RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B5-1
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, Maryland 20146

ARM Project No. 160443M-10

Respectfully Submitted,

Eric S. Magdar
Senior Geologist

T. Neil Peters, P.E.
Vice President

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1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area B: Sub-Parcel B5-1 (the Site). Tradepoint Atlantic submitted a letter (**Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. Parcel B5 is comprised of approximately 305 acres of the approximately 3,100-acre former plant property located as shown on **Figure 1**. The Sub-Parcel B5-1 Development Area consists of approximately 124 acres, the majority of which is within the southern portion of Parcel B5 (approximately 80.7 acres) with a corridor through Parcel B13 in the Ore Yard Material Handling Area.

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- 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).

Sub-Parcel B5-1 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 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.

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.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the

CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on the Sub-Parcel B5-1 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this Work Plan are implemented and a No Further Action letter is issued by the MDE pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the Work Plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this Work Plan.

The Sub-Parcel B5-1 consists of 124 acres currently slated for development with six bulk storage buildings and an associated truck scale, along with lighting improvements and a marine access road (**Figure 2a/2b**). Development activities will generally include grading, construction of slab on-grade bulk material storage buildings (including three 200,000 square foot buildings and three 150,000 square foot buildings), hot mix asphalt (HMA) paving surrounding the bulk storage buildings totaling 1,050,000 square feet, connections to existing stormwater systems, lighting improvements, and a marine access road totaling approximately 376,000 square feet. Subsequent site-use would involve industrial workers in the bulk storage buildings and truck drivers entering and leaving the Site.

This RADWP provides a Site description and history; summary of environmental conditions identified by the Phase I Environmental Site Assessment (ESA); summary of environmental conditions identified by subsequent Phase II Investigations including work associated with the Parcel B5 Phase II Investigation, Parcel B13 Phase II Investigation, and Area B Groundwater Investigation; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and engineering and institutional controls which have been designed to facilitate the planned Sub-Parcel B5-1 development and address the impacts and potential human

health exposures. The engineering and institutional controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering and institutional controls approved and installed as part of this Site RADWP shall be described in closure certification documentation submitted to the MDE demonstrating that the exposure pathways on Sub-Parcel B5-1 are addressed in a manner that protects public health and the environment. The remaining acreage of Parcels B5 and B13 will be addressed in future work associated with completion of the obligations of the ACO and associated VCP requirements. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use.

2.0 SITE DESCRIPTION AND HISTORY

2.1. SITE DESCRIPTION

Parcel B5 includes an area of 305 acres as shown in **Figure 1**. The Sub-Parcel B5-1 Development Area consists of 80.7 acres in the southern portion of Parcel B5 and a narrow corridor for the marine access road and lighting additions which runs along the western edge of Parcel B13 (**Figure 2a/2b**). The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM), and is not occupied. The Sub-Parcel B5-1 Development Area was formerly occupied by portions of the Blast Furnace Area and Ore Yard Material Handling Area. All former buildings have been demolished, and the Site has been cleared of all significant vegetation. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Parcel B5 is at an average elevation of approximately 12 feet above mean sea level (amsl). Elevations in the parcel range between 4 and 24 feet (stockpiled mounds) over Sub-Parcel B5-1. Elevations appear to be relatively consistent and range from 10 feet amsl to 14 feet amsl across the majority of the development boundary. Stormwater from the majority of Sub-Parcel B5-1 is discharged through the Pennwood Canal at National Pollutant Discharge Elimination System (NPDES) Outfall 001. However, runoff from the southeastern corner of the parcel is directed toward the Ore Dock (ultimately discharging through Outfall 055 or Outfall 056 to the Patapsco River), and runoff from the northeastern portion drains to Parcel B19.

2.2. SITE HISTORY

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

Several iron and steel work processes were completed within the Sub-Parcel B5-1 Development Area, which was formerly occupied by portions of the Blast Furnace Area and Ore Yard Material Handling Area. The former facilities and processes in the Blast Furnace Area generally included several high temperature blast furnaces used for extracting iron from ore and other iron-rich recyclable materials. Raw materials were transported by truck or conveyors to the Ore Yard for storage. More information regarding historical activities can be found in the agency approved Phase II Investigation Work Plans for Parcel B5 (dated December 3, 2015) and Parcel B13 (dated March 25, 2016).

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1. PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on 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. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These Recognized Environmental Conditions (RECs) included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) 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 Description of Current Conditions (DCC) report prepared by Rust Environmental and Infrastructure, dated January 1998 (included with 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. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. The following REC was identified within the Sub-Parcel B5-1 boundary as defined in the Phase I ESA:

Residential Town Tanks (REC 21, Finding 271):

REC 21 includes possible storage tanks and boiler rooms depicted on fire insurance maps of the former Sparrows Point residential town. It is unclear if the tanks were underground or aboveground storage tanks (USTs or ASTs), and no apparent USTs or ASTs were observed during the Phase I ESA site visit. According to the Phase I ESA, the tanks may have contained potentially hazardous substances and/or petroleum products which could have been released to the environment.

Relevant SWMUs and AOCs were also identified as located in Figure 3-1 from the DCC Report. This figure generally shows the SWMUs, AOCs, and main facility areas within the property boundaries. The following SWMU was identified within the Sub-Parcel B5-1 boundaries: SWMU 165 (L Furnace Slag Piles). SWMU 165 identifies slag piles which collected slag generated as a by-product of the iron making process. After cooling, the slag was crushed and marketed for reuse. These piles were designated as units managing non-hazardous waste. There were no AOCs identified within the Sub-Parcel B5-1 boundaries.

3.2. PHASE II INVESTIGATION RESULTS (SOIL)—SUB-PARCEL B5-1

Phase II Investigations specific to soil conditions were performed for Parcel B5 and Parcel B13 (encompassing the entire development area) in accordance with the requirements outlined in the ACO as further described in the Phase II Investigation Work Plan – Area B: Parcel B5 (Revision 1) dated December 3, 2015 and the Phase II Investigation Work Plan – Area B: Parcel B13 (Revision 0) dated March 25, 2016. These Work Plans were approved by the agencies on December 16, 2015 and September 21, 2016, respectively. Findings from the Parcel B5 Phase II Investigation are presented in the Phase II Investigation Report – Area B: Parcel B5 (Revision 0) dated February 14, 2017, and summarized in this document. Findings from the Parcel B13 Phase II Investigation are presented in the Phase II Investigation Report – Area B: Parcel B13 (Revision 0) dated April 19, 2017, and summarized in this document.

The Phase II Investigations were developed to target the specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including RECs, SWMUs, and AOCs (described above) as well as numerous other targets defined from former operations that would have the potential for environmental contamination. Samples were also collected at Site wide locations to ensure full coverage of the parcel.

A total of 324 soil samples (from 172 boring locations) were collected and analyzed to assess the presence or absence of contamination in Parcel B5 and a total of 199 soil samples (from 82 boring locations) were collected and analyzed to assess the presence or absence of contamination in Parcel B13. A total of 164 of these samples (from 67 boring locations in Parcel B5 and from 13 boring locations in Parcel B13) were included for the assessment of the Sub-Parcel B5-1 development, as indicated in **Figure 3**. Soil samples were analyzed for the EPA Target Compound List (TCL) Volatile Organic Compounds (VOCs), TCL Semi-Volatile Organic Compounds (SVOCs), Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DRO) and Gasoline Range Organics (GRO), Oil & Grease, EPA Target Analyte List (TAL) Metals, hexavalent chromium, and/or cyanide based on the parcel-specific sampling plan for each area. Shallow soil samples (0 to 1 foot bgs) were also analyzed for polychlorinated biphenyls (PCBs). The laboratory Certificates of Analysis (including Chains of Custody) and relevant Data Validation Reports (50% validated soil data) are included as electronic attachments. The laboratory and data validation reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results relevant for the Sub-Parcel B5-1 Development Area were screened against Project Action Limits (PALs) established in the site-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016. **Table 1** and **Table 2** provide a summary of the detected organic compounds and inorganics in the soil samples submitted for laboratory analysis, and **Figures S-1** through **S-3** present a summary of the soil sample results that exceeded the PALs. The tables and figures include all analytical data relevant for the proposed development area (Sub-Parcel

B5-1), and samples collected from within the proposed bulk materials building footprints are highlighted in grey. The PALs for relevant polynuclear aromatic hydrocarbons (PAHs) have been adjusted upward based on revised toxicity data for benzo[a]pyrene published in the USEPA Integrated Risk Information System (IRIS) Recent Additions dated January 19, 2017. PAL exceedances in soil relevant to the proposed Sub-Parcel B5-1 Development Area consisted of five inorganics (arsenic, hexavalent chromium, manganese, lead, and thallium), five SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and naphthalene), and two PCB groups (Aroclor 1260 and total PCBs).

There were no soil exceedances of the TPH/Oil & Grease PAL (6,200 mg/kg) or evidence of possible NAPL in any soil cores which would warrant additional evaluation. None of the detections of PCBs exceeded the mandatory excavation criteria of 50 mg/kg.

3.3. PHASE II INVESTIGATION RESULTS (GROUNDWATER)—SUB-PARCEL B5-1

Groundwater within Parcel B5 was investigated in accordance with the separate Area B Groundwater Investigation Work Plan (Revision 3) dated October 6, 2015. This Work Plan was pre-approved by the agencies on October 5, 2015. The sampling and analysis plan defined in the Area B Groundwater Investigation Work Plan was designed to provide a focused investigation of groundwater, with collection points distributed regularly throughout and along the perimeter of the Area B investigation boundary. Groundwater in Parcel B13 was investigated in accordance with the Phase II Investigation Work Plan – Area B: Parcel B13 (Revision 0) dated March 25, 2016. The sampling and analysis plan defined in the Parcel B13 Investigation Work Plan provided groundwater data throughout Parcel B13 at specific targets. Data from the Area B Groundwater Investigation and the Parcel B13 Phase II Investigation pertinent to the proposed development plan has been evaluated with respect to potential concerns associated with construction activities, with the findings discussed herein.

The overall Area B Groundwater Investigation has been completed with the findings reported in the Area B Groundwater Phase II Investigation Report (Revision 0) dated September 30, 2016. Additionally, the Parcel B13 Phase II field investigation (groundwater) has been completed with the findings reported in the Phase II Investigation Report – Area B: Parcel B13 (Revision 0) dated April 19, 2017. A total of 18 groundwater samples were collected from temporary groundwater sample collection points (piezometers) and permanent monitoring wells within and surrounding Sub-Parcel B5-1: SW-031-MWS, SW-032-MWS, SW-033-MWS, SW-034-MWS, SW-035-MWS, SW-036-MWS, SW-037-MWS, SW-038-MWS, SW-066-MWS, SW-071-MWS, SW-072-MWS, SW-073-MWS, SW15-PZM005, SW15-PZM031, SW15-PZM085, B13-021-PZ, B13-049-PZ, and B13-076-PZ. The locations of the groundwater sample points are shown on **Figure 4**. Of these 18 groundwater sample points, 16 samples were collected from the shallow hydrogeologic zone. Since excavation/trenching activities proposed in the Sub-Parcel B5-1 are unlikely to extend to the intermediate and lower hydrogeologic zones, the discussion of

analytical data presented herein is limited to the shallow hydrogeologic zone. These 16 shallow groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL-Dissolved Metals, TPH-DRO, TPH-GRO, hexavalent chromium, and cyanide. The permanent groundwater wells were additionally analyzed for TAL-Metals (total). Groundwater samples in Parcel B13 were analyzed for dissolved hexavalent chromium in lieu of total hexavalent chromium. Additionally, groundwater samples collected in Parcel B13 were analyzed for Oil & Grease. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (100% validated groundwater data) from the Area B Groundwater Investigation and Parcel B13 Phase II Investigation are included as electronic attachments. The laboratory and data validation reports contain qualifier keys for the flags assigned to individual results in the attached summary tables. Each groundwater collection point was inspected for evidence of non-aqueous phase liquid (NAPL) using an oil-water interface probe prior to sampling. None of the piezometers or permanent wells relevant for Sub-Parcel B5-1 showed evidence of NAPL during these checks.

Tables 3 and **4** present a summary of the organic compounds and inorganic compounds detected in the shallow hydrogeologic groundwater samples, and **Figures GW-1** through **GW-4** present all groundwater sample results that exceeded the PALs. For simplicity, the summary **Figure GW-4** does not include duplicate exceedances of total and dissolved metals at relevant Area B Groundwater sample locations. If both total and dissolved concentrations exceeded the PAL for a specific compound, the value for total metals is displayed on the figure for each sample. The groundwater PALs for certain PAHs have been adjusted upward from the values presented in the QAPP based on revised toxicity data for benzo[a]pyrene published in the USEPA IRIS Recent Additions dated January 19, 2017. These adjustments were completed only for the PAHs for which the PALs are not based on a Maximum Contaminant Level (MCL), but rather are based on the toxicity values for benzo[a]pyrene and relative potency factors (i.e., benzo[a]pyrene and benz[a]anthracene were not adjusted). Groundwater PAL exceedances in the vicinity of Sub-Parcel B5-1 consisted of eight inorganic compounds (beryllium, hexavalent chromium, cobalt, cyanide, iron, manganese, thallium, and vanadium), one VOC (chloroform), three SVOCs (benz[a]anthracene, naphthalene, and pentachlorophenol), TPH-DRO, TPH-GRO, and Oil & Grease. While the concentrations of these PAL exceedances on site also do not present a human health hazard since there is no groundwater use, proper water management is required to prevent unacceptable discharges or risks to on-site workers.

3.4. HUMAN HEALTH SCREENING LEVEL RISK ANALYSIS (SLRA)

A human health Screening Level Risk Analysis (SLRA) was performed for soils in Sub-Parcel B5-1 to determine potential future risks to Composite Workers and Construction Workers. There is no potential for human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction Worker exposure to groundwater during development, health and safety plans and procedures shall be followed to limit risk.

3.4.1. **Analysis Process**

The SLRA has been conducted for soils to further evaluate the Site conditions in support of the design of necessary response measures. The SLRA evaluation process is described in the Phase II Investigation Report – Area B: Parcel B5 (Revision 0) dated February 14, 2017 and in the Phase II Investigation Report – Area B: Parcel B13 (Revision 0) dated April 19, 2017.

The Sub-Parcel B5-1 Development Area was divided into exposure units (EUs), identified as B5 Road (21.5 acres), B5 Building (59.2 acres), and B13 Road (43.4 acres). These three EUs and the relevant Phase II Investigation soil boring locations are shown on **Figure 5**. The actual limit of disturbance for the marine road and lighting improvements is relatively narrow so the EUs have been defined to capture boring locations near the proposed road corridor. The specified EUs include data that are representative of each work area for risk assessment purposes.

Compounds that are present at concentrations at or above the EPA Regional Screening Levels (RSLs) set at a target cancer risk of 1E-6 or target non-cancer Hazard Quotient (HQ) of 0.1 were identified as constituents of potential concern (COPCs) to be included in the SLRA. The COPC screening analysis results for the three EUs in the Sub-Parcel B5-1 Development Area are included in **Table 5** to identify compounds above the relevant screening levels within the development area.

3.4.2. **Sub-Parcel B5-1 SLRA Results and Risk Characterization**

Soil data were divided into three datasets (surface, subsurface, and pooled) for the Sub-Parcel B5-1 development EUs to evaluate potential current and future exposure scenarios. The current Composite Worker will be exposed only to surface soils. However, if construction activities were to result in the placement of subsurface material over existing surface soils, a future Composite Worker could be exposed to a mixture of surface and subsurface soils. The Construction Worker may be exposed only to surface soils, but subsurface soils would be encountered for development activities that involve soil disturbances such as excavations or other intrusive earth-moving activities. The pooled data may be applicable for development work that involves disturbances through the surface soil, since workers would likely not be exposed solely to the subsurface soil.

The results for thallium were eliminated as COPCs for risk assessment because this compound was very infrequently detected in the dataset for Sub-Parcel B5-1. Thallium was only detected in 4.96% of the samples analyzed for this compound (7 samples out of 141). If the detection frequency of an analyte is less than 5% in a dataset with a minimum of 20 samples, the COPC can be eliminated from the risk analysis assuming the detections are not extremely high (based on agency discretion). A single detection that is extremely high could require delineation rather than elimination. In this case it is reasonable to remove thallium from the risk assessment based on the relatively low magnitude of the detections. Total PCBs have been included in the risk

ratio analysis, but Aroclor 1260 was omitted to avoid double-counting the carcinogenic risk associated with PCBs. The total PCB values are caused by Aroclor 1260, and the screening level for total PCBs is as conservative as that of Aroclor 1260. No samples exceeded the mandatory excavation criterion for PCBs of 50 mg/kg. All remaining COPCs listed in **Table 5** have been retained for the risk assessment.

Exposure point concentrations (EPCs) were calculated for each soil dataset (i.e., surface, subsurface, and pooled surface/subsurface) using the ProUCL software (version 5.0) developed by the USEPA. The EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. The average lead concentrations are presented for each dataset in **Table 6**. ProUCL input table and output tables derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the three datasets (surface, subsurface, and pooled) for each EU. The calculated EPCs are shown in **Table 7** (surface soils) and **Table 8** (subsurface soils). **Table 9** presents the supplemental EPCs generated from the pooled surface and subsurface soils for the Sub-Parcel B5-1 EUs.

As indicated on **Table 6**, neither surface, subsurface, nor pooled soils exceeded an average lead value of 800 mg/kg. The screening criterion for lead was set at an exposure unit arithmetic mean of 800 mg/kg based on the RSL, with a secondary limit of 2,737 mg/kg based on the Adult Lead Model developed by the USEPA (corresponding to a 5% probability of a blood lead level of 10 ug/dL). There were no locations where detections of lead exceeded 10,000 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker scenario are shown in **Table 10** (surface), **Table 11** (subsurface), and **Table 12** (pooled surface and subsurface soils). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	B5 Road (21.5 acres)	Surface Soil	none	6E-6
		Subsurface Soil	none	2E-6
		Surface & Subsurface Soil	none	5E-6
	B5 Building (59.2 acres)	Surface Soil	none	2E-5
		Subsurface Soil	none	8E-6
		Surface & Subsurface Soil	none	2E-5
	B13 Road (43.4 acres)	Surface Soil	none	4E-6
		Subsurface Soil	none	7E-6
		Surface & Subsurface Soil	none	5E-6

The current Composite Worker will be exposed only to surface soils. The risk ratios indicated that the cumulative cancer risks for the Composite Worker exposure to surface soils were equal to 6E-6 (B5 Road), 2E-5 (B5 Building), and 4E-6 (B13 Road). The cancer risk in the B5 Building EU exceeded the acceptable limit for no further action, and was primarily influenced by PCB detections within the exposure unit. However, the highest detection of PCBs (Aroclor 1260 and total) within this EU was 36.1 mg/kg which is well below the mandatory excavation criteria of 50 mg/kg. When the non-cancer risks were segregated and summed by target organ for cumulative Hazard Index (HI), no target organ exceeded a cumulative HI of 1 in surface soils. The calculated total cancer risks and cumulative HIs for a Composite Worker exposed to surface soils demonstrated acceptable risk conditions with the planned implementation of a capping remedy (with institutional controls) for the entire B5 Building EU.

Construction activities could result in the placement of subsurface material over existing surface soils exposing a future Composite Worker to a mixture of surface and subsurface soils. The risk ratios indicated that the cumulative cancer risks for the future Composite Worker scenario were equal to 2E-6 (B5 Road), 8E-6 (B5 Building), and 7E-6 (B13 Road) for subsurface soils in Sub-Parcel B5-1. When the non-cancer risks were segregated and summed by target organ for cumulative HI, no target organ exceeded a cumulative HI of 1 in subsurface soils. The evaluation of pooled data indicated similar carcinogenic risks and non-cancer hazards which did not exceed the regulatory standards for no further action given the proposed development plan. Based on this screening level risk analysis, the B5 Road and B13 Road areas of Sub-Parcel B5-1 are suitable for use by future Composite Workers and further action is not required.

Construction Worker Assessment:

Site-specific Construction Worker risk ratios were evaluated for several exposure scenarios to determine the exposure frequency for each EU that would result in risk ratios less than or equivalent to a cumulative cancer risk of 1E-5 or hazard index of 1 for any individual target organ. Risk ratios for the estimates of potential EPCs for the Construction Worker scenario (95-day exposure frequency for B5 Road, 105-day exposure frequency for B5 Building, and 55-day exposure frequency for B13 Road) are shown in **Table 13** (surface)**, Table 14** (subsurface), and **Table 15** (pooled surface and subsurface soils). The variables entered for calculation of site-specific Soil Screening Levels (SSLs) (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheets used for computation of the site-specific 95-day, 105-day, and 55-day Construction Worker SSLs are included in **Appendix B**.

The SLRA results for the 95-day (B5 Road), 105-day (B5 Building), and 55-day (B13 Road) exposure scenarios are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker (95 days)	B5 Road (21.5 acres)	Surface Soil	none	4E-7
		Subsurface Soil	none	2E-7
		Surface & Subsurface Soil	none	3E-7
Construction Worker (105 days)	B5 Building (59.2 acres)	Surface Soil	none	2E-6
		Subsurface Soil	none	1E-6
		Surface & Subsurface Soil	none	2E-6
Construction Worker (55 days)	B13 Road (43.4 acres)	Surface Soil	none	2E-7
		Subsurface Soil	none	3E-7
		Surface & Subsurface Soil	none	2E-7

Using the 95-day exposure scenario (B5 Road), 105-day exposure scenario (B5 Building), and 55-day exposure scenario (B13 Road) the carcinogenic risks for surface, subsurface, and pooled soils were all computed to be less than 1E-5, the acceptable carcinogenic risk level for no further action. In addition, none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system for surface, subsurface, or pooled soils using the specified exposure durations for each EU. This assessment indicates that site-specific health and safety protocols or further action would be required for the proposed construction only if intrusive activities exceed 95 work days for B5 Road, 105 work days for B5 Building, or for 55 work days for B13 Road. Additional worker protective measures beyond standard level D protection are not necessary for the intrusive development work planned for Sub-Parcel B5-1 if these exposure durations are not exceeded by an individual worker. These allowable durations of 95 days, 105 days, and 55 days for the individual EUs are not additive, and do not represent a maximum allowable schedule of work (i.e., 255 days) to be completed consecutively by a Construction Worker. If the total duration of intrusive work would exceed the specified limit in any individual EUs, the work would need to be completed by separate crews, or additional health and safety protections would be required.

According to the work schedule provided by Tradepoint Atlantic, intrusive activities (i.e., activities that involve disturbance of impacted soil performed by Construction Workers outside of enclosed vehicle cabs) are expected to require 190 work days. The total duration of intrusive construction activities is projected to be 38 weeks (190 work days), with the following intervals associated with specific milestones:

- Existing Utility Abandonment – 4 weeks
- Silt Fencing – 3 weeks
- Sanitary Sewers and Distribution – 4 weeks
- Underground Water System – 4 weeks

- Underground Storm-water System – 8 weeks
- Underground Electrical Distribution – 3 weeks
- Lighting System (Trenching) – 4 weeks
- Lighting System (Conduit Installation) – 5 weeks
- Lighting System (Pole Foundation and Installation) – 3 weeks

The proposed duration is indicated above as 190 work days (38 weeks), but most of the work will be performed concurrently such that the duration of intrusive work for an individual Construction Worker will be within the acceptable timeframes defined by the screening level risk assessment. General health and safety controls used by construction workers across the Site (level D protection) are adequate to mitigate risk to Construction Workers for the proposed work.

Institutional controls will be required to be established for the protection of future Construction Workers in the event of any future development which could include intrusive activities. These institutional controls will need to include a written notice to the MDE of any future soil disturbance activities, health and safety requirements for any excavations, and proper management and characterization of any removed material.

3.4.3. Evaluation of Comprehensive Environmental Response, Compensation, and Liability (CERCLA) Criteria

Results from the SLRA indicate that a remedy of capping (B5 Building EU) with institutional controls (and general health and safety protocols) will be acceptable to mitigate potential current and future Composite Worker and Construction Worker risks. The proposed capping remedy for the B5 Building EU was evaluated for consistency with the CERCLA Threshold Criteria and the Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at the Site. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials, and to protect the environment by preventing surface water from contacting impacted materials in place. The capping (B5 Building EU) and institutional control remedy would eliminate risk to current and future industrial workers by

preventing exposure to all areas of the Site where soil concentrations exceed the Composite Worker RSLs, or where the cumulative estimated risk to the Composite Worker could potentially exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a human health hazard since there is no groundwater use. Implementation of the proposed use restrictions will address the residual risk and will also protect hypothetical future Construction Workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil and groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objectives, which are risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objectives are to protect workers (current and future Composite Worker and future Construction Worker) from potential exposures to Site-related soil or groundwater constituents at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater. The groundwater impacts at the Site have been addressed within the Area B Groundwater Phase II Investigation Report (and will be further discussed in a future comprehensive groundwater study).

Control the Source of Releases: In its Resource Conservation and Recovery Act (RCRA) Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. None of the soils remaining on-site were identified as exhibiting characteristics of hazardous waste. Sampling results did not indicate localized, discernible source areas associated with the soil and groundwater conditions observed at the Site. The potential groundwater impacts at the Site have been addressed within the Area B Groundwater Phase II Investigation Report (and will be further discussed in a future comprehensive groundwater study). The proposed environmental capping will prevent contact with soil COPCs reducing potential risks to within acceptable levels for future industrial workers. The control measures included in the proposed remedy, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning associated with intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes. The capping remedy for the B5 Building EU will permanently contain the contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be required to determine if erosion or cracks have formed that could expose workers to contaminated soils. Institutional controls (deed restrictions) will be implemented to protect future Composite and Construction Workers against disturbances of the cap that might lead to inadvertent contact with impacted soils. The proposed remedy will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining in soils and groundwater. The long term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, industrial land uses of this area and existing groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The capping remedy for the B5 Building EU will prevent the spread of contaminants in wind-blown dust or stormwater and will prevent infiltration through the impacted unsaturated zone from carrying contaminants to the groundwater. Thus the mobility of contaminants will be reduced by the capping remedy for the B5 Building EU. The proposed capping remedy on the B5 Building EU will avoid the short term risks associated with excavating and transporting large quantities of soil which might otherwise be removed for risk mitigation.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The capping remedy for the B5 Building EU will be implemented within several months of the start of work. The results of the SLRA indicate that risks to the Construction Worker during remedy implementation are mitigated by limiting workers to the specific exposure durations given for each EU in the SLRA. The short-term risk to site workers following general health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and

safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security and fences will be used to maintain controlled access during construction of cap structures to be protective of site visitors. Proper installation of the cap will be performed in accordance with design specifications.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy on the B5 Building EU uses readily available standard capping techniques including asphalt/concrete paving technology in surfaced areas.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual Operating and Maintenance (O&M) costs, and the net present value (NPV) of this remedy relative to other alternatives. The capping remedy for the B5 Building EU remedial costs would be incurred as part of the proposed site development, regardless of the presence of impacted soil.

State/Support Agency Acceptance: MDE has been involved throughout the Site investigation process. The proposed use restrictions included in the proposed remedy are generally recognized as commonly employed measures for long-term stewardship. Ultimately State/MDE support will be evaluated based on comments received during the public comment period.

A capping remedy (B5 Building EU) with institutional controls would satisfy the CERCLA Threshold Criteria and the Balancing Criteria and would do so in a manner that ensures rapid and reliable implementation and effectiveness. The remedy is cost-effective and consistent with the proposed development plan for the Site.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing to construct a Bulk Storage Area consisting of six bulk storage buildings, a truck scale, a marine access road, and an easement for lighting improvements on the 124 acre Sub-Parcel B5-1 (including portions of Parcel B5 and Parcel B13). The proposed future use is Tier 3B – Restricted Industrial. The southern portion of Parcel B5 has undergone limited recent industrial redevelopment as noted in the RADWP for Area B: Sub-Parcel B4-1 (Automotive and RO-RO Distribution Center), Revision 2 dated August 10, 2016. These development activities in Parcel B5 included improvements to a stern dock facility for offloading cars from ships (the Fender Area) and installation of a paved access road connecting Sub-Parcel B4-1 to the Fender Area. The remainder of Parcel B5 and Parcel B13 will be addressed in additional separate development plans in accordance with requirements of the ACO that will include RADWPs, if necessary.

Certain compounds (organics and inorganics) are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Future adult workers and visitors could potentially contact surface soil. Future Construction Workers may contact impacted surface and subsurface soil during earth movement activities associated with future construction activities. Potential risks to future adult workers and visitors associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of engineering controls (capping of the entire area) and institutional controls (deed restrictions). The proposed site development plan provides for a containment remedy and institutional controls that will mitigate future adult workers and visitors from contacting impacted soil at the Site.

While the concentrations of COPCs in groundwater on-site are not deemed to be a human health hazard since there is no groundwater use, proper water management is required to prevent unacceptable discharges or risks to Construction Workers. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for Construction Workers associated with future excavations at the Site. Additionally, a restriction prohibiting the use of groundwater for any purpose at the Site will be included as an institutional control in the No Further Action (NFA) letter and Certificate of Completion (COC) issued by the MDE and a deed restriction prohibiting the use of groundwater will be filed.

General health and safety controls (level D protection) outlined in the site-specific Health and Safety Plan (HASP provided in **Appendix C**) will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater at the Site. The findings of the SLRA indicated that the screening level estimates of Construction Worker cancer risks for the site-specific 95-day exposure frequency (B5 Road), 105-day exposure frequency (B5 Building), and 55-day exposure frequency (B13 Road) were all less than or equal to 1E-5 (the acceptable level for no further action) evaluated for proposed development. No potential non-cancer hazards above the HI of 1 were identified for any target organ using the specified exposure frequencies

for the three EUs. If the schedule of intrusive activities will exceed 95 days in B5 Road, 105 days in B5 Building, or 55 days in B13 Road, additional site-specific health and safety requirements would be warranted.

The proposed Sub-Parcel B5-1 Development Area is approximately 124 acres. The cover types are indicated in **Figure 6a/6b**, along with general sections showing required minimum thicknesses for paving cover. Processed slag aggregate sourced from the Tradepoint property will be transported to the Site to serve as structural fill (subbase) for this development project.

Drawings for the proposed sub-parcel development are provided in **Appendix D**. The proposed buildings will cover 24 acres, or 19.4% of the Site. Paving will be completed for the entire B5 Building EU (approximately 59 acres, or 48% of Sub-Parcel B5-1). This will address the elevated carcinogenic risk to the current Composite Worker. While not required for risk mitigation, paving will be installed for the Marine Access Road within the B5 Road and B13 Road EUs (approximately 7 acres of paving, or 11% of Sub-Parcel B5-1. Heavy duty concrete and HMA paving sections that meet or exceed the minimum thicknesses specified in **Figure 6a/6b** will be used in combination to cap the paved areas as shown in the proposed development plans (**Appendix D**).

The process of constructing the proposed facility involves the tasks listed below. As-built and regulatory documentation for the outlined tasks and procedures will be provided in a Sub-Parcel B5-1 Development Completion Report (Completion Report):

- **Response Phase**

1. **Piezometer abandonment and installation of flush mount monitoring wells.**

   Temporary piezometers B13-021-PZ, B13-049-PZ, and B13-076-PZ installed for the Parcel B13 Phase II investigation will be properly abandoned in accordance with COMAR 26.04.04.34 through 36. Additionally, permanent monitoring wells SW-033-MWS, SW-034-MWS, SW-035-MWS, SW-066-MWS, SW-072-MWS, SW15-PZM005, SW15-PZM031, and SW15-PZM085 installed for the Area B Groundwater Investigation will be converted in to flush mounts. **Figure 7** indicates the wells and piezometers in the development area, and identifies which are to be abandoned, converted, or retained.

- **Development Phase**

1. **Sediment and erosion control installation for development.**

   Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils which are disturbed during the installation of erosion and sediment controls will be replaced on-site under areas to be paved (i.e. the proposed asphalt parking lot or concrete slabs and foundations).

2. Grading and site preparation.

As indicated on the grading plan in **Appendix D**, grading will include cut and fill which will ultimately raise the elevation at the Site. According to the design engineer, on-site grading will involve the excavation (cut) of approximately 23,075 cubic yards of material and the placement (fill) of approximately 152,199 cubic yards of processed slag aggregate material for the development area.

Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved common borrow-site stockpiles or processed slag aggregate, if necessary, and shall be free of organic material, frozen material, or other deleterious material. In the case that there is excess material, the spoils will be stockpiled at a suitable location in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Papadopulos & Associates, et al., June 17, 2015). This work will be coordinated with MDE accordingly. No excess material will leave the 3,100 acre property without prior approval from MDE.

3. Installation of underground utility and foundation structures.

Underground utilities and foundations will be installed at the grades and lines shown on the plans. Foundations for the buildings are anticipated to be limited to depths of less than 3 feet below grade. Soil removed from the utility and foundation excavations will be used as fill under areas that will be paved; any water removed will be collected to be sampled as described in the MMP and, if acceptable, taken to the Tradepoint Atlantic wastewater treatment plant. If analytical results indicate the presence of levels of contaminants exceeding levels acceptable for treatment at the wastewater treatment plant, the water will either be pre-treated through an on-site treatment system and retested prior to pumping to the wastewater treatment plant or will be disposed at an appropriate off-site facility.

4. Placement of subbase.

Following the installation of stormwater and electrical utilities, the Site will be fine-graded and placement of subbase will commence. The building area and access roads will receive a layer of subbase material which will consist of compacted aggregate base.

5. Floor slabs and paving.

Much of the Site will be covered with floor slabs or paving as indicated in **Figure 6a/6b**.

The full thickness of the pavement sections (i.e., asphalt or concrete cap) to be placed over the existing soils will meet the required minimum thicknesses for each type of cover indicated in the general sections provided on **Figure 6a/6b**.

6. Stormwater management.

Stormwater will be conveyed by new piping and inlet connections to existing stormwater management ties (**Appendix D**). The proposed connections to existing stormwater drains will discharge to existing stormwater outfalls permitted under the current industrial stormwater NPDES permit. Tradepoint Atlantic plans to submit a property-wide stormwater management plan to Baltimore County.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1. DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with construction of the planned Sub-Parcel B5-1 development. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PAL were identified in soil samples across the Site. The PALs are set based on EPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate such potential risks for material remaining on-site during the development phase. No soils contaminated with total PCBs in excess of 50 mg/kg have been identified in Sub-Parcel B5-1. Following completion of the SLRA, the screening level estimates of Construction Worker cancer risks for the site-specific 95-day (B5 Road), 105-day (B5 Building), and 55-day (B13 Road) exposure frequencies were all less than or equal to 1E-5 (the acceptable level for no further action). Furthermore, none of the potential non-cancer hazards were elevated above the HI of 1 for any exposure scenario when the schedule for intrusive construction activities was limited to the specified exposure durations for each EU. Therefore, general worker protective controls (Level D) and health and safety measures will be sufficient for the proposed development, with no additional site-specific requirements. The screening level estimates of Composite Worker cancer risks identified elevated risks for surface soils in the B5 Building EU primarily due to PCBs; however, the highest detection of PCBs (Aroclor 1260 and total) was below the mandatory excavation criteria of 50 mg/kg. The proposed capping remedy mitigates the potential future risk to a Composite Worker.

5.1.1. Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall consist of the construction manager and any workers involved with excavation and/or utility work. During the pre-excavation meeting, all workers shall review the proposed excavation and trenching locations and associated utility inverts. There were no boring locations with potential evidence of NAPL or elevated detections of TPH/Oil & Grease identified during the preceding Phase II Investigations within the development area which would warrant special consideration prior to work. The site-specific Health and Safety Plan for the project shall also be reviewed and discussed.

Key soil excavation and capping activities will be monitored through daily inspections by the environmental professional (EP). Soil excavation and removal activities will occur during utility

trenching, light pole and inlet/manhole installation, and grading. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site beneath the proposed capped areas. However, the EP will monitor all soil excavation activities for signs of potential contamination that may not have been previously identified (as described below).

To the extent practical, all excavation activities should be conducted in a manner to minimize double or extra handling of materials. Any stockpiles shall be kept within the Site footprint, and in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.

Utility trenches are to be over-excavated to a minimum of one foot on all sides of the proposed utility. All utility trenches will be backfilled with bedding and backfill materials approved by the MDE. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated material will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix E**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to prevent the spread of petroleum product will be conducted in accordance with this plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination that may not have been previously identified. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of contamination that may be different than what was already characterized. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management. Excavated material exhibiting possible evidence of contamination should be placed in stockpiles (not to exceed 500 cy) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Stockpiled materials will be sampled in accordance with waste disposal requirements, and properly transported to an appropriate permitted disposal facility. Plans for analysis of segregated soils for any use other than disposal must be submitted to the MDE for approval.

Excavated material that is visibly impacted by NAPL will be segregated and managed in accordance with the requirements specified in the Utility Excavation NAPL Contingency Plan. Excavated material with indicators of possible NAPL contamination will also be containerized or placed in a stockpile (not to exceed 500 cy) on polyethylene sheeting and covered with polyethylene sheeting until the material can be analyzed for TPH/Oil & Grease and PCBs (total) to characterize the material for appropriate disposal. The MDE will be notified if such materials are encountered during excavation or utility trenching activities.

5.1.2. **Soil Sampling and Disposal**

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indicators of potential contamination that has not previously been characterized shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be covered with a polyethylene tarp to minimize potential exposures and erosion. A sampling work plan including a description of the material, estimated volume and sampling parameters will be submitted and approved by MDE. All excavated soil may be considered for use as on-site fill below the proposed asphalt parking lot or concrete slabs and foundations depending on the analytical results. All supplemental data will be incorporated into the SLRA for the particular exposure unit where the excavated material would be placed. Following recalculation of the risk ratios, if the cancer risk is less than 1E-4, and the non-cancer risk (evaluated in terms of the magnitude of the exceedance and other factors such as bioavailability of the COPC) is acceptable, the excavated soil will be replaced under paved areas of the Site. Otherwise, the materials will be sampled to determine if they would be classified as hazardous waste.

Soil material that is determined to be a hazardous waste shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. Soil material shall be taken to the on-site landfill (Greys) for proper disposal if the concentrations of excavated sampled materials indicate that the materials are not hazardous, but still are not suitable for reuse. The quantities of all unsuitable materials that require disposal either off-site or at the on-site landfill, if any, will be recorded and identified in the Completion Report.

5.1.3. **Fill**

Processed slag aggregate from the Tradepoint Atlantic property will be used as compacted subbase for the building and paving for this project. Soil excavated on the parcel has been deemed to be suitable for re-use as fill below the paved areas of the Site. As described in the SLRA, the risk ratios for COPCs in the Sub-Parcel B5-1 Development Area indicate that soil contaminant concentrations do not exceed acceptable risk for a Composite Worker in capped areas of the Site. These materials are considered suitable for use as on-site fill below the proposed asphalt parking lot or concrete slabs and foundations. All over-excavated utility

trenches will be backfilled with bedding and backfill approved by the MDE. Any clean fill material imported to the Site will be screened according to MDE guidance for suitability.

5.1.4. **Sediment/Erosion Control**

Erosion and sediment controls will be installed prior to commencing work in accordance with 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The sediment and erosion controls will be approved by the Baltimore County Soil Conservation District. In addition, the following measures will be taken to prevent contaminated soil from exiting the Site:

- Stabilized construction entrance will be placed at site entrance.
- A dry street sweeper will be used as necessary on adjacent roads, and the swept dust will be collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, shall be periodically removed and returned to the Site for containment below the proposed asphalt cap or building.

5.1.5. **Dust Control**

General construction operations, including soil excavation and transport, soil grading, trenching for utilities, and cap construction activities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. To limit worker exposure to contaminants borne on dust and windblown particulates, dust control measures will be implemented, if warranted when the above activities are performed in areas with impacted soil. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) and/or continuous monitoring during the response and development activities on Site will be 3.0 mg/m^3. The lowest of the site-specific dust action levels, OSHA PELs, and ACGIH TLV was selected as the proposed action level.

If visible dust is generated in the breathing zone, air monitoring will be implemented as follows:

- At the start of intrusive activities;
- Periodically during intrusive activities (15-minute intervals);
- When contaminants other than those previously identified are being handled;
- When a different type of operation is initiated or conditions change;
- If personnel are working in areas with obvious particulate contamination; and
- If a sufficient reasonable interval has passed so that exposures may have significantly changed.

Air monitoring will be performed using a ThermoElectron Corporation Personal Data RAM 1000AN dust monitor or equivalent real-time air monitoring device. If the action level (3.0 mg/m^3) is exceeded as a result of conditions occurring at the Site, operations will be stopped and dust suppression implemented. The background dust concentration will be utilized to evaluate whether Site activities are the source of the action level exceedance. Background concentrations will be based on measurements over a minimum of a 1-hour period at the upwind Site boundary. This upwind data will be used to calculate a time weighted average background dust concentration. The background dust concentration may need to be recalculated periodically during the work day, based on changed upwind conditions. Operations may be resumed once monitoring indicates that dust concentrations are below the action level.

As applicable, air monitoring will be conducted during response and development implementation activities in the immediate work zones and surrounding areas to assess levels of exposure to Site workers, establish that the work zone designations are valid, and verify that respiratory protection being worn by personnel, if needed, is adequate. Concurrent with the work zone air monitoring, perimeter air monitoring will also be performed to ensure contaminants are not migrating off-site. Perimeter monitoring will include monitoring along the perimeter of the Site, including both the downwind and upwind portions of the Site. The concentration measured in the downwind portion of the Site shall not exceed the concentration in the upwind portion. If exceedances attributable to Site conditions are identified downwind for more than five minutes, dust control measures and additional monitoring will be implemented. The dust suppression measures may include wetting or misting through use of a hose connected to an available water supply or a water truck stationed on Site.

Dust control measures will be implemented as described above to address dust generated as a result of construction and response activities conducted on Site. However, based on the nature of the area and/or on-going activities surrounding the Site, it is possible that windblown particulates may come from surrounding areas. As discussed above, the dust concentration in the upwind portion of the Site will be considered when monitoring dust levels in the work zone. A pre-construction meeting will be held to discuss the potential of windblown particulates from other activities impacting the air monitoring required for this response plan. Site contact information will be provided to address the possibility of upwind dust impacts.

5.2. WATER MANAGEMENT

This plan presents the protocols for handling of any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel B5-1 development. While it is not anticipated that groundwater will be encountered during the proposed development, the following measures are provided as contingencies.

5.2.1. **Groundwater PAL Exceedances**

A total of 16 shallow groundwater samples (SW-031-MWS, SW-032-MWS, SW-033-MWS, SW-034-MWS, SW-035-MWS, SW-036-MWS, SW-037-MWS, SW-038-MWS, SW-066-MWS, SW-071-MWS, SW-072-MWS, SW-073-MWS, SW15-PZM005, B13-021-PZ, B13-049-PZ, and B13-076-PZ) were collected from piezometers and permanent monitoring wells within and surrounding Sub-Parcel B5-1 Development Area. None of the temporary groundwater sample collection points or permanent wells showed evidence of NAPL during mandatory checks with an oil-water interface probe.

PAL exceedances in groundwater in the vicinity of Sub-Parcel B5-1 consisted of eight inorganic compounds (beryllium, hexavalent chromium, cobalt, cyanide, iron, manganese, thallium, and vanadium), one VOC (chloroform), three SVOCs (benz[a]anthracene, naphthalene, and pentachlorophenol), TPH-DRO, TPH-GRO, and Oil & Grease. While the concentrations of these PAL exceedances are not deemed to be a human health hazard since there is no on-site groundwater use, proper water management is required to prevent unacceptable discharges or risks to on-site workers.

5.2.2. **Dewatering**

Dewatering during construction may be necessary for underground utility work (trenching) and light pole installation. If dewatering is required, it shall be done in accordance with all local, state and federal regulations.

Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and dust control waters will be sampled and, if determined to be acceptable, will be pumped to the Humphrey Creek Waste Water Treatment Plant (HCWWTP). The limitations and sampling protocols for water pumped to the HCWWTP comply and are in accordance with NPDES Permit No. 90-DP-0064; I. Special Conditions; A.4 – A.9; Effluent Limitations and Monitoring Requirements.

Water from excavations will be sampled and analyzed for the following suite of analyses prior to being pumped to the HCWWTP:

- Total metals by EPA Method 6020A
- PCBs by EPA Method 8082
- SVOCs by EPA Method 8270C
- VOCs by EPA Method 8260B
- TPH-DRO by EPA Method 8015B
- Oil & Grease by EPA Method 1664

The HCWWTP is designed to treat most potential site chemicals. If analytical results of water sampled from basements indicate the presence of levels of contaminants exceeding levels acceptable for treatment at the HCWWTP, the water will either be pre-treated through an on-site treatment system and retested prior to pumping to the HCWWTP or will be disposed at an appropriate off-site facility.

5.3. HEALTH AND SAFETY

A site-specific Health and Safety Plan (**Appendix C**) has been developed and is attached to this plan to present the minimum requirements for worker health and safety protection for the project. All contractors working on the Site must prepare their own Health and Safety Plan that provides a level of protection at least as much as that provided by the attached Health and Safety Plan. Alternately, on-site contactors may elect to adopt the Health and Safety Plan provided.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the Health and Safety Plan. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following safety procedures to prevent contact with potentially contaminated soil or groundwater.

5.4. INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the RADWP approval, No Further Action (NFA) letter, and Certificate of Completion (COC). These conditions are anticipated to include the following:

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Notice to MDE prior to any future soil disturbance activities at the Site below areas designated for engineering controls. This written notice will be required at least 15 days prior to any planned excavation activities at the Site that will penetrate through the cap.
- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any future material excavated from beneath the cap in accordance with applicable local, state and federal requirements.
- Implementation of inspection procedures and maintenance of the containment remedies as outlined the following section.

The responsible party will file the above deed restrictions as defined by the MDE VCP in the NFA Letter and COC. The proposed paved areas are subject to the proposed response action

containment remedy and the maintenance requirement. The entire Site will be subject to the groundwater use restriction.

The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. TPA will notify the Tenant of this requirement and will provide MDE with contact information for the Tenant prior to issuance of the NFA Letter.

5.5. POST REMEDIATION REQUIREMENTS

Post remediation requirements will include compliance with the conditions specified in the NFA Letter, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA Letter.

Maintenance requirements will include maintenance of the capped areas to minimize degradation of the cap and exposure to the underlying soil. An Operations and Maintenance Plan (O&M Plan) for the capped areas is included in **Appendix F**. The O&M Plan includes the inspection protocols and a maintenance schedule.

The responsible party will perform cap maintenance inspections, perform maintenance of the cap, and retain cap inspection records. Areas of the pavement cap that have degraded to a Pavement Condition Index (PCI) of 4.0 will be repaired within 30 days of discovery. MDE shall be notified within 10 business days of any repairs that are the result of a PCI of 4.0 or greater. The notification will include documentation of the conditions being repaired and the location of the repair.

In addition, MDE will be provided with a written notice at least 15 days prior to any planned excavation activities at the Site that will penetrate through the cap. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements.

5.6. CONSTRUCTION OVERSIGHT

Construction Oversight by an EP will ensure and document that the project is built as designed and appropriate environmental and safety protocols are followed. Upon completion, the EP will certify that the project is constructed in accordance with this RADWP. Records shall be provided to document:

- Daily Observations of Construction Activities during site grading
- Compliance with Soil Screening requirements
- Proper Cap Thickness and Construction
- Proper Water Management

6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

The participant and their contractors will comply with all local, state and federal laws and regulations by obtaining any necessary approvals and permits to conduct the activities contained herein.

A grading permit is required if the proposed grading disturbs over 5,000 square feet of surface area or over 100 cubic yards of earth. A grading permit is required for any grading activities in any watercourse, floodplain, wetland area, buffers (stream and within 100 feet of tidal water), habitat protection areas or forest buffer areas (includes forest conservation areas). Sediment and Erosion Control Plans will be submitted to and approved by the Baltimore County Soil Conservation District prior to initiation of land disturbance for development.

There are no wetlands identified within the project area and no work will be performed beyond the shoreline so no permits are required from the MDE Water Resources Administration.

Contingency measures will include the following:

1. the MDE will be notified immediately of any previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices; and

2. any significant change to the implementation schedule will be noted in the progress reports to MDE.

7.0 IMPLEMENTATION SCHEDULE

The proposed implementation schedule is shown below. Progress reports will be submitted to MDE upon completion of each milestone shown below.

Task	**Proposed Completion Date**
Anticipated Plan Approval	May 12, 2017
Response Phase	
Temporary Groundwater Sample Collection Point (Piezometer) Abandonment	June 2017
Well Conversion (flush mounts)	June 2017
Development Phase	
Existing Utility Abandonment	June 2017
Silt Fencing Installation	July 2017
Slag Delivery and Placement	August 2017
Installation of Sanitary Sewers and Distribution	September 2017
Underground Water/Stormwater Installations	September 2017
Lighting Installation	September 2017
Roadway Installation (Grading and Paving)	November 2017
Building Construction and Paving Installation	December 2017
Submittal of Completion Report/Notice of Readiness for Use*	January 2018
Request for a NFA from the MDE	February 2018
Recordation of institutional controls in the land records office of Baltimore County	Within thirty days of receiving the approval of NFA from the MDE

Submit proof of recordation with Baltimore County	Upon receipt from Baltimore County

*Notice of Readiness for Use shall be prepared by Professional Engineer registered in Maryland and submitted with the Completion Report to certify that the work is consistent with the requirements of this Development Plan and the Site is suitable for occupancy and use.

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

August 1, 2016

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

Figure 1

P:\EnviroAnalytics Group\160443M EAG_TPA Redevelopment\Drwg\B5\B-5-1\Production\Figure 2_Site Development Plan.dwg Plotted: March 31, 2017

Figure 2a

drawing title: SUB-PARCEL B5-1 SITE DEVELOPMENT PLAN

project title: SPARROWS POINT AREA B ENVIROANALYTICS GROUP

SPARROWS POINT BALTIMORE COUNTY, MARYLAND

designed	JMA	scale	1" = 200'
checked	TNP	date	3/31/2017
drawn	JMA	project no.	160443M

0 200 400
SCALE IN FEET

ARM Group Inc.
Earth Resource Engineers and Consultants
www.armgroup.net

P:\EnviroAnalytics Group\160443M EAG_TPA Redevelopment\Drwg\B5\B-5-1\Production\Figure 2_Site Development Plan.dwg Plotted: March 31, 2017

Figure 2b

drawing title
SUB-PARCEL B5-1 SITE DEVELOPMENT PLAN

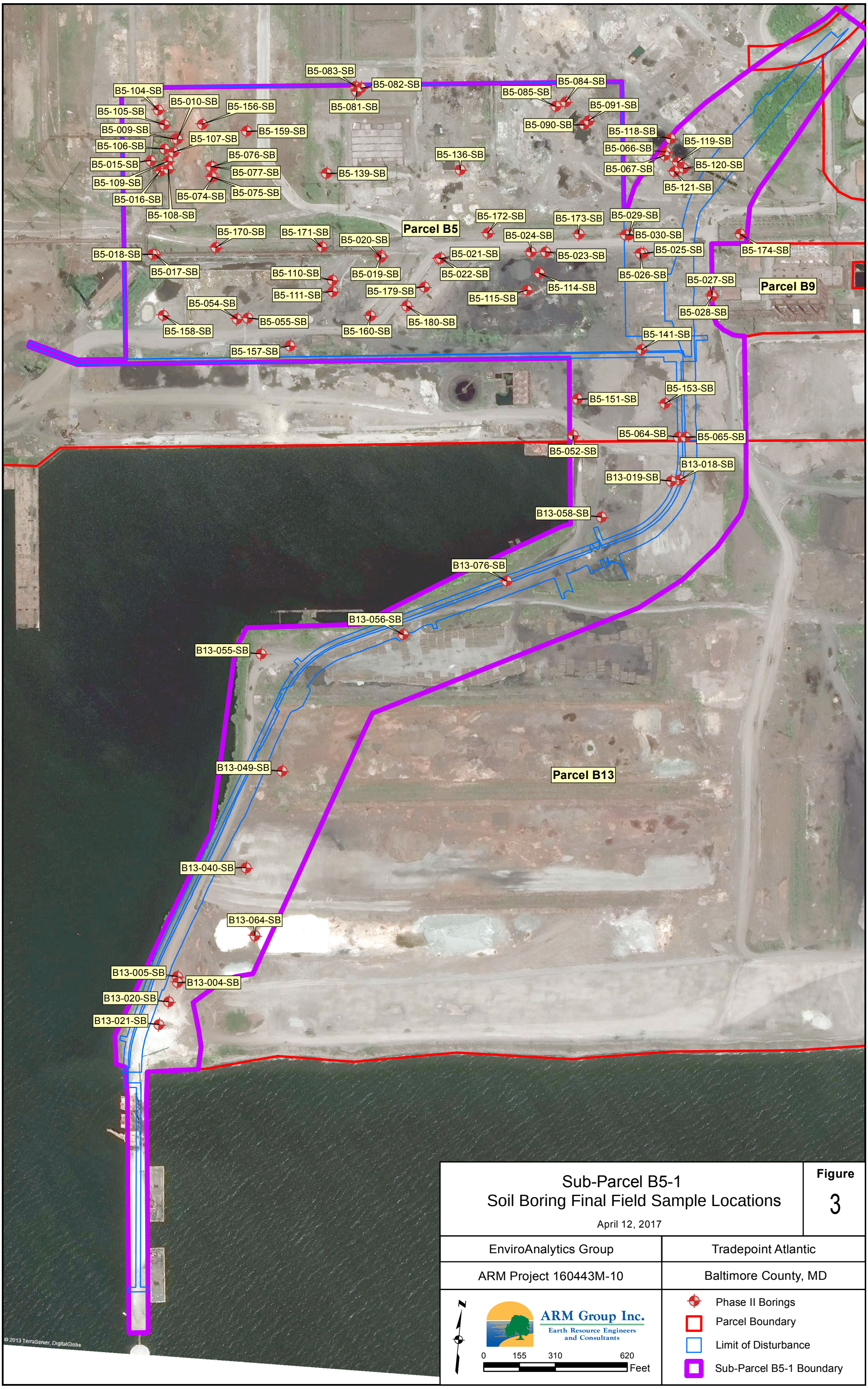
project title
SPARROWS POINT AREA B
ENVIROANALYTICS GROUP

SPARROWS POINT
BALTIMORE COUNTY, MARYLAND

designed	JMA	scale	1" = 200'
checked	TNP	date	3/31/2017
drawn	JMA	project no.	160443M

0 200 400
SCALE IN FEET

ARM Group Inc.
Earth Resource Engineers
and Consultants
www.armgroup.net



Sub-Parcel B5-1
Soil Boring Final Field Sample Locations

April 12, 2017

Figure 3

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Phase II Borings
- Parcel Boundary
- Limit of Disturbance
- Sub-Parcel B5-1 Boundary

B5-010-SB-1
Benz[a]anthracene: 38.1
Benzo[a]pyrene: 31.4
Benzo[b]fluoranthene: 52.6
Dibenz[a,h]anthracene: 26.8

B5-010-SB-7
Naphthalene: 72.9

B5-010-SB-10

B5-104-SB-1
B5-104-SB-5
B5-105-SB-1
B5-105-SB-5
B5-009-SB-1
B5-009-SB-5
B5-106-SB-1
B5-106-SB-5
B5-015-SB-1
B5-015-SB-5
B5-016-SB-1
B5-016-SB-8.5
B5-108-SB-1
B5-108-SB-5
B5-109-SB-1
B5-107-SB-1
B5-107-SB-6
B5-156-SB-1
B5-156-SB-6
B5-159-SB-1
B5-159-SB-5
B5-076-SB-1
B5-076-SB-6
B5-077-SB-1
Benzo[a]pyrene: 4.8
B5-077-SB-5
B5-075-SB-1
B5-075-SB-5
B5-074-SB-1
B5-074-SB-5
B5-083-SB-1
B5-083-SB-5
B5-082-SB-1
B5-082-SB-5
B5-081-SB-1
B5-081-SB-5
B5-139-SB-1
B5-139-SB-7
B5-084-SB-1
B5-085-SB-1
B5-091-SB-1
B5-091-SB-7
B5-090-SB-1
B5-090-SB-5
B5-136-SB-1
B5-136-SB-8
B5-118-SB-1
B5-066-SB-1
Benzo[a]pyrene: 9.6
B5-067-SB-1
B5-119-SB-1
B5-119-SB-5
B5-120-SB-1
B5-120-SB-4.5
B5-121-SB-1
B5-121-SB-5
Parcel B19
Parcel B5
B5-172-SB-1
B5-172-SB-5
B5-173-SB-1
B5-173-SB-5
B5-029-SB-1
B5-029-SB-5
B5-174-SB-1
B5-030-SB-1
B5-030-SB-4
B5-025-SB-1
B5-025-SB-5
B5-026-SB-1
B5-027-SB-1
B5-027-SB-5
B5-028-SB-1
B5-028-SB-4.5
Parcel B9
B5-019-SB-1
B5-019-SB-4
B5-020-SB-1
B5-020-SB-3.5
B5-170-SB-1
B5-171-SB-1
B5-018-SB-1
B5-017-SB-1
B5-022-SB-1
B5-022-SB-5
B5-021-SB-1
Benzo[a]pyrene: 2.4
B5-021-SB-5
B5-024-SB-1
B5-023-SB-1
B5-023-SB-5
B5-114-SB-1
B5-115-SB-1
B5-110-SB-1
B5-110-SB-4
B5-111-SB-1
B5-111-SB-4
B5-179-SB-1
B5-179-SB-9
B5-158-SB-1
B5-158-SB-5
B5-054-SB-1
B5-054-SB-4
B5-055-SB-1
B5-180-SB-1
B5-180-SB-5
B5-160-SB-1
B5-160-SB-4
Benzo[a]pyrene: 18.5
Benzo[b]fluoranthene: 25.8
Dibenz[a,h]anthracene: 3.5
B5-157-SB-1
B5-157-SB-5
B5-141-SB-1
B5-151-SB-1
B5-151-SB-5
B5-153-SB-1
B5-052-SB-1
B5-064-SB-1
B5-064-SB-7
B5-065-SB-1
B5-065-SB-6
B13-018-SB-1
B13-018-SB-9
B13-019-SB-1
B13-019-SB-4
B13-058-SB-1
B13-058-SB-7
B13-076-SB-1
B13-076-SB-7
B13-055-SB-1
B13-055-SB-9
B13-056-SB-1
B13-056-SB-5
B13-049-SB-1
B13-049-SB-5
Parcel B13
B13-040-SB-1
B13-040-SB-5
B13-040-SB-10
B13-064-SB-1
B13-064-SB-5
B13-005-SB-1
B13-005-SB-4
B13-004-SB-1
B13-004-SB-4
B13-020-SB-1
B13-020-SB-9
B13-021-SB-1
B13-021-SB-9

Sub-Parcel B5-1 Soil Borings
Phase II SVOC Exceedances (mg/kg)

April 5, 2017

Figure
S-1

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 145 290 580 Feet

- Phase II Borings
- Limit of Disturbance
- Parcel Boundary

Sub-Parcel B5-1 Soil Borings
Phase II PCB Exceedances (mg/kg)

April 5, 2017

Figure
S-2

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 145 290 580 Feet

- Phase II Borings
- Limit of Disturbance
- Parcel Boundary

B5-104-SB-1
Arsenic: 15.9
Manganese: 29,200
B5-104-SB-5
Arsenic: 9.0

B5-010-SB-1
Arsenic: 26.7
Lead: 822
B5-010-SB-7
Arsenic: 3.4
B5-010-SB-10
Arsenic: 5.0

B5-156-SB-1
Arsenic: 11.1
B5-156-SB-6
Arsenic: 5.2
B5-156-SB-10
Arsenic: 3.5

B5-083-SB-1
Arsenic: 6.4
B5-083-SB-5
Arsenic: 6.3

B5-082-SB-1
B5-082-SB-5
Arsenic: 3.8

B5-105-SB-1
Arsenic: 32.8
B5-105-SB-5

B5-107-SB-1
Arsenic: 4.5
B5-107-SB-6

B5-159-SB-1
Arsenic: 12.4
Lead: 1,720
B5-159-SB-5
Manganese: 31,800

B5-081-SB-1
B5-081-SB-5
Arsenic: 6.3

B5-084-SB-1

B5-085-SB-1
Arsenic: 12.8

B5-091-SB-1
Arsenic: 4.0
B5-091-SB-7
Arsenic: 4.3

B5-009-SB-1
Arsenic: 7.2
B5-009-SB-5
Arsenic: 3.7

B5-090-SB-1
Arsenic: 6.4
B5-090-SB-5
Arsenic: 3.1

B5-118-SB-1
Arsenic: 4.4

B5-066-SB-1
Arsenic: 3.7

B5-119-SB-1
B5-119-SB-5
Arsenic: 4.6

B5-106-SB-1
B5-106-SB-5

B5-076-SB-1
Arsenic: 6.5
B5-076-SB-6

B5-077-SB-1
Arsenic: 12.9
B5-077-SB-5
Manganese: 30,500

B5-139-SB-1
Arsenic: 3.9
B5-139-SB-7
Arsenic: 5.9

B5-136-SB-1
B5-136-SB-8

B5-067-SB-1
Arsenic: 12.2

B5-121-SB-1
B5-121-SB-5
Arsenic: 3.1

B5-120-SB-1
Arsenic: 5.2
B5-120-SB-4.5

B5-015-SB-1
Arsenic: 8.6
Lead: 4,910
B5-015-SB-5
Arsenic: 3.8
B5-015-SB-10
Arsenic: 5.6

B5-016-SB-1
Arsenic: 7.2
B5-016-SB-8.5

B5-109-SB-1
Arsenic: 3.8

B5-075-SB-1
Chromium VI: 8.1
Manganese: 29,400
B5-075-SB-5
Manganese: 27,800

B5-108-SB-1
Arsenic: 6.6
B5-108-SB-5
Arsenic: 4.3

B5-074-SB-1
Arsenic: 5.4
B5-074-SB-5
Manganese: 26,600

B5-172-SB-1
Arsenic: 6.0
B5-172-SB-5
Arsenic: 7.8

B5-173-SB-1
Arsenic: 3.4
B5-173-SB-5

B5-030-SB-1
B5-030-SB-4
Arsenic: 3.9

B5-029-SB-1
B5-029-SB-5

B5-174-SB-1
Arsenic: 13.2

Parcel B5

B5-019-SB-1
Arsenic: 5.1
B5-019-SB-4

B5-022-SB-1
B5-022-SB-5
Arsenic: 8.6

B5-171-SB-1
Arsenic: 6.0

B5-110-SB-1
Arsenic: 4.1
B5-110-SB-4
Arsenic: 24.7
Lead: 1,100

B5-023-SB-1
Arsenic: 3.0
B5-023-SB-5
Arsenic: 5.6

B5-018-SB-1
Arsenic: 4.4

B5-017-SB-1
Arsenic: 10.5

B5-170-SB-1
Arsenic: 6.0

B5-020-SB-1
B5-020-SB-3.5
Arsenic: 3.0

B5-021-SB-1
B5-021-SB-5
Arsenic: 5.8

B5-024-SB-1
Arsenic: 4.5

B5-026-SB-1
Arsenic: 7.0

B5-025-SB-1
Arsenic: 4.8
B5-025-SB-5

B5-028-SB-1
Arsenic: 5.0
Chromium VI: 6.7 J-
Manganese: 34,800
B5-028-SB-4.5
Arsenic: 10.2

Parcel B9

B5-111-SB-1
Arsenic: 6.1
Manganese: 39,200
B5-111-SB-4

B5-158-SB-1
Arsenic: 5.3
Lead: 1,040
B5-158-SB-5
Arsenic: 8.0
Lead: 3,180

B5-054-SB-1
Arsenic: 4.2
B5-054-SB-4
Arsenic: 6.2

B5-055-SB-1

B5-160-SB-1
Arsenic: 3.0
B5-160-SB-4
Arsenic: 5.5

B5-180-SB-1
Arsenic: 3.5
Manganese: 26,400 J
B5-180-SB-5
Arsenic: 12.9

B5-179-SB-1
Arsenic: 5.8
B5-179-SB-9
Arsenic: 9.4
Manganese: 30,400 J

B5-115-SB-1
Arsenic: 3.1
Manganese: 26,800

B5-114-SB-1
Arsenic: 3.5
Manganese: 29,400

B5-027-SB-1
Arsenic: 9.4
B5-027-SB-5
Arsenic: 8.9

B5-141-SB-1
Arsenic: 7.7

B5-157-SB-1
Arsenic: 16.2
B5-157-SB-5
Arsenic: 6.6

B5-151-SB-1
B5-151-SB-5
Arsenic: 7.4
B5-151-SB-10
Arsenic: 4.8

B5-153-SB-1
Arsenic: 15.2

B5-052-SB-1

B5-064-SB-1
Arsenic: 9.7
B5-064-SB-7
Arsenic: 5.4

B5-065-SB-1
Arsenic: 9.1
B5-065-SB-6
Arsenic: 3.6
B5-065-SB-10

B13-058-SB-1
Arsenic: 14.9
B13-058-SB-7
Arsenic: 17.7
B13-058-SB-10
Arsenic: 27.0

B13-019-SB-1
Arsenic: 3.9
B13-019-SB-4
Arsenic: 5.5

B13-018-SB-1
Arsenic: 6.4
B13-018-SB-9

B13-076-SB-1
Arsenic: 10.0
B13-076-SB-7
Arsenic: 4.4
B13-076-SB-10

B13-055-SB-1
Arsenic: 9.5
B13-055-SB-9
Arsenic: 6.2
Manganese: 90,000
Thallium: 14.3

B13-056-SB-1
B13-056-SB-5
Arsenic: 7.0
B13-056-SB-10
Arsenic: 3.9

B13-049-SB-1
Arsenic: 9.6
B13-049-SB-5
Arsenic: 6.2
B13-049-SB-10

Parcel B13

B13-040-SB-1
Arsenic: 16.0
B13-040-SB-5
Arsenic: 3.3
B13-040-SB-10
Arsenic: 16.3

B13-064-SB-1
Arsenic: 3.8
B13-064-SB-5

B13-005-SB-1
Arsenic: 3.9
B13-005-SB-4

B13-004-SB-1
Arsenic: 3.4
B13-004-SB-4
Arsenic: 3.5
B13-004-SB-10

B13-020-SB-1
Manganese: 38,900
B13-020-SB-9

B13-021-SB-1
B13-021-SB-9

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Sub-Parcel B5-1 Soil Borings
Phase II Inorganic Exceedances (mg/kg)

April 5, 2017

Figure
S-3

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 145 290 580 Feet

- Phase II Borings
- Limit of Disturbance
- Parcel Boundary

Sub-Parcel B5-1
Groundwater Sample Locations

April 12, 2017

Figure 4

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Area B Groundwater Well
- Phase II Piezometer
- Limit of Disturbance
- Parcel Boundary
- Sample ID Shallow Well
- Sample ID Intermediate Well
- Sample ID Lower Well

Sub-Parcel B5-1 Groundwater
Phase II VOC Exceedances (ug/L)

April 6, 2017

Figure

GW-1

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Area B Groundwater Well
- Phase II Piezometer
- Limit of Disturbance
- Parcel Boundary

Sub-Parcel B5-1 Groundwater
Phase II SVOC Exceedances (ug/L)

April 6, 2017

Figure

GW-2

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Area B Groundwater Well
- Phase II Piezometer
- Limit of Disturbance
- Parcel Boundary

Sub-Parcel B5-1 Groundwater
Phase II TPH/O&G Exceedances (ug/L)

April 6, 2017

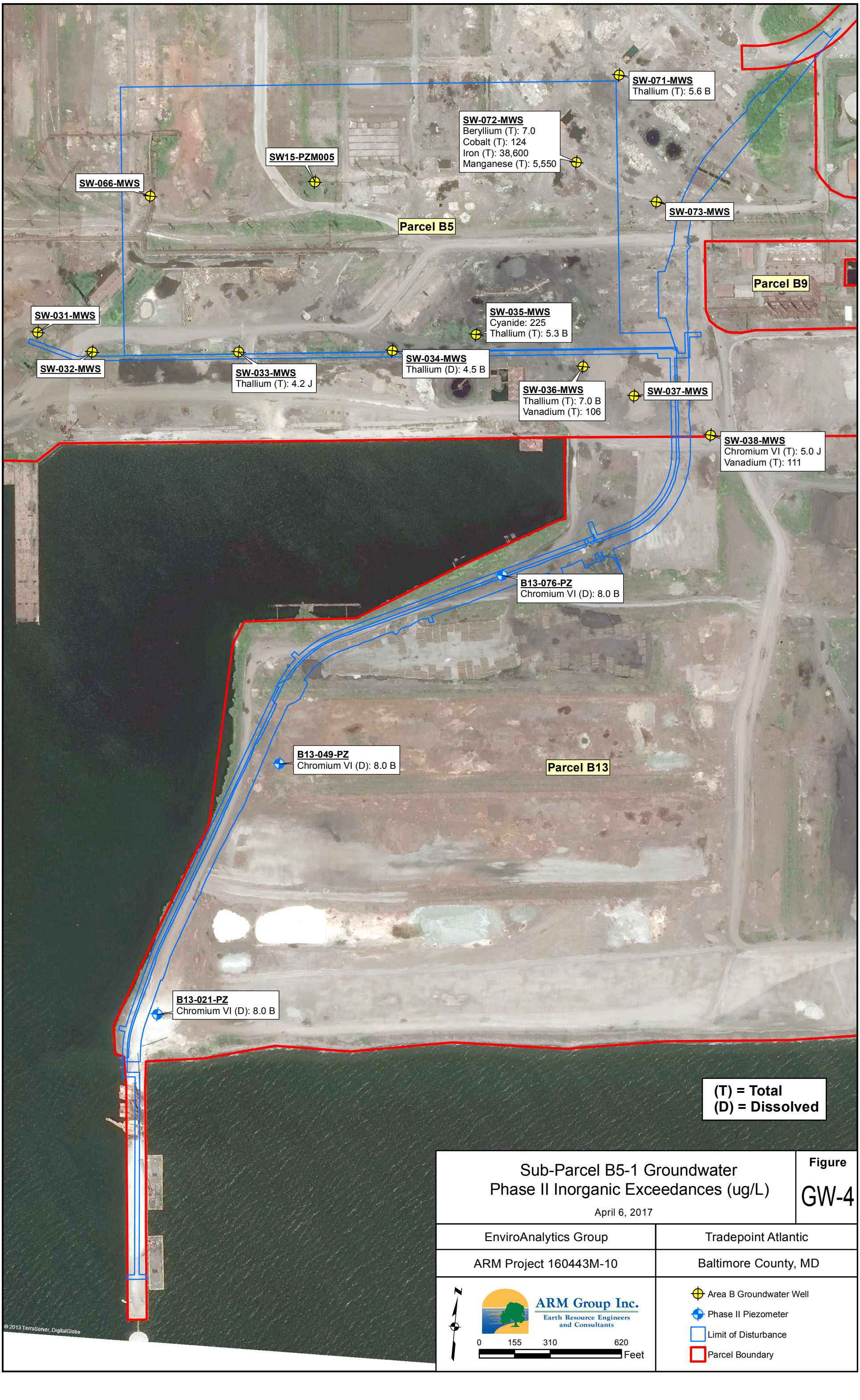
Figure
GW-3

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Area B Groundwater Well
- Phase II Piezometer
- Limit of Disturbance
- Parcel Boundary



Sub-Parcel B5-1 Groundwater Phase II Inorganic Exceedances (ug/L)

April 6, 2017

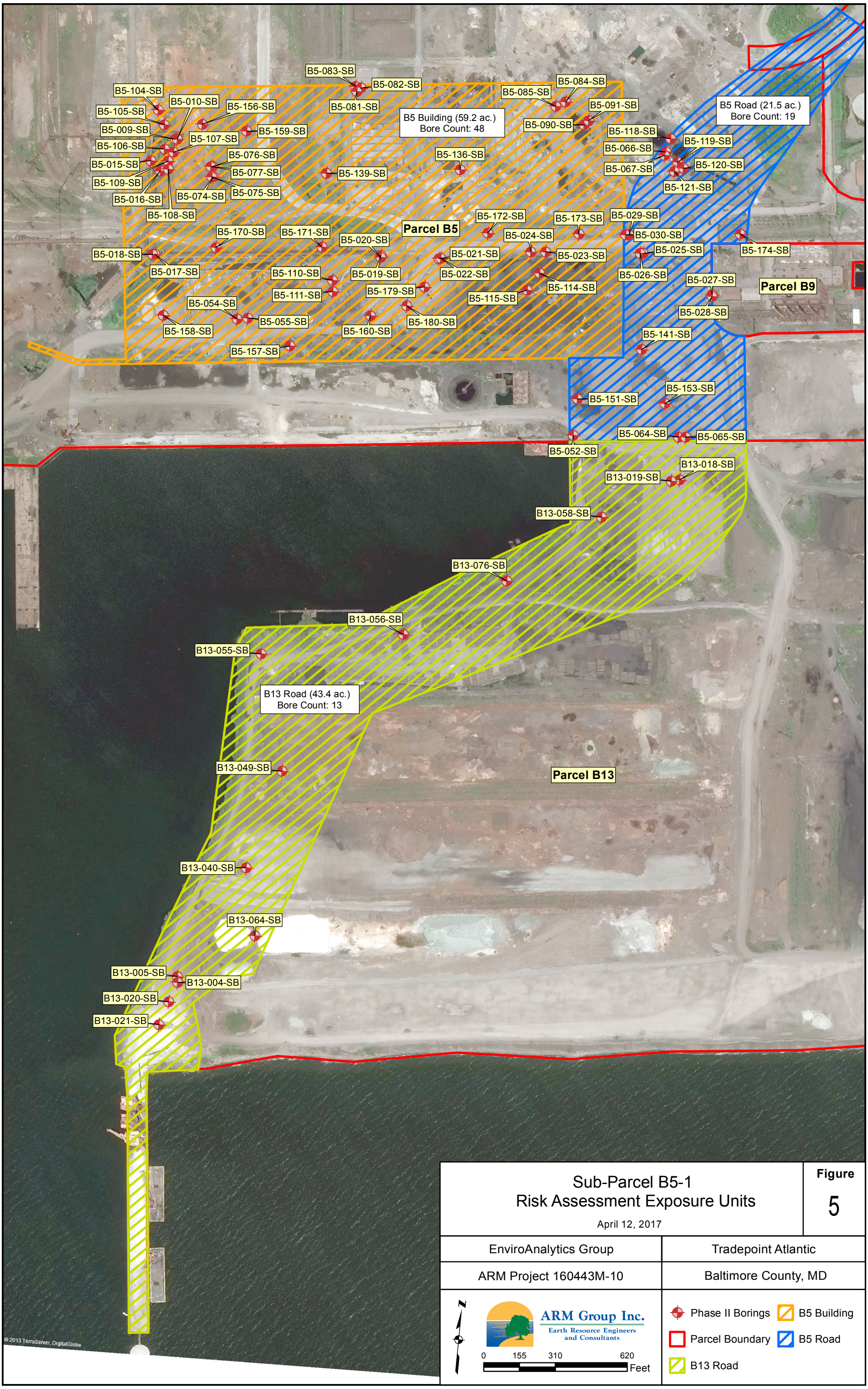
Figure GW-4

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Area B Groundwater Well
- Phase II Piezometer
- Limit of Disturbance
- Parcel Boundary



Sub-Parcel B5-1
Risk Assessment Exposure Units

April 12, 2017

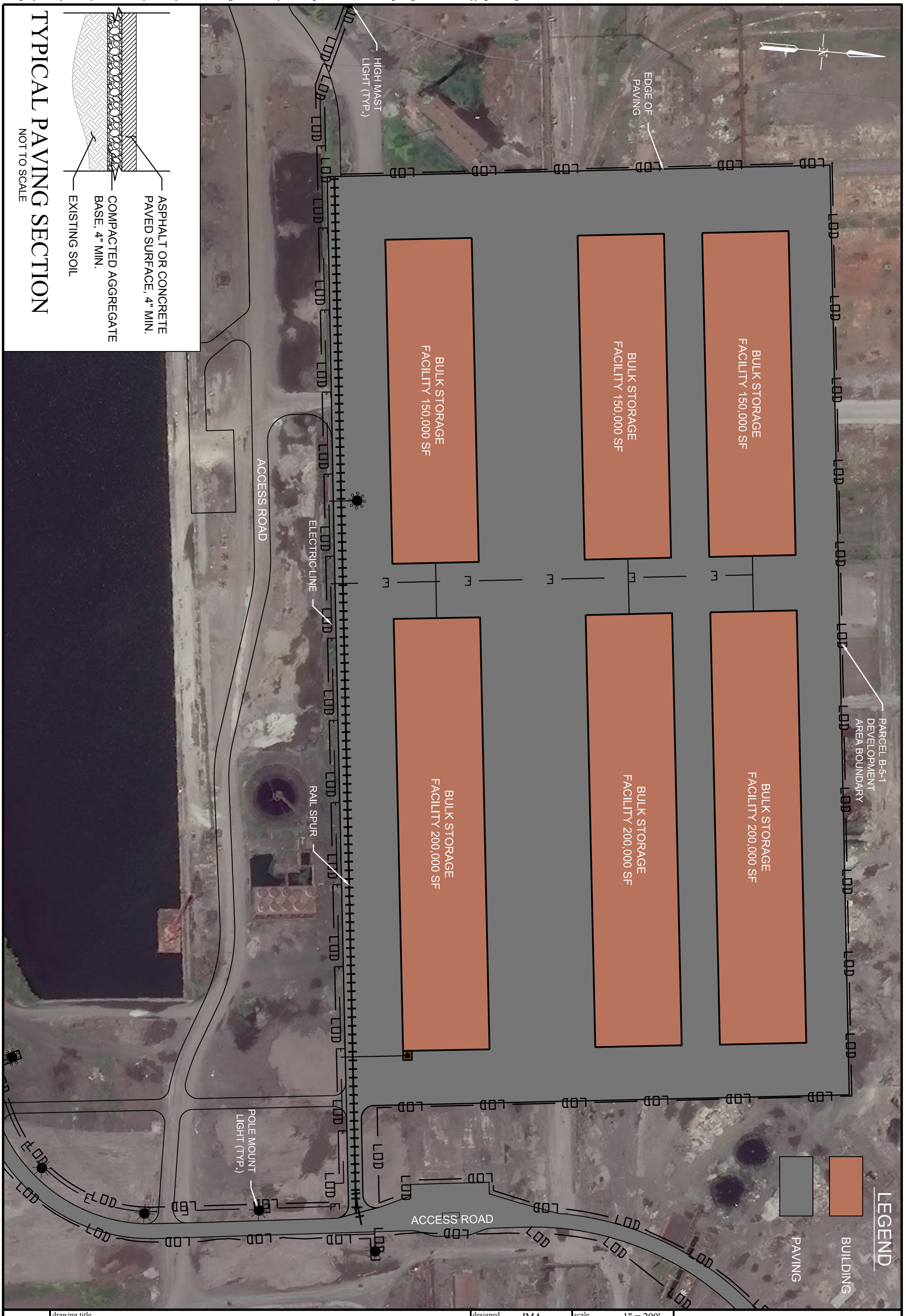
Figure 5

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Phase II Borings
- Parcel Boundary
- B13 Road
- B5 Building
- B5 Road



TYPICAL PAVING SECTION

NOT TO SCALE

Figure 6a

drawing title: SUB-PARCEL B5-1 ENVIRONMENTAL CAPPING PLAN

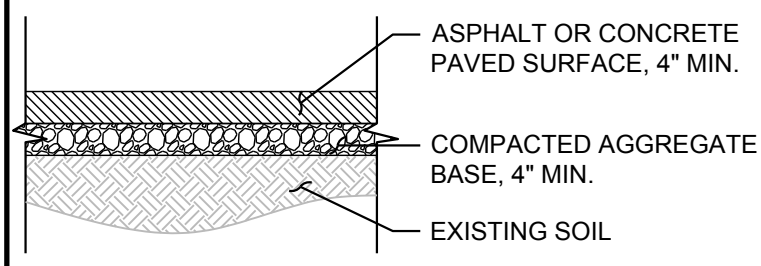
project title: SPARROWS POINT AREA B ENVIROANALYTICS GROUP

SPARROWS POINT BALTIMORE COUNTY, MARYLAND

designed	JMA	scale	1" = 200'
checked	TNP	date	3/31/2017
drawn	JMA	project no.	160443M

0 200 400
SCALE IN FEET

ARM Group Inc.
Earth Resource Engineers and Consultants
www.armgroup.net



TYPICAL PAVING SECTION

NOT TO SCALE

Figure 6b	drawing title: SUB-PARCEL B5-1 ENVIRONMENTAL CAPPING PLAN	designed JMA	scale 1" = 500'	ARM Group Inc. Earth Resource Engineers and Consultants www.armgroup.net
		checked TNP	date 3/31/2017	
		drawn JMA	project no. 160443M	
	project title: SPARROWS POINT AREA B ENVIROANALYTICS GROUP	SPARROWS POINT BALTIMORE COUNTY, MARYLAND	0 500 1000 SCALE IN FEET	

Sub-Parcel B5-1
Groundwater Network Development Details

April 12, 2017

Figure 7

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 160443M-10	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 155 310 620 Feet

- Piezometer (abandon)
- Flush-Mount (conversion)
- Retain in Current Condition
- Limit of Disturbance
- Parcel Boundary

TABLES

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-004-SB-1	B13-004-SB-4	B13-005-SB-1	B13-005-SB-4	B13-018-SB-1*	B13-018-SB-9*	B13-019-SB-1*	B13-019-SB-4*	B13-020-SB-1	B13-020-SB-9	B13-021-SB-1	B13-021-SB-9	B13-040-SB-1	B13-040-SB-5
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	0.012 U	N/A	**0.012 J**	0.0096 U	0.012 U	N/A	0.01 U	N/A	0.014 U	N/A	N/A
2-Hexanone	mg/kg	1,300	N/A	N/A	N/A	0.012 U	N/A	0.013 U	0.0096 U	0.012 U	N/A	0.01 U	N/A	0.014 U	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	N/A	**0.011 J**	N/A	**0.028**	**0.0079 J**	**0.013**	N/A	**0.0087 J**	N/A	**0.013 J**	N/A	N/A
Benzene	mg/kg	5.1	N/A	N/A	N/A	0.0061 U	N/A	**0.007**	0.0048 U	0.0061 U	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Chloroform	mg/kg	1.4	N/A	N/A	N/A	0.0061 U	N/A	0.0065 U	0.0048 U	0.0061 U	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Cyclohexane	mg/kg	27,000	N/A	N/A	N/A	0.012 UJ	N/A	0.013 U	0.0096 U	0.012 U	N/A	0.01 U	N/A	0.014 U	N/A	N/A
Ethylbenzene	mg/kg	25	N/A	N/A	N/A	0.0061 U	N/A	0.0065 U	0.0048 U	**0.0021 J**	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	N/A	0.061 UJ	N/A	0.065 U	0.048 U	0.061 U	N/A	0.05 R	N/A	0.068 R	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	0.0061 U	N/A	0.0065 U	0.0048 U	0.0061 U	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Tetrachloroethene	mg/kg	100	N/A	N/A	N/A	0.0061 U	N/A	0.0065 U	0.0048 U	0.0061 U	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	N/A	0.0061 U	N/A	**0.0033 J**	0.0048 U	0.0061 U	N/A	0.005 U	N/A	0.0068 U	N/A	N/A
Xylenes	mg/kg	2,800	N/A	N/A	N/A	0.018 U	N/A	0.02 U	0.014 U	**0.007 J**	N/A	0.015 U	N/A	0.02 U	N/A	N/A
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	mg/kg	200	**0.014 J**	0.072 U	0.072 UJ	0.074 U	**0.16**	0.074 U	**0.052 J**	**0.02 J**	0.079 U	0.072 U	0.071 U	0.074 U	**0.025 J**	**0.027 J**
2,4-Dimethylphenol	mg/kg	16,000	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 R	0.072 U	0.071 R	0.074 U	0.072 U	0.071 U
2-Chloronaphthalene	mg/kg	60,000	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.071 U
2-Methylnaphthalene	mg/kg	3,000	**0.042**	**0.0058 J**	**0.024 J**	**0.0077**	**0.24**	0.0073 U	**0.17**	**0.15**	**0.028**	**0.002 J**	**0.024**	**0.0036 J**	**0.12**	**0.089**
2-Methylphenol	mg/kg	41,000	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 R	0.072 U	0.071 R	0.074 U	0.072 U	0.071 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	0.14 U	0.14 UJ	0.15 U	0.15 U	0.15 U	0.14 U	0.15 U	0.16 R	0.14 U	0.14 R	0.15 U	0.14 U	0.14 U
Acenaphthene	mg/kg	45,000	0.0071 U	**0.00056 J**	**0.0049 J**	**0.0016 J**	**0.04**	0.0073 U	**0.016**	**0.014**	**0.0023 J**	**0.00075 J**	**0.0015 J**	**0.0022 J**	**0.014**	**0.014**
Acenaphthylene	mg/kg	45,000	**0.0018 J**	**0.0098**	**0.01 J**	**0.0052 J**	**0.14**	**0.00068 J**	**0.063**	**0.059**	**0.003 J**	**0.00073 J**	**0.0025 J**	**0.00067 J**	**0.036**	**0.042**
Acetophenone	mg/kg	120,000	0.069 U	0.072 U	0.072 UJ	0.074 U	**0.029 J**	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.071 U
Anthracene	mg/kg	230,000	**0.0042 J**	**0.0094**	**0.023 J**	**0.008**	**0.26**	0.0073 U	**0.12**	**0.091**	**0.014**	**0.0022 J**	**0.0087**	**0.0037 J**	**0.05**	**0.075**
Benzaldehyde	mg/kg	120,000	0.069 R	0.072 R	0.072 R	0.074 R	**0.032 J**	0.074 U	**0.02 J**	**0.026 J**	**0.027 J**	0.072 R	0.071 R	0.074 R	0.072 R	0.071 R
Benz[a]anthracene	mg/kg	21	**0.0096**	**0.051**	**0.25 J**	**0.028**	**0.87**	**0.0024 J**	**0.38**	**0.37**	**0.035**	**0.02**	**0.024**	**0.013**	**0.16**	**0.26**
Benzo[a]pyrene	mg/kg	2.1	**0.011 J**	**0.043**	**0.41 J**	**0.024**	**0.63**	**0.0017 J**	**0.28**	**0.37**	**0.027**	**0.015**	**0.022**	**0.018**	**0.16**	**0.25**
Benzo[b]fluoranthene	mg/kg	21	**0.027 J**	**0.071**	**0.53 J**	**0.058**	**1.2**	**0.003 J**	**0.72**	**0.82**	**0.068**	**0.042**	**0.052**	**0.031**	**0.35**	**0.54**
Benzo[g,h,i]perylene	mg/kg		**0.0064 J**	**0.024**	**0.26 J**	**0.016**	**0.55**	**0.0023 J**	**0.3**	**0.29**	**0.016**	**0.0062 J**	**0.011**	**0.0098**	**0.093**	**0.13**
Benzo[k]fluoranthene	mg/kg	210	**0.024 J**	**0.027**	**0.2 J**	**0.053**	**0.5**	**0.0026 J**	**0.64**	**0.72**	**0.062**	**0.038**	**0.047**	**0.028**	**0.32**	**0.15**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.069 U	0.072 U	0.072 UJ	0.074 U	**0.028 J**	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 UJ	0.071 UJ
Carbazole	mg/kg		0.069 U	0.072 U	0.072 UJ	0.074 U	**0.15**	0.074 U	**0.16**	**0.05 J**	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	**0.022 J**
Chrysene	mg/kg	2,100	**0.018**	**0.048**	**0.29 J**	**0.031**	**1**	**0.0015 J**	**0.48**	**0.43**	**0.042**	**0.024**	**0.032**	**0.013**	**0.17**	**0.33**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.0016 J**	**0.0089**	**0.076 J**	**0.0056 J**	**0.2**	0.0073 U	**0.1**	**0.12**	**0.0056 J**	**0.0026 J**	**0.0044 J**	**0.0031 J**	**0.034**	**0.048**
Diethylphthalate	mg/kg	660,000	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.071 U
Di-n-butylphthalate	mg/kg	82,000	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.071 U
Fluoranthene	mg/kg	30,000	**0.014**	**0.093**	**0.3 J**	**0.059**	**2**	**0.002 J**	**1.1**	**0.55**	**0.099**	**0.036**	**0.064**	**0.027**	**0.29**	**0.44**
Fluorene	mg/kg	30,000	**0.0015 J**	**0.0012 J**	**0.0037 J**	**0.0012 J**	**0.055**	0.0073 U	**0.022**	**0.012**	**0.0038 J**	0.0073 U	**0.002 J**	**0.0011 J**	**0.021**	**0.017**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.0049 J**	**0.026**	**0.23 J**	**0.015**	**0.54**	**0.0015 J**	**0.27**	**0.28**	**0.014**	**0.0065 J**	**0.01**	**0.009**	**0.09**	**0.13**
Naphthalene	mg/kg	17	**0.027**	**0.018**	**0.026 J**	**0.026**	**0.82**	0.0073 U	**0.45**	**0.1**	**0.03**	**0.0028 B**	**0.02**	**0.0071 B**	**0.48**	**0.1**
N-Nitrosodiphenylamine	mg/kg	470	0.069 U	0.072 U	0.072 UJ	0.074 U	0.074 U	0.074 U	0.071 U	0.075 U	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.071 U
Phenanthrene	mg/kg		**0.03**	**0.029**	**0.1 J**	**0.026**	**1.8**	**0.0015 J**	**0.92**	**0.32**	**0.082**	**0.011**	**0.058**	**0.014**	**0.14**	**0.25**
Pyrene	mg/kg	23,000	**0.014**	**0.071**	**0.29 J**	**0.049**	**1.5**	**0.0016 J**	**0.82**	**0.49**	**0.078**	**0.052**	**0.048**	**0.021**	**0.28**	**0.41**
PCBs																
Aroclor 1016	mg/kg	27	0.0537 U	N/A	0.0544 U	N/A	0.0559 U	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
Aroclor 1242	mg/kg	0.97	**0.0481 J**	N/A	**0.179**	N/A	0.0559 U	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
Aroclor 1248	mg/kg	0.94	0.0537 U	N/A	0.0544 U	N/A	0.0559 U	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
Aroclor 1254	mg/kg	0.97	0.0537 U	N/A	0.0544 U	N/A	0.0559 U	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
Aroclor 1260	mg/kg	0.99	0.0537 U	N/A	0.0544 U	N/A	**0.043 J**	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
Aroclor 1262	mg/kg		0.0537 U	N/A	0.0544 U	N/A	0.0559 U	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
PCBs (total)	mg/kg	0.97	**0.0481 J**	N/A	**0.179**	N/A	**0.043 J**	N/A	0.056 U	N/A	0.0562 U	N/A	0.0545 U	N/A	0.0543 U	N/A
TPH/Oil and Grease																
Diesel Range Organics	mg/kg	6,200	**127 J**	**12.1 J**	**39 J**	**24.6 J**	**112**	7.4 U	**48.3**	**72.4**	**28.2 J**	**13.6 J**	**61.6 J**	**30.7 J**	**33.3 J**	**33.8 J**
Gasoline Range Organics	mg/kg	6,200	6.4 U	16.2 U	9.2 U	13.7 U	11 U	13.6 U	8.5 U	12.4 U	14.9 U	10.8 U	14.5 U	16.7 U	12.4 U	9.6 U
Oil and Grease	mg/kg	6,200	**1,520**	**411**	**412**	**545**	**522**	**358**	**459**	**461**	**381**	**325**	**316**	**315**	**340**	**388**

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-040-SB-10	B13-049-SB-1	B13-049-SB-5	B13-055-SB-1*	B13-055-SB-9*	B13-056-SB-1*	B13-056-SB-5*	B13-058-SB-1*	B13-058-SB-7*	B13-064-SB-1	B13-064-SB-5	B13-076-SB-1*	B13-076-SB-7*
Volatile Organic Compounds															
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	N/A	0.01 U	N/A	0.013 U	N/A	0.0072 U	0.009 U	N/A	**0.012**	0.018 U
2-Hexanone	mg/kg	1,300	N/A	N/A	N/A	N/A	0.01 U	N/A	0.013 U	N/A	0.0072 U	0.009 U	N/A	0.0064 U	0.018 U
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	**0.0098 J**	N/A	**0.023**	N/A	0.0072 U	**0.0084 J**	N/A	**0.02**	**0.03**
Benzene	mg/kg	5.1	N/A	N/A	N/A	N/A	**0.0025 J**	N/A	**0.029**	N/A	0.0036 U	0.0045 U	N/A	**0.0014 J**	0.0088 U
Chloroform	mg/kg	1.4	N/A	N/A	N/A	N/A	0.0051 U	N/A	0.0063 U	N/A	0.0036 U	0.0045 U	N/A	0.0032 U	0.0088 U
Cyclohexane	mg/kg	27,000	N/A	N/A	N/A	N/A	0.01 U	N/A	0.013 U	N/A	0.0072 U	0.009 UJ	N/A	0.0064 U	0.018 U
Ethylbenzene	mg/kg	25	N/A	N/A	N/A	N/A	**0.0039 J**	N/A	**0.004 J**	N/A	0.0036 U	0.0045 U	N/A	**0.0024 J**	**0.012**
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	N/A	N/A	0.051 U	N/A	0.063 U	N/A	0.036 U	0.045 UJ	N/A	0.032 U	0.088 U
Styrene	mg/kg	35,000	N/A	N/A	N/A	N/A	0.0051 U	N/A	0.0063 U	N/A	0.0036 U	0.0045 U	N/A	0.0032 U	0.0088 U
Tetrachloroethene	mg/kg	100	N/A	N/A	N/A	N/A	0.0051 U	N/A	0.0063 U	N/A	0.0036 U	0.0045 U	N/A	0.0032 U	0.0088 U
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	**0.0068**	N/A	**0.019**	N/A	0.0036 U	0.0045 U	N/A	**0.0011 J**	0.0088 U
Xylenes	mg/kg	2,800	N/A	N/A	N/A	N/A	0.015 U	N/A	0.019 U	N/A	0.011 U	0.013 U	N/A	**0.014**	**0.076**
Semi-Volatile Organic Compounds^															
1,1-Biphenyl	mg/kg	200	N/A	0.072 U	0.074 U	**0.43**	0.068 U	**0.02 J**	0.074 U	**0.036 J**	0.069 U	0.075 U	0.072 U	**0.042 J**	**0.062 J**
2,4-Dimethylphenol	mg/kg	16,000	N/A	0.072 UJ	0.074 U	0.069 U	0.068 U	0.073 U	0.074 U	0.071 U	0.069 U	0.075 U	0.072 U	0.071 U	**0.053 J**
2-Chloronaphthalene	mg/kg	60,000	N/A	0.072 U	0.074 U	0.069 U	0.068 U	**0.11**	0.074 U	0.071 U	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
2-Methylnaphthalene	mg/kg	3,000	N/A	**0.0065 J**	**0.0053 J**	**1**	**0.0019 J**	**0.15**	**0.0087**	**0.12**	**0.015**	**0.015**	0.0074 U	**0.074**	**0.12**
2-Methylphenol	mg/kg	41,000	N/A	0.072 UJ	0.074 U	0.069 U	0.068 U	0.073 U	0.074 U	0.071 U	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	0.14 UJ	0.15 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 U	**0.03 J**
Acenaphthene	mg/kg	45,000	N/A	**0.0024 J**	**0.0006 J**	**0.043**	**0.0015 J**	**0.0098**	**0.00057 J**	**0.0093**	**0.0016 J**	**0.00081 J**	0.0074 U	**0.0064 J**	**0.0056 J**
Acenaphthylene	mg/kg	45,000	N/A	**0.0029 J**	**0.0039 J**	**0.0051 J**	0.007 U	**0.026**	**0.0014 J**	**0.014**	**0.0014 J**	**0.00078 J**	0.0074 U	**0.0079**	**0.0057 J**
Acetophenone	mg/kg	120,000	N/A	0.072 U	0.074 U	**0.12**	0.068 U	0.073 U	0.074 U	0.071 U	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
Anthracene	mg/kg	230,000	N/A	**0.022**	**0.0044 J**	**0.05**	0.007 U	**0.081**	**0.0053 J**	**0.045**	**0.0052 J**	**0.0031 J**	0.0074 U	**0.04**	**0.021**
Benzaldehyde	mg/kg	120,000	N/A	0.072 R	0.074 R	**0.13**	0.068 U	0.073 U	0.074 U	**0.021 J**	0.069 U	0.075 R	0.072 R	0.071 U	**0.15**
Benz[a]anthracene	mg/kg	21	N/A	**0.39**	**0.032**	**0.076**	0.007 U	**0.25**	**0.0051 J**	**0.19**	**0.013**	**0.011**	0.0074 U	**0.077**	**0.034**
Benzo[a]pyrene	mg/kg	2.1	**0.95 J**	**0.31**	**0.041**	**0.049**	0.007 U	**0.34**	**0.0033 J**	**0.16**	**0.013**	**0.011**	0.0074 U	**0.054**	**0.025**
Benzo[b]fluoranthene	mg/kg	21	N/A	**0.76**	**0.099**	**0.12**	0.007 U	**0.25**	**0.0081**	**0.33**	**0.028**	**0.018**	**0.00054 J**	**0.16**	**0.05**
Benzo[g,h,i]perylene	mg/kg		N/A	**0.13**	**0.021**	**0.048**	0.007 U	**0.27**	**0.0032 J**	**0.1**	**0.011**	**0.0082**	0.0074 U	**0.058**	**0.02**
Benzo[k]fluoranthene	mg/kg	210	N/A	**0.69**	**0.04**	**0.11**	0.007 U	**0.22**	**0.0072 J**	**0.29**	**0.025**	**0.0071 J**	0.0074 U	**0.14**	**0.044**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	**0.51 J**	0.074 U	0.069 U	0.068 U	0.073 U	0.074 U	**0.017 J**	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
Carbazole	mg/kg		N/A	**0.089**	0.074 U	**0.059 J**	0.068 U	**0.05 J**	0.074 U	**0.037 J**	0.069 U	0.075 U	0.072 U	**0.019 J**	**0.034 J**
Chrysene	mg/kg	2,100	N/A	**0.45**	**0.091**	**0.26**	0.007 U	**0.31**	**0.0079**	**0.22**	**0.021**	**0.014**	0.0074 U	**0.12**	**0.046**
Dibenz[a,h]anthracene	mg/kg	2.1	N/A	**0.046**	**0.0063 J**	**0.027**	0.007 U	**0.12**	**0.0014 J**	**0.041**	**0.0033 J**	**0.0026 J**	0.0074 U	**0.019**	**0.0054 J**
Diethylphthalate	mg/kg	660,000	N/A	0.072 U	0.074 U	0.069 U	0.068 U	0.073 U	0.074 U	0.071 U	0.069 U	**0.086**	**0.054 B**	0.071 U	0.088 U
Di-n-butylphthalate	mg/kg	82,000	N/A	0.072 U	0.074 U	0.069 U	0.068 U	0.073 U	0.074 U	**0.033 J**	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
Fluoranthene	mg/kg	30,000	N/A	**0.93**	**0.22**	**0.15**	**0.00066 J**	**0.14**	**0.01**	**0.31**	**0.028**	**0.021**	**0.0007 J**	**0.16**	**0.074**
Fluorene	mg/kg	30,000	N/A	**0.0032 J**	0.0076 U	**0.042**	**0.00077 J**	**0.022**	**0.0017 J**	**0.0092**	**0.0016 J**	**0.0013 J**	0.0074 U	**0.0073**	**0.006 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	N/A	**0.13**	**0.022**	**0.022**	0.007 U	**0.11**	**0.0024 J**	**0.093**	**0.0078**	**0.0069 J**	0.0074 U	**0.048**	**0.014**
Naphthalene	mg/kg	17	N/A	**0.0081 J**	**0.006 B**	**0.65**	**0.0034 J**	**0.12**	**0.012**	**0.11**	**0.014**	**0.012**	0.0074 U	**0.065**	**0.075**
N-Nitrosodiphenylamine	mg/kg	470	N/A	0.072 U	0.074 U	**0.063 J**	0.068 U	0.073 U	0.074 U	0.071 U	0.069 U	0.075 U	0.072 U	0.071 U	0.088 U
Phenanthrene	mg/kg		N/A	**0.12**	**0.052**	**0.97**	**0.0013 J**	**0.28**	**0.019**	**0.27**	**0.035**	**0.022**	**0.0011 J**	**0.19**	**0.14**
Pyrene	mg/kg	23,000	N/A	**0.81**	**0.17**	**0.15**	0.007 U	**0.25**	**0.0081**	**0.27**	**0.024**	**0.017**	0.0074 U	**0.13**	**0.068**
PCBs															
Aroclor 1016	mg/kg	27	N/A	0.0543 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0547 U	N/A	0.0542 U	N/A	0.0522 U	N/A
Aroclor 1242	mg/kg	0.97	N/A	0.0543 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0547 U	N/A	0.0542 U	N/A	0.0522 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	**0.128**	N/A	**0.1**	N/A	0.0543 U	N/A	0.0547 U	N/A	0.0542 U	N/A	0.0522 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.0543 U	N/A	0.0537 U	N/A	0.0543 U	N/A	**0.0421 J**	N/A	0.0542 U	N/A	0.0522 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.0543 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0547 U	N/A	0.0542 U	N/A	0.0522 U	N/A
Aroclor 1262	mg/kg		N/A	0.0543 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0547 U	N/A	0.0542 U	N/A	0.0522 U	N/A
PCBs (total)	mg/kg	0.97	N/A	**0.128**	N/A	**0.1**	N/A	0.0543 U	N/A	**0.0421 J**	N/A	0.0542 U	N/A	0.0522 U	N/A
TPH/Oil and Grease															
Diesel Range Organics	mg/kg	6,200	N/A	**36.5 J**	**6.6 J**	**185**	**5.6 J**	**32**	**16.3**	**50.8**	**47.8**	**16.1 J**	**10.3 J**	**70.1**	**174**
Gasoline Range Organics	mg/kg	6,200	N/A	10.1 U	15.2 U	**8.9 J**	**9.7 J**	15.7 U	9.4 U	9.8 U	8.5 U	9.1 U	17 U	**22.4**	**26.7**
Oil and Grease	mg/kg	6,200	N/A	**663**	**374**	**369**	**215**	**739**	**297**	**276**	**1,060**	**378**	**446**	**247**	**332**

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-009-SB-1*	B5-009-SB-5*	B5-010-SB-1*	B5-010-SB-7*	B5-010-SB-10*	B5-015-SB-1	B5-015-SB-5	B5-016-SB-1	B5-016-SB-8.5	B5-017-SB-1*	B5-018-SB-1*	B5-019-SB-1*	B5-019-SB-4*	B5-020-SB-1*
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	0.012 U	0.0088 U	0.008 U	0.016 U	N/A	0.0094 U	0.0094 U	0.011 U	0.014 U	**0.013**	**0.0083 J**	**0.0055 J**	**0.0057 J**	0.55 U
2-Hexanone	mg/kg	1,300	0.012 U	0.0088 U	0.008 U	0.016 U	N/A	0.0094 U	0.0094 U	0.011 U	0.014 U	**0.0021 J**	0.012 U	0.009 U	0.01 U	0.55 U
Acetone	mg/kg	670,000	0.012 U	0.0088 U	**0.071**	0.016 U	N/A	0.0094 R	0.0094 R	**0.063 J**	**0.044 J**	**0.079**	**0.051**	**0.064**	**0.033**	0.55 U
Benzene	mg/kg	5.1	0.0059 U	0.0044 U	0.004 U	**0.13**	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	**0.0017 J**	0.0058 U	0.0045 U	0.0051 U	0.27 U
Chloroform	mg/kg	1.4	0.0059 U	0.0044 U	0.004 U	0.0078 U	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	0.005 U	0.0058 U	0.0045 U	0.0051 U	0.27 U
Cyclohexane	mg/kg	27,000	0.012 U	0.0088 U	0.008 U	0.016 U	N/A	0.0094 U	0.0094 U	0.011 U	0.014 U	0.01 U	0.012 U	0.009 U	0.01 U	0.55 U
Ethylbenzene	mg/kg	25	0.0059 U	0.0044 U	0.004 U	**0.024**	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	0.005 U	0.0058 U	0.0045 U	0.0051 U	**0.08 J**
Methyl Acetate	mg/kg	1,200,000	0.059 U	0.044 U	0.04 U	0.078 U	N/A	0.047 U	0.047 U	0.054 U	0.072 U	0.05 U	0.058 U	0.045 U	0.051 U	2.7 U
Styrene	mg/kg	35,000	0.0059 U	0.0044 U	0.004 U	**0.015**	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	0.005 U	0.0058 U	0.0045 U	0.0051 U	0.27 U
Tetrachloroethene	mg/kg	100	0.0059 U	0.0044 U	0.004 U	0.0078 U	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	0.005 U	0.0058 U	0.0045 U	0.0051 U	0.27 U
Toluene	mg/kg	47,000	0.0059 U	0.0044 U	0.004 U	**0.27**	N/A	0.0047 U	0.0047 U	0.0054 U	0.0072 U	0.005 U	0.0058 U	0.0045 U	0.0051 U	0.27 U
Xylenes	mg/kg	2,800	0.018 U	0.013 U	0.012 U	**0.6**	N/A	0.014 U	0.014 U	0.016 U	0.022 U	0.015 U	0.018 U	0.013 U	0.015 U	**0.52 J**
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	mg/kg	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.04 J**	**0.043 J**	**3.5**	**1.4**	N/A	**0.068**	**0.0035 J**	**0.2**	0.0078 U	**0.24**	**0.1**	**0.17**	**0.025**	**12.2**
2-Methylphenol	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.5 U	7 U	7 U	7.9 U	N/A
Acenaphthene	mg/kg	45,000	0.15 U	**0.025 J**	**16.2**	**0.078**	N/A	**0.052**	0.0078 U	**0.035**	0.0078 U	**0.037**	**0.016**	**0.027**	**0.0037 J**	**0.72**
Acenaphthylene	mg/kg	45,000	**0.096 J**	**0.23**	**21.4**	**0.33**	N/A	**0.072**	**0.0018 J**	**0.1**	0.0078 U	**0.076**	**0.051**	**0.02**	**0.022**	**0.15**
Acetophenone	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Anthracene	mg/kg	230,000	**0.081 J**	**0.19**	**30.7**	**0.3**	N/A	**0.27**	**0.003 J**	**0.27**	**0.00091 J**	**0.12**	**0.058**	**0.13**	**0.027**	**0.7**
Benzaldehyde	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Benz[a]anthracene	mg/kg	21	**0.14 J**	**1**	**38.1**	**0.26**	N/A	**0.85**	**0.0099**	**0.93**	**0.003 J**	**0.27**	**0.14**	**0.25**	**0.23**	**0.4**
Benzo[a]pyrene	mg/kg	2.1	**0.13 J**	**0.74**	**31.4**	**0.13**	N/A	**1.3**	**0.0094 J**	**1.6**	**0.0012 J**	**0.31**	**0.12**	**0.38**	**0.25**	**0.41**
Benzo[b]fluoranthene	mg/kg	21	**0.18**	**1.7**	**52.6**	**0.29**	N/A	**2.1**	**0.019 J**	**3.6**	**0.0037 J**	**0.59**	**0.24**	**0.67**	**0.45**	**1**
Benzo[g,h,i]perylene	mg/kg		**0.12 J**	**0.28**	**8**	**0.044**	N/A	**0.73**	**0.0056 J**	**1.3**	0.0078 U	**0.18**	**0.078**	**0.22**	**0.11**	**0.14 J**
Benzo[k]fluoranthene	mg/kg	210	**0.071 J**	**0.5**	**18.3**	**0.093**	N/A	**0.82**	**0.0075 J**	**1.4**	**0.003 J**	**0.27**	**0.099**	**0.17**	**0.17**	**0.32**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Carbazole	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Chrysene	mg/kg	2,100	**0.14 J**	**1**	**32**	**0.29**	N/A	**0.86**	**0.014**	**1.1**	**0.0022 J**	**0.32**	**0.16**	**0.31**	**0.25**	**0.76**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.036 J**	**0.15 J**	**26.8**	**0.021**	N/A	**0.38**	**0.0019 J**	**0.52**	0.0078 U	**0.056**	**0.026**	**0.078**	**0.043**	0.15 U
Diethylphthalate	mg/kg	660,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Fluoranthene	mg/kg	30,000	**0.29**	**1.5**	**116**	**0.65**	N/A	**2.9**	**0.018**	**3.3**	**0.0033 J**	**0.43**	**0.27**	**0.39**	**0.29**	**1.2**
Fluorene	mg/kg	30,000	**0.056 J**	**0.057 J**	**28.9**	**0.17**	N/A	**0.086**	**0.0019 J**	**0.053**	0.0078 U	**0.029**	**0.019**	**0.049**	**0.0068 J**	**1.2**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.051 J**	**0.32**	**10.2**	**0.052**	N/A	**0.79**	**0.0051 J**	**1.3**	0.0078 U	**0.16**	**0.069**	**0.19**	**0.11**	**0.089 J**
Naphthalene	mg/kg	17	**0.43**	**0.41**	**7.5**	**72.9**	**0.0086 B**	**0.07**	**0.0054 B**	**0.25**	**0.0018 B**	**0.48**	**0.25**	**0.19**	**0.024 B**	**4.2**
N-Nitrosodiphenylamine	mg/kg	470	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7 U	3.5 U	3.5 U	3.9 U	N/A
Phenanthrene	mg/kg		**0.2**	**0.42**	**130**	**0.41**	N/A	**1.1**	**0.014**	**0.94**	**0.0023 J**	**0.46**	**0.22**	**0.37**	**0.09**	**3.8**
Pyrene	mg/kg	23,000	**0.24**	**2.2**	**86.1**	**0.52**	N/A	**1.3**	**0.016**	**1.4**	**0.0034 J**	**0.4**	**0.25**	**0.39**	**0.32**	**1.1**
PCBs																
Aroclor 1016	mg/kg	27	0.019 U	N/A	0.38 U	N/A	N/A	0.019 U	N/A	0.097 U	N/A	0.055 U	0.0538 U	0.0523 U	N/A	0.18 R
Aroclor 1242	mg/kg	0.97	0.019 U	N/A	0.38 U	N/A	N/A	0.019 U	N/A	0.097 U	N/A	0.055 U	0.0538 U	0.0523 U	N/A	0.18 R
Aroclor 1248	mg/kg	0.94	0.019 U	N/A	0.38 U	N/A	N/A	0.019 U	N/A	0.097 U	N/A	0.055 U	0.0538 U	0.0523 U	N/A	0.18 R
Aroclor 1254	mg/kg	0.97	**0.099**	N/A	0.38 U	N/A	N/A	0.019 U	N/A	0.097 U	N/A	0.13 R	0.11 R	**0.112**	N/A	0.18 R
Aroclor 1260	mg/kg	0.99	0.019 U	N/A	0.38 U	N/A	N/A	0.019 U	N/A	0.097 U	N/A	0.055 U	0.0538 U	0.0523 U	N/A	0.18 R
Aroclor 1262	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.055 U	0.0538 U	0.0523 U	N/A	0.0509 U
PCBs (total)	mg/kg	0.97	**0.099 J**	N/A	2.7 U	N/A	N/A	0.13 U	N/A	0.68 U	N/A	0.13 R	0.11 R	**0.112**	N/A	1.3 R
TPH/Oil and Grease																
Diesel Range Organics	mg/kg	6,200	**181**	**89.9**	**3,760**	**198**	N/A	**65.2**	**5 J**	**318 J**	**11**	**276**	**110**	**330**	**24.5**	**2,990**
Gasoline Range Organics	mg/kg	6,200	11.5 U	10.2 U	48.4 U	16.8 U	N/A	10.8 U	9.5 U	**19.3**	**19.3**	10.3 U	9.6 U	9.8 U	11.6 U	**32.6**
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-020-SB-3.5*	B5-021-SB-1*	B5-021-SB-5*	B5-022-SB-1*	B5-022-SB-5*	B5-023-SB-1*	B5-023-SB-5*	B5-024-SB-1	B5-025-SB-1	B5-025-SB-5	B5-026-SB-1	B5-027-SB-1	B5-027-SB-5	B5-028-SB-1	B5-028-SB-4.5
Volatile Organic Compounds																	
2-Butanone (MEK)	mg/kg	190,000	0.01 U	0.011 U	0.01 U	**0.016**	0.011 U	0.015 U	0.01 U	0.012 U	0.0098 U	0.0096 U	0.011 U	0.01 U	0.011 U	0.012 U	0.012 U
2-Hexanone	mg/kg	1,300	0.01 U	0.011 U	0.01 U	0.011 U	0.011 U	0.015 U	0.01 U	0.012 U	0.0098 U	0.0096 U	0.011 U	0.01 UJ	0.011 UJ	0.012 UJ	0.012 UJ
Acetone	mg/kg	670,000	**0.02**	0.011 U	0.01 U	**0.084**	0.011 U	0.015 U	0.01 U	0.012 U	**0.04**	0.0096 U	0.011 U	0.01 U	0.011 U	0.012 U	**0.075**
Benzene	mg/kg	5.1	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	0.0053 U	0.0059 U	0.006 U
Chloroform	mg/kg	1.4	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	**0.016**	0.0059 U	0.006 U
Cyclohexane	mg/kg	27,000	0.01 U	0.011 U	0.01 U	0.011 U	0.011 U	0.015 U	0.01 U	0.012 U	0.0098 U	0.0096 U	0.011 U	0.01 U	0.011 U	0.012 U	**0.0069 J**
Ethylbenzene	mg/kg	25	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	0.0053 U	0.0059 U	0.006 U
Methyl Acetate	mg/kg	1,200,000	0.051 U	0.053 U	0.05 U	0.057 U	0.053 U	0.074 U	0.052 U	0.061 R	0.049 R	0.048 R	0.057 R	0.051 R	0.053 R	0.059 R	0.06 R
Styrene	mg/kg	35,000	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	0.0053 U	0.0059 U	0.006 U
Tetrachloroethene	mg/kg	100	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	**0.024**	0.0059 U	**0.033**
Toluene	mg/kg	47,000	0.0051 U	0.0053 U	0.005 U	0.0057 U	0.0053 U	0.0074 U	0.0052 U	0.0061 U	0.0049 U	0.0048 U	0.0057 U	0.0051 U	0.0053 U	0.0059 U	0.006 U
Xylenes	mg/kg	2,800	0.015 U	0.016 U	0.015 U	0.017 U	0.016 U	0.022 U	0.016 U	0.018 U	0.015 U	0.014 U	0.017 U	0.015 U	0.016 U	0.018 U	0.018 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	**0.64**	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	**0.24 J**	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.015**	**0.11 J**	**0.017**	**0.022**	**0.014**	**2.7**	**0.0035 J**	**7**	**0.085**	0.008 U	**0.11**	**0.15**	**0.15**	**0.0014 J**	**0.089**
2-Methylphenol	mg/kg	41,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	**0.092 J**	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	7.8 U	7.1 U	8 U	7.1 U	7.3 U	8.9 U	8 U	**0.1 J**	0.78 U	0.8 U	0.78 U	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	**0.0025 J**	**0.02 J**	**0.0048 J**	**0.0015 J**	**0.0011 J**	**0.085**	**0.00078 J**	**0.14 J**	**0.042**	0.008 U	**0.02**	**0.0087**	**0.025**	0.0073 U	**0.0095**
Acenaphthylene	mg/kg	45,000	**0.019**	**0.066 J**	**0.0048 J**	**0.023**	**0.0033 J**	**0.019**	**0.0063 J**	**0.081 J**	**0.022**	0.008 U	**0.057**	**0.011**	**0.14**	0.0073 U	**0.045**
Acetophenone	mg/kg	120,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	**0.68**	**0.03 J**	0.4 U	**0.045 J**	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	**0.022**	**0.1 J**	**0.02**	**0.02**	**0.0084**	**0.12**	**0.0057 J**	**0.27**	**0.073**	**0.00079 J**	**0.054**	**0.032**	**0.13**	**0.0025 J**	**0.065**
Benzaldehyde	mg/kg	120,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	**0.05**	**1**	**0.058**	**0.041**	**0.024**	**0.12**	**0.017**	**0.33**	**0.32**	**0.004 J**	**0.18**	**0.058**	**0.39**	**0.0045 J**	**0.25**
Benzo[a]pyrene	mg/kg	2.1	**0.059**	**2.4**	**0.064**	**0.056**	**0.023**	**0.11**	**0.027**	**0.19**	**0.32**	**0.0025 J**	**0.19**	**0.059 J**	**0.45 J**	**0.0023 J**	**0.22 J**
Benzo[b]fluoranthene	mg/kg	21	**0.13**	**4**	**0.17**	**0.13**	**0.049**	**0.38**	**0.051**	**0.48**	**0.81**	**0.0071 J**	**0.57**	**0.19 J**	**1.3 J**	**0.0083**	**0.67 J**
Benzo[g,h,i]perylene	mg/kg		**0.027**	**1.3**	**0.028**	**0.039**	**0.0091**	**0.056**	**0.011**	**0.17**	**0.15**	**0.0017 J**	**0.076**	**0.036 J**	**0.23 J**	**0.0023 J**	**0.11 J**
Benzo[k]fluoranthene	mg/kg	210	**0.046**	**3.1**	**0.13**	**0.1**	**0.018**	**0.3**	**0.021**	**0.34**	**0.59**	**0.0021 J**	**0.4**	**0.19 J**	**1.3 J**	**0.008**	**0.67 J**
bis(2-Ethylhexyl)phthalate	mg/kg	160	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Carbazole	mg/kg		3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	**0.2 J**	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.056**	**1**	**0.072**	**0.053**	**0.029**	**0.34**	**0.026**	**0.52**	**0.27**	**0.0033 J**	**0.19**	**0.11**	**0.52**	**0.0043 J**	**0.33**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.0064 J**	**0.5**	**0.011**	**0.012**	**0.0042 J**	**0.029**	**0.0037 J**	**0.051 J**	**0.063**	0.008 U	**0.034**	**0.012 J**	**0.084 J**	0.0073 U	**0.048 J**
Diethylphthalate	mg/kg	660,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**0.081**	**1**	**0.13**	**0.054**	**0.047**	**0.26**	**0.023**	**0.48**	**0.42**	**0.0041 J**	**0.21**	**0.097**	**0.55**	**0.0068 J**	**0.44**
Fluorene	mg/kg	30,000	**0.007 J**	**0.021 J**	**0.0078 J**	**0.0028 J**	**0.0014 J**	**0.26**	0.0079 U	**0.29**	**0.026**	0.008 U	**0.015**	**0.013**	**0.024**	0.0073 U	**0.015**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.025**	**1.2**	**0.029**	**0.036**	**0.009**	**0.03**	**0.01**	**0.07 J**	**0.14**	**0.0013 J**	**0.078**	**0.028 J**	**0.21 J**	**0.0014 J**	**0.11 J**
Naphthalene	mg/kg	17	**0.039**	**0.11 J**	**0.035**	**0.027**	**0.017**	**1.5**	**0.0047 J**	**4.3**	**0.094**	**0.0031 B**	**0.57**	**0.093**	**0.13**	**0.0027 B**	**0.08**
N-Nitrosodiphenylamine	mg/kg	470	3.9 U	3.6 U	4 U	3.6 U	3.7 U	4.5 U	4 U	0.42 U	0.39 U	0.4 U	0.39 U	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.053**	**0.24**	**0.086**	**0.033**	**0.034**	**1.6**	**0.0092**	**2.9**	**0.35**	**0.0036 J**	**0.23**	**0.16**	**0.33**	**0.0064 J**	**0.29**
Pyrene	mg/kg	23,000	**0.081**	**1.1**	**0.1**	**0.052**	**0.039**	**0.22**	**0.022**	**0.47**	**0.35**	**0.003 J**	**0.17**	**0.084**	**0.57**	**0.0051 J**	**0.35**
PCBs																	
Aroclor 1016	mg/kg	27	N/A	0.0524 U	N/A	0.018 R	N/A	0.11 R	N/A	0.1 R	0.0588 U	N/A	0.0586 U	0.019 U	N/A	0.019 U	N/A
Aroclor 1242	mg/kg	0.97	N/A	0.0524 U	N/A	0.018 R	N/A	0.11 R	N/A	0.1 R	0.0588 U	N/A	0.0586 U	0.019 U	N/A	0.019 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.0524 U	N/A	0.018 R	N/A	0.11 R	N/A	0.1 R	0.0588 U	N/A	0.0586 U	0.019 U	N/A	0.019 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.0524 U	N/A	0.018 R	N/A	0.11 R	N/A	0.1 R	0.0588 U	N/A	0.0586 U	0.019 U	N/A	0.019 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	**0.0303 J**	N/A	0.018 R	N/A	0.11 R	N/A	0.1 R	**0.0304 J**	N/A	0.0586 U	0.019 U	N/A	0.019 U	N/A
Aroclor 1262	mg/kg		N/A	0.0524 U	N/A	N/A	N/A	0.0671 U	N/A	0.0608 U	0.0588 U	N/A	0.0586 U	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	0.12 R	N/A	0.12 R	N/A	0.77 R	N/A	0.71 R	0.14 R	N/A	0.14 R	0.13 U	N/A	0.13 U	N/A
TPH/Oil and Grease																	
Diesel Range Organics	mg/kg	6,200	**62.9**	**475**	**29.1**	**151**	**15.4**	**263**	7.7 U	**593**	**93.3**	8 U	**55.8**	**52.5**	**76.9**	**22.9**	**57.2**
Gasoline Range Organics	mg/kg	6,200	14.1 U	10.1 U	9.3 U	12.5 U	12.2 U	**15.2 J**	10.9 U	**29.1**	12.5 U	9.6 U	11.3 U	9.9 U	20.3 U	11.9 U	17.3 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-029-SB-1	B5-029-SB-5	B5-030-SB-1	B5-030-SB-4	B5-052-SB-1	B5-054-SB-1*	B5-054-SB-4*	B5-055-SB-1*	B5-064-SB-1	B5-064-SB-7	B5-065-SB-1	B5-065-SB-6	B5-066-SB-1	B5-067-SB-1	B5-074-SB-1*
Volatile Organic Compounds																	
2-Butanone (MEK)	mg/kg	190,000	0.011 U	0.0097 U	0.011 UJ	**0.026**	0.42 U	**0.027**	0.0095 U	0.01 U	0.4 U	0.014 U	0.0067 U	0.011 U	0.016 U	0.012 U	0.01 U
2-Hexanone	mg/kg	1,300	0.011 U	0.0097 U	0.011 U	0.015 U	0.42 U	0.012 U	0.0095 U	0.01 U	0.4 U	0.014 U	0.0067 U	0.011 U	0.016 UJ	0.012 UJ	0.01 U
Acetone	mg/kg	670,000	0.011 U	**0.03**	0.011 U	**0.032**	0.42 U	**0.54**	**0.01**	**0.14**	0.4 U	**0.038**	**0.021**	**0.04**	0.016 U	**0.094**	**0.082**
Benzene	mg/kg	5.1	0.0055 U	0.0048 U	0.0057 U	0.0074 U	0.21 U	0.0059 U	0.0048 U	0.005 U	0.2 U	0.0069 U	0.0034 U	0.0057 U	0.008 U	0.0059 U	0.005 U
Chloroform	mg/kg	1.4	0.0055 U	0.0048 U	0.0057 U	0.0074 U	0.21 U	0.0059 U	0.0048 U	0.005 U	0.2 U	0.0069 U	0.0034 U	0.0057 U	0.008 U	0.0059 U	0.005 U
Cyclohexane	mg/kg	27,000	0.011 U	0.0097 U	0.011 U	**0.012 J**	**0.21 J**	0.012 U	0.0095 U	0.01 U	0.4 U	0.014 U	0.0067 U	0.011 U	0.016 U	0.012 U	0.01 U
Ethylbenzene	mg/kg	25	0.0055 U	0.0048 U	0.0057 U	0.0074 U	0.21 U	0.0059 U	0.0048 U	0.005 U	0.2 U	0.0069 U	0.0034 U	0.0057 U	0.008 U	0.0059 U	0.005 U
Methyl Acetate	mg/kg	1,200,000	0.055 R	0.048 R	0.057 R	0.074 R	2.1 U	0.059 U	0.048 U	0.05 U	**0.13 J**	0.069 U	0.034 U	0.057 U	0.08 R	0.059 R	0.05 U
Styrene	mg/kg	35,000	0.0055 U	0.0048 U	0.0057 U	0.0074 U	0.21 U	0.0059 U	0.0048 U	0.005 U	0.2 U	0.0069 U	0.0034 U	0.0057 U	0.008 U	0.0059 U	0.005 U
Tetrachloroethene	mg/kg	100	0.0055 U	0.0048 U	0.0057 U	0.0074 U	0.21 U	0.0059 U	0.0048 U	0.005 U	0.2 U	0.0069 U	0.0034 U	0.0057 U	0.008 U	0.0059 U	0.005 U
Toluene	mg/kg	47,000	0.0055 U	0.0048 U	0.0057 U	0.0074 U	**0.45**	0.0059 U	0.0048 U	0.005 U	**0.09 J**	0.0069 U	0.0034 U	0.0057 U	0.008 U	**0.0028 J**	0.005 U
Xylenes	mg/kg	2,800	0.016 U	0.014 U	0.017 U	0.022 U	**0.88**	0.018 U	0.014 U	0.015 U	**0.24 J**	0.021 U	0.01 U	0.017 U	0.024 U	0.018 U	0.015 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	**0.066 J**	0.39 U	0.34 U	0.4 U	N/A	3.7 U	**0.77 J**	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.2**	0.0079 U	**0.011**	**0.093**	**1.2**	**1.3**	**0.64**	**0.49**	**0.33 J**	**0.029**	**0.53**	**0.062**	**0.069**	**0.17**	**0.0084**
2-Methylphenol	mg/kg	41,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.79 U	0.78 U	0.67 U	0.81 U	N/A	7.3 U	7.2 U	7.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	**0.015**	0.0079 U	0.0069 U	**0.024**	**0.017**	**0.096**	**0.1**	**0.071**	**0.0079**	0.0073 U	**0.011**	**0.0054 J**	**0.54**	**0.12**	0.15 U
Acenaphthylene	mg/kg	45,000	**0.0088**	0.0079 U	0.0069 U	**0.049**	**0.016**	**0.11**	**0.072**	**0.0045 J**	**0.013**	**0.017**	**0.0065 J**	**0.015**	**0.024**	**0.019**	**0.022 J**
Acetophenone	mg/kg	120,000	**0.05 J**	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	**0.037**	0.0079 U	**0.0021 J**	**0.069**	**0.047**	**0.14**	**0.2**	**0.07**	**0.04**	**0.0092**	**0.045**	**0.0081**	**0.23**	**0.26**	**0.012**
Benzaldehyde	mg/kg	120,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	**0.082 J**	**0.0037 J**	0.0069 UJ	**0.23**	**0.085**	**0.13**	**0.42**	**0.088**	**0.061 J**	**0.052**	**0.054**	**0.03**	**4.2**	**1**	**0.038**
Benzo[a]pyrene	mg/kg	2.1	**0.069 J**	**0.0024 J**	**0.016 J**	**0.2 J**	**0.075**	**0.13 J**	**0.38**	**0.089**	**0.045 J**	**0.059**	**0.047**	**0.049**	**9.6**	**1**	**0.042**
Benzo[b]fluoranthene	mg/kg	21	**0.18 J**	**0.0076 J**	**0.031 J**	**0.64 J**	**0.16**	**0.52**	**0.99**	**0.28**	**0.13 J**	**0.24**	**0.14**	**0.14**	**11.8**	**2.3**	**0.071**
Benzo[g,h,i]perylene	mg/kg		**0.056 J**	**0.0014 J**	**0.027 J**	**0.095 J**	**0.064**	**0.16**	**0.21**	**0.07**	**0.035 J**	**0.042**	**0.032**	**0.026**	**11.1**	**0.37**	**0.039**
Benzo[k]fluoranthene	mg/kg	210	**0.12 J**	**0.0023 J**	**0.018 J**	**0.45 J**	**0.14**	**0.42**	**0.39**	**0.087**	**0.11 J**	**0.2**	**0.12**	**0.12**	**4.9**	**0.68**	**0.034**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.4 UJ	0.39 U	0.34 UJ	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	mg/kg		0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.14 J**	**0.003 J**	**0.07 J**	**0.19**	**0.13**	**0.3**	**0.68**	**0.25**	**0.085 J**	**0.092**	**0.11**	**0.039**	**5.8**	**1.3**	**0.048**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.022 J**	0.0079 U	**0.01 J**	**0.038 J**	**0.014**	**0.058 J**	**0.1**	**0.04**	**0.011 J**	**0.016**	**0.01**	**0.0091**	**0.95**	**0.18**	**0.011**
Diethylphthalate	mg/kg	660,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**0.13**	**0.0048 J**	**0.0079**	**0.37**	**0.19**	**0.27**	**0.53**	**0.25**	**0.19 J**	**0.088**	**0.14**	**0.041**	**5.4**	**2.7**	**0.07**
Fluorene	mg/kg	30,000	**0.018**	0.0079 U	**0.0017 J**	**0.024**	**0.038**	**0.12**	**0.25**	**0.16**	**0.019**	**0.0019 J**	**0.034**	**0.0016 J**	**0.11**	**0.093**	**0.013 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.024 J**	**0.001 J**	0.0069 UJ	**0.089 J**	**0.032**	**0.079 J**	**0.21**	**0.053**	**0.02 J**	**0.045**	**0.017**	**0.028**	**8.9**	**0.38**	**0.034**
Naphthalene	mg/kg	17	**0.24**	0.0079 U	**0.0027 B**	**0.12**	**0.87**	**0.54**	**0.15**	**0.17**	**0.22 J**	**0.021**	**0.26**	**0.028**	**0.072**	**0.15**	**0.028**
N-Nitrosodiphenylamine	mg/kg	470	0.4 U	0.39 U	0.34 U	0.4 U	N/A	3.7 U	3.6 U	3.7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.24**	**0.0037 J**	**0.007**	**0.25**	**0.62**	**2.3**	**1**	**0.83**	**0.29**	**0.083**	**0.41**	**0.035**	**1**	**1.4**	**0.029**
Pyrene	mg/kg	23,000	**0.1**	**0.0035 J**	**0.025**	**0.28**	**0.19**	**0.24**	**0.59**	**0.22**	**0.17**	**0.067**	**0.13**	**0.037**	**5.5**	**2.5**	**0.065**
PCBs																	
Aroclor 1016	mg/kg	27	0.4 R	N/A	0.34 R	N/A	0.018 U	0.0563 U	N/A	0.054 U	0.018 U	N/A	0.018 U	N/A	0.19 U	0.02 U	0.018 U
Aroclor 1242	mg/kg	0.97	0.4 R	N/A	0.34 R	N/A	0.018 U	0.0563 U	N/A	**0.0346 J**	0.018 U	N/A	0.018 U	N/A	0.19 U	0.02 U	0.018 U
Aroclor 1248	mg/kg	0.94	0.4 R	N/A	0.34 R	N/A	0.018 U	0.0563 U	N/A	0.054 U	0.018 U	N/A	0.018 U	N/A	0.19 U	0.02 U	0.018 U
Aroclor 1254	mg/kg	0.97	0.4 R	N/A	0.34 R	N/A	**0.072**	0.059 R	N/A	0.048 R	0.018 U	N/A	0.018 U	N/A	0.19 U	0.02 U	**0.051**
Aroclor 1260	mg/kg	0.99	0.4 R	N/A	0.34 R	N/A	0.018 U	0.0563 U	N/A	0.054 U	0.018 U	N/A	0.018 U	N/A	0.19 U	0.02 U	**0.058**
Aroclor 1262	mg/kg		0.0531 U	N/A	0.0529 U	N/A	N/A	0.0563 U	N/A	**0.0322 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	2.8 R	N/A	2.4 R	N/A	**0.072 J**	0.059 R	N/A	**0.0966**	0.13 U	N/A	0.12 U	N/A	1.4 U	0.14 U	**0.11 J**
TPH/Oil and Grease																	
Diesel Range Organics	mg/kg	6,200	**252**	7.9 U	**300**	**54.8**	**80.4**	**160**	**56.5**	**49.5**	**50.8**	**30.6**	**107**	**156**	**546**	**61.9**	**12.6**
Gasoline Range Organics	mg/kg	6,200	12.2 U	9.4 U	13.6 U	18.2 U	**8.7**	**9.2 J**	10.3 U	18.3 U	8.7 U	13.4 U	7.5 U	10.4 U	18.4 U	12.3 U	11.6 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-074-SB-5*	B5-075-SB-1*	B5-075-SB-5*	B5-076-SB-1*	B5-076-SB-6*	B5-077-SB-1*	B5-077-SB-5*	B5-081-SB-1*	B5-081-SB-5*	B5-082-SB-1*	B5-082-SB-5*	B5-083-SB-1*	B5-083-SB-5*	B5-084-SB-1*
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	0.008 U	0.0092 U	0.0087 U	0.0096 U	0.0095 U	0.0093 U	0.0091 U	0.011 U	0.01 U	0.012 U	0.0092 U	0.0098 U	0.0076 U	0.0087 U
2-Hexanone	mg/kg	1,300	0.008 U	0.0092 U	0.0087 U	0.0096 U	0.0095 U	0.0093 U	0.0091 U	0.011 U	0.01 U	0.012 U	0.0092 U	0.0098 U	0.0076 U	0.0087 U
Acetone	mg/kg	670,000	0.008 U	0.0092 U	0.0087 U	**0.099**	**0.044**	**0.14**	**0.074**	0.011 U	**0.046**	**0.098**	0.0092 U	**0.049**	0.0076 U	**0.073**
Benzene	mg/kg	5.1	0.004 U	0.0046 U	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	**0.0083**
Chloroform	mg/kg	1.4	0.004 U	0.0046 U	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	0.0044 U
Cyclohexane	mg/kg	27,000	0.008 U	0.0092 U	0.0087 U	0.0096 U	0.0095 U	0.0093 U	0.0091 U	0.011 U	0.01 U	0.012 U	0.0092 U	0.0098 U	0.0076 U	0.0087 U
Ethylbenzene	mg/kg	25	0.004 U	0.0046 U	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	0.0044 U
Methyl Acetate	mg/kg	1,200,000	0.04 U	0.046 U	0.044 U	0.048 U	0.048 U	0.047 U	0.046 U	0.056 U	0.052 U	0.062 U	0.046 U	0.049 U	0.038 U	0.044 U
Styrene	mg/kg	35,000	0.004 U	0.0046 U	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	0.0044 U
Tetrachloroethene	mg/kg	100	0.004 U	**0.0089**	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	0.0044 U
Toluene	mg/kg	47,000	0.004 U	0.0046 U	0.0044 U	0.0048 U	0.0048 U	0.0047 U	0.0046 U	0.0056 U	0.0052 U	0.0062 U	0.0046 U	0.0049 U	0.0038 U	**0.0021 J**
Xylenes	mg/kg	2,800	0.012 U	0.014 U	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.017 U	0.016 U	0.019 U	0.014 U	0.015 U	0.011 U	0.013 U
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	mg/kg	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.0012 J**	0.0071 U	0.0073 U	**0.11**	**0.012**	**0.089**	**0.017**	**0.023 J**	**0.0016 J**	0.15 U	0.0079 U	**0.068 J**	**0.0011 J**	**0.013**
2-Methylphenol	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	0.0074 U	0.0071 U	0.0073 U	**0.033**	**0.0023 J**	**0.28**	**0.02**	0.15 U	0.0082 U	0.15 U	0.0079 U	0.15 U	0.008 U	**0.019**
Acenaphthylene	mg/kg	45,000	0.0074 U	0.0071 U	0.0073 U	**0.37**	**0.021**	**0.79**	**0.19**	0.15 U	0.0082 U	0.15 U	0.0079 U	**0.02 J**	0.008 U	**0.0024 J**
Acetophenone	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	**0.001 J**	**0.00084 J**	0.0073 U	**0.46**	**0.022**	**1.7**	**0.19**	0.15 U	**0.0013 J**	0.15 U	0.0079 U	**0.071 J**	**0.0011 J**	**0.029**
Benzaldehyde	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	**0.0027 J**	**0.0026 J**	0.0073 U	**1.1**	**0.095**	**4.8**	**0.65**	**0.057 J**	**0.0044 J**	**0.055 J**	0.0079 U	**0.36**	**0.0022 J**	**0.23**
Benzo[a]pyrene	mg/kg	2.1	**0.0016 J**	**0.0023 J**	0.0073 U	**1.8**	**0.097**	4.8	**0.69**	0.15 U	**0.0031 J**	**0.022 J**	0.0079 U	**0.34 J**	**0.0043 J**	**0.34**
Benzo[b]fluoranthene	mg/kg	21	**0.0041 J**	**0.0057 J**	**0.0013 J**	**2.5**	**0.16**	**6.2**	**1.1**	**0.069 J**	**0.0094**	**0.056 J**	**0.00071 J**	**0.49**	**0.01**	**0.78**
Benzo[g,h,i]perylene	mg/kg		**0.0021 J**	**0.0026 J**	0.0073 U	**1.3**	**0.071**	**3.1**	**0.31**	0.15 U	**0.0026 J**	**0.026 J**	0.0079 U	**0.31 J**	**0.0045 J**	**0.14**
Benzo[k]fluoranthene	mg/kg	210	**0.0034 J**	**0.0026 J**	0.0073 U	**1.2**	**0.069**	**2.3**	**0.42**	**0.057 J**	**0.0077 J**	**0.021 J**	0.0079 U	**0.22 J**	**0.0086**	**0.77**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.0019 J**	**0.0043 J**	**0.00079 J**	**1**	**0.097**	**5.1**	**0.62**	**0.024 J**	**0.0037 J**	**0.027 J**	0.0079 U	**0.47**	**0.0092**	**0.33**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0074 U	0.0071 U	0.0073 U	**0.4**	**0.026**	**0.87**	**0.13**	0.15 U	0.0082 U	0.15 U	0.0079 U	**0.11 J**	**0.0022 J**	**0.047**
Diethylphthalate	mg/kg	660,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**0.0051 J**	**0.0065 J**	**0.0018 J**	**4.3**	**0.17**	**11.9**	**1.2**	**0.028 J**	**0.0078 J**	**0.042 J**	**0.00057 J**	**0.47**	**0.0029 J**	**0.29**
Fluorene	mg/kg	30,000	0.0074 U	0.0071 U	**0.00074 J**	**0.2**	**0.0046 J**	**0.37**	**0.032**	**0.016 J**	**0.00072 J**	0.15 U	0.0079 U	**0.019 J**	0.008 U	**0.012**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.0014 J**	**0.0021 J**	0.0073 U	**1.1**	**0.069**	**2.7**	**0.36**	0.15 U	**0.0025 J**	0.15 U	0.0079 U	**0.25 J**	**0.002 J**	**0.12**
Naphthalene	mg/kg	17	**0.0029 J**	**0.0021 J**	**0.0014 J**	**0.3**	**0.028**	**0.23**	**0.048**	**0.061 J**	**0.004 J**	**0.063 J**	**0.002 J**	**0.093 J**	**0.0021 J**	**0.013**
N-Nitrosodiphenylamine	mg/kg	470	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.0059 J**	**0.0048 J**	**0.0036 J**	**3**	**0.06**	**5.4**	**0.5**	**0.068 J**	**0.0052 J**	**0.038 J**	**0.00079 J**	**0.39**	**0.0065 J**	**0.11**
Pyrene	mg/kg	23,000	**0.0044 J**	**0.0056 J**	**0.0016 J**	**3.5**	**0.16**	**11.3**	**1**	**0.045 J**	**0.0066 J**	**0.053 J**	0.0079 U	**0.45**	**0.0057 J**	**0.28**
PCBs																
Aroclor 1016	mg/kg	27	N/A	0.018 U	N/A	1.8 U	N/A	1.9 U	N/A	0.18 U	N/A	0.19 U	N/A	0.19 U	N/A	0.018 U
Aroclor 1242	mg/kg	0.97	N/A	0.018 U	N/A	1.8 U	N/A	1.9 U	N/A	0.18 U	N/A	0.19 U	N/A	0.19 U	N/A	0.018 U
Aroclor 1248	mg/kg	0.94	N/A	0.018 U	N/A	1.8 U	N/A	1.9 U	N/A	0.18 U	N/A	0.19 U	N/A	0.19 U	N/A	0.018 U
Aroclor 1254	mg/kg	0.97	N/A	0.018 U	N/A	1.8 U	N/A	1.9 U	N/A	0.18 U	N/A	0.19 U	N/A	0.19 U	N/A	0.018 U
Aroclor 1260	mg/kg	0.99	N/A	0.018 U	N/A	**11.3**	N/A	**13.6**	N/A	0.18 U	N/A	0.19 U	N/A	0.19 U	N/A	0.018 U
Aroclor 1262	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	0.12 U	N/A	**11.3 J**	N/A	**13.6**	N/A	1.3 U	N/A	1.3 U	N/A	1.4 U	N/A	0.13 U
TPH/Oil and Grease																
Diesel Range Organics	mg/kg	6,200	**7.6**	**43.8**	**13**	**140**	**34.2**	**192**	**131**	**401**	8.3 U	**259**	7.9 U	**285**	**37.2**	**20.9**
Gasoline Range Organics	mg/kg	6,200	9 U	9.2 U	10.1 U	11.2 U	9.7 U	10.3 U	9.9 U	11.8 U	10.9 U	12.7 U	8.6 U	10.4 U	9.1 U	11.6 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-085-SB-1	B5-090-SB-1	B5-090-SB-4.75	B5-091-SB-1*	B5-091-SB-7*	B5-104-SB-1*	B5-104-SB-5*	B5-105-SB-1*	B5-105-SB-5*	B5-106-SB-1*	B5-106-SB-5*	B5-107-SB-1*	B5-107-SB-6*	B5-108-SB-1
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	0.0097 U	0.011 U	**0.0031 J**	0.0078 U	0.0084 U	0.0097 U	0.011 U	0.0066 U	0.0092 U	0.011 U	0.011 U	0.013 U	0.01 U	0.01 U
2-Hexanone	mg/kg	1,300	0.0097 U	0.011 U	0.009 U	0.0078 U	0.0084 U	0.0097 U	0.011 U	0.0066 U	0.0092 U	0.011 U	0.011 U	0.013 U	0.01 U	0.01 U
Acetone	mg/kg	670,000	**0.07**	0.011 U	**0.035**	**0.096**	0.0084 U	0.0097 U	0.011 U	**0.052**	**0.035**	0.011 U	**0.028**	0.013 U	**0.031**	**0.044 J**
Benzene	mg/kg	5.1	**0.0064**	0.0053 U	0.0045 U	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	**0.0024 J**	0.0055 U	0.0053 U	0.0063 U	0.005 U	0.0051 U
Chloroform	mg/kg	1.4	0.0048 U	0.0053 U	0.0045 U	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	0.0046 U	0.0055 U	0.0053 U	0.0063 U	0.005 U	0.0051 U
Cyclohexane	mg/kg	27,000	0.0097 U	0.011 U	0.009 U	0.0078 U	0.0084 U	0.0097 U	0.011 U	0.0066 U	**0.0059 J**	0.011 U	0.011 U	0.013 U	0.01 U	0.01 U
Ethylbenzene	mg/kg	25	0.0048 U	0.0053 U	**0.003 J**	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	0.0046 U	0.0055 U	0.0053 U	0.0063 U	0.005 U	0.0051 U
Methyl Acetate	mg/kg	1,200,000	0.048 U	0.053 U	0.045 U	0.039 U	0.042 U	0.049 U	0.055 U	0.033 U	0.046 U	0.055 U	0.053 U	0.063 U	0.05 U	0.051 U
Styrene	mg/kg	35,000	0.0048 U	0.0053 U	0.0045 U	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	0.0046 U	0.0055 U	0.0053 U	0.0063 U	0.005 U	0.0051 U
Tetrachloroethene	mg/kg	100	0.0048 U	0.0053 U	0.0045 U	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	0.0046 U	0.0055 U	0.0053 U	**0.0041 J**	**0.014**	0.0051 U
Toluene	mg/kg	47,000	**0.0043 J**	0.0053 U	0.0045 U	0.0039 U	0.0042 U	0.0049 U	0.0055 U	0.0033 U	**0.0019 J**	0.0055 U	0.0053 U	0.0063 U	0.005 U	0.0051 U
Xylenes	mg/kg	2,800	0.015 U	0.016 U	**0.0068 J**	0.012 U	0.013 U	0.015 U	0.016 U	0.0099 U	0.014 U	0.017 U	0.016 U	0.019 U	0.015 U	0.015 U
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	mg/kg	200	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.037**	**0.025 J**	**0.0063 J**	**0.059**	**0.034**	**0.047**	0.0082 U	**0.015**	0.0072 U	**0.006 J**	**0.0017 J**	**0.0063 J**	**0.02 J**	**0.15**
2-Methylphenol	mg/kg	41,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	0.15 U	0.16 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	**0.032**	**0.0026 J**	**0.035**	**0.054**	**0.054**	**0.0042 J**	0.0082 U	**0.0029 J**	0.0072 U	**0.0012 J**	0.0071 U	0.0077 U	0.15 U	**0.027**
Acenaphthylene	mg/kg	45,000	**0.0063 J**	**0.0027 J**	0.008 U	**0.019**	**0.0026 J**	**0.005 J**	0.0082 U	**0.015**	**0.0009 J**	**0.0012 J**	**0.013**	**0.002 J**	**0.017 J**	**0.13**
Acetophenone	mg/kg	120,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	**0.1**	**0.019**	**0.023**	**0.25**	**0.038**	**0.022**	0.0082 U	**0.019**	**0.0016 J**	**0.0034 J**	**0.0071**	**0.0028 J**	0.15 U	**0.21**
Benzaldehyde	mg/kg	120,000	N/A	0.073 UJ	0.08 UJ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	**0.82**	**0.24 J**	**0.0071 J**	**0.75**	**0.086**	**0.049**	0.0082 U	**0.046**	**0.0033 J**	**0.014**	**0.021**	**0.011**	**0.07 J**	**1.4**
Benzo[a]pyrene	mg/kg	2.1	**1.1**	**0.22 J**	**0.0064 J**	**0.95**	**0.11**	**0.034**	0.0082 U	**0.039**	**0.002 J**	**0.013**	**0.031**	**0.0083**	**0.051 J**	**1.1**
Benzo[b]fluoranthene	mg/kg	21	**3.5**	**0.63 J**	**0.02**	**3.1**	**0.29**	**0.11**	**0.0015 J**	**0.1**	**0.0051 J**	**0.027**	**0.05**	**0.022**	**0.11 J**	**4.5 J**
Benzo[g,h,i]perylene	mg/kg		**0.36**	**0.19 J**	**0.0066 J**	**0.44**	**0.035**	**0.018**	0.0082 U	**0.021**	0.0072 U	**0.0099**	**0.02**	**0.0081**	**0.035 J**	**0.53**
Benzo[k]fluoranthene	mg/kg	210	**3.4**	**0.62 J**	**0.02**	**3.1**	**0.29**	**0.036**	**0.00082 J**	**0.034**	**0.0042 J**	**0.008**	**0.023**	**0.0081**	**0.037 J**	**0.8**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	mg/kg		N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.99**	**0.37 J**	**0.014**	**0.86**	**0.12**	**0.11**	**0.001 J**	**0.062**	**0.0024 J**	**0.017**	**0.024**	**0.025**	**0.053 J**	**1.4**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.14**	**0.072 J**	**0.0018 J**	**0.14**	**0.012**	**0.0077**	0.0082 U	**0.0061 J**	0.0072 U	**0.0029 J**	**0.008**	**0.0039 J**	0.15 U	**0.27**
Diethylphthalate	mg/kg	660,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**1.1**	**0.37 J**	**0.025**	**2.6**	**0.23**	**0.17**	**0.0015 J**	**0.12**	**0.0054 J**	**0.031**	**0.018**	**0.035**	**0.088 J**	**3.1**
Fluorene	mg/kg	30,000	**0.025**	**0.0025 J**	**0.025**	**0.055**	**0.042**	**0.0038 J**	0.0082 U	**0.0086**	**0.0011 J**	**0.0023 J**	**0.0012 J**	**0.0012 J**	0.15 U	**0.033**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.33**	**0.17 J**	**0.0051 J**	**0.39**	**0.031**	**0.017**	0.0082 U	**0.019**	0.0072 U	**0.0084**	**0.02**	**0.0048 J**	**0.03 J**	**0.61**
Naphthalene	mg/kg	17	**0.028**	**0.03 J**	**0.024**	**0.046**	**0.037**	**0.061**	**0.002 J**	**0.062**	**0.0029 J**	**0.01 B**	**0.0035 J**	**0.019**	**0.26 B**	**0.46**
N-Nitrosodiphenylamine	mg/kg	470	N/A	0.073 U	0.08 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.32**	**0.14 J**	**0.12**	**1.1**	**0.18**	**0.13**	**0.0013 J**	**0.074**	**0.0043 J**	**0.021**	**0.0065 J**	**0.016**	**0.053 J**	**0.68**
Pyrene	mg/kg	23,000	**1.4**	**0.32 J**	**0.016**	**2.1**	**0.18**	**0.13**	**0.0012 J**	**0.11**	**0.0042 J**	**0.026**	**0.019**	**0.031**	**0.073 J**	**3**
PCBs																
Aroclor 1016	mg/kg	27	**0.14**	0.0541 U	N/A	0.018 U	N/A	0.018 U	N/A	0.019 U	N/A	0.018 U	N/A	**0.16**	N/A	0.093 U
Aroclor 1242	mg/kg	0.97	0.093 U	0.0541 U	N/A	0.018 U	N/A	0.018 U	N/A	0.019 U	N/A	0.018 U	N/A	0.096 U	N/A	**0.78**
Aroclor 1248	mg/kg	0.94	0.093 U	0.0541 U	N/A	0.018 U	N/A	0.018 U	N/A	0.019 U	N/A	0.018 U	N/A	0.096 U	N/A	0.093 U
Aroclor 1254	mg/kg	0.97	0.093 U	0.0541 U	N/A	0.018 U	N/A	**0.15**	N/A	0.019 U	N/A	0.018 U	N/A	0.096 U	N/A	0.093 U
Aroclor 1260	mg/kg	0.99	0.093 U	0.0541 U	N/A	0.018 U	N/A	0.018 U	N/A	**0.042**	N/A	0.018 U	N/A	0.096 U	N/A	0.093 U
Aroclor 1262	mg/kg		N/A	0.0541 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	0.65 U	0.0541 U	N/A	0.13 U	N/A	**0.15**	N/A	**0.042 J**	N/A	0.13 U	N/A	0.67 U	N/A	**0.78**
TPH/Oil and Grease																
Diesel Range Organics	mg/kg	6,200	**88.9**	**28.6**	**9.3**	**205**	**24.5**	**166**	**4.6 J**	**91.8**	**6.4 J**	**12.1**	**7 J**	**24.9**	**41.6**	**201**
Gasoline Range Organics	mg/kg	6,200	11.5 U	10.8 U	12 U	8.2 U	8.8 U	10.5 U	10.1 U	**24.5**	6.1 U	11.1 U	11.1 U	10 U	10.8 U	48.8 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-108-SB-5	B5-109-SB-1*	B5-110-SB-1*	B5-110-SB-4*	B5-111-SB-1*	B5-111-SB-4*	B5-114-SB-1	B5-115-SB-1	B5-118-SB-1	B5-119-SB-1	B5-119-SB-5	B5-120-SB-1	B5-120-SB-4.5	B5-121-SB-1	B5-121-SB-5
Volatile Organic Compounds																	
2-Butanone (MEK)	mg/kg	190,000	0.012 U	0.012 U	**0.0035 J**	**0.0066 J**	**0.0058 J**	**0.0025 J**	0.012 U	0.016 U	0.01 U	0.011 U	0.011 U	0.01 U	0.012 U	0.011 U	0.01 U
2-Hexanone	mg/kg	1,300	0.012 U	0.012 U	0.012 U	0.01 U	0.013 U	0.01 U	0.012 UJ	0.016 UJ	0.01 UJ	0.011 UJ	0.011 UJ	0.01 UJ	0.012 UJ	0.011 UJ	0.01 UJ
Acetone	mg/kg	670,000	**0.057 J**	0.012 U	**0.043**	**0.034**	**0.05**	**0.022**	0.012 U	0.016 U	**0.061**	0.011 U	0.011 U	0.01 U	**0.084**	0.011 U	**0.049**
Benzene	mg/kg	5.1	0.0061 U	0.0058 U	0.0059 U	**0.0094**	0.0067 U	**0.0023 J**	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 U	0.0061 U	0.0055 U	0.0052 U
Chloroform	mg/kg	1.4	0.0061 U	0.0058 U	0.0059 U	0.0051 U	0.0067 U	0.0052 U	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 U	0.0061 U	0.0055 U	0.0052 U
Cyclohexane	mg/kg	27,000	0.012 U	0.012 U	0.012 U	0.01 U	0.013 U	0.01 U	0.012 U	0.016 U	0.01 U	0.011 U	0.011 U	0.01 UJ	0.012 U	0.011 U	0.01 U
Ethylbenzene	mg/kg	25	0.0061 U	0.0058 U	0.0059 U	0.0051 U	0.0067 U	0.0052 U	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 U	0.0061 U	0.0055 U	0.0052 U
Methyl Acetate	mg/kg	1,200,000	0.061 U	0.058 U	0.059 U	0.051 U	0.067 U	0.052 U	0.058 R	0.081 R	0.05 R	0.056 R	0.053 R	0.052 R	0.061 R	0.055 R	0.052 R
Styrene	mg/kg	35,000	0.0061 U	0.0058 U	0.0059 U	0.0051 U	0.0067 U	0.0052 U	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 R	0.0061 U	0.0055 U	0.0052 U
Tetrachloroethene	mg/kg	100	0.0061 U	0.0058 U	0.0059 U	0.0051 U	0.0067 U	0.0052 U	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 U	0.0061 U	0.0055 U	0.0052 U
Toluene	mg/kg	47,000	0.0061 U	0.0058 U	0.0059 U	**0.0036 J**	0.0067 U	0.0052 U	0.0058 U	0.0081 U	0.005 U	0.0056 U	0.0053 U	0.0052 U	0.0061 U	0.0055 U	0.0052 U
Xylenes	mg/kg	2,800	0.018 U	0.017 U	0.018 U	**0.0065 J**	0.02 U	0.016 U	0.017 U	0.024 U	0.015 U	0.017 U	0.016 U	0.016 U	0.018 U	0.017 U	0.016 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.024 J**	**0.0034 J**	**0.072**	**5.5**	**0.017**	**0.01 B**	**0.0066 J**	**1**	**0.051**	0.0072 U	0.0083 U	**0.066**	0.0075 U	**0.0073**	0.0076 U
2-Methylphenol	mg/kg	41,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	N/A	7.3 U	8 U	7.6 U	7 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	0.15 U	**0.00073 J**	**0.0076**	**0.058**	**0.0012 J**	**0.001 J**	0.0075 U	**0.013**	**0.049**	0.0072 U	0.0083 U	**0.15 J**	0.0075 U	**0.011**	0.0076 U
Acenaphthylene	mg/kg	45,000	0.15 U	**0.00095 J**	**0.0033 J**	**0.16**	**0.0077**	**0.0011 J**	0.0075 U	**0.011**	**0.035**	**0.00072 J**	0.0083 U	**0.012**	0.0075 U	**0.0025 J**	0.0076 U
Acetophenone	mg/kg	120,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	**0.015 J**	**0.0022 J**	**0.026**	**0.55**	**0.015**	**0.0094**	**0.0016 J**	**0.038**	**0.097**	**0.0022 J**	0.0083 U	**0.13 J**	**0.001 J**	**0.018**	**0.0014 J**
Benzaldehyde	mg/kg	120,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	**0.13 J**	**0.0062 J**	**0.038**	**0.79**	**0.066**	**0.038**	**0.0037 J**	**0.072**	**0.44**	**0.011**	0.0083 U	**0.55 J**	**0.0027 J**	**0.12**	**0.012**
Benzo[a]pyrene	mg/kg	2.1	**0.096 J**	**0.0059 J**	**0.035**	**0.93**	**0.058**	**0.032**	0.0075 UJ	**0.06**	**0.55**	**0.012**	0.0083 U	**0.69 J**	**0.0017 J**	**0.15**	**0.01**
Benzo[b]fluoranthene	mg/kg	21	**0.19**	**0.011**	**0.079**	**1.4**	**0.11**	**0.085**	**0.0067 J**	**0.16**	**1.2**	**0.026**	0.0083 U	**1.1**	**0.0047 J**	**0.35**	**0.014**
Benzo[g,h,i]perylene	mg/kg		**0.07 J**	**0.0057 J**	**0.019**	**0.43**	**0.047**	**0.032**	**0.0017 J**	**0.042**	**0.19**	**0.0033 J**	0.0083 U	**0.49**	**0.0019 J**	**0.069**	**0.0078**
Benzo[k]fluoranthene	mg/kg	210	**0.061 J**	**0.005 J**	**0.028**	**0.59**	**0.089**	**0.068**	**0.0067 J**	**0.16**	**1.2**	**0.026**	0.0083 U	**0.46 J**	**0.0044 J**	**0.35**	**0.0053 J**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	mg/kg		N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.14 J**	**0.0086**	**0.059**	**0.82**	**0.072**	**0.047**	**0.0045 J**	**0.14**	**0.55**	**0.011**	**0.00071 J**	**0.65 J**	**0.002 J**	**0.24**	**0.011**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.023 J**	**0.0019 J**	**0.0048 J**	**0.16**	**0.013**	**0.0089**	0.0075 UJ	**0.0096**	**0.083**	0.0072 U	0.0083 U	**0.16**	0.0075 U	**0.024**	**0.0023 J**
Diethylphthalate	mg/kg	660,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**0.15 J**	**0.014**	**0.11**	**1.9**	**0.1**	**0.087**	**0.0056 J**	**0.11**	**0.96**	**0.018**	**0.00074 J**	**0.88**	**0.0035 J**	**0.35**	**0.015**
Fluorene	mg/kg	30,000	0.15 U	**0.0019 J**	**0.015**	**0.23**	**0.0033 J**	**0.0014 J**	0.0075 U	**0.045**	**0.053**	0.0072 U	0.0083 U	**0.044**	0.0075 U	**0.011**	0.0076 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.059 J**	**0.0048 J**	**0.015**	**0.4**	**0.039**	**0.025**	0.0075 UJ	**0.018**	**0.19**	**0.0028 J**	0.0083 U	**0.53 J**	**0.0015 J**	**0.068**	**0.0065 J**
Naphthalene	mg/kg	17	0.15 U	**0.0063 J**	**0.063**	**14.5**	**0.044**	**0.025 B**	**0.0059 B**	**0.6**	**0.063**	**0.0024 B**	0.0083 U	**0.056 J**	0.0075 U	**0.0073**	**0.0021 B**
N-Nitrosodiphenylamine	mg/kg	470	N/A	N/A	3.7 U	4 U	3.8 U	3.5 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.052 J**	**0.011**	**0.16**	**1.6**	**0.067**	**0.047**	**0.0077**	**0.43**	**0.51**	**0.0046 J**	**0.0012 J**	**0.49 J**	**0.0027 J**	**0.21**	**0.0046 J**
Pyrene	mg/kg	23,000	**0.17**	**0.012**	**0.098**	**1.4**	**0.086**	**0.072**	**0.005 J**	**0.11**	**0.86**	**0.018**	**0.0011 J**	**0.78**	**0.0034 J**	**0.31**	**0.015**
PCBs																	
Aroclor 1016	mg/kg	27	N/A	0.019 U	0.0562 U	N/A	0.0545 U	N/A	0.019 U	0.018 U	0.018 U	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A
Aroclor 1242	mg/kg	0.97	N/A	0.019 U	0.0562 U	N/A	0.0545 U	N/A	0.019 U	0.018 U	0.018 U	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.019 U	0.0562 U	N/A	0.0545 U	N/A	0.019 U	0.018 U	0.018 U	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.019 U	0.0562 U	N/A	0.0545 U	N/A	0.019 U	0.018 U	0.018 U	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.019 U	0.0562 U	N/A	0.0545 U	N/A	0.019 U	0.018 U	0.018 U	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A
Aroclor 1262	mg/kg		N/A	N/A	0.0562 U	N/A	0.0545 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	0.13 U	0.13 R	N/A	0.13 R	N/A	0.13 U	0.13 U	0.13 U	0.13 U	N/A	0.13 U	N/A	0.12 U	N/A
TPH/Oil and Grease																	
Diesel Range Organics	mg/kg	6,200	**330**	**14.4**	**79.7**	**338**	**29.7**	**10.6**	**12.2**	**75.2**	**35.5**	**37**	8.2 U	**11.4 J**	7.5 U	**33.1**	7.6 U
Gasoline Range Organics	mg/kg	6,200	69.4 U	14.2 U	10.5 U	8 U	12.7 U	10.4 U	12.6 U	10.4 U	9.4 U	12.5 U	10.7 U	13.1 U	10.7 U	10.9 U	11.2 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-136-SB-1	B5-136-SB-8	B5-139-SB-1*	B5-139-SB-7*	B5-141-SB-1*	B5-151-SB-1	B5-151-SB-5	B5-153-SB-1	B5-156-SB-1*	B5-156-SB-6*	B5-157-SB-1*	B5-157-SB-5*	B5-158-SB-1*	B5-158-SB-5*	B5-159-SB-1*
Volatile Organic Compounds																	
2-Butanone (MEK)	mg/kg	190,000	0.011 U	0.0099 U	0.0098 U	0.0099 U	0.0097 U	0.0089 U	0.0091 U	0.0071 U	0.011 U	0.012 U	**0.018**	**0.012 J**	**0.0074 J**	**0.0078 J**	0.01 U
2-Hexanone	mg/kg	1,300	0.011 U	0.0099 U	0.0098 U	0.0099 U	0.0097 U	0.0089 U	0.0091 U	0.0071 U	0.011 U	0.012 U	0.012 U	0.014 U	0.011 U	0.012 U	0.01 U
Acetone	mg/kg	670,000	**0.047**	0.0099 U	**0.096**	0.0099 U	0.0097 U	**0.015**	**0.038**	**0.013**	**0.094**	**0.057**	**0.11**	**0.083**	**0.052**	**0.055**	**0.094**
Benzene	mg/kg	5.1	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	**0.0037 J**	**0.0021 J**	**0.0032 J**	0.0061 U	**0.0033 J**
Chloroform	mg/kg	1.4	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	0.006 U	0.007 U	0.0056 U	0.0061 U	0.005 U
Cyclohexane	mg/kg	27,000	0.011 U	0.0099 U	0.0098 U	0.0099 U	0.0097 U	0.0089 U	0.0091 U	0.0071 U	0.011 U	0.012 U	**0.0095 J**	0.014 U	0.011 U	0.012 U	0.01 U
Ethylbenzene	mg/kg	25	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	0.006 U	0.007 U	0.0056 U	0.0061 U	0.005 U
Methyl Acetate	mg/kg	1,200,000	0.055 U	0.049 U	0.049 U	0.05 U	0.049 U	0.045 U	0.046 U	0.035 U	0.056 U	0.061 U	0.06 U	0.07 U	0.056 U	0.061 U	0.05 U
Styrene	mg/kg	35,000	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	0.006 U	0.007 U	0.0056 U	0.0061 U	0.005 U
Tetrachloroethene	mg/kg	100	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	0.006 U	0.007 U	0.0056 U	0.0061 U	0.005 U
Toluene	mg/kg	47,000	0.0055 U	0.0049 U	0.0049 U	0.005 U	0.0049 U	0.0045 U	0.0046 U	0.0035 U	0.0056 U	0.0061 U	**0.0031 J**	0.007 U	**0.0026 J**	0.0061 U	**0.0023 J**
Xylenes	mg/kg	2,800	0.017 U	0.015 U	0.015 U	0.015 U	0.015 U	0.013 U	0.014 U	0.011 U	0.017 U	0.018 U	0.018 U	0.021 U	0.017 U	0.018 U	0.015 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
2-Methylnaphthalene	mg/kg	3,000	0.15 U	0.008 U	**0.0024 J**	0.0082 U	**0.073**	**0.076 J**	0.14 U	**0.035**	**0.046**	**0.0077**	**0.34**	**0.28**	**0.031**	**0.097**	**0.067**
2-Methylphenol	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.2 U	7.5 U	7.3 U	8.3 U	N/A
Acenaphthene	mg/kg	45,000	0.15 U	0.008 U	0.0079 U	0.0082 U	**0.027**	0.15 U	0.14 U	**0.0019 J**	**0.0058 J**	**0.002 J**	**0.084**	**0.1**	**0.0061 J**	**0.013**	**0.015**
Acenaphthylene	mg/kg	45,000	0.15 U	0.008 U	**0.0012 J**	0.0082 U	**0.022**	0.15 U	0.14 U	**0.0019 J**	**0.061**	**0.0096**	**0.022**	**0.041**	**0.0065 J**	**0.036**	**0.12**
Acetophenone	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Anthracene	mg/kg	230,000	0.15 U	0.008 U	**0.0025 J**	0.0082 U	**0.077**	0.15 U	0.14 U	**0.0062 J**	**0.05**	**0.015**	**0.2**	**0.23**	**0.042**	**0.13**	**0.18**
Benzaldehyde	mg/kg	120,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Benz[a]anthracene	mg/kg	21	**0.065 J**	0.008 U	**0.0072 J**	0.0082 U	**0.22**	**0.16**	**0.14**	**0.015**	**0.39**	**0.079**	**0.44**	**0.4**	**0.13**	**0.47**	**0.8**
Benzo[a]pyrene	mg/kg	2.1	**0.028 J**	0.008 U	**0.0072 J**	0.0082 U	**0.18**	0.15 U	0.14 U	**0.012**	**0.36**	**0.077**	**0.29**	**0.27**	**0.21**	**0.18**	**1.2**
Benzo[b]fluoranthene	mg/kg	21	**0.095 J**	0.008 U	**0.014**	0.0082 U	**0.69**	**0.21**	0.14 U	**0.04**	**0.86**	**0.16**	**0.59**	**0.51**	**0.42**	**0.53**	**2.5**
Benzo[g,h,i]perylene	mg/kg		**0.041 J**	0.008 U	**0.0069 J**	0.0082 U	**0.12**	**0.14 J**	**0.12 J**	**0.0091**	**0.19**	**0.045**	**0.081**	**0.091**	**0.2**	**0.053**	**0.97**
Benzo[k]fluoranthene	mg/kg	210	**0.09 J**	0.008 U	**0.0067 J**	0.0082 U	**0.68**	**0.12 J**	0.14 U	**0.033**	**0.27**	**0.057**	**0.29**	**0.24**	**0.13**	**0.53**	**0.85**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Carbazole	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Chrysene	mg/kg	2,100	**0.046 J**	0.008 U	**0.0097**	0.0082 U	**0.5**	**0.15**	**0.15**	**0.027**	**0.41**	**0.085**	**0.4**	**0.38**	**0.2**	**0.47**	**0.93**
Dibenz[a,h]anthracene	mg/kg	2.1	0.15 U	0.008 U	0.0079 U	0.0082 U	**0.043**	0.15 U	0.14 U	**0.0037 J**	**0.084**	**0.021**	**0.045**	**0.045**	**0.057**	**0.022**	**0.33**
Diethylphthalate	mg/kg	660,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Fluoranthene	mg/kg	30,000	**0.057 J**	0.008 U	**0.014**	**0.0006 J**	**0.64**	**0.4**	**0.32**	**0.037**	**0.48**	**0.098**	**1.1**	**0.52**	**0.26**	**0.72**	**1.2**
Fluorene	mg/kg	30,000	0.15 U	0.008 U	0.0079 U	0.0082 U	**0.014**	0.15 UJ	0.14 UJ	**0.0025 J**	**0.0084**	**0.0025 J**	**0.09**	**0.098**	**0.0053 J**	**0.034**	**0.027**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.026 J**	0.008 U	**0.0063 J**	0.0082 U	**0.11**	0.15 U	0.14 U	**0.0069 J**	**0.21**	**0.05**	**0.083**	**0.1**	**0.15**	**0.044**	**0.85**
Naphthalene	mg/kg	17	**0.05 B**	0.008 U	**0.0051 J**	**0.0023 J**	**0.15**	**0.15**	0.14 U	**0.036**	**0.24**	**0.029**	**1.4**	**0.16**	**0.029 B**	**0.081**	**0.65**
N-Nitrosodiphenylamine	mg/kg	470	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.6 U	3.7 U	3.6 U	4.2 U	N/A
Phenanthrene	mg/kg		**0.056 J**	**0.0024 J**	**0.0069 J**	**0.001 J**	**0.23**	0.15 U	0.14 U	**0.046**	**0.12**	**0.044**	**1**	**0.86**	**0.12**	**0.3**	**0.51**
Pyrene	mg/kg	23,000	**0.049 J**	0.008 U	**0.013**	0.0082 U	**0.53**	**0.37**	**0.3**	**0.03**	**0.47**	**0.086**	**0.92**	**0.45**	**0.27**	**0.72**	**1**
PCBs																	
Aroclor 1016	mg/kg	27	0.19 U	N/A	0.02 U	N/A	0.094 U	0.018 U	N/A	0.018 U	0.37 U	N/A	0.0537 U	N/A	0.0539 U	N/A	9.1 U
Aroclor 1242	mg/kg	0.97	0.19 U	N/A	0.02 U	N/A	0.094 U	0.018 U	N/A	**0.31**	0.37 U	N/A	**0.137**	N/A	0.0539 U	N/A	9.1 U
Aroclor 1248	mg/kg	0.94	0.19 U	N/A	0.02 U	N/A	0.094 U	0.018 U	N/A	0.018 U	0.37 U	N/A	0.0537 U	N/A	0.0539 U	N/A	9.1 U
Aroclor 1254	mg/kg	0.97	0.19 U	N/A	0.02 U	N/A	0.094 U	0.018 U	N/A	0.018 U	0.37 U	N/A	**0.098**	N/A	0.0539 U	N/A	9.1 U
Aroclor 1260	mg/kg	0.99	0.19 U	N/A	0.02 U	N/A	0.094 U	**0.014 J**	N/A	0.018 U	**3**	N/A	0.0537 U	N/A	0.0539 U	N/A	**36.1**
Aroclor 1262	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.116**	N/A	0.0539 U	N/A	N/A
PCBs (total)	mg/kg	0.97	1.3 U	N/A	0.14 U	N/A	0.66 U	0.13 U	N/A	**0.31**	**3**	N/A	**0.351**	N/A	0.13 R	N/A	**36.1 J**
TPH/Oil and Grease																	
Diesel Range Organics	mg/kg	6,200	**150**	**14.3**	**8.4**	**4.9 J**	**78.2**	**43.7**	**21.2**	**31.3**	**50.5**	**24.3**	**196**	**133**	**469**	**2,090**	**215**
Gasoline Range Organics	mg/kg	6,200	9.5 U	9.6 U	11.3 U	11.5 U	9.1 U	9.8 U	7.9 U	6.4 U	13.2 U	12.2 U	14.2 U	18.6 U	12.9 U	12.4 U	12.4 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
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Table 1
Summary of Organics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint, Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-159-SB-5*	B5-160-SB-1*	B5-160-SB-4*	B5-170-SB-1*	B5-171-SB-1*	B5-172-SB-1*	B5-172-SB-5*	B5-173-SB-1*	B5-173-SB-5*	B5-174-SB-1*	B5-179-SB-1	B5-179-SB-9	B5-180-SB-1	B5-180-SB-5
Volatile Organic Compounds																
2-Butanone (MEK)	mg/kg	190,000	0.008 U	0.011 U	0.013 U	**0.0086 J**	**0.0067 J**	**0.0066 J**	0.016 U	0.0093 U	0.013 U	0.01 U	0.0085 U	0.0087 U	0.011 U	0.012 U
2-Hexanone	mg/kg	1,300	0.008 U	0.011 U	0.013 U	0.012 U	0.0089 U	0.0092 U	0.016 U	0.0093 U	0.013 U	0.01 U	0.0085 U	0.0087 U	0.011 U	0.012 U
Acetone	mg/kg	670,000	0.008 U	0.011 U	**0.088**	**0.095**	**0.051**	**0.048**	**0.036**	0.0093 U	0.013 U	0.01 U	0.0085 R	**0.044 J**	**0.072 J**	**0.034 J**
Benzene	mg/kg	5.1	**0.0067**	0.0056 U	0.0066 U	**0.0018 J**	0.0045 U	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Chloroform	mg/kg	1.4	0.004 U	0.0056 U	0.0066 U	0.0059 U	**0.0092**	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Cyclohexane	mg/kg	27,000	0.008 U	0.011 U	0.013 U	0.012 U	0.0089 U	0.0092 U	0.016 U	0.0093 U	0.013 U	0.01 U	0.0085 U	0.0087 U	0.011 U	0.012 U
Ethylbenzene	mg/kg	25	0.004 U	0.0056 U	0.0066 U	0.0059 U	0.0045 U	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Methyl Acetate	mg/kg	1,200,000	0.04 U	0.056 U	0.066 U	0.059 U	0.045 U	0.046 U	0.079 U	0.047 U	0.067 U	0.051 U	0.043 R	0.044 R	0.055 R	0.058 R
Styrene	mg/kg	35,000	0.004 U	0.0056 U	0.0066 U	0.0059 U	0.0045 U	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Tetrachloroethene	mg/kg	100	0.004 U	0.0056 U	0.0066 U	0.0059 U	0.0045 U	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Toluene	mg/kg	47,000	0.004 U	0.0056 U	0.0066 U	0.0059 U	0.0045 U	0.0046 U	0.0079 U	0.0047 U	0.0067 U	0.0051 U	0.0043 U	0.0044 U	0.0055 U	0.0058 U
Xylenes	mg/kg	2,800	0.012 U	0.017 U	0.02 U	0.018 U	0.013 U	0.014 U	0.024 U	0.014 U	0.02 U	0.015 U	0.013 U	0.013 U	0.017 U	0.017 U
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	mg/kg	200	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	mg/kg	16,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	mg/kg	60,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	mg/kg	3,000	0.0071 U	**0.0059 J**	**0.12**	**0.093**	**0.11**	**0.32**	0.0078 U	**0.09**	**0.0072 J**	**0.11**	**0.65**	**0.029**	**0.24**	**0.02**
2-Methylphenol	mg/kg	41,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	N/A	7.5 U	7.7 U	7.4 U	7.4 U	7.3 U	7.8 U	7.5 U	7.8 U	N/A	N/A	N/A	N/A	N/A
Acenaphthene	mg/kg	45,000	0.0071 U	0.0075 U	**0.26**	**0.042**	**0.051**	**0.068**	0.0078 U	**0.0096**	**0.0022 J**	**0.017**	**0.9**	**0.057**	**0.67**	**0.0022 J**
Acenaphthylene	mg/kg	45,000	0.0071 U	0.0075 U	**0.021**	**0.052**	**0.054**	**0.45**	**0.0043 J**	**0.062**	**0.0069 J**	**0.044**	**0.4**	**0.0069 J**	**0.84**	**0.0096**
Acetophenone	mg/kg	120,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Anthracene	mg/kg	230,000	0.0071 U	**0.0028 J**	**0.2**	**0.16**	**0.21**	**0.84**	**0.0037 J**	**0.072**	**0.016**	**0.086**	**1.2**	**0.032**	**1.1**	**0.012**
Benzaldehyde	mg/kg	120,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	21	0.0071 U	**0.003 J**	**4.8**	**0.39**	**0.48**	**0.59**	**0.0025 J**	**0.13**	**0.041**	**0.27**	**7.7**	**0.13**	**8.4**	**0.17**
Benzo[a]pyrene	mg/kg	2.1	**0.00069 J**	**0.0012 J**	**18.5**	**0.37**	**0.77**	**1.2**	**0.0014 J**	**0.15**	**0.038**	**0.38**	**0.66 J**	**0.26 J**	**1.2 J**	**0.25**
Benzo[b]fluoranthene	mg/kg	21	**0.0018 J**	**0.0054 J**	**25.8**	**0.86**	**2.4**	**5.2**	**0.0051 J**	**0.37**	**0.075**	**0.85**	**3.6**	**0.53 J**	**5.9**	**0.32**
Benzo[g,h,i]perylene	mg/kg		0.0071 U	**0.0015 J**	**12.6**	**0.28**	**0.55**	**0.7**	**0.0015 J**	**0.12**	**0.023**	**0.18**	**0.25 J**	**0.14 J**	**0.38 J**	**0.24**
Benzo[k]fluoranthene	mg/kg	210	0.0071 U	**0.0043 J**	**8.2**	**0.27**	**1.9**	**4.2**	**0.004 J**	**0.12**	**0.06**	**0.84**	**3.6**	**0.53 J**	**5.9**	**0.14**
bis(2-Ethylhexyl)phthalate	mg/kg	160	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Carbazole	mg/kg		N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Chrysene	mg/kg	2,100	**0.00076 J**	**0.0032 J**	**5.1**	**0.49**	**0.6**	**1.1**	**0.002 J**	**0.16**	**0.03**	**0.32**	**8.9**	**0.14**	**6.7**	**0.18**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0071 U	0.0075 U	**3.5**	**0.1**	**0.17**	**0.27**	0.0078 U	**0.048**	**0.0077 J**	**0.082**	**0.11 J**	**0.044 J**	**0.18 J**	**0.063**
Diethylphthalate	mg/kg	660,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Di-n-butylphthalate	mg/kg	82,000	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Fluoranthene	mg/kg	30,000	**0.0011 J**	**0.0076**	**4.4**	**1.4**	**0.67**	**1.3**	**0.003 J**	**0.19**	**0.093**	**0.39**	**38.8**	**0.21**	**22**	**0.16**
Fluorene	mg/kg	30,000	0.0071 U	**0.00065 J**	**0.078**	**0.013**	**0.055**	**0.061**	**0.0011 J**	**0.019**	**0.013**	**0.014**	**0.87**	**0.01**	**0.54**	**0.0021 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0071 U	0.0075 U	**11.9**	**0.29**	**0.5**	**0.8**	**0.0012 J**	**0.13**	**0.02**	**0.2**	**0.27 J**	**0.12 J**	**0.41 J**	**0.2**
Naphthalene	mg/kg	17	**0.011**	**0.0047 J**	**0.18**	**0.11**	**0.12**	**0.19**	0.0078 U	**0.1**	**0.015**	**0.089**	**0.53**	**0.041**	**0.18**	**0.03**
N-Nitrosodiphenylamine	mg/kg	470	N/A	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.9 U	3.7 U	3.9 U	N/A	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg		**0.0022 J**	**0.011**	**0.79**	**0.43**	**0.36**	**0.55**	**0.0023 J**	**0.16**	**0.036**	**0.34**	**38.3**	**0.15**	**3.8**	**0.058**
Pyrene	mg/kg	23,000	**0.00093 J**	**0.006 J**	**5.3**	**1.4**	**1.5**	**1.4**	**0.0031 J**	**0.19**	**0.071**	**0.36**	**31**	**0.18**	**23.4**	**0.16**
PCBs																
Aroclor 1016	mg/kg	27	N/A	0.0564 U	N/A	0.0557 U	0.0601 U	0.0557 U	N/A	0.0544 U	N/A	0.37 U	0.018 U	N/A	0.018 U	N/A
Aroclor 1242	mg/kg	0.97	N/A	0.0564 U	N/A	0.0557 U	0.0601 U	0.0557 U	N/A	0.0544 U	N/A	0.37 U	0.018 U	N/A	0.018 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.0564 U	N/A	0.0557 U	0.0601 U	0.0557 U	N/A	0.0544 U	N/A	0.37 U	0.018 U	N/A	0.018 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.0564 U	N/A	0.061 R	0.0601 U	0.0557 U	N/A	0.0544 U	N/A	0.37 U	0.018 U	N/A	0.018 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.0564 U	N/A	0.0557 U	0.0601 U	0.0557 U	N/A	0.0544 U	N/A	**2.1**	0.018 U	N/A	0.018 U	N/A
Aroclor 1262	mg/kg		N/A	0.0564 U	N/A	0.0557 U	0.0601 U	0.0557 U	N/A	**0.0317 J**	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	0.13 R	N/A	0.061 R	0.0601 U	0.13 R	N/A	0.13 R	N/A	**2.1 J**	0.12 U	N/A	0.13 U	N/A
TPH/Oil and Grease																
Diesel Range Organics	mg/kg	6,200	7.1 U	**20.9**	**130**	**92.4**	**67.4**	**95.9**	7.8 U	**49.4**	**19.7**	**135**	**267**	**96**	**218**	**33.1**
Gasoline Range Organics	mg/kg	6,200	9 U	11.7 U	16.1 U	13.4 U	8.8 U	12 U	10.9 U	11 U	10.2 U	10.3 U	9.3 U	9.3 U	14.8 U	16.4 U
Oil and Grease	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data results
^PAH compounds were analyzed for SIM
Values in red indicate an exceedance of the Project Action Limit (PAL)
Gray highlight indicates within building footprint

J: The positive result reported for this anaytle is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitative/detection limit may be higher than reported.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-004-SB-1	B13-004-SB-4	B13-004-SB-10	B13-005-SB-1	B13-005-SB-4	B13-018-SB-1*	B13-018-SB-9*	B13-019-SB-1*	B13-019-SB-4*	B13-020-SB-1
Metal												
Aluminum	mg/kg	1,100,000	**18,100**	**39,600**	N/A	**11,700**	**38,000**	**7,160**	**37,800**	**10,600**	**30,300**	**30,500**
Antimony	mg/kg	470	2.6 UJ	2.6 UJ	N/A	2.6 UJ	2.7 UJ	2.2 U	2.3 U	2.6 U	2.2 U	2.9 UJ
Arsenic	mg/kg	3	**3.4**	**3.5**	**1.9**	**3.9**	2.2 U	**6.4**	1.9 U	**3.9**	**5.5**	2.5 UJ
Barium	mg/kg	220,000	**160 J**	**675 J**	N/A	**185 J**	**548 J**	**102**	**573**	**91.3**	**635**	**177 J**
Beryllium	mg/kg	2,300	**3.4**	**4.5**	N/A	**0.89**	**4.7**	**0.81**	**4.3**	**0.55 J**	**2.7**	**1**
Cadmium	mg/kg	980	**0.52 B**	**0.37 B**	N/A	**3.4**	**0.48 B**	**0.78 JB**	**0.3 JB**	**0.89 JB**	**1.4 B**	**0.71 B**
Chromium	mg/kg	120,000	**68.5 J**	**76.9 J**	N/A	**705 J**	**180 J**	**343**	**15.7**	**701**	**369**	**1,260**
Chromium VI	mg/kg	6.3	**0.33 B**	**0.3 B**	N/A	**0.39 B**	**0.35 B**	**0.48 JB**	**0.31 JB**	**0.38 JB**	**0.49 JB**	**0.33 B**
Cobalt	mg/kg	350	**2.4 J**	**2.9 J**	N/A	**5.6 J**	**4.6 J**	**3.3 J**	**1.2 J**	**1.9 J**	**50.5**	**0.3 J**
Copper	mg/kg	47,000	**7.9 J**	**20.5 J**	N/A	**60.8 J**	**13.8 J**	**25.8**	**19.1**	**25.5**	**316**	**7.9**
Iron	mg/kg	820,000	**84,700**	**21,400**	N/A	**169,000**	**44,500**	**160,000**	**9,390**	**178,000**	**66,100**	**128,000 J**
Lead	mg/kg	800	**28.8 J**	**12.4 J**	N/A	**126 J**	**33.3 J**	**39.1**	**450**	**47.2**	**190**	**13**
Manganese	mg/kg	26,000	**3,580**	**8,400**	N/A	**18,600**	**9,650**	**8,620**	**3,730**	**16,500**	**6,550**	**38,900**
Mercury	mg/kg	350	**0.0046 J-**	0.11 UJ	N/A	**0.025 J-**	**0.0022 J-**	**0.068 J**	0.11 U	**0.035 J**	0.11 U	**0.0044 J**
Nickel	mg/kg	22,000	**11.1 J**	**4.2 J**	N/A	**31.2 J**	**12.1 J**	**35**	**1.8 JB**	**28**	**326**	**10.9 J**
Selenium	mg/kg	5,800	**2.8 B**	**4.4**	N/A	3.5 U	**6.3**	3 U	**2.1 J**	3.5 U	2.9 U	3.9 U
Silver	mg/kg	5,800	2.6 U	2.6 U	N/A	2.6 U	2.7 U	**2.1 J**	2.3 U	**2.6**	2.2 U	2.9 UJ
Thallium	mg/kg	12	8.7 UJ	8.5 UJ	N/A	8.8 UJ	9 UJ	7.5 U	7.6 U	**4.2 J**	7.4 U	9.8 UJ
Vanadium	mg/kg	5,800	**39.6**	**433**	N/A	**1,270**	**685**	**185**	**83.5**	**429**	**271**	**357**
Zinc	mg/kg	350,000	**47.9 J**	**19.2 J**	N/A	**892 J**	**81.4 J**	**142**	**23.1**	**282**	**340**	**70.8 J**
Other												
Cyanide	mg/kg	150	**1.1**	**0.6**	N/A	**3.4**	**0.77**	**1.9**	**4**	**0.96**	**0.98**	**4.5**

Detections in bold
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Gray highlight indicates within building footprint

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J+: The positive result for this analyte is a quantitative estimate but may be biased high.
J-: The positive result for this analyte is a quantitative estimate but may be biased low.
J: The positive result for this analyte is a quantitative estimate.
R: The result for this analyte is unreliable.

Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-020-SB-9	B13-021-SB-1	B13-021-SB-9	B13-040-SB-1	B13-040-SB-5	B13-040-SB-10	B13-049-SB-1	B13-049-SB-5	B13-049-SB-10	B13-055-SB-1*
Metal												
Aluminum	mg/kg	1,100,000	**42,000**	**24,300**	**40,600**	**18,300**	**16,800**	N/A	**25,900**	**33,900**	N/A	**10,700**
Antimony	mg/kg	470	2.7 UJ	2.6 UJ	2.8 UJ	2.6 UJ	2.7 UJ	N/A	2.6 UJ	2.7 UJ	N/A	2.1 U
Arsenic	mg/kg	3	2.3 UJ	2.2 UJ	**2.5 J**	**16**	**3.3**	**16.3**	**9.6**	**6.2**	2 U	**9.5**
Barium	mg/kg	220,000	**381 J**	**232 J**	**363 J**	**277**	**250**	N/A	**510**	**897**	N/A	**122**
Beryllium	mg/kg	2,300	**5.8**	**3.8**	**6.4**	**2.5**	**1.8**	N/A	**2.4**	**3.4**	N/A	**0.92**
Cadmium	mg/kg	980	**0.42 B**	**0.54 B**	**0.26 B**	**0.37 B**	**0.62 B**	N/A	**0.77 B**	**0.5 B**	N/A	**0.36 JB**
Chromium	mg/kg	120,000	**204**	**135**	**23.2**	**141**	**209**	N/A	**124**	**198**	N/A	**771**
Chromium VI	mg/kg	6.3	**0.26 B**	**0.3 B**	**0.31 B**	**0.34 B**	**0.47 B**	N/A	**2.5 J-**	**0.35 B**	N/A	**0.2 JB**
Cobalt	mg/kg	350	**28.1**	**1.7 J**	**2.1 J**	**7.6**	**7**	N/A	**6.8**	**11.6**	N/A	**4.6**
Copper	mg/kg	47,000	**9.9**	**74.2**	**4.8**	**46.2**	**27.7**	N/A	**33.3**	**45.7**	N/A	**70.3**
Iron	mg/kg	820,000	**33,000 J**	**45,100 J**	**17,200 J**	**78,300**	**91,600**	N/A	**83,500**	**81,000**	N/A	**268,000**
Lead	mg/kg	800	**7.7**	**11**	**6.6**	**36.6**	**52.1**	N/A	**445**	**37.1**	N/A	**27.5**
Manganese	mg/kg	26,000	**3,310**	**8,050**	**2,440**	**7,330**	**17,300**	N/A	**6,430**	**11,900**	N/A	**19,300**
Mercury	mg/kg	350	0.1 U	**0.01 J**	0.1 U	0.11 U	**0.014 J**	N/A	**0.0025 J**	**0.0031 J**	N/A	**0.0044 J**
Nickel	mg/kg	22,000	**159 J**	**12.6 J**	**7 J**	**50.2**	**88.8**	N/A	**19.6**	**18.7**	N/A	**44.7**
Selenium	mg/kg	5,800	**4.3**	**2.5 J**	**2.6 J**	3.5 U	3.6 U	N/A	**2.6 B**	**3.6 B**	N/A	2.8 U
Silver	mg/kg	5,800	2.7 UJ	2.6 UJ	2.8 UJ	2.6 U	2.7 U	N/A	2.6 U	2.7 U	N/A	2.1 U
Thallium	mg/kg	12	9 UJ	8.8 UJ	9.2 UJ	8.8 U	9.1 U	N/A	8.6 U	9 U	N/A	**5.8 J**
Vanadium	mg/kg	5,800	**101**	**161**	**37**	**297**	**479**	N/A	**241**	**627**	N/A	**459**
Zinc	mg/kg	350,000	**18.1 J**	**34.2 J**	**9.4 J**	**69.2 J**	**55.2 J**	N/A	**193 J**	**11.7 J**	N/A	**133**
Other												
Cyanide	mg/kg	150	**0.71**	**0.49 J**	**0.84**	**1.1 J-**	**0.67 J-**	N/A	**1.3 J-**	**0.96 J-**	N/A	**0.46 J**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-055-SB-9*	B13-056-SB-1*	B13-056-SB-5*	B13-056-SB-10*	B13-058-SB-1*	B13-058-SB-7*	B13-058-SB-10*	B13-064-SB-1	B13-064-SB-5
Metal											
Aluminum	mg/kg	1,100,000	**9,210**	**2,520**	**36,500**	N/A	**17,300**	**4,020**	N/A	**26,300**	**41,800**
Antimony	mg/kg	470	2.6 U	2.4 U	2.1 U	N/A	2.5 U	2.4 U	N/A	2.7 UJ	2.7 UJ
Arsenic	mg/kg	3	**6.2**	2 U	**7**	**3.9**	**14.9**	**17.7**	**27**	**3.8**	2.2 U
Barium	mg/kg	220,000	**239**	**31.1**	**377**	N/A	**246**	**38.1**	N/A	**292 J**	**343 J**
Beryllium	mg/kg	2,300	**1.5**	0.8 U	**4.1**	N/A	**2.5**	**0.43 J**	N/A	**3.1**	**6.5**
Cadmium	mg/kg	980	**0.64 JB**	**0.4 JB**	**0.87 JB**	N/A	**1.3 B**	**0.61 JB**	N/A	**0.51 B**	**0.24 B**
Chromium	mg/kg	120,000	**829**	**220**	**173**	N/A	**205**	**516**	N/A	**237 J**	**10.4 J**
Chromium VI	mg/kg	6.3	**0.29 JB**	**0.35 JB**	**0.35 JB**	N/A	**0.3 JB**	**0.33 JB**	N/A	**0.4 B**	**0.31 B**
Cobalt	mg/kg	350	**3.5 J**	**37.9**	**15.7**	N/A	**10.6**	**13.7**	N/A	**12.7 J**	**0.8 J**
Copper	mg/kg	47,000	**130**	**10.9**	**125**	N/A	**53.5**	**162**	N/A	**44.1 J**	**1.8 J**
Iron	mg/kg	820,000	**139,000**	**46,500**	**78,700**	N/A	**105,000**	**299,000**	N/A	**111,000**	**9,090**
Lead	mg/kg	800	**14.7**	**2.8**	**75.6**	N/A	**161**	**65.7**	N/A	**39.9 J**	**4 J**
Manganese	mg/kg	26,000	**90,000**	**4,020**	**11,900**	N/A	**5,660**	**4,400**	N/A	**6,940**	**2,510**
Mercury	mg/kg	350	0.099 U	0.11 U	0.11 U	N/A	0.1 U	**0.046 J**	N/A	**0.0036 J-**	0.11 UJ
Nickel	mg/kg	22,000	**29.8**	**865**	**34.9**	N/A	**43.2**	**287**	N/A	**25.1 J**	**1.1 J**
Selenium	mg/kg	5,800	3.5 U	3.2 U	**2.6 JB**	N/A	3.3 U	**2.1 J**	N/A	**4.8**	**3.4 B**
Silver	mg/kg	5,800	2.6 U	2.4 U	2.1 U	N/A	2.5 U	**1 J**	N/A	2.7 U	2.7 U
Thallium	mg/kg	12	**14.3**	**3.5 J**	**6.9 J**	N/A	**3.9 J**	8.1 U	N/A	8.8 UJ	8.9 UJ
Vanadium	mg/kg	5,800	**1,230**	**264**	**438**	N/A	**288**	**95.3**	N/A	**517**	**48**
Zinc	mg/kg	350,000	**32.7**	**23.5**	**221**	N/A	**538**	**113**	N/A	**29.2 J**	**6 J**
Other											
Cyanide	mg/kg	150	**1.9**	0.58 U	**3.6**	N/A	**1.2**	**0.4 JB**	N/A	**0.5 J**	**0.24 J**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-076-SB-1*	B13-076-SB-7*	B13-076-SB-10*	B5-009-SB-1*	B5-009-SB-5*	B5-010-SB-1*	B5-010-SB-7*	B5-010-SB-10*	B5-015-SB-1	B5-015-SB-5
Metal												
Aluminum	mg/kg	1,100,000	**8,890**	**23,700**	N/A	**25,500**	**20,400**	**7,150**	**44,600**	N/A	**16,300**	**16,200**
Antimony	mg/kg	470	2.9 U	3.2 U	N/A	3.3 U	3.2 U	3.1 U	3.4 U	N/A	2.6 UJ	3 UJ
Arsenic	mg/kg	3	**10**	**4.4**	**2.6**	**7.2**	**3.7**	**26.7**	**3.4**	**5**	**8.6**	**3.8**
Barium	mg/kg	220,000	**99.8**	**447**	N/A	**193**	**192**	**55.6**	**322**	N/A	**265**	**55.1**
Beryllium	mg/kg	2,300	**1.2**	**2.5**	N/A	**3.8**	**2.1**	**0.49 J**	**3.5**	N/A	**1.1**	**0.36 J**
Cadmium	mg/kg	980	**0.64 JB**	**0.35 JB**	N/A	**3.3**	**0.51 J**	**11.5**	**0.26 J**	N/A	**5.5**	1.5 U
Chromium	mg/kg	120,000	**270**	**131**	N/A	**150**	**29.1**	**329**	**5 B**	N/A	**103 J**	**21.8 J**
Chromium VI	mg/kg	6.3	**0.33 JB**	**0.62 JB**	N/A	1.1 U	1.1 U	**0.18 J**	1.4 U	N/A	1.1 UJ	**0.28 B**
Cobalt	mg/kg	350	**10.7**	**15.7**	N/A	**4.3 J**	**4.9 J**	**14.1**	**0.92 J**	N/A	**11.4**	**4.3 B**
Copper	mg/kg	47,000	**55.1**	**37.5**	N/A	**67.3**	**19.5**	**234**	**36.5**	N/A	**110**	**13.5**
Iron	mg/kg	820,000	**121,000**	**37,500**	N/A	**148,000**	**19,200**	**302,000**	**6,640**	N/A	**40,800 J**	**13,200 J**
Lead	mg/kg	800	**52.6**	**25.1**	N/A	**282**	**28.6**	**822**	**7.2**	N/A	**4,910**	**11.6**
Manganese	mg/kg	26,000	**5,080**	**4,130**	N/A	**5,160**	**3,500**	**6,780**	**1,780**	N/A	**2,210**	**63.9**
Mercury	mg/kg	350	**0.51**	0.13 U	N/A	0.11 U	**0.025 J**	**0.21**	0.14 U	N/A	**0.21**	**0.022 J**
Nickel	mg/kg	22,000	**51.4**	**125**	N/A	**39.5**	**10.7 J**	**113**	**1.8 J**	N/A	**39.3 J**	**13.9 J**
Selenium	mg/kg	5,800	3.9 U	4.2 U	N/A	4.3 U	4.3 U	4.1 U	**7.2**	N/A	**2.8 B**	4 U
Silver	mg/kg	5,800	2.9 U	3.2 U	N/A	**2.1 J**	3.2 U	**6.9**	3.4 U	N/A	2.6 U	3 U
Thallium	mg/kg	12	9.7 U	10.5 U	N/A	10.9 U	10.8 U	10.2 U	11.2 U	N/A	8.7 U	10 U
Vanadium	mg/kg	5,800	**233**	**117**	N/A	**66.2**	**93.1**	**145**	**15.3**	N/A	**91.4**	**25.1**
Zinc	mg/kg	350,000	**240**	**54.9**	N/A	**2,140**	**75.1**	**15,600**	**24.7**	N/A	**7,290 J**	**30 J**
Other												
Cyanide	mg/kg	150	**2.8**	**1.8**	N/A	**0.5 J**	**1.7**	**6.8**	**7.5**	N/A	**1 J-**	0.59 UJ

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-015-SB-10*	B5-016-SB-1	B5-016-SB-8.5	B5-017-SB-1*	B5-018-SB-1*	B5-019-SB-1*	B5-019-SB-4*	B5-020-SB-1*	B5-020-SB-3.5*	B5-021-SB-1*
Metal												
Aluminum	mg/kg	1,100,000	N/A	**21,800**	**49,200**	**9,370**	**14,000**	**14,400**	**24,600**	**34,200**	**13,000**	**40,000**
Antimony	mg/kg	470	N/A	2.5 UJ	3.5 UJ	3 U	2.1 U	2.4 U	**1.5 J**	2.5 U	3.1 U	2.1 U
Arsenic	mg/kg	3	**5.6**	**7.2**	2.9 U	**10.5**	**4.4**	**5.1**	**2.9**	2.1 U	**3**	**2.6**
Barium	mg/kg	220,000	N/A	**237**	**353**	**88.3**	**100**	**176**	**508**	**446**	**59.8**	**902**
Beryllium	mg/kg	2,300	N/A	**2.2**	**7.2**	**0.94 J**	**0.99**	**2.2**	**1.6**	**5**	**0.57 J**	**4.8**
Cadmium	mg/kg	980	N/A	**2.6**	**0.27 B**	**3.7**	**1.4**	**2**	**1.2 B**	**0.48 J**	**0.38 J**	**1 B**
Chromium	mg/kg	120,000	N/A	**360 J**	**5.6 J**	**145**	**894**	**260**	**20.2**	**17.7**	**20.6**	**293**
Chromium VI	mg/kg	6.3	N/A	1.1 UJ	1.2 UJ	**0.31 J**	**0.21 J**	1.1 U	1.2 U	1.1 U	1.2 U	**0.17 J**
Cobalt	mg/kg	350	N/A	**7**	5.8 U	**17.8**	**3.6**	**3.5 J**	**4**	**1.5 J**	**4.5 J**	**4.4**
Copper	mg/kg	47,000	N/A	**71.2**	**3.8 J**	**132**	**39.3**	**39.3**	**52.6**	**7.6**	**14.1**	**26.5**
Iron	mg/kg	820,000	N/A	**114,000 J**	**5,880 J**	**113,000**	**151,000**	**106,000**	**25,900**	**12,300**	**32,500**	**49,800**
Lead	mg/kg	800	N/A	**412**	2.9 U	**404**	**178**	**510**	**208**	**68.9**	**151**	**51.5**
Manganese	mg/kg	26,000	N/A	**8,770**	**1,830**	**3,420**	**20,100**	**6,730**	**4,530**	**3,110**	**237**	**13,600**
Mercury	mg/kg	350	N/A	**4.1**	0.11 U	**0.66**	**0.77**	**7.8**	0.11 U	0.11 U	**0.0056 J**	**0.0033 J**
Nickel	mg/kg	22,000	N/A	**36.5 J**	11.5 U	**37**	**19.5**	**16.6**	**8.3**	**14.9**	**11.7**	**14.1**
Selenium	mg/kg	5,800	N/A	**2.2 B**	4.6 U	4 U	2.8 U	3.3 U	3.2 U	**3.2 J**	4.1 U	**3.6**
Silver	mg/kg	5,800	N/A	**1.6 B**	3.5 U	**1 J**	**1.3 J**	**1.5 J**	2.4 U	2.5 U	3.1 U	2.1 U
Thallium	mg/kg	12	N/A	8.3 U	11.5 U	10.1 U	7.1 U	8.2 U	7.9 U	8.3 U	10.2 U	6.9 U
Vanadium	mg/kg	5,800	N/A	**208**	**8.3**	**169**	**519**	**145**	**133**	**156**	**32.9**	**233**
Zinc	mg/kg	350,000	N/A	**2,060 J**	**3.1 B**	**1,540**	**627**	**1,300**	**279**	**173**	**138**	**146**
Other												
Cyanide	mg/kg	150	N/A	**6.7 J-**	**1.5 J-**	**23.1**	**16.3**	**13.8**	**0.64**	**0.19 J**	**0.33 J**	**1.5**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-021-SB-5*	B5-022-SB-1*	B5-022-SB-5*	B5-023-SB-1*	B5-023-SB-5*	B5-024-SB-1	B5-025-SB-1	B5-025-SB-5	B5-026-SB-1	B5-027-SB-1	B5-027-SB-5
Metal													
Aluminum	mg/kg	1,100,000	**9,920**	**44,600**	**22,500**	**6,670**	**16,900**	**2,920**	**36,800**	**14,400**	**18,400**	**11,700**	**19,400**
Antimony	mg/kg	470	3.4 U	2.5 U	2.1 U	3.2 U	3 U	2.4 UJ	2.2 UJ	2.9 UJ	3.2 UJ	3.2 UJ	3.2 UJ
Arsenic	mg/kg	3	**5.8**	**2 J**	**8.6**	**3**	**5.6**	**4.5**	**4.8**	**2.6**	**7**	**9.4**	**8.9**
Barium	mg/kg	220,000	**85**	**1,100**	**333**	**99.8**	**55**	**66.8 J**	**329 J**	**55.5 J**	**172 J**	**165**	**375**
Beryllium	mg/kg	2,300	**0.61 J**	**5.2**	**1.9**	**0.96 J**	**0.58 J**	**1.2**	**4.9**	**0.35 J**	**2.6**	**1.5**	**1.8**
Cadmium	mg/kg	980	**0.7 J**	**0.4 J**	**0.39 J**	**0.86 J**	1.5 U	**0.42 J**	**0.75 J**	1.5 U	**0.91 J**	**2**	**0.59 B**
Chromium	mg/kg	120,000	**32.3**	**42.4**	**72.3**	**280**	**28.9**	**64.4 J**	**105 J**	**17.7 J**	**169 J**	**200 J**	**61.1 J**
Chromium VI	mg/kg	6.3	1.2 U	1.1 U	1.1 U	1.3 U	**0.48 J**	**0.2 J**	1.2 U	**0.28 J**	1.2 U	1.1 UJ	1.1 UJ
Cobalt	mg/kg	350	**13.1**	**3.4 J**	**10.1**	**8.1**	**5.5**	**4.2**	**4.7**	**2.5 J**	**4.6 J**	**9.8**	**10.3**
Copper	mg/kg	47,000	**40.6**	**15.8**	**15.2**	**30.1**	**10.8**	**21.2**	**27.2**	**9.5**	**40.9**	**54.2 J**	**96.3 J**
Iron	mg/kg	820,000	**19,200**	**24,700**	**91,100**	**57,500**	**14,200**	**30,400**	**63,400**	**14,100**	**105,000**	**143,000 J**	**34,700 J**
Lead	mg/kg	800	**130**	**2.1**	**36.1**	**55.2**	**12.3**	**95.8 J**	**102 J**	**10.2 J**	**206 J**	**159 J**	**131 J**
Manganese	mg/kg	26,000	**665**	**9,930**	**5,940**	**6,570**	**136**	**1,780**	**3,790**	**48.7**	**4,650**	**5,730**	**7,940**
Mercury	mg/kg	350	**0.04 J**	0.1 U	0.11 U	**0.18**	**0.014 J**	**0.23 J-**	**0.24 J-**	**0.012 J-**	**0.0093 J-**	**0.093 J-**	0.12 R
Nickel	mg/kg	22,000	**25.6**	**12.2**	**12.6**	**20.7**	**13.1**	**16.7**	**15.8**	**7.4 J**	**31.6**	**64.9**	**36.4**
Selenium	mg/kg	5,800	4.5 U	**5.4**	2.8 U	4.2 U	4 U	3.3 U	**2.1 J**	3.9 U	4.3 U	4.2 U	4.2 U
Silver	mg/kg	5,800	3.4 U	2.5 U	2.1 U	3.2 U	3 U	2.4 U	2.2 U	2.9 U	3.2 U	**1.6 B**	3.2 U
Thallium	mg/kg	12	11.3 U	8.3 U	6.9 U	10.5 U	10 U	8.1 U	7.3 U	9.8 U	10.7 U	10.6 U	10.5 U
Vanadium	mg/kg	5,800	**63.1**	**150**	**212**	**157**	**40.7**	**37.2 J**	**81.2 J**	**19.5 J**	**97.6 J**	**140**	**123**
Zinc	mg/kg	350,000	**238**	**4.6**	**56.5**	**439**	**49.5**	**162 J**	**261 J**	**23.1 J**	**377 J**	**881 J**	**132 J**
Other													
Cyanide	mg/kg	150	0.59 U	**10.8**	**1.1**	**1**	0.63 U	**1.5**	**5.3**	0.66 U	**7.2**	**0.91**	**1.5**

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Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-028-SB-1	B5-028-SB-4.5	B5-029-SB-1	B5-029-SB-5	B5-030-SB-1	B5-030-SB-4	B5-052-SB-1	B5-054-SB-1*	B5-054-SB-4*	B5-055-SB-1*	B5-064-SB-1
Metal													
Aluminum	mg/kg	1,100,000	**7,180**	**27,800**	**6,340**	**14,200**	**2,580**	**38,600**	**7,830**	**10,600**	**3,640**	**9,200**	**6,670**
Antimony	mg/kg	470	2.8 UJ	3.3 UJ	2.3 UJ	2.1 UJ	2 UJ	2.4 UJ	2.3 UJ	2.7 U	2.7 U	3.1 U	3.2 UJ
Arsenic	mg/kg	3	**5**	**10.2**	**1.9 J**	**2.9**	1.6 U	**3.9**	**2.7**	**4.2**	**6.2**	2.6 U	**9.7**
Barium	mg/kg	220,000	**99.6**	**677**	**56.4 J**	**55.1 J**	**13 J**	**573 J**	**101**	**197**	**332**	**71.6**	**75**
Beryllium	mg/kg	2,300	0.93 U	**2.4**	**0.34 J**	**0.42 J**	0.65 U	**3.9**	**1.1**	**1.1**	**0.29 J**	**0.28 J**	**1.2**
Cadmium	mg/kg	980	**0.46 B**	**1.1 B**	**0.28 J**	1.1 U	**0.2 J**	**0.67 J**	**0.48 B**	**0.44 J**	**0.27 J**	**0.41 J**	**0.79 B**
Chromium	mg/kg	120,000	**1,710 J**	**97.1 J**	**121 J**	**19.2 J**	**13.4 J**	**38.1 J**	**247 J**	**424**	**135**	**611**	**165 J**
Chromium VI	mg/kg	6.3	**6.7 J-**	**0.18 J-**	1.2 U	1.2 U	1 U	1.2 U	1.1 UJ	1.1 U	**0.17 J**	1.1 U	**0.17 J-**
Cobalt	mg/kg	350	**0.51 B**	**9.9**	**2.9 J**	**3.6**	**1.1 J**	**3.3 J**	**3.2 J**	**4.5 J**	**5.5**	**3.7 J**	**9.2**
Copper	mg/kg	47,000	**26.4 J**	**57.3 J**	**15.2**	**11.3**	**6.9**	**37.6**	**15.9**	**46.3**	**57.7**	**35.6**	**31.6**
Iron	mg/kg	820,000	**214,000 J**	**33,500 J**	**31,500**	**13,000**	**5,040**	**21,000**	**121,000**	**114,000**	**28,100**	**126,000**	**217,000**
Lead	mg/kg	800	2.3 UJ	**88.2 J**	**12.4 J**	**9.1 J**	**2.9 J**	**58.5 J**	**8.3**	**67.6**	**133**	**20.4**	**30.5**
Manganese	mg/kg	26,000	**34,800**	**21,500**	**2,900**	**57.1**	**301**	**5,430**	**6,040**	**12,200**	**12,700**	**17,600**	**5,060**
Mercury	mg/kg	350	0.11 R	**0.026 J-**	**0.041 J-**	**0.011 J-**	**0.0049 J-**	0.12 R	**0.0098 J**	0.11 U	**0.016 J**	**0.0053 J**	**0.031 J**
Nickel	mg/kg	22,000	**17.7**	**54.6**	**13.1**	**8**	**8.1**	**8.7**	**14.9**	**29.3**	**10.7**	**21**	**79.7**
Selenium	mg/kg	5,800	3.7 U	4.4 U	3.1 U	2.8 U	2.6 U	**2.6 J**	3.1 U	3.6 U	3.6 U	4.1 U	4.2 U
Silver	mg/kg	5,800	**4.8**	**0.92 B**	2.3 U	2.1 U	2 U	2.4 U	**1.6 J**	**0.9 J**	**0.89 J**	3.1 U	**2.8 J**
Thallium	mg/kg	12	9.3 U	11 U	7.7 U	7 U	6.5 U	8 U	7.8 U	9.1 U	8.9 U	10.3 U	10.6 U
Vanadium	mg/kg	5,800	**619**	**280**	**103 J**	**27.5 J**	**60.6 J**	**61.6 J**	**139 J**	**229**	**84.9**	**389**	**118 J**
Zinc	mg/kg	350,000	**43 J**	**175 J**	**212 J**	**36.8 J**	**22.8 J**	**96 J**	**104**	**180**	**44.8**	**95.6**	**213**
Other													
Cyanide	mg/kg	150	0.56 U	**0.46 J**	**0.37 J**	0.6 U	0.56 U	**3**	**0.8 J-**	**1**	**0.21 J**	**0.3 J**	**0.67 J-**

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Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-064-SB-7	B5-065-SB-1	B5-065-SB-6	B5-065-SB-10	B5-066-SB-1	B5-067-SB-1	B5-074-SB-1*	B5-074-SB-5*	B5-075-SB-1*	B5-075-SB-5*
Metal												
Aluminum	mg/kg	1,100,000	**28,200**	**5,880**	**32,000**	N/A	**36,600**	**15,400**	**8,850**	**11,400**	**36,100**	**10,600**
Antimony	mg/kg	470	2.7 UJ	2.1 UJ	2.6 UJ	N/A	3.4 UJ	2.6 UJ	2.4 U	2.5 U	2.3 U	2.1 U
Arsenic	mg/kg	3	**5.4**	**9.1**	**3.6**	2.3 U	**3.7**	**12.2**	**5.4**	2.1 U	1.9 U	1.8 U
Barium	mg/kg	220,000	**488**	**121**	**638**	N/A	**451**	**193**	**72.1**	**45.8**	**66.3**	**43**
Beryllium	mg/kg	2,300	**2.8**	**1**	**3.5**	N/A	**6.7**	**2.5**	**0.57 J**	0.84 U	**0.17 J**	0.71 U
Cadmium	mg/kg	980	**0.85 B**	**0.51 B**	**0.42 B**	N/A	**1.2 J**	**1.6**	**1.4 B**	**0.27 J**	**0.4 J**	**0.46 J**
Chromium	mg/kg	120,000	**69 J**	**114 J**	**208 J**	N/A	**67.7 J**	**172 J**	**3,960**	**1,330**	**1,340**	**1,330**
Chromium VI	mg/kg	6.3	1.1 UJ	1.1 UJ	**0.31 J-**	N/A	1.2 UJ	**0.19 J-**	**0.22 J**	**5.3**	**8.1**	**5.9**
Cobalt	mg/kg	350	**7.2**	**7.4**	**4.9**	N/A	**3.1 B**	**10.5**	**11.4**	4.2 U	3.8 U	3.6 U
Copper	mg/kg	47,000	**23.7**	**33.7**	**31.6**	N/A	**29.4 J**	**40.9 J**	**323**	**25.6**	**14.7**	**17.3**
Iron	mg/kg	820,000	**40,200**	**203,000**	**46,300**	N/A	**56,400 J**	**155,000 J**	**331,000**	**216,000**	**173,000**	**197,000**
Lead	mg/kg	800	**44.7**	**30.6**	**18.5**	N/A	**105 J**	**379 J**	**105**	2.1 U	1.9 U	1.8 U
Manganese	mg/kg	26,000	**6,640**	**4,100**	**6,260**	N/A	**3,470**	**6,530**	**18,500**	**26,600**	**29,400**	**27,800**
Mercury	mg/kg	350	0.1 U	**0.021 J**	0.11 U	N/A	**0.033 J-**	**0.064 J-**	**0.021 J**	0.11 U	0.1 U	0.1 U
Nickel	mg/kg	22,000	**24.2**	**75.9**	**9.7**	N/A	**18.5**	**63.1**	**75.5**	**14.2**	**8.5**	**11.6**
Selenium	mg/kg	5,800	3.5 U	2.9 U	3.4 U	N/A	4.5 U	3.5 U	3.2 U	3.3 U	3 U	2.9 U
Silver	mg/kg	5,800	2.7 U	**2.6**	2.6 U	N/A	3.4 U	**1.9 B**	**4.9**	**2.3 J**	**2 J**	**2.6**
Thallium	mg/kg	12	8.8 U	7.1 U	8.5 U	N/A	11.3 U	8.8 U	8.1 U	8.4 U	7.5 U	7.1 U
Vanadium	mg/kg	5,800	**423 J**	**88.2 J**	**867 J**	N/A	**44.1**	**113**	**585**	**1,000**	**897**	**959**
Zinc	mg/kg	350,000	**106**	**199**	**35.5 B**	N/A	**7,330 J**	**25,700 J**	**351**	**88.2**	**61.5**	**65.2**
Other												
Cyanide	mg/kg	150	**0.52 J-**	**0.34 J-**	**0.23 J-**	N/A	**1.2**	**3.5**	**0.96**	0.54 U	**0.22 J**	0.53 U

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-076-SB-1*	B5-076-SB-6*	B5-077-SB-1*	B5-077-SB-5*	B5-081-SB-1*	B5-081-SB-5*	B5-082-SB-1*	B5-082-SB-5*	B5-083-SB-1*	B5-083-SB-5*
Metal												
Aluminum	mg/kg	1,100,000	**10,800**	**16,100**	**9,560**	**17,500**	**45,100**	**22,800**	**42,300**	**19,000**	**13,200**	**20,300**
Antimony	mg/kg	470	2.9 U	3.2 U	3.1 U	2.8 U	2.5 U	3.6 U	2.2 U	3.4 U	3.1 U	3 U
Arsenic	mg/kg	3	**6.5**	2.7 U	**12.9**	2.3 U	**1.9 J**	**6.3**	1.9 U	**3.8**	**6.4**	**6.3**
Barium	mg/kg	220,000	**135**	**151**	**177**	**69.8**	**401**	**54**	**428**	**63.4**	**93**	**27.1**
Beryllium	mg/kg	2,300	**0.53 J**	**1.5**	**0.67 J**	0.93 U	**8**	**0.74 J**	**7.6**	**0.74 J**	**0.78 J**	**1.2**
Cadmium	mg/kg	980	**4.5**	**0.46 J**	**6.2**	**0.6 J**	**0.4 J**	1.8 U	**0.36 J**	1.7 U	**1.6**	1.5 U
Chromium	mg/kg	120,000	**668**	**289**	**394**	**1,490**	**8.4**	**31.4**	**9.3**	**25.2**	**86.6**	**21.9**
Chromium VI	mg/kg	6.3	**0.18 J**	1.1 U	**0.27 J**	**0.27 J**	**0.52 J**	**0.5 J**	**0.59 J**	**1 J**	**0.51 J**	**1.3**
Cobalt	mg/kg	350	**9.8**	**3.3 J**	**13.9**	4.6 U	**1.2 J**	**5.7 J**	**0.84 J**	**4.3 J**	**8.8**	**4.6 J**
Copper	mg/kg	47,000	**289**	**19.3**	**216**	**22.2**	**2.2 J**	**12.6**	**5.3**	**9.7**	**34.8**	**9.1**
Iron	mg/kg	820,000	**156,000**	**52,400**	**180,000**	**193,000**	**10,100**	**26,700**	**8,920**	**16,400**	**61,900**	**19,800**
Lead	mg/kg	800	**383**	**26.6**	**725**	**25.8**	**2.5**	**11.1**	**18.5**	**8.7**	**114**	**8.5**
Manganese	mg/kg	26,000	**6,740**	**6,710**	**6,350**	**30,500**	**2,910**	**93.1**	**2,750**	**73.5**	**2,070**	**46.6**
Mercury	mg/kg	350	**0.71**	**0.092 J**	**2.4**	**0.059 J**	0.11 U	**0.12 J**	0.11 U	0.11 U	**0.024 J**	**0.0053 J**
Nickel	mg/kg	22,000	**144**	**9.9 J**	**85.5**	**11.3**	**2.7 J**	**14.6**	**2.6 J**	**12.2**	**22.3**	**11.9**
Selenium	mg/kg	5,800	3.9 U	4.3 U	4.2 U	3.7 U	**4.2**	4.8 U	**3.1**	4.5 U	4.2 U	4.1 U
Silver	mg/kg	5,800	**2.2 J**	3.2 U	**4**	**2.4 J**	2.5 U	3.6 U	2.2 U	3.4 U	3.1 U	3 U
Thallium	mg/kg	12	9.8 U	10.8 U	10.5 U	9.3 U	8.4 U	11.9 U	7.4 U	11.2 U	10.4 U	10.2 U
Vanadium	mg/kg	5,800	**175**	**203**	**155**	**998**	**47**	**39**	**32**	**31.4**	**87.6**	**34.4**
Zinc	mg/kg	350,000	**1,310**	**81**	**1,180**	**60.7**	**7.4**	**44.9**	**28.4**	**32.7**	**477**	**31**
Other												
Cyanide	mg/kg	150	**3.3**	**1.2**	**4.9**	**1.9**	0.67 U	0.6 U	**0.071 J**	0.58 U	**0.21 J**	0.72 U

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-084-SB-1*	B5-085-SB-1	B5-090-SB-1	B5-090-SB-4.75	B5-091-SB-1*	B5-091-SB-7*	B5-104-SB-1*	B5-104-SB-5*	B5-105-SB-1*	B5-105-SB-5*
Metal												
Aluminum	mg/kg	1,100,000	**35,500**	**18,800**	**25,200**	**16,300**	**14,300**	**16,000**	**8,870**	**18,100**	**10,100**	**43,600**
Antimony	mg/kg	470	2.3 U	2.4 UJ	3.1 UJ	3.1 UJ	2.5 U	2.5 U	2.5 U	2.8 U	2.3 U	2.7 U
Arsenic	mg/kg	3	**2.2**	**12.8**	**6.4**	**3.1**	**4**	**4.3**	**15.9**	**9**	**32.8**	2.2 U
Barium	mg/kg	220,000	**364**	**204 J**	**223 J**	**51.4 J**	**142**	**66.6**	**120**	**84.9**	**73.5**	**393**
Beryllium	mg/kg	2,300	**5.6**	**2.8**	**3**	**0.3 J**	**1.5**	**0.54 J**	**0.38 J**	**0.77 J**	**2**	**6.9**
Cadmium	mg/kg	980	**0.28 J**	**0.52 B**	**0.61 B**	1.6 U	**0.96 J**	1.2 U	**4**	1.4 U	**6.6**	**0.46 J**
Chromium	mg/kg	120,000	**44.2**	**161**	**87.1 J**	**24.2 J**	**41.5**	**36.5**	**846**	**30.2**	**250**	**3.9 B**
Chromium VI	mg/kg	6.3	1.1 U	**0.27 J**	**0.4 B**	**0.42 B**	1.1 U	1.1 U	**0.43 J**	**0.3 J**	1.1 U	1.1 U
Cobalt	mg/kg	350	**1.6 J**	**11.1**	**6.5**	**3.6 B**	**3.2 J**	**4.3**	**14.3**	**5.6**	**14.2**	**0.43 J**
Copper	mg/kg	47,000	**7.2**	**137**	**33**	**7.8**	**29**	**17.3**	**133**	**13.4**	**144**	4.5 U
Iron	mg/kg	820,000	**88,900**	**344,000**	**40,500 J**	**18,400 J**	**54,100**	**15,800**	**205,000**	**31,000**	**281,000**	**3,890**
Lead	mg/kg	800	**9.6**	**153 J**	**157 J**	**10.2 J**	**151**	**26.1**	**342**	**12.7**	**322**	**2.3**
Manganese	mg/kg	26,000	**3,250**	**4,620**	**4,400**	**152**	**1,170**	**690**	**29,200**	**118**	**2,080**	**1,730**
Mercury	mg/kg	350	**0.0026 J**	**0.03 J**	0.11 R	**0.052 J-**	**0.063 J**	**0.015 J**	**0.0046 J**	**0.003 J**	**1.2**	0.1 U
Nickel	mg/kg	22,000	**9.5**	**69.7**	**16.7**	**7.7 J**	**17.1**	**8 J**	**56.2**	**14.5**	**78.9**	9 U
Selenium	mg/kg	5,800	**2.7 J**	3.2 U	4.2 U	4.2 U	3.4 U	3.3 U	3.3 U	3.7 U	3 U	**4.2**
Silver	mg/kg	5,800	2.3 U	**4.1**	3.1 U	3.1 U	2.5 U	2.5 U	2.5 U	2.8 U	**5.4**	2.7 U
Thallium	mg/kg	12	7.6 U	7.9 UJ	10.4 U	10.4 U	8.4 U	8.3 U	8.3 U	9.2 U	7.6 U	9 U
Vanadium	mg/kg	5,800	**30.9**	**101**	**56.8 J**	**29.7 J**	**22.9**	**55.7**	**2,550**	**47.6**	**47.9**	**5.5**
Zinc	mg/kg	350,000	**38.6**	**339 J**	**211 J**	**31.6 J**	**293**	**57.4**	**639**	**38**	**8,350**	**44.5**
Other												
Cyanide	mg/kg	150	**6**	**3.3 J+**	**2.2 J-**	0.69 UJ	**3.5**	4.8 U	**0.54 J**	0.75 U	**5.2**	**0.18 J**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-106-SB-1*	B5-106-SB-5*	B5-107-SB-1*	B5-107-SB-6*	B5-108-SB-1	B5-108-SB-5	B5-109-SB-1*	B5-110-SB-1*	B5-110-SB-4*	B5-111-SB-1*
Metal												
Aluminum	mg/kg	1,100,000	**29,400**	**42,500**	**26,200**	**44,400**	**29,400**	**41,000**	**31,600**	**14,900**	**3,320**	**22,900**
Antimony	mg/kg	470	2.8 U	2.4 U	2.4 U	3.2 U	3.3 UJ	2.4 UJ	2.9 U	2.3 U	2.2 U	3.4 U
Arsenic	mg/kg	3	2.3 U	**2.4**	**4.5**	2.6 U	**6.6**	**4.3**	**3.8**	**4.1**	**24.7**	**6.1**
Barium	mg/kg	220,000	**228**	**315**	**164**	**196**	**246**	**514**	**273**	**218**	**38.8**	**427**
Beryllium	mg/kg	2,300	**4.6**	**7**	**3.3**	**2.1**	**4.9**	**4.7**	**5.2**	**1.6**	**0.6 J**	**2.7**
Cadmium	mg/kg	980	**0.29 J**	**0.65 J**	**1.3 B**	**0.5 J**	**1.2 B**	**1.2**	**1.2 J**	**0.44 J**	**12.4**	**0.78 J**
Chromium	mg/kg	120,000	**9.8**	**19**	**46.5**	**93.1**	**150 J**	**84.8 J**	**38.3**	**968**	**322**	**1,020**
Chromium VI	mg/kg	6.3	1.1 U	1.1 U	1.2 U	1.1 U	1.1 UJ	1.1 UJ	1.1 U	1.1 U	1.2 U	1.1 U
Cobalt	mg/kg	350	**0.3 J**	**0.43 J**	**2.3 J**	**2.7 J**	**4.3 B**	**7**	**2 J**	**2.4 J**	**13**	**5.1 J**
Copper	mg/kg	47,000	**3.1 J**	**6.9**	**24.5**	**19.3**	**37.8**	**35.8**	**16.8**	**26.9**	**177**	**64**
Iron	mg/kg	820,000	**4,430**	**9,920**	**57,300**	**5,000**	**117,000 J**	**38,800 J**	**33,000**	**138,000**	**391,000**	**113,000**
Lead	mg/kg	800	**5.9**	**23.6**	**105**	**17.7**	**134**	**123**	**59.5**	**102**	**1,100**	**29.2**
Manganese	mg/kg	26,000	**2,110**	**3,320**	**2,270**	**1,450**	**4,690**	**3,560**	**2,270**	**22,900**	**9,960**	**39,200**
Mercury	mg/kg	350	0.1 U	0.11 U	0.12 U	0.1 U	0.11 U	0.11 U	0.11 U	**0.074 J**	**0.19**	0.11 U
Nickel	mg/kg	22,000	9.2 U	**4.2 J**	**14.7**	**21.2**	**27.7 J**	**35.8 J**	**10**	**17.8**	**105**	**25.8**
Selenium	mg/kg	5,800	3.7 U	**4.9**	3.1 U	**5.9**	**4.9**	**2.3 B**	**3.1 J**	3.1 U	2.9 U	**3.8 J**
Silver	mg/kg	5,800	2.8 U	2.4 U	2.4 U	3.2 U	**0.85 B**	2.4 U	2.9 U	**0.93 J**	**11.1**	3.4 U
Thallium	mg/kg	12	9.2 U	7.9 U	7.9 U	10.6 U	11.1 U	8.1 U	9.8 U	7.8 U	7.3 U	11.5 U
Vanadium	mg/kg	5,800	**25**	**18.9**	**39.4**	**24.7**	**99.4**	**52**	**33.7**	**563**	**42.1**	**1,240**
Zinc	mg/kg	350,000	**19.7**	**189**	**829**	**29.1**	**439 J**	**494 J**	**371**	**104**	**16,600**	**76.5**
Other												
Cyanide	mg/kg	150	**0.37 J**	**0.59 J**	**0.32 J**	**1**	**2.2 J-**	**0.94 J-**	**0.31 J**	**0.12 J**	**7.6**	**2.8**

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Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-111-SB-4*	B5-114-SB-1	B5-115-SB-1	B5-118-SB-1	B5-119-SB-1	B5-119-SB-5	B5-120-SB-1	B5-120-SB-4.5	B5-121-SB-1	B5-121-SB-5	B5-136-SB-1
Metal													
Aluminum	mg/kg	1,100,000	**7,830**	**11,800**	**9,290**	**29,000**	**45,000**	**24,500**	**31,000**	**45,500**	**47,100**	**9,080**	**15,600**
Antimony	mg/kg	470	2.5 U	3.2 UJ	2.8 UJ	2.5 UJ	2.7 UJ	3.5 UJ	3.1 UJ	**1.9 J**	2.7 UJ	2.9 UJ	2.6 UJ
Arsenic	mg/kg	3	2 U	**3.5**	**3.1**	**4.4**	2.2 U	**4.6**	**5.2**	**1.9**	**2.3**	**3.1**	2.1 U
Barium	mg/kg	220,000	**26.8**	**39.4**	**43.5**	**299**	**445**	**97**	**272**	**327**	**392**	**53.1**	**167 J**
Beryllium	mg/kg	2,300	**0.16 J**	1.1 U	0.94 U	**4.8**	**7.8**	**1 J**	**4.6**	**7.1**	**7.7**	**0.67 J**	**1.7**
Cadmium	mg/kg	980	**0.35 J**	**0.41 B**	**0.41 B**	**0.8 B**	**0.54 B**	**0.23 B**	**9.8**	**0.26 B**	**0.44 B**	1.4 U	**0.61 B**
Chromium	mg/kg	120,000	**14.3**	**1,360 J**	**1,280 J**	**472 J**	**40.6 J**	**29.8 J**	**116 J**	**24.2 J**	**21.8 J**	**58.8 J**	**764**
Chromium VI	mg/kg	6.3	1.1 U	**5.1 J-**	**0.22 J-**	1.1 UJ	1.1 UJ	1.2 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.2 UJ	**0.27 J-**
Cobalt	mg/kg	350	**0.85 J**	**1.5 B**	**1.1 B**	**2 J**	**1.4 B**	**3.7 J**	**2.4 B**	**0.84 J**	**0.64 B**	**1.6 B**	**1.7 J**
Copper	mg/kg	47,000	**12.2**	**16.7 J**	**20.5 J**	**25.8 J**	**8.2 J**	**8.9 J**	**37.7 J**	**2.1 J**	**3.8 J**	**6.4 J**	**24.9**
Iron	mg/kg	820,000	**11,000**	**182,000 J**	**194,000 J**	**90,900 J**	**21,500 J**	**13,000 J**	**54,500 J**	**7,220 J**	**9,920 J**	**18,800 J**	**161,000**
Lead	mg/kg	800	**39.3**	2.7 UJ	**10.9 J**	**40.2 J**	**25.2 J**	**10.9 J**	**124 J**	**2.4 J**	**13.9 J**	**6.2 J**	**44.1 J**
Manganese	mg/kg	26,000	**565**	**29,400**	**26,800**	**9,870**	**3,300**	**27.9**	**4,400**	**2,910**	**3,900**	**940**	**19,200**
Mercury	mg/kg	350	**0.12**	0.11 R	**0.019 J-**	0.11 R	0.1 R	**0.046 J-**	0.1 R	0.11 R	0.1 R	**0.0089 J-**	0.11 UJ
Nickel	mg/kg	22,000	**5.9 J**	**16.2**	**17**	**12.3**	**6.3 J**	**9.7 J**	**16.7**	**1.3 J**	**3.3 J**	**4.4 J**	**10.8**
Selenium	mg/kg	5,800	3.3 U	4.3 U	3.7 U	3.3 U	**2.3 J**	4.7 U	4.1 U	**3.6**	**5.1**	3.8 U	3.4 U
Silver	mg/kg	5,800	2.5 U	**3.1 J**	**3**	2.5 U	2.7 U	3.5 U	3.1 U	2.2 U	2.7 U	2.9 U	2.6 U
Thallium	mg/kg	12	8.2 U	10.7 U	9.4 U	8.2 U	8.9 U	11.7 U	10.3 U	7.4 U	9.1 U	9.5 U	**7.3 J**
Vanadium	mg/kg	5,800	**21.5**	**913**	**844**	**546**	**31.4**	**26.3**	**92.2**	**21.8**	**21.9**	**46.1**	**2,670**
Zinc	mg/kg	350,000	**320**	**39.3 J**	**50 J**	**197 J**	**368 J**	**53.7 J**	**1,570 J**	**7 J**	**93.8 J**	**22.2 J**	**104 J**
Other													
Cyanide	mg/kg	150	**3**	0.59 U	**0.5 J**	**0.9**	**1.4 J-**	**1.5 J-**	**0.22 J-**	**0.81**	**0.59 J-**	0.66 UJ	**0.29 J+**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-136-SB-8	B5-139-SB-1*	B5-139-SB-7*	B5-141-SB-1*	B5-151-SB-1	B5-151-SB-5	B5-151-SB-10*	B5-153-SB-1	B5-156-SB-1*	B5-156-SB-6*
Metal												
Aluminum	mg/kg	1,100,000	**9,180**	**16,500**	**17,100**	**6,220**	**21,500**	**5,750**	N/A	**4,930**	**14,100**	**31,000**
Antimony	mg/kg	470	2.7 UJ	3.4 U	3.5 U	3 U	2.5 UJ	2.4 UJ	N/A	3.1 UJ	2.7 U	3 U
Arsenic	mg/kg	3	2.2 U	**3.9**	**5.9**	**7.7**	2.1 U	**7.4**	**4.8**	**15.2**	**11.1**	**5.2**
Barium	mg/kg	220,000	**17.2 J**	**58.7**	**91.7**	**62.5**	**181 J**	**85.5 J**	N/A	**66.9**	**141**	**363**
Beryllium	mg/kg	2,300	**0.46 J**	**0.4 J**	**1.1 J**	**0.55 J**	**1.7**	**0.52 J**	N/A	**0.78 J**	**1.5**	**3.8**
Cadmium	mg/kg	980	1.3 U	1.7 U	1.8 U	**0.55 J**	**0.6 B**	**0.38 B**	N/A	**0.52 B**	**2.9**	**0.78 J**
Chromium	mg/kg	120,000	**13.4**	**24.4**	**26.3**	**299**	**791 J**	**554 J**	N/A	**147 J**	**170**	**142**
Chromium VI	mg/kg	6.3	**0.34 J-**	**0.19 J**	**0.82 J**	**1.2**	1.1 UJ	**0.47 J-**	N/A	**0.29 J-**	1.1 U	1.1 U
Cobalt	mg/kg	350	**1.7 J**	**5.4 J**	**6.6**	**6.3**	**2.3 J**	**4**	N/A	**11.3**	**7.3**	**11.8**
Copper	mg/kg	47,000	**3.1 J**	**8.3**	**14.3**	**36.2**	**24.2 J**	**24.6 J**	N/A	**35.7**	**74.6**	**39.1**
Iron	mg/kg	820,000	**14,000**	**18,100**	**23,500**	**200,000**	**141,000**	**186,000**	N/A	**217,000**	**92,100**	**53,400**
Lead	mg/kg	800	**5.1 J**	**9.4**	**11.8**	**61.2**	**13.4 J**	**16.2 J**	N/A	**89.8**	**404**	**49**
Manganese	mg/kg	26,000	**134**	**101**	**92**	**7,390**	**20,900**	**16,300**	N/A	**4,930**	**3,150**	**6,590**
Mercury	mg/kg	350	0.12 UJ	**0.009 J**	0.12 U	**0.013 J**	**0.0099 J-**	**0.0046 J-**	N/A	**1.4**	**5.7**	0.1 U
Nickel	mg/kg	22,000	**5.9 J**	**9.9 J**	**15.1**	**47.3**	**10.5**	**17.1**	N/A	**84.9**	**39**	**18.5**
Selenium	mg/kg	5,800	3.6 U	4.5 U	4.7 U	4 U	3.4 U	3.2 U	N/A	4.2 U	3.6 U	**3.3 J**
Silver	mg/kg	5,800	2.7 U	3.4 U	3.5 U	**2.4 J**	**1.5 B**	2.4 U	N/A	**2.8 J**	**2 J**	3 U
Thallium	mg/kg	12	9 UJ	11.3 U	11.7 U	10.1 U	8.5 UJ	8 UJ	N/A	10.5 U	9.1 U	10 U
Vanadium	mg/kg	5,800	**21.2**	**34**	**43.1**	**165**	**413 J**	**1,410 J**	N/A	**98.3 J**	**78.7**	**645**
Zinc	mg/kg	350,000	**14.7 J**	**34.8**	**44.7**	**143**	**212 J**	**132 J**	N/A	**84.8 B**	**1,360**	**147**
Other												
Cyanide	mg/kg	150	0.7 U	0.58 U	0.59 U	**0.32 J**	**3.4 J-**	**4.1 J-**	N/A	**0.28 J-**	**1.5**	**3.7**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-156-SB-10	B5-157-SB-1*	B5-157-SB-5*	B5-158-SB-1*	B5-158-SB-5*	B5-159-SB-1*	B5-159-SB-5*	B5-160-SB-1*	B5-160-SB-4*	B5-170-SB-1*
Metal												
Aluminum	mg/kg	1,100,000	N/A	**8,960**	**14,400**	**13,400**	**11,400**	**9,640**	**9,300**	**11,900**	**28,400**	**12,800**
Antimony	mg/kg	470	N/A	3.1 U	2.2 U	2.6 U	3.5 U	2.7 U	2.2 U	2.4 U	2.9 U	2.6 U
Arsenic	mg/kg	3	**3.5**	**16.2**	**6.6**	**5.3**	**8**	**12.4**	**1.6 J**	**3**	**5.5**	**6**
Barium	mg/kg	220,000	N/A	**57.4**	**170**	**132**	**164**	**119**	**69.5**	**64.5**	**272**	**78.9**
Beryllium	mg/kg	2,300	N/A	**0.38 J**	**2.1**	**0.76 J**	**0.46 J**	**0.62 J**	**0.17 J**	0.8 U	**4**	**0.9**
Cadmium	mg/kg	980	N/A	**3.6**	**1.1 B**	**5.6**	**38.3**	**4.9**	**0.96 J**	**0.59 J**	**1.3 J**	**1.2 J**
Chromium	mg/kg	120,000	N/A	**221**	**236**	**110**	**88.1**	**597**	**1,850**	**1,310**	**59.7**	**784**
Chromium VI	mg/kg	6.3	N/A	**0.17 J**	**0.18 J**	**0.18 J**	1.2 U	**0.17 J**	**0.76 J**	**3.3**	1.2 U	1.1 U
Cobalt	mg/kg	350	N/A	**15.7**	**7.2**	**6.4**	**23.7**	**16.2**	**0.47 J**	**1.3 J**	**6.2**	**5.2**
Copper	mg/kg	47,000	N/A	**183**	**84**	**66.4**	**427**	**204**	**41.6**	**50.9**	**2,560**	**52.6**
Iron	mg/kg	820,000	N/A	**240,000**	**107,000**	**39,500**	**50,600**	**192,000**	**220,000**	**217,000**	**97,100**	**138,000**
Lead	mg/kg	800	N/A	**334**	**76.7**	**1,040**	**3,180**	**1,720**	**8.8**	2 U	**107**	**89.1**
Manganese	mg/kg	26,000	N/A	**5,300**	**5,220**	**2,630**	**1,780**	**9,040**	**31,800**	**25,800**	**3,140**	**16,600**
Mercury	mg/kg	350	N/A	**0.14**	**0.15**	**2.1**	**3.2**	**5.6**	0.11 U	0.11 U	**0.092 J**	**0.11**
Nickel	mg/kg	22,000	N/A	**111**	**42.3**	**17.5**	**123**	**77.5**	**21.5**	**23.1**	**31.2**	**19.3**
Selenium	mg/kg	5,800	N/A	4.2 U	3 U	3.5 U	4.6 U	3.6 U	2.9 U	3.2 U	**3.3 J**	3.4 U
Silver	mg/kg	5,800	N/A	**4.9**	**0.6 J**	2.6 U	**2.9 J**	**2.9**	**3.4**	**2.1 J**	2.9 U	**0.85 J**
Thallium	mg/kg	12	N/A	10.4 U	7.4 U	8.7 U	11.5 U	9 U	7.2 U	8 U	9.5 U	8.5 U
Vanadium	mg/kg	5,800	N/A	**65**	**167**	**90.3**	**47.2**	**231**	**595**	**637**	**98.5**	**473**
Zinc	mg/kg	350,000	N/A	**5,580**	**187**	**3,680**	**17,600**	**980**	**96.9**	**108**	**377**	**362**
Other												
Cyanide	mg/kg	150	N/A	**1.6**	**2.6**	**9.8**	**43**	**7.8**	0.52 U	**0.1 J**	**0.98**	**2.2**

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Table 2
Summary of Inorganics Detected in Soil
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B5-171-SB-1*	B5-172-SB-1*	B5-172-SB-5*	B5-173-SB-1*	B5-173-SB-5*	B5-174-SB-1*	B5-179-SB-1	B5-179-SB-9	B5-180-SB-1	B5-180-SB-5
Metal												
Aluminum	mg/kg	1,100,000	**13,200**	**18,400**	**14,100**	**15,500**	**19,200**	**6,040**	**15,300**	**8,170**	**13,800**	**19,400**
Antimony	mg/kg	470	2.8 U	2.9 U	2.9 U	2.3 U	**1.3 J**	**2.6**	2.8 UJ	2.3 UJ	2.6 UJ	2.2 UJ
Arsenic	mg/kg	3	**6**	**6**	**7.8**	**3.4**	**2.1**	**13.2**	**5.8**	**9.4**	**3.5**	**12.9**
Barium	mg/kg	220,000	**126**	**239**	**50.4**	**139**	**69.1**	**117**	**67.7**	**69.3 J**	**52.6 J**	**264 J**
Beryllium	mg/kg	2,300	**1.3**	**2.5**	**0.68 J**	**0.74 J**	**0.65 J**	**0.66 J**	**0.31 J**	0.75 U	0.85 U	**1.6**
Cadmium	mg/kg	980	**0.88 J**	**0.89 J**	1.5 U	**0.84 J**	**0.17 J**	**2.1**	**0.4 B**	**0.41 B**	**0.34 B**	**3.1**
Chromium	mg/kg	120,000	**758**	**253**	**17.6**	**102**	**27.8**	**119**	**1,170 J**	**1,820 J**	**1,290 J**	**361 J**
Chromium VI	mg/kg	6.3	1.1 U	1.1 U	1.1 U	**0.18 J**	1.2 U	1.1 U	1 UJ	**1.1 J-**	1.1 UJ	1.3 UJ
Cobalt	mg/kg	350	**4.6 J**	**8.2**	**4.2 J**	**7.3**	**6.1**	**19.7**	**2.9 B**	**7**	**1 J**	**16.7**
Copper	mg/kg	47,000	**60.8**	**56.2**	**7.2**	**35.4**	**12.8**	**191**	**44.9 J**	**106**	**31.4**	**122**
Iron	mg/kg	820,000	**155,000**	**126,000**	**24,800**	**38,000**	**14,200**	**167,000**	**174,000 J**	**240,000**	**160,000**	**122,000**
Lead	mg/kg	800	**107**	**66.2**	**11.5**	**55**	**27.6**	**219**	**31.2 J**	**31**	**22.6**	**604**
Manganese	mg/kg	26,000	**17,600**	**8,100**	**56.3**	**1,600**	**174**	**4,740**	**25,000**	**30,400 J**	**26,400 J**	**6,440 J**
Mercury	mg/kg	350	**0.0048 J**	**0.029 J**	0.11 U	**0.032 J**	**0.62**	**0.054 J**	**0.18 J+**	**0.0046 J+**	**0.11 J+**	**0.17 J+**
Nickel	mg/kg	22,000	**22.8**	**38.4**	**9.3 J**	**18**	**14.1**	**58.9**	**29**	**42.4**	**14.3**	**60.3**
Selenium	mg/kg	5,800	3.8 U	3.9 U	3.9 U	3 U	3 U	3.1 U	3.7 U	3 U	3.4 U	2.9 U
Silver	mg/kg	5,800	**0.91 J**	**0.95 J**	2.9 U	2.3 U	2.2 U	**2 J**	2.8 U	2.3 U	**1.9 J**	**2.8**
Thallium	mg/kg	12	9.4 U	9.7 U	9.8 U	7.6 U	7.4 U	7.6 U	9.3 U	7.5 U	8.5 U	7.3 U
Vanadium	mg/kg	5,800	**333**	**163**	**35.3**	**67.2**	**31.9**	**207**	**1,360**	**2,850 J**	**905 J**	**199 J**
Zinc	mg/kg	350,000	**286**	**346**	**28.9**	**183**	**70.3**	**682**	**103 J**	**228 J**	**58.2 J**	**1,070 J**
Other												
Cyanide	mg/kg	150	**1.5**	**0.77**	0.61 U	**0.24 J**	0.62 U	**0.71**	**1**	**0.11 J**	**0.18 J**	**1.1**

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Table 3
Summary of Organics Detected in Groundwater
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-021-PZ	B13-049-PZ	B13-076-PZ	SW-031-MWS	SW-032-MWS	SW-033-MWS	SW-034-MWS	SW-035-MWS	SW-036-MWS	SW-037-MWS
Volatile Organic Compounds												
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	10 U	10 U	10 U	10 U	10 R	10 U	10 U	10 R	10 UJ
Benzene	µg/L	5	**0.57 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	µg/L	7.5	1 U	1 U	1 U	1 U	1 U	**0.67 J**	1 U	1 U	1 U	1 U
Carbon disulfide	µg/L	810	1 U	**1.6**	**1.3**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	**1.3**	1 U	1 U	1 U	**1.1**	**3**
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.58 J**
Toluene	µg/L	1,000	**1.4**	**0.6 J**	**0.95 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.6 J**
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	**1.5 J**
Semi-Volatile Organic Compounds*												
1,4-Dioxane	µg/L	0.46	**0.12**	**0.1**	**0.11**	**0.11**	**0.18**	**0.18**	**0.18**	0.11 U	**0.072 J**	**0.063 J**
2,4-Dimethylphenol	µg/L	360	1 U	1 U	1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	**0.093 B**	**0.048 B**	**0.1**	**0.022 J**	0.11 U	**0.04 J**	0.1 U	0.11 U	**0.17**	0.1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2 U	2.1 U	2.1 U	2.1 U	2.1 U	2 U	2 U	2.1 U	2 U	2.1 U
Acenaphthene	µg/L	530	**0.15**	**0.043 J**	**0.079 J**	**0.02 J**	**0.074 J**	**0.22**	**0.067 J**	**0.05 J**	**0.25**	0.1 U
Acenaphthylene	µg/L	530	**0.015 J**	**0.029 J**	0.1 U	0.11 U	0.11 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U
Anthracene	µg/L	1,800	**0.022 J**	0.1 U	**0.018 J**	**0.058 J**	**0.036 J**	**0.061 J**	**0.022 J**	**0.046 J**	**0.21**	**0.018 J**
Benz[a]anthracene	µg/L	0.012	0.1 U	0.1 U	0.1 U	**0.017 J**	**0.016 J**	**0.024 J**	0.1 U	0.11 U	**0.086 J**	**0.016 J**
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	0.1 U	0.11 U	0.11 U	**0.011 J**	0.1 U	0.11 U	**0.012 J**	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.1 U	0.1 U	0.1 U	0.11 U	0.11 U	**0.016 J**	0.1 U	0.11 U	**0.034 J**	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	0.1 U	0.1 U	0.1 U	0.11 U	0.11 U	**0.012 J**	0.1 U	0.11 U	**0.025 J**	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1 U
Carbazole	µg/L		1 U	1 U	1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	**0.61 J**	1 U
Chrysene	µg/L	25	0.1 U	**0.0097 J**	**0.0079 J**	**0.0091 J**	**0.01 J**	**0.013 J**	0.1 U	0.11 U	**0.061 J**	0.1 U
Fluoranthene	µg/L	800	**0.032 J**	**0.084 J**	**0.092 J**	**0.038 J**	**0.046 J**	**0.088 J**	0.1 U	0.11 U	**0.72**	**0.029 J**
Fluorene	µg/L	290	**0.061 J**	**0.041 J**	**0.061 J**	**0.026 J**	**0.05 J**	**0.12**	0.1 U	0.11 U	**0.15**	0.1 U
Naphthalene	µg/L	0.17	**1.4**	**0.8**	**0.74**	**0.037 B**	**0.086 B**	**0.1**	**0.067 B**	**0.13**	**0.16**	**0.055 B**
Pentachlorophenol	µg/L	1	**1 J**	**1 J**	**1.1 J**	2.6 U	2.6 U	2.5 U	2.6 U	**0.95 J**	2.5 U	2.6 U
Phenanthrene	µg/L		**0.091 J**	**0.093 J**	**0.18**	**0.12**	**0.099 J**	**0.24**	**0.02 J**	0.11 U	**1.1**	**0.027 J**
Phenol	µg/L	5,800	1 U	1 U	1 U	1.1 U	1.1 U	**0.29 J**	1 U	1.1 U	1 U	1 U
Pyrene	µg/L	120	**0.021 J**	**0.055 J**	**0.062 J**	**0.031 J**	**0.038 J**	**0.057 J**	0.1 U	0.11 U	**0.54**	**0.025 J**
TPH/Oil and Grease												
Diesel Range Organics	µg/L	47	**116 J**	**50.1 J**	**59.4 J**	**694 J**	106 UJ	**99.6 J**	**170 J**	**240 J**	**121 J**	**345 J**
Gasoline Range Organics	µg/L	47	200 U	**76.4 J**	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
Oil and Grease	µg/L	47	**1,200 J**	4,820 U	4,820 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
J: The positive result reported for this analyte is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the assoicated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitaiton/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
R: The result for this analyt is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.
*PAH compounds were analyzed via sim

Table 3
Summary of Organics Detected in Groundwater
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-038-MWS	SW-066-MWS	SW-071-MWS	SW-072-MWS	SW-073-MWS	SW15-PZM005
Volatile Organic Compounds								
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	2 U	2 U	2 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	**4.4 J**	10 U	10 U	10 U
Acetone	µg/L	14,000	10 UJ	10 UJ	**7.2 J**	10 UJ	**6.8 J**	10 U
Benzene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	µg/L	7.5	1 U	1 U	1 U	1 U	1 U	1 UJ
Carbon disulfide	µg/L	810	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	**2**	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	**0.91 J**	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	1 U	**0.71 J**	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	**4.1**	3 U
Semi-Volatile Organic Compounds*								
1,4-Dioxane	µg/L	0.46	**0.041 J**	0.1 U	0.1 U	**0.071 J**	0.1 U	0.1 U
2,4-Dimethylphenol	µg/L	360	1 U	1 U	**1.4**	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	**0.05 J**	0.1 U	**0.24**	0.1 U	**0.59**	0.1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2 U	2 U	**0.65 J**	2 U	2 U	2 U
Acenaphthene	µg/L	530	**0.037 J**	0.1 U	**0.29**	0.1 U	**0.37**	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	**0.038 J**	0.1 U	**0.023 J**	0.1 U
Anthracene	µg/L	1,800	**0.09 J**	**0.016 J**	**0.2**	0.1 U	**0.28**	0.1 U
Benz[a]anthracene	µg/L	0.012	0.1 U	0.1 U	0.1 U	0.1 U	**0.043 J**	0.1 U
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	**0.32 B**	1 U	1 U	1 U
Carbazole	µg/L		1 U	1 U	**0.43 J**	1 U	**0.23 J**	1 U
Chrysene	µg/L	25	0.1 U	0.1 U	0.1 U	0.1 U	**0.03 J**	0.1 U
Fluoranthene	µg/L	800	**0.015 J**	0.1 U	**0.015 J**	**0.011 J**	**0.42**	0.1 U
Fluorene	µg/L	290	**0.02 J**	0.1 U	**0.11**	0.1 U	**0.22**	0.1 U
Naphthalene	µg/L	0.17	**0.099 B**	**0.022 B**	**0.16**	**0.033 B**	**0.42**	**0.023 B**
Pentachlorophenol	µg/L	1	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Phenanthrene	µg/L		**0.033 J**	0.1 U	**0.073 J**	0.1 U	**0.63**	0.1 U
Phenol	µg/L	5,800	1 U	1 U	**5.3 J**	1 U	**0.27 J**	1 U
Pyrene	µg/L	120	0.1 U	0.1 U	**0.029 J**	0.1 U	**0.42**	0.1 U
TPH/Oil and Grease								
Diesel Range Organics	µg/L	47	**489 J**	**188 J**	**3,120 J**	**308 J**	**929 J**	101 UJ
Gasoline Range Organics	µg/L	47	200 U	200 U	200 U	200 U	200 U	200 U
Oil and Grease	µg/L	47	N/A	N/A	N/A	N/A	N/A	N/A

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
J: The positive result reported for this analyte is a quantitative estimate.
B: The compound/analyte was not detected substantially above the level of the assoicated method blank/preparation or field blank.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitaiton/detection limit.
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R: The result for this analyt is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.
*PAH compounds were analyzed via sim

Table 4
Summary of Inorganics Detected in Groundwater
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	B13-021-PZ	B13-049-PZ	B13-076-PZ	SW-031-MWS	SW-032-MWS	SW-033-MWS	SW-034-MWS	SW-035-MWS	SW-036-MWS	SW-037-MWS
Total Metals												
Aluminum	µg/L	20,000	N/A	N/A	N/A	**320**	**266**	**881**	**249**	**124**	**636**	**770**
Arsenic	µg/L	10	N/A	N/A	N/A	**3.8 J**	5 U	**3.5 B**	**3.2 J**	**3.4 J**	5 U	5 U
Barium	µg/L	2,000	N/A	N/A	N/A	**30.1**	**62**	**53**	**73.3**	**20.1**	**69.3**	**71.3**
Beryllium	µg/L	4	N/A	N/A	N/A	1 U	1 U	**0.34 J**	1 U	1 U	1 U	1 U
Cadmium	µg/L	5	N/A	N/A	N/A	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Chromium	µg/L	100	N/A	N/A	N/A	**1.4 J**	**3.3 J**	**8.8**	**1.9 J**	**5.7**	**1.8 B**	**0.99 J**
Chromium VI	µg/L	0.035	N/A	N/A	N/A	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	6	N/A	N/A	N/A	5 U	**5.2**	5 U	5 U	5 U	5 U	5 U
Copper	µg/L	1,300	N/A	N/A	N/A	5 U	5 U	**2.5 J**	5 U	5 U	5 U	5 U
Iron	µg/L	14,000	N/A	N/A	N/A	**346**	**1,970**	**448**	**35 J**	**138**	**75.2**	**29.5 B**
Lead	µg/L	15	N/A	N/A	N/A	5 U	5 U	5 U	5 U	5 U	**4.6 B**	5 U
Manganese	µg/L	430	N/A	N/A	N/A	**46.7**	**336**	**14.6**	**5.7**	**5.6**	**68.7**	**11.3**
Mercury	µg/L	2	N/A	N/A	N/A	0.2 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U
Nickel	µg/L	390	N/A	N/A	N/A	**2.8 B**	**4.6 B**	**1.2 B**	10 U	**0.73 B**	10 U	10 U
Selenium	µg/L	50	N/A	N/A	N/A	8 U	8 U	**4 B**	8 U	8 U	**6.8 B**	8 U
Silver	µg/L	94	N/A	N/A	N/A	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Thallium	µg/L	2	N/A	N/A	N/A	10 U	10 U	**4.2 J**	10 U	**5.3 B**	**7 B**	10 U
Vanadium	µg/L	86	N/A	N/A	N/A	**6.6**	**15.2**	**32.2**	**42.7**	**22.4**	**106**	**61.3**
Zinc	µg/L	6,000	N/A	N/A	N/A	**2.8 B**	**2.7 B**	**3.7 B**	10 U	**8.7 B**	**1.4 B**	10 U
Dissolved Metals												
Aluminum, Dissolved	µg/L	20,000	**150**	**107**	**343**	**83.5**	**93.8**	**49.8 J**	**224**	**126**	**363**	**699**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	**2.4 B**	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	5 U	5 U	5 U	**3.1 B**	5 U	**4.3 B**	5 U	**4.1 B**	5 U	5 U
Barium, Dissolved	µg/L	2,000	**33.6**	**38.1**	**44.5**	**29.4**	**57.6**	**47.1**	**69**	**21.7**	**65.6**	**67.3**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	**8 B**	**8 B**	**8 B**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**1.6 J**	**1.7 J**	**1.4 J**	5 U	**1.2 B**	**7.9**	**1.7 B**	**5.4**	**0.96 B**	**1 J**
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper, Dissolved	µg/L	1,300	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	70 U	70 U	70 U	70 U	**59.9 J**	**38.8 B**	**34.2 J**	**102**	70 U	**13.9 B**
Manganese, Dissolved	µg/L	430	**0.94 J**	**1 J**	**1 J**	**40.4**	**98.6**	**2.3 B**	**3.6 J**	**3.3 J**	**2.3 B**	**1.4 B**
Nickel, Dissolved	µg/L	390	**1.2 B**	**1.1 B**	**0.87 B**	**1.7 B**	**3 B**	10 U	**0.82 B**	**0.71 B**	**1.2 B**	10 U
Selenium, Dissolved	µg/L	50	**4.1 J**	8 U	8 U	8 U	8 U	**4.2 B**	8 U	**5.6 J**	**5.6 B**	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	**6.1 B**	**4.5 B**	10 U	**4.7 B**	10 U
Vanadium, Dissolved	µg/L	86	**34.9**	**40.4**	**4.1 J**	**6.2**	**6.1**	**26.3**	**41.2**	**24.4**	**104**	**61.5**
Zinc, Dissolved	µg/L	6,000	**1.6 B**	**1.2 B**	**1.7 B**	**3.9 B**	10 U	**1.5 B**	**1.5 B**	**0.77 B**	10 U	**0.67 B**
Other												
Cyanide	µg/L	200	**3.2 J**	**4.1 J**	10 U	**6.1 J**	**32.4**	**81.1**	**71.8**	**225**	10 U	**4.6 J**

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
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Table 4
Summary of Inorganics Detected in Groundwater
Sub-Parcel B5-1 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-038-MWS	SW-066-MWS	SW-071-MWS	SW-072-MWS	SW-073-MWS	SW15-PZM005
Total Metals								
Aluminum	µg/L	20,000	**250**	**385**	**73.5**	**7,650**	**125**	**165**
Arsenic	µg/L	10	5 U	**4.3 J**	5 U	5 U	5 U	5 U
Barium	µg/L	2,000	**64.5**	**37.6**	**49.2**	**16.9**	**149**	**30.2**
Beryllium	µg/L	4	1 U	1 U	1 U	**7**	1 U	1 U
Cadmium	µg/L	5	3 U	3 U	3 U	**1.1 J**	3 U	3 U
Chromium	µg/L	100	**17.3**	**6.5**	**1.1 B**	**1.4 J**	**8.8**	**0.89 B**
Chromium VI	µg/L	0.035	**5 J**	10 U	10 U	10 U	10 U	N/A
Cobalt	µg/L	6	5 U	5 U	5 U	**124**	5 U	**4 J**
Copper	µg/L	1,300	5 U	5 U	5 U	**4.8 J**	5 U	**2.1 B**
Iron	µg/L	14,000	70 U	**42.5 B**	**103**	**38,600**	70 U	**899**
Lead	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	µg/L	430	5 U	**2 B**	**193**	**5,550**	5 U	**256**
Mercury	µg/L	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.05 B**
Nickel	µg/L	390	**0.93 J**	**0.81 B**	**0.73 J**	**166**	**0.75 B**	**4.2 B**
Selenium	µg/L	50	**4 J**	8 U	**11.2**	8 U	**6.4 J**	8 U
Silver	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U
Thallium	µg/L	2	10 U	10 U	**5.6 B**	10 U	10 U	10 U
Vanadium	µg/L	86	**111**	**27.9**	**3.3 B**	5 U	**17.7**	5 U
Zinc	µg/L	6,000	10 U	**0.65 J**	10 U	**411**	10 U	**7.5 B**
Dissolved Metals								
Aluminum, Dissolved	µg/L	20,000	**249**	**358**	**45 J**	**7,800**	**125**	**144**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	5 U	**5.6**	**4.7 B**	5 U	5 U	5 U
Barium, Dissolved	µg/L	2,000	**64.3**	**37.9**	**43.7**	**16.5**	**150**	**30.7**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	**7.3**	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	3 U	**0.93 J**	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**17.4**	**6**	**1.4 B**	**0.85 J**	**9.7**	**0.79 B**
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	**123**	5 U	**4.5 B**
Copper, Dissolved	µg/L	1,300	5 U	5 U	5 U	**4.9 J**	5 U	**1.9 J**
Iron, Dissolved	µg/L	14,000	70 U	**12.3 B**	**45.6 B**	**44,100**	**12.1 B**	**957**
Manganese, Dissolved	µg/L	430	5 U	5 U	**186**	**5,360**	5 U	**273**
Nickel, Dissolved	µg/L	390	**0.99 B**	10 U	10 U	**165**	**0.7 B**	**3.6 B**
Selenium, Dissolved	µg/L	50	8 U	8 U	**4.8 J**	8 U	**7.1 J**	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium, Dissolved	µg/L	86	**108**	**27.5**	**2.5 J**	5 U	**17.6**	5 U
Zinc, Dissolved	µg/L	6,000	**1.3 B**	**0.63 B**	10 U	**410**	**1.7 B**	**8 B**
Other								
Cyanide	µg/L	200	10 U	**11.2**	**10.4**	10 U	10 U	10 U

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
Values in red indicate an exceedance of the Project Action Limit (PAL)
J: The positive result reported for this analyte is a quantitative estimate.
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Table 5 - Sub-Parcel B5-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	B5-054-SB-4	0.77	J	0.014	0.17	66	21.21	409	20	no
2,4-Dimethylphenol	105-67-9	B5-024-SB-1	0.24	J	0.053	0.15	64	3.13		1,640	no
2-Butanone (MEK)	78-93-3	B5-054-SB-1	0.027		0.0025	0.01	127	16.54		19,300	no
2-Chloronaphthalene	91-58-7	B13-056-SB-1	0.11		0.11	0.11	66	1.52		6,030	no
2-Hexanone	591-78-6	B5-017-SB-1	0.0021	J	0.0021	0.002	127	0.79		134	no
2-Methylnaphthalene	91-57-6	B5-020-SB-1	12.2		0.0011	0.39	141	85.11		301	no
2-Methylphenol	95-48-7	B5-024-SB-1	0.092	J	0.092	0.09	64	1.56		4,100	no
Acenaphthene	83-32-9	B5-010-SB-1	16.2		0.00056	0.22	141	70.92		4,520	no
Acenaphthylene	208-96-8	B5-010-SB-1	21.4		0.00067	0.25	141	79.43			no
Acetone	67-64-1	B5-054-SB-1	0.54		0.0079	0.06	124	61.29		67,000	no
Acetophenone	98-86-2	B5-024-SB-1	0.68		0.029	0.16	66	9.09		11,700	no
Aluminum	7429-90-5	B5-016-SB-8.5	49,200		2,520	20,251	141	100.00		112,000	no
Anthracene	120-12-7	B5-010-SB-1	30.7		0.00079	0.36	141	87.94		22,600	no
Antimony	7440-36-0	B5-174-SB-1	2.6		1.3	1.83	141	2.84		46.7	no
Aroclor 1016	12674-11-2	B5-107-SB-1	0.16		0.14	0.15	79	2.53	27.5	5.13	no
Aroclor 1242	53469-21-9	B5-108-SB-1	0.78		0.0346	0.25	79	7.59	0.95		no
Aroclor 1248	12672-29-6	B13-049-SB-1	0.128		0.1	0.11	79	2.53	0.954		no
Aroclor 1254	11097-69-1	B5-104-SB-1	0.15		0.0298	0.08	79	12.66	0.972	1.47	no
Aroclor 1260	11096-82-5	B5-159-SB-1	36.1		0.014	6.03	79	13.92	0.991		YES (C)
Arsenic	7440-38-2	B5-105-SB-1	32.8		1.6	6.85	152	82.24	3	47.9	YES (C)
Barium	7440-39-3	B5-022-SB-1	1,100		13	219	141	100.00		21,700	no
Benzaldehyde	100-52-7	B13-076-SB-7	0.15		0.02	0.06	53	13.21	818	11,700	no
Benzene	71-43-2	B5-010-SB-7	0.13		0.0014	0.01	127	13.39	5.08	42.3	no
Benz[a]anthracene	56-55-3	B5-010-SB-1	38.1		0.0022	0.73	141	92.91	21		YES (C)
Benzo[a]pyrene	50-32-8	B5-010-SB-1	31.4		0.00069	0.75	142	91.55	2.1	22	YES (C/NC)
Benzo[b]fluoranthene	205-99-2	B5-010-SB-1	52.6		0.00054	1.30	141	96.45	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	B5-160-SB-4	12.6		0.0014	0.42	141	91.49			no
Benzo[k]fluoranthene	207-08-9	B5-010-SB-1	18.3		0.00082	0.66	141	93.62	210		no
Beryllium	7440-41-7	B5-081-SB-1	8		0.16	2.34	141	92.20	6,950	229	no
bis(2-Ethylhexyl)phthalate	117-81-7	B13-049-SB-1	0.51	J	0.017	0.19	66	4.55	164	1,640	no
Cadmium	7440-43-9	B5-158-SB-5	38.3		0.17	1.63	141	89.36	9,260	98.2	no
Carbazole	86-74-8	B5-024-SB-1	0.2	J	0.019	0.08	66	16.67			no
Chloroform	67-66-3	B5-027-SB-5	0.016		0.0092	0.01	127	1.57	1.38	103	no
Chromium	7440-47-3	B5-074-SB-1	3,960		3.9	346	141	100.00			no
Chromium VI	18540-29-9	B5-075-SB-1	8.1		0.17	0.83	141	53.19	6.33	348	YES (C)
Chrysene	218-01-9	B5-010-SB-1	32		0.00071	0.71	141	96.45	2,100		no
Cobalt	7440-48-4	B13-019-SB-4	50.5		0.3	6.69	141	96.45	1,850	34.7	YES (NC)
Copper	7440-50-8	B5-160-SB-4	2,560		1.8	70.4	141	99.29		4,670	no
Cyanide	57-12-5	B5-158-SB-5	43		0.071	2.64	141	82.27		14.7	YES (NC)
Cyclohexane	110-82-7	B5-052-SB-1	0.21	J	0.0059	0.05	127	3.94		2,740	no
Dibenz[a,h]anthracene	53-70-3	B5-010-SB-1	26.8		0.0014	0.36	141	78.01	2.1		YES (C)
Diesel Range Organics	DRO	B5-010-SB-1	3,760		4.6	167	141	92.20		620	YES (NC)

Table 5 - Sub-Parcel B5-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Diethylphthalate	84-66-2	B13-064-SB-1	0.086		0.054	0.07	66	3.03		65,700	no
Di-n-butylphthalate	84-74-2	B13-058-SB-1	0.033	J	0.033	0.03	66	1.52		8,210	no
Ethylbenzene	100-41-4	B5-020-SB-1	0.08	J	0.0021	0.02	127	6.30	25.4	2,050	no
Fluoranthene	206-44-0	B5-010-SB-1	116		0.00057	1.82	141	99.29		3,010	no
Fluorene	86-73-7	B5-010-SB-1	28.9		0.00065	0.32	141	79.43		3,010	no
Gasoline Range Organics	GRO	B5-020-SB-1	32.6		8.3	18.5	246	7.32		620	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B5-160-SB-4	11.9		0.001	0.42	141	87.23	21		no
Iron	7439-89-6	B5-110-SB-4	391,000		3,890	95,968	141	100.00		81,800	YES (NC)
Lead^	7439-92-1	B5-015-SB-1	4,910		2.1	187	141	95.04		800	YES (NC)
Manganese	7439-96-5	B13-055-SB-9	90,000		27.9	9,094	141	100.00		2,560	YES (NC)
Mercury	7439-97-6	B5-019-SB-1	7.8		0.0022	0.47	131	66.41		35	no
Methyl Acetate	79-20-9	B5-064-SB-1	0.13	J	0.13	0.13	98	1.02		117,000	no
Naphthalene	91-20-3	B5-010-SB-7	72.9		0.0014	0.91	142	93.66	16.7	58.5	YES (C/NC)
Nickel	7440-02-0	B13-056-SB-1	865		1.1	39.9	141	97.87	64,100	2,240	no
N-Nitrosodiphenylamine	86-30-6	B13-055-SB-1	0.063	J	0.063	0.06	66	1.52	469		no
Oil and Grease	O&G	B13-004-SB-1	1,520		215	467	26	100.00		620	YES (NC)
PCBs (total)*	1336-36-3	B5-159-SB-1	36.1	J	0.0303	2.65	79	32.91	0.942		YES (C)
Phenanthrene	85-01-8	B5-010-SB-1	130		0.00079	1.60	141	98.58			no
Pyrene	129-00-0	B5-010-SB-1	86.1		0.00093	1.56	141	96.45		2,260	no
Selenium	7782-49-2	B5-010-SB-7	7.2		2.1	3.61	141	25.53		584	no
Silver	7440-22-4	B5-110-SB-4	11.1		0.6	2.54	141	34.04		584	no
Styrene	100-42-5	B5-010-SB-7	0.015		0.015	0.02	126	0.79		3,480	no
Tetrachloroethene	127-18-4	B5-028-SB-4.5	0.033		0.0041	0.02	127	3.94	103	38.9	no
Thallium	7440-28-0	B13-055-SB-9	14.3		3.5	6.56	141	4.96		1.17	YES (NC)
Toluene	108-88-3	B5-052-SB-1	0.45		0.0011	0.06	127	11.81		4,680	no
Vanadium	7440-62-2	B5-179-SB-9	2,850	J	5.5	307	141	100.00		583	YES (NC)
Xylenes	1330-20-7	B5-052-SB-1	0.88		0.0065	0.26	127	7.09		249	no
Zinc	7440-66-6	B5-067-SB-1	25,700	J	3.1	1,010	141	100.00		35,000	no

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

COPC = Constituent of Potential Concer
C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC
TR = Target Risk
HQ = Hazard Quotient

*PCBs (total) include the sum of all detected aroclor mixtures, including those without regional screening levels (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^The COPC screening level for lead was not adjusted to the HQ=0.1 because lead is not assessed in the SLRA. The 800 mg/kg PAL is relevant to the Adult Lead Model procedure.

Table 6 - Sub-Parcel B5-1
Development Area
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Arithmetic Mean (mg/kg)
B5 Road (21.5 ac.)	Surface	85.51
	Sub-Surface	35.99
	Pooled	67.35
B5 Building (59.2 ac.)	Surface	307.04
	Sub-Surface	169.53
	Pooled	247.18
B13 Road (43.4 ac.)	Surface	79.269
	Sub-Surface	74.946
	Pooled	77.11

Adult Lead Model (ALM) Risk Levels	
Soil Concentration (mg/kg)	Probability of Blood Concentration of 10 ug/dL
2,737 mg/kg	5%
3,417 mg/kg	10%

Table 7 - Sub-Parcel B5-1
EPCs - Surface Soils

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	EPC Type B5 Road	EPC B5 Road (mg/kg)	EPC Type B5 Building	EPC B5 Building (mg/kg)	EPC Type B13 Road	EPC B13 Road (mg/kg)
Arsenic	3.00	47.9	95% KM (t) UCL	**7.93**	95% KM (Chebyshev) UCL	**10.50**	95% KM (t) UCL	**9.15**
Chromium VI	6.33	348	95% KM (Percentile Bootstrap) UCL	1.33	95% KM (BCA) UCL	1.02	95% Chebyshev (Mean, Sd) UCL	1.24
Cobalt	1,850	34.7	95% Student's-t UCL	7.37	95% KM (Chebyshev) UCL	9.10	95% Student's-t UCL	13.0
Cyanide		14.7	97.5% KM (Chebyshev) UCL	4.31	95% KM (Chebyshev) UCL	6.09	95% KM (Chebyshev) UCL	3.09
Iron		81,800	95% Student's-t UCL	**146,400**	95% Student's-t UCL	**144,100**	95% Student's-t UCL	**151,600**
Manganese		2,560	95% Chebyshev (Mean, Sd) UCL	**15,081**	95% Adjusted Gamma UCL	**14,026**	95% Adjusted Gamma UCL	**17,960**
Vanadium		583	95% H-UCL	275	95% H-UCL	**619**	95% Student's-t UCL	514
PCBs (total)	0.94		95% KM (t) UCL	0.38	99% KM (Chebyshev) UCL	**9.99**	95% KM (t) UCL	0.09
Benz[a]anthracene	21		95% Adjusted Gamma KM-UCL	1.39	97.5% Chebyshev (Mean, Sd) UCL	6.61	95% Student's-t UCL	0.33
Benzo[a]pyrene	2.10	22.0	95% Adjusted Gamma KM-UCL	**4.26**	99% KM (Chebyshev) UCL	**7.68**	95% Student's-t UCL	0.28
Benzo[b]fluoranthene	21		95% Adjusted Gamma UCL	2.33	97.5% Chebyshev (Mean, Sd) UCL	9.19	95% Student's-t UCL	0.53
Dibenz[a,h]anthracene	2.10		95% Adjusted Gamma KM-UCL	0.32	97.5% KM (Chebyshev) UCL	**4.16**	95% Student's-t UCL	0.08
Naphthalene	16.7	58.5	95% Adjusted Gamma UCL	0.31	95% Chebyshev (Mean, Sd) UCL	1.39	95% Adjusted Gamma UCL	0.53

Bold indicates EPC higher than lowest COPC SL
COPC = Constituent of Potential Concern
Benzo[a]pyrene screening level was derived from the USEPA IRIS Recent Additions dated January 19, 2017
PAH compounds screening levels were adjusted based on the relative potency factor

Table 8 - Sub-Parcel B5-1
EPCs - Sub-Surface Soils

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	EPC Type B5 Road	EPC B5 Road (mg/kg)	EPC Type B5 Building	EPC B5 Building (mg/kg)	EPC Type B13 Road	EPC B13 Road (mg/kg)
Arsenic	3.00	47.9	95% KM (t) UCL	**6.02**	95% GROS Adjusted Gamma UCL	**7.63**	95% GROS Adjusted Gamma UCL	**18.4**
Chromium VI	6.33	348	95% KM (t) UCL	0.42	95% GROS Adjusted Gamma UCL	1.43	95% Modififed-t UCL	0.42
Cobalt	1,850	34.7	95% Student's-t UCL	6.43	95% Adjusted Gamma KM-UCL	7.31	95% Student's-t UCL	19.0
Cyanide		14.7	95% KM (t) UCL	1.92	97.5% KM (Chebyshev) UCL	9.67	95% Adjusted Gamm UCL	2.21
Iron		81,800	95% Adjusted Gamma UCL	76,262	95% H-UCL	**112,900**	95% Student's-t UCL	**110,000**
Manganese		2,560	95% Student's-t UCL	**10,020**	95% Adjusted Gamma UCL	**10,294**	95% H-UCL	**26,366**
Vanadium		583	95% Adjusted Gamma UCL	**858**	95% Chebyshev (Mean, Sd) UCL	**618**	95% Student's-t UCL	529
Benz[a]anthracene	21		95% KM (t) UCL	0.17	95% KM (Chebyshev) UCL	0.85	95% GROS Adjusted Gamma UCL	0.22
Benzo[a]pyrene	2.10	22.0	95% GROS Adjusted Gamma UCL	0.39	99% KM (Chebyshev) UCL	**5.59**	99% KM (Chebyshev) UCL	0.82
Benzo[b]fluoranthene	21		95% KM (t) UCL	0.51	99% KM (Chebyshev) UCL	7.86	95% Adjusted Gamma KM-UCL	0.46
Dibenz[a,h]anthracene	2.10		95% KM (t) UCL	0.04	99% KM (Chebyshev) UCL	1.06	97.5% KM (Chebyshev) UCL	0.08
Naphthalene	16.7	58.5	95% KM (t) UCL	0.07	99% KM (Chebyshev) UCL	**21.7**	95% GROS Adjusted Gamma UCL	0.09

Bold indicates EPC higher than lowest COPC SL
COPC = Constituent of Potential Concern
Benzo[a]pyrene screening level was derived from the USEPA IRIS Recent Additions dated January 19, 2017
PAH compounds screening levels were adjusted based on the relative potency factor

Table 9 - Sub-Parcel B5-1
EPCs - Pooled Soils

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	EPC Type B5 Road	EPC B5 Road (mg/kg)	EPC Type B5 Building	EPC B5 Building (mg/kg)	EPC Type B13 Road	EPC B13 Road (mg/kg)
Arsenic	3.00	47.9	95% GROS Adjusted Gamma UCL	**7.88**	95% KM (BCA) UCL	**6.87**	95% GROS Adjusted Gamma UCL	**13.1**
Chromium VI	6.33	348	95% KM (BCA) UCL	0.94	95% KM (BCA) UCL	0.93	95% Modified-t UCL	0.59
Cobalt	1,850	34.7	95% Adjusted Gamma UCL	6.86	95% KM (Chebyshev) UCL	8.18	95% Adjusted Gamma UCL	15.3
Cyanide		14.7	97.5% KM (Chebyshev) UCL	3.36	95% KM (Chebyshev) UCL	5.54	95% KM (Chebyshev) UCL	2.48
Iron		81,800	95% Adjusted Gamma UCL	**124,400**	95% Approximate Gamma UCL	**118,900**	95% Student's-t UCL	**121,000**
Manganese		2,560	95% Chebyshev (Mean, Sd) UCL	**12,772**	95% Approximate Gamma UCL	**11,309**	95% H-UCL	**16,971**
Vanadium		583	95% H-UCL	373	95% Chebyshev (Mean, Sd) UCL	**584**	95% Student's-t UCL	468
PCBs (total)	0.94		95% KM (t) UCL	0.38	99% KM (Chebyshev) UCL	**9.99**	95% KM (t) UCL	0.09
Benz[a]anthracene	21		95% KM (Chebyshev) UCL	0.91	97.5% KM (Chebyshev) UCL	3.89	95% KM (Chebyshev) UCL	0.31
Benzo[a]pyrene	2.10	22.0	95% Adjusted Gamma KM-UCL	**2.41**	97.5% KM (Chebyshev) UCL	**3.60**	99% KM (Chebyshev) UCL	0.60
Benzo[b]fluoranthene	21		95% KM (Chebyshev) UCL	2.50	97.5% KM (Chebyshev) UCL	6.04	95% KM (Chebyshev) UCL	0.52
Dibenz[a,h]anthracene	2.10		97.5% KM (Chebyshev) UCL	0.26	97.5% KM (Chebyshev) UCL	**2.41**	99% KM (Chebyshev) UCL	0.13
Naphthalene	16.7	58.5	95% KM (Chebyshev) UCL	0.27	97.5% KM (Chebyshev) UCL	6.74	99% KM (Chebyshev) UCL	0.55

Bold indicates EPC higher than lowest COPC SL
COPC = Constituent of Potential Concern
Benzo[a]pyrene screening level was derived from the USEPA IRIS Recent Additions dated January 19, 2017
PAH compounds screening levels were adjusted based on the relative potency factor

Table 10 - Sub-Parcel B5-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organ	B5 Road (21.5 ac.)					B5 Building (59.2 ac.)					B13 Road (43.4 ac.)				
			Composite Worker					Composite Worker					Composite Worker			
			RSLs		Risk Estimates			RSLs		Risk Estimates			RSLs		Risk Estimates	
		EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	7.93	3.0	479	2.6E-06	0.02	10.50	3.0	479	3.5E-06	0.022	9.15	3.0	479	3.1E-06	0.02
Chromium VI	**Respiratory**	1.33	6.33	3,480	2.1E-07	0.0004	1.02	6.33	3,480	1.6E-07	0.0003	1.24	6.33	3,480	2.0E-07	0.0004
Cobalt	**None Specified**	7.37	1,850	347	4.0E-09	0.02	9.10	1,850	347	4.9E-09	0.03	13.0	1,850	347	7.0E-09	0.04
Cyanide	**None Specified**	4.31		147		0.03	6.09		147		0.04	3.09		147		0.02
Iron	**None Specified**	146,400		818,000		0.2	144,100		818,000		0.2	151,600		818,000		0.2
Manganese	**Nervous**	15,081		25,600		0.6	14,026		25,600		0.5	17,960		25,600		0.7
Vanadium	**Dermal**	275		5,830		0.05	619		5,830		0.1	514		5,830		0.09
PCBs (total)		0.38	0.942		4.0E-07		9.99	0.942		1.1E-05		0.09	0.942		9.3E-08	
Benz[a]anthracene		1.39	21		6.6E-08		6.61	21		3.1E-07		0.33	21		1.6E-08	
Benzo[a]pyrene	**None Specified**	4.26	2.1	220	2.0E-06	0.02	7.68	2.1	220	3.7E-06	0.03	0.28	2.1	220	1.4E-07	0.001
Benzo[b]fluoranthene		2.33	21		1.1E-07		9.19	21		4.4E-07		0.53	21		2.5E-08	
Dibenz[a,h]anthracene		0.32	2.1		1.5E-07		4.16	2.1		2.0E-06		0.08	2.1		3.9E-08	
Naphthalene	**Nervous; Respiratory**	0.31	16.7	585	1.9E-08	0.0005	1.39	16.7	585	8.3E-08	0.002	0.53	16.7	585	3.2E-08	0.0009
					6E-06	↓				**2E-05**	↓				**4E-06**	↓

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

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Table 11 - Sub-Parcel B5-1
Sub-Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organ	B5 Road (21.5 ac.)					B5 Building (59.2 ac.)					B13 Road (43.4 ac.)				
			Composite Worker					Composite Worker					Composite Worker			
			RSLs		Risk Estimates			RSLs		Risk Estimates			RSLs		Risk Estimates	
		EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	6.02	3.0	479	2.0E-06	0.01	7.63	3.0	479	2.5E-06	0.02	18.4	3.0	479	6.1E-06	0.04
Chromium VI	**Respiratory**	0.42	6.33	3,480	6.6E-08	0.000120	1.43	6.33	3,480	2.3E-07	0.0004	0.42	6.33	3,480	6.6E-08	0.0001
Cobalt	**None Specified**	6.43	1,850	347	3.5E-09	0.02	7.31	1,850	347	4.0E-09	0.02	19.0	1,850	347	1.0E-08	0.05
Cyanide	**None Specified**	1.92		147		0.01	9.67		147		0.07	2.21		147		0.02
Iron	**None Specified**	76,262		818,000		0.09	112,900		818,000		0.1	110,000		818,000		0.1
Manganese	**Nervous**	10,020		25,600		0.4	10,294		25,600		0.4	26,366		25,600		1
Vanadium	**Dermal**	858		5,830		0.1	618		5,830		0.1	529		5,830		0.09
Benz[a]anthracene		0.17	21		8.3E-09		0.85	21		4.0E-08		0.22	21		1.1E-08	
Benzo[a]pyrene	**None Specified**	0.39	2.1	220	1.9E-07	0.002	5.59	2.1	220	2.7E-06	0.03	0.82	2.1	220	3.9E-07	0.004
Benzo[b]fluoranthene		0.51	21		2.4E-08		7.86	21		3.7E-07		0.46	21		2.2E-08	
Dibenz[a,h]anthracene		0.04	2.1		1.8E-08		1.06	2.1		5.1E-07		0.08	2.1		3.6E-08	
Naphthalene	**Nervous; Respiratory**	0.07	16.7	585	4.1E-09	0.0001	21.7	16.7	585	1.3E-06	0.04	0.09	16.7	585	5.2E-09	0.0001
					2E-06	↓				**8E-06**	↓				**7E-06**	↓

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

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	0
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	0
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Table 12 - Sub-Parcel B5-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organ	B5 Road (21.5 ac.)					B5 Building (59.2 ac.)					B13 Road (43.4 ac.)				
			Composite Worker					Composite Worker					Composite Worker			
			RSLs		Risk Estimates			RSLs		Risk Estimates			RSLs		Risk Estimates	
		EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	7.88	3.0	479	2.6E-06	0.02	6.87	3.0	479	2.3E-06	0.01	13.1	3.0	479	4.4E-06	0.03
Chromium VI	**Respiratory**	0.94	6.33	3,480	1.5E-07	0.0003	0.93	6.33	3,480	1.5E-07	0.0003	0.59	6.33	3,480	9.4E-08	0.0002
Cobalt	**None Specified**	6.86	1,850	347	3.7E-09	0.02	8.18	1,850	347	4.4E-09	0.02	15.3	1,850	347	8.2E-09	0.04
Cyanide	**None Specified**	3.36		147		0.02	5.54		147		0.04	2.48		147		0.02
Iron	**None Specified**	124,400		818,000		0.2	118,900		818,000		0.1	121,000		818,000		0.1
Manganese	**Nervous**	12,772		25,600		0.5	11,309		25,600		0.4	16,971		25,600		0.7
Vanadium	**Dermal**	373		5,830		0.06	584		5,830		0.1	468		5,830		0.08
PCBs (total)		0.38	0.942		4.0E-07		9.99	0.942		1.1E-05		0.09	0.942		9.3E-08	
Benz[a]anthracene		0.91	21		4.3E-08		3.89	21		1.9E-07		0.31	21		1.5E-08	
Benzo[a]pyrene	**None Specified**	2.41	2.1	220	1.1E-06	0.01	3.60	2.1	220	1.7E-06	0.02	0.60	2.1	220	2.8E-07	0.003
Benzo[b]fluoranthene		2.50	21		1.2E-07		6.04	21		2.9E-07		0.52	21		2.5E-08	
Dibenz[a,h]anthracene		0.26	2.1		1.3E-07		2.41	2.1		1.1E-06		0.13	2.1		6.3E-08	
Naphthalene	**Nervous; Respiratory**	0.27	16.7	585	1.6E-08	0.0005	6.74	16.7	585	4.0E-07	0.01	0.55	16.7	585	3.3E-08	0.0009
					5E-06	↓				**2E-05**	↓				**5E-06**	↓

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

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	0
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	0
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Table 13 - Sub-Parcel B5-1
Surface Soils
Construction Worker Risk Ratios

		95 day B5 Road (21.5 ac.)					105 day B5 Building (59.2 ac.)					55 day B13 Road (43.4 ac.)				
			Construction Worker					Construction Worker					Construction Worker			
			SSLs		Risk Estimates			SSLs		Risk Estimates			SSLs		Risk Estimates	
Parameter	Target Organ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	7.93	39.8	253	2.0E-07	0.03	10.50	36.0	230	2.9E-07	0.05	9.15	68.8	438	1.3E-07	0.02
Chromium VI	Respiratory	1.33	56.1	2,105	2.4E-08	0.0006	1.02	51.8	1,908	2.0E-08	0.0005	1.24	98.3	3,641	1.3E-08	0.0003
Cobalt	None Specified	7.37	9,770	2,448	7.5E-10	0.003	9.10	13,799	2,296	6.6E-10	0.004	13.0	22,913	4,341	5.7E-10	0.003
Cyanide	None Specified	4.31		16.8		0.3	6.09		13.7		0.4	3.09		19.9		0.2
Iron	None Specified	146,400		633,004		0.2	144,100		572,717		0.3	151,600		1,093,370		0.1
Manganese	Nervous	15,081		10,615		1	14,026		10,225		1	17,960		19,189		0.9
Vanadium	Dermal	275		4,181		0.07	619		3,828		0.2	514		7,285		0.07
PCBs (total)		0.38	12.1		3.1E-08		9.99	10.5		9.5E-07		0.09	17.2		5.1E-09	
Benz[a]anthracene		1.39	381		3.7E-09		6.61	338		2.0E-08		0.33	607		5.4E-10	
Benzo[a]pyrene	None Specified	4.26	45.0	17.0	9.5E-08	0.3	7.68	40.5	14.0	1.9E-07	0.5	0.28	76.2	20.7	3.7E-09	0.01
Benzo[b]fluoranthene		2.33	448		5.2E-09		9.19	403		2.3E-08		0.53	757		7.0E-10	
Dibenz[a,h]anthracene		0.32	46.9		6.8E-09		4.16	42.4		9.8E-08		0.08	81.0		1.0E-09	
Naphthalene	Nervous; Respiratory	0.31	37.1	54.1	8.3E-09	0.006	1.39	30.4	44.3	4.6E-08	0.03	0.53	43.9	64.0	1.2E-08	0.008
					4E-07	↓				**2E-06**	↓				**2E-07**	↓

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002
Guidance Equation Input Assumptions:
- 5 cars/day (2 tons/car)
- 5 trucks/day (20 tons/truck)
- 3 meter source depth thickness

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	1

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	1

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Table 14 - Sub-Parcel B5-1
Sub-Surface Soils
Construction Worker Risk Ratios

		95 day B5 Road (21.5 ac.)					105 day B5 Building (59.2 ac.)					55 day B13 Road (43.4 ac.)				
			Construction Worker					Construction Worker					Construction Worker			
			SSLs		Risk Estimates			SSLs		Risk Estimates			SSLs		Risk Estimates	
Parameter	Target Organ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.02	39.8	253	1.5E-07	0.02	7.63	36.0	230	2.1E-07	0.03	18.4	68.8	438	2.7E-07	0.04
Chromium VI	Respiratory	0.42	56.1	2,105	7.5E-09	0.0002	1.43	51.8	1,908	2.8E-08	0.0008	0.42	98.3	3,641	4.2E-09	0.0001
Cobalt	None Specified	6.43	9,770	2,448	6.6E-10	0.003	7.31	13,799	2,296	5.3E-10	0.003	19.0	22,913	4,341	8.3E-10	0.004
Cyanide	None Specified	1.92		16.8		0.1	9.67		13.7		0.7	2.21		19.9		0.1
Iron	None Specified	76,262		633,004		0.1	112,900		572,717		0.2	110,000		1,093,370		0.1
Manganese	Nervous	10,020		10,615		0.9	10,294		10,225		1	26,366		19,189		1
Vanadium	Dermal	858		4,181		0.2	618		3,828		0.2	529		7,285		0.07
Benz[a]anthracene		0.17	381		4.6E-10		0.85	338		2.5E-09		0.22	607		3.7E-10	
Benzo[a]pyrene	None Specified	0.39	45.0	17.0	8.8E-09	0.02	5.59	40.5	14.0	1.4E-07	0.4	0.82	76.2	20.7	1.1E-08	0.04
Benzo[b]fluoranthene		0.51	448		1.1E-09		7.86	403		1.9E-08		0.46	757		6.1E-10	
Dibenz[a,h]anthracene		0.04	46.9		7.9E-10		1.06	42.4		2.5E-08		0.08	81.0		9.3E-10	
Naphthalene	Nervous; Respiratory	0.07	37.1	54.1	1.9E-09	0.001	21.7	30.4	44.3	7.1E-07	0.5	0.09	43.9	64.0	2.0E-09	0.001
					2E-07	↓				**1E-06**	↓				**3E-07**	↓

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	1

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

Table 15 - Sub-Parcel B5-1
Pooled Soils
Construction Worker Risk Ratios

		95 day B5 Road (21.5 ac.)					105 day B5 Building (59.2 ac.)					55 day B13 Road (43.4 ac.)				
			Construction Worker					Construction Worker					Construction Worker			
			SSLs		Risk Estimates			SSLs		Risk Estimates			SSLs		Risk Estimates	
Parameter	Target Organ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ	EPC mg/kg	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	7.88	39.8	253	2.0E-07	0.03	6.87	36.0	230	1.9E-07	0.03	13.1	68.8	438	1.9E-07	0.03
Chromium VI	Respiratory	0.94	56.1	2,105	1.7E-08	0.0004	0.93	51.8	1,908	1.8E-08	0.0005	0.59	98.3	3,641	6.0E-09	0.0002
Cobalt	None Specified	6.86	9,770	2,448	7.0E-10	0.003	8.18	13,799	2,296	5.9E-10	0.004	15.3	22,913	4,341	6.7E-10	0.004
Cyanide	None Specified	3.36		16.8		0.2	5.54		13.7		0.4	2.48		19.9		0.1
Iron	None Specified	124,400		633,004		0.2	118,900		572,717		0.2	121,000		1,093,370		0.1
Manganese	Nervous	12,772		10,615		1	11,309		10,225		1	16,971		19,189		0.9
Vanadium	Dermal	373		4,181		0.09	584		3,828		0.2	468		7,285		0.06
PCBs (total)		0.38	12.1		3.1E-08		9.99	10.5		9.5E-07		0.09	17.2		5.1E-09	
Benz[a]anthracene		0.91	381		2.4E-09		3.89	338		1.1E-08		0.31	607		5.0E-10	
Benzo[a]pyrene	None Specified	2.41	45.0	17.0	5.4E-08	0.1	3.60	40.5	14.0	8.9E-08	0.3	0.60	76.2	20.7	7.8E-09	0.03
Benzo[b]fluoranthene		2.50	448		5.6E-09		6.04	403		1.5E-08		0.52	757		6.9E-10	
Dibenz[a,h]anthracene		0.26	46.9		5.6E-09		2.41	42.4		5.7E-08		0.13	81.0		1.6E-09	
Naphthalene	Nervous; Respiratory	0.27	37.1	54.1	7.2E-09	0.005	6.74	30.4	44.3	2.2E-07	0.2	0.55	43.9	64.0	1.3E-08	0.009
					3E-07	↓				**2E-06**	↓				**2E-07**	↓

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	1

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	1

Total HI	Dermal	0
	Cardiovascular	0
	Respiratory	0
	Nervous	1
	None Specified	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

April 11, 2017

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Parcel B-5-1

Dear Ms. Brown:

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- 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).

On September 11, 2014, Tradepoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP).

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel B-5-1 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this work plan are implemented and a No Further Action letter is issued by the Department pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the work plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this work plan.

Engineering and institutional controls approved as part of this Site Response and Development Work Plan shall be described in documentation submitted to the Department demonstrating that the exposure pathways on the sub-parcel are addressed in a manner that protects public health and the environment. This information shall support Tradepoint Atlantic's request for the issuance of a COC for the larger parcel.

Please do not hesitate to contact Tradepoint Atlantic for further information.

Thank you,

Peter Haid

Environmental Director
TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219
T 443.649.5055 C 732.841.7935
phaid@tradepointatlantic.com

APPENDIX B

Construction Worker Soil Screening Levels
95, 105, and 55 Work Day Exposures
Calculation Spreadsheet - Sub-Parcel B5-1

Description	Variable	Value
Days worked per week	DW	5
Exposure duration (yr)	ED	1
Hours worked per day	ET	8
A/constant (unitless) - particulate emission factor	Aconst	12.9351
B/constant (unitless) - particulate emission factor	Bconst	5.7383
C/constant (unitless) - particulate emission factor	Cconst	71.7711
Dispersion correction factor (unitless)	FD	0.185
Days per year with at least .01" precipitation	P	130
Target hazard quotient (unitless)	THQ	1
Body weight (kg)	BW	80
Averaging time - noncancer (yr)	ATnc	1
Soil ingestion rate (mg/d)	IR	330
Skin-soil adherence factor (mg/cm2)	AF	0.3
Skin surface exposed (cm2)	SA	3300
Event frequency (ev/day)	EV	1
Target cancer risk (unitless)	TR	01E-06
Averaging time - cancer (yr)	ATc	70
A/constant (unitless) - volatilization	Aconstv	2.4538
B/constant (unitless) - volatilization	Bconstv	17.566
C/constant (unitless) - volatilization	Cconstv	189.0426
Dry soil bulk density (kg/L)	Pb	1.5
Average source depth (m)	ds	3
Soil particle density (g/cm3)	Ps	2.65
Total soil porosity	Lpore/Lsoil	0.43
Air-filled soil porosity	Lair/Lsoil	0.28

Construction Worker Soil Screening Levels
95, 105, and 55 Work Day Exposures
Calculation Spreadsheet - Sub-Parcel B5-1

Area of site (ac)	Ac	21.5
Overall duration of construction (wk/yr)	EW	19
Exposure frequency (day/yr)	EF	**95**
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	**11**
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**14.3**
Overall duration of traffic (s)	Tt	**2,736,000**
Surface area (m2)	AR	**87,007**
Length (km)	LR	**295**
Distance traveled (km)	ΣVKT	**280**
Particulate emission factor (m3/kg)	PEFsc	**108,982,362**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**7.46**
Total time of construction (s)	Tcv	**2,736,000**

B5 Road

B5 Building

B13 Road

Input
Calculation

Chemical	Toxicity Criteria Source	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				39.9	20,449	39.8	256	18,842	253
Chromium(VI)	A/N/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	**0.01**	1			-	1.90E+01				59.3	1,047	56.1	2,117	376,850	2,105
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	**0.01**	1			-	4.50E+01					9,770	9,770	2,713	25,123	2,448
Cyanide (CN-)	I	-	-	2.00E-02	8.00E-04	1	2.00E-02	**0.01**	1	2.10E-01	2.50E-05	4.15E-03	9.90E+00		4.68E-06	1.82E+3				18,086	16.8	16.8
Iron	P	-	-	7.00E-01	-	1	7.00E-01	**0.01**	1			-	2.50E+01							633,004		633,004
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	**0.01**	1			-	6.50E+01							12,774	62,808	10,615
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	**0.01**	1			-	1.00E+03							4,324	125,617	4,181
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.82E+4	23.0	25.8	12.1			
Benz[a]anthracene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	2.60E-02	6.70E-06	4.91E-04	1.08E+03	1.80E+05	6.71E-10	1.52E+5	469	2,042	381			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	8.10E+5	46.9	1,081	45.0	201	18.5	17.0
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	7.30E+5	469	9,751	448			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	1.94E+6	46.9	146,553	46.9			
Naphthalene	C/I/P	-	3.40E-05	6.00E-01	3.00E-03	1	6.00E-01	0.13	1	6.00E-02	8.40E-06	1.80E-02	9.00E+00	1.50E+03	6.35E-06	1.56E+3		37.1	37.1	402,052	54.1	54.1

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris or IRIS 2017 Recent Additions at https://www.epa.gov/iris/iris-recent-additions ; in addition, PAH compounds were adjusted based on the relative potency factor
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2016-01.pdf
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php
N: chemical specific parameters found in NJDEP

Construction Worker Soil Screening Levels
95, 105, and 55 Work Day Exposures
Calculation Spreadsheet - Sub-Parcel B5-1

Area of site (ac)	Ac	59.2
Overall duration of construction (wk/yr)	EW	21
Exposure frequency (day/yr)	EF	**105**
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	**11**
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**13.4**
Overall duration of traffic (s)	Tt	**3,024,000**
Surface area (m2)	AR	**239,574**
Length (km)	LR	**489**
Distance traveled (km)	ΣVKT	**514**
Particulate emission factor (m3/kg)	PEFsc	**170,127,270**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**6.42**
Total time of construction (s)	Tcv	**3,024,000**

B5 Road

B5 Building

B13 Road

Input
Calculation

Chemical	Toxicity Criteria Source	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				36.1	28,882	36.0	232	26,613	230
Chromium(VI)	A/N/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	**0.01**	1			-	1.90E+01				53.6	1,478	51.8	1,915	532,255	1,908
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	**0.01**	1			-	4.50E+01					13,799	13,799	2,455	35,484	2,296
Cyanide (CN-)	I	-	-	2.00E-02	8.00E-04	1	2.00E-02	**0.01**	1	2.10E-01	2.50E-05	4.15E-03	9.90E+00		4.68E-06	1.65E+3				16,363	13.8	13.7
Iron	P	-	-	7.00E-01	-	1	7.00E-01	**0.01**	1			-	2.50E+01							572,717		572,717
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	**0.01**	1			-	6.50E+01							11,557	88,709	10,225
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	**0.01**	1			-	1.00E+03							3,913	177,418	3,828
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.65E+4	20.8	21.1	10.5			
Benz[a]anthracene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	2.60E-02	6.70E-06	4.91E-04	1.08E+03	1.80E+05	6.71E-10	1.38E+5	424	1,673	338			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	7.33E+5	42.4	888	40.5	182	15.2	14.0
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	6.61E+5	424	8,006	403			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	1.75E+6	42.4	206,988	42.4			
Naphthalene	C/I/P	-	3.40E-05	6.00E-01	3.00E-03	1	6.00E-01	0.13	1	6.00E-02	8.40E-06	1.80E-02	9.00E+00	1.50E+03	6.35E-06	1.41E+3		30.4	30.4	363,761	44.3	44.3

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris or IRIS 2017 Recent Additions at https://www.epa.gov/iris/iris-recent-additions ; in addition, PAH compounds were adjusted based on the relative potency factor
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2016-01.pdf
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php
N: chemical specific parameters found in NJDEP

Construction Worker Soil Screening Levels
95, 105, and 55 Work Day Exposures
Calculation Spreadsheet - Sub-Parcel B5-1

Area of site (ac)	Ac	43.4
Overall duration of construction (wk/yr)	EW	11
Exposure frequency (day/yr)	EF	**55**
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	**11**
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**13.7**
Overall duration of traffic (s)	Tt	**1,584,000**
Surface area (m2)	AR	**175,634**
Length (km)	LR	**419**
Distance traveled (km)	ΣVKT	**230**
Particulate emission factor (m3/kg)	PEFsc	**147,968,211**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**6.72**
Total time of construction (s)	Tcv	**1,584,000**

B5 Road

B5 Building

B13 Road

Input
Calculation

Chemical	Toxicity Criteria Source	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				68.9	47,957	68.8	443	44,189	438
Chromium(VI)	A/N/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	**0.01**	1			-	1.90E+01				102.4	2,455	98.3	3,656	883,774	3,641
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	**0.01**	1			-	4.50E+01					22,913	22,913	4,686	58,918	4,341
Cyanide (CN-)	I	-	-	2.00E-02	8.00E-04	1	2.00E-02	**0.01**	1	2.10E-01	2.50E-05	4.15E-03	9.90E+00		4.68E-06	1.25E+3				31,239	19.9	19.9
Iron	P	-	-	7.00E-01	-	1	7.00E-01	**0.01**	1			-	2.50E+01							1,093,370		1,093,370
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	**0.01**	1			-	6.50E+01							22,064	147,296	19,189
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	**0.01**	1			-	1.00E+03							7,470	294,591	7,285
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.25E+4	39.7	30.5	17.2			
Benz[a]anthracene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	2.60E-02	6.70E-06	4.91E-04	1.08E+03	1.80E+05	6.71E-10	1.04E+5	810	2,417	607			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	5.55E+5	81.0	1,283	76.2	347	22.0	20.7
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	5.00E+5	810	11,575	757			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	1.33E+6	81.0	343,690	81.0			
Naphthalene	C/I/P	-	3.40E-05	6.00E-01	3.00E-03	1	6.00E-01	0.13	1	6.00E-02	8.40E-06	1.80E-02	9.00E+00	1.50E+03	6.35E-06	1.07E+3		43.9	43.9	694,453	64.0	64.0

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris or IRIS 2017 Recent Additions at https://www.epa.gov/iris/iris-recent-additions ; in addition, PAH compounds were adjusted based on the relative potency factor
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2016-01.pdf
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php
N: chemical specific parameters found in NJDEP

APPENDIX C

HEALTH AND SAFETY PLAN

SPARROWS POINT TERMINAL
SPARROWS POINT, MARYLAND

Prepared by:

EnviroAnalytics Group

Environmental Engineers

January 2015

TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

1.1 Background

The Sparrows Point Terminal site has historically been a steel making facility. It is located in Baltimore County, Maryland in the southeast corner of the Baltimore metropolitan area (approximately 9 miles from the downtown area), on the Sparrows Point Peninsula in the Chesapeake Bay watershed. The facility occupies the entire peninsula and is bounded to the west by Bear Creek; to the south by Patapsco River; and to the east by Jones Creek, Old Road Bay and residential areas of the City of Edgemere. The facility is bounded to the north by the Sparrows Point Country Club. The site is approximately 3,100 acres in size.

Pennsylvania Steel built the furnace at Sparrows Point in 1887 and the first iron was cast in 1889. Bethlehem Steel Corporation (BSC) purchased the facility in 1916 and enlarged it by building additional and plating facilities. BSC filed for bankruptcy in 2001. A series of entities has owned the site between then and now: the International Steel Group (ISG), Mittal Steel, ISG Sparrows Point, LLC, Severstal Sparrows Holding LLC, which was renamed to Severstal Sparrows Point, LLC, RG Steel Sparrows Point, LLC, and then a joint venture to Sparrows Point LLC (SP) and HRE Sparrows Point LLC. Most recently, in 2014, the property and assets were sold to Sparrows Point Terminal LLC (SPT). Environmental liability was retained by SP and work is currently being conducted by EnviroAnalytics Group, LLC (EAG) on behalf of SP.

- In addition to the current environmental investigation and remediation being conducted onsite by EAG and their consultants, there are other entities conducting work on the facility. Demolition of the remaining structures is currently ongoing at the site, and those contractors are being managed by SPT.
- The purpose of this document is to provide an overall health and safety plan (HASP) for EAG personnel and EAG directed contractors who are engaging in environmental investigation and remediation activities onsite. EAG directed contractors will also be expected to have their own Health and Safety Program, and they may opt to draft their own site specific HASP, provided it meets the requirements in this HASP.

1.2 Historic Operations

Steel manufacturing involves handling vast amounts of raw material including coke, iron ore, limestone and scrap steel, as well as recovering byproducts and managing waste materials. The operations listed below either were or are currently performed at the Sparrows Point Facility.

- Iron and steel production
- Coal chemical recovery system
- Other byproducts recovery systems
- Wastewater treatment systems
- Solid waste management
- Air pollution control

A number of site-specific environmental and hydrogeologic investigations have been prepared for the Sparrows Point facility. For the purposes of this HASP, information was obtained from the "Special Study Area Release Site Characterization" completed in 2001 by CH2MHill, as well as additional documents submitted since that time. There are five separate Special Study Areas as put forth in the Consent Decree:

- Humphrey Impoundment,
- Tin Mill Canal/Finishing Mills Areas,
- Coke Oven Area,
- Coke Point Landfill, and
- Greys Landfill.

Contaminated soils and groundwater may be present at the site. This plan was prepared based on an assessment of hazards expected to be present and a review of data from the previous site investigations and groundwater sampling events.

During the current investigations and remedial efforts, all related work will be performed in accordance with the requirements of this HASP and Occupational Safety and Health Administration (OSHA) regulations as defined in 29 Code of Federal Regulations (CFR) 1910.120 and 1926.65.

2.0 PURPOSE, SCOPE AND ORGANIZATION

This section describes the purpose, scope and organization of this HASP and the health and safety responsibilities of EAG, their employees, and their subcontractors involved in the field investigation and remediation activities at the Sparrows Point facility.

2.1 Scope

Field investigation and remediation activities for this project may include, but are not limited to:

- Groundwater sampling and monitoring,
- Groundwater and remediation well installation,
- Groundwater and remediation well repairs,
- Groundwater and remediation well closure and abandonment,
- Surface water sampling,
- Sediment sampling,
- Soil boring and subsurface soil sampling,
- Soil excavations for remedial purposes,
- Installation and operation of remediation systems for soil, soil vapor, and groundwater,
- Decommissioning and closure of remediation systems,
- Soil excavations for remedial purposes,
- Insitu soil mixing/soil stabilization,
- Exsitu soil mixing/soil stabilization,
- Dredging operations along Tin Mill Canal,
- Insitu chemical and/or biological injections, and
- Recovery of non-aqueous phase liquids (NAPL)

When EAG personnel are providing oversight of subcontractors, they will attend the safety and health briefings held by the contractor. EAG personnel will follow the requirements of this HASP, as well as any potentially more stringent requirements of the contractor's health and safety plan.

When EAG personnel are conducting tasks on their own, with or without subcontractors, they will follow the requirements of this HASP. EAG contractors, such as drillers, will also be required to follow the requirements of this HASP, as well as any more stringent requirements of the contractor's health and safety plan.

All EAG field personnel, including subcontractors to EAG, will be required to read and understand this HASP and agree to implement its provisions. All site personnel will sign the Acknowledgement Form included in **Attachment A** stating that they have read, understood, and agree to abide by the guidelines and requirements set forth in this plan.

2.2 Organization of Document

This HASP includes health and safety procedures for all generally anticipated project field activities. This plan also meets the OSHA requirements contained in the CFR, specifically 29 CFR 1910.120 and 29 CFR 1926, by including the following items:

- A description of staff organization, qualifications and responsibilities (Section 2.3),
- Hazard analysis (Section 3.0),
- Health hazard information (Section 4.0),
- Personal protective equipment (PPE), including available first aid, emergency, and safety equipment (Section 5.0),
- Employee and subcontractor training and standard safety procedures (section 6.0),
- Exposure monitoring plan (Section 7.0),
- Medical surveillance (Section 8.0),
- Site control measures and decontamination procedures for personnel and equipment (Section 9.0),
- Emergency response and contingency procedures (section 10.0), and
- Material Safety Data Sheets (MSDSs) for chemicals used on-site (**Attachment B**).

2.3 EAG Health and Safety Personnel

Personnel responsible for implementing this HASP include:

EAG Contacts for Sparrows Point Project Work	
VP Remediation, Russ Becker	(314) 686-5611
Senior Project Manager, James Calenda	(314) 620-3056
Senior Project Engineer, Elizabeth Schlaeger	(314) 307-1732
Josh Burke – Field Operations Manager	(314) 686-5623
Project Field Team Members, Jeff Wilson and Bill Trentzsch	(314) 620-3135, (314) 686-5598

3.0 HAZARD ANALYSIS

This section outlines the potential hazards related to the field activities listed in Section 2.1.

3.1 Hazard Analysis

The field activities planned for this project pose potential health and safety hazards for field team members. This section describes the hazards associated with the above-listed field activities. Detailed chemical, physical, and biological hazards information is provided in Section 4.0 (Health Hazard Information).

Hazards to which employees and subcontractors may be exposed to as a result of the above-listed activities include potential chemical exposures, lacerations, excessive noise, thermal stress, lifting of excessive weight or bulk, hand tools and heavy equipment, drilling and slips, trips and falls.

3.1.1 Chemical Hazards

Potential exposures to chemicals in the soil or groundwater include the possibility of dermal exposure (contact and/or absorption), inhalation of chemical contamination that may be encountered during sampling or during equipment decontamination activities, or ingestion of contaminants if good personal hygiene practices are not followed.

Benzene, naphthalene, and various metals are the major contaminants that have been identified in groundwater during previous investigations at the site In addition, light NAPL (LNAPL – benzene, in particular) and dense NAPL (DNAPL – naphthalene, in particular) have also been identified or are heavily suspected in various locations in the Coke Oven Area. Dissolved metals the chemicals of concern primarily located in the area of Tin Mill Canal and the Rod and Wire Mill Area. Treatment chemicals, such as sulfuric acid, are currently being used in remediation systems. All appropriate MSDS sheets will be reviewed that apply to the investigation or remedial tasks being conducted. MSDS sheets are located in **Attachment B**. It should be noted that this is a dynamic document: should any additional chemicals be introduced or discovered, the MSDS sheets will be added to **Attachment B**, as necessary.

3.1.2 Physical Hazards

The potential physical hazards associated with field activities include:

- Excessive lifting
- Slips, trips, and falls
- Working at heights
- Exposure to extreme outside temperatures and weather
- Equipment hazards
- Drilling Hazards
- Noise
- Dust and fumes
- Injury from tools, equipment, rotating parts
- Electrical hazards
- Buried and overhead hazards
- Work over water
- Driving to, from, and around the site (including working in trafficked areas)

Additional hazards may be encountered based on the various task at hand. It will be the responsibility of the site manager, with the help of field staff, to identify and address any additional hazards on a "per task or job" basis. A Job Safety Analyses (JSA) may need to be conducted prior to the start of various tasks. Safety meetings will be conducted with all staff in attendance, before the start of any new task or when any significant personnel or other changes (such as a swift change in weather, for example) occur. Updated information relating to physical hazards will be presented during these meetings in an effort to familiarize the crew with potential hazards, discuss new situations, and determine how the associated risks can be reduced. Further, good housekeeping practices will be enforced to preclude other risks resulting from clutter and inattention to detail. In addition, internal field audits will be randomly conducted to ensure adherence to all procedures are being followed.

3.1.3 Biological Hazards

Biological hazards that may be encountered when conducting field activities include the following:

- Poisonous snakes and spiders
- Ticks and tick-borne diseases
- Stinging insects such as chiggers, bees, wasps, etc.
- Various viruses and diseases spread via animal to human contact such as West Nile virus or rabies
- Various viruses and diseases spread via human to human contact such as colds or the flu
- Dermal contact with poison ivy, oak, and/or sumac
- Bloodborne pathogens when administering first aid

First aid kits will be available on-site. It is crucial to note that any site personnel who has significant allergies should communicate that information to the field team they are working with, along with the location of their auto-injector pen (such as an Epi-Pen) for use in case of going into anaphylactic shock from something that would cause such a reaction (like a bee sting, for example). Personnel who suffer from such allergies are responsible for providing their own auto-injector devices as those are typically prescription based as well as specific to their particular allergy.

4.0 HEALTH HAZARD INFORMATION

This section provides chemical hazard information for those potentially hazardous materials expected to be present at the facility. Potential physical and biological hazards are also discussed in this section.

4.1 Chemical Hazards

Exposure to chemicals through inhalation, ingestion, or skin contact may result in health hazards to field workers. Hazards associated with exposure will be evaluated using OSHA Permissible Exposure Limits (PELs) and the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). Each of these values are 8-hour, time-weighted averaged (TWAs) above which an employee cannot be exposed. EAG may also use the National Institute of Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs) where applicable. Although the OSHA PELs are the only exposure limits enforceable by law, the most stringent of exposure limits will be used as the EAG-enforced exposure criteria during field activities.

The following is a summary of the potential hazards created by the compounds that may be encountered during field activities. Data from sampling of groundwater wells was reviewed to identify potential contaminants at the site. Contaminants of concern may include benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), phenols, metals and water treatment chemicals. Table 4-1 contains chemical information and exposure limits for various chemicals that may be expected to be present in the investigation and remediation efforts. During the recovery of NAPL, the major contaminants of concern are benzene and naphthalene. It is possible that carbon monoxide may also be encountered from the use of various internal combustion engines (vehicular or otherwise); however, it is anticipated that since any such engine will be used outdoors, it is not expected that concentrations of concern will accumulate. With the use of any such engine, the engine should be positioned such that site personnel are upwind of the engine exhaust.

If any chemicals are brought on-site, MSDS must be made available and added to **Attachment B**. Personnel must be trained in the hazards and use of chemicals.

Table 4-1
Chemical Contaminants of Potential Concern

Chemical Name Synonyms (trade name)	Exposure Limits	Characteristics	Route of Exposure	Symptoms of Exposure
Benzene	PEL: 1PPM REL: 0.1 CA TLV: 0.5PPM STEL: 1PPM (NIOSH) Skin: YES	Colorless to light-yellow liquid with aromatic odor. LEL: 1.2% UEL: 7.8% VP: 75mm FI.P: 12°F	INH ABS ING CON	Irritation of eyes, skin, nose, respiratory system, giddiness, headache, nausea, fatigue, anorexia, dermatitis, bone marrow depression
Ethylbenzene	PEL: 100PPM REL: 100PPM TLV: 100PPM STEL: 125PPM IDLH: 800PPM Skin: NO	Colorless liquid with an aromatic odor. LEL: 0.85 UEL: 6.7% IP: 8.76EV VP: 7mm FI.P: 55°F	INH ING CON	Irritation of eyes, skin, mucous membranes; headache; dermatitis
1,1 dichloroethane	PEL: 100PPM REL: 100PPM TLV: 100PPM STEL: NA IDLH: 3000PPM Skin: NO	Colorless, oily liquid with a chloroform-like odor. LEL: 6.2% UEL: 16% IP: 11.05EV Vp: 64mm FI.P: 56°F	INH ING CON	Irritation of eyes, CNS depression, liver, kidney, lung damage
Phenol	PEL: 5PPM REL: 5PPM, 15.6PPM (C) TLV: 5PPM STEL: NA IDLH 250PPM Skin: YES	Colorless to light pink crystalline solid with a sweet, acrid odor. LEL: 1.8% UEL: 5.9% IP: 8.12EV Vp: 0.08mm FI.P: 175°F	INH ING CON ABS	Irritated eyes, nose, throat, anorexia, weakness, muscular ache, pain, dark urine, cyanosis, liver, kidney damage, skin burns, dermatitis, tremor, convulsions, twitch
Naphthalene	PEL: 10PPM REL: 10PPM TLV: 10PPM STEL: 15PPM IDLH: 250PPM Skin: YES	Colorless to brown solid with an odor of mothballs LEL: 0.9% UEL: 5.9% IP: 8.12EV Vp: 0.08mm FI.P: 174°F	INH ABS ING CON	Irritation of eyes, headache, confusion, excitement, malaise, nausea, vomiting, abdominal pain, irritated bladder, profuse sweating, jaundice, hematuria, renal shutdown, dermatitis, optical neuritis, corneal damage
Toluene	PEL: 200PPM, 300PPM (C) REL: 100PPM TLV: 20PPM STEL: 150PPM IDLH: 500PPM Skin: YES	Colorless liquid with a sweet, pungent benzene-like odor. LEL: 1.1% UEL: 7.1% IP: 8.82EV VP: 21MM FI.P: 40°F	INH ABS ING CON	Irritation of eyes, nose, fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, lacrimation, nervousness, muscle fatigue, insomnia, dermatitis, liver, kidney damage
Xylenes	PEL: 100PPM REL: 100PPM TLV: 100PPM STEL: 150PPM IDLH: 900PPM Skin: NO	Colorless liquid with an aromatic odor. LEL: 0.9% UEL: 6.7% IP: 8.40EV VP: 5MM FI.P: 88°F	INH ABS ING CON	Irritated eyes, nose, respiratory system, headache, fatigue, dizziness, confusion, malaise, drowsiness, incoherence, staggering gait, corneal vacuolization, anorexia, nausea, vomiting, abdominal pain, dermatitis

Chemical Name Synonyms (trade name)	Exposure Limits	Characteristics	Route of Exposure	Symptoms of Exposure
Styrene	PEL: 100PPM, 200PPM (C) REL: 50PPM TLV: 20PPM STEL: 40PPM IDLH: 700PPM Skin: NO	Colorless to yellow, oily liquid with a sweet, floral odor. LEL: 0.9% UEL: 6.8% IP: 8.40eV VP: 5MM FI.P: 88°F	INH ABS ING CON	Irritated eyes, nose, respiratory system, headache, fatigue, dizziness, confusion, malaise, drowsiness, weakness, narcosis, dermatitis
Chlorodiphenyl (54% chlorine) (11097-69-1)	PEL: 0.5mg/m³ REL: 0.001mg/m³ TLV: 0.5mg/m³ STEL: N/A IDLH: 5mg/m³(CA) Skin: YES	Colorless to pale yellow viscous liquid with a mild hydrocarbon odor. LEL: NA UEL: NA IP: UNKNOWN VP: 0.00006MM FI.P: NA	INH ABS ING CON	Irritated eyes, chloracne, liver damage, reproductive effects (carcinogen)
Polynuclear aromatic hydrocarbons (PAHs) (coal tar pitch volatiles) (65996-93-2)	PEL: 0.2mg/m³ REL: 0.1mg/m³ TLV: 0.2 mg/m³ STEL: N/A IDLH: 80mg/m³(CA) Skin: NO	The pitch of coal tar is black or dark brown amorphous residue that remains after the redistillation process. LEL: N/A UEL: N/A IP: VARIES VP: VARIES FI.P: VARIES	INH CON	Direct contact or exposure to vapors may be irritating to the eyes. Direct contact can be highly irritating to the skin and produce dermatitis. Exposure to vapors may cause nausea and vomiting. A potential human carcinogen.
Arsenic (inorganic)	PEL: 0.01mg/m³ REL: NONE TLV: 0.5 mg/m³ STEL: N/A IDLH: 5mg/m³ (CA) Skin: NO	Silver-gray or tin-white brittle odorless solid. Air odor threshold: N/D.	INH ABS CON ING	Symptoms include ulceration of nasal septum, gastrointestinal disturbances, respiratory irritation and peripheral neuropathy. Potential occupational carcinogen.
Barium	PEL: 0.5mg/m³ REL: 0.5mg/m³ TLV: 0.5mg/m³ STEL: N/A IDLH: 50mg/m³ Skin: NO	White, odorless solid. Air odor threshold: N/D.	INH ING CON	Irritated eyes, skin, upper respiratory system, skin burns, gastroenteritis, muscle spasm, slow pulse, cardiac arrhythmia
Cadmium (elemental)	PEL: 0.005mg/m³ REL: CA TLV: 0.01mg/m³ STEL: N/A IDLH: 9mg/m³ (CA) Skin: NO	Silver-white, blue-tinged lustrous, odorless solid. Air odor threshold: N/D.	INH ING	Symptoms include pulmonary edema, cough, tight chest, head pain, chills, muscle aches, vomiting and diarrhea. Potential occupational carcinogen.
Chromium (Metal)	PEL: 1.0mg/m³ REL: 0.5mg/m³ TLV: 0.5mg/m³ STEL: N/A IDLH: 250mg/m³ Skin: NO	Blue-white to steel-gray lustrous, brittle, hard odorless solid. Air odor threshold: N/D.	INH ING CON	Symptoms may include irritated eyes and skin, lung fibrosis.
Chromium (Chromium III inorganic compounds)	PEL: 0.5mg/m³ REL: 0.5mg/m³ TLV: 0.5mg/m³ STEL: N/A IDLH: 25mg/m³ Skin: NO	Varies depending on specific compound.	INH ING CON	Irritation of eyes, sensitivity dermatitis

Chemical Name Synonyms (trade name)	Exposure Limits	Characteristics	Route of Exposure	Symptoms of Exposure
Copper	PEL: 1mg/m³ REL: 1mg/m³ TLV: 1mg/m³ STEL: N/A IDLH: 100mg/m³ Skin: NO	Reddish, lustrous, malleable, odorless solid	INH ING CON	Irritation of eyes, nose, pharynx, nasal septum perforations, metallic taste, dermatitis
Lead (Elemental & Inorganic as Pb)	PEL: 0.05mg/m³ REL0.1mg/m³ TLV: 0.05mg/m³ STEL: N/A IDLH: 100mg/m³ Skin: NO	A heavy, ductile soft gray solid. Air odor threshold: N/D.	INH ING CON	Accumulative poison may cause weakness, insomnia, facial pallor, anorexia, malnutrition, constipation, abdominal pain, anemia, gingival lead line, paralysis of wrists and ankles, hypertension and kidney disease.
Nickel	PEL: 1mg/m³ REL: 0.015mg/m³ (Ca) TLV: 0.1mg/m³ STEL: N/A IDLH: 10mg/m³ Skin: NO	Lustrous, silvery, odorless solid. Air odor threshold: N/A VP: 0mm	INH CON ING	Sensitivity dermatitis, allergic asthma, pneumonitis
Vanadium pentoxide dust	PEL: 0.5mg/m³ (C) REL: 0.05mg/m³ (C) TLV: 0.05mg/m³ STEL: N/A IDLH: 35mg/m³ Skin: NO	Yellow-orange powder or dark gray, odorless flakes dispersed in air. VP: 0mm	INH ING CON	Irritated eyes, skin, throat, green tongue, metallic taste, eczema, cough, fine rales, wheezing, bronchitis
Zinc oxide	PEL: 5mg/m³ REL: 5mg/m³ TLV: 2mg/m³ STEL: 10mg/m³ IDLH: 500mg/m³ Skin: NO	White, lustrous solid	INH	Metal fume fever, chills, muscular ache, nausea, fever, dry throat, cough, weakness, metallic taste, headache, blurred vision, low back pain, vomiting, fatigue, malaise
Sulfuric Acid (water treatment chemical)	PEL: 1mg/m³ TLV: 0.2mg/m³ Skin: YES	Oily, colorless to slightly yellow, clear to turbid liquid	IHN ABS ING CON	Can cause irritation or corrosive burns to the upper respiratory system, lung irritation, pulmonary edema, burns to mouth throat and stomach, erode teeth, skin lesions
Antiscale (water treatment chemical)	PEL: 1mg/m³ TLV: 0.2mg/m³ Skin: YES	Liquid, colorless, clear	IHN ABS ING CON	May cause severe skin burns and eye damage, can cause cancer, fatal if inhaled, may damage organs through prolonged exposure
Antifoam (water treatment chemical)	N/E	Liquid emulsion, white, opaque	IHN ABS ING CON	May be harmful to skin, if inhaled and if swallowed
Gases				
Carbon Monoxide	PEL: 50PPM REL: 35PPM TLV: 25PPM STEL: 200PPM (C) IDLH: 1200PPM Skin: NO	Colorless, odorless gas LEL: 12.5% UEL: 74% IP: 14.01eV VP: >35atm FI.P: N/A	INH	Headache, rapid breathing, nausea, tiredness, dizziness, confusion

NOTES:

OSHA PEL	Occupational Safety and Health administration Final Rule Limits, Permissible Exposure Limit for an eight=hour, time-weighted average
ACGIH TLV	American Conference of Governmental Industrial Hygienists, Threshold Limit Value for eight-hour, time-weighted average
STEL	Short-term Exposure Limit for a 15-minute, time-weighted average
NIOSH IDLH	National Institute for Occupational Safety and Health, Immediately Dangerous to Life or Health concentration
PPM	Part of vapor or gas per millions parts of air by volume at 25°Celsius and 760mm Hg mg/m³ (milligram of substance per cubic meter of air)
CA	NIOSH has identified numerous chemicals that it recommends to be treated as potential or confirmed human carcinogens.
(C)	The (ceiling) concentration that should not be exceed during any part of the working exposure.
Skin	Refers to the potential contribution to the overall exposure by the cutaneous (absorption) route, including mucous membranes and eye, either by airborne or more particularly by direct contact with the substance.
UEL	Upper Explosive Limit – the highest concentration of a material in air that produces an explosion in fire or ignites when it contacts an ignition source.
LEL	Lower Explosive Limit – the lowest concentration of the material in air that can be detonated by spark, shock, fire, etc.
INH	Inhalation
ABS	Skin absorption
ING	Ingestion
CON	Skin and/or eye contact

4.2 Physical Hazards

Field employees and subcontractors may be exposed to a number of physical hazards during this project. Physical hazards that may be encountered include the following:

- Heat and cold stress
- Lifting hazards
- Slips, trips and falls
- Working around heavy equipment
- Drilling hazards
- Noise
- Use of hand and power tools
- Buried hazards
- Electrical hazards
- Underground and overhead utilities
- Working over water
- Travel to and from site

4.2.1 Heat Stress

Local weather conditions may produce an environment that will require restricted work schedules in order to protect employees from heat stress. The Project Manager or the Field Lead Team Member will observe workers for any potential symptoms of heat stress. Adaptation of work schedules and training on recognition of heat stress conditions should help prevent heat-related illnesses from occurring. Heat stress controls will be stated at 70°F for personnel in protective clothing and at 90°F for personnel in regular work clothing. Heat stress prevention controls include:

- Allow workers to become acclimatized to heat (three to six days)
- Provide rest breaks in a shaded or air-conditioned break area
- Provide sun screen to prevent sun burn
- Provide drinking water and electrolyte-replenishing fluids
- Keep ice readily available to rapidly cool field team members

The following Heat Stress Index should be used as a guide to evaluate heat stress situations. If the Heat Stress exceeds 105 degrees Fahrenheit, contact the project manager prior to conducting work for detailed guidance.

Heat Stress Index

Temp. °F	Relative Humidity								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
105	98	104	110	120	132				
102	97	101	108	117	125				
100	95	99	105	110	120	132			
98	93	97	101	106	110	125			
96	91	95	98	104	108	120	128		
94	89	93	95	100	105	111	122		
92	87	90	92	96	100	106	114	122	
90	85	88	90	92	96	100	106	114	122
88	82	86	87	89	93	95	100	106	115
86	80	84	85	87	90	92	96	100	109
84	78	81	83	85	86	89	91	95	99
82	77	79	80	81	84	86	89	91	95
80	75	77	78	79	81	83	85	86	89
78	72	75	77	78	79	80	81	83	85
76	70	72	75	76	77	77	77	78	79
74	68	70	73	74	75	75	75	76	77

NOTES: Add 10° F when protective clothing is being used; Add 10° F when in direct sunlight

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HSI Temp	Category	Injury Threat
Above 130° F	Extreme Danger	No work unless emergency exists. Contact Cardno ATC RSC and Corporate Risk Management Department prior to proceeding. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
105° to 130° F	Danger	Contact RSC prior to proceeding. Requires strict adherence to ACGIH Heat Stress Guidelines, including use of on-site WBGT equipment. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
90° to 105° F	Extreme Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
80° to 90° F	Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
Below 80° F	Normal Range	Typical conditions for time of year. Little or no danger under normal circumstances. As always, anticipate problems and work safely.

4.2.2 Cold Stress

Frostbite and hypothermia are two types of cold injury that personnel must be protected against during the performance of field duties. The objective is to prevent the deep body temperature from falling below 96.8° F and to prevent cold injury to body extremities. Two factors influence the development of a cold injury the ambient temperature, and wind velocity. Reduced body temperature will very likely result in reduced mental alertness, reduction in rational decision making, and/or loss of consciousness with the threat of death.

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Use appropriate cold weather clothing when temperatures are at or below 40° F as exposed skin surfaces must be protected. These protective items can include facemask, hand wear, and foot wear. Workers handling evaporative solvents during cold stress conditions will take special precautions to avoid soaking gloves and clothing because of the added danger of prolonged skin contact and evaporative cooling. Personnel will wear protective clothing appropriate for the level of cold and planned physical activity. The objective is to protect all parts of the body, with emphasis on the hands and feet. Eye protection against glare and ultraviolet light should be worn in snowy and icy conditions.

The work rate should not be so great as to cause heavy sweating that could result in wet clothing. If heavy work must be done, opportunities for rest breaks will be provided where workers have the opportunity to change into dry clothing. Conversely, plan work activities to minimize time spent sitting or standing still. Rest breaks should be taken in a warm, dry area. Windbreaks can also be used to shield the work area from the cooling effects of wind.

If extreme cold-related weather conditions occur, EAG field personnel and subcontractors will take the following precautions:

- Wear adequate insulated clothing when the air temperature drops below 40°F
- Reduce work periods in extreme conditions to allow adequate rest periods in a warm area
- Change clothes when work clothes become wet
- Avoid caffeine (which has diuretic and circulatory effects)

4.2.3 Lifting Hazards

Field personnel may be exposed to injury caused by lifting heavy objects and various pieces large or unwieldy pieces of equipment. All field team members will be trained in the proper methods for lifting heavy and/or large equipment and are cautioned against lifting objects that are too heavy or too big for one person. Proper lifting techniques include the following:

- Keep feet approximately shoulder width apart
- Bend at the knees
- Tighten abdominal muscles
- Lift with the legs
- Keep the load close to the body
- Keep the back upright
- Use the buddy system for larger or heavy pieces of equipment

All drums will be staged using an approved drum dolly or other appropriate equipment. Proper care will be taken in the use of this equipment. Healthy employees with no medical restrictions may lift and carry a maximum of 50 pounds using proper lifting and carrying techniques. This recommended weight limit may be reduced depending on physical and workplace factors.

4.2.4 Slips, Trips and Falls

The most common hazards that will be encountered during field activities will be slips, trips and falls. Field team members are trained to use common sense to avoid these hazards such as using work boots/safety shoes with nonskid soles. When working on slippery surfaces, tasks will be planned to decrease the risk of slipping via avoiding the slippery areas, if possible, or utilizing engineering controls. Engineering controls may involve the placement of supplemental material such as boards, gravel, or ice melt should be utilized to mitigate slippery conditions. Other engineering controls may involve the use of footgear traction control devices. Employees and subcontractors will avoid slippery surfaces, use engineering controls as appropriate, not hurry, and maintain good housekeeping.

4.2.5 Buried Hazards

Whenever the ground is penetrated, the potential for contacting buried hazards exists. During the planning/mobilization phase, prior to drilling or other excavation activities, EAG personnel and/or their contractors will establish the location of underground utility lines (gas, electrical, telephone, fiber optic cable, etc.) and/or substructures or other potential buried hazardous items. This may be conducted by review of historic utility and substructure maps, private utility locates, ground penetrating radar, or other technologies. If there is any evidence of utilities or subsurface objects/structures, drilling or excavation activities may be offset. If activities cannot be offset, measures will be taken to remove, disconnect, and/or protect the utilities and/or subsurface structures and/or objects. Every reasonable effort will be made to clear the area of intrusive work prior to fieldwork being started.

4.2.6 Electrical Hazards

It may be possible that overhead power lines will be in proximate locations during drilling or excavation activities. At least a 20 foot clearance must be maintained from overhead power lines. No equipment such as drill rigs or dump trucks can be moved while masts or buckets are in the upright position. Field personnel and subcontractors performing electrical work are required to be appropriately trained to work on the electrical systems in question prior to start of work. Authorization from project management personnel is required prior to any electrical work or work near overhead power lines. . When using extension cords, all field workers will ensure that they are in good working condition, are correctly rated for use, and do not contain abrasions such that bare wires could be exposed to the environment. Extension cords will not be used in wet areas without plugging the extension cord into a ground fault circuit interrupter (GFCI). GFCIs will detect a short circuit and cut power.

4.2.7 Heavy Equipment Operations

Heavy equipment must be operated in a safe manner and be properly maintained such that operators and ground personnel are protected.

Requirements for Operators

- Only qualified, trained, and authorized operators are allowed to operate equipment
- Seat belts will be used at all times in all equipment and trucks
- Operators will stop work whenever ground personnel or other equipment enter their work area; work will resume only when the area has been cleared
- No personnel may ride on equipment other than the Authorized Operator
- No personnel may be carried or lifted in the buckets or working "arms" of the equipment
- Spotters will be used when ground personnel are in the vicinity of heavy equipment work areas and/or when an operator is backing equipment near other structures or congested area

Requirements for Ground Personnel

- All ground personnel must wear orange protective vests in work areas with any operating heavy equipment
- Ground personnel will stay outside of the swing zone or work area of any operating equipment
- Ground personnel may only enter the swing or work area of any operating equipment when:
  -They have attracted the operators attention and made eye contact
  -The operator has idled the equipment down and grounded all extensions
  -The operator gives the ground personnel permission to approach
- Ground personnel shall never walk or position themselves between any fixed object and running equipment or between two running pieces of equipment

Equipment

- Maintain operations manuals at the site for each piece of equipment that is present and in use
- Ensure operators are familiar with the manual for the equipment and operate the equipment within the parameters of the manual
- Ensure all equipment is provided with roll-over protection systems
- Verify that seatbelts are present and functional in all equipment
- Prohibit the use of equipment that has cab glass which is broken or missing
- Ensure that backup alarms are functional on all trucks and equipment
- Require all extensions such as buckets, blades, forks, etc. to be grounded when not in use
- Require brakes to be set and wheels chocked (when applicable) when not in use

Daily inspections of equipment are required using a Daily Heavy Equipment Safety Checklist. Equipment deemed to be unsafe as a result of daily inspection will not be used until required repairs or maintenance occurs. During maintenance/repair, ensure that motors are turned off, all extensions are grounded or securely blocked, controls are in a neutral position, and the brakes are set.

4.2.8 Drilling and Excavation Safety

Prior to any intrusive work, as previously mentioned, the location of underground utilities, such as sewer, telephone, gas, water and electric lines must be determined and plainly staked. Necessary arrangements must be made with the utility company or owner for the protection, removal or relocation of the underground utilities. In such circumstances, excavation will be done in a manner that

does not endanger the field personnel engaged in the work or the underground utility. Utilities left in place will be protected by barricading, shoring, suspension or other measures, as necessary.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly. If found to be defective, equipment must be immediately removed from use and either repaired or replaced prior to resuming work with that equipment. Field personnel will be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers for emergency assistance must be prominently posted and kept current.

Good housekeeping conditions will be observed in and around the work areas. Suitable storage places will be provided for all materials and supplies. Pipe, drill rods, etc. must be securely stacked on solid, level sills. Work surfaces, platforms, stairways, walkways, scaffolding, and access ways will be kept free of obstructions. All debris will be collected and stored in piles or containers for removal and disposal.

The area of the site to undergo intrusive activity must be walked over with the drillers and/or heavy equipment operators to identify all work locations, as well as making sure all marked utilities are seen by those doing the intrusive work.

Drilling Specific Concerns:

In areas where utilities have been identified or may be suspected, pre-drilling clearance such hand-augering, hand excavation (with shovels or post-hole diggers), or air-knifing to a depth of at least 5' below ground surface (BGS) may be required. The Project Manager will provide guidance in those instances on what has been determined as an acceptable means of clearing drilling locations. It should be noted that if the soil lithology changes to gravel within those 5 feet, that may be an indication of a utility trench and extreme caution should be taken OR the drilling location should be offset 5 horizontal feet from the original location. Should 3 consecutive attempts be made without success to offset a particular drilling location, the field personnel should stop and contact the Project Manager for further instruction.

Special precaution must be taken when using a drill rig on a site within the vicinity of electrical power lines and other overhead utilities. Electricity can shock, burn and cause death. When overhead electrical power lines exist at or near a drilling site, all wires will be considered dangerous.

A check will be made for sagging power lines before a site is entered. Power lines will not be lifted to gain entrance. The appropriate utility company will be contacted and a request will be made that it lift or raise cut off power to the lines.

The area around the drill rig will be inspected before the drill rig mast (derrick) is raised at a site in the vicinity of power lines. The minimum distance from any point on the drill rig to the nearest power line will be determined when the mast is raised or is being raised. The mast will not be raised and the drill rig will not be operated if this distance is less than 20 feet, because hoist lines and overhead power lines can be moved toward each other by the wind.

Before the mast is raised, personnel will be cleared from the immediate area, with the exception of the operator and a helper, when necessary. A check will be made to ensure safe clearance from energized power lines or equipment (minimum 20-foot clearance). Unsecured equipment must be removed from the mast and cables, mud lines and catline ropes must be adequately secured to the mast before raising. After it is raised, the mast must be secured to the rig in an upright position with steel pins.

Excavation Specific Concerns:

For excavation work, entry into an excavated area or trench will only be allowed when:

- Shoring, sloping, and spoil pile placement is in conformance with 29 CFR 1926 Subpart P, and
- Personal protection and monitoring, as detailed in this HASP, has been implemented.

All excavation contractors are required to provide an OSHA trained and certified Competent Person. Daily inspections of excavations, the adjacent areas, and protective systems shall be made by the Competent Person for evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the Competent Person prior to the start of work and as needed throughout each shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. All inspections made by the Competent Person should be recorded in the field log book. No personnel shall perform work in a trench or excavation that contains accumulated water (any accumulated water will need to be either pumped out until the trench/excavation is dry, or the accumulated water is allowed to disperse naturally). Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when excavations are made entirely in stable rock or the excavation is less than 5 feet in depth and examination by the Competent Person provides no indication of a potential cave-in. Protective systems consist of sloping or benching, use of trench boxes or other shielding mechanisms, or the use of a shoring system in accordance with the regulations.

When mobile equipment is operated adjacent to an excavation and the operators/drivers do not have a clear and direct view of the edge of the excavation, a warning system such as barricades, hand or mechanical signals, or spotters are required.

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard to personnel in the excavation. All temporary spoil piles shall be kept at least 2 feet away from the edge of the excavation. Spoil piles should be placed to channel rainwater or other run-off water away from the excavation.

All excavations deeper than 4 feet deep and which have the potential to have a hazardous atmosphere or oxygen deficient atmospheres (less than 19.5% oxygen) must be tested to ensure safe working conditions, prior to entry.

4.2.9 Use of Hand Tools and Portable Power Tools

Hand tools will be kept in good repair and used only for their designed purposes. Proper protective eyewear will be worn when using hand tools and portable power tools. Unguarded sharp-edged or

pointed tools will not be carried in field personnel's pockets. The use of tools with mushroomed heads, split or defective handles, worn parts, or other defects will not be permitted. Inspect all tools prior to start-up or use to identify any defects. Tools that have become unsafe will be reconditioned before reissue or they will be discarded and replaced. Throwing or dropping of tools from one level to another will not be permitted; rather, containers and hand lines will be used for transporting tools from one level to another if working at heights.

Non-sparking tools will be used in atmospheres where sources of ignition may cause fire or explosion. Electric-powered shop and hand tools will be of the double-insulated, shockproof type, or they will be effectively grounded. Power tools will be operated only by designated personnel who are familiar and trained with their use. When not in use, tools will not be left on scaffolds, ladders or overhead working surfaces.

4.2.10 Noise

Exposure to high levels of noise may occur when working near drill rigs or other heavy equipment. Also, depending upon where the work is being performed, local equipment (e.g., airports, factory machines, etc.) may produce high levels of noise. A good indication of the need for hearing protection is when verbal communication is difficult at a distance of 2-3 feet. Personnel will be provided with ear plugs and/or earmuffs when exposed to noise levels in excess of the 8-hour Permissible Exposure Limit (PEL) of 90 decibels.

4.2.11 Work Zone Traffic Control

Personnel will exercise caution when working near areas of vehicular traffic. Work zones will be identified by the use of delineators (traffic cones, flags, vehicles, DOT approved devices, temporary or permanent fencing, and/or safety barrier tape). Personnel will wear reflective vests when working in these areas. Depending on frequency, proximity, and nature of traffic, a flag person may also be utilized.

4.2.12 Work Over Water

If personnel will be working near, above or immediately adjacent to or within 6 feet of water that is 3 feet or more deep or where water presents a drowning hazard (e.g., fast-moving stream, water body with a soft bottom), employees are required to a U.S. Coast Guard (USCG) approved personal flotation device (PFD). All PFDs must have reflective tape on them to facilitate visibility. Employees must inspect PFDs daily before use for defects. Do no use defective PFDs.

4.2.13 Vehicle Use

Personnel must use caution when driving to, from, and across the site, paying special attention to other site traffic, as well as weather and road conditions. Heavy equipment should be transported during non-rush hour traffic.

4.3 Biological Hazards

Site activities on this Site may expose workers to other hazards such as poisonous plants, insects, animals, and indigenous pathogens. Protective clothing and respiratory protection equipment, and being capable of identifying poisonous plants, animals, and insects, can greatly reduce the chances of exposure. Thoroughly washing any exposed body parts, clothing, and equipment will also protect against infections. Avoiding contact with biological hazards is the best way to prevent potential adverse health effects. Recognition of potential hazards is essential. When avoidance is impractical or impossible, PPE, personal hygiene, good general health and awareness must be used to prevent adverse effects. If working in wooded/grassy areas, use appropriate insect repellants (containing DEET and/or Permethrin) and apply them per the manufacturers' directions. The following is a list of biological hazards that may be encountered while performing field activities at the project site and surrounding areas:

BIOLOGICAL HAZARD and LOCATION	CONTROL MEASURES
Snakes typically are found in underbrush and tall grassy areas.	If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound or apply a tourniquet. Carry the victim or have him/her walk slowly if the victim must be moved. Try to identify the snake: note color, size, patterns and markings.
Poison ivy, poison oak and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas.	Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.
Exposure to **bloodborne pathogens** may occur when rendering first aid or CPR, or when coming into contact with medical or other potentially infectious material or when coming into contact with landfill waste or waste streams containing such infectious material.	Training is required before a task involving potential exposure is performed. Exposure controls and personal protective equipment (PPE) area required. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.
Bees, spiders and other stinging insects may be encountered almost anywhere and may present a serious hazard particularly to people who are allergic.	Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past and inform the Project Manager and/or the buddy. If a stinger is present, remove it carefully with tweezers. Watch for allergic reaction; seek medical attention if a reaction develops.
Ticks typically are in wooded areas, bushes, tall grass and brush. Ticks are black, black and red or brown and can be up to one-quarter inch in size.	Avoid tick areas. Wear tightly woven, light-colored clothing with pants tucked into boots or socks. Spray outside of clothing with insect repellent containing permethrin. Check yourself for ticks often. If bitten, carefully remove tick with tweezers. Report the bit to the Project Manager. Look for symptoms of Lyme

	disease that include a rash that looks like a bulls eye and chills, fever, headache, fatigue, stiff neck or bone pain. If symptoms appear, seek medical attention.

5.0 PERSONAL PROTECTIVE EQUIPMENT

PPE ensembles are used to protect employees and subcontractors from potential contamination hazards while conducting project field activities. Level D is expected to be used for most activities at the site. The following subsections describe the PPE requirements for the field activities.

5.1 Level D Protection

When the atmosphere contains no known hazards and work functions preclude splashes, immersions or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals, Level D protection may be used. Level D does not provide respiratory protection and only provides minimal dermal protection. The Level D ensemble consists of the following:

- Work clothes that may consist of a short or long-sleeved cotton shirt and cotton pants, cotton overalls, or disposal overalls such as Tyvek™
- Steel-toe/steel-shank work boots
- Safety glasses with side shields
- Hearing protection, as necessary
- Hand protection, as appropriate
- Hard hat when working around overhead equipment such as a drilling rig
- Reflective vests when working around heavy equipment or near roadways
- Body harness and life vests when working on or within 6 feet of bulkheads, at heights, or in 3 feet or more of standing water (such as in Tin Mill Canal)

5.2 Modified Level D Protection

This is the level of protection that may be needed for material handling, sampling operations, and operation of remediation equipment when splash hazards are present. Modified Level D protection consists of the following:

- Disposable overalls such as polyethylene-coated Tyvek™
- Latex, vinyl, or nitrite inner gloves when handling liquids/fluids
- Nitrile outer gloves (taped to outer suit)
- Chemical-protective over-boots (taped to outer suit)
- Steel-toe/steel-shank, high-ankle work boots
- Hard hat with face shield
- Safety glasses with side shields or goggles
- 5dzăű a l·ă]
- Hearing protection, as necessary

5.3 Level C Protection

Level C protection will be used when site action levels are exceeded and respiratory protection is required. The Level C ensemble consists of Modified Level D with the following modifications:

- Half or full-face air-purifying respirator (APR) equipped with appropriate cartridges/filters
- Chemical resistant clothing such as poly-coated Tyvek™
- Inner and outer nitrile gloves
- Chemical-resistant safety boots or boot covers to go over safety boots

Upgrading or downgrading the level of protection used by EAG employees and subcontractors is a decision made by EAG based on the air monitoring protocols presented in Section 7.0 for respiratory protection, the potential for inhalation exposure to toxic chemicals, and the need for dermal protection during the activity.

5.4 First Aid, Emergency and Safety Equipment

The following first aid, emergency and safety equipment will be maintained onsite at the work area:

- A portable eye wash
- Appropriate ABC-type fire extinguishers (minimum of 10 pounds; remediation systems to house individual 20 pound extinguishers) carried in every vehicle used during field operations
- Industrial first-aid kit (one 16-unit that complies with American National Standards Institute (ANSI) Z308A for every 25 persons or less)
- Bloodborne pathogen precaution kit with CPR mouth shield
- Instant cold packs
- Soap or waterless hand cleaner and towels
- American Red Cross First Aid and CPR Instruction Manuals

6.0 PERSONNEL TRAINING AND STANDARD SAFETY PROCEDURES

Employees must have received, at the time of project assignment, a minimum of 40 hours of initial OSHA health and safety training for hazardous waste site operations. Personnel who have not met the requirements for the initial training will not be allowed in the Exclusion Zone (EZ) or Contamination Reduction Zone (CRZ) of any active work area. A copy of each subcontractor site worker's 40-hour training certificate must be sent to the Project Manager for review prior to the start of the site work.

The 8-hour refresher training course must be taken at a minimum of once per year. At the time of the job assignment, all site workers must have received 8 hours of refresher training within the past year. This course is required of all field personnel to maintain their qualifications for hazardous waste site work. A copy of each subcontractor site worker's most recent 8-hour refresher training certificate must be sent to the Project Manager for review prior to the start of the site work.

A site-specific safety orientation will be conducted by EAG for all EAG employees and subcontractors engaged in fieldwork.

6.1 Onsite Safety, Health and Emergency Response Training

The OSHA 1910.120 standard requires that site safety and health training be provided by a trained, experienced supervisor. "Trained" is defined to mean an individual that has satisfactorily completed the OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course and 8-hour site supervisor training. Training will be offered at the time of the initial task assignment and/or whenever new chemicals are introduced into the workplace. Training will include all applicable regulatory requirements, location of the program, inventory and MSDSs, chemicals used and their hazards (chemical, physical, and health), how to detect the presence or release of chemicals, safe work practices and methods employees can take to protect themselves from hazards, how to read MSDSs and site or project specific information on hazard warnings and labels in use at that location. All training will be documented and training certificates will be kept in the employee's permanent training file. All applicable training will also require annual refreshers.

EAG qualified personnel must also provide safety meetings.

6.2 Standard Safety Procedures

This section describes the standard safety procedures that EAG requires all onsite personnel to follow during site activities.

6.2.1 General Safety Work Practices

All onsite employees and subcontractors will observe the following general safety work practices:

- Health and safety tailgate briefings will occur to introduce new activities, any new safety issues, and emergency egress routes for work areas; any significant change (added personnel, change in scope, or change in field conditions) will trigger a second (or more) tailgate meeting to address whatever change occurred
- No food, drink, or tobacco products will be allowed in the Exclusion and Contamination Reduction Zones
- Loose clothing, hair, and/or jewelry will not be permitted around moving or rotating equipment
- The "buddy system" will be implemented as necessary whereby a pair of co-workers watches out for each other while in proximity of potential physical work hazards
- Good housekeeping of all work areas will be maintained on an ongoing basis

6.2.2 Hand Safety

This standard is intended to protect employees from activities that may expose them to injury. This standard provides information on recognizing those conditions that require personal protective equipment (PPE) or specific work practices to reduce the risk of hand injury.

Appropriate gloves must be worn when persons work with materials or equipment that presents the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc.

<u>Guidelines for Working With and Around Equipment (Hand Tools, Portable Powered Equipment)</u>:

- Employees should be trained in the use of all tools.
- Keep hand and power tools in good repair and use them only for the task for which they were designed.

- Inspect tools before use and remove damaged or defective tools from service.
- Operate tools in accordance with manufacturer's instructions.
- Do not remove or bypass a guarding device for any reason.
- Keep surfaces and handles clean and free of excess oil to prevent slipping.
- Wear proper PPE, including gloves, as necessary.
- Do not carry sharp tools in pockets.
- Clean tools and return to the toolbox or storage area upon completion of a job.
- Before applying pressure, ensure that wrenches have a good bite.
- Brace yourself by placing your body in the proper position so you will not fall if the tool slips.
- Make sure hands and fingers have sufficient clearance in the event the tool slips.
- Always pull on a wrench, never push.
- When working with tools overhead, place tools in a holding receptacle when not in use.
- Do not throw tools from place to place or from person to person, or drop tools from heights.
- Inspect all tools prior to start-up or use to identify any defects.
- Powered hand tools should not be capable of being locked in the ON position.
- Require that all power-fastening devices be equipped with a safety interlock capable of activation only when in contact with the work surface.
- Do not allow loose clothing, long hair, loose jewelry, rings, and chains to be worn while working with power tools.
- Do not use cheater pipes.
- Make provisions to prevent machines from restarting through proper lockout/tagout.

<u>Guidelines for using Cutting Tools:</u>

- Always use the specific tool for the task. Tubing cutters, snips, self- retracting knives, concealed blade cutters, and related tools are task specific and minimize the risk of hand injury. For more information about cutting tools, see Supplemental Information A.
- Fixed open-blade knives (FOBK) are prohibited from use. Examples of fixed open-blade knives include pocket knives, multitools, hunting knives, and standard utility knives.
- When utilizing cutting tools, personnel will observe the following precautions to the fullest extent possible:
- Use the correct tool and correct size tool for the job.
- Cut in a direction away from yourself and not toward other workers in the area.
- Maintain the noncutting hand and arm toward the body and out of the direction of the cutting tool if it were to slip out of the material being cut.
- Ensure that the tool is sharp and clean; dirty and dull tools typically cause poor cuts and more hazard than a sharp, clean cutting tool.
- Store these tools correctly with covers in place or blades retracted, as provided by the manufacturer.
- On tasks where cutting may be very frequent or last all day (e.g., liner samples), consider Kevlar® gloves in the PPE evaluation for the project.
- Do not remove guards on paper cutters.

6.2.3 Respiratory Protection

Based on air monitoring, an upgrade to Level C protection may be indicated. Half or full-face APRs will be utilized for protection against organic vapors and particulates. All employees required to wear respirators will be need to be medically cleared, in writing to do so by a qualified Occupational Physician.

All respirator users must be trained before they are assigned a respirator, annually thereafter, whenever a new hazard or job is introduces and whenever employees fail to demonstrate proper use or knowledge. Training will include, at a minimum:

- Why the respirator is necessary and what conditions can make the respirator ineffective.
- What limitation and capabilities of the respirators area.
- How to inspect, put on and remove and check the seals of the respirator.
- What respirator maintenance and storage procedures are.
- How to recognize medicals signs and symptoms that may limit or prevent effective use of the respirator.
- The engineering and administrative controls being used and the need for respirators.
- The hazards and consequences of improper respirator use.
- How to recognize and handle emergency situations.

Training will be documented and training certificated will be kept in the employee's permanent training file.

6.2.4 Personal Hygiene Practices

The field team must pay strict attention to sanitation and personal hygiene requirements to avoid personal contamination. The following instructions will be discussed and must be followed:

- During field activities, never put anything in the mouth, including fingers
- All employees must wash their hands, forearms, face, and neck before eating drinking, smoking or using the restroom
- Smoking is prohibited except in designated areas outside the work zone
- At the end of the day, all employees will shower upon returning home or to their hotel

6.2.5 Electrical Safety

All extension cords used onsite must be heavy-duty variety and must be properly grounded. All temporary circuitry must incorporate the use of GFCI devices. Refer to electrical safety in Section 4.2.6, Electrical Hazards.

6.2.6 Fire Safety

All flammable liquids will be used only for their intended purpose and stored and handled only in approved containers. Portable containers must be the approved red safety containers equipped with flame arresters and self-closing lids. All transfers of flammable liquids must be made with the containers grounded or bonded. Also, gasoline containers will be clearly labeled and storage areas (if

applicable) will be posted with "No Smoking" signs. Fire extinguishers will be stalled in all areas that contain flammable liquids.

6.2.7 Illumination

All work is planned for daylight hours. No special requirements are anticipated. However, should any work take place outdoors after daylight hours, suitable lighting will be required. In addition, suitable lighting is to be provided in each remediation system building or enclosure.

6.2.8 Sanitation

Potable water and toilet facilities will be provided in compliance with the OSHA 1926.51 standard. Any container used to distribute drinking water shall be clearly marked and not used for any other purpose. Single drinking cups will be supplied, both a sanitary container for the unused cups and a receptacle for disposed of the used cups will also be provided. Port-a-johns will be provided since there are no sanitary sewers on the job site.

7.0 EXPOSURE MONITORING PLAN

This section describes air and personnel monitoring protocols, sampling methods, and instrumentation to be used, as well as the methods and frequency of sampling instrument calibration and action levels for potential work site hazards. When engaged in air monitoring, EAG personnel and subcontractors must use the forms to record air monitoring data and air monitoring instrument calibration records. All monitoring records/forms are to be maintained in the project file by the EAG Project Manager.

7.1 Air Monitoring

The surveillance program is established to detect changes in the ambient air at the work site and to ensure the continuing safety of the work zones and adequacy of the level of worker protection. During field activities, the designated field team member will monitor the work site for combustible gas concentrations and organic vapors. Calibration of all monitoring equipment will be performed in accordance with the manufacturers' procedures by trained EAG employees and subcontractors. The Project Manager, Project Field Team Leader or representative will be notified immediately of any contaminant levels that could trigger an upgrade in PPE or cause a suspension of site activities.

- One or more of the following direct-reading instruments may be used to aid in this determination. Photoionization Detectors (PID) and Flame Ionization Detectors (FID) will measure non-specific organic gases and vapors. Combustible Gas Indicators (CGI) will detect explosive atmospheres. Oxygen (O2) meters will detect fluctuations in oxygen concentrations. These instruments should be calibrated or bump tested daily and whenever the readings may be erratic. All readings should be recorded in the field log books.

Air monitoring results obtained from the breathing zone during field activities will be recorded in field log books. All such records will also include the location, date/time, weather conditions, person monitored, background concentration, and identification of specific contaminant whenever possible. Air monitoring information will be utilized to evaluate personnel exposure and assess the appropriateness of PPE for Site conditions.

7.1.1 Combustible Gas and Oxygen Deficiency/Excess Monitoring

Explosive gas concentrations are not expected to exceed 10% of the lower explosive level (LEL). Should the need be indicated for monitoring, action guidance for the CGI/O2 meter responses is contained in **Table 7-1**.

Table 7-1

CGI/Oxygen Meter Action Levels	
Meter Response	**Action**
CGI response 0%-10% LEL	Continue normal operations
CGI initial response >10% and <20% LEL	Eliminate all sources of ignition from the work area; temporarily retreat from work area for 15-30 minutes and then monitor area again
CGI response after 15-30 minute retreat >10% and <20% LEL	Retreat from work area; notify Project Manager
CGI response >20%	Discontinue operations; retreat from work area
Oxygen level <19.5%	Retreat from work area; notify Project Manager
Oxygen level >23.5%	Retreat from work area; notify Project Manager

7.1.2 Organic Vapor Concentrations

Real-time monitoring for organic vapor concentrations in the breathing zone and down hole will be conducted during field operations (installation of groundwater monitoring and groundwater sampling by EAG and EAG subcontractor personnel) with a PID equipped with a 10.2- or 11.7-electron volt (eV) probe. The PID will be taken into the field and operated during site activities where contaminated soil and/or groundwater may be present. Air monitoring will be conducted during well installation and when a well is opened for groundwater measurements. Measurements will be made at the well head and personnel breathing zones where activities are being performed. The instrument will be calibrated using ultra-high purity air and isobutylene vapor of known concentration before and after use each day. Air calibration measurements will be documented in writing and kept in the project file. Action guidance for PID responses is contained in **Table 7-2**.

Table 7-2

Action Levels for General Site Work	
Meter Response in Breathing Zone (minimum of 3 minutes)	**Action Required**
<5ppm above background	Use Level D PPE
>5ppm above background	Level C PPE, including half or full-face APR with organic vapor cartridges/P100 filters
>50ppm above background	Stop work
Action Levels for Handling NAPL	
Meter Response in Breathing Zone (minimum of 3 minutes)	**Action Required**
<1ppm above background	Use Modified Level D PPE
>1ppm to <10ppm	Level C PPE, including half or full-face APR with organic vapor cartridges
>10ppm above background	Immediately withdraw; monitoring will continue until action levels will allow safe re-entry

If air concentrations of organic vapors are greater than 5 ppm above background in the breathing zone for a 3-minute period, personnel will stop work, retreat from site, and allow time (at least 15 minutes) for vapors to dissipate. If monitoring indicates that concentrations still exceed 5 ppm, workers will upgrade to Level C PPE. If monitoring indicates that concentrations exceed 50 ppm, work will be stopped until site conditions can be re-evaluated.

These action levels are based on the assumption that the major component of free product being recovered will be benzene or naphthalene.

Work involving NAPL recovery from monitoring wells will be conducted in Level C PPE. This level may be downgraded based on air monitoring data and actual field conditions. Downgrading of PPE must be approved by the PM and HSE staff. If ventilation is conducted, additional air monitoring will be performed to the resumption of work to determine the level of PPE required.

7.2 Physical Conditions Monitoring

Site workers will be monitored by the Project Manager for signs of weather-related symptoms from exposure to excessive heat or cold.

Whenever the air temperature exceeds 70°F for personnel wearing chemical protective clothing or 90°F for personnel wearing regular work clothes, the Project Manager will assess conditions that may cause heat stress in site workers.

8.0 MEDICAL SURVEILLANCE

This section discusses the medical surveillance program, how the results are reviewed by a physician and how participation is documented.

8.1 Medical Surveillance Program

All personnel who will be performing any task where potential exposure to hazardous material exists will undergo medical surveillance as outlined in OSHA 29 CFR 1910.120(f). All personnel performing tasks in the Exclusion Zone or Contamination Reduction Zone will be required to have passed the EAG medical surveillance examination (or equivalent), performed by a licensed Occupational Physician. The Project Manager will verify that all EAG and subcontractor personnel meet applicable OSHA medical surveillance requirements.

Applicable field employees will undergo an annual comprehensive medical examination, including a comprehensive health history, blood chemistry with complete blood count and differential, urinalysis, medical history, required chest x-rays, audiogram, pulmonary function testing, testing for heavy metals (as needed), and a physician's interpretation of each employee's medical surveillance examination, including the ability of the employee to wear a respirator. A comprehensive medical examination will be performed if an employee develops signs or symptoms indicating possible overexposure to hazardous substances and/or heat or cold stress.

8.2 Physician Review

All medical surveillance and examination results are reviewed by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine. EAG employee participation in the medical surveillance program is a part of their permanent medical record maintained in the employee's home office. A copy of the current medical clearance signed by the occupational health physician for all EAG employees must be maintained at the home office.

9.0 SITE CONTROL MEASURES AND DECONTAMINATION

To provide for the protection of public health and safety and minimize the possibility of transferring hazardous substances from the site, contamination control procedures are required. These procedures consist of site control measures (which entail the delineation of work zones, communications, and site security) and decontamination procedures (which are necessary for both personnel and equipment). Contaminants that may be uncovered during sampling operations must not be transferred outside the work zone unless properly containerized, and must be removed from clothing, personnel, and equipment prior to relocation from that zone. This section discusses site control measures and decontamination procedures to be used during the collection of samples, the installation of soil borings and/or groundwater monitoring/remediation wells, excavations, and other intrusive work where contact with impacted soils and groundwater could occur by EAG and/or EAG subcontractor personnel.

9.1 Site Control Measures

Site control can be achieved by effectively delineating the work zone, providing appropriate communication, and establishing site security.

9.1.1 Work Zone Delineation

To minimize the transfer of hazardous substances from the site and to ensure proper protection of employees and subcontractors, work zones will be established by the Field Project Team Leader. Applicable site work and the associated requirement for work zones will be determined by the Project Manager. The work area will be divided into an Exclusion Zone (EZ), a Contamination Reduction Zone (CRZ), and a Support Zone (SZ). A typical work zone delineation setup is shown as **Figure 9-1**, below.

Exclusion Zone (EZ)

Contamination does or could exist in this zone. Only properly authorized and trained individuals (refer to Section 6.0) wearing appropriate PPE will be allowed to enter and work in this zone. All people entering the EZ must wear, at a minimum, Level D protection. An entry and exit point for personnel and equipment will be established at the periphery of the EZ (between the EZ and the CRZ) to regulate the flow of personnel and equipment.

Contamination Reduction Zone (CRZ)

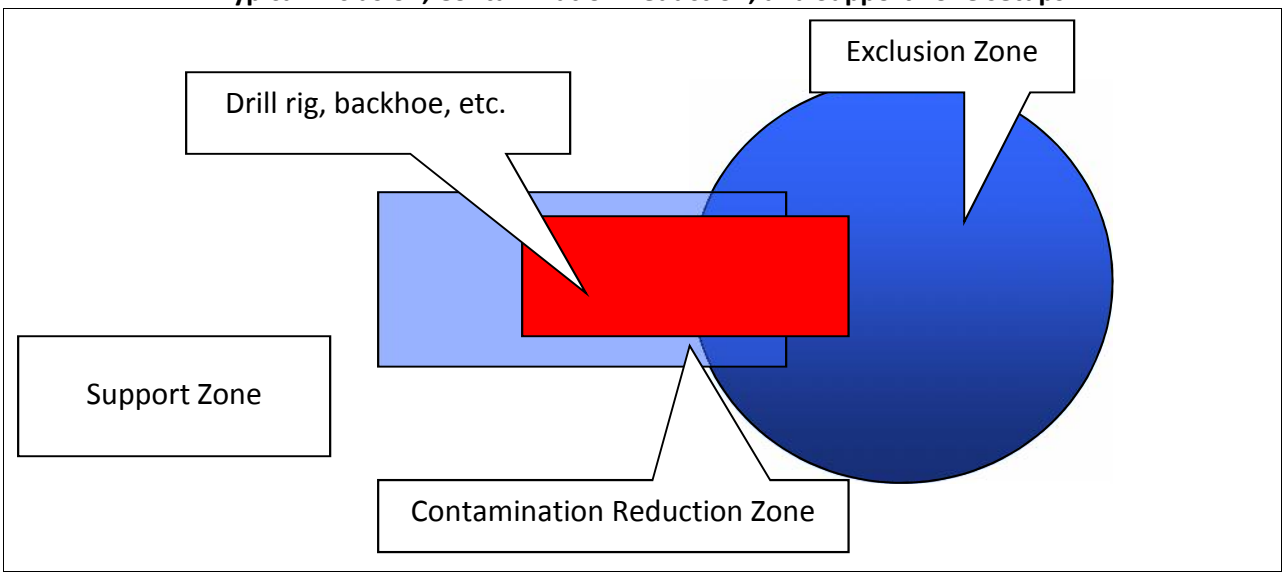
Between the EZ and the SZ will be the CRZ, which will provide a transition between the potentially contaminated EZ and the clean SZ. The CRZ (located upwind of the EZ, if possible) will be a corridor leading from the EZ and will serve as a buffer to further reduce the probability of the SZ becoming contaminated. Exit from the EZ will only be allowed through this CRZ. The CRZ will provide additional assurance that the physical transfer of contaminating substances on people, equipment, and/or in the air will be limited through a combination of decontamination and zone restrictions. Within this zone, employees and subcontractors may perform personal decontamination (e.g., face and hand washing), and certain PPE and small equipment decontamination. Buckets or wash basins for boot

washing and equipment decontamination will be stationed on a sheet of plastic (a minimum of 8 feet by 8 feet), the boundaries of which will constitute the CRZ.

Support Zone (SZ)

The Support Zone will be considered a non-contaminated area. The location of support facilities in the SZ will be upwind of the EZ (where possible) and readily accessible to the nearest road. The field office/support facilities, equipment vehicles, a first aid station and a visitors/personnel entry and exit log for the work site will be located in this zone. Potentially contaminated personal clothing, equipment and samples are not permitted in this zone unless properly containerized.

Figure 9-1
Typical Exclusion, Contamination Reduction, and Support Zone setups



9.1.2 Communications

A loud and clear form of communication should be made available for Site personnel entering the work zones. Site communication may be in the form of hand signals, voice, or other communication devices. All forms of communication should be understood by all workers on the Site prior to starting work. Offsite communications may be conducted with mobile phones or walkie-talkies only if the atmosphere has been deemed non-explosive, and the person using the mobile device is in the SZ while placing the call, or inside the cab of a stationary vehicle.

9.1.3 Site Security

The Sparrows Point facility is not open to the public, and there is a strictly monitored main entrance with a security guard on duty at all times who only allows authorized personnel onto the Site. This limited access to the facility should eliminate the need for many requirements for specific site security except those needed to maintain work zone integrity, such as visible barriers around open excavations or EZs and CRZs. No site visitors will be allowed to travel unescorted by EAG or subcontractor personnel around the facility.

Once site visitors arrive at their intended work zone, they must check in with the Field Team Lead. If visitors are authorized to enter the CRZ and/or the EZ, they must have completed OSHA 1910.120 medical surveillance and training requirements (refer to Section 8.0 and Section 6.0). Visitors must wear

appropriate PPE before they will be allowed to enter the CRZ and/or the EZ. They must also be taken through this HASP during a brief tail-gate meeting and sign the Acknowledgement page in the back prior to engaging in any activities inside the CRZ or the EZ. All site visitors must follow the same site control measures and decontamination procedures as EAG personnel and subcontractors. The Project Manager must also be informed of each visitor's name, purpose for their visit, time of entry (and exit), location of tasks they wish to perform, whether they completed their intended task(s), and any other relevant information pertaining to their visit.

9.2 Decontamination Procedures

Decontamination of employees, subcontractors, and equipment leaving the EZ will be performed to minimize human exposure to hazardous substances and to minimize the spread of contamination to surrounding areas. The purpose of the CRZ is to provide a location to perform limited personnel decontamination and certain PPE and small equipment decontamination.

9.2.1 Personnel Decontamination

Persons leaving the EZ must pass through the CRZ and follow decontamination procedures before entering the SZ. Hand tools and other sampling equipment used in the EZ and reusable PPE (boots, safety glasses, etc.) will be appropriately cleaned prior to removal from the site each day. The step-by-step sequence for personnel decontamination is as follows:

- Remove boot covers (if used) at the boot washing station and place them in the disposal container provided
- Wash outer gloves and chemical resistant boots (if used) at the boot washing station
- Remove wrist tape (if used) and outer gloves and place them in the disposal container provided
- Remove ankle tape (if used) and disposable coveralls (if used) and place them in the disposal container provided
- Remove respirators (if used) and place each in designated locations in the CRZ
- Remove inner gloves and discard in the disposal container provided
- Wash hands and face and proceed to the SZ

Respirators must be fully decontaminated after each use by the personnel who previously wore them. All project employees and subcontractors are required to take a thorough soap and water shower in their home or motel room at the end of each workday. If monitoring or a general exposure assessment indicates that an employee has become contaminated, the employee or subcontractor will notify the EAG Project Manager and the Field Team Lead as soon as the contaminated state has been discovered.

9.2.2 Equipment Decontamination

All equipment leaving the EZ must be decontaminated either within the CRZ or at the central decontamination area. Small equipment, such as hand tools, will be thoroughly decontaminated within the CRZ before being placed in the SZ. The field tools may be scrubbed visually clean using a detergent solution (Alconox/Liquinox) with water and a stiff, long-bristled scrub brush. Following the solution scrubbing, the tools may be rinsed with distilled water or isopropyl alcohol. Any vehicle working in an EZ will be decontaminated before leaving the site. The vehicle will be cleaned by sweeping excess soil and debris off the wheels. A high-pressure sprayer will then be used to wash the wheels, if necessary.

Each piece of equipment will be inspected after cleaning for any soil remaining on the tires or elsewhere. All vehicles will be cleaned to the satisfaction of the Field Team Lead or a designated assistant prior to entering the SZ or leaving the site. Employees or subcontractors performing decontamination shall wear the appropriate level of PPE (refer to Section 5.0).

9.2.3 Waste Management

The Project Manager and the Field Team Leads will be responsible for overseeing the containerization and disposal of any field derived wastes. Contaminated or suspected contaminated field derived wastes shall be disposed of in accordance with all local, state, and/or federal regulations. Field derived wastes include decontamination rinse waters and other related decontamination generated wastes.

Soils and groundwater expected to be encountered during any sampling or intrusive work not to be contaminated, based on existing data, may be discharged to the ground surface in the immediate vicinity of the monitoring well. However, any known or suspected to be contaminated soil (in small quantities) or groundwater will be containerized for future removal, likely in 55-gallon drums or other approved storage vessels. Depending on the suspected contaminants, the recovered groundwater may be sent through one of the onsite groundwater treatment units. However, the treatment unit must be designed to address the contaminants of concern in the groundwater being treated. Otherwise, the liquid must be staged onsite for eventual offsite disposal at an approved facility.

Impacted soil, if in drums, will be staged in an area designated by the Project Manager or Field Team Lead for eventual disposal. For large excavations, where excavated soil is stockpiled, it may be necessary to place soils on plastic and cover with plastic to prevent any potential leachable runoff. The Project Manager and/or Field Team Lead will provide the proper guidance necessary for handling bulk soil piles.

Any NAPL recovered via remediation systems or manual recovery efforts will be properly containerized and either disposed of offsite as a recyclable material, if possible, or as a hazardous waste. The receiving facility must be an approved facility.

10.0 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

The objective of emergency response and contingency procedures is to ensure that effective actions are implemented in a timely manner to minimize or control the effects of adverse events (e.g., potential chemical exposures, personal injuries, fires/explosions, and spills/releases). The following subsections describe the basic emergency responses required should an emergency take place during field investigation or remedial effort activities.

10.1 Emergency Phone Numbers

Emergency telephone numbers are listed in **Table 10-1**.

Table 10-1
Emergency Telephone Numbers and Agencies

Agency	Telephone Number
Security (Sparrows Point facility)	(410) 388-7761
Ambulance	911
Fire	911
Occupational Health Clinic	(410) 633-3600
Hospital	(410) 550-0100 (general) (410) 550-0350 (emergency)
National Response Center	(800) 424-8802
Poison Control Center - Maryland	(800) 222-1222
EAG Main Contact	
VP Remediation, Russ Becker	(314) 686-5611
Project Manager, James Calenda	(314) 620-3056

10.2 Injury/Illness Treatment

In the event of illness or injury, the following steps will be taken:

- Evaluate the extent of injuries or seriousness of illness.
- When employees require urgent medical attention, call for emergency assistance. First aid should be administered while awaiting an ambulance or paramedics. All emergency medical treatment, other than first aid, will be administered by the local paramedics. **Table 10-1** lists site emergency telephone numbers. In all cases, critical injuries must be immediately referred for professional medical attention.
- For a non-critical injury/illness, first aid will be administered by onsite personnel. Anyone sustaining a non-critical injury/illness who continues to work will be monitored by the Field Team Lead for any signs of worsening condition, if it is deemed that the person can return to work by the Team Lead and Project Manager. Injured personnel who later suffer any worsening change in status are to immediately notify the Team Lead or the Project Manager.

10.3 Occupational Health Clinic and Hospital Information

Occupational Health Clinic

The Concentra Medical Center, located at 1833 Portal Street, Baltimore, MD, is the closest occupational health clinic, just over 6 miles away. A map to the clinic in included as **Figure 10-1**. The clinic should be used for non-emergency injuries and illnesses.

Directions:
From Sparrow's Point Road, turn left onto Wharf Road;
Turn left onto MD-158 W/Bethlehem Blvd. (0.4 mile);
Turn right onto MD-157 N/Peninsula Expy. (2.7 miles);
Turn slight left onto Merritt Ave. (0.1 mile);
Merritt Ave. becomes Sollers Point Rd. (0.3 mile);
Turn left to stay on Sollers Point Rd (0.6 mile);
Turn left onto Williams Ave. (0.2 mile);
Turn right onto Dundalk Ave. (<0.1 miles);
Turn left onto Chandlery St. (0.1 mile);
Turn left onto Portal St.

Figure 10-1: Health Clinic (Non-Emergency) Map

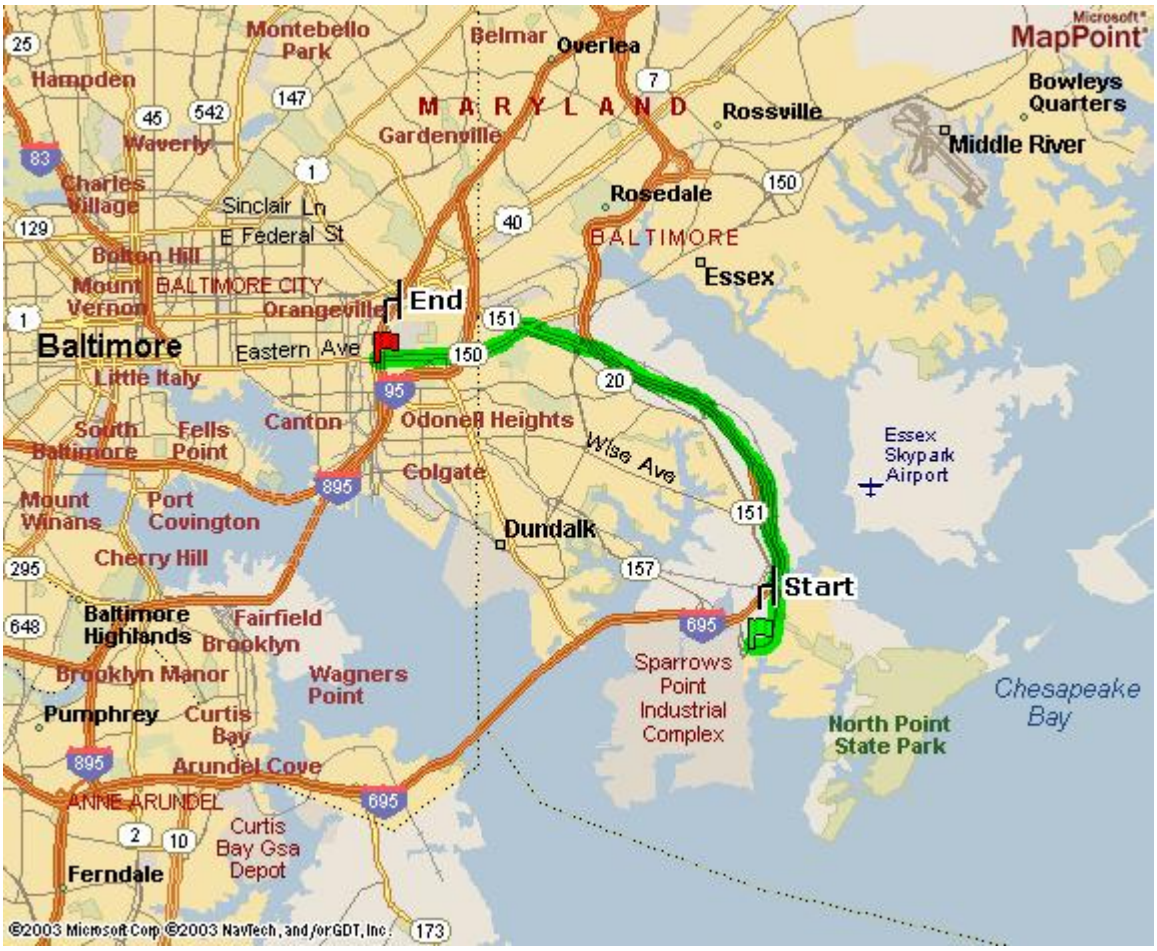
Hospital

The Johns Hopkins Bayview Hospital is the closest emergency facility, just over 9 miles away. The hospital is located at 4940 Eastern Avenue in Baltimore, MD. **Figure 10-2** is a map to this hospital. Maps are also included in **Attachment E**.

Directions:

From the Sparrows Point Industrial Complex, go north on Route 151 for approximately one mile.
Take ramp (right) onto I-695 towards I-695/Essex.
At exit 40, take ramp (right) onto Route 151/North Point Boulevard North/MD 150;
Take ramp (right) onto Route 150 (Eastern Avenue).
Continue on Eastern Avenue to hospital on right.

Figure 10-2: Hospital Map



Prior to the start of field activities, the Project Field Team Leader will call to verify the telephone numbers and directions for the clinic and hospital, and then distribute location maps and the emergency telephone list to workers and vehicles.

10.4 Accident and Emergency Medical Response

All field team members will be aware of the location of a first aid kit kept onsite. All vehicles used to transport injured persons to an offsite medical facility will be provided with directions and a map to the medical facility.

If treatment beyond first aid is required, emergency response personnel will be contacted for assistance and transport. Before beginning site activities, the Project Field Team Leader will ensure that each field team member knows where the nearest emergency medical facilities are and how to get there. The closest hospital will be used in cases of life-threatening emergencies at the direction of the Project Field Team Leader. The telephone numbers of the local emergency services will be available in the SZ, and the Project Field Team Leader will brief the field team on the procedures for calling for help in an emergency.

Site personnel will inform the Project Manager of any medications, allergies, or other medical information that may be applicable for their medical treatment. The Project Manager will supply this information to emergency response personnel, and will accompany the victim to the hospital, if possible.

10.4.1 Chemical Exposure

In case of accidental overexposure to a hazardous material (groundwater, soil, and/or off-gas materials), guidelines shown in **Table 10-2** will be used.

Table 10-2
Chemical Exposure Guidelines

Type of Overexposure	First Aid Guidelines
Skin Contact	Skin: Wash/rinse the affected area thoroughly with copious amounts of soap and water.
	Eyes: Eyes should be rinsed for at least 15 minutes following chemical contamination.
	Contact emergency response personnel if required, or transport victim to the hospital.
Inhalation	Move the victim to fresh air.
	Contact emergency response personnel if required, or transport victim to the hospital.
Ingestion	Contact Poison Control Center.
	Contact emergency response personnel, or transport victim to the hospital.

10.4.2 Decontamination During a Medical Emergency

For minor medical problems or injuries, regular decontamination procedures will be followed. If emergency, life-saving first aid and/or medical treatment are required, regular decontamination procedures may need to be abbreviated or omitted:

- Do not attempt to wash or rinse an unresponsive victim unless the victim has been contaminated with an extremely toxic or corrosive chemical that may cause injury or loss of life to emergency response personnel.
- Outer garments can be removed if it does not cause a delay, interfere with treatment, or aggravate the problem.

- PPE can be cut away and respiratory protective equipment must always be removed.
- If contaminated clothing cannot be safely removed, then the victim should be wrapped in a blanket or plastic sheeting to prevent contamination to the inside of the ambulance and/or emergency response personnel.

The Project Manager or Field Team Lead will advise the medical staff as to the type of contamination possibly involved.

10.4.3 Small or Incipient Fire

A small fire is defined as a fire that can be extinguished with an available 20 pound type ABC fire extinguisher. An incipient fire is a fire that is small because it has just started. In the event of a small or incipient fire, the following minimum actions will be taken:

- Evacuate nearby personnel from the area, if possible, to an upwind location or to an area not affected by smoke or hazardous decomposition products if an upwind location is not feasible.
- Attempt to extinguish fire using portable fire extinguisher or by smothering.
- Contact emergency response personnel, as needed, for any injuries or exposures to hazardous decomposition products, or if fire cannot be put out.
- After the fire has been extinguished, or emergency response personnel have been contacted, notify the following project personnel:
  The Project Manager

10.4.4 Large Fire or Explosion

An explosion, large fire or a small fire which cannot be extinguished is beyond the first line capabilities of EAG personnel. Professional emergency response personnel would be needed to provide emergency assistance for these types of incidents. In the event of a large fire, explosion or a small fire that cannot be extinguished, the following minimum actions will be taken:

- Evacuate all personnel from the site, if possible, to an upwind location, or to an area not affected by smoke or hazardous decomposition products if an upwind location is not feasible
- Perform a quick role call to account for all site personnel
- Contact the fire department
- Contact emergency response personnel, as needed, for any injuries or exposures to hazardous decomposition products
- After emergency response personnel have been contacted, notify the following project personnel:
  The Project Manager

10.4.5 Adverse Weather Conditions

In the event of adverse weather conditions, the Project Manager will determine if work can continue without sacrificing the health and safety of site personnel. Threatening weather conditions will be monitored by the Project Manager and possibly the Team Lead via radio, television, internet, and/ or calls to the National Weather Service. Some of the conditions to be considered include:

- Potential for heat or cold stress
- Limited visibility

- Electrical storms
- Treacherous weather-related working conditions (i.e., heavy rainfall, icy conditions causing slippery footing hazards, etc.).

10.4.6 First Aid for Heat Stress/Cold Stress

First aid treatment for **heat cramps** includes shade, rest and fluid replacement. If available, the individual should drink electrolyte replacement fluids (e.g., Gatorade, Squincher or 10-K). The individual should recover within half an hour.

First aid treatment for **heat exhaustion** includes cooling the victim, elevating the feet and fluid replacement. If the individual has not recovered within half an hour, then transport the victim to the hospital for medical attention.

Heat stroke is a medical emergency, requiring the immediate cooling of the victim and transport to the hospital for medical treatment immediately.

First aid treatment for **frost nip** and **frostbite** includes covering the affected area with warmth and retreating to a warm area. If the individual has not recovered within half an hour, then transport the victim to the hospital for medical attention.

Frozen tissue is a medical emergency and the victim must receive medical attention immediately. Contact emergency response personnel immediately or transport the victim to the hospital.

First aid treatment of **mild hypothermia** includes using heat to raise the individual's body temperature. Heat may be applied to the victim in the form of heat packs, hot water bottles and blankets. If the individual has not recovered within half an hour, then transport the victim to the hospital for medical attention.

Severe hypothermia is a medical emergency and the victim must be transported to the hospital immediately. First aid treatment for severe hypothermia includes handling the victim very gently; rough handling may set off of an irregular heartbeat. ***DO NOT*** attempt to re-warm the severely hypothermic victim; re-warming may cause the development of an irregular heartbeat.

10.4.7 Snake Bites

If bitten, lower the extremity below the heart to reduce the poison's dissemination through the body. Remain calm, try to keep the heart rate reduced and seek medical attention immediately. Do not cut the wound or attempt to suck out the venom. Note any physical features (e.g., shape of head and color or pattern on body) of the snake.

10.4.8 Animal Bites

All bites should be treated as contaminated soft tissue injuries. Bites should be washed immediately with large amounts of soap and water. If soap is not available, flush the wound with water. The severity and onset of any infection is dependent upon the number of organisms (viruses or bacteria) introduced into the wound. Washing saliva out of the wound immediately will reduce the number of bacteria or viruses that can enter the tissue. Medical attention must be sought if rabies is suspected or the individual has not had a recent tetanus booster.

10.4.9 Insect Bites and Stings

Emergency care for insect bites and stings depends on the individual's reaction. To treat a sting that results in a minor reaction, remove the stinger by gently scraping it off the skin. Do not try to grasp the sac or stinger, because this forces the remaining venom into the skin. Once the stinger has been removed, clean the wound and surrounding area. Apply cold packs to slow the absorption of the venom and reduce pain and swelling. The treatment for a severe reaction to insect stings includes the following:

- Confirm with the victim whether they are highly allergic to the insect that stung them
    - If victim has gone into anaphylactic shock, retrieve their epi pen or other auto-injector and administer per the directions as hastily as possible
- Assuming the victim remains conscious, ask them to refrain from moving around, and to lie down
- Immobilize the injured area immediately
- If an extremity is involved, remove any rings or watch
- Keep the affected part low, below the level of the heart
- Apply cold compresses to the affected area
- If possible, try to identify the type of insect that inflicted the sting
- Transport the victim to a medical facility immediately, continuing supportive measures en route.

All employees and subcontractors must report severe reactions to insect stings prior to the beginning of work to both the Project Manager and Field Team Lead.

10.4.10 Poisonous Plants

Decontamination: Wash the skin immediately after contact with the plant. Proper washing may not be practical in the middle of the woods, but a product such as Technu or a small wash-up kit with prepackaged, alcohol-based cleansing tissues can be effective. Employees and subcontractors should not forget to wash contaminated clothing and clean up contaminated equipment prior to re-use.

Treatment: Options are as follows:

- Home treatment: Calamine lotion and an oatmeal bath (one cup to a tub full of water) can help relieve itching. To prevent secondary skin infection, scratching is not helpful and the fingernails should be cut to avoid damage to the skin. Over-the-counter hydrocortisone cream can decrease inflammation and itching; however, the label should be read and the cream used according to directions.
- When to see the doctor: Severe cases may require further treatment. A physician should be seen if the rash appears infected, is on the face or other sensitive body areas, or is too extensive to be easily treated at home.

10.4.11 Ticks

To remove an attached tick:

- Use fine-tipped tweezers or a "tick tool" to grasp the tick at the surface of the skin
- If tweezers are not available, use a tissue to protect the fingers (exposure to the tick's body fluid may lead to transmission of disease)
- With a steady motion, pull the tick straight out

Disinfect the bite site and the tweezers. Wash your hands thoroughly with soap and water. Save the tick if you can by placing it in a Ziploc bag in the freezer; this may help with diagnosis in the future.

If flu-like symptoms such as fatigue, headache, neck-stiffness or jaw discomfort begin following a tick bite, seek medical attention.

APPENDICES

EnviroAnalytics Group

Environmental Engineers

ATTACHMENT A

COMPLIANCE AGREEMENT

EAG HEALTH AND SAFETY PLAN

ACKNOWLEDGEMENT FORM

I, _____, have read (or had read to me), EAG's health and safety plan.
(Print Name)

I understand my responsibilities as they are defined in this plan and will abide by these rules and procedures, as well as any regulations or otherwise governing safety. When in doubt concerning safe job performance, I will speak to my immediate supervisor and/or Project Manager.

I understand EAG reserves the right to change or amend the HASP at any time.

I understand any violation to the plan policies or procedures will be cause for disciplinary action up to and including termination.

_____ _____

Employee Signature Date

_____ _____

EAG Supervisor/Project Manager Signature Date

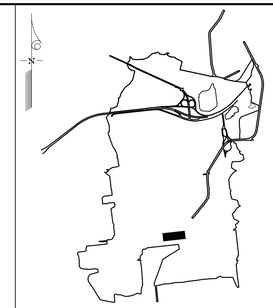
ATTACHMENT B

Material Safety Data Sheets (MSDSs)

APPENDIX D

SHEET INDEX

MARINE IMPROVEMENTS
AT
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND



LOCATION MAP

SCALE: 1" =5000'

LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- PROPOSED HIGH MAST LIGHT
- PROPOSED HIGH MAST LIGHT
- 12 EXISTING CONTOUR
- 14 PROPOSED CONTOUR
- E EXISTING ELECTRIC
- E PROPOSED ELECTRIC
- SS EXISTING SANITARY SEWER
- SS PROPOSED SANITARY SEWER
- W EXISTING WATER
- 10" W PROPOSED WATER
- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN

VICINITY MAP

SCALE: 1" = 1000'

SITE DATA

1. SITE ADDRESS: BALTIMORE, MD 21219
2. ELECION DISTRICT: 15
3. COUNCILMANIC DISTRICT: 7
4. CENSUS TRACT: 452200
5. DEED REF: 32617/00144
6. TAX MAP: 111 DRID MAP: 14 PARCEL: 318
7. PROPERTY TAX ACCOUNT NO.1502024000
8. PROPERTY OWNER: SPARROWS POINT TERMINAL, LLC
   1600 SPARROWS POINT BLVD.
   SPARROWS POINT, MD 21219
9. TOTAL SITE AREA:
10. SITE IS LOCATED WITHIN BALTIMORE HARBOR WATERSHED DRAINAGE AREA
11. ZONING: MH/M (MANUFACTURING HEAVY/INDUSTRIAL MAJOR) 2-5 N/A
12. THIS SITE IS SERVED BY PRIVATLY OWNED SEWER AND WATER SYSTEMS

NOTES

1. PROPOSED WORK SHOWN OUTSIDE THE MDE PARCEL B-5 BOUNDARY IS SHOWN FOR MASTER PLANNING PURPOSES.
2. APPROXIMATE CUT= 23,075 CY
   APPROXIMATE FILL= 152,199.28 CY
3. EXCAVATED MATERIAL TO BE REUSED ON MDE B-5 IF DEEMED SUITABLE FOR REUSE.

TRADEPOINT ATLANTIC

N

PROP. BULK STORAGE 'BUILDING 106'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 105'
BUILDING AREA = 200,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 104'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 103'
BUILDING AREA = 200,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 102'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 101'
BUILDING AREA = 200,000 SF
F.F. = 14.00

MDE PARCEL B-5
MDE PARCEL B-19

MDE PARCEL B-5
MDE PARCEL B-9

EX. PENNWOOD POWER STATION
TO BE REMOVED BY OTHERS

MDE PARCEL B-9
MDE PARCEL B-5

MDE PARCEL B-5

MDE PARCEL B-5
MDE PARCEL B-13

MATCHLINE STA. 20+50

LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- POLE MOUNT LIGHT (PHASE I)
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN
- HIGH MAST LIGHT (PHASE I)
- EXISTING ELECTRIC
- PROPOSED ELECTRIC
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATER
- PROPOSED WATER

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TRADEPOINT ATLANTIC

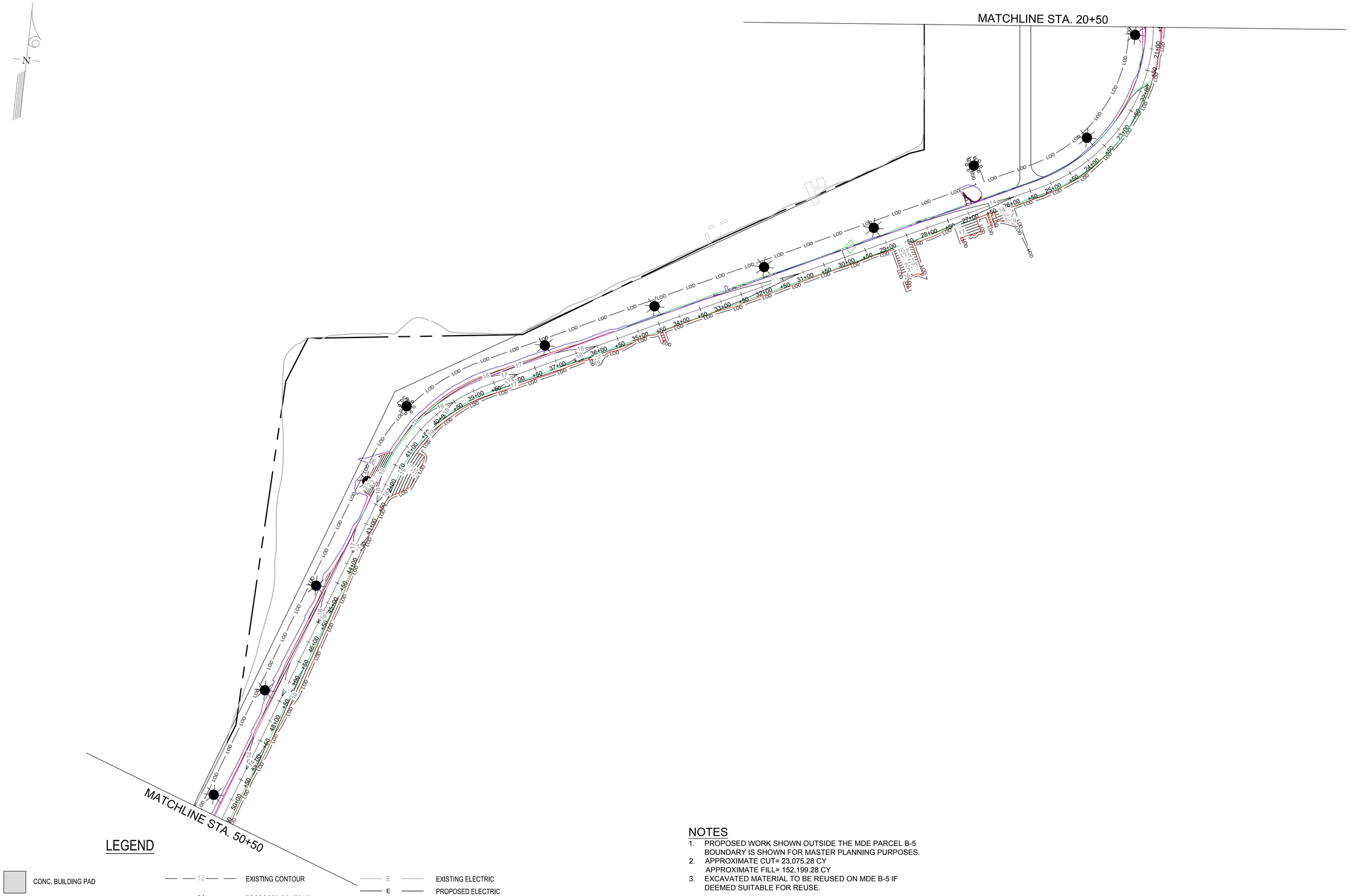
REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE 1"=100'
DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS
MDE PARCEL B-5

DRAWING NO.
SITE PLAN

SHEET 2 OF 14



LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- POLE MOUNT LIGHT (PHASE I)
- 12 — EXISTING CONTOUR
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- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN
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PHASE II IMPROVEMENTS MDE PARCEL B-5

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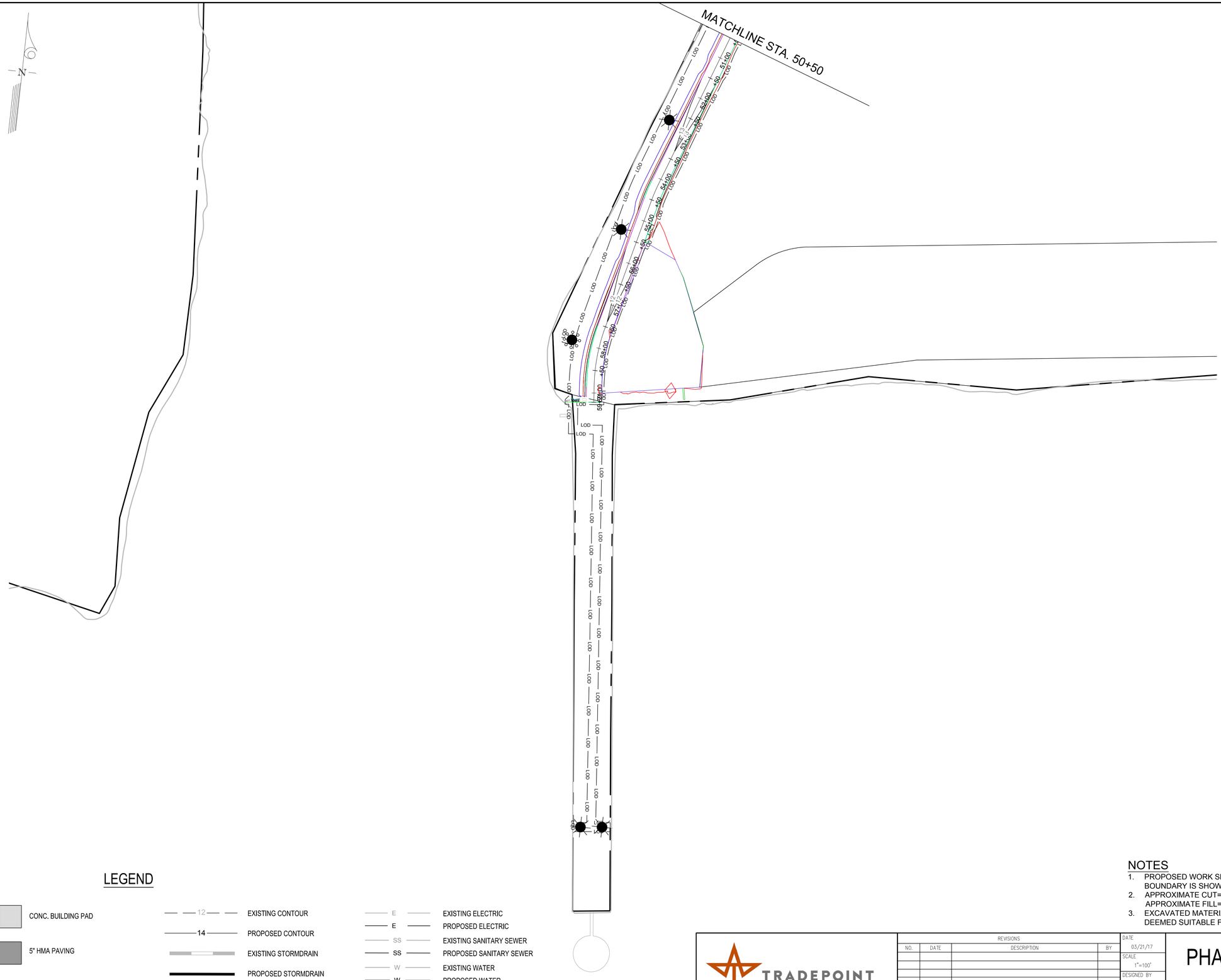

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DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS MDE PARCEL B-5

DRAWING NO.
SITE PLAN

N

PROP. BULK STORAGE 'BUILDING 106'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 105'
BUILDING AREA = 200,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 104'
BUILDING AREA = 150,000 SF
F.F. = 14.00

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BUILDING AREA = 200,000 SF
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MDE PARCEL B-5
MDE PARCEL B-19

MDE PARCEL B-5
MDE PARCEL B-9

EX. PENNWOOD POWER STATION
TO BE REMOVED BY OTHERS

MDE PARCEL B-9
MDE PARCEL B-5

MDE PARCEL B-5

MDE PARCEL B-5
MDE PARCEL B-13

MATCHLINE STA. 20+50

LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
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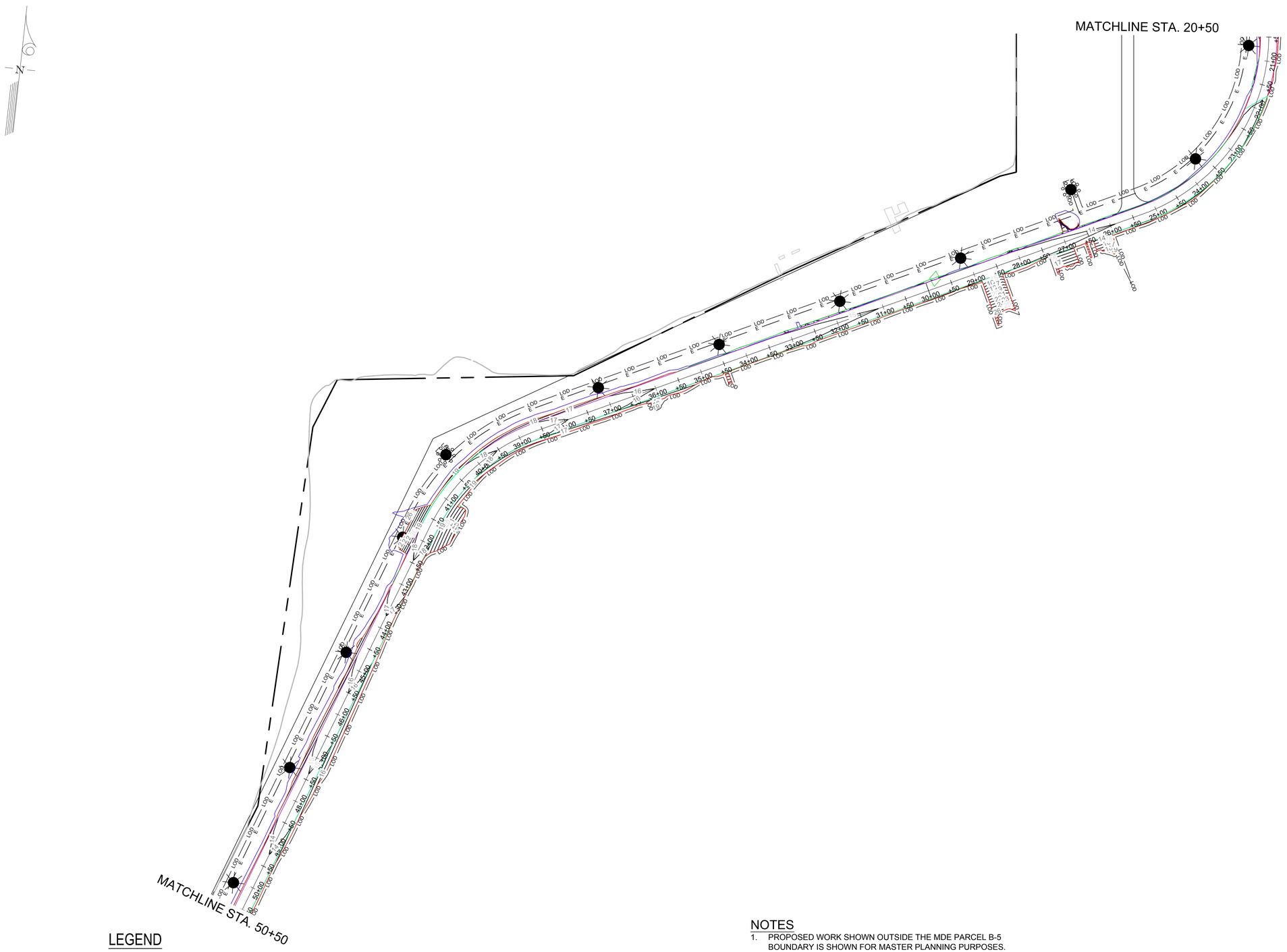
DRAWN BY KD

PHASE II IMPROVEMENTS
MDE PARCEL B-5

DRAWING NO.
GRADING PLAN

SHEET 5 OF 14



LEGEND

- CONC. BUILDING PAD
- 5" HMA SLAG
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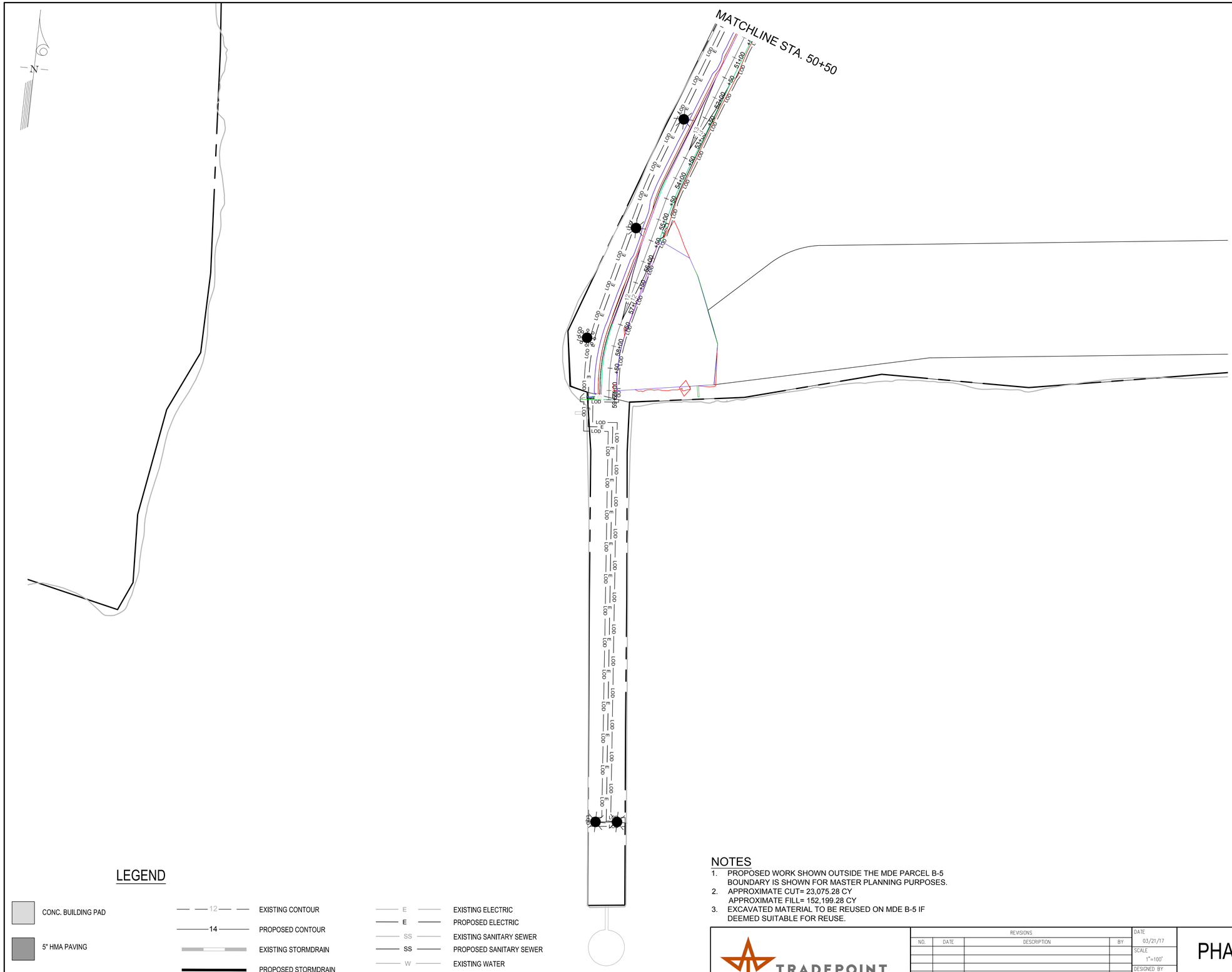
GRADING PLAN
SHEET 6 OF 14



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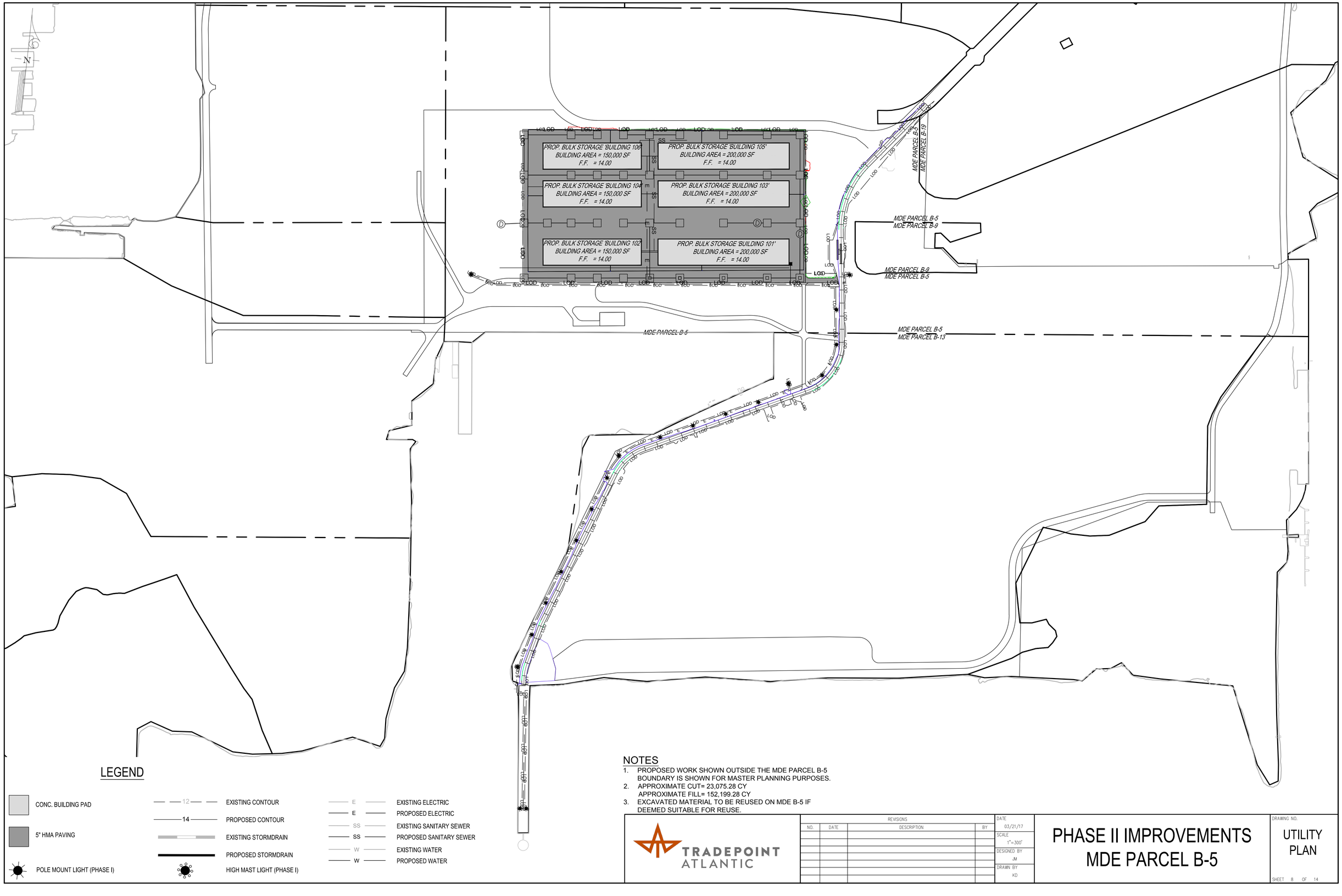

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TRADEPOINT ATLANTIC

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE 1"=300'
DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS
MDE PARCEL B-5

DRAWING NO.
UTILITY PLAN

N

PROP. BULK STORAGE 'BUILDING 106'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 105'
BUILDING AREA = 200,000 SF
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PROP. BULK STORAGE 'BUILDING 104'
BUILDING AREA = 150,000 SF
F.F. = 14.00

PROP. BULK STORAGE 'BUILDING 103'
BUILDING AREA = 200,000 SF
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PROP. BULK STORAGE 'BUILDING 102'
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PROP. BULK STORAGE 'BUILDING 101'
BUILDING AREA = 200,000 SF
F.F. = 14.00

MDE PARCEL B-5
MDE PARCEL B-19
MDE PARCEL B-9
MDE PARCEL B-13

EX. PENNWOOD POWER STATION
TO BE REMOVED BY OTHERS

MATCHLINE STA. 20+50

LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- POLE MOUNT LIGHT (PHASE I)
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN
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SCALE 1"=100'
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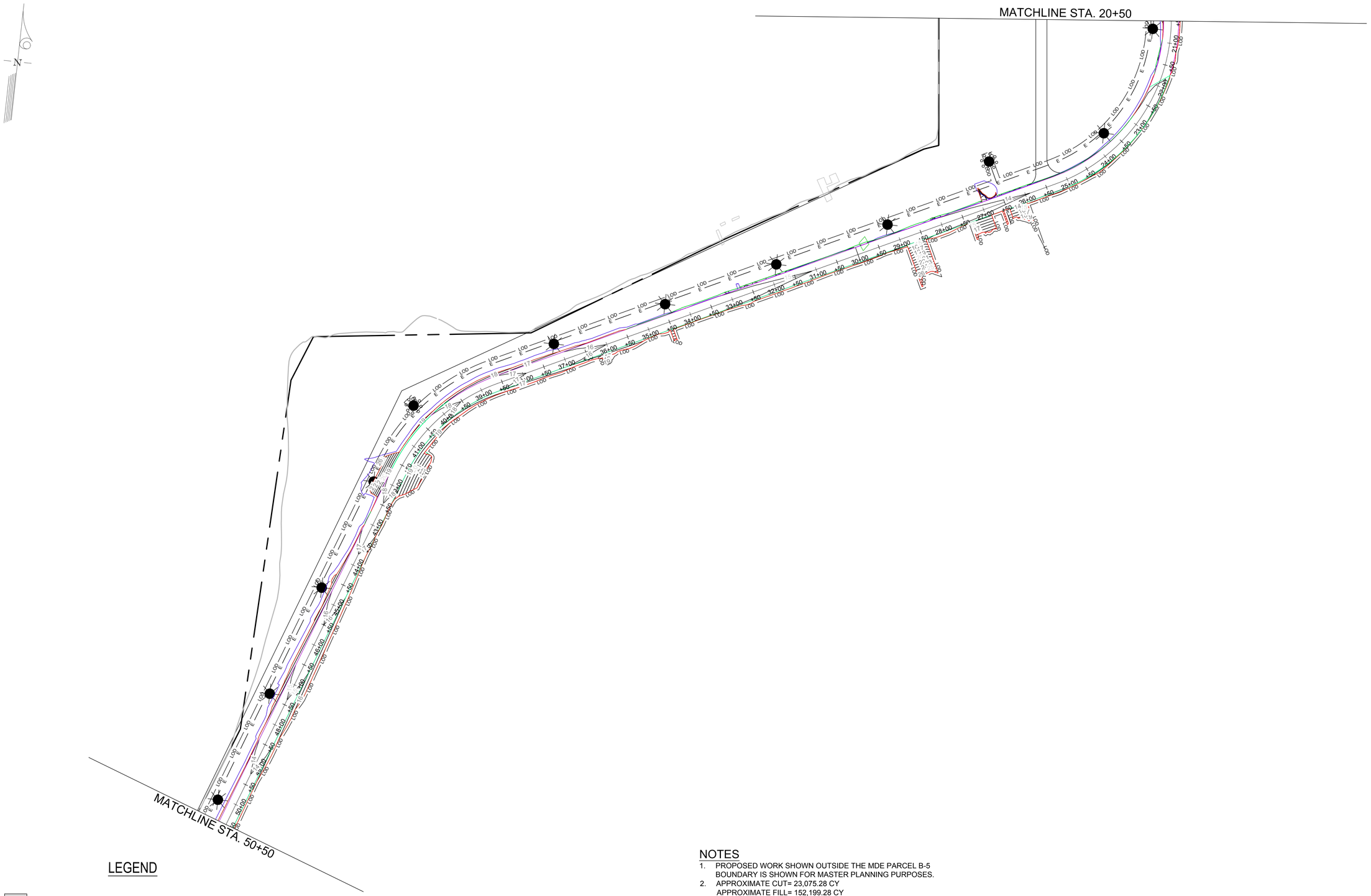
PHASE II IMPROVEMENTS
MDE PARCEL B-5

DRAWING NO.
UTILITY PLAN

SHEET 9 OF 14



LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- POLE MOUNT LIGHT (PHASE I)
- 12 — EXISTING CONTOUR
- 14 — PROPOSED CONTOUR
- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN
- HIGH MAST LIGHT (PHASE I)
- E — EXISTING ELECTRIC
- E — PROPOSED ELECTRIC
- SS — EXISTING SANITARY SEWER
- SS — PROPOSED SANITARY SEWER
- W — EXISTING WATER
- W — PROPOSED WATER

NOTES

1. PROPOSED WORK SHOWN OUTSIDE THE MDE PARCEL B-5 BOUNDARY IS SHOWN FOR MASTER PLANNING PURPOSES.
2. APPROXIMATE CUT= 23,075.28 CY
   APPROXIMATE FILL= 152,199.28 CY
3. EXCAVATED MATERIAL TO BE REUSED ON MDE B-5 IF DEEMED SUITABLE FOR REUSE.

TRADEPOINT ATLANTIC

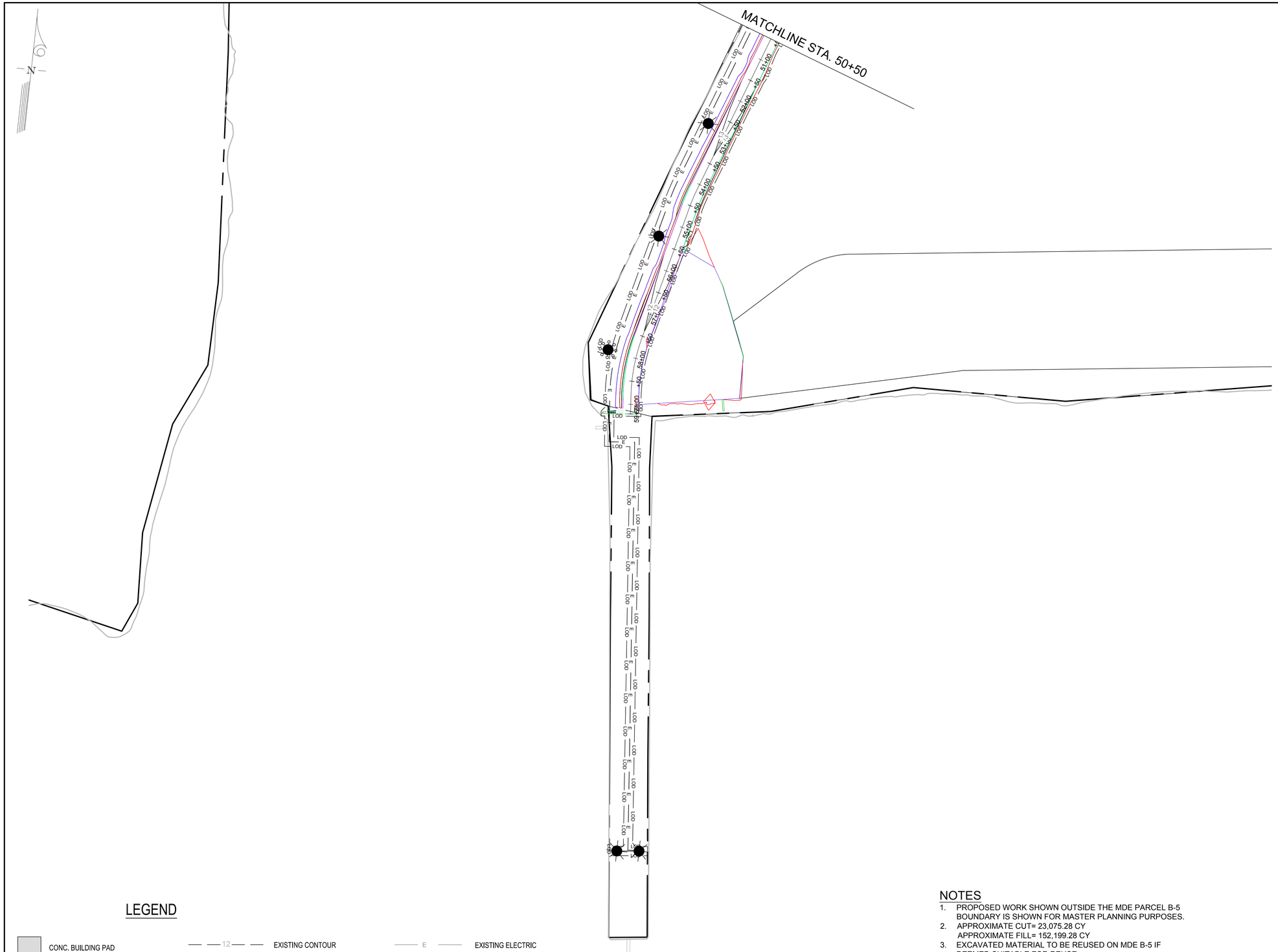
REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE 1"=100'
DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS MDE PARCEL B-5

DRAWING NO.
UTILITY PLAN

SHEET 10 OF 14



LEGEND

- CONC. BUILDING PAD
- 5" HMA PAVING
- POLE MOUNT LIGHT (PHASE I)
- 12 — EXISTING CONTOUR
- 14 — PROPOSED CONTOUR
- EXISTING STORMDRAIN
- PROPOSED STORMDRAIN
- HIGH MAST LIGHT (PHASE I)
- E — EXISTING ELECTRIC
- E — PROPOSED ELECTRIC
- SS — EXISTING SANITARY SEWER
- SS — PROPOSED SANITARY SEWER
- W — EXISTING WATER
- W — PROPOSED WATER

NOTES

1. PROPOSED WORK SHOWN OUTSIDE THE MDE PARCEL B-5 BOUNDARY IS SHOWN FOR MASTER PLANNING PURPOSES.
2. APPROXIMATE CUT= 23,075.28 CY
   APPROXIMATE FILL= 152,199.28 CY
3. EXCAVATED MATERIAL TO BE REUSED ON MDE B-5 IF DEEMED SUITABLE FOR REUSE.

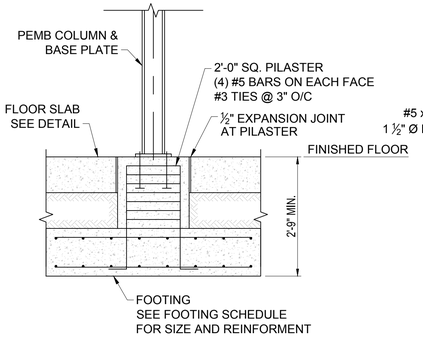
TRADEPOINT ATLANTIC

REVISIONS			
NO.	DATE	DESCRIPTION	BY

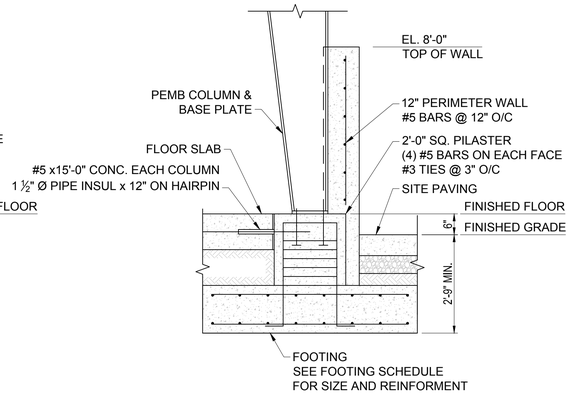
DATE 03/21/17
SCALE 1"=100'
DESIGNED BY JM
DRAWN BY KD

PHASE I IMPROVEMENTS MDE PARCEL B-5

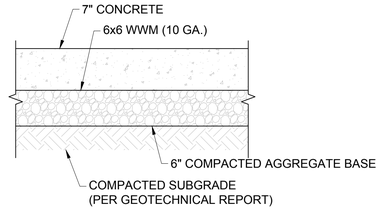
DRAWING NO.
UTILITY PLAN



INTERIOR PAD FOOTING



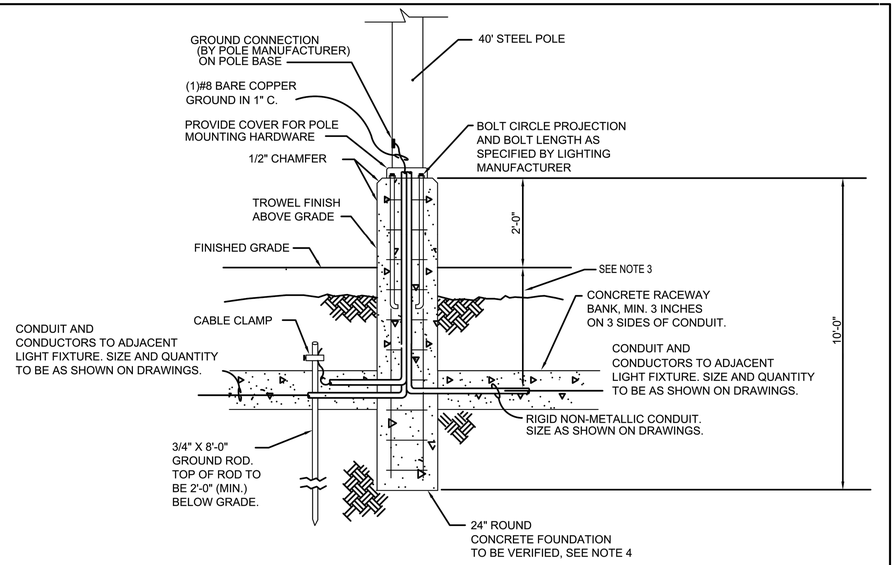
EXTERIOR PAD FOOTING



HEAVY DUTY CONCRETE SECTION

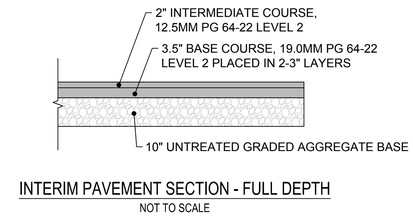
NOTE:

1. SECTION SHOWN WAS PREPARED BASED ON A CBR OF 5 PER A GEOTECHICAL REPORT PREPARD BY HILLS-CARNES ENGINEERING ASSOCIATES, ENTITLED: "GEOTECHNICAL ENGINEEING STUDY; PROJECT ST. JOHN'S; BALTIMORE COUNTY, MARYLAND" DATED JULY 15, 2016; PROJECT NO.: 16325A. FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE



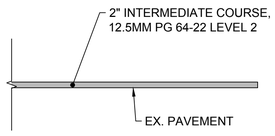
40' POLE MOUNTING DETAIL

NTS



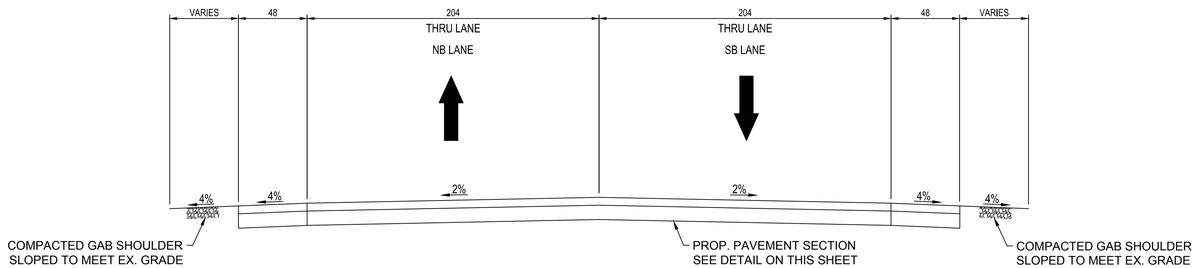
INTERIM PAVEMENT SECTION - FULL DEPTH

NOT TO SCALE



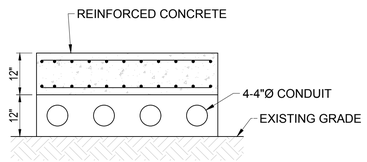
INTERIM PAVEMENT SECTION - OVER EX. PAVEMENT

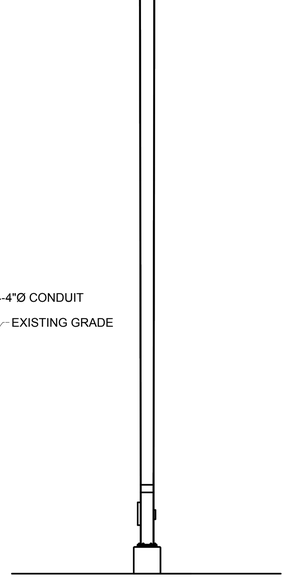
NOT TO SCALE



MARINE ACCESS RD - FULL DEPTH

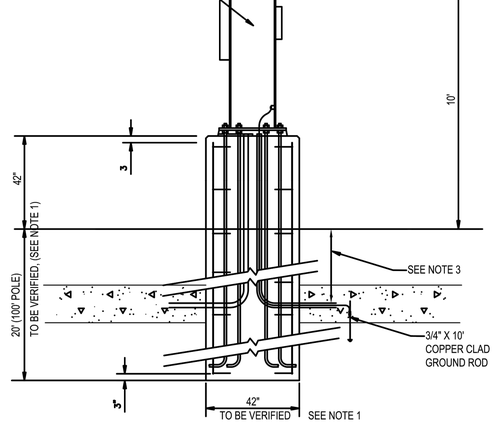
NOT TO SCALE

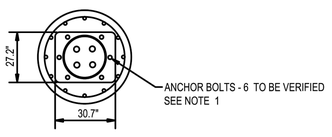




HIGH MAST LIGHT POLE ELEVATION

NTS





HIGH MAST LIGHT POLE BASE

NTS

FOOTING SCHEDULE					
SIZE			REINFORCEMENT		
LENGTH	WIDTH	DEPTH	TOP	BOTTOM	LOCATION
6'-0"	6'-0"	1'-4"	(7) #5 BARS E.W.	(7) #5 BARS E.W.	EXTERIOR COLUMNS
6'-6"	6'-6"	1'-4"	(7) #5 BARS E.W.	(7) #5 BARS E.W.	BRACED BAYS
7'-0"	7'-0"	1'-4"	(8) #5 BARS E.W.	(8) #5 BARS E.W.	CENTER INTERIOR COLUMNS

NOTES:

1. THE BOTTOM OF ALL FOOTINGS (INCLUDING INTERIOR) SHALL BE 2'-9" BELOW ADJACENT FINISHED EARTH GRADE. (ACTUAL DEPTH MAY VARY).
2. THE TOP OF PIER FOR ALL FOOTINGS SHALL BE 1'-4" BELOW FINISHED FLOOR.
3. FROST LINE IS ASSUMED O BE 30" BELOW FINISHED GRADE.

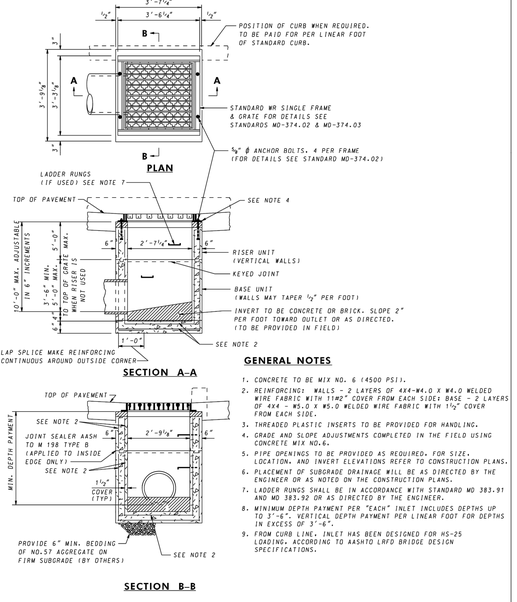
TRADEPOINT ATLANTIC

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE N.T.S.
DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS
MDE PARCEL B-5

DRAWING NO.
GENERAL NOTES & DETAILS
SHEET 12 OF 14



GENERAL NOTES

1. CONCRETE TO BE MIX NO. 6 (4500 PSI).
2. REINFORCING: WALLS - 2 LAYERS OF 4X4-W4.0 X W4.0 WELDED WIRE FABRIC WITH 1 1/2" COVER FROM EACH SIDE; BASE - 2 LAYERS OF 4X4 - W5.0 X W5.0 WELDED WIRE FABRIC WITH 1½" COVER FROM EACH SIDE.
3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO.6.
5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS REFER TO CONSTRUCTION PLANS.
6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE AS DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD MD 383.91 AND MD 383.92 OR AS DIRECTED BY THE ENGINEER.
8. MINIMUM DEPTH PAYMENT PER "EACH" INLET INCLUDES DEPTHS UP TO 3'-6". VERTICAL DEPTH PAYMENT PER LINEAR FOOT FOR DEPTHS IN EXCESS OF 3'-6".
9. FROM CURB LINE, INLET HAS BEEN DESIGNED FOR HS-25 LOADING, ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

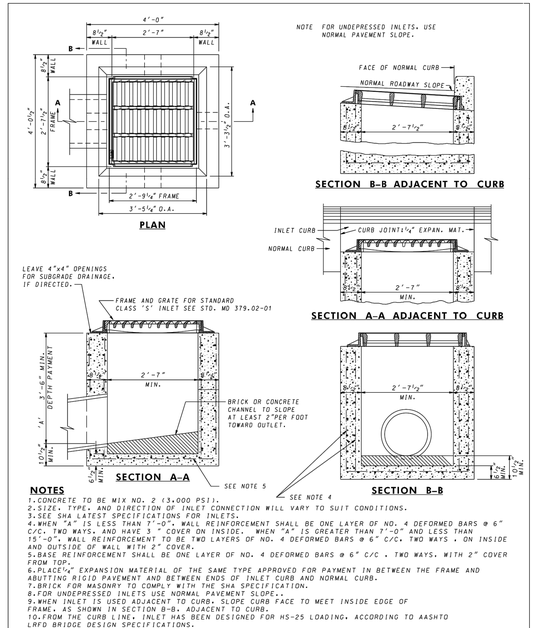
SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	DIRECTOR – OFFICE OF PRELIMINARY DEVELOPMENT

REVISIONS	APPROVAL • SHA	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	6-4-84	8-1-84
REVISED	10-1-01	3-20-87
REVISED	10-7-14	9-29-14
REVISED		

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

PRECAST SINGLE WR INLET

STANDARD NO. MD 374.23



NOTES

1. CONCRETE TO BE MIX NO. 2 (3,000 PSI).
2. SIZE, TYPE, AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.
3. SEE SHA LATEST SPECIFICATIONS FOR INLETS.
4. WHEN "A" IS LESS THAN 7'-0", WALL REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C. TWO WAYS. WHEN "A" IS LESS THAN 15'-0", WALL REINFORCEMENT SHALL BE TWO LAYERS OF NO. 4 DEFORMED BARS @ 6" C/C. TWO WAYS. ON INSIDE AND OUTSIDE OF WALL WITH 2" COVER.
5. BASE REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C . TWO WAYS. WITH 2" COVER FROM TOP.
6. PLACE ¼" EXPANSION MATERIAL OF THE SAME TYPE APPROVED FOR PAYMENT IN BETWEEN THE FRAME AND ABUTTING RIGID PAVEMENT AND BETWEEN ENDS OF INLET CURB AND NORMAL CURB.
7. BRICK FOR MASONRY TO COMPLY WITH THE SHA SPECIFICATION.
8. FOR UNDEPRESSED INLETS USE NORMAL PAVEMENT SLOPE.
9. WHEN INLET IS USED ADJACENT TO CURB- SLOPE CURB FACE TO MEET INSIDE EDGE OF FRAME, AS SHOWN IN SECTION B-B, ADJACENT TO CURB.
10. FROM THE CURB LINE, INLET HAS BEEN DESIGNED FOR HS-25 LOADING, ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

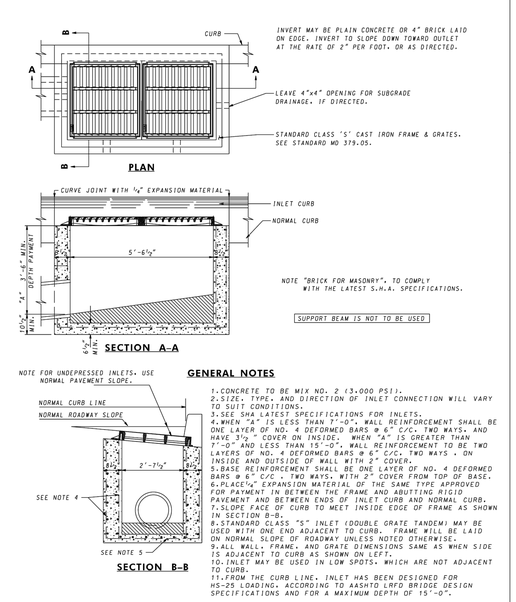
SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	DIRECTOR – OFFICE OF PRELIMINARY DEVELOPMENT

REVISIONS	APPROVAL • SHA	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	7-9-82	2-24-88
REVISED	8-3-10	7-26-10
REVISED	10-7-14	9-29-14
REVISED	–	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD TYPE S INLET SINGLE GRATE

STANDARD NO. MD 379.01



GENERAL NOTES

1. CONCRETE TO BE MIX NO. 2 (3,000 PSI).
2. SIZE, TYPE, AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.
3. SEE SHA LATEST SPECIFICATIONS FOR INLETS.
4. WHEN "A" IS LESS THAN 7'-0", WALL REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C. TWO WAYS. AND HAVE 3½" COVER ON INSIDE. WHEN "A" IS GREATER THAN 7'-0" AND LESS THAN 15'-0", WALL REINFORCEMENT TO BE TWO LAYERS OF NO. 4 DEFORMED BARS @ 6" C/C. TWO WAYS . ON INSIDE AND OUTSIDE OF WALL WITH 2" COVER.
5. BASE REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C . TWO WAYS. WITH 2" COVER FROM TOP OF BASE.
6. PLACE ¼" EXPANSION MATERIAL OF THE SAME TYPE APPROVED FOR PAYMENT IN BETWEEN THE FRAME AND ABUTTING RIGID PAVEMENT AND BETWEEN ENDS OF INLET CURB AND NORMAL CURB.
7. SLOPE OF CURB TO MEET INSIDE EDGE OF FRAME AS SHOWN IN SECTION B-B.
8. STANDARD CLASS "S" INLET (DOUBLE GRATE TANDEM) MAY BE USED WITH ONE END ADJACENT TO CURB. FRAME WILL BE LAID ON NORMAL SLOPE OF ROADWAY UNLESS NOTED OTHERWISE.
9. ALL WALL, FRAME, AND GRATE DIMENSIONS SAME AS WHEN SIDE IS ADJACENT TO CURB AS SHOWN ON LEFT.
10. INLET MAY BE USED IN LOW SPOTS. WHICH ARE NOT ADJACENT TO CURB.
11. FROM THE CURB LINE, INLET HAS BEEN DESIGNED FOR HS-25 LOADING, ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND FOR A MAXIMUM DEPTH OF 15'-0".

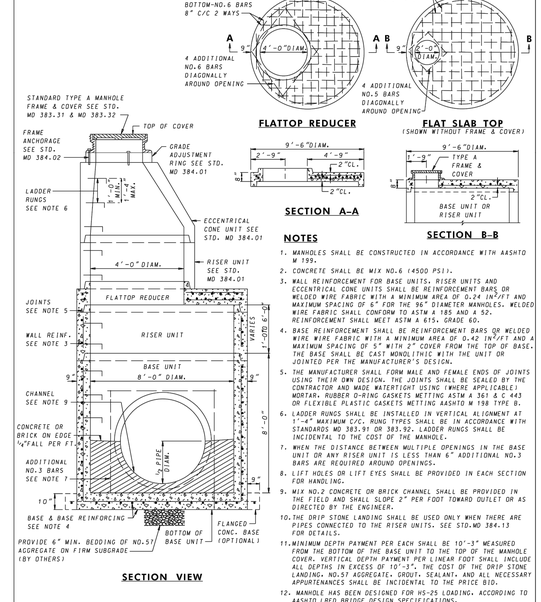
SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	DIRECTOR – OFFICE OF PRELIMINARY DEVELOPMENT

REVISIONS	APPROVAL • SHA	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	10-30-69	11-10-69
REVISED	8-3-10	7-27-09
REVISED	10-7-14	9-29-14
REVISED	–	–

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD TYPE S INLET DOUBLE GRATE TANDEM

STANDARD NO. MD 379.03



NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO.6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS AND ECCENTRICAL CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.24 IN²/FT AND MAXIMUM SPACING OF 6" FOR THE 96" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 82. REINFORCEMENT SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE WIRE FABRIC WITH A MINIMUM AREA OF 0.12 IN²/FT AND A MAXIMUM SPACING OF 5" WITH 2" COVER FROM THE TOP OF BASE. THE BASE SHALL BE CAST MONOLITHIC WITH THE UNIT OR JOINTED PER THE MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETTING ASTM A 361 & C 443 OR FLEXIBLE PLASTIC GASKETS METTING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD 383.91 OR 383.92. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6" ADDITIONAL NO.3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO.2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD.MD 384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-3" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-1". THE COST OF THE DRIP STONE LANDING, NO.57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.
12. MANHOLE HAS BEEN DESIGNED FOR HS-25 LOADING, ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	DIRECTOR – OFFICE OF PRELIMINARY DEVELOPMENT

REVISIONS	APPROVAL • SHA	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	2-22-91	1-2-91
REVISED	10-7-14	9-29-14
REVISED	–	
REVISED		

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

96" DIAMETER PRECAST MANHOLE FOR 72" PIPES

STANDARD NO. MD 384.09

TRADEPOINT ATLANTIC

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE N.T.S.
DESIGNED BY JM
DRAWN BY KD

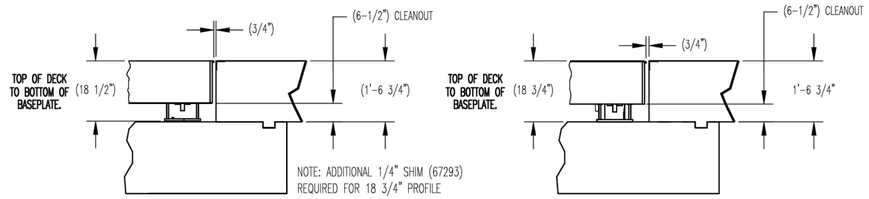
PHASE II IMPROVEMENTS MDE PARCEL B-5

DRAWING NO.
GENERAL NOTES & DETAILS
SHEET 13 OF 14

TABULATION		
	DIMENSION	
SCALE SIZE	A	B
70' X 11'	12'-0"	9'-2 1/4"
70' X 12'	13'-0"	10'-2 1/4"

MATERIAL REQUIREMENTS – 70' X 11'				
REBAR SCHEDULE				
BAL. NO.	QUANTITY	BAR SIZE	LENGTH & DESCRIPTION	WEIGHT
A	36	#5	2'-0" @ 8" O.C.	75
B	52	#5	9'-6" @ 12" O.C.	514
C	204	#5	11'-6"	2440
D	36	#5	71'-6"	2677
			TOTAL WEIGHT OF REBAR	5706
CONCRETE SCHEDULE				
APPROACHES (2)				14 YDS.
FOUNDATION				32 YDS.
TOTAL YARDS OF CONCRETE				46

MATERIAL REQUIREMENTS – 70' X 12'				
REBAR SCHEDULE				
BAL. NO.	QUANTITY	BAR SIZE	LENGTH & DESCRIPTION	WEIGHT
A	38	#5	2'-0" @ 8" O.C.	79
B	56	#5	9'-6" @ 12" O.C.	553
C	204	#5	12'-6"	2652
D	38	#5	71'-6"	2826
			TOTAL WEIGHT OF REBAR	6110
CONCRETE SCHEDULE				
APPROACHES (2)				15.5 YDS.
FOUNDATION				35 YDS.
TOTAL YARDS OF CONCRETE				50.5



SCALE PROFILE DETAIL 4/S-1
NO SCALE

REVISIONS			
REV	REFERENCE	INIT	DATE
A	ADDED TAB WITH 12' WIDE SCALE; ADDED 2" TO PROFILE	SJJ	3/22/04
B	CORRECTED PROFILE IN FRONT VIEW & SECTION 1/S-1	SJJ	1/6/05

NOTE:

1. DESIGN STRESSES:

1.1) CONCRETE: f'c = 3000 PSI @ 28 DAYS, MAXIMUM SLUMP 4.

1.2) REINFORCING STEEL: DEFORMED BARS ASTM A615 GRADE 60, UNLESS OTHERWISE NOTED.

1.3) STEEL: STRUCTURAL ASTM A36

2. CONTRACTOR NOTE:

2.1) STRUCTURAL CONCRETE MEMBERS ARE DESIGNED FOR "IN PLACE" LOADS. CONTRACTOR IS RESPONSIBLE FOR BRACING ALL STRUCTURAL ELEMENTS (AS REQUIRED AT ANY STAGE OF CONSTRUCTION) UNTIL COMPLETION OF THIS PROJECT. SHOP DRAWINGS ARE SUBMITTED TO ARCHITECT/ENGINEER FOR APPROVAL (3 SETS REQUIRED).

2.2) SOME STATES REQUIRE CONCRETE CLEANOUTS. CHECK WITH STATE AND LOCAL CODES BEFORE PROCEEDING WITH CONSTRUCTION

2.3) MONOLITHIC POUR OF SLAB AND PIERS IS ALLOWED, AT CONTRACTOR'S DISCRETION.

2.4) STATE AND LOCAL AGENCIES MAY HAVE VARIOUS REQUIREMENTS FOR APPROACH RAMP LENGTH, PITCH, AND FOR CLEAN OUT HEIGHT. PLEASE CHECK WITH ALL AGENCIES PRIOR TO CONSTRUCTION.

DIVISION 2

3. SITE PREPARATION:

3.1) FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL OR ENGINEERED FILL.

3.2) DEVELOP AND MAINTAIN SITE GRADES WHICH WILL RAPIDLY DRAIN SURFACE AND ROOF RUN-OFF AWAY FROM FOUNDATION.

3.3) ALL FILL SHALL BE COMPACTED TO 95 – 98 PERCENT OF STANDARD PROCTOR DENSITY (ASTM 698).

3.4) FOOTINGS HAVE BEEN DESIGNED FOR A MINIMUM SOIL PRESSURE OF 3000 PSF IN LIEU OF SOIL BORINGS. IT WILL BE THE RESPONSIBILITY OF OTHERS TO VERIFY THIS VALUE.

DIVISION 3

4. CONCRETE:

4.1) CODE FOR REINFORCED CONCRETE ACI 318 LATEST EDITION.

4.2) WHERE REINFORCING BARS ARE SHOWN CONTINUOUS, LAP SPLICE BARS 40 DIAMETERS.

4.3) UNLESS SHOWN OTHERWISE, PROVIDE 2" CONCRETE COVER ON ALL REINFORCING STEEL (3" AT FOOTING REINF.).

4.4) PROVIDE SUITABLE SUPPORT OF ALL REINFORCING TO PREVENT DISPLACEMENT DURING CONCRETING.

4.5) ALL EXPANSION BOLTS SHALL BE "KWIKBOLT", "WEJIT", OR EQUAL.

4.6) ALL CONCRETE TO HAVE 5-8% ENTRAINED AIR BY VOLUME.

4.7) CONCRETE SHOULD NOT CONTAIN FLY ASH.

4.8) PORTLAND CEMENT: ASTM C150, TYPE 1; AGGREGATE – 3/4".

4.9) WATER: CLEAN, POTABLE AND FREE OF DELETERIOUS AMOUNTS OF ACIDS, ALKALINES AND ORGANIC MATERIALS.

4.10) CONCRETE: SHALL BE MAINTAINED ABOVE 50° F.' AND IN A MOIST CONDITION FOR AT LEAST 7 DAYS FOR NORMAL CONCRETE AND 3 DAYS FOR HIGH-EARLY STRENGTH CONCRETE. HOT AND COLD WEATHER PROTECTION ASTM C-94.

4.11) THE CONCRETE SUPPLIER OR HIS REPRESENTATIVE SHALL TAKE A SET OF 3 CYLINDERS FOR EVERY TRUCK LOAD OF CONCRETE POURED, OR A MINIMUM OF ONE SET PER ANY ONE POUR. THE CYLINDERS WILL BE MARKED WITH THE LOCATION OF WHERE THEY WERE TAKEN, THE NUMBER OF THE TRUCK THAT HAULED THE CONCRETE AND THE DATE AND TIME THE CYLINDERS WERE TAKEN. THE CYLINDERS ARE TO BE TAKEN ACCORDING TO ACCEPTED PRACTICES BY ASTM C31, C39 AND C172 USING APPROVED CYLINDER FORMS.

4.12) THE OWNER SHALL BE RESPONSIBLE FOR STORING THE CYLINDERS AND MAINTAINING THEM IN GOOD CONDITION.

4.13) THE OWNER SHALL HAVE ONE CYLINDER FOR EACH SET BROKE AT 7 DAYS AND A SECOND CYLINDER OF EACH SET BROKE AT 28 DAYS BY AN APPROVED TESTING COMPANY. THE THIRD CYLINDER OF EACH SET SHALL BE RETAINED AT THE SITE.

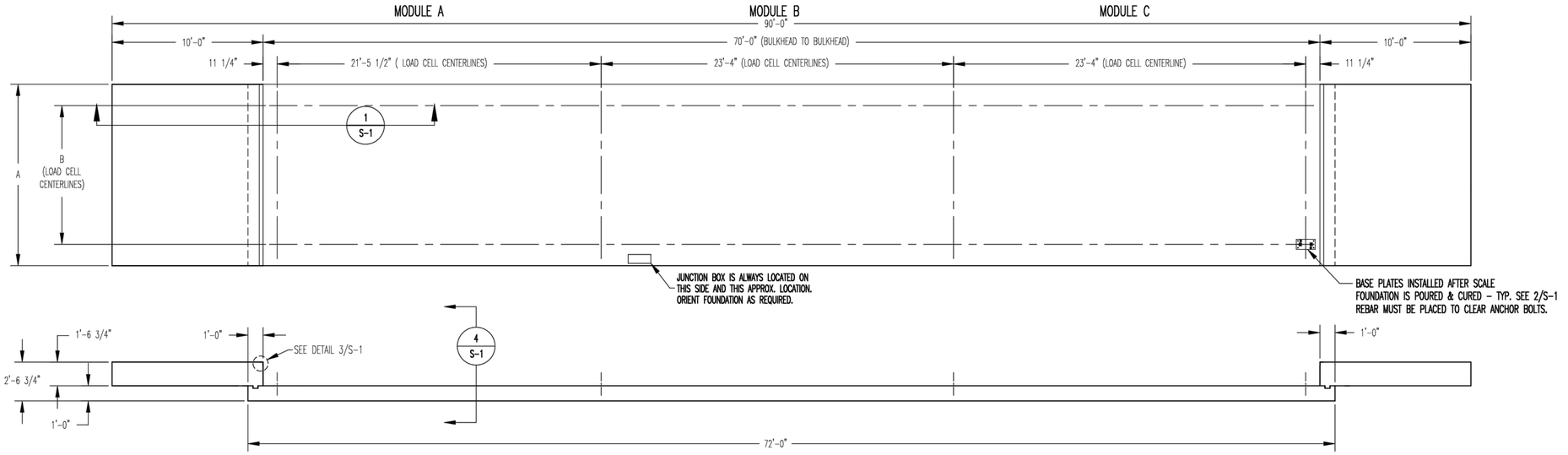
4.14) THE OWNER OR OWNER'S REP SHALL RECEIVE WRITTEN COPIES OF THE TESTING COMPANY'S REPORT IN A TIMELY MANNER, AND PROVIDE THEM TO THE MANUFACTURER AT THEIR REQUEST.

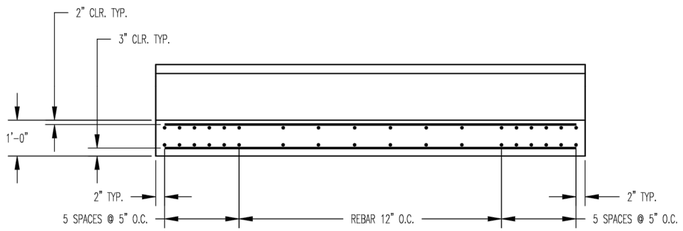
4.15) CONTRACTOR MUST SUPPLY CONCRETE DESIGN MIX TO OWNER OR OWNER'S REP AND A/E PRIOR TO STARTING CONSTRUCTION.

5. SLAB TO BE LEVEL WITHIN 1/4".

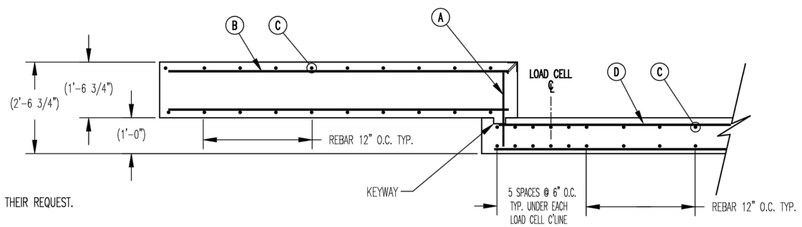
6. APPROACHES TO BE A COMMON PLANE WITHIN 1/4".

7. TOP OF REBAR MUST BE PLACED TO CLEAR THE ANCHOR BOLTS. ANCHOR BOLTS ARE TO BE INSTALLED AFTER FOUNDATION HAS CURED.





SECTION 4/S-1
1/2" = 1'-0"



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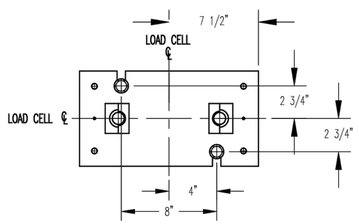

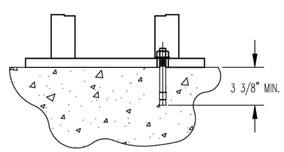

SECTION 2/S-1
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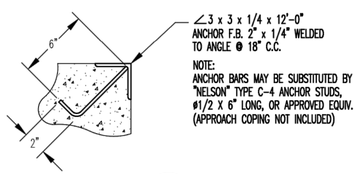


STD. BULKHEAD DETAIL 3/S-1
NO SCALE

TRADEPOINT ATLANTIC

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 03/21/17
SCALE N.T.S.
DESIGNED BY JM
DRAWN BY KD

PHASE II IMPROVEMENTS MDE PARCEL B-5

DRAWING NO.
GENERAL NOTES & DETAILS
SHEET 14 OF 14

APPENDIX E

Utility Excavation NAPL Contingency Plan

Revision 3 – April 11, 2017

Introduction:

Proposed underground utilities and excavations necessary for the redevelopment of the Tradepoint Atlantic property may encounter areas of petroleum and/or Oil & Grease contamination in soil. The assessment of total petroleum hydrocarbons (TPH) diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, and/or non-aqueous phase liquid (NAPL) completed as part of each Phase II Investigation includes the following:

- Each soil boring with evidence of free-phase NAPL in the soil core, whether located near utilities or not, is investigated via the installation of a piezometer to assess mobility to groundwater. If measureable NAPL is present in the initial piezometer, additional soil borings and shallow temporary piezometers are installed surrounding the initial detection to delineate the impacts. Each piezometer installed to delineate the presence or absence of NAPL is checked with an oil-water interface probe immediately after installation, 48 hours after installation, and at least 30 days after installation.
- TPH-DRO/GRO and Oil & Grease data, once received, are assessed in their magnitude and location respective to subsurface utilities, stormwater conveyances, and surface waters.
- Locations that exhibit elevated detections of TPH/Oil & Grease or evidence of NAPL, that are within reasonable proximity (i.e. 25 feet) to subsurface utilities or stormwater conveyances and/or within reasonable proximity (i.e. 100 feet) to surface waters, are identified for further delineation and selective removal (if warranted).

Any NAPL identified in soil borings or piezometers during the Phase II Investigation would be noted on relevant logs and identified in Response and Development Work Plans for construction planning purposes. Despite these planning efforts, unidentified pockets of contamination (including NAPL) may still be encountered during construction. This contingency plan provides the procedures to be utilized during construction work to properly address response and construction techniques if any materials impacted with NAPL are encountered.

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that NAPL is encountered in utility trenches or other excavations during development of the Tradepoint Atlantic property. The specific objectives of this plan and the procedures outlined herein are:

1. To ensure identification and proper management of Oil & Grease and petroleum-contaminated soils.
2. To ensure proper worker protection for working in areas of Oil & Grease and petroleum contamination.
3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of free-phase hydrocarbons (Oil & Grease, TPH-DRO/GRO, etc.) or soil vapors.

Identification of Oil & Grease and Petroleum Contaminated Soil:

An Environmental Professional (EP) will be on-site to determine if soils show evidence of the presence of Oil & Grease or TPH present as NAPL during installation of utility trenches or other excavation activities completed during development. Oil & Grease or petroleum-contaminated soils can be identified by the presence of free oil, oil staining, a petroleum odor, or any combination of these conditions. Free oil (NAPL) is liquid oil which could potentially be drained or otherwise extracted from the soil, and is the focus of this contingency plan, although severe staining accompanied by odors should be addressed via the same contingency measures provided herein (based on the judgement of the EP). The appearance of oil staining is not always consistent, but varies depending on the nature of the oil, the soil type, and the age of the release. Staining associated with old petroleum contamination often has a greenish hue, but may also be brown or black. The olfactory sense is the most sensitive instrument for identifying petroleum contamination in the field. Therefore, a petroleum odor may be noted although there is no visible sign of oil or staining. In some instances, decaying organic matter can produce an odor similar to petroleum, but this is rare.

If NAPL is encountered during construction, the extent of impacts shall be delineated by excavating trenches or installing four soil borings (two in each direction) perpendicular to the utility alignment or excavation to examine the soil for physical evidence of NAPL. Perpendicular transects will be investigated every 50 feet along the section of the utility trench or excavation where there is physical evidence of NAPL. Each transect will extend to a distance of 10 feet from the edge of the utility trench or excavation. This represents the maximum distance which would require mandatory excavation to mitigate potential migration risks (see below).

NAPL delineation will be guided primarily by screening observations from the perpendicular borings or trenches, and samples will be collected to test for extractable Oil & Grease or petroleum-contaminated soil using the Oil Sticks™ test kit. This test kit provides a determination of whether hydrocarbons are present in soil and extractable (i.e. could mobilize as a NAPL). Oil Sticks™ change from a pale blue to a deep blue color when they come in contact with free product. This instantaneous change in color occurs even when miniscule amounts of product come in contact with the strip. The sensitivity of Oil Sticks™ to determine the presence/absence of oil is reported by the manufacturer to be about 1,000 to 2,000 mg/kg. The

field test is performed by placing approximately 3 tablespoons of soil in a clean sample cup and adding enough water to cover the sample. After stirring the sample and waiting ~1 minute, the Oil Sticks™ test strip should be swished through the water, making sure to touch the strip to the sides of the cup where product may collect at the interface (meniscus) between the cup, water, and air. If the strip turns deep blue, or deep blue spots appear, oil or hydrocarbon is present. However, the MDE has observed that the Oil Sticks™ method may produce inconsistent results. Therefore, documentation of all screening methods is necessary during boring/trenching work. This documentation shall include an accurate record of visual and olfactory screening, along with a narrative with photographs. Field screening will be aided by photoionization detector (PID) results, and Oil Sticks™ samples should be biased to target elevated PID readings, if any. The agencies have requested that all soil samples prepared for the Oil Sticks™ field test be photographed for evidence of sheen/residue on the cup sides. Detailed records are required to be submitted with the project-specific Completion Report.

If petroleum or Oil & Grease impacts are identified in Site soils based on use of the Oil Sticks™ test kit or other field screening methods, disposal requirements will be determined using the quantitative PetroFLAG™ hydrocarbon analysis system or fixed laboratory analysis (see following section). The PetroFLAG™ hydrocarbon analysis system is a broad spectrum field test kit suitable for TPH contamination regardless of the source or state of degradation (Dexsil Corporation). PetroFLAG™ field test kits do not distinguish between aromatic and aliphatic hydrocarbons, but quantify all fuels, oils, and greases as TPH. Dilutions can be used to determine concentrations of TPH/Oil & Grease above the normal calibration range. Dexsil notes that positive results for TPH may occur if naturally occurring waxes and oils, such as vegetable oils, are present in the sample. Additional detail regarding the procedure for the PetroFLAG™ kit is given in **Attachment 1**.

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized. Excavated material that is visibly stained or that exhibits a sustained PID reading of greater than 10 ppm will be segregated and containerized or placed in a stockpile on polyethylene or impervious surface until the material can be analyzed using the PetroFLAG™ kit (or via fixed laboratory) to characterize the material for appropriate disposal. In addition, any hydrocarbon contamination discovered during construction activities that was not previously characterized must also be analyzed for PCBs prior to removal and transport to an appropriate disposal facility. If excavated and stockpiled, such materials will be covered with a plastic tarp so that the entire stockpile is encapsulated, and anchored to prevent the elements from affecting the integrity of the containment. The MDE will be notified if such materials are encountered during utility work.

Soil exhibiting physical evidence of NAPL contamination or elevated TPH/Oil & Grease with detections in the low percentage range, which is located within 10 feet of a proposed new utility or subsurface structure (i.e., foundation, sump, electrical vault, underground tank, etc.), will be excavated and segregated for disposal at the on-site nonhazardous landfill (Greys Landfill) pending the completion of any required PCB analytical testing. Impacted soil which is located greater than 10 feet away from the proposed utility or subsurface structure may be left in place and undisturbed. The extent of the excavation will be determined in the field following visual/olfactory screening supplemented by the PID and Oil Sticks™ test kit, but soil disposal requirements will be determined with the PetroFLAG™ test kit or via fixed laboratory analysis for TPH/Oil & Grease (since the Oil Sticks™ method is not quantitative).

Any recovered NAPL will be collected for off-site disposal. As required by the appropriate and MDE approved facility, samples impacted by free-phase NAPL (i.e., containing free oil) will be collected for profiling/waste characterization and submitted to a fixed laboratory for the following analyses: metals, VOCs, TPH-DRO/GRO, and any additional analysis required by the selected disposal facility. Upon receipt of any additional characterization analytical results, the MDE Voluntary Cleanup Program (VCP) will be notified of the proposed disposal facility. Non-impacted material without evidence of NAPL (i.e. soils that may contain measureable concentrations of TPH/Oil & Grease but below percentage levels) may be placed on the Site in areas to be paved or capped.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation, it will be reported to the MDE (VCP Project Manager) within two hours. Information regarding the location and characteristics of any NAPL contaminated soil will be documented as follows:

- Location (exact stationing);
- Extent of contamination (horizontally and vertically – prepare a sketch including dimensions);
- Relative degree of contamination (i.e. free oil with strong odor vs. staining); and
- Visual documentation (take photographs and complete a photograph log)

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of Oil & Grease or petroleum contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. All trench backfill will meet the MDE definition of Clean Fill. Pipe bedding will be installed to minimize the potential for accumulation of water and concentrated infiltration. This can be achieved by using a relatively small amount of low-permeability pipe bedding; open-graded stone will be avoided or only used in thicknesses of 6 inches or less. Bedding must be properly

placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs will be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. Installation of each trench plug will follow the completion of the trench excavation, installation of granular pipe bedding (because dense-graded aggregate or soil or other pipe bedding is difficult to properly compact below the haunches of the pipe), and seating of the pipe. The trench plug will then be installed by digging out a 1-foot trench below and around the pipe corridor, and placing clay or flowable fill to construct the plug. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

Attachment 1 - PetroFLAG™ Procedure

PetroFLAG™ field test kits use a proprietary turbidimetric reaction to determine the TPH concentration of solvent extracted samples (USEPA). Calibration standards provided with the unit are used to perform a two-point calibration for the PetroFLAG™. A blank and a 1,000 ppm standard are run by the analyzer unit to create an internal calibration curve.

Analysis of a soil sample is performed using three simple steps: extraction, filtration, and analysis. The PetroFLAG™ analysis is performed as follows:

- Place a 10 gram soil sample in a test tube.
- Add extraction solvent to the tube.
- Shake the tube intermittently for four minutes.
- Filter the extract into a vial that contains development solution
- Allow the solution to react for 10 minutes.

The filtration step is important because the PetroFLAG™ analyzer measures the turbidity or "optical density" of the final solution. Approximately 25 samples can be analyzed per hour. The vial of developed solution is placed in the meter, and the instrument produces a quantitative reading that reveals the concentration of hydrocarbons in the soil sample. The PetroFLAG™ method quantifies all fuels, oils, and greases as TPH between 15 and 2000 ppm (Dexsil Corporation). A 10x dilution of the filtered extraction solvent will be completed to allow for quantification of soil concentrations in excess of 10,000 ppm. The specially designed PetroFLAG™ analyzer allows the user to select, in the field, the response factor that is appropriate for the suspected contaminant at each site. Vegetable-based oils have been shown to exhibit a response factor of 18% (EPA Method 9074). Using the selected response factor, the analyzer compensates for the relative response of each analyte and displays the correct concentration in parts per million (ppm).

References:

U.S. Environmental Protection Agency (EPA). Contaminated Site Clean-up Information (Clu-IN): Test Kits. Office of Superfund Remediation and Technology Innovation. http://www.clu-in.net/characterization/technologies/color.cfm

Dexsil Corporation. 2016. PetroFLAG Analyzer System (PF-MTR-01). http://www.dexsil.com/products/detail.php?product_id=23

EPA SW-846 Method Number 9074 - Turbidimetric Screening Procedure for Total Recoverable Hydrocarbons in Soil

GENERAL NOTES:

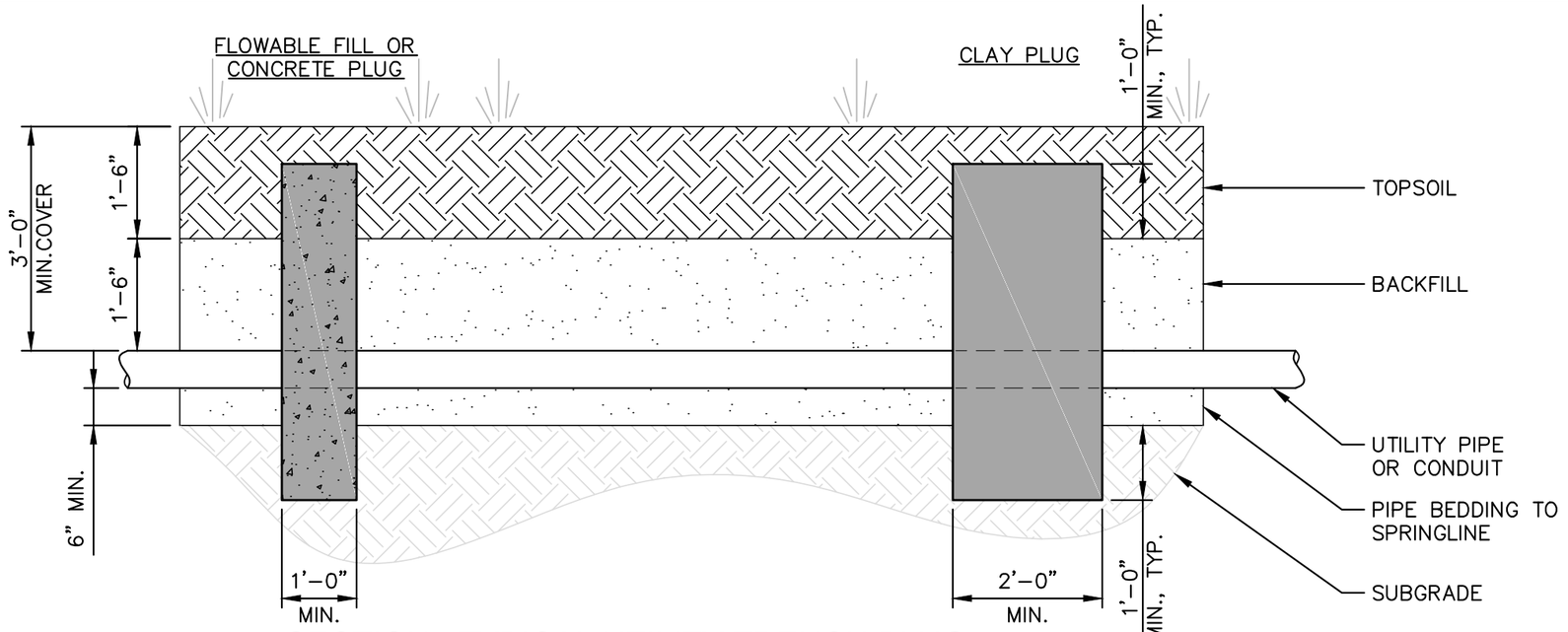
1. ALL PIPES OR CONDUIT PASSING THROUGH AREAS OF PETROLEUM CONTAMINATION SHALL BE LEAK–PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

3. ALL TRENCH BACKFILL SHALL MEET THE MDE DEFINITION OF CLEAN FILL.

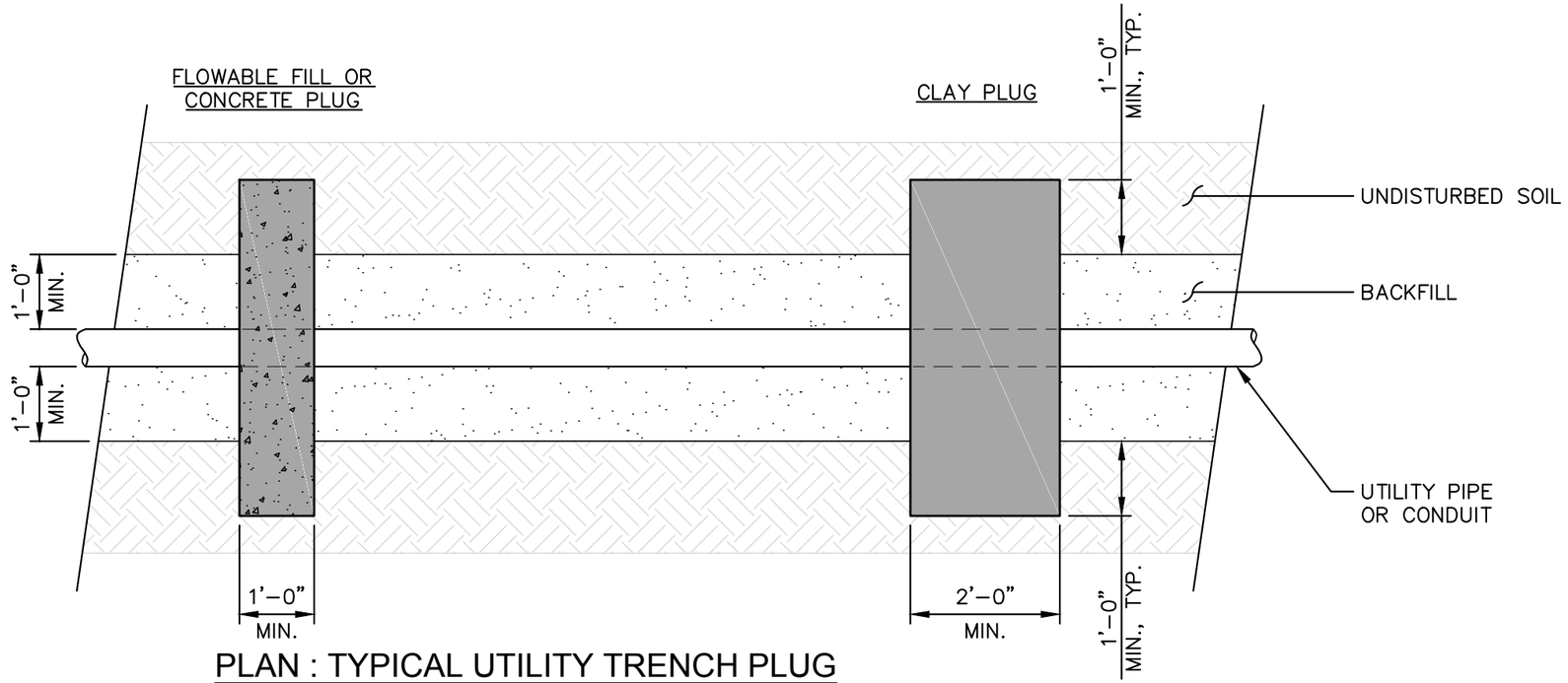
4. TRENCH PLUGS SHALL EXTEND A MINIMUM OF ONE (1) FOOT BEYOND PERMEABLE BEDDING OR BACKFILL IN ALL DIRECTIONS.

5. ANTI–SEEP COLLARS FROM THE PIPE MANUFACTURER, THAT ARE PRODUCED SPECIFICALLY FOR THE PURPOSE OF PREVENTING SEEPAGE AROUND THE PIPE, ARE ACCEPTABLE IF INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND ONLY WITH PRIOR APPROVAL BY EAG.



SECTION : TYPICAL UTILITY TRENCH PLUG

SCALE: 1/2" = 1'–0"



PLAN : TYPICAL UTILITY TRENCH PLUG

SCALE: 1/2" = 1'–0"

ARM Group Inc.
Earth Resource Engineers and Consultants
www.armgroup.net

UTILITY TRENCH PLUG
Sparrows Point Site
EnvirAnalytics Group, LLC

January 2017
NONE
160443M

Figure 1

APPENDIX F

CONTAINMENT REMEDY OPERATIONS AND MAINTENANCE PLAN
SUB-PARCEL "υζρ FORMER SPARROWS POINT STEEL MILL

Containment Remedy Operations and Maintenance Overview

In accordance with the Sub-Parcel B5-1 Response and Development Work Plan (RADWP) for development on the southern portion of the Sparrows Point Peninsula in Sparrows Point, MD (the Site), post remediation care requirements include compliance with the conditions placed on the No Further Action Letter, Certificate of Completion, and deed restrictions recorded for the Site. In addition, maintenance will be performed on the capped areas to control degradation and exposure to the underlying soil. Inspections of the capped areas will be conducted semi-annually. The responsible party will perform cap inspections, maintenance of the cap, and retain cap inspection records. Maintenance records will include the date of the inspection, name of the inspector, any noted issues, and subsequent resolution of the issues. Maintenance records will be maintained in a designated area at the Site for Maryland Department of the Environment (MDE) inspection and review, if requested.

The containment remedy (cap) will be constructed as described in the MDE-approved RADWP. The following sections provide details of the Operations and Maintenance Plan (O&M Plan) procedures to be followed at the Site to assess when maintenance of the capped areas is necessary.

Designated Pavement Area Inspections

The designated paved areas, as identified in the RADWP, will be maintained to ensure integrity of the cap.

Pavement area inspections will be conducted on a semi-annual basis to ensure that the capped areas are maintained as needed. During the inspection, the capped surfaces will be inspected to check for the following potential conditions:

- Differential settlement and significant surface-water ponding;
- Erosion or cracking of the cap materials; and
- Obstruction or blocking of drainage facilities.

When inspections indicate that cap repair is necessary, repairs will be completed as soon as practically possible in compliance with any recorded deed restrictions. The work will be documented on a form similar to the attached example Pavement Inspection Form. The inspection documentation will include the results of each inspection, recommended maintenance actions, and the actual maintenance/repair implemented. The responsible party will maintain inspection forms and any resulting repair records.

Pavement Inspection Protocol

A pavement management system (pavement condition index) will be implemented in the designated areas of the Site. The purpose of this system is to plan and prioritize future pavement maintenance needs. The system is based on a numerical rating of pavement distresses as published by the United States Army Corps of Engineers. The following chart will be used to provide an index of the pavement condition.

PAVEMENT CONDITION INDEX (PCI)		
PCI	**Characterization**	**Description**
1	New crack-free surface	Black in color, smooth texture
2	Oxidation has started	Short hairline cracks start to develop; dark gray color.
3	Oxidation in advanced state	Hairline cracks are longer and wider; gray in color
4	Oxidation complete	Cracked area 0.25 inch wide and crack lines have found base faults
5	Moisture penetrating through 0.25 inch cracks; loose material, stone and sand, evident	Texture of surface becoming rough; Preventative maintenance
6	Cracks widen and join	Cracks and shrinkage evident at curb and gutter lines
7	Potholes develop in low spots	Gatoring areas begin to break up; overall texture very rough.
8	Potholes developing	Pavement breaking up
9	Heaving due to excessive moisture in base	Distorts entire surface

PAVEMENT CONDITION INDEX (PCI)		
PCI	**Characterization**	**Description**
10	General breakup of surface	General breakup of surface

An inspection indicating a PCI of 4 or greater for designated areas of the Site will require maintenance. The intent is that repairs should be completed before the pavement degrades beyond a PCI of 4. MDE will be notified in a timely manner of any repairs that are the result of a PCI of 4 or greater. The notification will include documentation of the conditions being repaired and the location of the repair.

PAVEMENT INSPECTION FORM	Sub-Parcel B5-1 Development Fmr. Sparrows Point Steel Mill
Date:	Time:
Weather Conditions:	
General Pavement Conditions:	

PCI		Characterization	Description
1		New crack-free surface	Black in color, smooth texture
2		Oxidation has started	Short hairline cracks start to develop; dark gray color
3		Oxidation in advanced state	Hairline cracks are longer and wider; gray in color
RESPONSE REQUIRED	4	Oxidation complete	Crack area 0.25 inch wide and crack lines have found base faults
	5	Moisture penetrating through 0.25-inch cracks; loose material, stone and sand,evident	Texture of surface becoming rough; preventative maintenance
	6	Cracks widen and join	Cracks and shrinkage evident at curb and gutter lines
	7	Potholes develop in low spots	Gatoring areas begin to break up; overall texture very rough
	8	Potholes developing	Pavement breaking up
	9	Heaving due to excessive moisture in base	Distorts entire surface
	10	General breakup of surface	General breakup of surface

PAVEMENT INSPECTION FORM	Sub-Parcel B5-1 Development Fmr. Sparrows Point Steel Mill
CURB CONDITION	☐ Exists ☐ Sound ☐ Cracked ☐ Root Intrusion ☐ Deteriorated Comments: _____
SIDEWALK CONDITION	Comments: _____
RESPONSE REQUIRED	
WORK COMPLETED	
PHOTOGRAPHS / FIGURES ATTACHED	
RESPONSE CONTRACTOR	Work Completed By: _____ Date: Signature: