the final sampling plan for the entire Parcel B4.

1.4. SAMPLING DESIGN AND RATIONALE

Across the whole Tradepoint Atlantic property, several buildings and facilities may have been historical sources of environmental contamination. These areas were identified as targets for sampling through a careful review of historical documents. When a sampling target was identified, at least two borings were placed at or around its location using GIS software (ArcMap Version 10.2.2). The first sampling targets to be identified were Recognized Environmental Conditions (RECs) located within the Site boundaries, as shown on the REC Location Map provided in the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants dated May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. All RECs were targeted with at least three (3) borings. Based on the review of historical documents and aerial images, REC boundaries are adjusted, as appropriate, from the original positions shown on the REC Location Map. The following RECs were identified within the Site boundaries:

Oil House (REC 8C, Finding 203):
According to the Phase I ESA, documents provided by Baltimore County under the Freedom of Information Act (FOIA) indicated that an oil house was located east of the shipyards. Weaver Boos considered this particular oil house to be a REC, because the conditions and status of the building were unknown. The oil house was positively identified on several sets of historical drawings, and the REC boundaries were redrawn to enclose this feature. Current aerial images indicate that this structure is no longer in use and has been demolished.

Gas Pumping Station (REC 8D, Finding 204):
According to the Phase I ESA, documents provided by Baltimore County under the FOIA indicated that a gas pumping station was located to the southeast of the shipyards. Based on interviews conducted by Weaver Boos, they determined this gas pumping station to be a REC because the station was associated with coke oven gas. It is possible that a historical release of gas condensate may have occurred. The gas pumping station was positively identified on several sets of historical drawings, and the REC boundaries were redrawn to enclose this feature. Current aerial images indicate that this structure is no longer in use and has been demolished.

Following the identification and evaluation of all RECs at the Site, Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were identified from the DCC report Figure 3-1. **Figure 5** shows the proposed borings overlain on the DCC figure, which shows the SWMUs, AOCs, and main facility areas within the parcel boundaries. There were no additional SWMUs or AOCs that were identified at the Site based on this figure, although several non-releasing units were identified from the DCC report Table 3-1. These units in the Steel Making Area which appear to be within the Parcel B4 boundary include the Caster Dust Baghouse Storage Area (SWMU 76), Desulfurizer Baghouse (SWMU 77), Desulfurizer Collection Dumpsters (SWMU 78), Skimmer Baghouse (SWMU 79), Skimmer Baghouse Collection Dumpsters (SWMU 80), Former Open Hearth #3 Site (SWMU 81), Former Open Hearth #1 Site (SWMU 82), and Caster Baghouse (SWMU 83). Since these features were not observed to be releasing, they were not considered by Rust Environmental and Infrastructure to be a risk for significant environmental impact and were screened out (not proposed for further action). No additional descriptions of these screened out SWMUs were provided in the DCC report. Due to the determined low risk for environmental impacts, as well as the paving (engineered barrier) proposed to cover the parcel, these features were not explicitly identified as targets for the site-specific sampling plan.

Following the identification of all RECs, SWMUs, and AOCs, four (4) sets of historical site drawings were reviewed to identify additional sampling targets. These site 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.) **Figures 6 through 9** show the proposed borings and the parcel boundary overlain on the 5000 Set, 5100 Set, 5500 Set, and drip leg drawings, respectively. Careful review of these geospatially referenced figures and review of other historical documents (previously discussed) yielded the proposed boring locations. A summary of the specific drawings covering the Site is presented in the table below:

Parcel B4 Historical Site Drawings Details

Set Name	Typical Features Shown	Drawing Number	Original Date Drawn	Latest Revision Date
Plant Arrangement	Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.)	5014	10/1/1959	3/12/1982
		5015	6/14/1957	3/12/1982
		5020	*Unknown*	3/9/1982
		5021	10/1/1958	3/11/1982
		5026	6/24/1958	3/11/1982
		5027	6/24/1959	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5114	*Unknown*	8/14/2008
		5115	*Unknown*	9/4/2008
		5120	*Unknown*	6/26/2008
		5121	*Unknown*	11/7/2008
		5126	*Unknown*	9/27/2010
		5127	*Unknown*	8/14/2008
		5120-A	*Unknown*	3/28/2008
		5120-B	*Unknown*	9/28/2010
		5120-C	*Unknown*	9/28/2010
		5120-D	*Unknown*	8/13/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5514	*Unknown*	1/22/1982
		5515	10/1/1958	9/11/2008
		5520	*Unknown*	3/19/1992
		5521	9/30/1959	9/10/2008
		5526	8/24/1959	3/19/1992
		5527	*Unknown*	9/10/2008
Drip Legs	Coke Oven Gas Drip Legs Locations	5885B	*Unknown*	Sept. 1988

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 this criterion (as well as additional MDE requests), the following sampling targets were identified at the Site: Desulfurizer Stations, Mould Treatment Building, Fuel Department, Oil House (non-REC), Emergency Plating Pit, Substations/Transformers, Tar Tanks, Thickener Tanks, Mould Yards, Water Treatment Area, and No. 3 Open Hearth. ARM received a list of former PCB-containing transformer equipment from Tradepoint Atlantic personnel, for inclusion as additional targets. There were two substations identified as possible PCB-contaminated areas which were previously targeted based on the historical drawing sets (above). These possible PCB areas are indicated on the provided figures. The number of proposed borings that targeted a specific feature is directly related to the

size and likely historical presence of materials that could have impacted the Site. A subset of the drip legs within Parcel B4 were selected for inclusion in the sampling plan. In total, five drip legs were targeted (each with 2 soil borings) from the 13 locations indicated on the historical drip legs drawings. Every drip leg which was not explicitly targeted was located within 100 feet of at least one other soil boring. The full list of sampling targets, along with the specific rationale for sampling each, is provided as **Appendix E**. The targets in the sampling plan table are grouped by their location in either Sub-Parcel B4-1 or B4-2.

Sample locations were added to fill in areas with insufficient coverage (large spatial gaps between proposed borings) within the Site and to meet the sample density requirements set forth in the Quality Assurance Project Plan (QAPP), Worksheet 17 – Sampling Design and Rationale. Parcel B4 contains a total of 72.1 acres: 1.6 acres without engineered barriers proposed and 70.5 acres with engineered barriers proposed (parking/roads or building slabs). In accordance with the relevant sampling density requirements, a minimum of 3 soil boring locations are required in the areas without engineered barriers, and a minimum of 35 soil boring locations are required in the areas with engineered barriers. A total of 3 borings have been proposed in areas without engineered barriers and a total of 53 borings have been proposed in areas with engineered barriers**.**

Figure 10 shows the proposed borings on an aerial image to indicate locations of borings with regard to currently existing engineered barriers (roads, parking, and building slabs) and other landmarks**.** Groundwater at the Site was investigated as described in the Area B Groundwater Investigation Work Plan. The groundwater sample locations completed in accordance with this separate plan are shown on **Figure 11**. Non validated groundwater analytical data for the sample locations within Parcel B4 has been provided in **Appendix D.**

The sub-slab soil gas investigation below the maintenance shop is necessary to verify that conditions within, below, and around the building do not pose a potentially unacceptable risk to current and future commercial workers occupying the buildings. There is no groundwater use on-site. Therefore, exposure to groundwater is not a potential concern. The exterior of the building would be used only for worker parking and vehicle traffic, and there is only a minimal risk for exposure to soils. It is unlikely that commercial workers will come into regular contact with (or ingest) potentially contaminated soil as they walk into the building from their vehicles. Given the very short duration of any potential exposure to soil outside of the building, the risk associated with exposure to the soils surrounding the building would be expected to be minimal. Any required construction or subsurface utility work would be performed by Tradepoint Atlantic's contractors, and the lease would include a restriction to prevent the tenant from disturbing any pavement or doing any excavation on the property without measures protective of workers' health and approved protocols. Therefore direct contact with the soil outside of the building, and potential exposure by dermal contact or incidental ingestion or by inhalation of

vapors in an excavation, are not pathways of concern. Based on the potential exposures described above, an evaluation of the potential for impacts to indoor air is sufficient to assess the risk to a commercial worker presented by the proposed use of the existing building.

The maintenance shop has an area of approximately 5,750 ft^2. According to the density requirement given in QAPP Worksheet 17 – Sampling Design and Rationale, three (3) sampling locations are required in a structure of this size. Sub-slab soil gas samples have been included in the parcel specific sampling plan, with one (1) location (B4-052-SG) targeting the observed parts washer and one (1) location (B4-053-SG) targeting a storage enclosure and small oil release. The remaining location (B4-051-SG) provides general coverage of the building slab. **Figure 12** displays the locations of these sub-slab soil gas samples.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1. PROJECT PERSONNEL

The site characterization of Area B Parcel B4 will be conducted by ARM under a contract with EAG. ARM will provide project planning, field sampling and reporting support. The required drilling, Geoprobe® and laboratory services will be contracted directly by EAG. The management, field, and laboratory responsibilities of key project personnel are defined in this section.

The ARM Project Manager, Mr. Eric Magdar is responsible for ensuring that all activities are conducted in accordance with this Work Plan and the contract requirements. Mr. Magdar will provide technical coordination with the MDE, EPA and EAG. The ARM Project Manager is responsible for managing all operations conducted for this project including:

- Ensure all personnel assigned to this project review the technical project plans before initiation of all tasks associated with the project.
- Review of project plans in a timely manner.
- Ensure proper methods and procedures are implemented to collect representative samples.
- Monitor the project budget and schedule and ensure the availability of necessary personnel, equipment, subcontractors, and other necessary services.

The lead ARM Project Scientist, Mr. Nicholas Kurtz, will be responsible for coordinating field activities including the collection, preservation, documentation and shipment of samples. Mr. Kurtz will directly communicate with the ARM Project Manager and Laboratory Project Manager on issues pertaining to sample shipments, schedules, container requirements, and other necessary issues. Mr. Kurtz is also responsible for ensuring the accuracy of sample documentation including the completion of the chain-of-custody (CoC) forms.

Pace Analytical Services, Inc. (PACE) of Greensburg, Pennsylvania will provide the analytical services for this project. The address for the laboratory is as follows:

Pace Analytical
1638 Roseytown Road
Greensburg, PA 15601

During the field activities, the Laboratory Project Manager will coordinate directly with the ARM Project Manager on issues regarding sample shipments, schedules, container requirements, and other field-laboratory logistics. The Laboratory Project Manager will monitor the daily activities of the laboratory, coordinate all production activities, and ensure that work is being

conducted as specified in this document. Ms. Samantha Bayura will be the Laboratory Project Manager for PACE on this project.

2.2. HEALTH AND SAFETY ISSUES

Because of the potential presence of metals, petroleum hydrocarbons and chlorinated hydrocarbons in the soil and groundwater at the Site, the investigation will be conducted under a site-specific Health and Safety Plan to protect investigation workers from possible exposure to contaminated soil and groundwater. The site-specific HASP for Parcel B4 is provided as **Appendix F**.

Based on information provided to ARM, the planned site activities will be conducted under modified Level D personal protection. The requirements of the modified Level D protection are defined in ARM's site specific Health and Safety Plan. All field personnel assigned for work at the Site have been trained in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response standard (29 CFR 1910.120) and other applicable OSHA training standards. All field staff will be experienced in hazardous waste site work, use of personal protective equipment (PPE), and emergency response procedures.

3.0 FIELD ACTIVITIES AND PROCEDURES

3.1. UTILITY CLEARANCE

ARM will take appropriate precautions to avoid subsurface utilities and structures during the site investigation. Prior to initiating any subsurface investigations, ARM will attempt to determine the location of utilities in the project area using the Miss Utility system. Additionally, any required state or local permits will be acquired prior to the commencement of site activities.

In addition to the Miss Utility system, EAG will clear each proposed boring with utility personnel currently working on the property. To facilitate this, ARM will locate with a GPS and mark all proposed boring locations in the field. ARM will coordinate the staking of borings in the field with Tradepoint Atlantic utility personnel to avoid conflicts. Historical utility drawings which may be relevant include the 5600 Set (Plant Water Lines) and 5800 Set (Plant Gas Lines).

3.2. SAMPLING PLAN

The purpose of this site characterization is to identify any existing hazardous conditions across the entire Site. A summary of the RECs and other areas of concern that will be investigated, along with the proposed boring identification number and the analyses being performed, has been provided as **Appendix E.**

This Work Plan presents the methods and protocols to be used to complete the site characterization. These methods and procedures follow the MDE-VCP and EPA guidelines. Information regarding the project organization, field activities and sampling methods, sampling equipment, sample handling and management procedures, the laboratory analytical methods and selected laboratory, quality control and quality assurance procedures, investigation-derived waste (IDW) management methods, reporting requirements are described in detail in the QAPP that has been developed to support the investigation and remediation of the Tradepoint Atlantic Site (Quality Assurance Project Plan, ARM Group Inc., April 5, 2016).

The proposed schedule of this investigation is contained in this work plan (Section 8.0). All site characterization activities will be conducted under the site-specific HASP (**Appendix F**).

3.3. SOIL INVESTIGATION

Soil samples will be collected from the locations identified on **Figures 4 through 10**, and in accordance with procedures referenced in the QAPP Worksheet 21 – Field SOPs (Standard Operating Procedures), SOP No. 009 – Sub-surface Soil Sampling.

Regarding soil sampling depth, a shallow sample will be collected from the 0 to 1 foot depth interval, and a deeper sample will be collected from the 4 to 5 foot depth interval. One

additional set of samples will also be collected from the 9 to 10 foot depth interval if groundwater has not been encountered; however, these samples will be held by the laboratory pending the analysis of the 0 to 1 and 4 to 5 foot depth interval samples. If the PID or other field observations indicate contamination to exist at a depth greater than 3 feet bgs but less than 9 feet bgs, and is above the water table, the sample from the deeper 4-5 foot interval may be shifted to the depth interval indicated by the PID response. It should be noted that no soil samples will be collected from a depth that is below the water table.

After soil sampling has been concluded at a location, all down-hole soil sampling equipment will be decontaminated according to procedures referenced in the QAPP Worksheet 21 – Field SOPs, SOP No. 016 Equipment Decontamination. The decontamination procedures that will be used during the course of this investigation include Decontamination Area (Section 3.1 of the SOP), Decontamination of Sampling Equipment (Section 3.5), Decontamination of Measurement Devices & Monitoring Equipment (Section 3.7), Decontamination of Subsurface Drilling Equipment (Section 3.8), and Document and Record Keeping (Section 5).

All soil samples will be analyzed for TCL-VOCs, TCL-SVOCs, TAL-Metals, TPH-DRO, TPH-GRO, hexavalent chromium, and cyanide. Additionally, the shallow soil samples collected across the Site from the 0-1 foot bgs interval will also be analyzed for PCBs. Analytical methods, sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.4. SUB-SLAB SOIL GAS INVESTIGATION

To determine if historical on-site activities have negatively impacted the soil beneath the maintenance shop and to determine if there is a potentially unacceptable risk associated with the vapor intrusion to indoor air risk pathway, sub-slab soil gas samples have been collected from temporary monitoring probes installed at each of the locations provided on **Figure 12**. The final locations for all sub-slab soil gas sampling points were selected by the MDE project manager. Soil gas samples were collected according to procedures outlined in QAPP Worksheet 21 – Field SOPs (Standard Operating Procedures), and Appendix A of the QAPP. All sub-slab soil gas samples were analyzed for VOCs. Analytical methods, sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.5. NAPL DELINEATION

In the event that NAPL bearing soils are identified in a soil boring, a temporary piezometer will be installed according to the specifications identified in SOP No. 28 – Direct Push Installation and Construction of Temporary Groundwater Sample Collection Points. ARM will immediately check the piezometer for the presence of NAPL using an oil-water interface probe in accordance

with methods referenced in the SOP No. 19 – Depth to Groundwater and NAPL Measurements. If NAPL is not detected, the piezometer will be allowed to equilibrate for at least 48 hours prior to a second measurement. If no product is detected after 48 hours, the piezometer will be emptied, removed and discarded, and the borehole will be abandoned in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36. If NAPL is detected during either check, another measurement will be made after a 30 day (minimum) equilibration period to determine NAPL thickness.

If NAPL is detected in the initial piezometer, ARM will remobilize (following utility clearance) to install and inspect additional soil borings and shallow, temporary piezometers to the north, south, east, and west of the detection point at distances of 25 feet. Delineation piezometers will extend into adjacent parcels (if applicable) but will not be installed off of Tradepoint Atlantic property and will only be installed up to the edge of existing buildings. At each location, continuous core soil samples will be screened with a hand-held PID and inspected for evidence of NAPL, and the additional temporary piezometers will be installed to a final depth determined by ARM personnel.

Each additional piezometer installed to delineate the NAPL will be checked for the presence of product with an oil-water interface probe immediately after installation, 48 hours after installation, and again after a 30 day equilibration period. If NAPL is identified within any of the piezometers, additional borings/piezometers will be added as necessary to complete the delineation. The MDE will be notified within 48 hours if NAPL is detected within the temporary piezometers. Once the MDE has given approval to abandon the additional piezometers, each piezometer will be emptied, removed and discarded. All boreholes will be abandoned in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36. A full report documenting the results of the delineation, including NAPL thickness, will be submitted to the MDE within 30 days of completing the field activities.

3.6. SAMPLE DOCUMENTATION

3.6.1. Sample Numbering

Samples will be numbered in accordance with the QAPP Appendix C – Data Management Plan.

3.6.2. Sample Labels & Chain-of-Custody Forms

Samples will be labeled and recorded on the Chain-of-Custody form in accordance with methods referenced in the QAPP Worksheet 26 & 27 – Sample Handling, Custody and Disposal.

3.7. LABORATORY ANALYSIS

EAG has contracted PACE of Greensburg, Pennsylvania to perform the laboratory analysis for this project. All sample analyses to be performed are listed in **Appendix E**. The samples will be submitted for analysis with a standard turnaround time (approximately 5 work days). The specific list of compounds and analytes that the soil samples will be analyzed for, as well as the quantitation limits and project action limits, is provided in QAPP Worksheet 15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

All soil samples will be collected using dedicated equipment including new soil core liners and polyethylene tubing. Each cooler temperature will be measured and documented by the laboratory upon receipt.

Quality control (QC) samples are collected during field studies for various purposes, among which are to isolate site effects (control samples), to define background conditions (background sample), and to evaluate field/laboratory variability (spikes and blanks, trip blanks, duplicates, etc.).

The following QC samples will be submitted for analysis to support the data validation:

- Trip Blank – at a rate of one per day
  - Soil – VOCs only
- Blind Field Duplicate – at a rate of one duplicate per twenty samples
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, PCBs, Hexavalent Chromium, and Cyanide
  - Sub-Slab Soil Gas – VOCs only
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, PCBs, and Hexavalent Chromium
- Field Blank and Equipment Blank
  - Soil – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Hexavalent Chromium, and Cyanide
  - Sub-Slab Soil Gas – VOCs only

The QC samples will be 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.

5.0 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

All investigation derived waste (IDW) procedures will be carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs, SOP No. 5 – Investigation-Derived Wastes Management.

6.0 DATA VALIDATION

All data validation procedures will be carried out in accordance with the QAPP Worksheet 34 – Data Verification and Validation Inputs, QAPP Worksheet 35 – Data Verification Procedures, and QAPP Worksheet 36 – Data Validation Procedures.

7.0 REPORTING

Following the receipt of all sampling results from Sub-Parcel B4-1 and Sub-Parcel B4-2 of "Area B Parcel B4", ARM will prepare a Phase II Site Investigation Report that will document the sample collection procedures and supporting rationale, and present and interpret the analytical results. All results will be presented in tabular and graphical formats as appropriate to best summarize the data for future use. The sample results will be compared against relevant criteria such as the MDE Generic Numeric Cleanup Standards and the EPA Regional Screening Levels, considering appropriate land use factors and institutional controls, to identify contaminants and exposure pathways of potential concern. ARM will also present recommendations for any additional site investigation activities if warranted.

8.0 SCHEDULE

The field activities below (including sample analysis and data validation) are planned so that they may be completed within six (6) months of agency approval of this Work Plan. In addition, the investigation report will be submitted to the regulatory authorities within two (2) months of completion of the field activities in accordance with these approximate timeframes:

- the sample collection activities will take approximately five (5) weeks to complete (including mobilization activities) once approval of the work plan is received;
- the soil and groundwater sample analysis, data validation and review is expected to require an additional eight (8) weeks to complete; and
- the preparation of the investigation report, including an internal Quality Assurance Review cycle, will require another six (6) weeks.

FIGURES

ARM Group Inc.
Earth Resource Engineers and Consultants

0 375 750 1,500 Feet

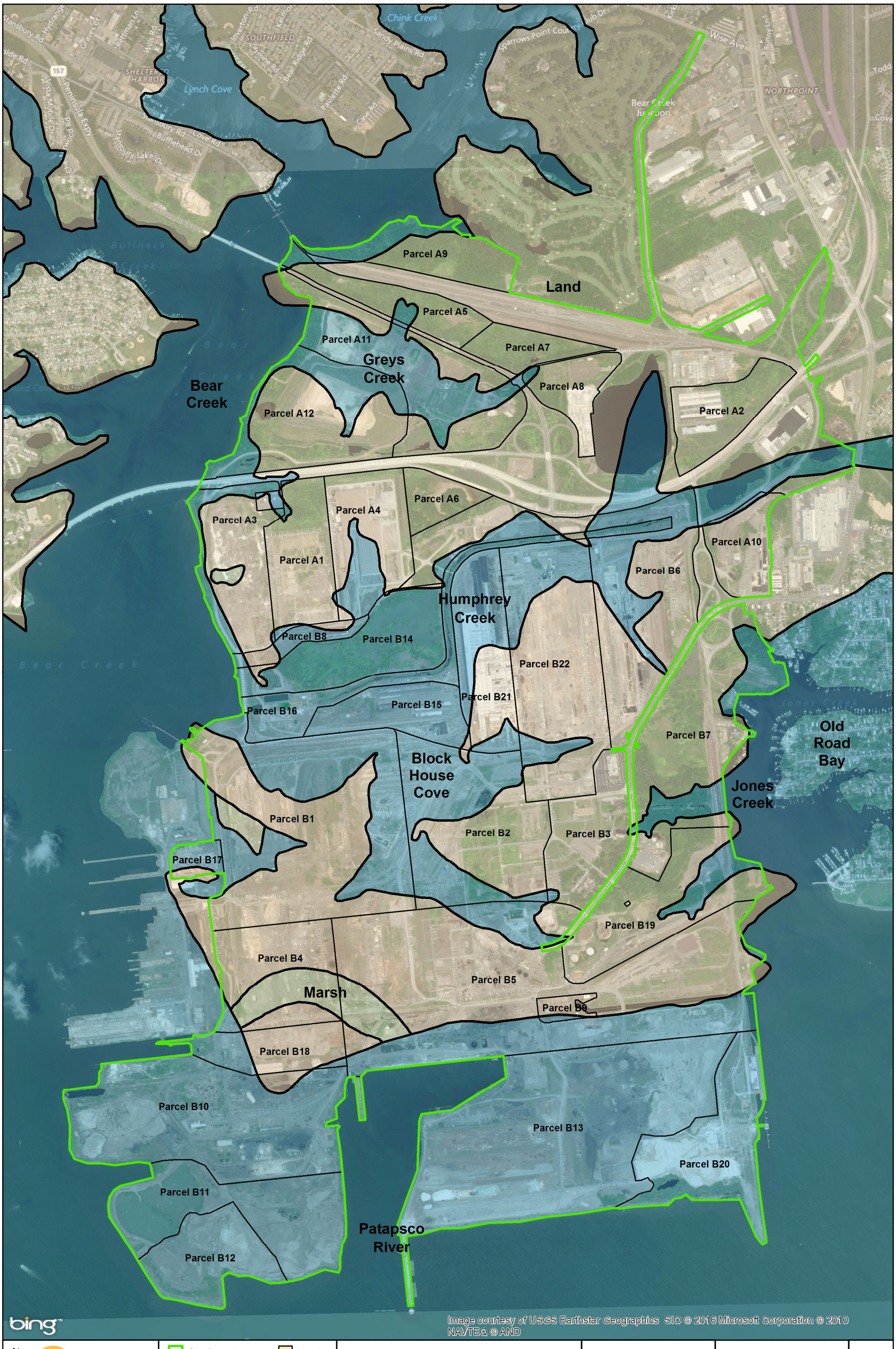
Site Boundary
Private Property
Area A Boundaries
Area B Boundaries

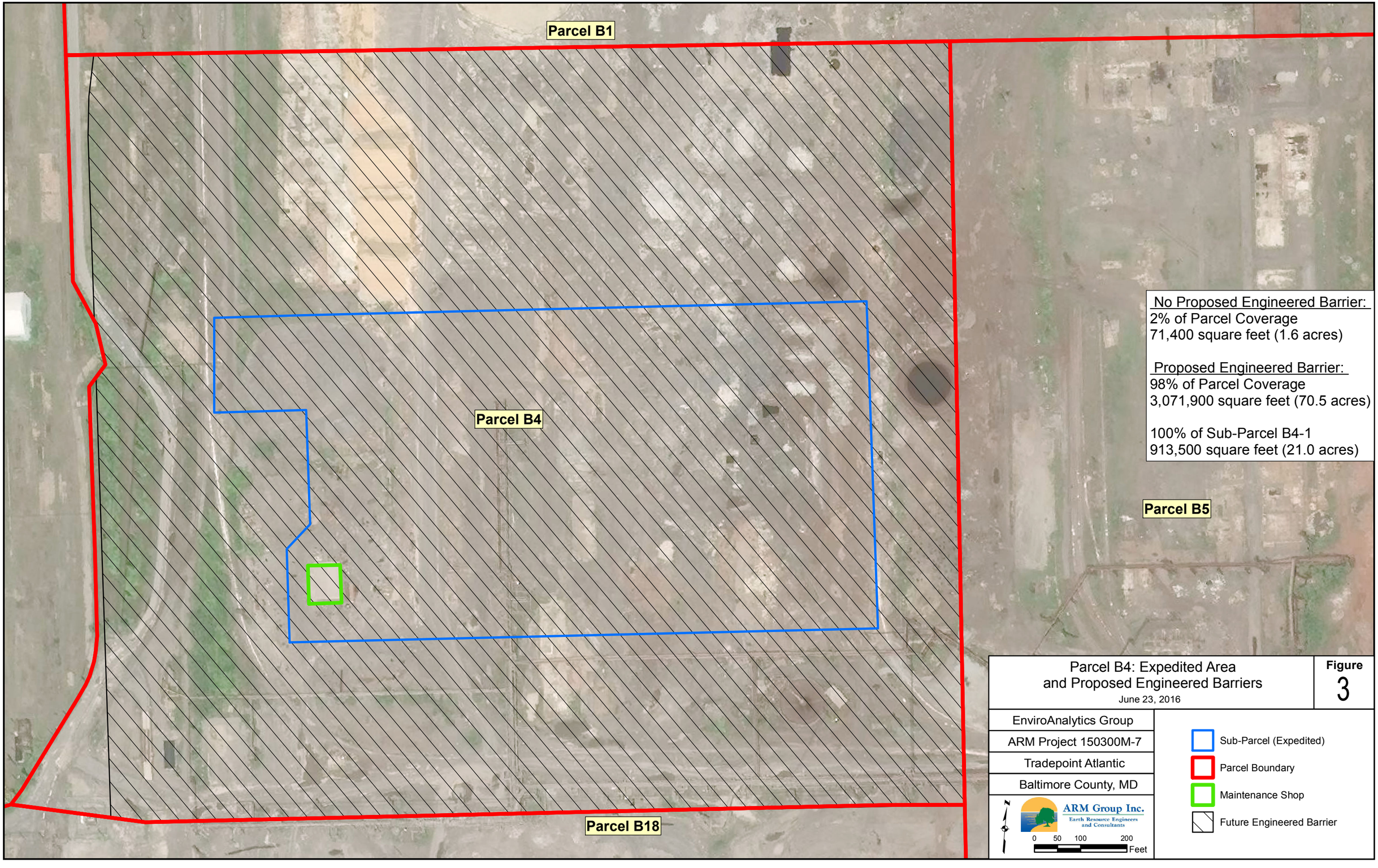
Tradepoint Atlantic
Area A and Area B Parcels

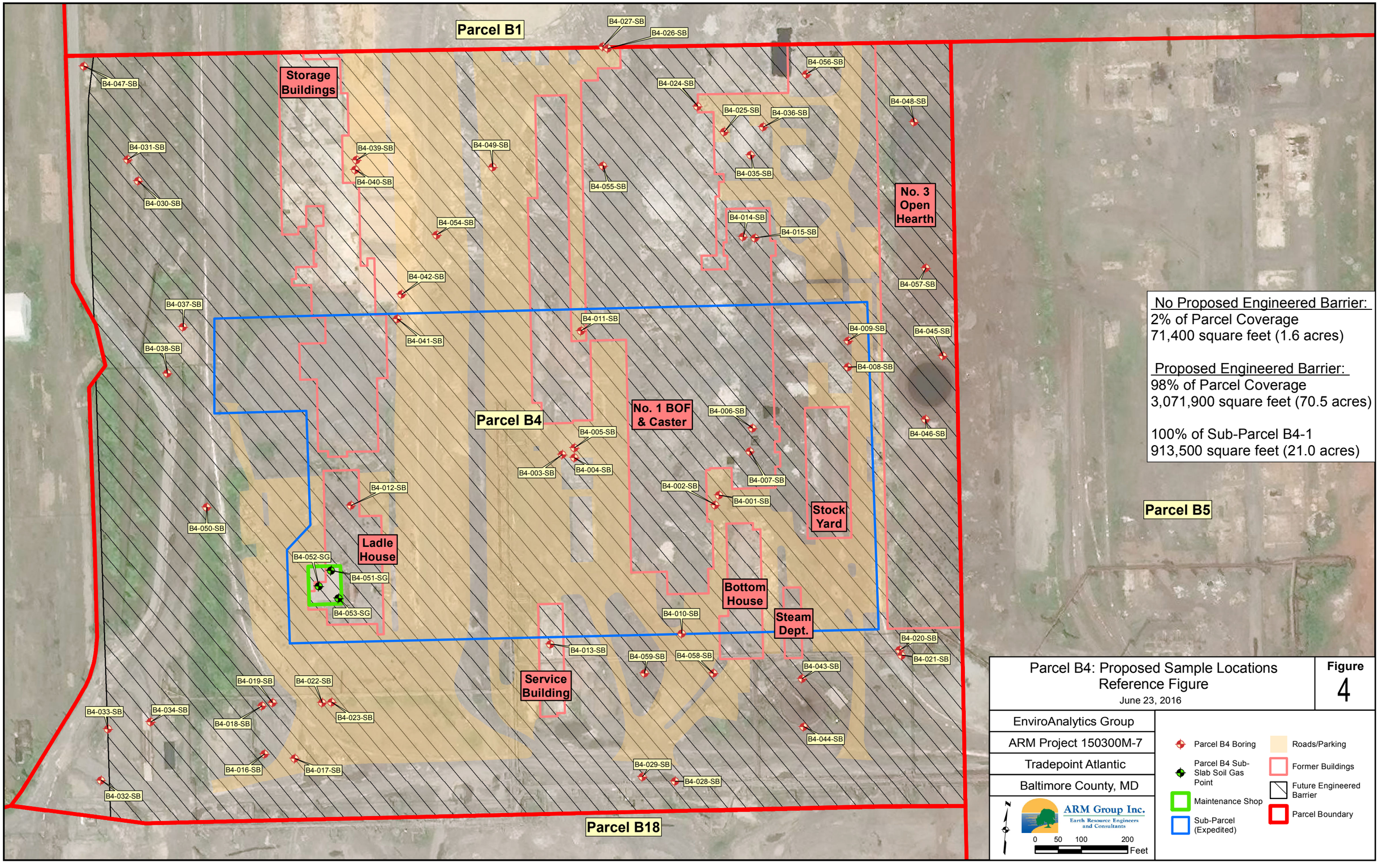
May 31, 2016

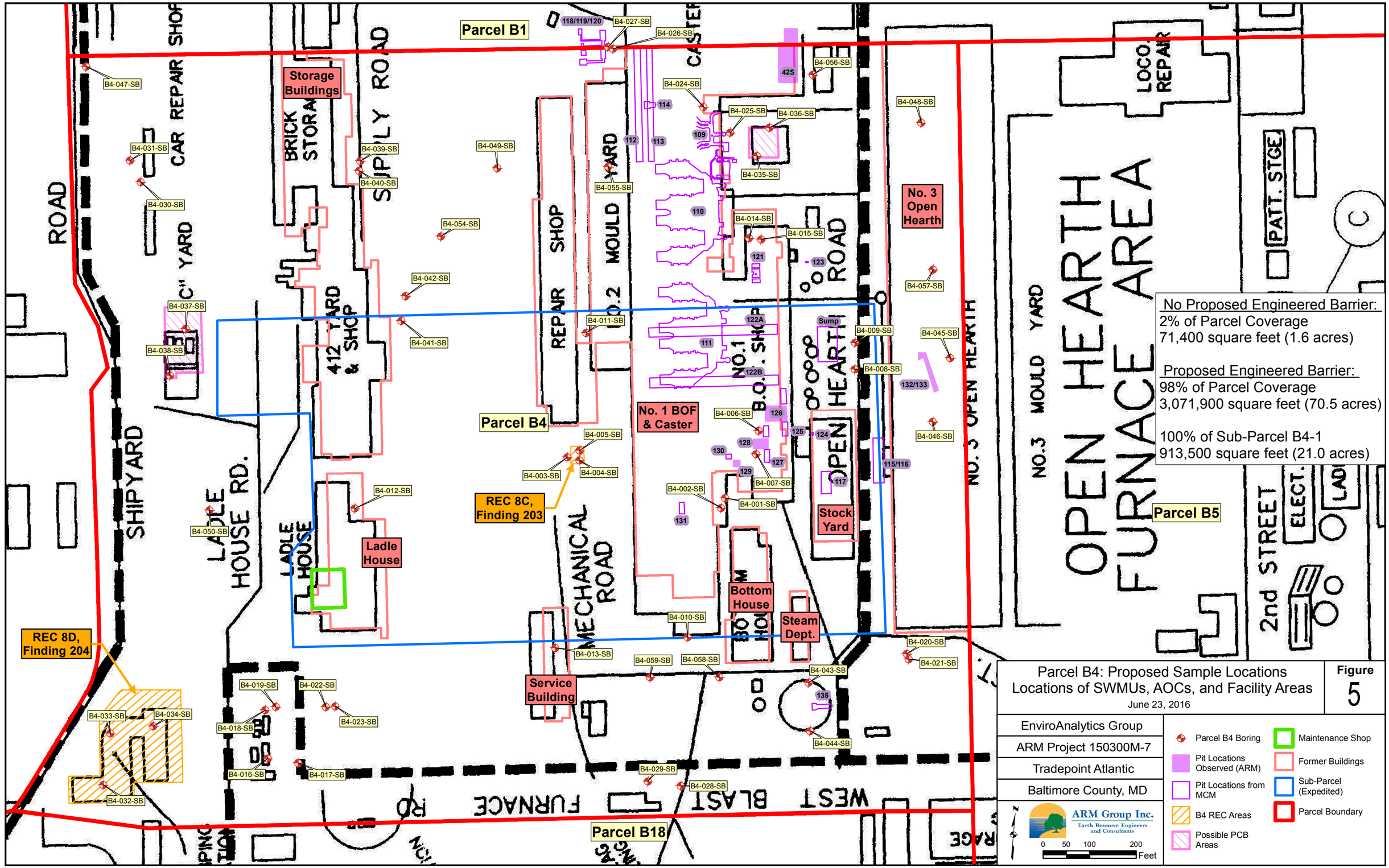
EnviroAnalytics Group	Tradepoint Atlantic
Area A: Project 150298M Area B: Project 150300M	Baltimore County, MD

Figure 1


Chink Creek
Lynch Cove
Bear Creek
Greys Creek
Humphrey Creek
Block House Cove
Old Road Bay
Jones Creek
Patapsco River
Marsh
Land
Parcel A1
Parcel A2
Parcel A3
Parcel A4
Parcel A5
Parcel A6
Parcel A7
Parcel A8
Parcel A9
Parcel A10
Parcel A11
Parcel A12
Parcel B1
Parcel B2
Parcel B3
Parcel B4
Parcel B5
Parcel B6
Parcel B7
Parcel B8
Parcel B9
Parcel B10
Parcel B11
Parcel B12
Parcel B13
Parcel B14
Parcel B15
Parcel B16
Parcel B17
Parcel B18
Parcel B19
Parcel B20
Parcel B21
Parcel B22
Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation © 2010 NAVTEQ © AND
bing
N
ARM Group Inc.
Earth Resource Engineers and Consultants
0 375 750 1,500
Feet
Site Boundary
Area A Boundaries
Area B Boundaries
Land
Marsh
Water
Approximate Shoreline in 1916
May 31, 2016
Adapted from Figure 2-5 of the Description of Current Conditions Report prepared by Rust Environmental and Infrastructure, dated January 1998
EnviroAnalytics Group
Area A: Project 150298M
Area B: Project 150300M
Tradepoint Atlantic
Baltimore County, MD
Figure
2


Parcel B1
Parcel B4
Parcel B5
Parcel B18
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Expedited Area
and Proposed Engineered Barriers
June 23, 2016
Figure
3
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet
Sub-Parcel (Expedited)
Parcel Boundary
Maintenance Shop
Future Engineered Barrier


Parcel B1
B4-027-SB
B4-026-SB
B4-047-SB
Storage Buildings
B4-056-SB
B4-024-SB
B4-048-SB
B4-025-SB
B4-036-SB
B4-031-SB
B4-039-SB
B4-049-SB
B4-035-SB
B4-040-SB
B4-055-SB
B4-030-SB
No. 3 Open Hearth
B4-014-SB
B4-054-SB
B4-015-SB
B4-042-SB
B4-057-SB
B4-037-SB
B4-011-SB
B4-009-SB
B4-045-SB
B4-041-SB
B4-038-SB
B4-008-SB
No. 1 BOF & Caster
B4-006-SB
Parcel B4
B4-005-SB
B4-046-SB
B4-003-SB
B4-004-SB
B4-007-SB
B4-012-SB
B4-002-SB
B4-001-SB
B4-050-SB
Stock Yard
Parcel B5
Ladle House
B4-052-SG
B4-051-SG
Bottom House
B4-053-SG
B4-010-SB
Steam Dept.
B4-020-SB
B4-013-SB
B4-059-SB
B4-058-SB
B4-021-SB
B4-043-SB
B4-019-SB
B4-022-SB
Service Building
B4-033-SB
B4-034-SB
B4-023-SB
B4-018-SB
B4-044-SB
B4-016-SB
B4-017-SB
B4-029-SB
B4-028-SB
B4-032-SB
Parcel B18
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Proposed Sample Locations Reference Figure
June 23, 2016
Figure 4
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet
Parcel B4 Boring
Parcel B4 Sub-Slab Soil Gas Point
Maintenance Shop
Sub-Parcel (Expedited)
Roads/Parking
Former Buildings
Future Engineered Barrier
Parcel Boundary


Parcel B1
Storage Buildings
Parcel B4
Parcel B5
Parcel B18
No. 1 BOF & Caster
No. 3 Open Hearth
Ladle House
Bottom House
Steam Dept.
Service Building
Stock Yard
REC 8C, Finding 203
REC 8D, Finding 204
B4-047-SB
B4-031-SB
B4-030-SB
B4-037-SB
B4-038-SB
B4-039-SB
B4-040-SB
B4-049-SB
B4-054-SB
B4-042-SB
B4-041-SB
B4-011-SB
B4-055-SB
118/119/120
B4-027-SB
B4-026-SB
42S
B4-056-SB
B4-024-SB
B4-025-SB
B4-036-SB
B4-035-SB
B4-048-SB
B4-014-SB
B4-015-SB
B4-057-SB
B4-045-SB
B4-009-SB
B4-008-SB
132/133
B4-046-SB
115/116
B4-006-SB
B4-007-SB
B4-002-SB
B4-001-SB
B4-005-SB
B4-003-SB
B4-004-SB
B4-012-SB
B4-050-SB
B4-010-SB
B4-013-SB
B4-059-SB
B4-058-SB
B4-043-SB
B4-020-SB
B4-021-SB
B4-044-SB
B4-019-SB
B4-022-SB
B4-018-SB
B4-023-SB
B4-033-SB
B4-034-SB
B4-016-SB
B4-017-SB
B4-032-SB
B4-029-SB
B4-028-SB
SHIPYARD
LADLE HOUSE RD.
MECHANICAL ROAD
WEST BLAST FURNACE RD
OPEN HEARTH FURNACE AREA
NO.3 MOULD YARD
2nd STREET
PATT. STGE
LOCO. REPAIR
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Proposed Sample Locations
Locations of SWMUs, AOCs, and Facility Areas
June 23, 2016
Figure 5
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet
Parcel B4 Boring
Pit Locations Observed (ARM)
Pit Locations from MCM
B4 REC Areas
Possible PCB Areas
Maintenance Shop
Former Buildings
Sub-Parcel (Expedited)
Parcel Boundary

Parcel B1

Storage Buildings

No. 3 Open Hearth

No. 1 BOF & Caster

Parcel B4

Parcel B5

Parcel B18

Ladle House

Stock Yard

Bottom House

Steam Dept.

Service Building

REC 8C, Finding 203

REC 8D, Finding 204

B4-001-SB
B4-002-SB
B4-003-SB
B4-004-SB
B4-005-SB
B4-006-SB
B4-007-SB
B4-008-SB
B4-009-SB
B4-010-SB
B4-011-SB
B4-012-SB
B4-013-SB
B4-014-SB
B4-015-SB
B4-016-SB
B4-017-SB
B4-018-SB
B4-019-SB
B4-020-SB
B4-021-SB
B4-022-SB
B4-023-SB
B4-024-SB
B4-025-SB
B4-026-SB
B4-027-SB
B4-028-SB
B4-029-SB
B4-030-SB
B4-031-SB
B4-032-SB
B4-033-SB
B4-034-SB
B4-035-SB
B4-036-SB
B4-037-SB
B4-038-SB
B4-039-SB
B4-040-SB
B4-041-SB
B4-042-SB
B4-043-SB
B4-044-SB
B4-045-SB
B4-046-SB
B4-047-SB
B4-048-SB
B4-049-SB
B4-050-SB
B4-054-SB
B4-055-SB
B4-056-SB
B4-057-SB
B4-058-SB
B4-059-SB

118/119/120
42S
114
112
113
109
110
121
123
122A
111
122B
126
125
124
128
130
127
129
117
115/116
131
135
132/133
Sump

No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)

Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)

100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)

Parcel B4: Proposed Sample Locations
Historical Site Drawings - 5000 Set

June 23, 2016

Figure 6

EnviroAnalytics Group

ARM Project 150300M-7

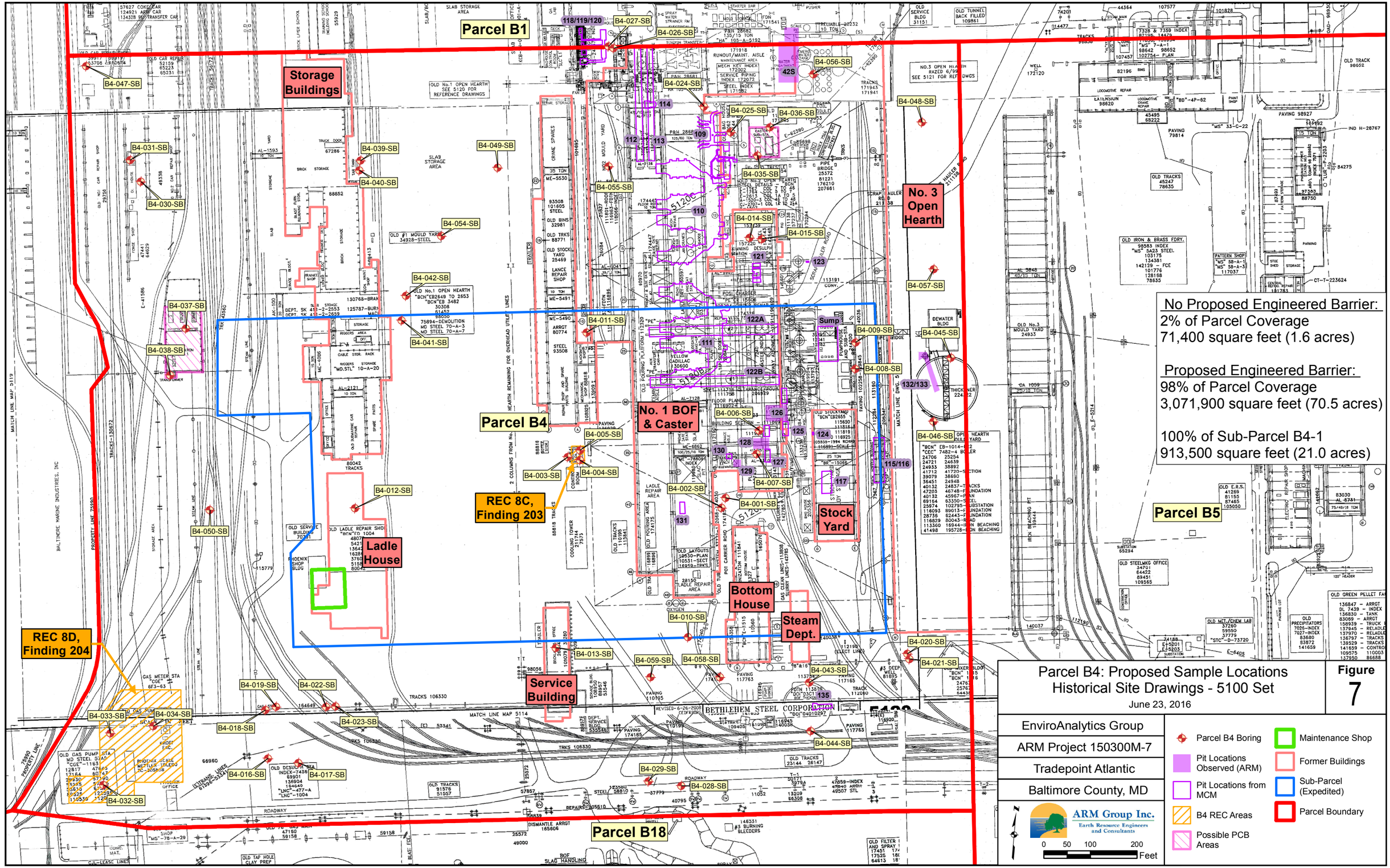
Tradepoint Atlantic

Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 50 100 200 Feet

- Parcel B4 Boring
- Pit Locations Observed (ARM)
- Pit Locations from MCM
- B4 REC Areas
- Possible PCB Areas
- Maintenance Shop
- Former Buildings
- Sub-Parcel (Expedited)
- Parcel Boundary


Parcel B1
Storage Buildings
No. 3 Open Hearth
Parcel B4
No. 1 BOF & Caster
REC 8C, Finding 203
Ladle House
Stock Yard
Bottom House
Steam Dept.
Service Building
REC 8D, Finding 204
Parcel B5
Parcel B18
B4-001-SB
B4-002-SB
B4-003-SB
B4-004-SB
B4-005-SB
B4-006-SB
B4-007-SB
B4-008-SB
B4-009-SB
B4-010-SB
B4-011-SB
B4-012-SB
B4-013-SB
B4-014-SB
B4-015-SB
B4-016-SB
B4-017-SB
B4-018-SB
B4-019-SB
B4-020-SB
B4-021-SB
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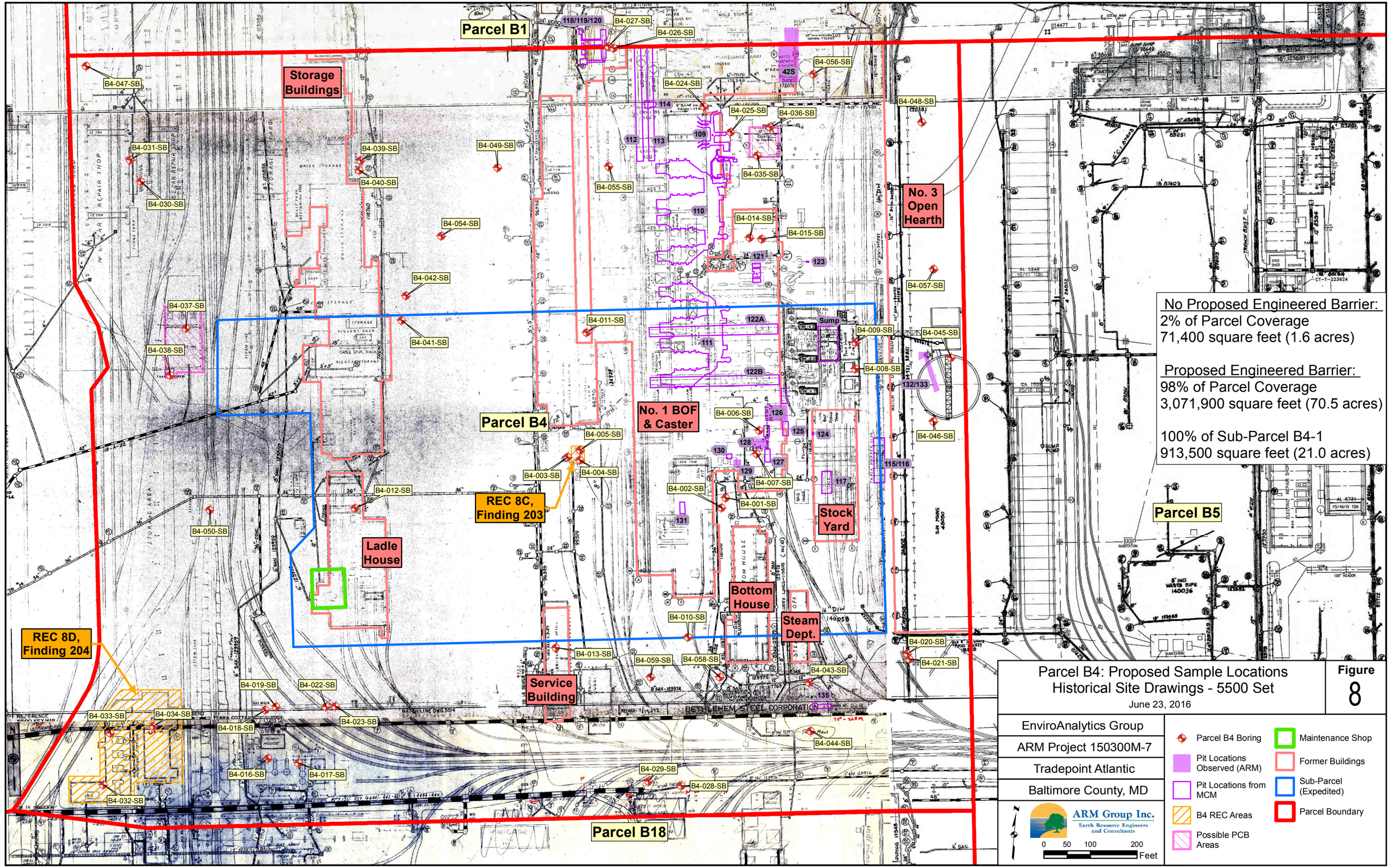
B4-023-SB
B4-024-SB
B4-025-SB
B4-026-SB
B4-027-SB
B4-028-SB
B4-029-SB
B4-030-SB
B4-031-SB
B4-032-SB
B4-033-SB
B4-034-SB
B4-035-SB
B4-036-SB
B4-037-SB
B4-038-SB
B4-039-SB
B4-040-SB
B4-041-SB
B4-042-SB
B4-043-SB
B4-044-SB
B4-045-SB
B4-046-SB
B4-047-SB
B4-048-SB
B4-049-SB
B4-050-SB
B4-054-SB
B4-055-SB
B4-056-SB
B4-057-SB
B4-058-SB
B4-059-SB
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Proposed Sample Locations
Historical Site Drawings - 5100 Set
June 23, 2016
Figure 7
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
Parcel B4 Boring
Pit Locations Observed (ARM)
Pit Locations from MCM
B4 REC Areas
Possible PCB Areas
Maintenance Shop
Former Buildings
Sub-Parcel (Expedited)
Parcel Boundary
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet



No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)

Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)

100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)

Parcel B4: Proposed Sample Locations
Historical Site Drawings - 5500 Set

June 23, 2016

Figure 8

EnviroAnalytics Group

ARM Project 150300M-7

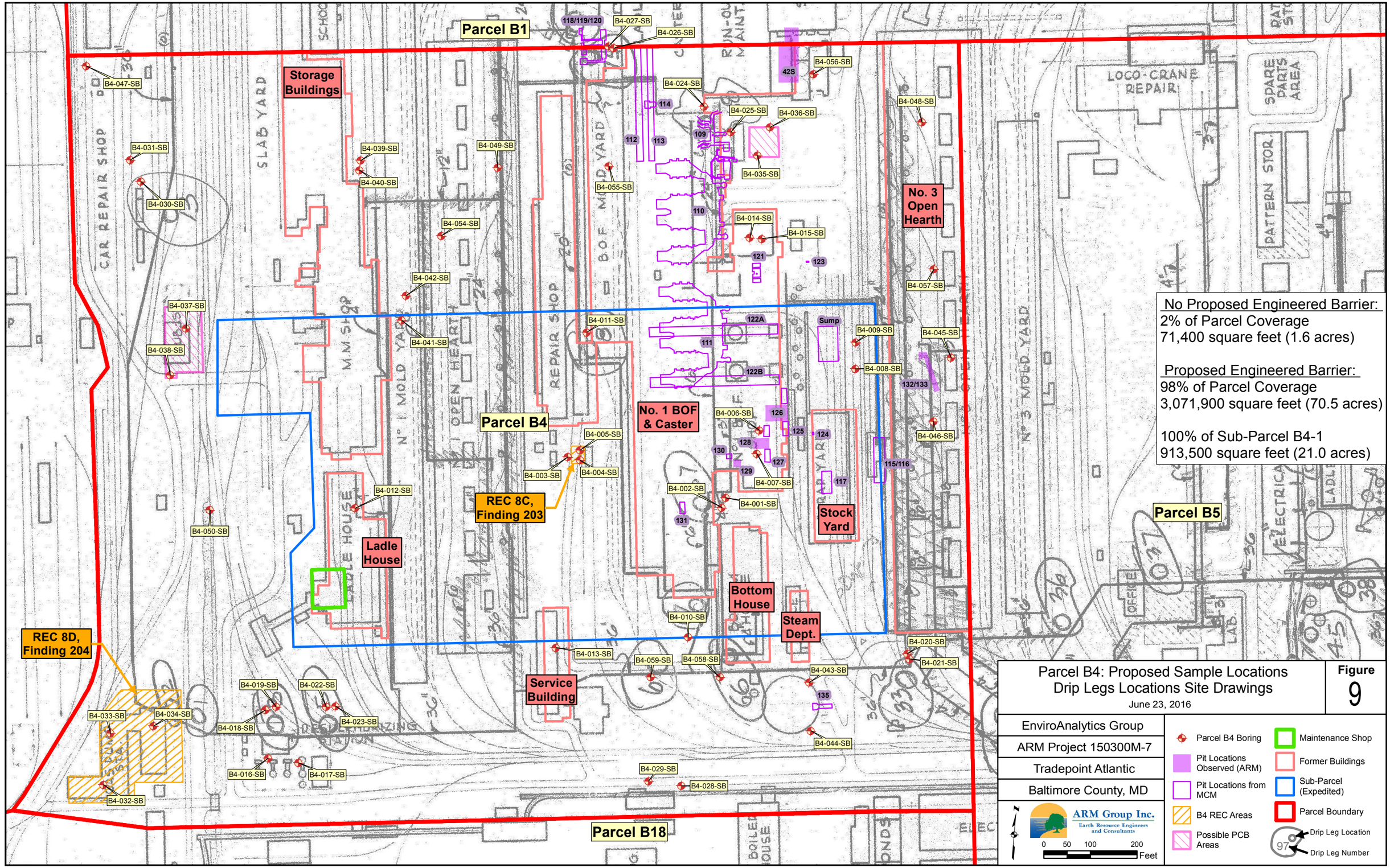
Tradepoint Atlantic

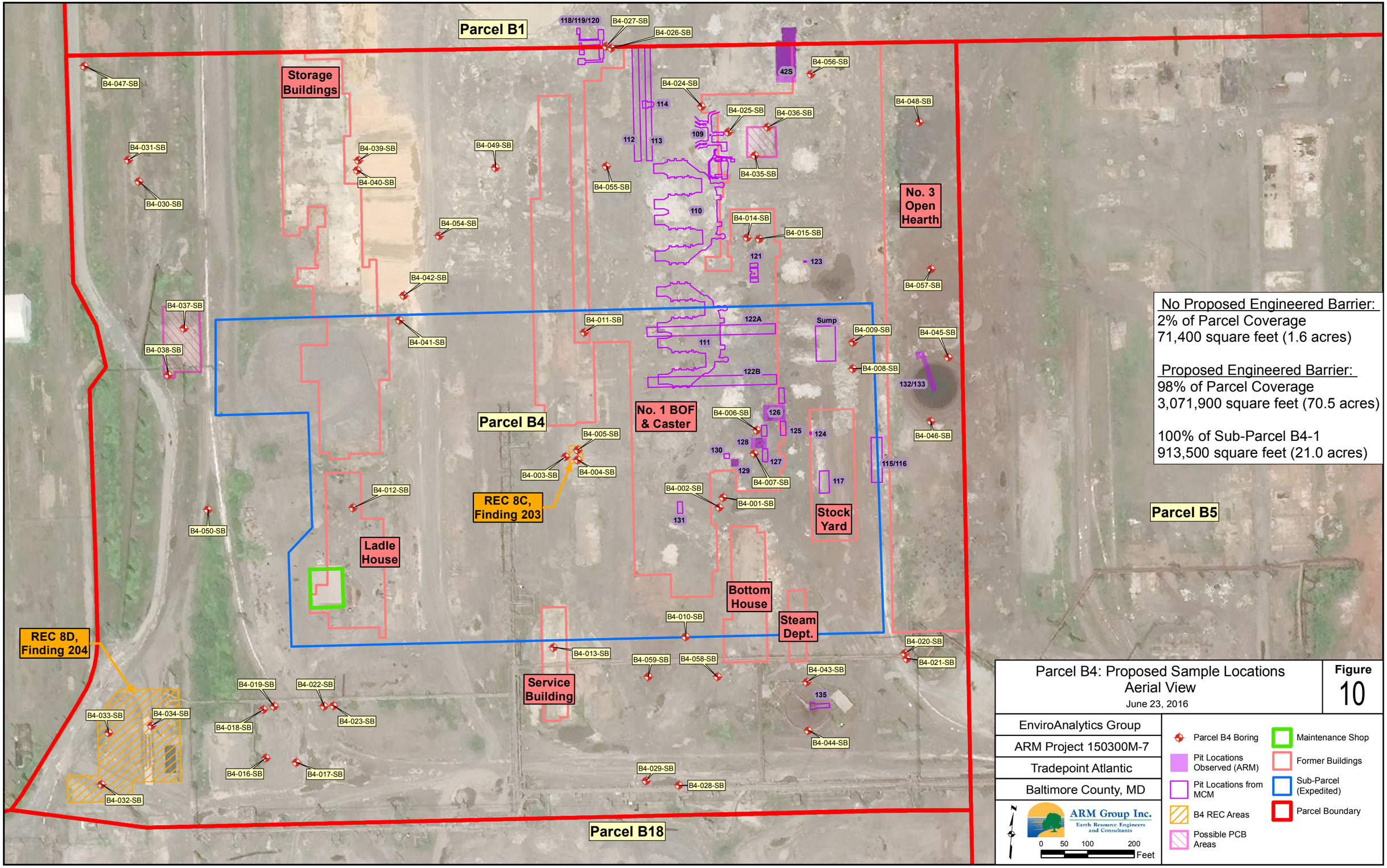
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 50 100 200 Feet

- Parcel B4 Boring
- Pit Locations Observed (ARM)
- Pit Locations from MCM
- B4 REC Areas
- Possible PCB Areas
- Maintenance Shop
- Former Buildings
- Sub-Parcel (Expedited)
- Parcel Boundary


Parcel B1
Storage Buildings
No. 3 Open Hearth
No. 1 BOF & Caster
Parcel B4
Parcel B5
Parcel B18
REC 8C, Finding 203
REC 8D, Finding 204
Ladle House
Stock Yard
Bottom House
Steam Dept.
Service Building
B4-047-SB
B4-031-SB
B4-030-SB
B4-037-SB
B4-038-SB
B4-039-SB
B4-040-SB
B4-049-SB
B4-054-SB
B4-042-SB
B4-041-SB
B4-011-SB
B4-055-SB
B4-027-SB
B4-026-SB
B4-056-SB
B4-024-SB
B4-025-SB
B4-036-SB
B4-035-SB
B4-048-SB
B4-014-SB
B4-015-SB
B4-057-SB
B4-009-SB
B4-045-SB
B4-008-SB
B4-006-SB
B4-046-SB
B4-005-SB
B4-003-SB
B4-004-SB
B4-012-SB
B4-050-SB
B4-002-SB
B4-001-SB
B4-007-SB
B4-010-SB
B4-013-SB
B4-059-SB
B4-058-SB
B4-020-SB
B4-021-SB
B4-043-SB
B4-044-SB
B4-033-SB
B4-034-SB
B4-032-SB
B4-019-SB
B4-022-SB
B4-018-SB
B4-023-SB
B4-016-SB
B4-017-SB
B4-029-SB
B4-028-SB
118/119/120
42S
114
112
113
109
110
121
123
122A
111
122B
126
125
124
128
130
129
127
117
131
115/116
132/133
135
Sump
SLAB YARD
CAR REPAIR SHOP
SCHOOL
MOLD YARD
OPEN HEARTH
REPAIR SHOP
BOF
RUN-OUT
LOCO CRANE REPAIR
SPARE PARTS AREA
PATTERN STOR.
LADLE
OFFICE
LAB
ELECTRICAL
BOILER HOUSE
PONDS
DEGREASING
STATION
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Proposed Sample Locations
Drip Legs Locations Site Drawings
June 23, 2016
Figure 9
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet
Parcel B4 Boring
Pit Locations Observed (ARM)
Pit Locations from MCM
B4 REC Areas
Possible PCB Areas
Maintenance Shop
Former Buildings
Sub-Parcel (Expedited)
Parcel Boundary
Drip Leg Location
Drip Leg Number
97



No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)

Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)

100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)

Parcel B4: Proposed Sample Locations Aerial View

June 23, 2016

Figure 10

EnviroAnalytics Group

ARM Project 150300M-7

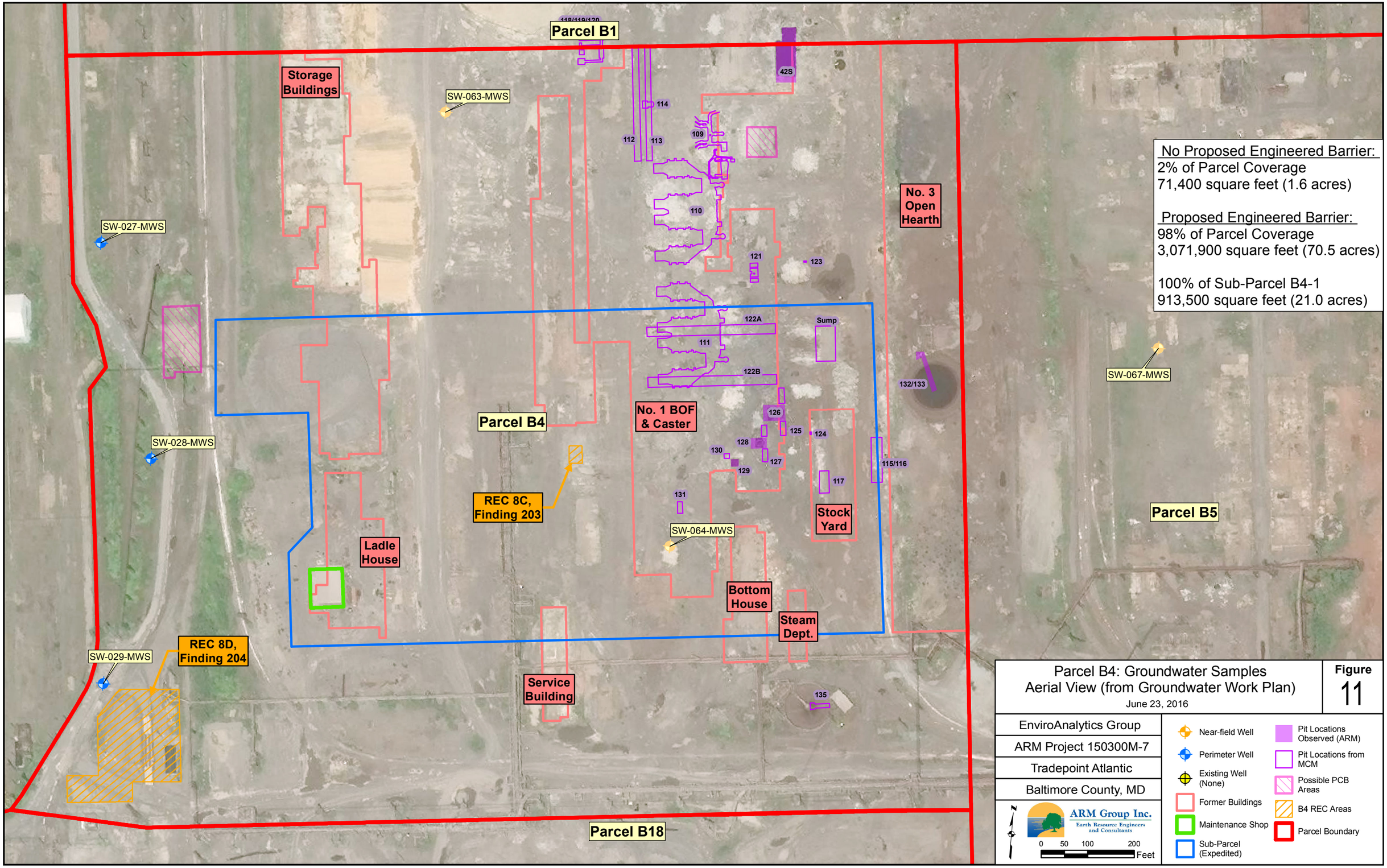
Tradepoint Atlantic

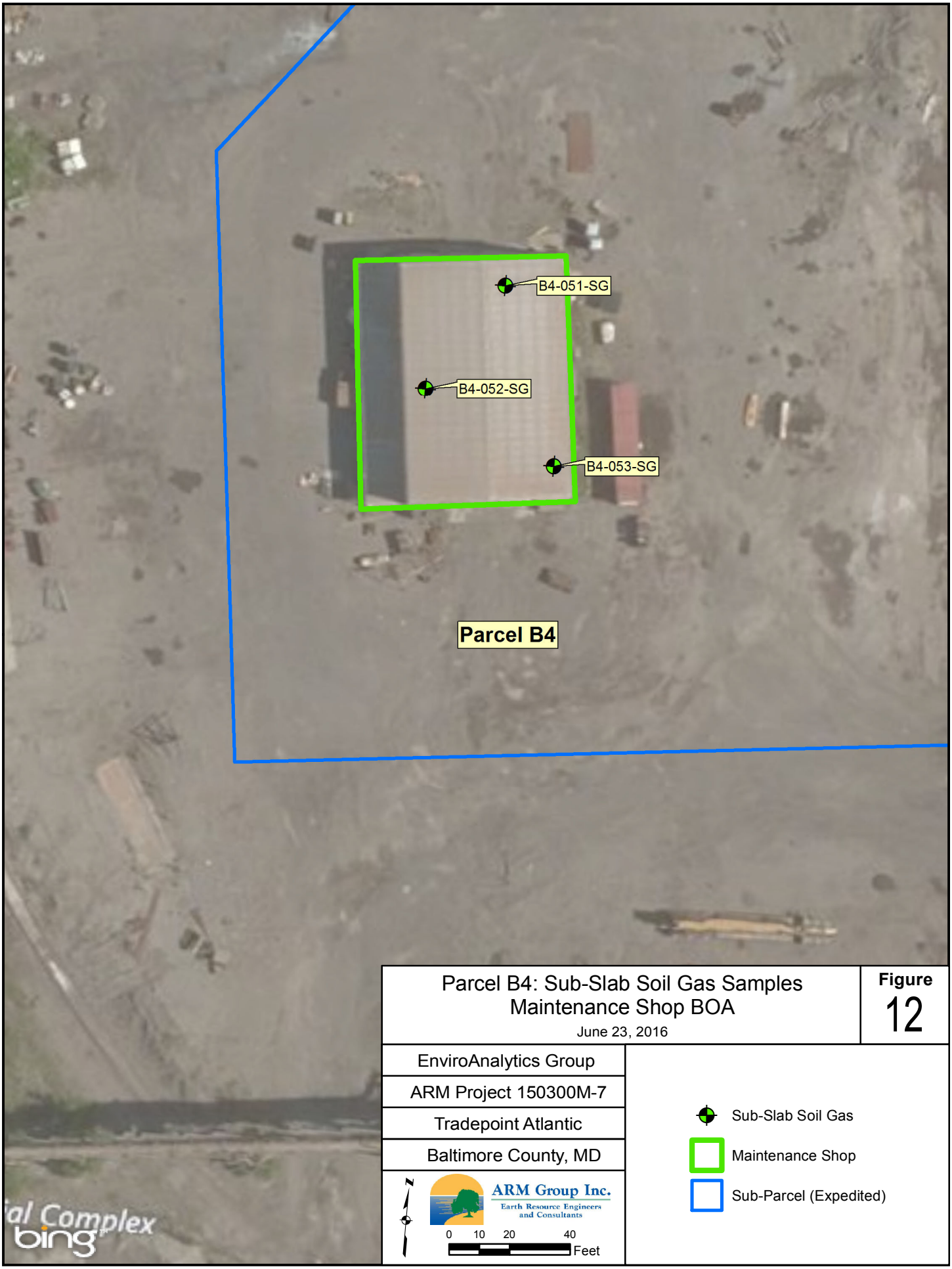
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 50 100 200 Feet

- Parcel B4 Boring
- Pit Locations Observed (ARM)
- Pit Locations from MCM
- B4 REC Areas
- Possible PCB Areas
- Maintenance Shop
- Former Buildings
- Sub-Parcel (Expedited)
- Parcel Boundary


Parcel B1
Storage Buildings
SW-063-MWS
42S
114
112
113
109
110
SW-027-MWS
No. 3 Open Hearth
121
123
122A
Sump
111
122B
132/133
SW-067-MWS
Parcel B4
No. 1 BOF & Caster
126
125
124
128
130
127
129
115/116
117
131
REC 8C, Finding 203
Stock Yard
Parcel B5
SW-028-MWS
SW-064-MWS
Ladle House
Bottom House
Steam Dept.
SW-029-MWS
REC 8D, Finding 204
Service Building
135
Parcel B18
No Proposed Engineered Barrier:
2% of Parcel Coverage
71,400 square feet (1.6 acres)
Proposed Engineered Barrier:
98% of Parcel Coverage
3,071,900 square feet (70.5 acres)
100% of Sub-Parcel B4-1
913,500 square feet (21.0 acres)
Parcel B4: Groundwater Samples
Aerial View (from Groundwater Work Plan)
June 23, 2016
Figure 11
EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 50 100 200
Feet
Near-field Well
Perimeter Well
Existing Well (None)
Former Buildings
Maintenance Shop
Sub-Parcel (Expedited)
Pit Locations Observed (ARM)
Pit Locations from MCM
Possible PCB Areas
B4 REC Areas
Parcel Boundary



Parcel B4: Sub-Slab Soil Gas Samples
Maintenance Shop BOA
June 23, 2016

Figure
12

EnviroAnalytics Group
ARM Project 150300M-7
Tradepoint Atlantic
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 10 20 40
Feet

Sub-Slab Soil Gas
Maintenance Shop
Sub-Parcel (Expedited)

APPENDIX A

Parcel B4 Maintenance Shop Photographic Log
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

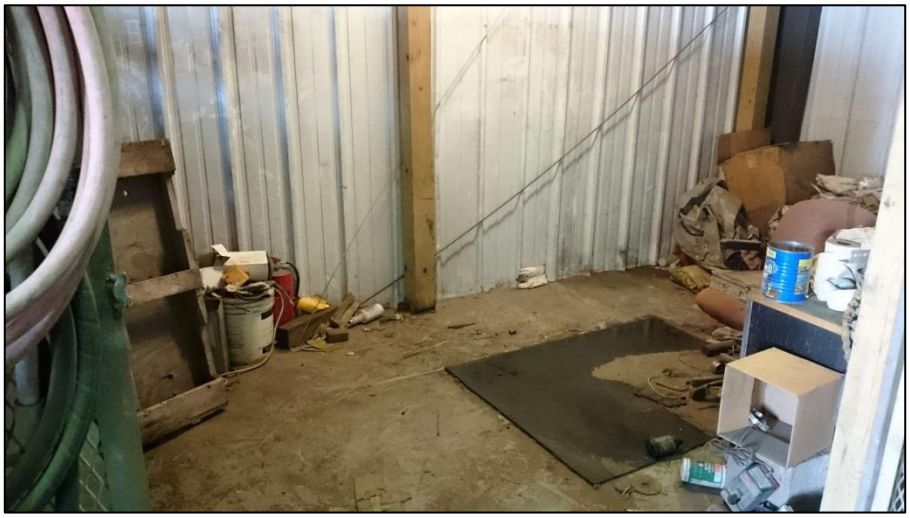
030216-1: Exterior view of maintenance shop, facing southwest.

030216-2: Interior view of maintenance shop showing open work area, facing south.

030216-3: Interior view of maintenance shop showing second level storage, facing east.

030216-4: Interior generic storage along eastern wall (north end), facing east.

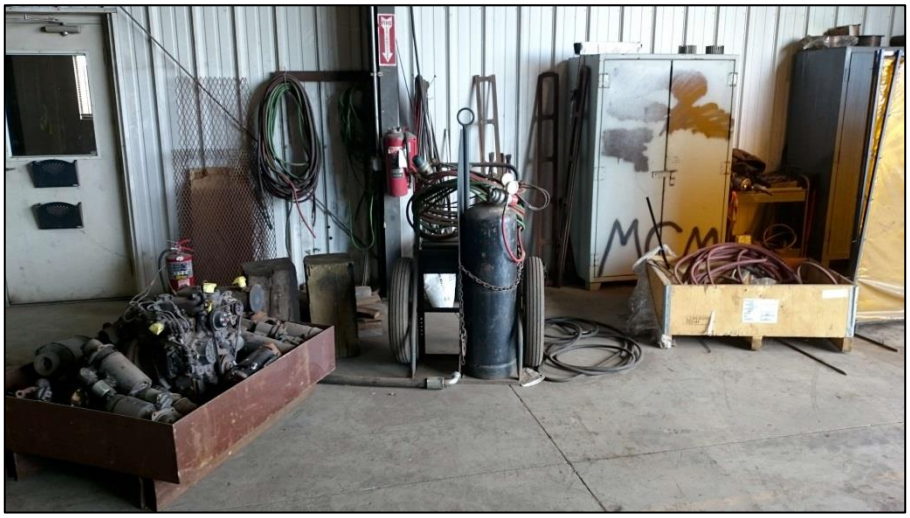
030216-5: Interior generic storage along eastern wall (middle section), facing east.



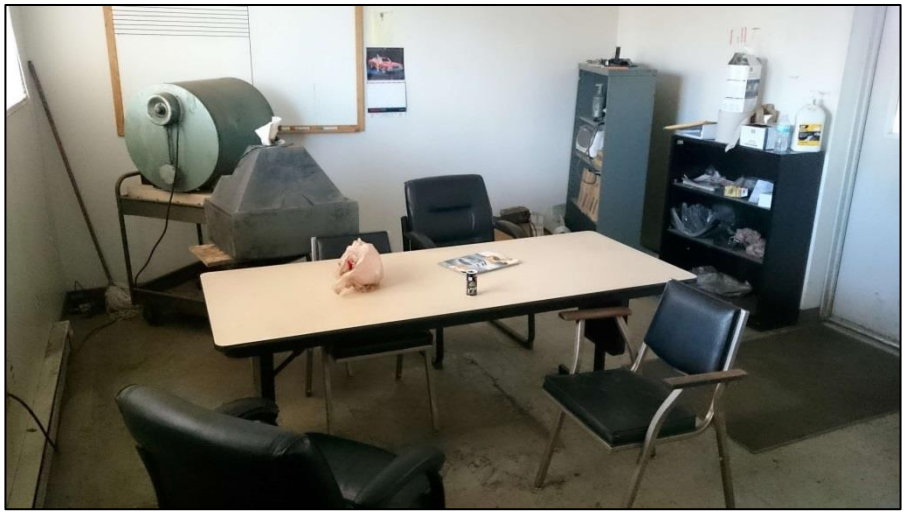
030216-6: Interior office with general storage along eastern wall (south end), facing east.

030216-7: Interior generic storage along western wall (south end) and exterior door, facing west. Noted yellow fuel cans.

030216-8: Interior generic storage along western wall (middle section), facing west. Noted red parts washer with odors.



030216-9: Interior generic storage along western wall (north end) and main office door, facing west.



030216-10: Interior view of main office located on the west side of the maintenance shop, facing north.

030216-11: View of outbuilding located on the west side of the maintenance shop, facing east. Noted hanging grease guns.

030216-12: Close-up view (rotated) of hanging grease gun, facing east.

030216-13: Close-up view of leaked oil container in interior office (see photograph 6) along eastern building wall.

030216-14: Close-up view of parts washer (see photograph 8) along western interior wall. Odors noted during inspection..

APPENDIX B

Parcel B1 Pit Information from MCM
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Structure ID Number*	Function	MCM Field Verified?	Approx. Length (ft)	Approx. Width (ft)	Approx. Depth (ft)
CEI-109	Dust Collection Tunnel	No	85	67	6.6
CEI-110	Waste Heater Tunnel	No	230	140	10.1
CEI-111	Waste Heater Tunnel	No	230	140	10.1
CEI-112	Ladle Transfer Car Pit	No	199	13	1.8
CEI-113	Ladle Transfer Car Pit	No	199	12	1.8
CEI-114	No. 2 Open Hearth	No	18	11	11.9
CEI-115/116	Track Hopper Pit and Conveyor Tunnel	No	97	23	18.0
CEI-117	Track Yard Scale Pit	No	40	11	9.3
CEI-118/119/120	Mould Treating Pit	No	80	60	10.5
CEI-121	Coal Pit	No	41	17	14.0
CEI-122A	No. 1 Furnace Rubble Pit	No	287	19	4.0
CEI-122B	No. 2 Furnace Rubble Pit	No	287	19	4.0
CEI-123	Stack #4 Sump Pit	No	6	3	7.0
CEI-124	Stack #1 Sump Pit	No	6	3	7.0
CEI-125	Reladling Pit Track Scale	No	49	28	2.3
CEI-126	Reladling Pit	No	39	25	26.2
CEI-127	Emergency Reladling Pit Track Scale	No	28	19	9.0
CEI-128	Emergency Reladling Pit	No	20	24	17.0
CEI-129	Freight Elevator Pit	No	20	20	9.5
CEI-130	Passenger Elevator Pit	No	9	10	5.5
CEI-131	Slag Scale Pit	No	24	10	5.0
CEI-132/133	Replacement Thickener Pump House/Tunnel	No	90	10	8.7
CEI-135	Original Thickener Tunnel	No	49	7	3.3
CEI-42S	Water Treatment Building Basement	No	123	46	18.5
Sump[¥]	Pump House Sump Pit	No	80	40	*Unknown*

*Abbreviated IDs are given on the figures (only the unique identifiers after "CEI-")

[¥]The pump house sump pit was not identified on the set of subgrade structures provided by MCM

APPENDIX C

Parcel B4 Existing Pits Photographic Log
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

021916-1: Elevator Shaft (Sub-1), partially filled with standing water, facing north.

021916-2: Emergency Plating Pit (Sub-2), partially filled with standing water and containing a metallurgical ladle, facing south.

021916-3: Reladling Pit (Sub-3), partially filled with standing water, facing north.

021916-4: Water Treatment Building Basement (Sub-4), partially filled with standing water and construction rubble, facing north.

021916-5: Thickener Tank Tunnel (Sub-5) underneath the intact tank, facing south.

APPENDIX D

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-027-MWS	Shallow	4.4-14.4	1,1,1-Trichloroethane	71-55-6	2/11/2016	1	U	200	NO
SW-027-MWS	Shallow	4.4-14.4	1,1,2,2-Tetrachloroethane	79-34-5	2/11/2016	1	U	0.076	NO
SW-027-MWS	Shallow	4.4-14.4	1,1,2-Trichloroethane	79-00-5	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	1,1,2-Trichlorotrifluoroethane	76-13-1	2/11/2016	50	U	55000	NO
SW-027-MWS	Shallow	4.4-14.4	1,1-Dichloroethane	75-34-3	2/11/2016	1	U	2.7	NO
SW-027-MWS	Shallow	4.4-14.4	1,1-Dichloroethene	75-35-4	2/11/2016	1	U	7	NO
SW-027-MWS	Shallow	4.4-14.4	1,2,3-Trichlorobenzene	87-61-6	2/11/2016	2	U	7	NO
SW-027-MWS	Shallow	4.4-14.4	1,2,4,5-Tetrachlorobenzene	95-94-3	2/11/2016	1	U	1.7	NO
SW-027-MWS	Shallow	4.4-14.4	1,2,4-Trichlorobenzene	120-82-1	2/11/2016	1	U	70	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dibromo-3-chloropropane	96-12-8	2/11/2016	5	U	0.2	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dibromoethane (EDB)	106-93-4	2/11/2016	1	U	0.0075	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dichlorobenzene	95-50-1	2/11/2016	1	U	600	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dichloroethane	107-06-2	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dichloroethene (Total)	540-59-0	2/11/2016	2	U	70	NO
SW-027-MWS	Shallow	4.4-14.4	1,2-Dichloropropane	78-87-5	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	1,3-Dichlorobenzene	541-73-1	2/11/2016	1	U		NO
SW-027-MWS	Shallow	4.4-14.4	1,4-Dichlorobenzene	106-46-7	2/11/2016	1	U	75	NO
SW-027-MWS	Shallow	4.4-14.4	1,4-Dioxane (p-Dioxane)	123-91-1	2/11/2016	0.1	U	0.46	NO
SW-027-MWS	Shallow	4.4-14.4	2,3,4,6-Tetrachlorophenol	58-90-2	2/11/2016	1	U	240	NO
SW-027-MWS	Shallow	4.4-14.4	2,4,5-Trichlorophenol	95-95-4	2/11/2016	2.5	U	1200	NO
SW-027-MWS	Shallow	4.4-14.4	2,4,6-Trichlorophenol	88-06-2	2/11/2016	1	U	4	NO
SW-027-MWS	Shallow	4.4-14.4	2,4-Dichlorophenol	120-83-2	2/11/2016	1	U	46	NO
SW-027-MWS	Shallow	4.4-14.4	2,4-Dimethylphenol	105-67-9	2/11/2016	1	U	360	NO
SW-027-MWS	Shallow	4.4-14.4	2,4-Dinitrophenol	51-28-5	2/11/2016	2.5	U	39	NO
SW-027-MWS	Shallow	4.4-14.4	2,4-Dinitrotoluene	121-14-2	2/11/2016	1	UL3	0.24	NO
SW-027-MWS	Shallow	4.4-14.4	2,6-Dinitrotoluene	606-20-2	2/11/2016	1	U	0.048	NO
SW-027-MWS	Shallow	4.4-14.4	2-Butanone (MEK)	78-93-3	2/11/2016	10	U	5600	NO
SW-027-MWS	Shallow	4.4-14.4	2-Chloronaphthalene	91-58-7	2/11/2016	1	U	750	NO
SW-027-MWS	Shallow	4.4-14.4	2-Chlorophenol	95-57-8	2/11/2016	1	U	91	NO
SW-027-MWS	Shallow	4.4-14.4	2-Hexanone	591-78-6	2/11/2016	10	U	38	NO
SW-027-MWS	Shallow	4.4-14.4	2-Methylnaphthalene	91-57-6	2/11/2016	0.1	U	36	NO
SW-027-MWS	Shallow	4.4-14.4	2-Methylphenol(o-Cresol)	95-48-7	2/11/2016	1	U	930	NO
SW-027-MWS	Shallow	4.4-14.4	2-Nitroaniline	88-74-4	2/11/2016	2.5	U	190	NO
SW-027-MWS	Shallow	4.4-14.4	3&4-Methylphenol(m&p Cresol)	108-39-4/106-44-5	2/11/2016	2	U	930	NO
SW-027-MWS	Shallow	4.4-14.4	3,3'-Dichlorobenzidine	91-94-1	2/11/2016	1	U	0.12	NO
SW-027-MWS	Shallow	4.4-14.4	4-Chloroaniline	106-47-8	2/11/2016	1	U	0.36	NO
SW-027-MWS	Shallow	4.4-14.4	4-Methyl-2-pentanone (MIBK)	108-10-1	2/11/2016	10	U	1200	NO
SW-027-MWS	Shallow	4.4-14.4	4-Nitroaniline	100-01-6	2/11/2016	2.5	U	3.8	NO
SW-027-MWS	Shallow	4.4-14.4	Acenaphthene	83-32-9	2/11/2016	0.1	U	530	NO
SW-027-MWS	Shallow	4.4-14.4	Acenaphthylene	208-96-8	2/11/2016	0.1	U	530	NO
SW-027-MWS	Shallow	4.4-14.4	Acetone	67-64-1	2/11/2016	10	U	14000	NO
SW-027-MWS	Shallow	4.4-14.4	Acetophenone	98-86-2	2/11/2016	1	U	1900	NO
SW-027-MWS	Shallow	4.4-14.4	Aluminum	7429-90-5	2/11/2016	32.8	J	20000	NO
SW-027-MWS	Shallow	4.4-14.4	Aluminum, Dissolved	7429-90-5	2/11/2016	50	U	20000	NO
SW-027-MWS	Shallow	4.4-14.4	Anthracene	120-12-7	2/11/2016	0.041	J	1800	NO
SW-027-MWS	Shallow	4.4-14.4	Antimony	7440-36-0	2/11/2016	3.8	J	6	NO
SW-027-MWS	Shallow	4.4-14.4	Antimony, Dissolved	7440-36-0	2/11/2016	6	U	6	NO
SW-027-MWS	Shallow	4.4-14.4	Arsenic	7440-38-2	2/11/2016	4.2	J	10	NO
SW-027-MWS	Shallow	4.4-14.4	Arsenic, Dissolved	7440-38-2	2/11/2016	5	U	10	NO
SW-027-MWS	Shallow	4.4-14.4	Barium	7440-39-3	2/11/2016	32.4		2000	NO
SW-027-MWS	Shallow	4.4-14.4	Barium, Dissolved	7440-39-3	2/11/2016	34.2		2000	NO
SW-027-MWS	Shallow	4.4-14.4	Benzaldehyde	100-52-7	2/11/2016	1	U	1900	NO
SW-027-MWS	Shallow	4.4-14.4	Benzene	71-43-2	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Benzo(a)anthracene	56-55-3	2/11/2016	0.015	J	0.012	YES
SW-027-MWS	Shallow	4.4-14.4	Benzo(a)pyrene	50-32-8	2/11/2016	0.1	U	0.2	NO
SW-027-MWS	Shallow	4.4-14.4	Benzo(b)fluoranthene	205-99-2	2/11/2016	0.022	JB	0.034	NO
SW-027-MWS	Shallow	4.4-14.4	Benzo(g,h,i)perylene	191-24-2	2/11/2016	0.1	U		NO
SW-027-MWS	Shallow	4.4-14.4	Benzo(k)fluoranthene	207-08-9	2/11/2016	0.1	UB	0.34	NO
SW-027-MWS	Shallow	4.4-14.4	Beryllium	7440-41-7	2/11/2016	1	U	4	NO
SW-027-MWS	Shallow	4.4-14.4	Beryllium, Dissolved	7440-41-7	2/11/2016	1	U	4	NO
SW-027-MWS	Shallow	4.4-14.4	Biphenyl (Diphenyl)	92-52-4	2/11/2016	1	U	0.83	NO
SW-027-MWS	Shallow	4.4-14.4	bis(2-chloroethoxy)methane	111-91-1	2/11/2016	1	U	59	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-027-MWS	Shallow	4.4-14.4	bis(2-Chloroethyl) ether	111-44-4	2/11/2016	1	U	0.014	NO
SW-027-MWS	Shallow	4.4-14.4	bis(2-Chloroisopropyl) ether	108-60-1	2/11/2016	1	U	0.36	NO
SW-027-MWS	Shallow	4.4-14.4	bis(2-Ethylhexyl)phthalate	117-81-7	2/11/2016	1	U	6	NO
SW-027-MWS	Shallow	4.4-14.4	Bromodichloromethane	75-27-4	2/11/2016	1	U	0.13	NO
SW-027-MWS	Shallow	4.4-14.4	Bromoform	75-25-2	2/11/2016	1	U	3.3	NO
SW-027-MWS	Shallow	4.4-14.4	Bromomethane	74-83-9	2/11/2016	1	U	7.5	NO
SW-027-MWS	Shallow	4.4-14.4	Cadmium	7440-43-9	2/11/2016	3	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Cadmium, Dissolved	7440-43-9	2/11/2016	0.51	J	5	NO
SW-027-MWS	Shallow	4.4-14.4	Caprolactam	105-60-2	2/11/2016	2.5	U	9900	NO
SW-027-MWS	Shallow	4.4-14.4	Carbazole	86-74-8	2/11/2016	1	U		NO
SW-027-MWS	Shallow	4.4-14.4	Carbon disulfide	75-15-0	2/11/2016	1	U	810	NO
SW-027-MWS	Shallow	4.4-14.4	Carbon tetrachloride	56-23-5	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Chlorobenzene	108-90-7	2/11/2016	1	U	100	NO
SW-027-MWS	Shallow	4.4-14.4	Chloroethane	75-00-3	2/11/2016	1	U	21000	NO
SW-027-MWS	Shallow	4.4-14.4	Chloroform	67-66-3	2/11/2016	1	U	0.22	NO
SW-027-MWS	Shallow	4.4-14.4	Chloromethane	74-87-3	2/11/2016	1	U	190	NO
SW-027-MWS	Shallow	4.4-14.4	Chromium	7440-47-3	2/11/2016	9.9		100	NO
SW-027-MWS	Shallow	4.4-14.4	Chromium, Dissolved	7440-47-3	2/11/2016	10.2		100	NO
SW-027-MWS	Shallow	4.4-14.4	Chromium, Hexavalent	18540-29-9	2/11/2016	10	U	0.035	NO
SW-027-MWS	Shallow	4.4-14.4	Chrysene	218-01-9	2/11/2016	0.1	U	3.4	NO
SW-027-MWS	Shallow	4.4-14.4	cis-1,2-Dichloroethene	156-59-2	2/11/2016	1	U	70	NO
SW-027-MWS	Shallow	4.4-14.4	cis-1,3-Dichloropropene	10061-01-5	2/11/2016	1	U		NO
SW-027-MWS	Shallow	4.4-14.4	Cobalt	7440-48-4	2/11/2016	5	U	6	NO
SW-027-MWS	Shallow	4.4-14.4	Cobalt, Dissolved	7440-48-4	2/11/2016	5	U	6	NO
SW-027-MWS	Shallow	4.4-14.4	Copper	7440-50-8	2/11/2016	5	U	1300	NO
SW-027-MWS	Shallow	4.4-14.4	Copper, Dissolved	7440-50-8	2/11/2016	3.1	J	1300	NO
SW-027-MWS	Shallow	4.4-14.4	Cyanide	57-12-5	2/11/2016	10	U	200	NO
SW-027-MWS	Shallow	4.4-14.4	Cyclohexane	110-82-7	2/11/2016	10	U	13000	NO
SW-027-MWS	Shallow	4.4-14.4	Decachloro[13C12]biphenyl	1336-36-3	2/11/2016	0.09713		0.5	NO
SW-027-MWS	Shallow	4.4-14.4	Decachlorobiphenyl	2051-24-3	2/11/2016	0.025	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Dibenz(a,h)anthracene	53-70-3	2/11/2016	0.1	U	0.0034	NO
SW-027-MWS	Shallow	4.4-14.4	Dibromochloromethane	124-48-1	2/11/2016	1	U	0.17	NO
SW-027-MWS	Shallow	4.4-14.4	Dichlorobiphenyl	25512-42-9	2/11/2016	0.005	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Dichlorodifluoromethane	75-71-8	2/11/2016	1	U	200	NO
SW-027-MWS	Shallow	4.4-14.4	Diesel Range Organics	DRO	2/11/2016	67.5	JN2L2	47	YES
SW-027-MWS	Shallow	4.4-14.4	Diethylphthalate	84-66-2	2/11/2016	1	U	15000	NO
SW-027-MWS	Shallow	4.4-14.4	Di-n-butylphthalate	84-74-2	2/11/2016	1	U	900	NO
SW-027-MWS	Shallow	4.4-14.4	Di-n-octylphthalate	117-84-0	2/11/2016	1	U	200	NO
SW-027-MWS	Shallow	4.4-14.4	Ethylbenzene	100-41-4	2/11/2016	1	U	700	NO
SW-027-MWS	Shallow	4.4-14.4	Fluoranthene	206-44-0	2/11/2016	0.1	U	800	NO
SW-027-MWS	Shallow	4.4-14.4	Fluorene	86-73-7	2/11/2016	0.1	U	290	NO
SW-027-MWS	Shallow	4.4-14.4	Gasoline Range Organics	GRO	2/11/2016	200	U	47	NO
SW-027-MWS	Shallow	4.4-14.4	Heptachlorobiphenyl	28655-71-2	2/11/2016	0.015	U	0.004	NO
SW-027-MWS	Shallow	4.4-14.4	Hexachloro-1,3-butadiene	87-68-3	2/11/2016	1	U	0.14	NO
SW-027-MWS	Shallow	4.4-14.4	Hexachlorobenzene	118-74-1	2/11/2016	1	U	1	NO
SW-027-MWS	Shallow	4.4-14.4	Hexachlorobiphenyl	26601-64-9	2/11/2016	0.01	U	0.000004	NO
SW-027-MWS	Shallow	4.4-14.4	Hexachlorocyclopentadiene	77-47-4	2/11/2016	1	U	50	NO
SW-027-MWS	Shallow	4.4-14.4	Hexachloroethane	67-72-1	2/11/2016	1	U	0.33	NO
SW-027-MWS	Shallow	4.4-14.4	Indeno(1,2,3-cd)pyrene	193-39-5	2/11/2016	0.1	U	0.034	NO
SW-027-MWS	Shallow	4.4-14.4	Iron	7439-89-6	2/11/2016	26.6	J	14000	NO
SW-027-MWS	Shallow	4.4-14.4	Iron, Dissolved	7439-89-6	2/11/2016	12.2	J	14000	NO
SW-027-MWS	Shallow	4.4-14.4	Isophorone	78-59-1	2/11/2016	1	U	78	NO
SW-027-MWS	Shallow	4.4-14.4	Isopropylbenzene (Cumene)	98-82-8	2/11/2016	1	U	450	NO
SW-027-MWS	Shallow	4.4-14.4	Lead	7439-92-1	2/11/2016	5	U	15	NO
SW-027-MWS	Shallow	4.4-14.4	Lead, Dissolved	7439-92-1	2/11/2016	5	U	15	NO
SW-027-MWS	Shallow	4.4-14.4	Manganese	7439-96-5	2/11/2016	1.8	J	430	NO
SW-027-MWS	Shallow	4.4-14.4	Manganese, Dissolved	7439-96-5	2/11/2016	2.2	J	430	NO
SW-027-MWS	Shallow	4.4-14.4	Mercury	7439-97-6	2/11/2016	0.2	U	2	NO
SW-027-MWS	Shallow	4.4-14.4	Mercury, Dissolved	7439-97-6	2/11/2016	0.2	U	2	NO
SW-027-MWS	Shallow	4.4-14.4	Methyl Acetate	79-20-9	2/11/2016	5	U	20000	NO
SW-027-MWS	Shallow	4.4-14.4	Methylene Chloride	75-09-2	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Methyl-tert-butyl ether	1634-04-4	2/11/2016	1	U	14	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-027-MWS	Shallow	4.4-14.4	Monochlorobiphenyl	27323-18-8	2/11/2016	0.005	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Naphthalene	91-20-3	2/11/2016	0.024	JB	0.17	NO
SW-027-MWS	Shallow	4.4-14.4	Nickel	7440-02-0	2/11/2016	10	U	390	NO
SW-027-MWS	Shallow	4.4-14.4	Nickel, Dissolved	7440-02-0	2/11/2016	1.6	JB	390	NO
SW-027-MWS	Shallow	4.4-14.4	Nitrobenzene	98-95-3	2/11/2016	1	U	0.14	NO
SW-027-MWS	Shallow	4.4-14.4	N-Nitroso-di-n-propylamine	621-64-7	2/11/2016	1	U	0.011	NO
SW-027-MWS	Shallow	4.4-14.4	N-Nitrosodiphenylamine	86-30-6	2/11/2016	1	U	12	NO
SW-027-MWS	Shallow	4.4-14.4	Nonachlorobiphenyl	53742-07-7	2/11/2016	0.025	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Octachlorobiphenyl	55722-26-4	2/11/2016	0.015	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Pentachlorobiphenyl	25429-29-2	2/11/2016	0.01	U	1.2E-06	NO
SW-027-MWS	Shallow	4.4-14.4	Pentachlorophenol	87-86-5	2/11/2016	2.5	U	1	NO
SW-027-MWS	Shallow	4.4-14.4	Phenanthrene	85-01-8	2/11/2016	0.1	U		NO
SW-027-MWS	Shallow	4.4-14.4	Phenol	108-95-2	2/11/2016	1	U	5800	NO
SW-027-MWS	Shallow	4.4-14.4	Pyrene	129-00-0	2/11/2016	0.1	U	120	NO
SW-027-MWS	Shallow	4.4-14.4	Selenium	7782-49-2	2/11/2016	8	U	50	NO
SW-027-MWS	Shallow	4.4-14.4	Selenium, Dissolved	7782-49-2	2/11/2016	4.5	J	50	NO
SW-027-MWS	Shallow	4.4-14.4	Silver	7440-22-4	2/11/2016	6	U	94	NO
SW-027-MWS	Shallow	4.4-14.4	Silver, Dissolved	7440-22-4	2/11/2016	6	U	94	NO
SW-027-MWS	Shallow	4.4-14.4	Styrene	100-42-5	2/11/2016	1	U	100	NO
SW-027-MWS	Shallow	4.4-14.4	Tetrachlorobiphenyl	26914-33-0	2/11/2016	0.01	U	0.0004	NO
SW-027-MWS	Shallow	4.4-14.4	Tetrachloroethene	127-18-4	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Tetrachloro-meta-xylene	1336-36-3	2/11/2016	0.00884	*	0.5	NO
SW-027-MWS	Shallow	4.4-14.4	Thallium	7440-28-0	2/11/2016	10	U	2	NO
SW-027-MWS	Shallow	4.4-14.4	Thallium, Dissolved	7440-28-0	2/11/2016	10	U	2	NO
SW-027-MWS	Shallow	4.4-14.4	Toluene	108-88-3	2/11/2016	1	U	1000	NO
SW-027-MWS	Shallow	4.4-14.4	Total PCB	1336-36-3	2/11/2016	0.025	U	0.5	NO
SW-027-MWS	Shallow	4.4-14.4	trans-1,2-Dichloroethene	156-60-5	2/11/2016	1	U	100	NO
SW-027-MWS	Shallow	4.4-14.4	trans-1,3-Dichloropropene	10061-02-6	2/11/2016	1	U		NO
SW-027-MWS	Shallow	4.4-14.4	Trichlorobiphenyl	25323-68-6	2/11/2016	0.005	U	0.044	NO
SW-027-MWS	Shallow	4.4-14.4	Trichloroethene	79-01-6	2/11/2016	1	U	5	NO
SW-027-MWS	Shallow	4.4-14.4	Trichlorofluoromethane	75-69-4	2/11/2016	1	U	1100	NO
SW-027-MWS	Shallow	4.4-14.4	Vanadium	7440-62-2	2/11/2016	31.8		86	NO
SW-027-MWS	Shallow	4.4-14.4	Vanadium, Dissolved	7440-62-2	2/11/2016	32.8		86	NO
SW-027-MWS	Shallow	4.4-14.4	Vinyl chloride	75-01-4	2/11/2016	1	U	2	NO
SW-027-MWS	Shallow	4.4-14.4	Xylene (Total)	1330-20-7	2/11/2016	3	U	10000	NO
SW-027-MWS	Shallow	4.4-14.4	Zinc	7440-66-6	2/11/2016	7.1	J	6000	NO
SW-027-MWS	Shallow	4.4-14.4	Zinc, Dissolved	7440-66-6	2/11/2016	7.4	J	6000	NO
SW-028-MWS	Shallow	3.9-13.9	1,1,1-Trichloroethane	71-55-6	2/12/2016	1	U	200	NO
SW-028-MWS	Shallow	3.9-13.9	1,1,2,2-Tetrachloroethane	79-34-5	2/12/2016	1	U	0.076	NO
SW-028-MWS	Shallow	3.9-13.9	1,1,2-Trichloroethane	79-00-5	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	1,1,2-Trichlorotrifluoroethane	76-13-1	2/12/2016	50	U	55000	NO
SW-028-MWS	Shallow	3.9-13.9	1,1-Dichloroethane	75-34-3	2/12/2016	1	U	2.7	NO
SW-028-MWS	Shallow	3.9-13.9	1,1-Dichloroethene	75-35-4	2/12/2016	1	U	7	NO
SW-028-MWS	Shallow	3.9-13.9	1,2,3-Trichlorobenzene	87-61-6	2/12/2016	2	U	7	NO
SW-028-MWS	Shallow	3.9-13.9	1,2,4,5-Tetrachlorobenzene	95-94-3	2/12/2016	1	U	1.7	NO
SW-028-MWS	Shallow	3.9-13.9	1,2,4-Trichlorobenzene	120-82-1	2/12/2016	1	U	70	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dibromo-3-chloropropane	96-12-8	2/12/2016	5	U	0.2	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dibromoethane (EDB)	106-93-4	2/12/2016	1	U	0.0075	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dichlorobenzene	95-50-1	2/12/2016	1	U	600	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dichloroethane	107-06-2	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dichloroethene (Total)	540-59-0	2/12/2016	2	U	70	NO
SW-028-MWS	Shallow	3.9-13.9	1,2-Dichloropropane	78-87-5	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	1,3-Dichlorobenzene	541-73-1	2/12/2016	1	U		NO
SW-028-MWS	Shallow	3.9-13.9	1,4-Dichlorobenzene	106-46-7	2/12/2016	1	U	75	NO
SW-028-MWS	Shallow	3.9-13.9	1,4-Dioxane (p-Dioxane)	123-91-1	2/12/2016	0.1	U	0.46	NO
SW-028-MWS	Shallow	3.9-13.9	2,3,4,6-Tetrachlorophenol	58-90-2	2/12/2016	1	U	240	NO
SW-028-MWS	Shallow	3.9-13.9	2,4,5-Trichlorophenol	95-95-4	2/12/2016	2.5	U	1200	NO
SW-028-MWS	Shallow	3.9-13.9	2,4,6-Trichlorophenol	88-06-2	2/12/2016	1	U	4	NO
SW-028-MWS	Shallow	3.9-13.9	2,4-Dichlorophenol	120-83-2	2/12/2016	1	U	46	NO
SW-028-MWS	Shallow	3.9-13.9	2,4-Dimethylphenol	105-67-9	2/12/2016	1	U	360	NO
SW-028-MWS	Shallow	3.9-13.9	2,4-Dinitrophenol	51-28-5	2/12/2016	2.5	U	39	NO
SW-028-MWS	Shallow	3.9-13.9	2,4-Dinitrotoluene	121-14-2	2/12/2016	1	UL3	0.24	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
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Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-028-MWS	Shallow	3.9-13.9	2,6-Dinitrotoluene	606-20-2	2/12/2016	1	U	0.048	NO
SW-028-MWS	Shallow	3.9-13.9	2-Butanone (MEK)	78-93-3	2/12/2016	10	U	5600	NO
SW-028-MWS	Shallow	3.9-13.9	2-Chloronaphthalene	91-58-7	2/12/2016	1	U	750	NO
SW-028-MWS	Shallow	3.9-13.9	2-Chlorophenol	95-57-8	2/12/2016	1	U	91	NO
SW-028-MWS	Shallow	3.9-13.9	2-Hexanone	591-78-6	2/12/2016	10	U	38	NO
SW-028-MWS	Shallow	3.9-13.9	2-Methylnaphthalene	91-57-6	2/12/2016	0.1	U	36	NO
SW-028-MWS	Shallow	3.9-13.9	2-Methylphenol(o-Cresol)	95-48-7	2/12/2016	1	U	930	NO
SW-028-MWS	Shallow	3.9-13.9	2-Nitroaniline	88-74-4	2/12/2016	2.5	U	190	NO
SW-028-MWS	Shallow	3.9-13.9	3&4-Methylphenol(m&p Cresol)	108-39-4/106-44-5	2/12/2016	2	U	930	NO
SW-028-MWS	Shallow	3.9-13.9	3,3'-Dichlorobenzidine	91-94-1	2/12/2016	1	U	0.12	NO
SW-028-MWS	Shallow	3.9-13.9	4-Chloroaniline	106-47-8	2/12/2016	1	U	0.36	NO
SW-028-MWS	Shallow	3.9-13.9	4-Methyl-2-pentanone (MIBK)	108-10-1	2/12/2016	10	U	1200	NO
SW-028-MWS	Shallow	3.9-13.9	4-Nitroaniline	100-01-6	2/12/2016	2.5	U	3.8	NO
SW-028-MWS	Shallow	3.9-13.9	Acenaphthene	83-32-9	2/12/2016	0.51		530	NO
SW-028-MWS	Shallow	3.9-13.9	Acenaphthylene	208-96-8	2/12/2016	0.018	J	530	NO
SW-028-MWS	Shallow	3.9-13.9	Acetone	67-64-1	2/12/2016	10	U	14000	NO
SW-028-MWS	Shallow	3.9-13.9	Acetophenone	98-86-2	2/12/2016	1	U	1900	NO
SW-028-MWS	Shallow	3.9-13.9	Aluminum	7429-90-5	2/12/2016	180		20000	NO
SW-028-MWS	Shallow	3.9-13.9	Aluminum, Dissolved	7429-90-5	2/12/2016	22.1	J	20000	NO
SW-028-MWS	Shallow	3.9-13.9	Anthracene	120-12-7	2/12/2016	0.04	J	1800	NO
SW-028-MWS	Shallow	3.9-13.9	Antimony	7440-36-0	2/12/2016	6	U	6	NO
SW-028-MWS	Shallow	3.9-13.9	Antimony, Dissolved	7440-36-0	2/12/2016	6	U	6	NO
SW-028-MWS	Shallow	3.9-13.9	Arsenic	7440-38-2	2/12/2016	4.3	J	10	NO
SW-028-MWS	Shallow	3.9-13.9	Arsenic, Dissolved	7440-38-2	2/12/2016	4.9	J	10	NO
SW-028-MWS	Shallow	3.9-13.9	Barium	7440-39-3	2/12/2016	68.6		2000	NO
SW-028-MWS	Shallow	3.9-13.9	Barium, Dissolved	7440-39-3	2/12/2016	63.3		2000	NO
SW-028-MWS	Shallow	3.9-13.9	Benzaldehyde	100-52-7	2/12/2016	1	U	1900	NO
SW-028-MWS	Shallow	3.9-13.9	Benzene	71-43-2	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Benzo(a)anthracene	56-55-3	2/12/2016	0.053	J	0.012	YES
SW-028-MWS	Shallow	3.9-13.9	Benzo(a)pyrene	50-32-8	2/12/2016	0.033	J	0.2	NO
SW-028-MWS	Shallow	3.9-13.9	Benzo(b)fluoranthene	205-99-2	2/12/2016	0.13	ipB	0.034	YES
SW-028-MWS	Shallow	3.9-13.9	Benzo(g,h,i)perylene	191-24-2	2/12/2016	0.1	U		NO
SW-028-MWS	Shallow	3.9-13.9	Benzo(k)fluoranthene	207-08-9	2/12/2016	0.092	JipB	0.34	NO
SW-028-MWS	Shallow	3.9-13.9	Beryllium	7440-41-7	2/12/2016	1	U	4	NO
SW-028-MWS	Shallow	3.9-13.9	Beryllium, Dissolved	7440-41-7	2/12/2016	1	U	4	NO
SW-028-MWS	Shallow	3.9-13.9	Biphenyl (Diphenyl)	92-52-4	2/12/2016	1	U	0.83	NO
SW-028-MWS	Shallow	3.9-13.9	bis(2-chloroethoxy)methane	111-91-1	2/12/2016	1	U	59	NO
SW-028-MWS	Shallow	3.9-13.9	bis(2-Chloroethyl) ether	111-44-4	2/12/2016	1	U	0.014	NO
SW-028-MWS	Shallow	3.9-13.9	bis(2-Chloroisopropyl) ether	108-60-1	2/12/2016	1	U	0.36	NO
SW-028-MWS	Shallow	3.9-13.9	bis(2-Ethylhexyl)phthalate	117-81-7	2/12/2016	1	U	6	NO
SW-028-MWS	Shallow	3.9-13.9	Bromodichloromethane	75-27-4	2/12/2016	1	U	0.13	NO
SW-028-MWS	Shallow	3.9-13.9	Bromoform	75-25-2	2/12/2016	1	U	3.3	NO
SW-028-MWS	Shallow	3.9-13.9	Bromomethane	74-83-9	2/12/2016	1	U	7.5	NO
SW-028-MWS	Shallow	3.9-13.9	Cadmium	7440-43-9	2/12/2016	3	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Cadmium, Dissolved	7440-43-9	2/12/2016	3	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Caprolactam	105-60-2	2/12/2016	2.5	U	9900	NO
SW-028-MWS	Shallow	3.9-13.9	Carbazole	86-74-8	2/12/2016	1	U		NO
SW-028-MWS	Shallow	3.9-13.9	Carbon disulfide	75-15-0	2/12/2016	1	U	810	NO
SW-028-MWS	Shallow	3.9-13.9	Carbon tetrachloride	56-23-5	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Chlorobenzene	108-90-7	2/12/2016	1	U	100	NO
SW-028-MWS	Shallow	3.9-13.9	Chloroethane	75-00-3	2/12/2016	1	U	21000	NO
SW-028-MWS	Shallow	3.9-13.9	Chloroform	67-66-3	2/12/2016	1	U	0.22	NO
SW-028-MWS	Shallow	3.9-13.9	Chloromethane	74-87-3	2/12/2016	1	U	190	NO
SW-028-MWS	Shallow	3.9-13.9	Chromium	7440-47-3	2/12/2016	1.3	J	100	NO
SW-028-MWS	Shallow	3.9-13.9	Chromium, Dissolved	7440-47-3	2/12/2016	0.84	J	100	NO
SW-028-MWS	Shallow	3.9-13.9	Chromium, Hexavalent	18540-29-9	2/12/2016	10	U	0.035	NO
SW-028-MWS	Shallow	3.9-13.9	Chrysene	218-01-9	2/12/2016	0.038	JB	3.4	NO
SW-028-MWS	Shallow	3.9-13.9	cis-1,2-Dichloroethene	156-59-2	2/12/2016	1	U	70	NO
SW-028-MWS	Shallow	3.9-13.9	cis-1,3-Dichloropropene	10061-01-5	2/12/2016	1	U		NO
SW-028-MWS	Shallow	3.9-13.9	Cobalt	7440-48-4	2/12/2016	5	U	6	NO
SW-028-MWS	Shallow	3.9-13.9	Cobalt, Dissolved	7440-48-4	2/12/2016	5	U	6	NO
SW-028-MWS	Shallow	3.9-13.9	Copper	7440-50-8	2/12/2016	2.3	J	1300	NO

Area B Groundwater Investigation Well Data (Non-Validated)
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Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-028-MWS	Shallow	3.9-13.9	Copper, Dissolved	7440-50-8	2/12/2016	2.5	J	1300	NO
SW-028-MWS	Shallow	3.9-13.9	Cyanide	57-12-5	2/12/2016	10	U	200	NO
SW-028-MWS	Shallow	3.9-13.9	Cyclohexane	110-82-7	2/12/2016	10	U	13000	NO
SW-028-MWS	Shallow	3.9-13.9	Decachloro[13C12]biphenyl	1336-36-3	2/12/2016	0.07938		0.5	NO
SW-028-MWS	Shallow	3.9-13.9	Decachlorobiphenyl	2051-24-3	2/12/2016	0.025	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Dibenz(a,h)anthracene	53-70-3	2/12/2016	0.1	U	0.0034	NO
SW-028-MWS	Shallow	3.9-13.9	Dibromochloromethane	124-48-1	2/12/2016	1	U	0.17	NO
SW-028-MWS	Shallow	3.9-13.9	Dichlorobiphenyl	25512-42-9	2/12/2016	0.005	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Dichlorodifluoromethane	75-71-8	2/12/2016	1	U	200	NO
SW-028-MWS	Shallow	3.9-13.9	Diesel Range Organics	DRO	2/12/2016	144	N2L21c3c	47	YES
SW-028-MWS	Shallow	3.9-13.9	Diethylphthalate	84-66-2	2/12/2016	1	U	15000	NO
SW-028-MWS	Shallow	3.9-13.9	Di-n-butylphthalate	84-74-2	2/12/2016	1	U	900	NO
SW-028-MWS	Shallow	3.9-13.9	Di-n-octylphthalate	117-84-0	2/12/2016	1	U	200	NO
SW-028-MWS	Shallow	3.9-13.9	Ethylbenzene	100-41-4	2/12/2016	1	U	700	NO
SW-028-MWS	Shallow	3.9-13.9	Fluoranthene	206-44-0	2/12/2016	0.2		800	NO
SW-028-MWS	Shallow	3.9-13.9	Fluorene	86-73-7	2/12/2016	0.1	U	290	NO
SW-028-MWS	Shallow	3.9-13.9	Gasoline Range Organics	GRO	2/12/2016	200	U	47	NO
SW-028-MWS	Shallow	3.9-13.9	Heptachlorobiphenyl	28655-71-2	2/12/2016	0.015	U	0.004	NO
SW-028-MWS	Shallow	3.9-13.9	Hexachloro-1,3-butadiene	87-68-3	2/12/2016	1	U	0.14	NO
SW-028-MWS	Shallow	3.9-13.9	Hexachlorobenzene	118-74-1	2/12/2016	1	U	1	NO
SW-028-MWS	Shallow	3.9-13.9	Hexachlorobiphenyl	26601-64-9	2/12/2016	0.01	U	0.000004	NO
SW-028-MWS	Shallow	3.9-13.9	Hexachlorocyclopentadiene	77-47-4	2/12/2016	1	U	50	NO
SW-028-MWS	Shallow	3.9-13.9	Hexachloroethane	67-72-1	2/12/2016	1	U	0.33	NO
SW-028-MWS	Shallow	3.9-13.9	Indeno(1,2,3-cd)pyrene	193-39-5	2/12/2016	0.1	U	0.034	NO
SW-028-MWS	Shallow	3.9-13.9	Iron	7439-89-6	2/12/2016	534		14000	NO
SW-028-MWS	Shallow	3.9-13.9	Iron, Dissolved	7439-89-6	2/12/2016	392		14000	NO
SW-028-MWS	Shallow	3.9-13.9	Isophorone	78-59-1	2/12/2016	1	U	78	NO
SW-028-MWS	Shallow	3.9-13.9	Isopropylbenzene (Cumene)	98-82-8	2/12/2016	1	U	450	NO
SW-028-MWS	Shallow	3.9-13.9	Lead	7439-92-1	2/12/2016	5	U	15	NO
SW-028-MWS	Shallow	3.9-13.9	Lead, Dissolved	7439-92-1	2/12/2016	5	U	15	NO
SW-028-MWS	Shallow	3.9-13.9	Manganese	7439-96-5	2/12/2016	477		430	YES
SW-028-MWS	Shallow	3.9-13.9	Manganese, Dissolved	7439-96-5	2/12/2016	475		430	YES
SW-028-MWS	Shallow	3.9-13.9	Mercury	7439-97-6	2/12/2016	0.2	U	2	NO
SW-028-MWS	Shallow	3.9-13.9	Mercury, Dissolved	7439-97-6	2/12/2016	0.2	U	2	NO
SW-028-MWS	Shallow	3.9-13.9	Methyl Acetate	79-20-9	2/12/2016	5	U	20000	NO
SW-028-MWS	Shallow	3.9-13.9	Methylene Chloride	75-09-2	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Methyl-tert-butyl ether	1634-04-4	2/12/2016	1	U	14	NO
SW-028-MWS	Shallow	3.9-13.9	Monochlorobiphenyl	27323-18-8	2/12/2016	0.005	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Naphthalene	91-20-3	2/12/2016	0.082	JB	0.17	NO
SW-028-MWS	Shallow	3.9-13.9	Nickel	7440-02-0	2/12/2016	1.2	JB	390	NO
SW-028-MWS	Shallow	3.9-13.9	Nickel, Dissolved	7440-02-0	2/12/2016	1.2	JB	390	NO
SW-028-MWS	Shallow	3.9-13.9	Nitrobenzene	98-95-3	2/12/2016	1	U	0.14	NO
SW-028-MWS	Shallow	3.9-13.9	N-Nitroso-di-n-propylamine	621-64-7	2/12/2016	1	U	0.011	NO
SW-028-MWS	Shallow	3.9-13.9	N-Nitrosodiphenylamine	86-30-6	2/12/2016	1	U	12	NO
SW-028-MWS	Shallow	3.9-13.9	Nonachlorobiphenyl	53742-07-7	2/12/2016	0.025	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Octachlorobiphenyl	55722-26-4	2/12/2016	0.015	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Pentachlorobiphenyl	25429-29-2	2/12/2016	0.01	U	1.2E-06	NO
SW-028-MWS	Shallow	3.9-13.9	Pentachlorophenol	87-86-5	2/12/2016	2.5	U	1	NO
SW-028-MWS	Shallow	3.9-13.9	Phenanthrene	85-01-8	2/12/2016	0.041	J		NO
SW-028-MWS	Shallow	3.9-13.9	Phenol	108-95-2	2/12/2016	1	U	5800	NO
SW-028-MWS	Shallow	3.9-13.9	Pyrene	129-00-0	2/12/2016	0.32		120	NO
SW-028-MWS	Shallow	3.9-13.9	Selenium	7782-49-2	2/12/2016	8	U	50	NO
SW-028-MWS	Shallow	3.9-13.9	Selenium, Dissolved	7782-49-2	2/12/2016	8	U	50	NO
SW-028-MWS	Shallow	3.9-13.9	Silver	7440-22-4	2/12/2016	6	U	94	NO
SW-028-MWS	Shallow	3.9-13.9	Silver, Dissolved	7440-22-4	2/12/2016	6	U	94	NO
SW-028-MWS	Shallow	3.9-13.9	Styrene	100-42-5	2/12/2016	1	U	100	NO
SW-028-MWS	Shallow	3.9-13.9	Tetrachlorobiphenyl	26914-33-0	2/12/2016	0.01	U	0.0004	NO
SW-028-MWS	Shallow	3.9-13.9	Tetrachloroethene	127-18-4	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Tetrachloro-meta-xylene	1336-36-3	2/12/2016	0.01001	*	0.5	NO
SW-028-MWS	Shallow	3.9-13.9	Thallium	7440-28-0	2/12/2016	3.5	J	2	YES
SW-028-MWS	Shallow	3.9-13.9	Thallium, Dissolved	7440-28-0	2/12/2016	4.8	J	2	YES
SW-028-MWS	Shallow	3.9-13.9	Toluene	108-88-3	2/12/2016	1	U	1000	NO

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-028-MWS	Shallow	3.9-13.9	Total PCB	1336-36-3	2/12/2016	0.025	U	0.5	NO
SW-028-MWS	Shallow	3.9-13.9	trans-1,2-Dichloroethene	156-60-5	2/12/2016	1	U	100	NO
SW-028-MWS	Shallow	3.9-13.9	trans-1,3-Dichloropropene	10061-02-6	2/12/2016	1	U		NO
SW-028-MWS	Shallow	3.9-13.9	Trichlorobiphenyl	25323-68-6	2/12/2016	0.005	U	0.044	NO
SW-028-MWS	Shallow	3.9-13.9	Trichloroethene	79-01-6	2/12/2016	1	U	5	NO
SW-028-MWS	Shallow	3.9-13.9	Trichlorofluoromethane	75-69-4	2/12/2016	1	U	1100	NO
SW-028-MWS	Shallow	3.9-13.9	Vanadium	7440-62-2	2/12/2016	1.2	J	86	NO
SW-028-MWS	Shallow	3.9-13.9	Vanadium, Dissolved	7440-62-2	2/12/2016	0.87	J	86	NO
SW-028-MWS	Shallow	3.9-13.9	Vinyl chloride	75-01-4	2/12/2016	1	U	2	NO
SW-028-MWS	Shallow	3.9-13.9	Xylene (Total)	1330-20-7	2/12/2016	3	U	10000	NO
SW-028-MWS	Shallow	3.9-13.9	Zinc	7440-66-6	2/12/2016	2.2	J	6000	NO
SW-028-MWS	Shallow	3.9-13.9	Zinc, Dissolved	7440-66-6	2/12/2016	10	U	6000	NO
SW-029-MWS	Shallow	4.1-11.1	1,1,1-Trichloroethane	71-55-6	2/11/2016	1	U	200	NO
SW-029-MWS	Shallow	4.1-11.1	1,1,2,2-Tetrachloroethane	79-34-5	2/11/2016	1	U	0.076	NO
SW-029-MWS	Shallow	4.1-11.1	1,1,2-Trichloroethane	79-00-5	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	1,1,2-Trichlorotrifluoroethane	76-13-1	2/11/2016	50	U	55000	NO
SW-029-MWS	Shallow	4.1-11.1	1,1-Dichloroethane	75-34-3	2/11/2016	0.73	J	2.7	NO
SW-029-MWS	Shallow	4.1-11.1	1,1-Dichloroethene	75-35-4	2/11/2016	1	U	7	NO
SW-029-MWS	Shallow	4.1-11.1	1,2,3-Trichlorobenzene	87-61-6	2/11/2016	2	U	7	NO
SW-029-MWS	Shallow	4.1-11.1	1,2,4,5-Tetrachlorobenzene	95-94-3	2/11/2016	1	U	1.7	NO
SW-029-MWS	Shallow	4.1-11.1	1,2,4-Trichlorobenzene	120-82-1	2/11/2016	1	U	70	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dibromo-3-chloropropane	96-12-8	2/11/2016	5	U	0.2	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dibromoethane (EDB)	106-93-4	2/11/2016	1	U	0.0075	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dichlorobenzene	95-50-1	2/11/2016	1	U	600	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dichloroethane	107-06-2	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dichloroethene (Total)	540-59-0	2/11/2016	2	U	70	NO
SW-029-MWS	Shallow	4.1-11.1	1,2-Dichloropropane	78-87-5	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	1,3-Dichlorobenzene	541-73-1	2/11/2016	1	U		NO
SW-029-MWS	Shallow	4.1-11.1	1,4-Dichlorobenzene	106-46-7	2/11/2016	1	U	75	NO
SW-029-MWS	Shallow	4.1-11.1	1,4-Dioxane (p-Dioxane)	123-91-1	2/11/2016	0.045	J	0.46	NO
SW-029-MWS	Shallow	4.1-11.1	2,3,4,6-Tetrachlorophenol	58-90-2	2/11/2016	1	U	240	NO
SW-029-MWS	Shallow	4.1-11.1	2,4,5-Trichlorophenol	95-95-4	2/11/2016	2.5	U	1200	NO
SW-029-MWS	Shallow	4.1-11.1	2,4,6-Trichlorophenol	88-06-2	2/11/2016	1	U	4	NO
SW-029-MWS	Shallow	4.1-11.1	2,4-Dichlorophenol	120-83-2	2/11/2016	1	U	46	NO
SW-029-MWS	Shallow	4.1-11.1	2,4-Dimethylphenol	105-67-9	2/11/2016	1	U	360	NO
SW-029-MWS	Shallow	4.1-11.1	2,4-Dinitrophenol	51-28-5	2/11/2016	2.5	U	39	NO
SW-029-MWS	Shallow	4.1-11.1	2,4-Dinitrotoluene	121-14-2	2/11/2016	1	UL3	0.24	NO
SW-029-MWS	Shallow	4.1-11.1	2,6-Dinitrotoluene	606-20-2	2/11/2016	1	U	0.048	NO
SW-029-MWS	Shallow	4.1-11.1	2-Butanone (MEK)	78-93-3	2/11/2016	10	U	5600	NO
SW-029-MWS	Shallow	4.1-11.1	2-Chloronaphthalene	91-58-7	2/11/2016	1	U	750	NO
SW-029-MWS	Shallow	4.1-11.1	2-Chlorophenol	95-57-8	2/11/2016	1	U	91	NO
SW-029-MWS	Shallow	4.1-11.1	2-Hexanone	591-78-6	2/11/2016	10	U	38	NO
SW-029-MWS	Shallow	4.1-11.1	2-Methylnaphthalene	91-57-6	2/11/2016	0.35		36	NO
SW-029-MWS	Shallow	4.1-11.1	2-Methylphenol(o-Cresol)	95-48-7	2/11/2016	1	U	930	NO
SW-029-MWS	Shallow	4.1-11.1	2-Nitroaniline	88-74-4	2/11/2016	2.5	U	190	NO
SW-029-MWS	Shallow	4.1-11.1	3&4-Methylphenol(m&p Cresol)	108-39-4/106-44-5	2/11/2016	2	U	930	NO
SW-029-MWS	Shallow	4.1-11.1	3,3'-Dichlorobenzidine	91-94-1	2/11/2016	1	U	0.12	NO
SW-029-MWS	Shallow	4.1-11.1	4-Chloroaniline	106-47-8	2/11/2016	1	U	0.36	NO
SW-029-MWS	Shallow	4.1-11.1	4-Methyl-2-pentanone (MIBK)	108-10-1	2/11/2016	10	U	1200	NO
SW-029-MWS	Shallow	4.1-11.1	4-Nitroaniline	100-01-6	2/11/2016	2.5	U	3.8	NO
SW-029-MWS	Shallow	4.1-11.1	Acenaphthene	83-32-9	2/11/2016	0.19		530	NO
SW-029-MWS	Shallow	4.1-11.1	Acenaphthylene	208-96-8	2/11/2016	0.088	J	530	NO
SW-029-MWS	Shallow	4.1-11.1	Acetone	67-64-1	2/11/2016	10	U	14000	NO
SW-029-MWS	Shallow	4.1-11.1	Acetophenone	98-86-2	2/11/2016	0.45	J	1900	NO
SW-029-MWS	Shallow	4.1-11.1	Aluminum	7429-90-5	2/11/2016	56.1		20000	NO
SW-029-MWS	Shallow	4.1-11.1	Aluminum, Dissolved	7429-90-5	2/11/2016	42.4	J	20000	NO
SW-029-MWS	Shallow	4.1-11.1	Anthracene	120-12-7	2/11/2016	0.083	J	1800	NO
SW-029-MWS	Shallow	4.1-11.1	Antimony	7440-36-0	2/11/2016	6	U	6	NO
SW-029-MWS	Shallow	4.1-11.1	Antimony, Dissolved	7440-36-0	2/11/2016	6	U	6	NO
SW-029-MWS	Shallow	4.1-11.1	Arsenic	7440-38-2	2/11/2016	5	U	10	NO
SW-029-MWS	Shallow	4.1-11.1	Arsenic, Dissolved	7440-38-2	2/11/2016	5	U	10	NO
SW-029-MWS	Shallow	4.1-11.1	Barium	7440-39-3	2/11/2016	84.3		2000	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-029-MWS	Shallow	4.1-11.1	Barium, Dissolved	7440-39-3	2/11/2016	85.8		2000	NO
SW-029-MWS	Shallow	4.1-11.1	Benzaldehyde	100-52-7	2/11/2016	1	U	1900	NO
SW-029-MWS	Shallow	4.1-11.1	Benzene	71-43-2	2/11/2016	3.6		5	NO
SW-029-MWS	Shallow	4.1-11.1	Benzo(a)anthracene	56-55-3	2/11/2016	0.066	J	0.012	YES
SW-029-MWS	Shallow	4.1-11.1	Benzo(a)pyrene	50-32-8	2/11/2016	1.2	J	0.2	YES
SW-029-MWS	Shallow	4.1-11.1	Benzo(b)fluoranthene	205-99-2	2/11/2016	2.7	JB	0.034	YES
SW-029-MWS	Shallow	4.1-11.1	Benzo(g,h,i)perylene	191-24-2	2/11/2016	1.3	J		NO
SW-029-MWS	Shallow	4.1-11.1	Benzo(k)fluoranthene	207-08-9	2/11/2016	1.3	JB	0.34	YES
SW-029-MWS	Shallow	4.1-11.1	Beryllium	7440-41-7	2/11/2016	1	U	4	NO
SW-029-MWS	Shallow	4.1-11.1	Beryllium, Dissolved	7440-41-7	2/11/2016	1	U	4	NO
SW-029-MWS	Shallow	4.1-11.1	Biphenyl (Diphenyl)	92-52-4	2/11/2016	1	U	0.83	NO
SW-029-MWS	Shallow	4.1-11.1	bis(2-chloroethoxy)methane	111-91-1	2/11/2016	1	U	59	NO
SW-029-MWS	Shallow	4.1-11.1	bis(2-Chloroethyl) ether	111-44-4	2/11/2016	1	U	0.014	NO
SW-029-MWS	Shallow	4.1-11.1	bis(2-Chloroisopropyl) ether	108-60-1	2/11/2016	1	U	0.36	NO
SW-029-MWS	Shallow	4.1-11.1	bis(2-Ethylhexyl)phthalate	117-81-7	2/11/2016	1	U	6	NO
SW-029-MWS	Shallow	4.1-11.1	Bromodichloromethane	75-27-4	2/11/2016	1	U	0.13	NO
SW-029-MWS	Shallow	4.1-11.1	Bromoform	75-25-2	2/11/2016	1	U	3.3	NO
SW-029-MWS	Shallow	4.1-11.1	Bromomethane	74-83-9	2/11/2016	1	U	7.5	NO
SW-029-MWS	Shallow	4.1-11.1	Cadmium	7440-43-9	2/11/2016	0.73	J	5	NO
SW-029-MWS	Shallow	4.1-11.1	Cadmium, Dissolved	7440-43-9	2/11/2016	3	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	Caprolactam	105-60-2	2/11/2016	2.5	U	9900	NO
SW-029-MWS	Shallow	4.1-11.1	Carbazole	86-74-8	2/11/2016	1	U		NO
SW-029-MWS	Shallow	4.1-11.1	Carbon disulfide	75-15-0	2/11/2016	1	U	810	NO
SW-029-MWS	Shallow	4.1-11.1	Carbon tetrachloride	56-23-5	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	Chlorobenzene	108-90-7	2/11/2016	1	U	100	NO
SW-029-MWS	Shallow	4.1-11.1	Chloroethane	75-00-3	2/11/2016	1	U	21000	NO
SW-029-MWS	Shallow	4.1-11.1	Chloroform	67-66-3	2/11/2016	1	U	0.22	NO
SW-029-MWS	Shallow	4.1-11.1	Chloromethane	74-87-3	2/11/2016	1	U	190	NO
SW-029-MWS	Shallow	4.1-11.1	Chromium	7440-47-3	2/11/2016	0.87	J	100	NO
SW-029-MWS	Shallow	4.1-11.1	Chromium, Dissolved	7440-47-3	2/11/2016	5	U	100	NO
SW-029-MWS	Shallow	4.1-11.1	Chromium, Hexavalent	18540-29-9	2/11/2016	10	U	0.035	NO
SW-029-MWS	Shallow	4.1-11.1	Chrysene	218-01-9	2/11/2016	0.048	JB	3.4	NO
SW-029-MWS	Shallow	4.1-11.1	cis-1,2-Dichloroethene	156-59-2	2/11/2016	1	U	70	NO
SW-029-MWS	Shallow	4.1-11.1	cis-1,3-Dichloropropene	10061-01-5	2/11/2016	1	U		NO
SW-029-MWS	Shallow	4.1-11.1	Cobalt	7440-48-4	2/11/2016	2.9	J	6	NO
SW-029-MWS	Shallow	4.1-11.1	Cobalt, Dissolved	7440-48-4	2/11/2016	1.9	J	6	NO
SW-029-MWS	Shallow	4.1-11.1	Copper	7440-50-8	2/11/2016	5	U	1300	NO
SW-029-MWS	Shallow	4.1-11.1	Copper, Dissolved	7440-50-8	2/11/2016	5	U	1300	NO
SW-029-MWS	Shallow	4.1-11.1	Cyanide	57-12-5	2/11/2016	1420		200	YES
SW-029-MWS	Shallow	4.1-11.1	Cyclohexane	110-82-7	2/11/2016	10	U	13000	NO
SW-029-MWS	Shallow	4.1-11.1	Decachloro[13C12]biphenyl	1336-36-3	2/11/2016	0.08554		0.5	NO
SW-029-MWS	Shallow	4.1-11.1	Decachlorobiphenyl	2051-24-3	2/11/2016	0.025	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Dibenz(a,h)anthracene	53-70-3	2/11/2016	5.1	U	0.0034	NO
SW-029-MWS	Shallow	4.1-11.1	Dibromochloromethane	124-48-1	2/11/2016	1	U	0.17	NO
SW-029-MWS	Shallow	4.1-11.1	Dichlorobiphenyl	25512-42-9	2/11/2016	0.005	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Dichlorodifluoromethane	75-71-8	2/11/2016	1	U	200	NO
SW-029-MWS	Shallow	4.1-11.1	Diesel Range Organics	DRO	2/11/2016	1810	N2L2	47	YES
SW-029-MWS	Shallow	4.1-11.1	Diethylphthalate	84-66-2	2/11/2016	1	U	15000	NO
SW-029-MWS	Shallow	4.1-11.1	Di-n-butylphthalate	84-74-2	2/11/2016	1	U	900	NO
SW-029-MWS	Shallow	4.1-11.1	Di-n-octylphthalate	117-84-0	2/11/2016	1	U	200	NO
SW-029-MWS	Shallow	4.1-11.1	Ethylbenzene	100-41-4	2/11/2016	1	U	700	NO
SW-029-MWS	Shallow	4.1-11.1	Fluoranthene	206-44-0	2/11/2016	0.091	J	800	NO
SW-029-MWS	Shallow	4.1-11.1	Fluorene	86-73-7	2/11/2016	0.079	J	290	NO
SW-029-MWS	Shallow	4.1-11.1	Gasoline Range Organics	GRO	2/11/2016	200	U	47	NO
SW-029-MWS	Shallow	4.1-11.1	Heptachlorobiphenyl	28655-71-2	2/11/2016	0.015	U	0.004	NO
SW-029-MWS	Shallow	4.1-11.1	Hexachloro-1,3-butadiene	87-68-3	2/11/2016	1	U	0.14	NO
SW-029-MWS	Shallow	4.1-11.1	Hexachlorobenzene	118-74-1	2/11/2016	1	U	1	NO
SW-029-MWS	Shallow	4.1-11.1	Hexachlorobiphenyl	26601-64-9	2/11/2016	0.01	U	0.000004	NO
SW-029-MWS	Shallow	4.1-11.1	Hexachlorocyclopentadiene	77-47-4	2/11/2016	1	U	50	NO
SW-029-MWS	Shallow	4.1-11.1	Hexachloroethane	67-72-1	2/11/2016	1	U	0.33	NO
SW-029-MWS	Shallow	4.1-11.1	Indeno(1,2,3-cd)pyrene	193-39-5	2/11/2016	5.1	U	0.034	NO
SW-029-MWS	Shallow	4.1-11.1	Iron	7439-89-6	2/11/2016	678		14000	NO

Area B Groundwater Investigation Well Data (Non-Validated)
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Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-029-MWS	Shallow	4.1-11.1	Iron, Dissolved	7439-89-6	2/11/2016	595		14000	NO
SW-029-MWS	Shallow	4.1-11.1	Isophorone	78-59-1	2/11/2016	1	U	78	NO
SW-029-MWS	Shallow	4.1-11.1	Isopropylbenzene (Cumene)	98-82-8	2/11/2016	1	U	450	NO
SW-029-MWS	Shallow	4.1-11.1	Lead	7439-92-1	2/11/2016	5	U	15	NO
SW-029-MWS	Shallow	4.1-11.1	Lead, Dissolved	7439-92-1	2/11/2016	5	U	15	NO
SW-029-MWS	Shallow	4.1-11.1	Manganese	7439-96-5	2/11/2016	167		430	NO
SW-029-MWS	Shallow	4.1-11.1	Manganese, Dissolved	7439-96-5	2/11/2016	183		430	NO
SW-029-MWS	Shallow	4.1-11.1	Mercury	7439-97-6	2/11/2016	0.2	U	2	NO
SW-029-MWS	Shallow	4.1-11.1	Mercury, Dissolved	7439-97-6	2/11/2016	0.2	U	2	NO
SW-029-MWS	Shallow	4.1-11.1	Methyl Acetate	79-20-9	2/11/2016	5	U	20000	NO
SW-029-MWS	Shallow	4.1-11.1	Methylene Chloride	75-09-2	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	Methyl-tert-butyl ether	1634-04-4	2/11/2016	1	U	14	NO
SW-029-MWS	Shallow	4.1-11.1	Monochlorobiphenyl	27323-18-8	2/11/2016	0.005	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Naphthalene	91-20-3	2/11/2016	162		0.17	YES
SW-029-MWS	Shallow	4.1-11.1	Nickel	7440-02-0	2/11/2016	10	U	390	NO
SW-029-MWS	Shallow	4.1-11.1	Nickel, Dissolved	7440-02-0	2/11/2016	10	U	390	NO
SW-029-MWS	Shallow	4.1-11.1	Nitrobenzene	98-95-3	2/11/2016	1	U	0.14	NO
SW-029-MWS	Shallow	4.1-11.1	N-Nitroso-di-n-propylamine	621-64-7	2/11/2016	1	U	0.011	NO
SW-029-MWS	Shallow	4.1-11.1	N-Nitrosodiphenylamine	86-30-6	2/11/2016	1	U	12	NO
SW-029-MWS	Shallow	4.1-11.1	Nonachlorobiphenyl	53742-07-7	2/11/2016	0.025	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Octachlorobiphenyl	55722-26-4	2/11/2016	0.015	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Pentachlorobiphenyl	25429-29-2	2/11/2016	0.01	U	1.2E-06	NO
SW-029-MWS	Shallow	4.1-11.1	Pentachlorophenol	87-86-5	2/11/2016	2.5	U	1	NO
SW-029-MWS	Shallow	4.1-11.1	Phenanthrene	85-01-8	2/11/2016	0.08	J		NO
SW-029-MWS	Shallow	4.1-11.1	Phenol	108-95-2	2/11/2016	0.32	J	5800	NO
SW-029-MWS	Shallow	4.1-11.1	Pyrene	129-00-0	2/11/2016	0.078	J	120	NO
SW-029-MWS	Shallow	4.1-11.1	Selenium	7782-49-2	2/11/2016	6.8	J	50	NO
SW-029-MWS	Shallow	4.1-11.1	Selenium, Dissolved	7782-49-2	2/11/2016	8	U	50	NO
SW-029-MWS	Shallow	4.1-11.1	Silver	7440-22-4	2/11/2016	6	U	94	NO
SW-029-MWS	Shallow	4.1-11.1	Silver, Dissolved	7440-22-4	2/11/2016	6	U	94	NO
SW-029-MWS	Shallow	4.1-11.1	Styrene	100-42-5	2/11/2016	1	U	100	NO
SW-029-MWS	Shallow	4.1-11.1	Tetrachlorobiphenyl	26914-33-0	2/11/2016	0.01	U	0.0004	NO
SW-029-MWS	Shallow	4.1-11.1	Tetrachloroethene	127-18-4	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	Tetrachloro-meta-xylene	1336-36-3	2/11/2016	0	*	0.5	NO
SW-029-MWS	Shallow	4.1-11.1	Thallium	7440-28-0	2/11/2016	10	U	2	NO
SW-029-MWS	Shallow	4.1-11.1	Thallium, Dissolved	7440-28-0	2/11/2016	10	U	2	NO
SW-029-MWS	Shallow	4.1-11.1	Toluene	108-88-3	2/11/2016	0.49	J	1000	NO
SW-029-MWS	Shallow	4.1-11.1	Total PCB	1336-36-3	2/11/2016	0.025	U	0.5	NO
SW-029-MWS	Shallow	4.1-11.1	trans-1,2-Dichloroethene	156-60-5	2/11/2016	1	U	100	NO
SW-029-MWS	Shallow	4.1-11.1	trans-1,3-Dichloropropene	10061-02-6	2/11/2016	1	U		NO
SW-029-MWS	Shallow	4.1-11.1	Trichlorobiphenyl	25323-68-6	2/11/2016	0.005	U	0.044	NO
SW-029-MWS	Shallow	4.1-11.1	Trichloroethene	79-01-6	2/11/2016	1	U	5	NO
SW-029-MWS	Shallow	4.1-11.1	Trichlorofluoromethane	75-69-4	2/11/2016	1	U	1100	NO
SW-029-MWS	Shallow	4.1-11.1	Vanadium	7440-62-2	2/11/2016	5	J	86	NO
SW-029-MWS	Shallow	4.1-11.1	Vanadium, Dissolved	7440-62-2	2/11/2016	4.6	J	86	NO
SW-029-MWS	Shallow	4.1-11.1	Vinyl chloride	75-01-4	2/11/2016	1	U	2	NO
SW-029-MWS	Shallow	4.1-11.1	Xylene (Total)	1330-20-7	2/11/2016	3	U	10000	NO
SW-029-MWS	Shallow	4.1-11.1	Zinc	7440-66-6	2/11/2016	2.4	J	6000	NO
SW-029-MWS	Shallow	4.1-11.1	Zinc, Dissolved	7440-66-6	2/11/2016	43.6		6000	NO
SW-063-MWS	Shallow	6.0-18.0	1,1,1-Trichloroethane	71-55-6	1/29/2016	1	U	200	NO
SW-063-MWS	Shallow	6.0-18.0	1,1,2,2-Tetrachloroethane	79-34-5	1/29/2016	1	U	0.076	NO
SW-063-MWS	Shallow	6.0-18.0	1,1,2-Trichloroethane	79-00-5	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	1,1,2-Trichlorotrifluoroethane	76-13-1	1/29/2016	50	U	55000	NO
SW-063-MWS	Shallow	6.0-18.0	1,1-Dichloroethane	75-34-3	1/29/2016	1	U	2.7	NO
SW-063-MWS	Shallow	6.0-18.0	1,1-Dichloroethene	75-35-4	1/29/2016	1	U	7	NO
SW-063-MWS	Shallow	6.0-18.0	1,2,3-Trichlorobenzene	87-61-6	1/29/2016	2	U	7	NO
SW-063-MWS	Shallow	6.0-18.0	1,2,4,5-Tetrachlorobenzene	95-94-3	1/29/2016	1	U1c	1.7	NO
SW-063-MWS	Shallow	6.0-18.0	1,2,4-Trichlorobenzene	120-82-1	1/29/2016	1	U	70	NO
SW-063-MWS	Shallow	6.0-18.0	1,2-Dibromo-3-chloropropane	96-12-8	1/29/2016	5	U	0.2	NO
SW-063-MWS	Shallow	6.0-18.0	1,2-Dibromoethane (EDB)	106-93-4	1/29/2016	1	U	0.0075	NO
SW-063-MWS	Shallow	6.0-18.0	1,2-Dichlorobenzene	95-50-1	1/29/2016	1	U	600	NO
SW-063-MWS	Shallow	6.0-18.0	1,2-Dichloroethane	107-06-2	1/29/2016	1	U	5	NO

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-063-MWS	Shallow	6.0-18.0	1,2-Dichloroethene (Total)	540-59-0	1/29/2016	2	U	70	NO
SW-063-MWS	Shallow	6.0-18.0	1,2-Dichloropropane	78-87-5	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	1,3-Dichlorobenzene	541-73-1	1/29/2016	1	U		NO
SW-063-MWS	Shallow	6.0-18.0	1,4-Dichlorobenzene	106-46-7	1/29/2016	1	U	75	NO
SW-063-MWS	Shallow	6.0-18.0	1,4-Dioxane (p-Dioxane)	123-91-1	1/29/2016	0.19	1c	0.46	NO
SW-063-MWS	Shallow	6.0-18.0	2,3,4,6-Tetrachlorophenol	58-90-2	1/29/2016	1	U1c	240	NO
SW-063-MWS	Shallow	6.0-18.0	2,4,5-Trichlorophenol	95-95-4	1/29/2016	2.5	U1c	1200	NO
SW-063-MWS	Shallow	6.0-18.0	2,4,6-Trichlorophenol	88-06-2	1/29/2016	1	U1c	4	NO
SW-063-MWS	Shallow	6.0-18.0	2,4-Dichlorophenol	120-83-2	1/29/2016	1	U1c	46	NO
SW-063-MWS	Shallow	6.0-18.0	2,4-Dimethylphenol	105-67-9	1/29/2016	1	U1c	360	NO
SW-063-MWS	Shallow	6.0-18.0	2,4-Dinitrophenol	51-28-5	1/29/2016	2.5	U1c	39	NO
SW-063-MWS	Shallow	6.0-18.0	2,4-Dinitrotoluene	121-14-2	1/29/2016	1	U1c	0.24	NO
SW-063-MWS	Shallow	6.0-18.0	2,6-Dinitrotoluene	606-20-2	1/29/2016	1	U1c	0.048	NO
SW-063-MWS	Shallow	6.0-18.0	2-Butanone (MEK)	78-93-3	1/29/2016	10	U	5600	NO
SW-063-MWS	Shallow	6.0-18.0	2-Chloronaphthalene	91-58-7	1/29/2016	1	U1c	750	NO
SW-063-MWS	Shallow	6.0-18.0	2-Chlorophenol	95-57-8	1/29/2016	1	U1c	91	NO
SW-063-MWS	Shallow	6.0-18.0	2-Hexanone	591-78-6	1/29/2016	10	U	38	NO
SW-063-MWS	Shallow	6.0-18.0	2-Methylnaphthalene	91-57-6	1/29/2016	0.1	U1c	36	NO
SW-063-MWS	Shallow	6.0-18.0	2-Methylphenol(o-Cresol)	95-48-7	1/29/2016	1	U1c	930	NO
SW-063-MWS	Shallow	6.0-18.0	2-Nitroaniline	88-74-4	1/29/2016	2.5	U1c	190	NO
SW-063-MWS	Shallow	6.0-18.0	3&4-Methylphenol(m&p Cresol)	108-39-4/106-44-5	1/29/2016	2	U1c	930	NO
SW-063-MWS	Shallow	6.0-18.0	3,3'-Dichlorobenzidine	91-94-1	1/29/2016	1	U1c	0.12	NO
SW-063-MWS	Shallow	6.0-18.0	4-Chloroaniline	106-47-8	1/29/2016	1	U1c	0.36	NO
SW-063-MWS	Shallow	6.0-18.0	4-Methyl-2-pentanone (MIBK)	108-10-1	1/29/2016	10	U	1200	NO
SW-063-MWS	Shallow	6.0-18.0	4-Nitroaniline	100-01-6	1/29/2016	2.5	U1c	3.8	NO
SW-063-MWS	Shallow	6.0-18.0	Acenaphthene	83-32-9	1/29/2016	0.1	U1c	530	NO
SW-063-MWS	Shallow	6.0-18.0	Acenaphthylene	208-96-8	1/29/2016	0.1	U1c	530	NO
SW-063-MWS	Shallow	6.0-18.0	Acetone	67-64-1	1/29/2016	10	U	14000	NO
SW-063-MWS	Shallow	6.0-18.0	Acetophenone	98-86-2	1/29/2016	1	U1c	1900	NO
SW-063-MWS	Shallow	6.0-18.0	Aluminum	7429-90-5	1/29/2016	380		20000	NO
SW-063-MWS	Shallow	6.0-18.0	Aluminum, Dissolved	7429-90-5	1/29/2016	62.7		20000	NO
SW-063-MWS	Shallow	6.0-18.0	Anthracene	120-12-7	1/29/2016	0.2	1c	1800	NO
SW-063-MWS	Shallow	6.0-18.0	Antimony	7440-36-0	1/29/2016	6	U	6	NO
SW-063-MWS	Shallow	6.0-18.0	Antimony, Dissolved	7440-36-0	1/29/2016	6	U	6	NO
SW-063-MWS	Shallow	6.0-18.0	Arsenic	7440-38-2	1/29/2016	4.4	J	10	NO
SW-063-MWS	Shallow	6.0-18.0	Arsenic, Dissolved	7440-38-2	1/29/2016	5	U	10	NO
SW-063-MWS	Shallow	6.0-18.0	Barium	7440-39-3	1/29/2016	65.3		2000	NO
SW-063-MWS	Shallow	6.0-18.0	Barium, Dissolved	7440-39-3	1/29/2016	62.5		2000	NO
SW-063-MWS	Shallow	6.0-18.0	Benzaldehyde	100-52-7	1/29/2016	1	U1c	1900	NO
SW-063-MWS	Shallow	6.0-18.0	Benzene	71-43-2	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Benzo(a)anthracene	56-55-3	1/29/2016	0.1	U1c	0.012	NO
SW-063-MWS	Shallow	6.0-18.0	Benzo(a)pyrene	50-32-8	1/29/2016	0.1	U1c	0.2	NO
SW-063-MWS	Shallow	6.0-18.0	Benzo(b)fluoranthene	205-99-2	1/29/2016	0.1	U1c	0.034	NO
SW-063-MWS	Shallow	6.0-18.0	Benzo(g,h,i)perylene	191-24-2	1/29/2016	0.1	U1c		NO
SW-063-MWS	Shallow	6.0-18.0	Benzo(k)fluoranthene	207-08-9	1/29/2016	0.1	U1c	0.34	NO
SW-063-MWS	Shallow	6.0-18.0	Beryllium	7440-41-7	1/29/2016	1	U	4	NO
SW-063-MWS	Shallow	6.0-18.0	Beryllium, Dissolved	7440-41-7	1/29/2016	1	U	4	NO
SW-063-MWS	Shallow	6.0-18.0	Biphenyl (Diphenyl)	92-52-4	1/29/2016	1	U1c	0.83	NO
SW-063-MWS	Shallow	6.0-18.0	bis(2-chloroethoxy)methane	111-91-1	1/29/2016	1	U1c	59	NO
SW-063-MWS	Shallow	6.0-18.0	bis(2-Chloroethyl) ether	111-44-4	1/29/2016	1	U1c	0.014	NO
SW-063-MWS	Shallow	6.0-18.0	bis(2-Chloroisopropyl) ether	108-60-1	1/29/2016	1	U1c	0.36	NO
SW-063-MWS	Shallow	6.0-18.0	bis(2-Ethylhexyl)phthalate	117-81-7	1/29/2016	0.26	J1c	6	NO
SW-063-MWS	Shallow	6.0-18.0	Bromodichloromethane	75-27-4	1/29/2016	1	U	0.13	NO
SW-063-MWS	Shallow	6.0-18.0	Bromoform	75-25-2	1/29/2016	1	U	3.3	NO
SW-063-MWS	Shallow	6.0-18.0	Bromomethane	74-83-9	1/29/2016	1	U	7.5	NO
SW-063-MWS	Shallow	6.0-18.0	Cadmium	7440-43-9	1/29/2016	3	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Cadmium, Dissolved	7440-43-9	1/29/2016	3	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Caprolactam	105-60-2	1/29/2016	2.5	U1c	9900	NO
SW-063-MWS	Shallow	6.0-18.0	Carbazole	86-74-8	1/29/2016	1	U1c		NO
SW-063-MWS	Shallow	6.0-18.0	Carbon disulfide	75-15-0	1/29/2016	1	U	810	NO
SW-063-MWS	Shallow	6.0-18.0	Carbon tetrachloride	56-23-5	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Chlorobenzene	108-90-7	1/29/2016	1	U	100	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-063-MWS	Shallow	6.0-18.0	Chloroethane	75-00-3	1/29/2016	1	U	21000	NO
SW-063-MWS	Shallow	6.0-18.0	Chloroform	67-66-3	1/29/2016	1	U	0.22	NO
SW-063-MWS	Shallow	6.0-18.0	Chloromethane	74-87-3	1/29/2016	1	U	190	NO
SW-063-MWS	Shallow	6.0-18.0	Chromium	7440-47-3	1/29/2016	1	J	100	NO
SW-063-MWS	Shallow	6.0-18.0	Chromium, Dissolved	7440-47-3	1/29/2016	0.86	J	100	NO
SW-063-MWS	Shallow	6.0-18.0	Chromium, Hexavalent	18540-29-9	1/29/2016	10	UH3	0.035	NO
SW-063-MWS	Shallow	6.0-18.0	Chrysene	218-01-9	1/29/2016	0.1	U1c	3.4	NO
SW-063-MWS	Shallow	6.0-18.0	cis-1,2-Dichloroethene	156-59-2	1/29/2016	1	U	70	NO
SW-063-MWS	Shallow	6.0-18.0	cis-1,3-Dichloropropene	10061-01-5	1/29/2016	1	U		NO
SW-063-MWS	Shallow	6.0-18.0	Cobalt	7440-48-4	1/29/2016	20.6		6	YES
SW-063-MWS	Shallow	6.0-18.0	Cobalt, Dissolved	7440-48-4	1/29/2016	20.1		6	YES
SW-063-MWS	Shallow	6.0-18.0	Copper	7440-50-8	1/29/2016	5	U	1300	NO
SW-063-MWS	Shallow	6.0-18.0	Copper, Dissolved	7440-50-8	1/29/2016	5	U	1300	NO
SW-063-MWS	Shallow	6.0-18.0	Cyanide	57-12-5	1/29/2016	10	U	200	NO
SW-063-MWS	Shallow	6.0-18.0	Cyclohexane	110-82-7	1/29/2016	10	U	13000	NO
SW-063-MWS	Shallow	6.0-18.0	Dibenz(a,h)anthracene	53-70-3	1/29/2016	0.1	U1c	0.0034	NO
SW-063-MWS	Shallow	6.0-18.0	Dibromochloromethane	124-48-1	1/29/2016	1	U	0.17	NO
SW-063-MWS	Shallow	6.0-18.0	Dichlorodifluoromethane	75-71-8	1/29/2016	1	U	200	NO
SW-063-MWS	Shallow	6.0-18.0	Diesel Range Organics	DRO	1/29/2016	664	N2L21c	47	YES
SW-063-MWS	Shallow	6.0-18.0	Diethylphthalate	84-66-2	1/29/2016	1	U1c	15000	NO
SW-063-MWS	Shallow	6.0-18.0	Di-n-butylphthalate	84-74-2	1/29/2016	1	U1c	900	NO
SW-063-MWS	Shallow	6.0-18.0	Di-n-octylphthalate	117-84-0	1/29/2016	1	U1c	200	NO
SW-063-MWS	Shallow	6.0-18.0	Ethylbenzene	100-41-4	1/29/2016	1	U	700	NO
SW-063-MWS	Shallow	6.0-18.0	Fluoranthene	206-44-0	1/29/2016	0.1	U1c	800	NO
SW-063-MWS	Shallow	6.0-18.0	Fluorene	86-73-7	1/29/2016	0.1	U1c	290	NO
SW-063-MWS	Shallow	6.0-18.0	Gasoline Range Organics	GRO	1/29/2016	200	U	47	NO
SW-063-MWS	Shallow	6.0-18.0	Hexachloro-1,3-butadiene	87-68-3	1/29/2016	1	U1c	0.14	NO
SW-063-MWS	Shallow	6.0-18.0	Hexachlorobenzene	118-74-1	1/29/2016	1	U1c	1	NO
SW-063-MWS	Shallow	6.0-18.0	Hexachlorocyclopentadiene	77-47-4	1/29/2016	1	U1c	50	NO
SW-063-MWS	Shallow	6.0-18.0	Hexachloroethane	67-72-1	1/29/2016	1	U1c	0.33	NO
SW-063-MWS	Shallow	6.0-18.0	Indeno(1,2,3-cd)pyrene	193-39-5	1/29/2016	0.1	U1c	0.034	NO
SW-063-MWS	Shallow	6.0-18.0	Iron	7439-89-6	1/29/2016	13000		14000	NO
SW-063-MWS	Shallow	6.0-18.0	Iron, Dissolved	7439-89-6	1/29/2016	11700		14000	NO
SW-063-MWS	Shallow	6.0-18.0	Isophorone	78-59-1	1/29/2016	1	U1c	78	NO
SW-063-MWS	Shallow	6.0-18.0	Isopropylbenzene (Cumene)	98-82-8	1/29/2016	1	U	450	NO
SW-063-MWS	Shallow	6.0-18.0	Lead	7439-92-1	1/29/2016	5	U	15	NO
SW-063-MWS	Shallow	6.0-18.0	Lead, Dissolved	7439-92-1	1/29/2016	5	U	15	NO
SW-063-MWS	Shallow	6.0-18.0	Manganese	7439-96-5	1/29/2016	1540		430	YES
SW-063-MWS	Shallow	6.0-18.0	Manganese, Dissolved	7439-96-5	1/29/2016	1510		430	YES
SW-063-MWS	Shallow	6.0-18.0	Mercury	7439-97-6	1/29/2016	0.2	U	2	NO
SW-063-MWS	Shallow	6.0-18.0	Mercury, Dissolved	7439-97-6	1/29/2016	0.2	U	2	NO
SW-063-MWS	Shallow	6.0-18.0	Methyl Acetate	79-20-9	1/29/2016	5	U	20000	NO
SW-063-MWS	Shallow	6.0-18.0	Methylene Chloride	75-09-2	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Methyl-tert-butyl ether	1634-04-4	1/29/2016	1	U	14	NO
SW-063-MWS	Shallow	6.0-18.0	Naphthalene	91-20-3	1/29/2016	0.1	U1c	0.17	NO
SW-063-MWS	Shallow	6.0-18.0	Nickel	7440-02-0	1/29/2016	9.7	J	390	NO
SW-063-MWS	Shallow	6.0-18.0	Nickel, Dissolved	7440-02-0	1/29/2016	9.7	J	390	NO
SW-063-MWS	Shallow	6.0-18.0	Nitrobenzene	98-95-3	1/29/2016	1	U1c	0.14	NO
SW-063-MWS	Shallow	6.0-18.0	N-Nitroso-di-n-propylamine	621-64-7	1/29/2016	1	U1c	0.011	NO
SW-063-MWS	Shallow	6.0-18.0	N-Nitrosodiphenylamine	86-30-6	1/29/2016	1	U1c	12	NO
SW-063-MWS	Shallow	6.0-18.0	Pentachlorophenol	87-86-5	1/29/2016	2.5	U1c	1	NO
SW-063-MWS	Shallow	6.0-18.0	Phenanthrene	85-01-8	1/29/2016	0.1	U1c		NO
SW-063-MWS	Shallow	6.0-18.0	Phenol	108-95-2	1/29/2016	1	U1c	5800	NO
SW-063-MWS	Shallow	6.0-18.0	Pyrene	129-00-0	1/29/2016	0.1	U1c	120	NO
SW-063-MWS	Shallow	6.0-18.0	Selenium	7782-49-2	1/29/2016	8	U	50	NO
SW-063-MWS	Shallow	6.0-18.0	Selenium, Dissolved	7782-49-2	1/29/2016	8	U	50	NO
SW-063-MWS	Shallow	6.0-18.0	Silver	7440-22-4	1/29/2016	6	U	94	NO
SW-063-MWS	Shallow	6.0-18.0	Silver, Dissolved	7440-22-4	1/29/2016	6	U	94	NO
SW-063-MWS	Shallow	6.0-18.0	Styrene	100-42-5	1/29/2016	1	U	100	NO
SW-063-MWS	Shallow	6.0-18.0	Tetrachloroethene	127-18-4	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Thallium	7440-28-0	1/29/2016	10	U	2	NO
SW-063-MWS	Shallow	6.0-18.0	Thallium, Dissolved	7440-28-0	1/29/2016	10	U	2	NO

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-063-MWS	Shallow	6.0-18.0	Toluene	108-88-3	1/29/2016	1	U	1000	NO
SW-063-MWS	Shallow	6.0-18.0	trans-1,2-Dichloroethene	156-60-5	1/29/2016	1	U	100	NO
SW-063-MWS	Shallow	6.0-18.0	trans-1,3-Dichloropropene	10061-02-6	1/29/2016	1	U		NO
SW-063-MWS	Shallow	6.0-18.0	Trichloroethene	79-01-6	1/29/2016	1	U	5	NO
SW-063-MWS	Shallow	6.0-18.0	Trichlorofluoromethane	75-69-4	1/29/2016	1	U	1100	NO
SW-063-MWS	Shallow	6.0-18.0	Vanadium	7440-62-2	1/29/2016	5	U	86	NO
SW-063-MWS	Shallow	6.0-18.0	Vanadium, Dissolved	7440-62-2	1/29/2016	5	U	86	NO
SW-063-MWS	Shallow	6.0-18.0	Vinyl chloride	75-01-4	1/29/2016	1	U	2	NO
SW-063-MWS	Shallow	6.0-18.0	Xylene (Total)	1330-20-7	1/29/2016	3	U	10000	NO
SW-063-MWS	Shallow	6.0-18.0	Zinc	7440-66-6	1/29/2016	5.7	J	6000	NO
SW-063-MWS	Shallow	6.0-18.0	Zinc, Dissolved	7440-66-6	1/29/2016	5.2	JB	6000	NO
SW-064-MWS	Shallow	5.0-15.0	1,1,1-Trichloroethane	71-55-6	3/28/2016	1	U	200	NO
SW-064-MWS	Shallow	5.0-15.0	1,1,2,2-Tetrachloroethane	79-34-5	3/28/2016	1	U	0.076	NO
SW-064-MWS	Shallow	5.0-15.0	1,1,2-Trichloroethane	79-00-5	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	1,1,2-Trichlorotrifluoroethane	76-13-1	3/28/2016	50	U	55000	NO
SW-064-MWS	Shallow	5.0-15.0	1,1-Dichloroethane	75-34-3	3/28/2016	1	U	2.7	NO
SW-064-MWS	Shallow	5.0-15.0	1,1-Dichloroethene	75-35-4	3/28/2016	1	U	7	NO
SW-064-MWS	Shallow	5.0-15.0	1,2,3-Trichlorobenzene	87-61-6	3/28/2016	2	U	7	NO
SW-064-MWS	Shallow	5.0-15.0	1,2,4,5-Tetrachlorobenzene	95-94-3	3/28/2016	1	U1c	1.7	NO
SW-064-MWS	Shallow	5.0-15.0	1,2,4-Trichlorobenzene	120-82-1	3/28/2016	1	U	70	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dibromo-3-chloropropane	96-12-8	3/28/2016	5	U	0.2	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dibromoethane (EDB)	106-93-4	3/28/2016	1	U	0.0075	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dichlorobenzene	95-50-1	3/28/2016	1	U	600	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dichloroethane	107-06-2	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dichloroethene (Total)	540-59-0	3/28/2016	2	U	70	NO
SW-064-MWS	Shallow	5.0-15.0	1,2-Dichloropropane	78-87-5	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	1,3-Dichlorobenzene	541-73-1	3/28/2016	1	U		NO
SW-064-MWS	Shallow	5.0-15.0	1,4-Dichlorobenzene	106-46-7	3/28/2016	1	U	75	NO
SW-064-MWS	Shallow	5.0-15.0	1,4-Dioxane (p-Dioxane)	123-91-1	3/28/2016	0.062	J1c	0.46	NO
SW-064-MWS	Shallow	5.0-15.0	2,3,4,6-Tetrachlorophenol	58-90-2	3/28/2016	1	U1c	240	NO
SW-064-MWS	Shallow	5.0-15.0	2,4,5-Trichlorophenol	95-95-4	3/28/2016	2.5	U1c	1200	NO
SW-064-MWS	Shallow	5.0-15.0	2,4,6-Trichlorophenol	88-06-2	3/28/2016	1	U1c	4	NO
SW-064-MWS	Shallow	5.0-15.0	2,4-Dichlorophenol	120-83-2	3/28/2016	1	U1c	46	NO
SW-064-MWS	Shallow	5.0-15.0	2,4-Dimethylphenol	105-67-9	3/28/2016	1	U1c	360	NO
SW-064-MWS	Shallow	5.0-15.0	2,4-Dinitrophenol	51-28-5	3/28/2016	2.5	U1c	39	NO
SW-064-MWS	Shallow	5.0-15.0	2,4-Dinitrotoluene	121-14-2	3/28/2016	1	UL31c	0.24	NO
SW-064-MWS	Shallow	5.0-15.0	2,6-Dinitrotoluene	606-20-2	3/28/2016	1	U1c	0.048	NO
SW-064-MWS	Shallow	5.0-15.0	2-Butanone (MEK)	78-93-3	3/28/2016	10	U	5600	NO
SW-064-MWS	Shallow	5.0-15.0	2-Chloronaphthalene	91-58-7	3/28/2016	1	U1c	750	NO
SW-064-MWS	Shallow	5.0-15.0	2-Chlorophenol	95-57-8	3/28/2016	1	U1c	91	NO
SW-064-MWS	Shallow	5.0-15.0	2-Hexanone	591-78-6	3/28/2016	10	U	38	NO
SW-064-MWS	Shallow	5.0-15.0	2-Methylnaphthalene	91-57-6	3/28/2016	0.1	U1c	36	NO
SW-064-MWS	Shallow	5.0-15.0	2-Methylphenol(o-Cresol)	95-48-7	3/28/2016	1	U1c	930	NO
SW-064-MWS	Shallow	5.0-15.0	2-Nitroaniline	88-74-4	3/28/2016	2.5	U1c	190	NO
SW-064-MWS	Shallow	5.0-15.0	3&4-Methylphenol(m&p Cresol)	108-39-4/106-44-5	3/28/2016	2	U1c	930	NO
SW-064-MWS	Shallow	5.0-15.0	3,3'-Dichlorobenzidine	91-94-1	3/28/2016	1	U1c	0.12	NO
SW-064-MWS	Shallow	5.0-15.0	4-Chloroaniline	106-47-8	3/28/2016	1	U1c	0.36	NO
SW-064-MWS	Shallow	5.0-15.0	4-Methyl-2-pentanone (MIBK)	108-10-1	3/28/2016	10	U	1200	NO
SW-064-MWS	Shallow	5.0-15.0	4-Nitroaniline	100-01-6	3/28/2016	2.5	U1c	3.8	NO
SW-064-MWS	Shallow	5.0-15.0	Acenaphthene	83-32-9	3/28/2016	0.1	U1c	530	NO
SW-064-MWS	Shallow	5.0-15.0	Acenaphthylene	208-96-8	3/28/2016	0.1	U1c	530	NO
SW-064-MWS	Shallow	5.0-15.0	Acetone	67-64-1	3/28/2016	10	UM0R1L3	14000	NO
SW-064-MWS	Shallow	5.0-15.0	Acetophenone	98-86-2	3/28/2016	1	U1c	1900	NO
SW-064-MWS	Shallow	5.0-15.0	Aluminum	7429-90-5	3/28/2016	192		20000	NO
SW-064-MWS	Shallow	5.0-15.0	Aluminum, Dissolved	7429-90-5	3/28/2016	72		20000	NO
SW-064-MWS	Shallow	5.0-15.0	Anthracene	120-12-7	3/28/2016	0.036	J1c	1800	NO
SW-064-MWS	Shallow	5.0-15.0	Antimony	7440-36-0	3/28/2016	6	U	6	NO
SW-064-MWS	Shallow	5.0-15.0	Antimony, Dissolved	7440-36-0	3/28/2016	6	U	6	NO
SW-064-MWS	Shallow	5.0-15.0	Arsenic	7440-38-2	3/28/2016	5	U	10	NO
SW-064-MWS	Shallow	5.0-15.0	Arsenic, Dissolved	7440-38-2	3/28/2016	5	U	10	NO
SW-064-MWS	Shallow	5.0-15.0	Barium	7440-39-3	3/28/2016	61.9		2000	NO
SW-064-MWS	Shallow	5.0-15.0	Barium, Dissolved	7440-39-3	3/28/2016	60.5		2000	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-064-MWS	Shallow	5.0-15.0	Benzaldehyde	100-52-7	3/28/2016	1	U1c	1900	NO
SW-064-MWS	Shallow	5.0-15.0	Benzene	71-43-2	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Benzo(a)anthracene	56-55-3	3/28/2016	0.016	J1c	0.012	YES
SW-064-MWS	Shallow	5.0-15.0	Benzo(a)pyrene	50-32-8	3/28/2016	0.1	UL11c	0.2	NO
SW-064-MWS	Shallow	5.0-15.0	Benzo(b)fluoranthene	205-99-2	3/28/2016	0.1	U1c	0.034	NO
SW-064-MWS	Shallow	5.0-15.0	Benzo(g,h,i)perylene	191-24-2	3/28/2016	0.1	U1c		NO
SW-064-MWS	Shallow	5.0-15.0	Benzo(k)fluoranthene	207-08-9	3/28/2016	0.1	U1c	0.34	NO
SW-064-MWS	Shallow	5.0-15.0	Beryllium	7440-41-7	3/28/2016	1	U	4	NO
SW-064-MWS	Shallow	5.0-15.0	Beryllium, Dissolved	7440-41-7	3/28/2016	1	U	4	NO
SW-064-MWS	Shallow	5.0-15.0	Biphenyl (Diphenyl)	92-52-4	3/28/2016	1	U1c	0.83	NO
SW-064-MWS	Shallow	5.0-15.0	bis(2-chloroethoxy)methane	111-91-1	3/28/2016	1	U1c	59	NO
SW-064-MWS	Shallow	5.0-15.0	bis(2-Chloroethyl) ether	111-44-4	3/28/2016	1	U1c	0.014	NO
SW-064-MWS	Shallow	5.0-15.0	bis(2-Chloroisopropyl) ether	108-60-1	3/28/2016	1	U1c	0.36	NO
SW-064-MWS	Shallow	5.0-15.0	bis(2-Ethylhexyl)phthalate	117-81-7	3/28/2016	1	U1c	6	NO
SW-064-MWS	Shallow	5.0-15.0	Bromodichloromethane	75-27-4	3/28/2016	1	U	0.13	NO
SW-064-MWS	Shallow	5.0-15.0	Bromoform	75-25-2	3/28/2016	1	U	3.3	NO
SW-064-MWS	Shallow	5.0-15.0	Bromomethane	74-83-9	3/28/2016	1	U	7.5	NO
SW-064-MWS	Shallow	5.0-15.0	Cadmium	7440-43-9	3/28/2016	3	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Cadmium, Dissolved	7440-43-9	3/28/2016	3	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Caprolactam	105-60-2	3/28/2016	2.5	U1c	9900	NO
SW-064-MWS	Shallow	5.0-15.0	Carbazole	86-74-8	3/28/2016	1	U1c		NO
SW-064-MWS	Shallow	5.0-15.0	Carbon disulfide	75-15-0	3/28/2016	1	U	810	NO
SW-064-MWS	Shallow	5.0-15.0	Carbon tetrachloride	56-23-5	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Chlorobenzene	108-90-7	3/28/2016	1	U	100	NO
SW-064-MWS	Shallow	5.0-15.0	Chloroethane	75-00-3	3/28/2016	1	U	21000	NO
SW-064-MWS	Shallow	5.0-15.0	Chloroform	67-66-3	3/28/2016	1	U	0.22	NO
SW-064-MWS	Shallow	5.0-15.0	Chloromethane	74-87-3	3/28/2016	1	U	190	NO
SW-064-MWS	Shallow	5.0-15.0	Chromium	7440-47-3	3/28/2016	1.9	J	100	NO
SW-064-MWS	Shallow	5.0-15.0	Chromium, Dissolved	7440-47-3	3/28/2016	1.5	J	100	NO
SW-064-MWS	Shallow	5.0-15.0	Chromium, Hexavalent	18540-29-9	3/28/2016	10	U	0.035	NO
SW-064-MWS	Shallow	5.0-15.0	Chrysene	218-01-9	3/28/2016	0.1	U1c	3.4	NO
SW-064-MWS	Shallow	5.0-15.0	cis-1,2-Dichloroethene	156-59-2	3/28/2016	1	U	70	NO
SW-064-MWS	Shallow	5.0-15.0	cis-1,3-Dichloropropene	10061-01-5	3/28/2016	1	U		NO
SW-064-MWS	Shallow	5.0-15.0	Cobalt	7440-48-4	3/28/2016	5	U	6	NO
SW-064-MWS	Shallow	5.0-15.0	Cobalt, Dissolved	7440-48-4	3/28/2016	5	U	6	NO
SW-064-MWS	Shallow	5.0-15.0	Copper	7440-50-8	3/28/2016	5	U	1300	NO
SW-064-MWS	Shallow	5.0-15.0	Copper, Dissolved	7440-50-8	3/28/2016	5	U	1300	NO
SW-064-MWS	Shallow	5.0-15.0	Cyanide	57-12-5	3/28/2016	10	U	200	NO
SW-064-MWS	Shallow	5.0-15.0	Cyclohexane	110-82-7	3/28/2016	10	U	13000	NO
SW-064-MWS	Shallow	5.0-15.0	Dibenz(a,h)anthracene	53-70-3	3/28/2016	0.1	U1c	0.0034	NO
SW-064-MWS	Shallow	5.0-15.0	Dibromochloromethane	124-48-1	3/28/2016	1	U	0.17	NO
SW-064-MWS	Shallow	5.0-15.0	Dichlorodifluoromethane	75-71-8	3/28/2016	1	U	200	NO
SW-064-MWS	Shallow	5.0-15.0	Diesel Range Organics	DRO	3/28/2016	93.2	JN2L21c	47	YES
SW-064-MWS	Shallow	5.0-15.0	Diethylphthalate	84-66-2	3/28/2016	1	U1c	15000	NO
SW-064-MWS	Shallow	5.0-15.0	Di-n-butylphthalate	84-74-2	3/28/2016	1	U1c	900	NO
SW-064-MWS	Shallow	5.0-15.0	Di-n-octylphthalate	117-84-0	3/28/2016	1	U1c	200	NO
SW-064-MWS	Shallow	5.0-15.0	Ethylbenzene	100-41-4	3/28/2016	1	U	700	NO
SW-064-MWS	Shallow	5.0-15.0	Fluoranthene	206-44-0	3/28/2016	0.015	J1c	800	NO
SW-064-MWS	Shallow	5.0-15.0	Fluorene	86-73-7	3/28/2016	0.1	U1c	290	NO
SW-064-MWS	Shallow	5.0-15.0	Gasoline Range Organics	GRO	3/28/2016	200	U	47	NO
SW-064-MWS	Shallow	5.0-15.0	Hexachloro-1,3-butadiene	87-68-3	3/28/2016	1	U1c	0.14	NO
SW-064-MWS	Shallow	5.0-15.0	Hexachlorobenzene	118-74-1	3/28/2016	1	U1c	1	NO
SW-064-MWS	Shallow	5.0-15.0	Hexachlorocyclopentadiene	77-47-4	3/28/2016	1	U1c	50	NO
SW-064-MWS	Shallow	5.0-15.0	Hexachloroethane	67-72-1	3/28/2016	1	U1c	0.33	NO
SW-064-MWS	Shallow	5.0-15.0	Indeno(1,2,3-cd)pyrene	193-39-5	3/28/2016	0.1	U1c	0.034	NO
SW-064-MWS	Shallow	5.0-15.0	Iron	7439-89-6	3/28/2016	47.6	J	14000	NO
SW-064-MWS	Shallow	5.0-15.0	Iron, Dissolved	7439-89-6	3/28/2016	70	U	14000	NO
SW-064-MWS	Shallow	5.0-15.0	Isophorone	78-59-1	3/28/2016	1	U1c	78	NO
SW-064-MWS	Shallow	5.0-15.0	Isopropylbenzene (Cumene)	98-82-8	3/28/2016	1	U	450	NO
SW-064-MWS	Shallow	5.0-15.0	Lead	7439-92-1	3/28/2016	5	U	15	NO
SW-064-MWS	Shallow	5.0-15.0	Lead, Dissolved	7439-92-1	3/28/2016	5	U	15	NO
SW-064-MWS	Shallow	5.0-15.0	Manganese	7439-96-5	3/28/2016	6.7		430	NO

Area B Groundwater Investigation Well Data (Non-Validated)
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	Zone	Screen Interval (feet bgs)	Parameter	CAS	Sample Date	Result (ug/L)	Flag	PAL	Exceeds PAL?
SW-064-MWS	Shallow	5.0-15.0	Manganese, Dissolved	7439-96-5	3/28/2016	5	U	430	NO
SW-064-MWS	Shallow	5.0-15.0	Mercury	7439-97-6	3/28/2016	0.2	U	2	NO
SW-064-MWS	Shallow	5.0-15.0	Mercury, Dissolved	7439-97-6	3/28/2016	0.2	U	2	NO
SW-064-MWS	Shallow	5.0-15.0	Methyl Acetate	79-20-9	3/28/2016	5	U	20000	NO
SW-064-MWS	Shallow	5.0-15.0	Methylene Chloride	75-09-2	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Methyl-tert-butyl ether	1634-04-4	3/28/2016	1	U	14	NO
SW-064-MWS	Shallow	5.0-15.0	Naphthalene	91-20-3	3/28/2016	0.13	1c	0.17	NO
SW-064-MWS	Shallow	5.0-15.0	Nickel	7440-02-0	3/28/2016	0.66	J	390	NO
SW-064-MWS	Shallow	5.0-15.0	Nickel, Dissolved	7440-02-0	3/28/2016	10	U	390	NO
SW-064-MWS	Shallow	5.0-15.0	Nitrobenzene	98-95-3	3/28/2016	1	U1c	0.14	NO
SW-064-MWS	Shallow	5.0-15.0	N-Nitroso-di-n-propylamine	621-64-7	3/28/2016	1	U1c	0.011	NO
SW-064-MWS	Shallow	5.0-15.0	N-Nitrosodiphenylamine	86-30-6	3/28/2016	1	U1c	12	NO
SW-064-MWS	Shallow	5.0-15.0	Pentachlorophenol	87-86-5	3/28/2016	2.5	U1c	1	NO
SW-064-MWS	Shallow	5.0-15.0	Phenanthrene	85-01-8	3/28/2016	0.02	J1c		NO
SW-064-MWS	Shallow	5.0-15.0	Phenol	108-95-2	3/28/2016	1	U1c	5800	NO
SW-064-MWS	Shallow	5.0-15.0	Pyrene	129-00-0	3/28/2016	0.014	J1c	120	NO
SW-064-MWS	Shallow	5.0-15.0	Selenium	7782-49-2	3/28/2016	5.6	J	50	NO
SW-064-MWS	Shallow	5.0-15.0	Selenium, Dissolved	7782-49-2	3/28/2016	6.6	J	50	NO
SW-064-MWS	Shallow	5.0-15.0	Silver	7440-22-4	3/28/2016	6	U	94	NO
SW-064-MWS	Shallow	5.0-15.0	Silver, Dissolved	7440-22-4	3/28/2016	6	U	94	NO
SW-064-MWS	Shallow	5.0-15.0	Styrene	100-42-5	3/28/2016	1	U	100	NO
SW-064-MWS	Shallow	5.0-15.0	Tetrachloroethene	127-18-4	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Thallium	7440-28-0	3/28/2016	10	U	2	NO
SW-064-MWS	Shallow	5.0-15.0	Thallium, Dissolved	7440-28-0	3/28/2016	10	U	2	NO
SW-064-MWS	Shallow	5.0-15.0	Toluene	108-88-3	3/28/2016	1	U	1000	NO
SW-064-MWS	Shallow	5.0-15.0	trans-1,2-Dichloroethene	156-60-5	3/28/2016	1	U	100	NO
SW-064-MWS	Shallow	5.0-15.0	trans-1,3-Dichloropropene	10061-02-6	3/28/2016	1	U		NO
SW-064-MWS	Shallow	5.0-15.0	Trichloroethene	79-01-6	3/28/2016	1	U	5	NO
SW-064-MWS	Shallow	5.0-15.0	Trichlorofluoromethane	75-69-4	3/28/2016	1	U	1100	NO
SW-064-MWS	Shallow	5.0-15.0	Vanadium	7440-62-2	3/28/2016	2.4	J	86	NO
SW-064-MWS	Shallow	5.0-15.0	Vanadium, Dissolved	7440-62-2	3/28/2016	2.3	J	86	NO
SW-064-MWS	Shallow	5.0-15.0	Vinyl chloride	75-01-4	3/28/2016	1	U	2	NO
SW-064-MWS	Shallow	5.0-15.0	Xylene (Total)	1330-20-7	3/28/2016	3	U	10000	NO
SW-064-MWS	Shallow	5.0-15.0	Zinc	7440-66-6	3/28/2016	1.1	J	6000	NO
SW-064-MWS	Shallow	5.0-15.0	Zinc, Dissolved	7440-66-6	3/28/2016	0.95	JB	6000	NO

PAL exceedances are highlighted.

APPENDIX E

Table 1 - Soil Samples
Parcel B4 (Full) Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Sub-Parcel	Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil Samples
B4-1	Drip Legs		Drip Legs Drawing 5885B	Coke oven gas condensate was removed from the gas pipelines at drip legs located throughout the distribution system. The condensate was typically discharged to drums, although it is possible some spilled out of the drums and on to the ground. A subset of the drip legs was selected for investigation.	2	B4-001 and B4-002	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-1	REC Oil House	REC 8C, Finding 203	REC Location Map/ Drawing 5020	The Phase I ESA identified this particular oil house to be a REC, because the conditions and status of the building were unknown. The oil house was positively identified on several sets of historical drawings. Current aerial images indicate that this structure is no longer in use and has been demolished.	3	B4-003 through B4-005	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-1	Emergency Plating Pit		Drawing 5120-A	Investigate potential impacts related to the emergency plating pit (potential leaks or releases).	2	B4-006 and B4-007	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-1	Substation/ Transformers		Drawing 5120	Investigate potential impacts related to a substation/transformers which are not on the list of PCB-containing equipment (potential leaks or releases).	2	B4-008 and B4-009	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-1	Parcel B4 Coverage			Investigate potential impacts related to any historical activities which may have occurred on the site (potential leaks or releases).	3	B4-010 through B4-012	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')

Table 1 - Soil Samples
Parcel B4 (Full) Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Sub-Parcel	Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil Samples
B4-2	Desulfurizer Stations		Drawings 5014 and 5020	Investigate potential impacts related to the desulfurizer stations (potential leaks or releases).	4	B4-014 through B4-017	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Drip Legs		Drip Legs Drawing 5885B	Coke oven gas condensate was removed from the gas pipelines at drip legs located throughout the distribution system. The condensate was typically discharged to drums, although it is possible some spilled out of the drums and on to the ground. A subset of the drip legs was selected for investigation.	8	B4-018 through B4-025	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Mould Treatment Building		Drawing 5026	Investigate potential impacts related to the mould treatment building (potential leaks or releases).	2	B4-026 and B4-027	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Fuel Department		Drawing 5014	Investigate potential impacts related to the fuel department (potential leaks or releases).	2	B4-028 and B4-029	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')

Table 1 - Soil Samples
Parcel B4 (Full) Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Sub-Parcel	Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil Samples
B4-2	Non-REC Oil House		Drawing 5020	Investigate potential impacts related to the oil house classified as a non-REC (potential leaks or releases).	2	B4-030 and B4-031	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Gas Pump Station	REC 8D, Finding 204	REC Location Map/ Drawing 5014	Based on interviews conducted by Weaver Boos, they determined this gas pumping station to be a REC because the station was associated with coke oven gas. It is possible that a historical release of gas condensate may have occurred. The gas pumping station was positively identified on several sets of historical drawings. Current aerial images indicate that this structure is no longer in use and has been demolished.	3	B4-032 through B4-034	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Substations/ Transformers		Drawings 5020 and 5120	Investigate potential impacts related to substations/transformers which may have included PCB-containing equipment (potential leaks or releases).	4	B4-035 through B4-038	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-1 & B4-2	Tar Tanks		Drawing 5020	Investigate potential impacts related to the tar tanks (potential leaks or releases).	4	B4-039 through B4-042	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')

Table 1 - Soil Samples
Parcel B4 (Full) Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Sub-Parcel	Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil Samples
B4-2	Thickener Tanks		Drawings 5014, 5020, and 5121	Investigate potential impacts related to the thickener tanks (potential leaks or releases).	4	B4-043 through B4-046	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Parcel B4 Coverage			Investigate potential impacts related to any historical activities which may have occurred on the site (potential leaks or releases).	5	B4-013; B4-047 through B4-050	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Mould Yards		Drawing 5120	MDE Request. Investigate potential impacts related to the mould yards (potential leaks or releases).	2	B4-054 and B4-055	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Water Treatment Area		Drawing 5526	MDE Request. Investigate potential impacts related to the water treatment area (potential leaks or releases).	1	B4-056	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	No. 3 Open Hearth		Drawings 5121 and 5127	MDE Request. Investigate potential impacts related to the No. 3 Open Hearth (potential leaks or releases).	1	B4-057	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
B4-2	Additional PCB Investigation			MDE Request. Investigate potential impacts in the vicinity of an elevated PCB detection (potential leaks or releases).	2	B4-058 and B4-059	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC, SVOC, Metals, DRO/GRO, PCBs (0-1')
				Total	56				

Soil Borings Sampling Density Requirements (from **Worksheet 17 - Sampling Design and Rationale**)
Engineered Barrier (71-100 acres): 1 boring per 5 acres with no less than 35.
No Engineered Barrier (1-15 acres): 0.5 boring per acre with no less than 3.
Engineered Barrier (70.5 acres) = **35 borings required, 53 proposed**
No Engineered Barrier (1.6 acres) = **3 borings required, 3 proposed**

VOCs - Volatile Organic Compounds (Target Compound List)
SVOCs - Semivolatile Organic Compounds (Target Compound List)
Metals - (Target Analyte List plus Hexavalent Chromium and Cyanide)
PCBs - Polychlorinated Biphenyls
DRO/GRO - Diesel Range Organics/Gasoline Range Organics
bgs - Below Ground Surface

Table 2 - Sub-Slab Soil Gas Samples
Parcel B4 (Full) Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Source Area/ Description	RATIONALE	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Sub-Slab Soil Gas
Maintenance Shop (Coverage)	Investigate potential impacts related to any historical activities which may have occurred within the maintenance shop (potential leaks or releases).	1	B4-051	6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs
Maintenance Shop (Parts Washer)	Investigate potential impacts related to the observed parts washer (potential leaks or releases).	1	B4-052	6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs
Maintenance Shop (Storage Enclosure & Oil Release)	Investigate potential impacts related to the storage enclosure and small oil release (potential leaks or releases).	1	B4-053	6 inches below bottom of concrete slab	6 inches below bottom of concrete slab	VOCs
	Total	3				

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

Sub-Slab: 1 sample collected per 20,000 ft^2, with a minimum of 3 per building

Maintenance Shop (5,750 ft^2) = 3 **Samples**

APPENDIX F

Health and Safety Plan

Area B: Parcel B4
Tradepoint Atlantic
Sparrows Point, Maryland

Prepared for:
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1650 Des Peres Road
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Prepared by:
ARM Group Inc.
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January 2016

ARM Project 150300M

Respectfully submitted,

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Senior Geologist

T. Neil Peters
Vice President

TABLE OF CONTENTS

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared by ARM Group Inc. (ARM) to address personnel health and safety requirements for employees of ARM and its subcontractors to complete a Phase II investigation on a portion of the Tradepoint Atlantic property that has been designated as Parcel B4. The on-site activities may include the following: installation of soil borings, collection of soil samples, and installation and gauging of temporary piezometers. ARM will comply with industry-standard health and safety protocol and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 to prevent human exposure to volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), petroleum hydrocarbons, polychlorinated biphenyls (PCB) and metals that may be present in site soil and groundwater.

2.0 GENERAL INFORMATION

2.1 Site Description

Parcel B4, which is comprised of 72 acres of the approximately 3,100-acre former plant property, is located off of Sparrows Point Boulevard in Sparrows Point, Maryland. Parcel B4 is one of several parcels that make up a larger area, known as Area B, of the Tradepoint Atlantic facility. Area B and its parcels are shown on **Figure 1.**

From the late 1800s until 2012, the Tradepoint Atlantic property was used for the production and manufacturing of steel. Iron and steel production operations and processes at the Site included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, it 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 the facility ceased in fall 2012.

2.2 Site Hazards

The following is a general description of the potential site hazards.

Chemical Hazards:

- VOCs, SVOCs, PCBs, petroleum hydrocarbons, and metals potentially present in soil and groundwater.

Explosive Hazards:

- VOC and petroleum hydrocarbon vapors in boreholes, piezometers and collection containers.

Physical Hazards:

- Slipping/tripping in work area
- Stress/fatigue from heat or cold temperatures
- Traffic
- Driving on steep slopes and/or off-road conditions
- Insect and animal bites
- Hand tools

Mechanical/Electrical Hazards:

- Underground utilities
- Heavy equipment (Geoprobe)
- Noise from heavy equipment operations
- Power tools

2.3 Utilities

Prior to initiating any subsurface investigations, all underground utilities will be cleared using the Miss Utility system. Additionally, EnviroAnalytics Group (EAG) will clear each proposed boring with utility personnel currently working on the property. The ARM staff will be responsible for avoiding any above ground utilities while operating vehicles on the site.

2.4 Waste Management

A small quantity of investigation derived waste (IDW) material will be generated as a result of the planned site work. These wastes could include decontamination fluids, soil cuttings, personal protective equipment (PPE) and disposable sampling equipment. All IDW will be containerized in steel 55-gallon drums for on-site treatment or off-site disposal, pending the receipt of analytical results. Specific procedures associated with the management of the IDW have been established in SOP 005, attached in Appendix A of the EPA approved Quality Assurance Project Plan (QAPP).

2.5 Site Controls and Security

It is the responsibility of ARM staff to keep unauthorized personnel away from the work areas during site work. All equipment used at the site must be secured or taken off-site. Subsurface intrusions should be covered to reduce any hazard that may be posed. Traffic cones, caution tape, physical barriers, or other such means as necessary shall be used to ensure that no unauthorized work area entry occurs.

3.0 OPERATING PROCEDURES

3.1 Air Monitoring

Due to the nature of the site activities and materials potentially present at the site, no vapor hazards are expected. If discernable odors are noted in the breathing zone, then work will be temporarily suspended and air monitoring will be initiated using a PID or explosive gas indicator. If sustained vapor concentrations are measured at or above action levels in the breathing zone, work will immediately cease until such time as appropriate action is established. This action may require the upgrade of PPE or reevaluation of the need to proceed.

3.2 Personnel Protection

Personnel health and safety protection shall follow the guidelines provided by this HASP. Modifications to the HASP may be made by the field supervisor with the approval of the ARM Project Manager on a day-to-day basis as conditions change, based on existing conditions. Any necessary revisions must be fully documented by the field supervisor to include the specifics and rationalizations for the change.

It is anticipated that a modified Level D of personal protection will be appropriate for the anticipated site activities. PPE associated with this designated level of protection (Level D), as established by the USEPA, is listed in a later section. The PPE listed for this level of protection should be available to all personnel.

PPE will be stored in a clean, dry environment prior to it usage. Disposable equipment shall remain, in as much as possible, its original manufacturer's packaging to ensure its integrity. PPE that is assigned to a specific end user is subject to inspection by the supervisor at any time.

3.2.1 Determination of Level of Protection Requirements

The appropriate level of personnel protection must be established on the basis of ambient air monitoring responses. Air monitoring action levels should be consistent with the primary compounds of concern as listed in Table 3-1 (below). Appropriate action should be taken if total organic vapor air concentrations are sustained at a concentration equal to or greater than the PEL listed on Table 3-1.

Table 3-1

Substance	CAS #	OSHA PEL (ppm)	IDLH (ppm)
Benzene	71-43-2	10	500
Toluene	108-88-3	200	500
Ethyl benzene	100-41-4	100	800
Xylenes	1330-20-7	100	900
Naphthalene	91-20-3	10	250
Tetrachloroethylene	127-18-4	100	150
Trichloroethylene	79-01-6	100	1,000

Notes: ppm = parts per million
PEL = Permissible Exposure Limit
IDLH = Immediately Dangerous to Life or Health

This criterion will be applicable to all activities unless specific protection requirement for a certain task are addressed separately. As previously stated, it is anticipated that a modified Level D will be appropriate for the anticipated site activities; which requires a regular worker uniform, steel-toed safety shoes, hardhat, safety glasses and long paints. Level D will be considered the minimum protection level for all work on-site.

Respiratory protection against dust must also be considered during site work. The usage of dust respirators (high efficiency particulate air [HEPA] filters) or NIOSH P100 filter paired with a half-mask respirator will be determined by site conditions and judgment of the field supervisor. Sprinklers may be used to control dust during work activities.

3.2.2 Dermal Protection

In general, dermal protection levels will correspond with the respiratory protection level in use during an activity as described in other sections. For most activities on the site, Level D dermal protection will be adequate. When work tasks are such that a higher level of personal protection is required, dermal protection may be upgraded to coated Tyvek (Saranex) or chemical-resistant rain suit or Tyvek. This determination will be made by the ARM Field Supervisor as required.

Chemical and abrasion-resistant outer gloves and inner chemical-resistant disposable gloves would be required in the work zone to provide adequate protection of hands and assist in preventing transfer of contaminants. As much of the investigation may require handling of possibly contaminated equipment, groundwater, or soil, chemical-resistant gloves should be required for all on-site work with these materials. Various operations, which require dexterity and do not necessitate the abrasion-resistant feature of outer gloves, could be performed with the inner gloves only, at the direction of the ARM Field Supervisor.

3.2.3 Eye Protection

Since many volatile contaminants are capable of penetrating skin tissues, the eyes provide a potential route of entry into the body. Typically, volatile organic vapors will be detected in the air-monitoring program. Dust and air-borne particulates will be monitored visually and nuisance dust standards will be applied. If exceeded, dust masks will be donned. Eye protection, beyond the use of safety glasses, must correspond to the respiratory protection level.

3.3 Task-Related Personnel Protection

At a minimum, all workers are required to wear long pants, steel toed shoes and a sleeved shirt at all times. Additional PPE will be required on a task-specific basis.

3.3.1 Installation of Geoprobe Soil Borings and Piezometers, Soil Logging and Soil Sampling Activities

All personnel should wear the following:

- Long pants and sleeved shirt/vest (high visibility)
- Steel toe safety boots
- Safety glasses with side shields
- Hearing protection
- Chemical resistant gloves

3.4 Explosion Prevention

Due to the potential presence of flammable materials at the site, the following safety guidelines must be followed to prevent the possibility of explosion:

a. All monitoring equipment will be intrinsically safe or explosion-proof, if used in areas of possible explosive atmospheres.

b. A fire extinguisher, first-aid kit, and an eye wash station will be located at the site within a short distance of site work.

c. Any compressed gas cylinders or bottles will be stored safely as required by the OSHA regulations. In addition, metal barriers must be provided and installed between oxygen and acetylene bottles, extending above the height of the regulators. At the end of each work shift, regulators shall be removed and replaced with protective caps.

d. No explosives, whatsoever, shall be used or stored on the premises.

e. All cleaning fluids or solvents must be stored and transported in OSHA-approved safety containers.

f. Propane, butane, or other heavier-than-air gases shall not be transported onto or used on-site unless prior approval is obtained in writing from the Project Manager and the Facility Operator.

4.0 DECONTAMINATION PROCEDURES

Decontamination procedures will be used on some field tasks, but not all, completed at the site. All decontamination operations may be performed at the sampling location unless the level of PPE is upgraded. If the level of PPE is upgraded, all decontamination operations will be performed in a central decontamination area and supervised by the ARM Field Supervisor. If necessary, a decontamination corridor will be set up adjacent to the area and equipped with brushes, plastic bags, and drum storage. Disposable outerwear and contaminated disposable equipment will be collected for future disposal. The ARM Field Supervisor would be required to inspect PPE and clothing to determine if decontamination procedures were sufficient to allow passage into the staging area.

The following decontamination facilities, as a minimum, will be provided in the staging area:

a. Hand washing facilities

b. First-aid kit

c. Eye wash station

d. Fire extinguisher

Proper on-site decontamination procedures, the use of disposable outer clothing, and field wash of hands and face as soon as possible after leaving the decontamination corridor could effectively minimize the opportunity for skin contact with contaminants.

4.1 Personnel Decontamination Procedures

Decontamination procedures should be as follows:

Level D decontamination will consist of:

1. Potable water wash and potable water rinse of boots and outer gloves (if worn).

2. Drum all visibly impacted disposable clothing.

3. Field wash of hands and face.

4.2 Equipment Decontamination

All equipment decontamination will be completed in accordance with the procedures referenced in Worksheet 21—Field SOPs, and Appendix A of the QAPP (SOP No. 016 Equipment Decontamination). The decontamination procedures that will be used during the course of this investigation include Decontamination Area (Section 3.1 of the SOP), Decontamination of

Sampling Equipment (Section 3.5), Decontamination of Measurement Devices & Monitoring Equipment (Section 3.7), Decontamination of Subsurface Drilling Equipment (Section 3.8), and Document and Record Keeping (Section 5).

Level D personnel protection is required during equipment decontamination.

5.0 EMERGENCY CONTINGENCY INFORMATION

Pertinent emergency telephone numbers are listed in Table 5-1. This information must be reviewed by and provided to all personnel prior to site entry.

Table 5-1
Emergency Telephone Numbers

Facility/Title	Telephone Number
Fire and Police	911
Ambulance	911
James Calenda, EnviroAnalytics Group	(314) 620-3056
Eric Magdar, ARM Manager	Office: (410) 290-7775 Cell: (301) 529-7140
Hospital – Johns Hopkins Bayview	(410) 550-0350

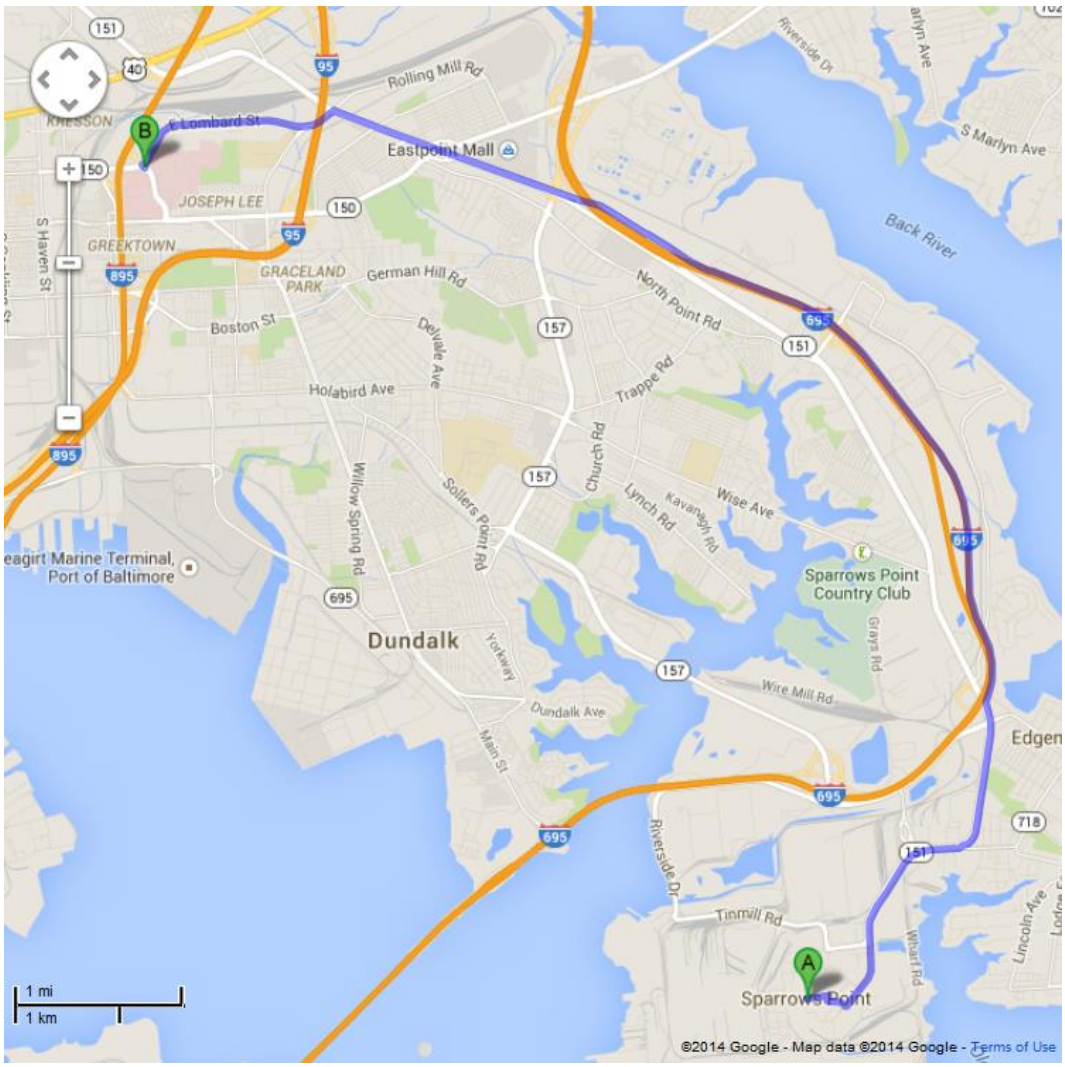
In the event of a fire or explosion, the site will be evacuated immediately and the appropriate emergency response groups notified. In the event of an environmental incident caused by spill or spread of contamination, personnel will attempt to contain the spread of contamination, if possible.

In the event of a personnel injury, emergency first aid would be applied on site by ARM as deemed necessary. The victim should be transported to the local medical facility if needed. The map to the hospital is provided below.

Hospital Route From Tradepoint Atlantic

Johns Hopkins Bayview
4940 Eastern Avenue
Baltimore, MD
(410) 550-0350

1. Start out going East on 7th Street.
2. Turn LEFT onto Sparrow Point Road.
3. Travel 1.4 miles and continue onto North Point Boulevard.
4. Travel 0.9 miles and turn slight right to merge onto I-695 North/Baltimore Beltway toward Essex.
5. Travel 3.4 miles and take EXIT 40 for MD-151/N. Pt. Blvd. N toward MD-150/East. Blvd W/Baltimore.
6. Travel 0.5 miles and merge onto MD-151 N/North Point Blvd.
7. Travel 2.0 miles and turn LEFT onto Kane Street.
8. Travel 0.2 miles and turn slight right onto E. Lombard Street.
9. Travel 1.2 miles and turn left onto Bayview Blvd.
10. Make a left at the emergency room of the hospital



6.0 ACKNOWLEDGEMENT OF PLAN

All site personnel are required to read and comply with the HASP. The following safety compliance affidavit should be signed and dated by each person directed to work on-site.

I have read this HASP and agree to conduct all on-site work in conformity with the requirements of the HASP. I acknowledge that failure to comply with the designated procedures in the HASP may lead to my removal from the site, and appropriate disciplinary actions by my employer.

Title and Company	Name	Signature	Date