

# Phase II Investigation Work Plan

## Area B: Parcel B6 Tradepoint Atlantic Sparrows Point, Maryland

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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 B6 (the Site). Parcel B6 is comprised of approximately 148.5 acres of the approximately 3,100-acre former plant property located as shown on **Figure 1**.

Site characterization of Parcel B6 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 Tradepoint Atlantic property into the Maryland Department of the Environment Voluntary Cleanup Program (MDE-VCP) was submitted to MDE on September 10, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over the next several years. Parcel B6 is also part of the acreage that remains subject to the requirements of 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.

### 1.2. SITE BACKGROUND

#### 1.2.1. Steel Manufacturing Operations

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 67% natural soils and 33% 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 Report (DCC) report prepared by Rust Environmental and Infrastructure, dated January 1998). Parcel B6 was formerly occupied by the Hot Strip Mills area, which contained numerous product manufacturing operations. The parcel also included shipping and processing buildings and the Contractor's Village. All buildings, with the exception of a few small shops, have been recently demolished or are in the process of being demolished. Several pits and basements across the Site have been filled-in, with others remaining open. The concrete slabs remain on grade.

Several iron and steel work processes were completed within the boundary of Parcel B6. Descriptions of the facilities and processes within the Hot Strip Mill are provided below.

#### **Hot Strip Mill:**

Slabs were transferred to the Hot Strip Mill, often following preparation steps which could include slitting (to alter the size) or scarfing (to remove surface defects). Prepared slabs were transported to reheat furnaces, where they were heated and soaked until achieving a rolling temperature of approximately 2,200 degrees F. Heated slabs left the furnace and were descaled with high pressure water to remove iron oxides, then rolled into hot bands of specific size and gauge. The bands were water cooled and coiled for sale or further processing. The furnaces used a combination of natural gas, No. 6 fuel oil, and/or on-specification used oil.

#### **1.2.2. Background Environmental Data**

The separate Finishing Mills Groundwater Investigation Work Plan includes historical groundwater data from past monitoring wells installed within and surrounding the Finishing Mills area (inclusive of Parcel B6). In addition, recent groundwater data was obtained from several monitoring wells within and surrounding the Finishing Mills area during the completion of the Area B Groundwater Investigation. The results from the recent groundwater sampling events (December 2015 through March 2016), and a summary of any Project Action Limit (PAL) exceedances in the groundwater, are also provided in the Finishing Mills Groundwater Investigation Work Plan. There are no historical soil or soil gas sampling datasets available from this parcel.

#### **1.3. 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 (2) borings were placed at or around its location using GIS software (ArcMap Version 10.3.1). 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. A previous visual site inspection (VSI) was conducted as part of the RCRA Facility Assessment (RFA) prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This 1991 VSI is regularly cited in the DCC Report and Weaver Boos' Phase I ESA. Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. 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 at the Site from information presented in the DCC Report and Phase I ESA:

**Hot Strip Mill Basins (3)/Hot Strip Mill Oil Skimmer System (RECs 1L/1N, Findings 27/29, also listed as SWMUs 62/64):**

The basins and oil skimmer system associated with the Hot Strip Mill were located to the east of the Finishing Mills Area. The settling basins removed mill scale from the process wastewater so it could be recycled. Mill scale that accumulated in the north and south basins was sent to Coke Point for metals recovery. The oil skimmer system was located directly above the settling basins, and recovered waste oil from the basins. The waste oil was temporarily stored in the waste oil tank (SWMU 63) before being sent to the Palm Oil Recovery, Inc. (PORI) Area (SWMUs 71 to 73). During the 1991 VSI, a pile of mill scale was observed on the ground adjacent to the north basin. Mill scale was also observed on the surrounding ground and on the basin walls, which were in poor condition.

**Hot Strip Mill Waste Oil Tank (REC 1M, Finding 28, also listed as SWMU 63):**

The waste oil tank temporarily held waste oil which had been recovered from the settling basins by the oil skimmer system (SWMUs 62/64). After storage, the oil was transferred to the PORI Area (SWMUs 71 to 73), where the waste oil was further reclaimed.

**Former Fuel UST at Contractor's Village (REC 20, Finding 270):**

During Weaver Boos' site visit, an area of storage buildings included in the former Contractor's Village was observed east of the rail yards. The area was formerly used by contractors for equipment and material staging for use in the mill. A diesel fuel UST was formerly located along the eastern edge of the Contractor's Village. The UST was removed, and according to the Phase I ESA it is unclear whether any leaks or staining were observed in the surrounding soil when the UST was removed.

**Apparent Historical Surface Impoundment (“G” Gate) (REC 22, Finding 273):**

According to the Phase I ESA, a small irregular shaped image which may have been a pond was visible on aerial photography, in the area just north of the Tin Mill Canal. The pond was located just east of the "G" Gate along the south side of Route 158, in an area converted to a vehicle parking lot. The pond appeared to discharge a dark plume to the surface waters of the remnant Humphrey Creek. It is unclear what materials were present in the discharge.

**TMC Oil Recovery Plant and Impoundment (REC 26, Finding 278):**

According to the Phase I ESA, aerial photography indicated that a small oil recovery plant was located just north of the Tin Mill Canal, with a small rectangular surface impoundment located just to the southwest. The impoundment appeared to be diked to separate it from the adjoining surface waters of the Humphrey Creek. The area may have contained petroleum products and/or potentially hazardous substances.

**Hot Strip Mill Cooling Tower (REC unidentified, Finding 30, also listed as SWMU 65):**

Wastewater from the Hot Strip Mill Basins was discharged to the cooling tower. If the cooling tower was unable to accept the wastewater volume, the Tin Mill Canal acted as the overflow. Heavy oil and grease impacted scale was observed on the tower and surrounding ground during the site visit. Materials in grease impacted scale likely contain hazardous substances and/or petroleum products which may have resulted in a release to the environment. No specific recommendations for further action were given regarding SWMU 65.

In addition to the listed RECs, the Hot Strip Mill was generally observed by Weaver Boos to be heavily stained with petroleum products, with varying ground surface conditions. This entire facility area was classified as a REC. Following the identification and evaluation of all RECs at the Site, SWMUs and AOCs were identified from the DCC Report Figure 3-1. **Figure 3** shows the proposed borings overlain on the DCC figure, which shows the SWMUs, AOCs, and main facility areas within the parcel boundaries. All of the SWMUs within the Parcel B6 boundary are cross-listed as RECs, and have been previously discussed. No additional AOCs were identified within the parcel boundary.

Additional Findings (Non-RECs) from the Phase I ESA which were identified as Potential Environmental Concerns were also reviewed and targeted as applicable. 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. Only drip legs which were located

greater than 100 feet from the nearest boring were included as sampling targets.). There were no drip legs identified in the parcel. **Figures 4 through 6** show the proposed borings and the parcel boundary overlain on the 5000 Set, 5100 Set, and 5500 Set, 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 below:

<b>Parcel B6 Historical Site Drawings Details</b>				
<u>Set Name</u>	<u>Typical Features Shown</u>	<u>Drawing Number</u>	<u>Original Date Drawn</u>	<u>Latest Revision Date</u>
Plant Arrangement	Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.)	5035	9/1/1958	3/19/1982
		5041	6/15/1958	3/19/1982
		5042	<i>Unknown</i>	3/11/1982
		5046	9/21/1959	3/19/1982
		5047	1/17/1966	3/11/1958
		5050	<i>Unknown</i>	3/18/1982
		5051	6/1/1960	3/19/1982
		5052	6/30/1959	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5135	<i>Unknown</i>	7/11/2008
		5141	<i>Unknown</i>	9/27/2010
		5142	<i>Unknown</i>	11/10/2008
		5146	<i>Unknown</i>	8/18/2008
		5147	<i>Unknown</i>	11/10/2008
		5150	<i>Unknown</i>	8/18/2008
		5151	<i>Unknown</i>	2/21/2008
		5152	<i>Unknown</i>	2/25/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5535	<i>Unknown</i>	5/28/1976
		5541	9/6/1959	10/6/1993
		5542	9/11/1959	3/18/1976
		5546	10/15/1959	6/9/1993
		5547	9/16/1959	3/15/1976
		5550	9/16/1959	3/5/1976
		5551	9/16/1959	3/5/1976
		5552	9/16/1959	3/9/1976
Drip Legs	Coke Oven Gas Drip Legs Locations	5886B	<i>Unknown</i>	Sept. 1988
		5888	<i>Unknown</i>	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, the following sampling targets were identified at the Site: Crane Repair Shop, Fuel Areas/Stations, Hydraulic Repair

Unit/Bulkfill, Lube Oil House, Fuel Pump Houses, Descaling Pump House, Reclaimed Pit, Scale Pits, Electric Sub-Stations, Waste Acid Tanks, Fuel/Oil Tanks, Unknown Contents Tanks, and Waste Oil Pit. ARM received a list of former PCB-containing transformer equipment from Tradepoint Atlantic personnel, for inclusion as additional targets. The possible PCB-contaminated areas are indicated on the provided figures. The full list of sampling targets, along with the specific rationale for sampling each, is provided as **Appendix A**.

Additional sample locations were added to fill in areas with insufficient coverage (large spatial gaps between 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 B6 contains a total of approximately 148.5 acres: 75.1 acres without engineered barriers and 72.9 acres with engineered barriers (roads, parking, and building slabs). In accordance with the relevant sampling density requirements, a minimum of 35 soil boring locations are required in the area without engineered barriers, and a minimum of 17 soil boring locations are required in the area with engineered barriers. A total of 47 borings have been proposed in areas without engineered barriers and a total of 39 borings have been proposed in areas with these barriers. **Figures 7a and 7b** shows the proposed borings on an aerial image to indicate locations of borings with regard to engineered barriers (roads, parking, and building slabs) and other landmarks.

Tradepoint Atlantic has developed an initial master plan for the entire site that shows potential future development areas across the entire Tradepoint Atlantic property. This master plan is a working document and it is expected to undergo subsequent revisions in the future. In its current iteration, the plan shows that roughly 91% of the total area within Parcel B6 is proposed for paving. **Figures 8a and 8b** shows the current and future (proposed) engineered barriers within Parcel B6, respectively.

No borings are proposed within the suspected boundaries of subgrade structures (pits). Information regarding subgrade structure outlines in Parcel B6 was received from MCM for features in the Hot Strip Mill area. Subgrade structures include pits, basements, underground vaults, and other underground rooms or storage areas. Outlines of subgrade structures as shown on the figures were based on historical drawings and may be approximate. The pit locations are highlighted on all relevant figures. MCM is presently compiling additional information (IDs, functions, dimensions) on subgrade structures within the Site. Further discussion of these structures will be provided to the MDE once ARM has received the remaining pertinent information.

Groundwater at the Site will be investigated as described in the separate Finishing Mills Groundwater Investigation Work Plan.

## 2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

### 2.1. PROJECT PERSONNEL

The site characterization of Area B Parcel B6 will be conducted by ARM under a contract with EAG. ARM will provide project planning, field sampling and reporting support. The required drilling, Geoprobe<sup>®</sup> 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 B6 is provided as **Appendix B**.

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 A**.

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., October 2, 2015). 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 B**).

#### 3.3. SOIL INVESTIGATION

Soil samples will be collected from the locations identified on **Figures 3 through 8**, 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. 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 measureable 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 measureable NAPL is detected during either check, another measurement will be made after a 30 day (minimum) equilibration period to determine NAPL thickness.

If measureable NAPL is present 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 measureable NAPL is present 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 (thus requiring delineation). 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.

### **3.5. SAMPLE DOCUMENTATION**

#### **3.5.1. Sample Numbering**

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

#### **3.5.2. 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.

### **3.6. 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 A**. 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. 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
- 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 - VOC, SVOC, Metals, TPH-DRO, TPH-GRO, Hexavalent Chromium, and Cyanide

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 “Area B Parcel B6”, 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 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.

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## **FIGURES**

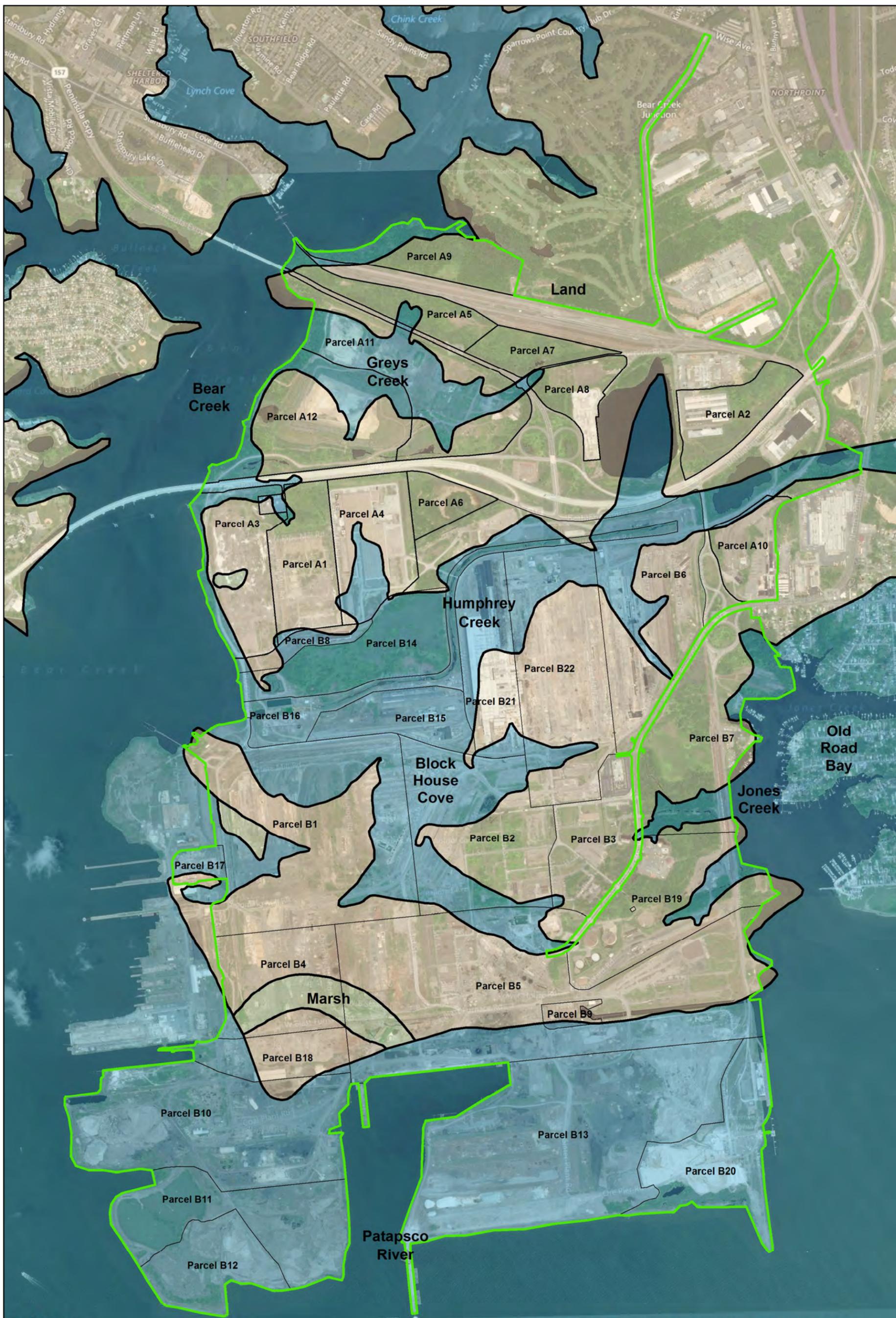
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  	<ul style="list-style-type: none"> <li><span style="color: green;">□</span> Site Boundary</li> <li><span style="border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span> Private Property</li> <li><span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Area A</li> <li><span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Area B Boundaries</li> </ul>	<p><b>Tradepoint Atlantic</b>  <b>Area A and Area B Parcels</b>          May 9, 2016</p>	<p>EnviroAnalytics Group</p> <hr/> <p>Area A: Project 150298M          Area B: Project 150300M</p>	<p>Tradepoint Atlantic</p> <hr/> <p>Baltimore County, MD</p>	<p><b>Figure</b>  <span style="font-size: 2em; font-weight: bold;">1</span></p>
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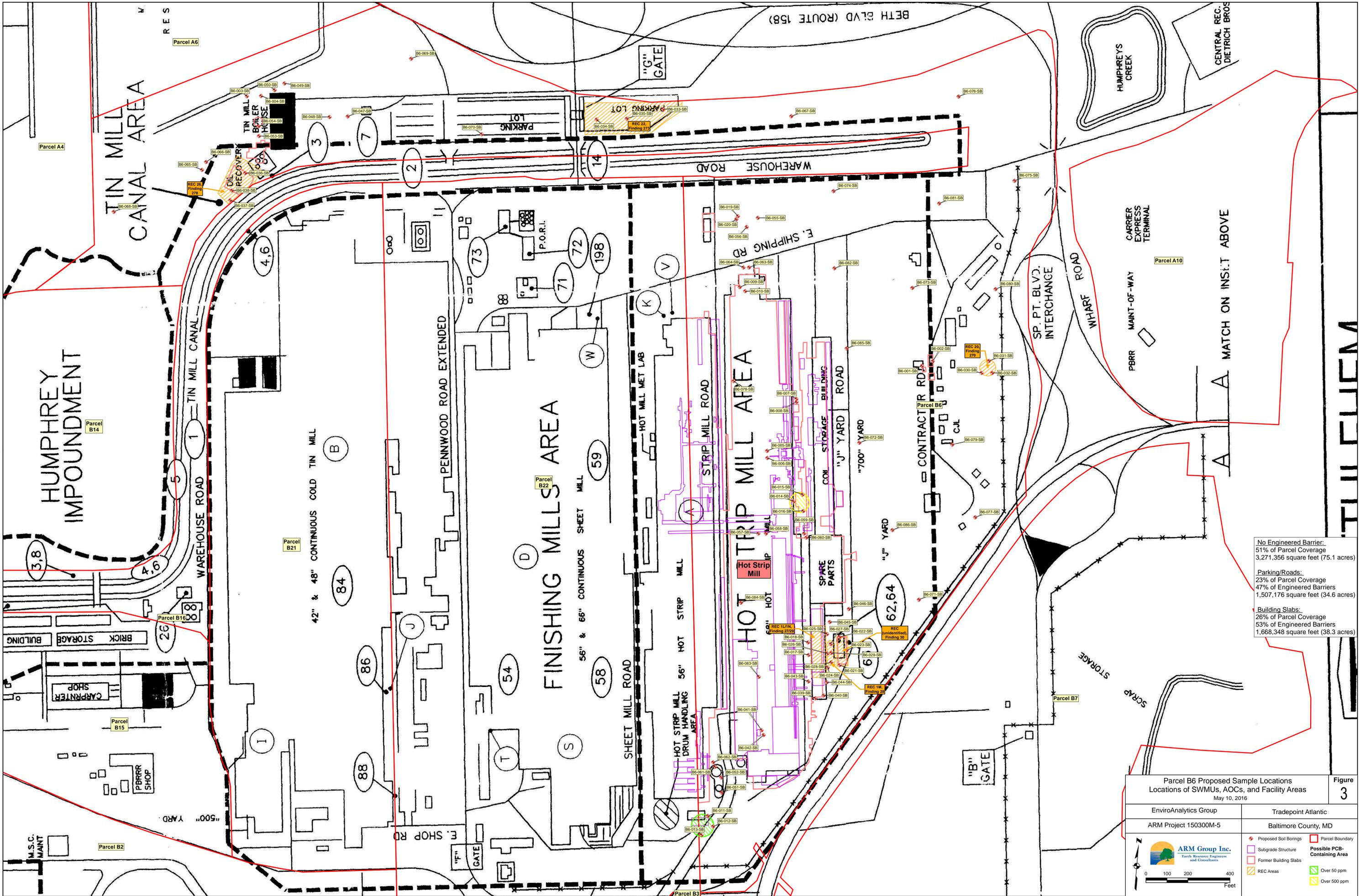
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Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation © 2010 NAVTEQ © AND

		Site Boundary	Land	<b>Approximate Shoreline in 1916</b> May 12, 2016		EnviroAnalytics Group	Tradepoint Atlantic	<b>Figure</b> <b>2</b>
		Area A Boundaries	Marsh					



No Engineered Barrier:  
 51% of Parcel Coverage  
 3,271,356 square feet (75.1 acres)

Parking/Roads:  
 23% of Parcel Coverage  
 47% of Engineered Barriers  
 1,507,176 square feet (34.6 acres)

Building Slabs:  
 26% of Parcel Coverage  
 53% of Engineered Barriers  
 1,668,348 square feet (38.3 acres)

Parcel B6 Proposed Sample Locations Locations of SWMUs, AOCs, and Facility Areas May 10, 2016		<b>Figure</b> <b>3</b>
EnviroAnalytics Group ARM Project 150300M-5	Tradepoint Atlantic Baltimore County, MD	
ARM Group Inc. Earth Resource Engineers and Consultants	<ul style="list-style-type: none"> <li><span style="color: red;">●</span> Proposed Soil Borings</li> <li><span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span> Parcel Boundary</li> <li><span style="border: 1px solid purple; display: inline-block; width: 10px; height: 10px;"></span> Subgrade Structure</li> <li><span style="border: 1px solid orange; display: inline-block; width: 10px; height: 10px;"></span> Former Building Slabs</li> <li><span style="border: 1px solid yellow; display: inline-block; width: 10px; height: 10px;"></span> REC Areas</li> <li><span style="background-color: lightgreen; border: 1px solid green; display: inline-block; width: 10px; height: 10px;"></span> Over 50 ppm</li> <li><span style="background-color: yellow; border: 1px solid orange; display: inline-block; width: 10px; height: 10px;"></span> Over 500 ppm</li> </ul>	

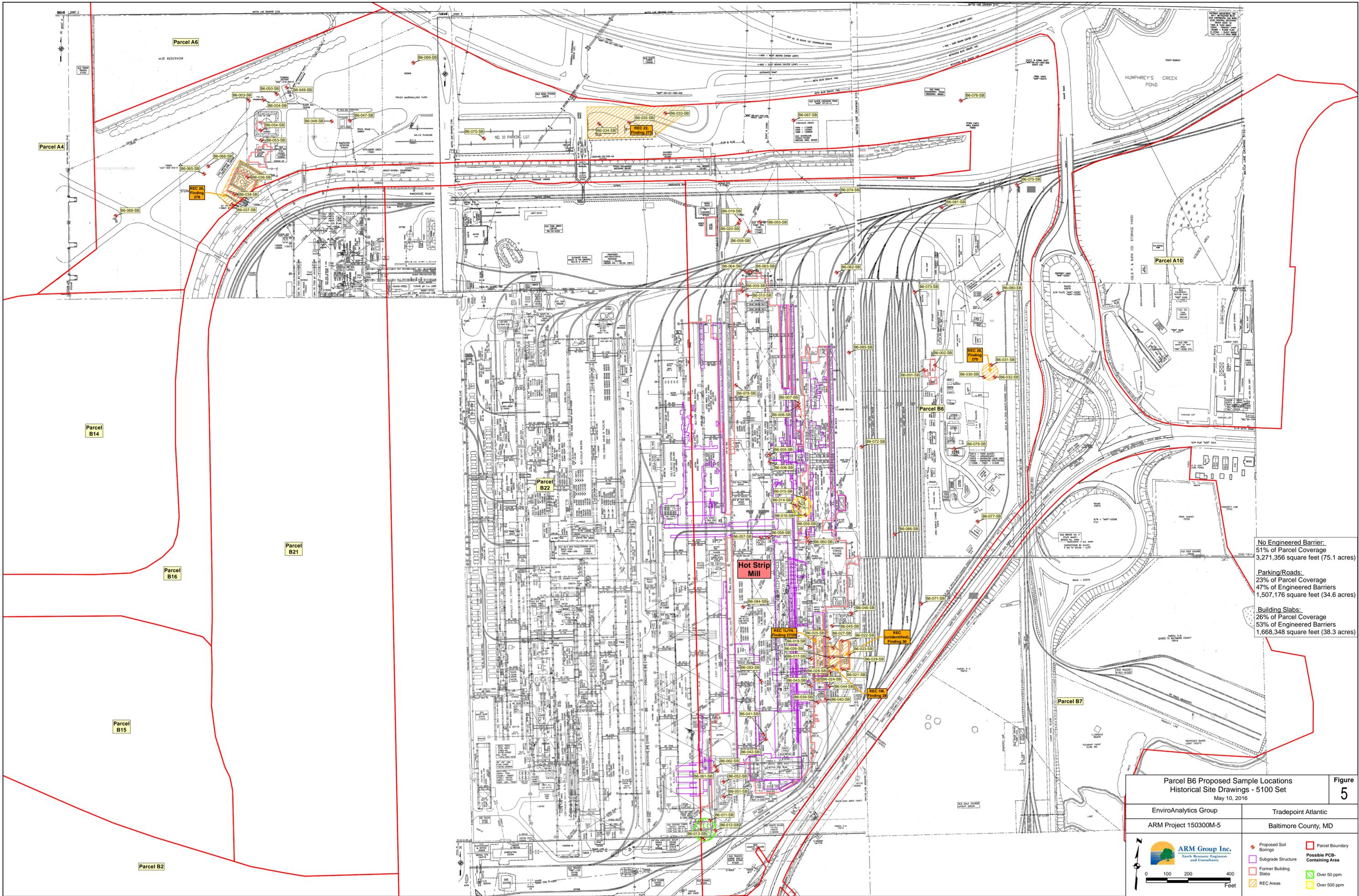


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<p>Parcel B6 Proposed Sample Locations Historical Site Drawings - 5000 Set May 10, 2016</p>		<p>Figure 4</p>
<p>EnviroAnalytics Group ARM Project 150300M-5</p>	<p>Tradepoint Atlantic Baltimore County, MD</p>	
<p>ARM Group Inc. Earth Resource Engineers and Consultants</p>	<ul style="list-style-type: none"> <li><span style="color: red;">◆</span> Proposed Soil Borings</li> <li><span style="border: 1px solid purple; padding: 2px;"> </span> Subgrade Structure</li> <li><span style="border: 1px solid yellow; padding: 2px;"> </span> Former Building Slabs</li> <li><span style="border: 2px solid orange; padding: 2px;"> </span> REC Areas</li> </ul>	<ul style="list-style-type: none"> <li><span style="border: 1px solid red; padding: 2px;"> </span> Parcel Boundary</li> <li><span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> Possible PCB-Containing Area</li> <li><span style="background-color: lightgreen; border: 1px solid black; padding: 2px;"> </span> Over 50 ppm</li> <li><span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> Over 500 ppm</li> </ul>
<p>0 100 200 400 Feet</p>		

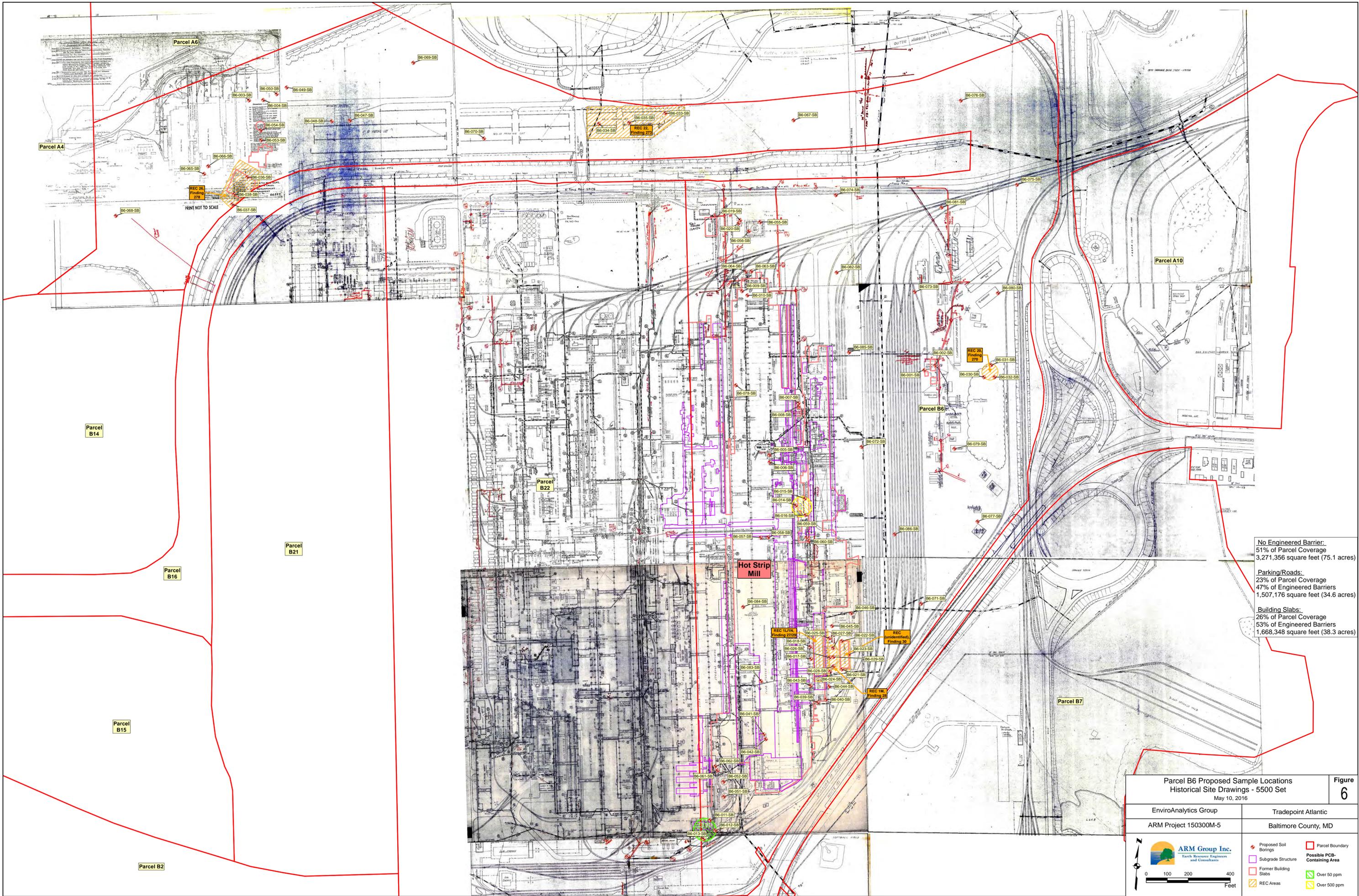


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<b>Parcel B6 Proposed Sample Locations</b> <b>Historical Site Drawings - 5100 Set</b> May 10, 2016		<b>Figure</b> <b>5</b>
EnviroAnalytics Group ARM Project 150300M-5	Tradepoint Atlantic Baltimore County, MD	
<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Proposed Soil Borings</li> <li><span style="border: 1px dashed purple; padding: 2px;"> </span> Subgrade Structure</li> <li><span style="border: 1px solid orange; padding: 2px;"> </span> Former Building Slabs</li> <li><span style="border: 1px solid yellow; padding: 2px;"> </span> REC Areas</li> </ul>		<ul style="list-style-type: none"> <li><span style="border: 1px solid red; padding: 2px;"> </span> Parcel Boundary</li> <li><span style="border: 1px dashed purple; padding: 2px;"> </span> Possible PCB-Containing Area</li> <li><span style="background-color: lightgreen; border: 1px solid green; padding: 2px;"> </span> Over 50 ppm</li> <li><span style="background-color: yellow; border: 1px solid orange; padding: 2px;"> </span> Over 500 ppm</li> </ul>

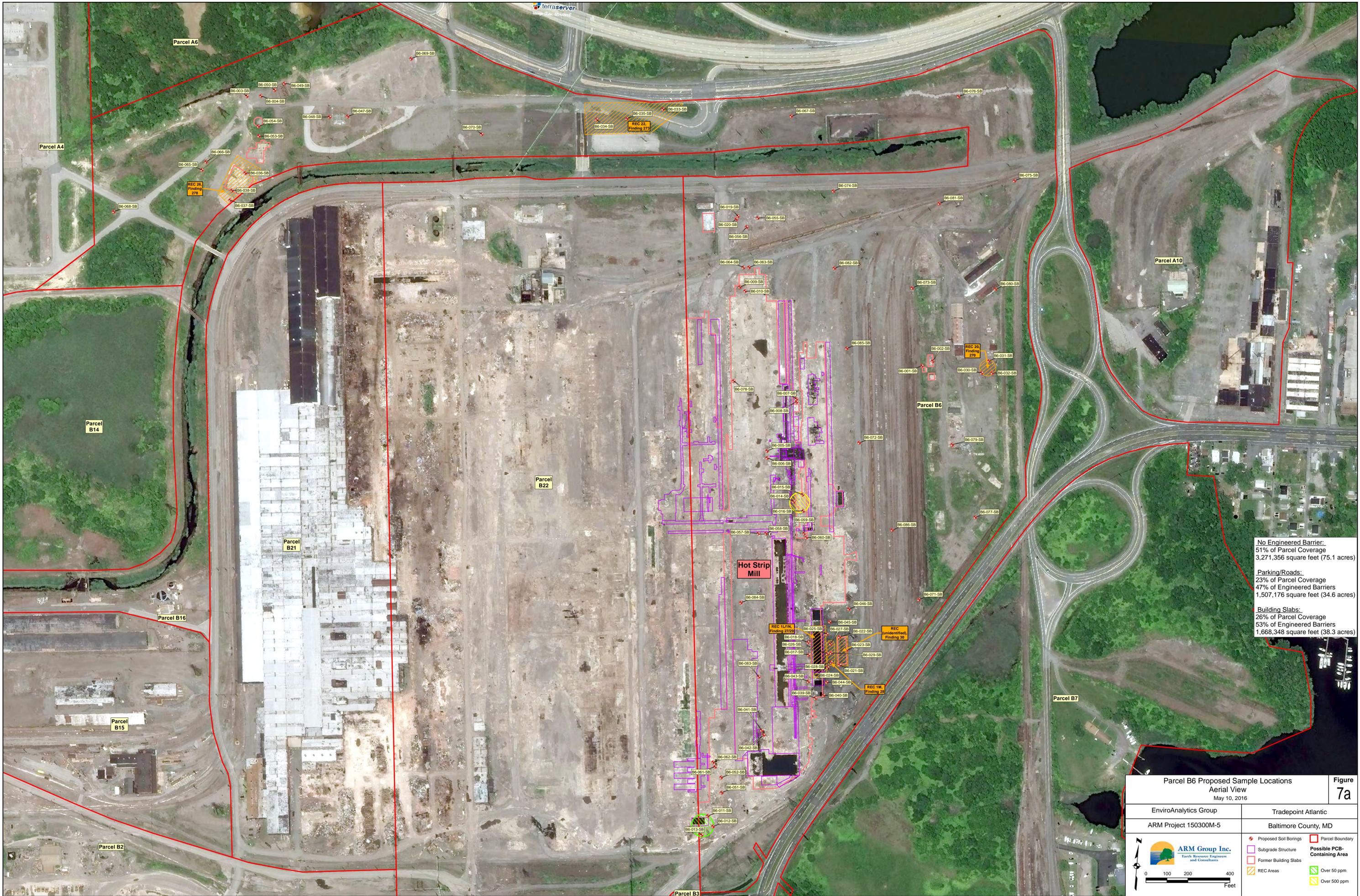


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<p>Parcel B6 Proposed Sample Locations Historical Site Drawings - 5500 Set May 10, 2016</p>		<p>Figure <b>6</b></p>
<p>EnviroAnalytics Group ARM Project 150300M-5</p>	<p>Tradepoint Atlantic Baltimore County, MD</p>	
<p>ARM Group Inc. Earth Resource Engineers and Consultants</p>	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Proposed Soil Borings</li> <li><span style="border: 1px solid purple; padding: 2px;"> </span> Subgrade Structure</li> <li><span style="border: 1px solid pink; padding: 2px;"> </span> Former Building Slabs</li> <li><span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> REC Areas</li> </ul>	<ul style="list-style-type: none"> <li><span style="border: 1px solid red; padding: 2px;"> </span> Parcel Boundary</li> <li><span style="background-color: lightgreen; border: 1px solid green; padding: 2px;"> </span> Possible PCB-Containing Area</li> <li><span style="background-color: lightgreen; border: 1px solid green; padding: 2px;"> </span> Over 50 ppm</li> <li><span style="background-color: yellow; border: 1px solid black; padding: 2px;"> </span> Over 500 ppm</li> </ul>
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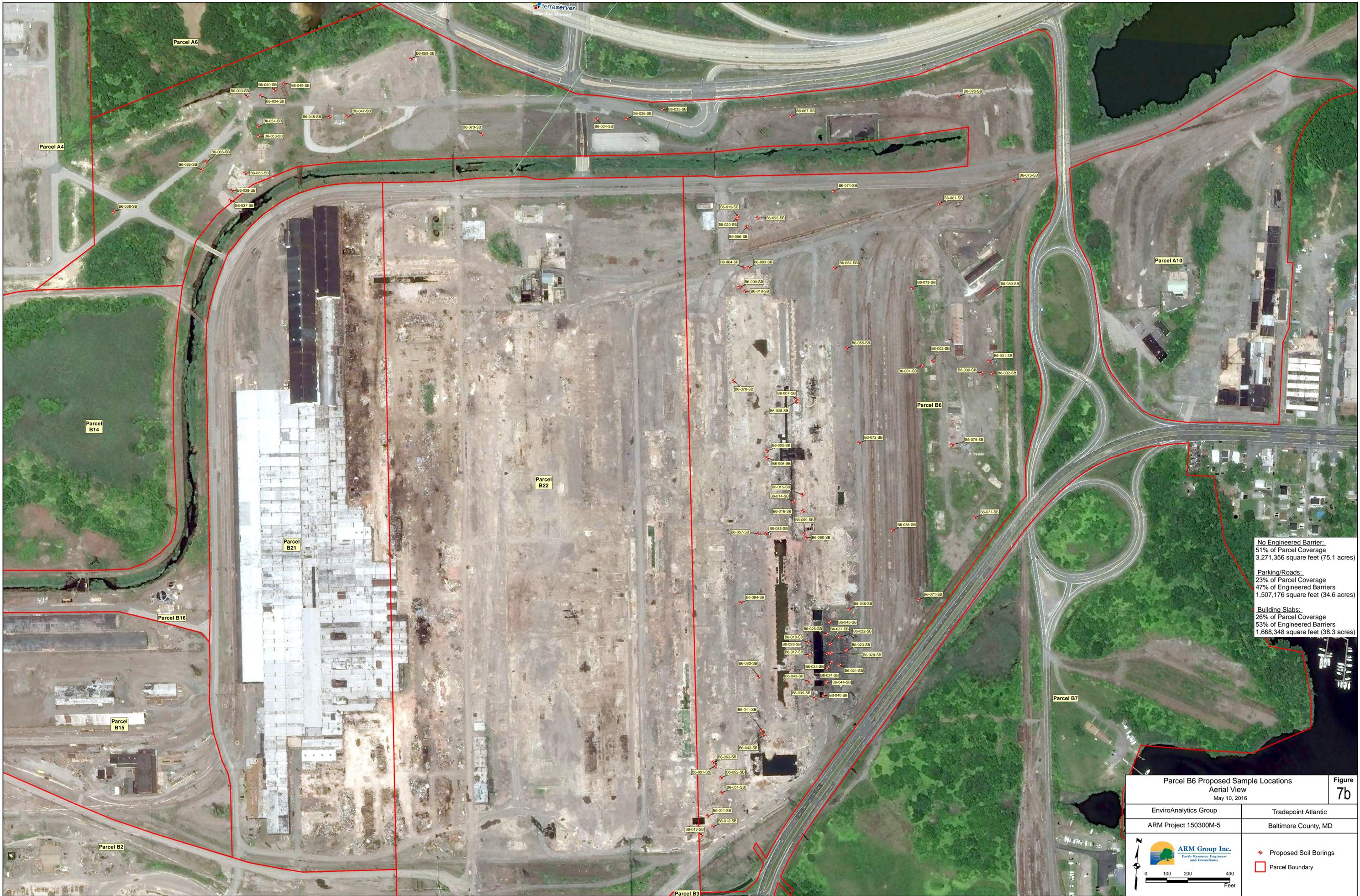


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<b>Parcel B6 Proposed Sample Locations</b> Aerial View May 10, 2016		<b>Figure</b> <b>7a</b>
EnviroAnalytics Group ARM Project 150300M-5	Tradepoint Atlantic Baltimore County, MD	
<ul style="list-style-type: none"> <li><span style="color: red;">—</span> Proposed Soil Borings</li> <li><span style="border: 1px solid purple; padding: 2px;"> </span> Subgrade Structure</li> <li><span style="border: 1px solid red; padding: 2px;"> </span> Former Building Slabs</li> <li><span style="border: 2px solid orange; padding: 2px;"> </span> REC Areas</li> </ul>	<ul style="list-style-type: none"> <li><span style="border: 1px solid red; padding: 2px;"> </span> Parcel Boundary</li> <li><span style="border: 1px solid purple; padding: 2px;"> </span> Possible PCB-Containing Area</li> <li><span style="background-color: yellow; border: 1px solid green; padding: 2px;"> </span> Over 50 ppm</li> <li><span style="background-color: orange; border: 1px solid green; padding: 2px;"> </span> Over 500 ppm</li> </ul>	

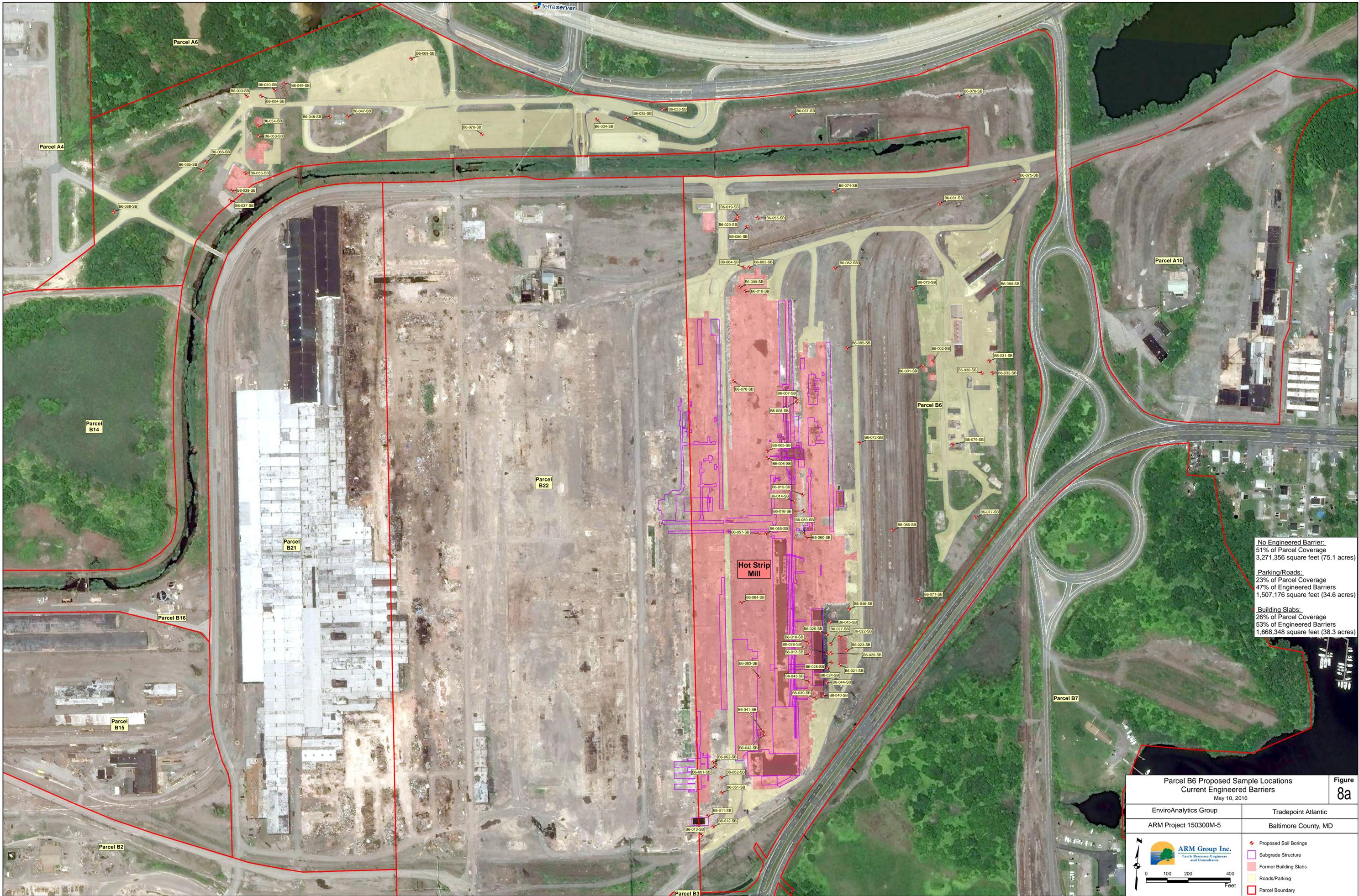


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<b>Parcel B6 Proposed Sample Locations</b> Aerial View May 10, 2016		<b>Figure</b> <b>7b</b>
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-5	Baltimore County, MD	



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<b>Parcel B6 Proposed Sample Locations</b> <b>Current Engineered Barriers</b> May 10, 2016		<b>Figure</b> <b>8a</b>
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-5	Baltimore County, MD	
<ul style="list-style-type: none"> <li><span style="color: red;">●</span> Proposed Soil Borings</li> <li><span style="border: 1px solid purple; display: inline-block; width: 10px; height: 10px;"></span> Subgrade Structure</li> <li><span style="background-color: lightcoral; display: inline-block; width: 10px; height: 10px;"></span> Former Building Slabs</li> <li><span style="background-color: yellow; display: inline-block; width: 10px; height: 10px;"></span> Roads/Parking</li> <li><span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span> Parcel Boundary</li> </ul>		



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<b>Parcel B6 Proposed Sample Locations</b> <b>Future Engineered Barriers</b> May 12, 2016		<b>Figure</b> <b>8b</b>
EnviroAnalytics Group	Tradepoint Atlantic	
ARM Project 150300M-5	Baltimore County, MD	
		Proposed Soil Borings Future Engineered Barriers Parcel Boundary

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## APPENDIX A

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Parcel B6 Sampling Plan Summary  
Former Sparrows Point Steel Mill  
Sparrows Point, Maryland

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
Crane Repair Shop		Drawing 5047	Investigate potential impacts related to the crane repair shop (potential leaks or releases).	2	B6-001 and B6-002	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')
Fuel Areas/ Stations		Drawing 5050	Investigate potential impacts related to the fuel areas and stations (potential leaks or releases).	2	B6-003 and B6-004	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')
Hydraulic Unit/ Bulkfill		Drawing 5146	Investigate potential impacts related to the hydraulic unit and bulkfill (potential leaks or releases).	2	B6-005 and B6-006	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')
Lube Oil Houses/Shops		Drawing 5146	Investigate potential impacts related to lube oil houses and shops (potential leaks or releases).	2	B6-007 and B6-008	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')
Pickler Tank		Drawing 5046	Investigate potential impacts related to the pickler tank (potential leaks or releases).	2	B6-009 and B6-010	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')
Possible PCB- Contaminated Areas		PCB Site Inventory Data/Map	Investigate potential impacts related to the storage and operation of PCB-containing equipment (potential leaks or releases).	6	B6-011 through B6-016	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')
Descaling Pump House		Drawing 5141	Investigate potential impacts related to the descaling pump house (potential leaks or releases).	2	B6-017 and B6-018	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')
Fuel Pump House		Drawing 5051	Investigate potential impacts related to pump houses used for fuel (potential leaks or releases).	2	B6-019 and B6-020	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')

Parcel B6 Sampling Plan Summary  
Former Sparrows Point Steel Mill  
Sparrows Point, Maryland

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
Hot Strip Mill Cooling Tower	REC (unidentified), Finding 30/ SWMU 65	Drawing 5041	Wastewater from the Hot Strip Mill Basins was discharged to the cooling tower. If the cooling tower was unable to accept the wastewater volume, the Tin Mill Canal acted as the overflow. Heavy oil and grease impacted scale was observed on the tower and surrounding ground during the site visit. No specific recommendations for further action were given regarding SWMU 65.	3	B6-021 through B6-023	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')
Hot Strip Mill Basins / Hot Strip Mill Oil Skimmer System	REC 1L, 1N, Finding 27, 29/ SWMU 62, 64	DCC Figure 3-1/ Drawing 5041	The basins and oil skimmer system associated with the Hot Strip Mill were located to the east of the Finishing Mills Area. The settling basins removed mill scale from the process wastewater so it could be recycled (sent to Coke Point for metals recovery). The oil skimmer system was located directly above the settling basins, and recovered waste oil from the basins. The waste oil was temporarily stored in the waste oil tank (SWMU 63) before being sent to the PORI Area (SWMUs 71 to 73). During the 1991 VSI, a pile of mill scale was observed on the ground adjacent to the north basin. Mill scale was also observed on the surrounding ground and on the basin walls, which were in poor condition. Further evaluation was proposed regarding SWMU 62/64.	3	B6-024 through B6-026	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')
Hot Strip Mill Waste Oil Tank	REC 1M, Finding 28/ SWMU 63	DCC Figure 3-1/ Drawing 5041	The waste oil tank temporarily held waste oil which had been recovered from the settling basins by the oil skimmer system (SWMUs 62, 64). After storage, the oil was transferred to the PORI Area (SWMUs 71 to 73), where the waste oil was further reclaimed. Further evaluation was proposed regarding SWMU 63.	3	B6-027 through B6-029	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')
Former Fuel UST at Contractor's Village	REC 20, Finding 270	REC Location Map	During a site visit, an area of storage buildings included in the former Contractor's Village was observed east of the rail yards. The area was formerly used by contractors for equipment storage and repairs. A diesel fuel UST was formerly located along the eastern edge of the Contractor's Village. The UST was removed, and it is unclear whether any leaks or staining were observed in the surrounding soil.	3	B6-030 through B6-032	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')

Parcel B6 Sampling Plan Summary  
Former Sparrows Point Steel Mill  
Sparrows Point, Maryland

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
Apparent Historical Surface Impoundment ("G" Gate)	REC 22, Finding 273	REC Location Map/ Drawing 5051	A small irregular shaped image which may have been a pond was visible on aerial photography, in the area just north of the Tin Mill Canal. The pond was located just east of the "G" Gate along the south side of Route 158, in an area converted to a vehicle parking lot. The pond appeared to discharge a dark plume to the surface waters of the remnant Humphrey Creek. It is unclear what materials were present in the discharge.	3	B6-033 through B6-035	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')
TMC Oil Recovery Plant and Impoundment	REC 26, Finding 278	REC Location Map/ Drawing 5050	Based on a review of aerial photography, a small oil recovery plant was located just north of the Tin Mill Canal, with a small rectangular surface impoundment located just to the southwest. The impoundment appeared to be diked to separate it from the adjoining surface waters of the Humphrey Creek. The area may have contained petroleum products and/or potentially hazardous substances.	3	B6-036 through B6- 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')
Reclaimed Pit		Drawing 5141	Investigate potential impacts related to the reclaimed pit (potential leaks or releases).	2	B6-039 and B6-040	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')
Scale Pits		Drawings 5041 and 5141	Investigate potential impacts related to the scale pits (potential leaks or releases).	4	B6-041 through B6-044	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')
Electric Sub- Stations		Drawings 5041 and 5050	Investigate potential impacts related to electric sub-stations (potential leaks or releases).	6	B6-045 through B6-050	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')
Fuel/Oil Tanks		Drawings 5041, 5050, 5051, and 5146	Investigate potential impacts related to fuel and oil tanks (potential leaks or releases).	10	B6-051 through B6-060	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')
Tanks - Unknown Contents		Drawing 5041	Investigate potential impacts related to tanks containing unknown substances (potential leaks or releases).	2	B6-061 and B6-062	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')

Parcel B6 Sampling Plan Summary  
Former Sparrows Point Steel Mill  
Sparrows Point, Maryland

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
Acid/Waste Acid Tanks		Drawing 5051	Investigate potential impacts related to acid and waste acid tanks (potential leaks or releases).	2	B6-063 and B6-064	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')
Waste Oil Pit		Drawing 5050	Investigate potential impacts related to the waste oil pit (potential leaks or releases).	2	B6-065 and B6-066	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')
Parcel B6 Coverage			Investigate potential impacts related to unknown historical activities, and characterize soil in areas not previously sampled.	20	B6-067 through B6-086	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')
<b>Total:</b>				86				

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

*No Engineered Barrier (71-100 acres): 1 boring per 2.5 acres with no less than 35.*

*Engineered Barrier (71-100 acres): 1 boring per 5 acres with no less than 17.*

No Engineered Barrier (75.1 acres) = **35 borings required, 47 proposed**

Engineered Barrier (72.9 acres) = **17 borings required, 39 proposed**

Parking/Roads (34.6 acres)

Buildings (38.3 acres)

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

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## APPENDIX B

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# Health and Safety Plan

## Area B: Parcel B6 Tradepoint Atlantic Sparrows Point, Maryland

Prepared for:  
**EnviroAnalytics Group**  
1650 Des Peres Road  
Suite 230  
Saint Louis, Missouri 63131

Prepared by:  
**ARM Group Inc.**  
9175 Guilford Road  
Suite 310  
Columbia, MD 21046

May 2016

ARM Project 150300M-5

Respectfully submitted,



Eric S. Magdar  
Senior Geologist



T. Neil Peters  
Vice President

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## **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 B6. The on-site activities shall include the following: installation of soil borings, collection of soil samples, and possible installation of temporary NAPL delineation 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 B6, which is comprised of 148.5 acres of the approximately 3,100-acre former plant property, is located off of Sparrows Point Boulevard in Sparrows Point, Maryland. Parcel B6 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 its 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 pants. 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.

<b>Table 5-1 Emergency Telephone Numbers</b>	
<b>Facility/Title</b>	<b>Telephone Number</b>
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 7<sup>th</sup> 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

