RESPONSE AND DEVELOPMENT WORK PLAN

AREA A: PARCEL A4
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

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TABLE OF CONTENTS

TABLE OF CONTENTS
(CONT.)

FIGURES

TABLES

TABLE OF CONTENTS
(CONT.)

APPENDICES

ELECTRONIC ATTACHMENTS

1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared this Response and Development Work Plan for a portion of the Tradepoint Atlantic property that has been designated as Area A: Parcel A4, (the Site). Tradepoint Atlantic submitted a letter (**Appendix A**) requesting an expedited remedial plan review to achieve construction deadlines for the proposed development on this Site. Parcel A4 is comprised of approximately 61.4 acres of the approximately 3,100-acre former plant property located as shown on **Figure 1**. Parcel A4 includes an 800,000 square foot building (18.1 ac) that was the former New Cold Mill Complex (NCMC) and 10 acres of existing paved laydown areas. The NCMC was previously investigated by a building occupancy assessment (BOA), and will be retained during development.

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).

An application to enter the Tradepoint Atlantic property into the Maryland Department of the Environment Voluntary Cleanup Program (MDE-VCP) was submitted to MDE on September 10, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over the next several years. Parcel A4 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the United States Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE) (effective October 8, 1997) as documented in correspondence received from EPA on September 12, 2014. Based on this agreement, EPA has determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the EPA's RCRA Corrective Action authorities.

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation and redevelopment of certain 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 A4 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 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 parcel. At such time that all remedial activities have been completed, 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 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.

The Development Area (Site) consists of the entire Parcel A4 (61.4 acres) currently slated for development and reuse as a distribution facility (**Figure 2**). The parcel contains the existing NCMC building (approximately 800,000 square feet) proposed for reuse as the distribution warehouse. The proposed development consists of minor modifications to the existing facility including paving of additional area, truck bay construction, minor utility relocation and storm drain connections, and lighting and security improvements.

This Response and Development Work Plan provides a Site description and history, summary of environmental conditions identified by Phase I and Phase II Investigations including work associated with the Parcel A4 Phase II 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 parcel 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 Response and Development Work Plan shall be described in closure certification documentation submitted to the Department demonstrating that the exposure pathways on the parcel are addressed in a manner that protects public health and the environment.

2.0 SITE DESCRIPTION AND HISTORY

2.1. SITE DESCRIPTION

Parcel A4 includes an area of 61.4 acres and is shown in **Figure 1**. Parcel A4 includes an existing 18.1 acre building that was the former NCMC, with 10 additional acres of associated existing paved laydown areas and roadways. All steel finishing equipment has been removed from the NCMC and the complex is currently in use as a materials warehouse. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM). The Site is bounded to the south by the former Billet Building (Parcel B8) and Humphrey's Impoundment (Parcel B14), to the north by I-695, to the west by the former Pipe Mill (Parcel A1), and to the east by the former mud reservoir (Parcel A6) and open vegetated areas (Parcel B6).

Parcel A4 is at an elevation of approximately 12 feet above mean sea level (amsl). Elevations at the Site range from 8 to 19 feet across the parcel area. In the northwestern corner of the parcel, the ground slopes sharply upward from 11 to 19 feet. Across most of the Site, elevations are fairly uniform with no clear discharge location. Parcel A4 includes stormwater sewer infrastructure that directs runoff to the Humphrey Creek Wastewater Treatment Plant (HCWWTP). Surface waters which are collected and treated at the HCWWTP ultimately flow through the permitted Outfall 014, which discharges to Bear Creek. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

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.

The Parcel A4 Development Area was formerly occupied by the NCMC which containing numerous steel manufacturing processes. The NCMC was constructed in 2000 and all operations utilized high efficiency emissions control. Former operations at the NCMC delivered cold flat-rolled sheeting for either sale or further coating operations conducted elsewhere on the property. The NCMC housed an in-line continuous pickler, which cleaned steel prior to rolling. The pickler was linked to a sheet steel cold reduction section that consisted of a five-stand Tandem Mill. The NCMC also contained a hydrogen batch annealing facility, Skin Pass Mill and tension leveling line, coil build-up and inspection line, packaging line, storage, and offices. The western portion of Parcel A4 historically operated as a pipe production facility (Pipe Mill) beginning in the 1940s. In May 1984, the Pipe Mill was closed under a Closure Plan approved by the MDE on

December 12, 1983. Closure activities occurred on the Site and surrounding area through the 1980s and 1990s. In 1998, the Pipe Mill was demolished.

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1. PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I Environmental Site Assessment (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. There were no RECs identified within the Parcel A4 development boundaries.

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. Two additional SWMUs/AOCs were identified within the Development Area further described as follows:

Pipe Mill Trenches/Sumps (SWMU 49):

The Pipe Mill Trenches and Sumps were identified as a unit associated with piping designed to transport process wastewater from the Pipe Mill (located to the west of Parcel A4) to the TMC Discharge Pipes (SWMU 2) and ultimately to the Tin Mill Canal. The unit began operations in the 1950s and was dismantled in 1983. During the 1991 VSI, the Trenches/Sumps were covered with earthen material and not readily visible.

Hydraulic Oil Storage Area (AOC O):

This unit, located on the east side of the Pipe Mill, managed non-hazardous, water-based hydraulic fluid until the Pipe Mill ceased to operate in the late 1980s. The RFA Report indicates that the area included approximately 20 drums stored outside on soil/gravel on the east side of the Pipe Mill. There are no records available to indicate the drum removal date.

3.2. PHASE II INVESTIGATION RESULTS – PARCEL A4

A Phase II Investigation for soil and groundwater conditions was performed for the Site in accordance with the requirements outlined in the ACO as further described in the Phase II Investigation Work Plan – Area A: Parcel A4 (Revision 2) dated October 29, 2015. This work plan was approved by the agencies on October 30, 2015. Findings from the Phase II Investigation have been presented in the Phase II Investigation Report – Area A: Parcel A4 (dated October 12, 2016), and are summarized in this document.

The Phase II Investigation was developed to target the specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including the SWMUs and AOCs described above as well as numerous other targets defined from former operations that would have the potential for environmental contamination. The position of the SWMUs and AOCs may have been adjusted during the field investigation based on a review of historical documents and aerial images, as appropriate. Samples were also collected at Site wide locations to ensure full coverage of the parcel.

A total of 76 soil samples (from the 28 boring locations shown in **Figure 3**) were collected and analyzed to assess the presence or absence of contamination in Parcel A4. Soil samples were submitted to Pace Analytical Services, Inc. (PACE), and analyzed for the EPA Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), Oil & Grease, EPA Target Analyte List (TAL) Metals, hexavalent chromium, and cyanide. Based on the specific sampling plan targets, select locations were analyzed for total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO). Additionally, shallow soil samples (0 to 1 foot bgs) were also analyzed for polychlorinated biphenyls (PCBs).

Groundwater at the Site was investigated via the installation of shallow temporary groundwater sample collection points (piezometers). A total of eight shallow groundwater samples were collected from piezometers within Parcel A4. The soil boring locations where shallow temporary groundwater sample collection points were installed during the investigation included A4-001-PZ, A4-005-PZ, A4-007-PZ, A4-010-PZ, A4-012-PZ, A4-013-PZ, A4-014-PZ, and A4-019-PZ as shown on **Figure 4**. Temporary piezometer A4-019-PZ was installed to replace the historical permanent well SW04-PZM001. These eight groundwater samples were submitted to PACE and analyzed for TCL-VOCs, TCL-SVOCs, Oil & Grease, TAL-Dissolved Metals, hexavalent chromium, and cyanide. Additionally, sample A4-007-PZ was also analyzed for DRO and GRO based on the sampling target (Waste Oil Tank).

3.2.1. Summary of Soil Sample Results

Soil sample results for the Parcel A4 Development Area were screened against Project Action Limits (PALs) established in the site-wide Quality Assurance Project Plan (QAPP) dated April 5,

2016 to identify any Contaminants of Potential Concern (COPCs) based on EPA's Regional Screening Levels (RSLs) for the composite worker exposure to soil. **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 within the proposed development area. Any compound for which any result exceeded the PAL was identified as a COPC. COPCs in soil within the proposed Development Area of Parcel A4 consisted of six inorganics (arsenic, manganese, lead, thallium, cadmium, and hexavalent chromium), six SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene), and TPH-DRO. Only four locations were selected for TPH-DRO/GRO analysis, due to the specific sampling targets at the boring locations (Hydraulic Oil Storage Area and Waste Oil Tank) and the standard sampling protocol at the time of Work Plan approval.

The highest detection of Oil & Grease (17,600 mg/kg) in soil was in sample A4-002-SB-5, which targeted the Pipe Mill Trenches/Sump. This sample had an elevated detection of 17,600 mg/kg for Oil & Grease, which may be indicative of an unacceptable DRO concentration (6,200 mg/kg) based on other analytical data in the vicinity. This elevated detection of Oil & Grease was present in the subsurface soil, which warrants an evaluation of utility corridors to determine whether excavation and removal may be appropriate. In addition, the elevated Oil & Grease detection at A4-002-SB should be investigated via the installation of a temporary screening piezometer. Since the shallow soil sample at the same boring location was not impacted by elevated Oil & Grease (787 mg/kg at A4-002-SB-1), the soil impacts detected at 5 feet bgs may be related to migration in groundwater at the top of the water table. The log for this boring also notes petroleum odor and a sheen present at the bottom of the boring. If it is determined that free product (NAPL) is present, the extent of the product should be delineated and evaluated further.

3.2.2. **Summary of Groundwater Results**

Groundwater results from the Phase II Investigation were also screened against the PALs for groundwater established in the site-wide QAPP. **Table 3** and **Table 4** present a summary of the organic and inorganic compounds detected in the groundwater samples, and **Figures GW-1** through **GW-3** present all groundwater sample results that exceeded the PALs. Any compound for which any result exceeded the PAL specified in the QAPP was identified as a COPC in groundwater. COPCs in shallow groundwater within Parcel A4 consisted of four dissolved inorganic compounds (cobalt, iron, manganese, and vanadium), four SVOCs (1,4-dioxane, benzo[a]anthracene, naphthalene, and pentachlorophenol), and TPH-GRO. One location (A4-007-PZ) was selected for TPH analysis, due to the specific sampling target at the piezometer location (Waste Oil Tank). The maximum detection of Oil & Grease in groundwater was 1,500 µg/L ("J" flagged) at A4-007-PZ.

3.2.3. Non-Aqueous Phase Liquid (NAPL) Investigation

Each groundwater collection point (A4-001-PZ, A4-005-PZ, A4-007-PZ, A4-010-PZ, A4-012-PZ, A4-013-PZ, A4-014-PZ and A4-019-PZ) was inspected for evidence of non-aqueous phase liquid (NAPL) immediately after installation using an oil-water interface probe. During the initial check, NAPL was not detected in any temporary groundwater sampling point. Additional NAPL checks were completed 24 hours after installation, and again prior to groundwater sampling (November 9 through November 11, 2016). None of the temporary groundwater sample collection points showed evidence of NAPL during these checks.

3.2.4. NCMC Building Occupancy Assessment (Sub-Slab Soil Gas)

A building occupancy assessment (BOA) specific to sub-slab soil gas conditions was performed for the existing NCMC building. A total of 19 temporary monitoring probes were installed to verify that the current conditions within and below the NCMC would not pose a potential unacceptable risk to commercial workers occupying the facility. Sub-slab soil gas samples were submitted to PACE, and analyzed for VOCs via USEPA Method TO-15. The completed Building Occupancy Assessment – New Cold Mill Complex dated April 13, 2015 is included as **Appendix B**, including the laboratory Certificates of Analysis (and associated Chains of Custody). While there were a few VOCs detected, none of the detections exceeded the MDE's Tier 1 and Tier 2 Commercial Target Soil Gas Levels for any compound in the soil gas samples submitted for analysis. **Appendix B** (BOA) presents a summary of the VOCs detected in the sub-slab soil gas samples collected from below the NCMC.

3.3. HUMAN HEALTH SCREENING LEVEL RISK ANALYSIS (SLRA)

3.3.1. Analysis Process

A human health Screening Level Risk Analysis (SLRA) has been conducted for soils to further evaluate the Site conditions in support of the design of necessary response measures. The SLRA included the following evaluation process:

Identification of Constituents of Potential Concern (COPCs): Analytical results for the parcel soils were compared to the Project Action Limits (PALs), which are the USEPA Industrial Soil Regional Screening Levels (RSLs). Compounds that are present at concentrations at or above the PAL were identified as COPCs to be included in the SLRA.

Identification of Exposure Units (EUs): A single exposure unit including the entire parcel exclusive of the NCMC building footprint was identified for Parcel A4. The site-wide exposure unit is comprised of 43.3 acres, with the remaining 18.1 acres occupied by

the building. Conditions under the building were addressed by a separate BOA completed prior to the Phase II Investigation (with results presented in **Appendix B**).

Exposure Point Concentrations (EPCs): The COPC soil data for the exposure unit was divided into surface (0-1 ft) and subsurface (>1 ft) depths for estimation of potential exposure point concentrations. Thus, for the Development Area of Parcel A4 there are two soil data sets. A statistical analysis was performed for each COPC data set, using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model-based values. If applicable, all PCB results equaling or exceeding 50 mg/kg would be delineated for excavation and removal, and all remaining PCBs would be included in the EPCs and risk ratio calculations.

Risk Ratios: The surface soil EPCs were compared to the USEPA RSLs for the Composite Industrial Worker, and the subsurface soil EPCs were compared to the Calculator-based RSLs for Construction Worker, Soil – Other Construction Activities to develop risk ratios for each COPC. The risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer Hazard Quotient (HQ) of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer risk.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soil and subsurface soils for the site-wide EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to a soil lead concentration of 1,235 mg/kg, which is the most conservative (i.e., lowest) concentration calculated by the Adult Lead Model (ALM Version date 6/21/2009) that would yield a probability of 5% of a blood lead concentration of 10 ug/dL. If the arithmetic mean concentrations for the EU were below 1,235 mg/kg, the EU was identified as requiring no further action for lead. The lead averages are presented for surface and subsurface soils in **Table 5**.

Assessment of TPH-DRO: EPCs were not calculated for TPH-DRO. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). Of the four locations sampled for DRO, the highest detection was 2,310 mg/kg in sample A4-004-SB-5. Oil & Grease was used as a proxy for TPH in areas of the Site where TPH was not

analyzed. The only location where Oil & Grease was detected above 6,200 mg/kg and TPH was not analyzed was A4-002-SB-5 (17,600 mg/kg). At the nearby sample location A4-004-SB-5 (130 feet to the northeast), Oil & Grease was detected at 5,590 mg/kg versus 2,310 mg/kg for DRO. Based on this point, roughly 40% of the Oil & Grease detection at A4-002-SB may be in the DRO class of compounds. Therefore, soil at one location in Parcel A4 (A4-002-SB) was identified as potentially containing DRO at a concentration exceeding 6,200 mg/kg.

Risk Characterization Approach: For the site-wide EU, if the baseline risk ratio for each non-carcinogenic COPC does not exceed 1 (with the exception of lead), and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of less than 1E-5, then a no further action determination will be recommended.

If the baseline estimate of cumulative cancer risk exceeds 1E-5, but is less than 1E-4, then capping of the EU will be considered to be an acceptable presumptive remedy. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability of the COPC. Similarly, for lead, if the results of the ALM indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 10 ug/dL for the EU, then capping of the EU would be an acceptable presumptive remedy. The mean soil lead concentrations corresponding to ALM probabilities of 5% and 10% are 1,235 mg/kg, and 2,000 mg/kg, respectively. If capping of the identified area is not proposed, additional more detailed quantitative evaluation of risk will be required for the EU.

If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of non-carcinogen hazard exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy. In addition, if the ALM indicates that the mean concentrations would present a >10% probability of a blood concentration of 10 ug/dL for the EU, further analysis of site conditions including toxicity reduction will be completed such that the probability would be reduced to less than 10% after toxicity reduction, but before capping.

3.3.2. Parcel A4 Development Area SLRA Results

ProUCL output tables (with computed UCLs and average lead values) 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 two data sets (surface and subsurface) for the exposure unit. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special

management based on the risk characterization approach. The calculated EPCs are shown in **Table 6** (surface soils) and **Table 7** (subsurface soils). The average lead concentrations are presented for each depth in **Table 5**.

Risk ratios for the estimates of potential EPCs for surface and subsurface soils are shown in **Table 8** and **Table 9**, respectively. For the Construction Worker scenario, the parameters selected for each activity (excavating, dozing, grading, etc.) as input into the RSL Calculator are indicated on **Table 9**.

The risk ratios indicate that the cumulative cancer risks were equal to 3E-6 for the Construction Worker Scenario (subsurface soils) and 4E-5 for the Composite Worker scenario (surface soils) in the parcel-wide exposure unit. Based on these values, the cancer risk is acceptable for the Construction Worker Scenario without any further action; however, the Composite Worker cancer risk exceeds the limit for no further action (1E-5). The main contributions to cancer risk in surface soils were several SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene). The maximum detections in shallow soil for each listed SVOC were identified in sample A4-021-SB-1, and the second highest detections for benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene were identified in A4-026-SB-1 (with significant contributions for the remaining SVOCs). Both A4-021-SB and A4-026-SB were completed in areas proposed for future heavy duty pavement, thus eliminating the exposure pathway for the potential future composite worker. The cumulative cancer risk in areas without proposed pavement would drop below 1E-5 when computed without these SVOC detections. Since areas with the proposed paving included exhibit a cumulative cancer-risk of less than 1E-4, the proposed paving in Parcel A4 is adequate to mitigate carcinogenic risk, with no additional action required beyond implementation of the development plan.

Manganese was the only compound that contributed significantly to non-cancer hazard for the Composite Worker scenario. The highest individual non-cancer HQ for the Composite Worker scenario was 1 for manganese, and when the non-cancer risks were segregated and summed by target organ for cumulative Hazard Index (HI), manganese (nervous system) was responsible for the highest value (1). The HI levels for each target organ were all less than or equal to 1, indicating that no further remedial action is required for shallow soil. For the Construction Worker exposure to subsurface soils in the parcel, the HQ for manganese was equal to 2, which contributed to a cumulative HI of 2 for the nervous system. The presence of elevated manganese will be addressed within contractor-specific health and safety plans developed to support construction activities at the Site, and as such, no further action is proposed for manganese. Cadmium was identified with an unacceptable non-cancer HQ of 50. This elevated HQ (and corresponding HI for the urinary system) was caused by a single elevated detection (33,600 mg/kg). The next highest detection on the parcel was only 11.7 mg/kg, well below the allowable cadmium concentration of 267 mg/kg that is equivalent to a HQ of 1 for the Construction Worker

scenario as shown in Table 9. Remedial action can be implemented in order to remove cadmium which is contributing to the unacceptable risk level. Soil material containing cadmium at or above 267 mg/kg will be required to be excavated and removed from the Site to ensure an acceptable risk level. Once the elevated cadmium is removed from the parcel, the non-cancer hazard for the Composite Worker and Construction Worker Scenarios will be acceptable for the proposed site development.

As indicated on **Table 5**, neither surface nor subsurface 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 1,235 mg/kg based on the Adult Lead Model (ALM) developed by the USEPA (corresponding to a 5% probability of a blood lead level of 10 ug/dL).

Results from the SLRA in conjunction with the risk characterization approach indicate that a remedy of capping, excavation, and removal of cadmium in the proposed areas will be acceptable to mitigate worker risk and reduce toxicity for mitigation of human health exposures for the Parcel A4 Development Area.

3.4. MANAGEMENT OF PCB-CONTAMINATED MEDIA

Soils or contaminated media within the Development Area containing total PCB concentrations less than 50 mg/kg may be left in place if paved or otherwise capped. The Toxic Substances Control Act (TSCA) low and high occupancy standards will not apply to structures serving as engineered barriers. All soil exceeding 50 mg/kg of total PCBs would be excavated and transported to a permitted off-site commercial landfill approved to accept TSCA-regulated remediation waste. Soils or contaminated media containing total PCB concentrations less than the PALs specified in the QAPP may be left in place without additional capping. There were no PCB concentrations identified in Parcel A4 above the PALs.

3.5. GROUNDWATER QUALITY ASSESSMENT

3.5.1. Analysis Process

An evaluation of groundwater quality relative to vapor intrusion criteria has been conducted to further evaluate the significance of detected groundwater concentrations in support of the design of necessary response measures. The groundwater data were also evaluated relative to the magnitude of PAL exceedances and distribution of COPCs in the proposed Development Area. The groundwater quality assessment included the following evaluation process:

Comparison to Vapor Intrusion Criteria: All groundwater data were screened to determine whether individual sample results may exceed the USEPA Vapor Intrusion (VI) Screening Levels (Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient

(THQ) of 1) as determined by the Vapor Intrusion Screening Level (VISL) Calculator version 3.5.1 (https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls). The PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site. A cumulative VI risk analysis was also performed. Sample results were segregated based on cancer versus non-cancer risk, and a risk ratio was estimated for each detection by comparing the detected value to the VI TCR or THQ level. All detections were used in the evaluation of the cumulative cancer risk, and all detections exceeding 10% of the THQ level were included in the evaluation of non-cancer risk. Exceedances of the cumulative criteria would be noted if the total cancer risk exceeded 1E-5 or the Hazard Index (summed by target organ) exceeded 1 for any individual sample location.

3.5.2. **Parcel A4 Development Area Groundwater Screening Results**

The results of the sample screening against the VI criteria are summarized in **Table 10**. The only parameter which exceeded the individual VI THQ criteria was total cyanide, which was detected above the acceptable VI limit (3.5 µg/L) at two of the eight applicable shallow groundwater locations, with the highest detection (20.6 µg/L) observed at sample location A4-012-PZ. None of the individual sample results exceeded the VI TCR criteria, and none of the cumulative VI cancer risks were greater than or equal to 1E-5 when the results were summed by sample location. There were two locations where the screening level estimates of cumulative VI non-cancer hazard exceeded 1, both caused by the individual detections of total cyanide. The results of the cumulative VI comparisons are provided in **Table 11**, with the exceedances highlighted. The piezometer locations which exceeded the cumulative VI criteria due to elevated total cyanide are shown in **Figure GW-4**.

Naphthalene was also reported at elevated levels in groundwater sample A4-012-PZ (below the VI screening criterion of 200 ug/L). This location had a significant detection (63.9 µg/L) in excess of 100 times the applicable PAL specified in the QAPP (0.17 µg/L). In addition to naphthalene, pentachlorophenol was also detected in A4-012-PZ at a low level, with no detections of this compound at other locations in the parcel. Based on a review of the groundwater data in Parcel A4 and the apparent insignificant risk for vapor intrusion, a continuing source of naphthalene is not suspected in the Parcel A4 Development Area.

The presence and absence of groundwater impacts within the proposed Development Area have been adequately described. VI risks were evaluated and identified two locations which may be impacted by elevated cyanide. However, the detected levels of cyanide did not suggest that sources of continuing releases of contaminant mass to the groundwater are present. The VI risks were conservatively screened using total cyanide rather than free cyanide or cyanide amenable to chlorination. The fractions of free cyanide and/or amenable cyanide that could contribute to VI risks would be expected to be significantly lower than the total cyanide. Based on the sporadic

and relatively low-level results identified during this effort, significant ongoing sources of groundwater contamination have not been identified within the Parcel A4 Development Area and further investigation and remediation work has been determined to not be necessary.

3.6. NCMC Building Occupancy Assessment

A sub-slab soil gas survey of the NCMC was completed to verify that conditions within and below the building would not pose a potentially unacceptable risk to current and future commercial workers occupying the buildings. The 19 sub-slab samples collected during the BOA for the existing NCMC did not contain any VOC compounds that exceeded the MDE's Tier 1 and Tier 2 Commercial Target Soil Gas Levels for any compound in the soil gas samples submitted for analysis. **Appendix B** presents a summary of the VOCs detected in the sub-slab soil gas samples. Further remediation is not required based on the documentation of minimal impacts below the building slab, and the apparent insignificant risk for vapor intrusion.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing to construct a distribution facility on Parcel A4 (the Development Area) of the Tradepoint Atlantic property. Included will be various construction and paving improvements on the 61.4 acre parcel. The proposed future use is Tier 3B – Restricted Industrial.

Certain compounds (organics and inorganics) are present in the soils located near the surface 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) 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.

No significant groundwater impacts were identified in the Development Area. 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. The proposed health and safety controls outlined in Section 5 and the site-specific Health and Safety Plan (HASP) will mitigate the potential risk to construction workers from contacting impacted groundwater at the Site. Additionally, a potable groundwater use restriction 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 potable use of groundwater will be filed.

The proposed health and safety controls outlined in Section 5 and the site-specific Health and Safety Plan (HASP) will mitigate the potential risk to construction workers from contacting impacted soil and groundwater at the Site.

Approximately 37.1 acres (60%) of the proposed Development Area will be capped and covered by building footprints or paving. The remaining 24.3 acres (40%) will remain uncapped in their current condition. The cover types are indicated in **Figure 5**. General sections showing required minimum thicknesses for the proposed paving cover are also provided on **Figure 5**.

Drawings for the proposed parcel development are provided in **Appendix C**. The existing NCMC and associated out-buildings and access roadways will be retained and will cover 28.1 acres, or 46% of Parcel A4.

Additional asphalt paving will cover 9.0 acres, or 15% of the site. Paving sections that meet or exceed the minimum thicknesses specified in **Figure 5** will be used to cap the paved areas as shown in the proposed site development plans (**Appendix C**). The heavy duty paving section will consist of 5 inches of asphalt over a 5-inch aggregate base. The mill & overlay section will consist of 4 inches of asphalt over the underlying existing pavement (after removing 2 inches of existing material).

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 Parcel A4 Response Action Completion Report (Completion Report):

- **Response Phase**

This work will be completed prior to the initiation of site development grading activities.

1. **Well abandonment**

   Wells and temporary groundwater sampling points installed for the Phase II investigation will be properly abandoned in accordance with Code of Maryland Regulations (COMAR) COMAR 26.04.04.34 through 36 prior to site work in this area. **Figure 6** shows the wells and temporary groundwater sampling points (piezometers) in all hydrogeologic zones on Parcel A4, indicating which are to be abandoned or retained.

2. **Supplemental DRO delineation**

   The subsurface sample A4-002-SB-5 (targeting AOC O) had an elevated detection of 17,600 mg/kg for Oil & Grease, which may be indicative of an unacceptable DRO concentration (6,200 mg/kg). The elevated detection appeared to be isolated to the subsurface soil, as the shallow sample at the same boring location did not have a significant Oil & Grease detection. The elevated DRO detection at 5 feet bgs may be the result of migration in groundwater at the top of the water table. There do not appear to be any conflicts with potential utility corridors. The elevated Oil & Grease detection at A4-002-SB will be investigated via the installation of a temporary screening piezometer to determine if free petroleum product is present as a NAPL. The initial screening piezometer was installed October 10, 2016.

   The temporary screening piezometer was immediately checked for the presence of NAPL using an oil-water interface probe in accordance with methods referenced in the QAPP SOP No. 019 – Depth to Groundwater and NAPL Measurements and NAPL was not detected. The piezometer will be allowed to equilibrate for at least 48 hours prior to a second measurement. If no measureable product is detected after 48 hours, the piezometer will be checked again after 30 days. If measureable NAPL is detected during any check, the 30-day measurement will be required to determine NAPL thickness after equilibration. In the event that No NAPL is detected in the screening piezometer, it will be emptied, removed and discarded, and the

borehole will be abandoned in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36.

If measureable NAPL is present in the screening piezometer, additional soil borings with shallow temporary piezometers will be installed to the north, south, east, and west of the detection point at distances of 25 feet. At each location, continuous core soil samples will be screened with a hand-held PID and inspected for evidence of NAPL.

Each additional piezometer installed to delineate the NAPL will be checked for the presence of product with an oil-water interface probe immediately after installation, 48 hours after installation, and again after a 30 day equilibration period. If measureable NAPL is present within any of the piezometers, additional borings/piezometers will be added as necessary to complete the delineation. The MDE will be notified within 48 hours if NAPL is detected within the temporary piezometers. If measureable NAPL is detected, it will be removed via surface techniques (bailing or similar), until product is no longer present beyond a surface sheen. Once the MDE has given approval to abandon the additional piezometers, each piezometer will be emptied, removed and discarded. All boreholes will be abandoned in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36. The results of the delineation, including NAPL thickness, will be presented in the Completion Report.

3. Supplemental cadmium delineation and removal

The subsurface sample A4-013-SB-4 (providing site-wide coverage) had an elevated detection of 33,600 mg/kg for cadmium, which contributed an unacceptable HQ of 50. The elevated detection appeared to be isolated to this location, as the next highest detection on the parcel was only 11.7 mg/kg. Soil material containing cadmium at or above 267 mg/kg (equivalent to a HQ of 1) will be delineated for excavation and removal from the Site. As indicated on Figure 5, A4-013-SB is located in an area of the Site that is proposed to remain unpaved and no construction activities are planned in this area. Therefore, the delineation will be completed following approval of this work plan. Excavation will be completed in a prompt fashion after delineation has been deemed complete.

Soil borings will be completed based on a grid interval no larger than 10 feet; which will be centered on the elevated cadmium location (**Figure 7**). At each boring location, continuous core soil samples were collected to a depth of up to 10 feet bgs and screened with a hand-held X-ray fluorescence (XRF) instrument which will provide real-time results for cadmium in soil. Calibration of the XRF is performed in the factory, but calibration checks will be completed in the field at the start of each testing period using a calibration clip and NIST Standard. The field operator will screen each 1-foot interval of the soil core and recorded the reading. The sampling grid will be adjusted and expanded in the field based on the real-time detections reported by the XRF. Confirmatory samples (splits) will be collected for

laboratory analysis from 20% of the XRF screening locations. Since the analyses are only being used to determine the limits of soil removal, and there will be no exposure to the material left in place, the XRF analysis should be sufficient to determine the limits of excavation to the cadmium cleanup level (267 mg/kg) as supplemented by 20% laboratory confirmation analyses. After soil sampling or screening has been concluded, each hole will be backfilled with bentonite chips and down-hole soil sampling equipment will be decontaminated according to procedures specified in the QAPP. Once the extents of the elevated cadmium impacts have been defined, all impacted soil will be excavated and removed from the Site (following waste characterization; see Section 5.0). Analytical data will be reviewed and will be provided to the agencies as part of the Completion Report.

- **Development Phase**

1. Grading and site preparation

Site grading activities will be minimal, with no major excavations planned. The maximum depth of excavation is 6 feet to allow for installation of new footers for the truck wells. Development activities will be primarily limited to the placement of asphalt pavement and aggregate subbase where needed. 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.

2. Installation of underground utility structures

No major underground utilities are planned for installation during the Parcel A4 development. Soil removed from any lighting or minor utility excavations (minor storm drain connections for each new truck well) will be used as fill under areas that will be paved. Groundwater is not expected to be encountered, and dewatering is not anticipated.

3. Placement of subbase

Following the completion of any preparatory work, the site will be fine-graded in applicable areas and placement of subbase will commence. The paved areas and access roads will receive a 5-inch thick layer of subbase material, which will consist of processed slag or a replacement aggregate material.

4. Floor slabs and paving

The majority of the site will be covered with existing floor slabs or new/existing paving as indicated in **Figure 5**. The full thickness of the pavement section (i.e., asphalt cap) to be placed over the existing soils will consist of 10 inches (5 inches of subbase and 5 inches of asphalt in the heavy duty areas). The thickness of asphalt in any mill & overlay areas will consist of 4 inches of asphalt over the existing pavement (after 2 inches of older material is removed).

5. Security and lighting

Following the completion of paving, the contractor will install site security fencing, and will relocate light masts and perform final electrical connections.

6. Stormwater management

No new stormwater facilities are proposed for construction at the Site, but stormwater will be managed in accordance with a master plan for the Tradepoint Atlantic property. Stormwater from Parcel A4 will be conveyed to a stormwater management facility on the property to be determined. Tradepoint Atlantic plans to submit a master stormwater management plan to Baltimore County that describes the new stormwater management facilities. The new stormwater management facilities will discharge to existing stormwater outfalls permitted under the current industrial stormwater NPDES permit.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1. RESPONSE AND DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with construction of the distribution facility of Parcel A4. 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 contaminants of potential concern (COPCs) were identified in soil samples across the site at concentrations that are above the Project Action Limits (PALs). The PALs are set based on EPA's Regional Screening Levels (RSLs) for industrial soils. COPCs in soil within the proposed development area consist of six inorganics (arsenic, manganese, lead, thallium, cadmium, and hexavalent chromium), six SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene), and TPH-DRO. Because these COPCs 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.

5.1.1. Cadmium Contaminated Media Excavation and Disposal

Soil excavation will be overseen by a full-time EAG Environmental Professional (EP). An XRF analysis (SOP No. 23 in the QAPP) will be collected from each 200 square foot area of the excavation bottom and sidewalls to confirm when all soil exceeding the cleanup level have been removed. Confirmatory laboratory samples will also be collected from 20% of the locations screened during excavation using the hand-held XRF. Excavated soil for disposal will be tested every 500 cubic yards for other waste characterization analyses (TCLP), if required by the commercial disposal facility for waste approval. Soil from the excavations will be staged on-site pending TCLP testing to determine if the material must be disposed of in an off-site hazardous landfill or may be brought to the on-site nonhazardous landfill (Grey's Landfill).

If soil characterization samples indicate that the soil exceeds the TCLP regulatory criteria, EAG will dispose of the soil at an off-site, permitted hazardous waste landfill. Any characteristically hazardous remediation waste will be appropriately manifested and transported off-site by a licensed hauler to a permitted treatment and disposal facility. If a large quantity of remediation waste is identified which is characteristically hazardous for RCRA metals, MDE will be notified of the plan for on-site treatment to eliminate the hazardous waste characteristic so that the material can be sent off-site for disposal in a permitted commercial non-hazardous waste landfill. In this case, waste characterization data (including TCLP results for the treated waste) would be provided to the waste disposal company to determine waste acceptance and the appropriate

disposal facility. The RCRA regulations allow generators to treat hazardous waste in containers, tanks, and containment buildings, without obtaining a RCRA hazardous waste treatment permit, so long as the generator complies with applicable generator requirements and storage management standards, including 40 CFR 262.34, referencing 40 CFR 264 and 265. Should excavated material be treated prior to off-site disposal, the treatment would occur in roll-off bins (i.e., containers). As a large quantity generator, Tradepoint Atlantic would supplement the appropriate RCRA compliance plans in place to comply with the applicable requirements. The treatment would typically consist of mixing a pozzolanic material (such as Portland cement or cement kiln dust) or a commercial chemical fixation product (such as MetaFix, Ecobond or MAECTITE) with the waste using a spray application and/or mixing with a backhoe in a roll-off to react with metals to reduce leachability. The specific treatment process would be dependent on the contaminant and would be determined through bench testing. The treated waste would then be re-tested using the TCLP test, and re-treated if necessary, until the metals were no longer leachable and the waste passed the TCLP test. All analytical results, disposal facilities, and volumes and type of generated hazardous waste will be provided to the agencies in the Completion Report.

5.1.2. **Soil Excavation**

Key soil excavation activities will be monitored through daily inspections by the EP. Soil excavation and removal activities may occur during minor utility trenching (discussed below), light pole installation, fine-grading, and truck well construction.

Prior to any earthwork being conducted on-site, a pre-excavation meeting shall be held to address proper operating procedures for working on-site and handling potentially contaminated material. This meeting shall consist of the construction manager and any workers involved with earthwork. The site-specific Health and Safety Plan for the project shall be reviewed and discussed.

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 paved areas. However, the EP will monitor all soil excavation activities for signs of potential contamination that may not have been previously identified. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential volatile organic compounds (VOCs), and will also be visually inspected for the presence of staining, waste materials, or other indications of contamination that may be different than what was already characterized.

To the extent practical, all earthmoving activities should be conducted in a manner to minimize double or extra handling of materials. If excavated materials need to be stockpiled prior to placement or other handling, any such 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.

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. If excavated and stockpiled, such materials should be covered with a plastic tarp to minimize potential exposures and erosion.

5.1.3. **Utility Installation**

Minor utility trenching and installations will be monitored through inspections by the EP.

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring the excavation and installation of utility piping (storm drain connections and light pole relocation) in potentially contaminated material. This meeting shall consist of the construction manager and any workers involved with utility trenching/installation. During the pre-excavation meeting, all utility workers shall review the proposed utility excavation locations and associated utility inverts in conjunction with existing boring locations to identify areas of potentially elevated petroleum concentrations that may be mobilized by the utility installation. These areas will include borings which had evidence of free-phase NAPL in the soil cores or elevated analytical detections of TPH-GRO/DRO. The site-specific Health and Safety Plan for the project shall also be reviewed and discussed.

Utility trenches are to be over-excavated to a minimum of one foot on all sides of the proposed utility. 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 paved areas. All utility trenches will be backfilled with bedding and backfill materials meeting the MDE definition of clean fill.

Additional preventative measures will be required in Site areas exhibiting evidence of petroleum contamination to prevent the discharge of petroleum product or sheen associated with the installation of any utilities. These measures may include the following (or equivalent actions) as appropriate: over-excavation of contaminated materials, installation of anti-seep collars located within the pipe bedding and backfill materials or the placement of impervious materials within the backfill. Approval by the agencies will be required for the use of preventative measures to prevent the discharge of petroleum products.

The EP will monitor utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential volatile organic compounds (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. 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 and covered with polyethylene until the material can be disposed of at Greys Landfill, or analyzed, if necessary,to characterize the material for appropriate off-site disposal. MDE will be notified if such materials are encountered during utility work.

To the extent practical, utility excavation activities should be conducted in a manner to minimize double or extra handling of materials. If excavated materials need to be stockpiled prior to placement or other handling, any such 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.

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. If excavated and stockpiled, such materials should be covered with a plastic tarp to minimize potential exposures and erosion.

5.1.4. **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. 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 laydown area depending on the analytical results. All supplemental data will be incorporated into the SLRA for the parcel-wide 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.

For excavated materials that are sampled, if sampling indicates that the material is a hazardous waste, then such materials shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. If the concentrations of excavated sampled materials indicate that the materials are not hazardous, they shall be taken to the on-site landfill for proper disposal. 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.

5.1.5. **Fill**

Processed slag aggregate from the Tradepoint property will be used as compacted sub-base for the paving for this project. Soil excavated on the parcel or relocated during fine grading activities has been deemed to be suitable for re-use as fill below the paved areas of the Site. As indicated in the SLRA for the Parcel A4 Development Area, the risk ratios for COPCs in the development area indicate that soil contaminant concentrations do not the acceptable levels (cancer or non-cancer) for placement under capping. These materials are considered suitable for use as on-site fill below the proposed asphalt sections. All over-excavated utility trenches will be backfilled with material meeting the MDE definition of clean fill. Any clean fill material imported to the site will be screened according to MDE guidance for suitability.

5.1.6. **Dust Control**

General construction operations, soil excavation and transport, soil grading, minor trenching for utilities, and cap construction activities may 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/m³. 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/m³) 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 one 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

It is not anticipated that any water management or dewatering will be required during development, as no excavations deeper than 6 feet bgs are required to facilitate construction of the truck wells (the primary excavation component for Parcel A4).

Health and Safety

A site-specific Health and Safety Plan (**Appendix D**) 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 contaminants of potential

concern. Workers will be responsible for following safety procedures to prevent contact with potentially contaminated soil or groundwater.

5.3. INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the development and response plan approval, NFA Letter, and COC. These conditions are anticipated to include the following:

- A restriction prohibiting potable use of groundwater at the Site;
- Implementation of inspection procedures and maintenance of the containment remedies as outlined in Section 5.5 below.

The responsible party will file the above deed restrictions as defined by the MDE VCP in the NFA Letter and COC. The proposed capped areas are subject to the proposed response action containment remedy and the maintenance requirement. The Site will be subject to the potable 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.

5.4. 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 E**. 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 ten 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.

5.5. 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 Development Plan. Records shall be provided to document:

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

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.

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	November 1, 2016
Remedial Phase	
Well Abandonment	November 8, 2016
Supplemental DRO Delineation	November 15, 2016
Supplemental Cd Delineation/Removal	November 15, 2016
Development Phase	
Completion of site preparation/grading	November 30, 2016
Installation of paving (Starting)	November 15, 2016
Submittal of Completion Report/Notice of Readiness for Use*	January 1, 2017
Request for a NFA from the MDE	February 1, 2017
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\A4\Production\Figure 2 - Site Development Plan.dwg Plotted: October 6, 2016

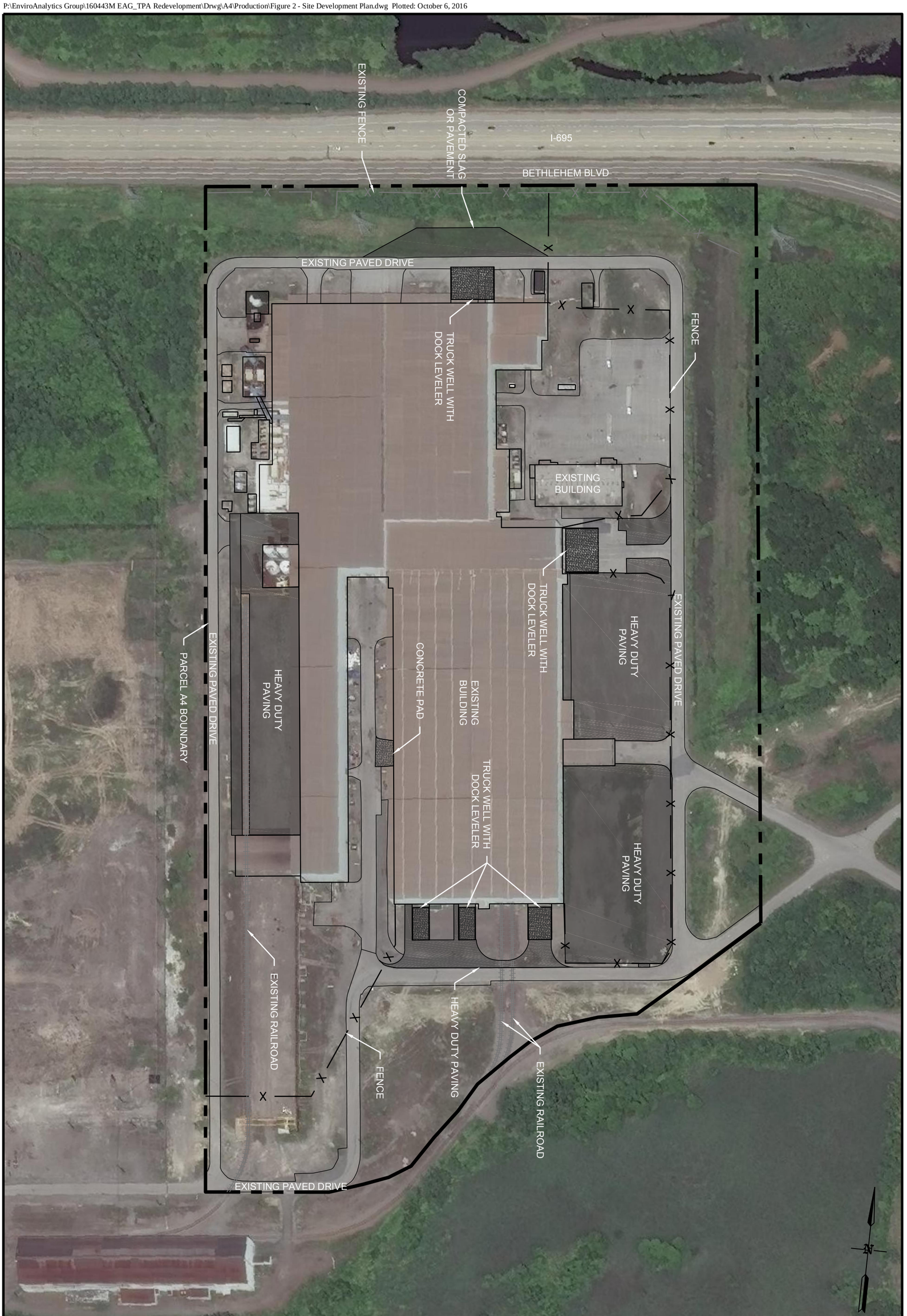


Figure 2

drawing title: PARCEL A4 SITE DEVELOPMENT PLAN

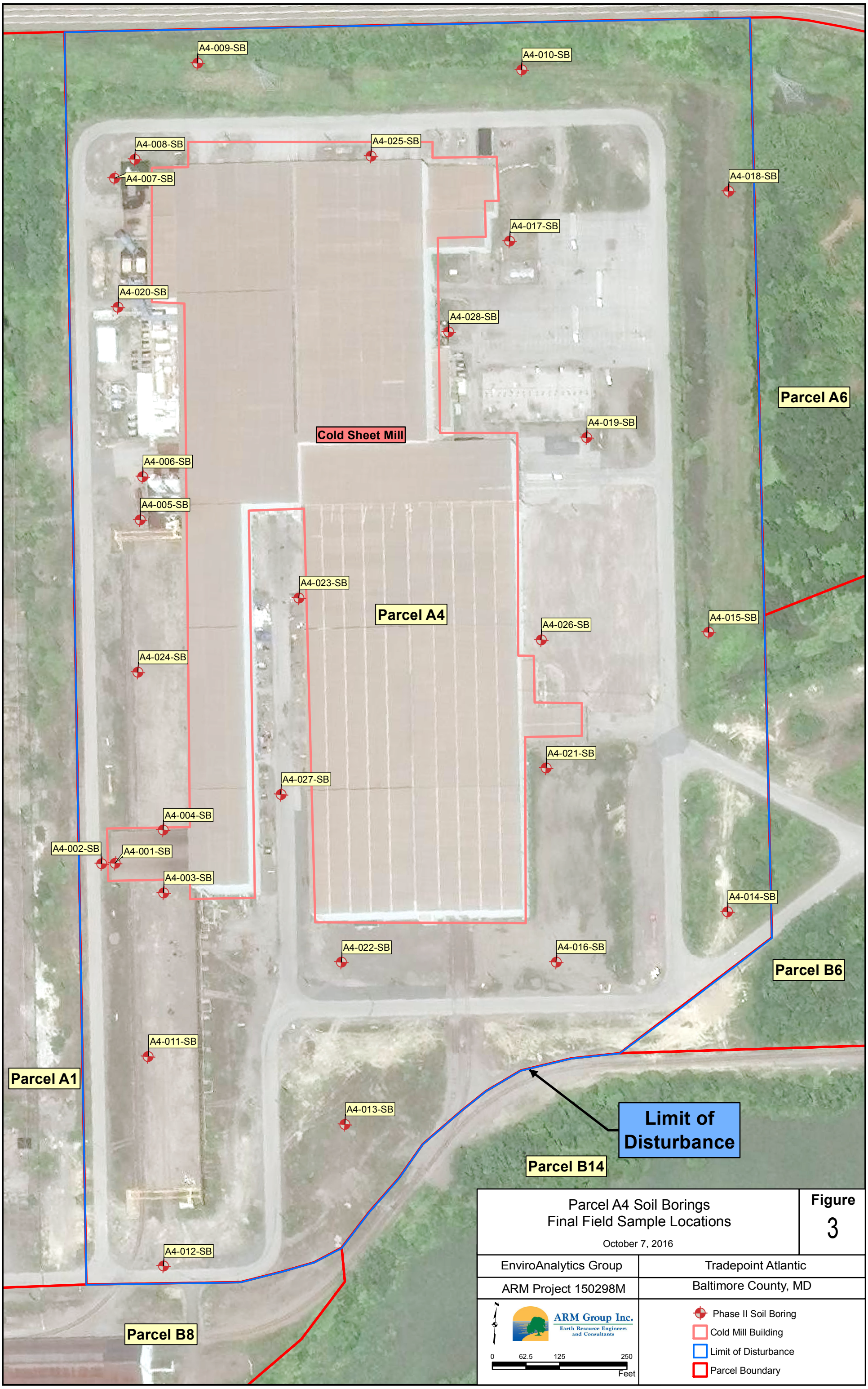
project title: SPARROWS POINT AREA A ENVIROANALYTICS GROUP

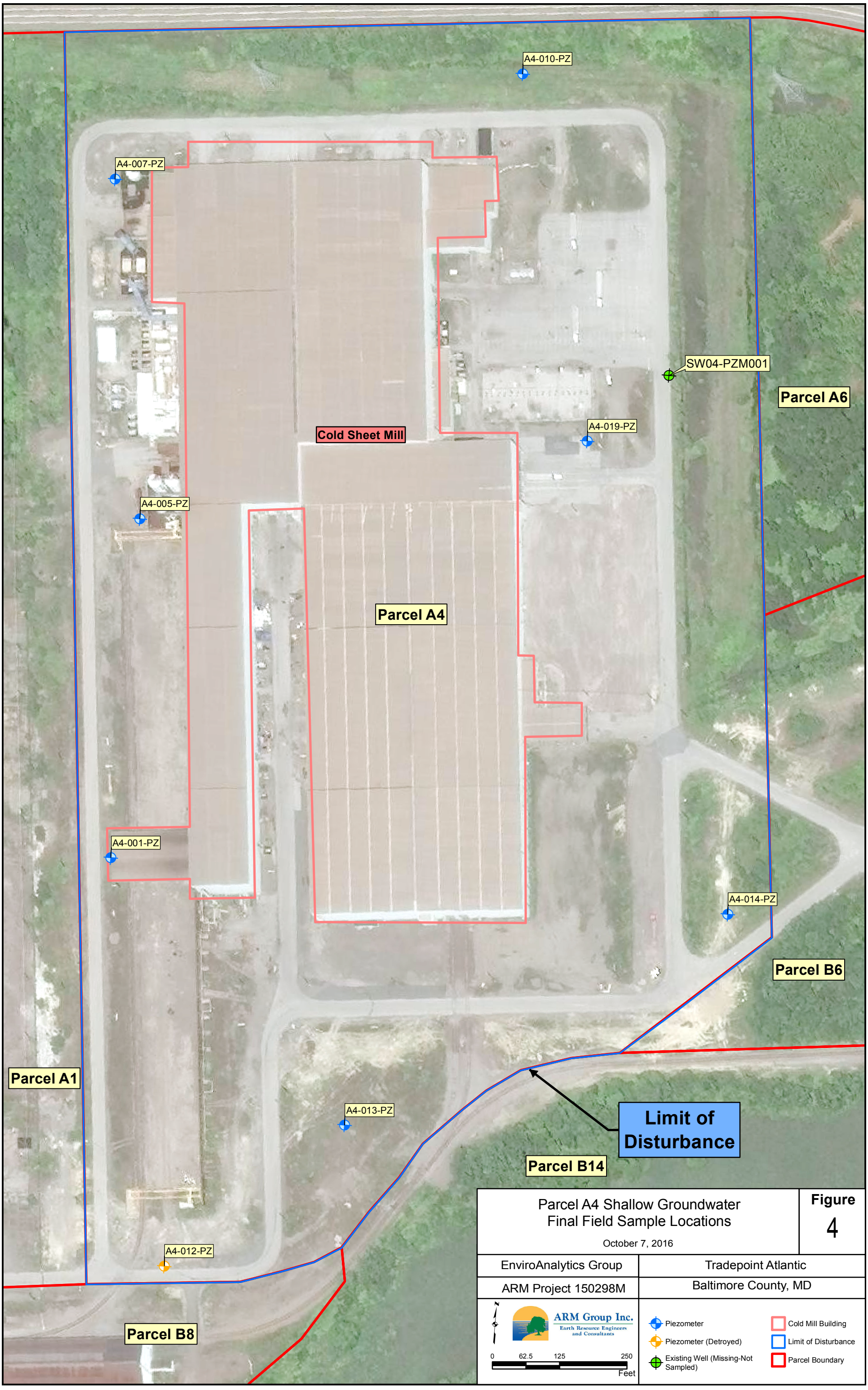
SPARROWS POINT BALTIMORE COUNTY, MARYLAND

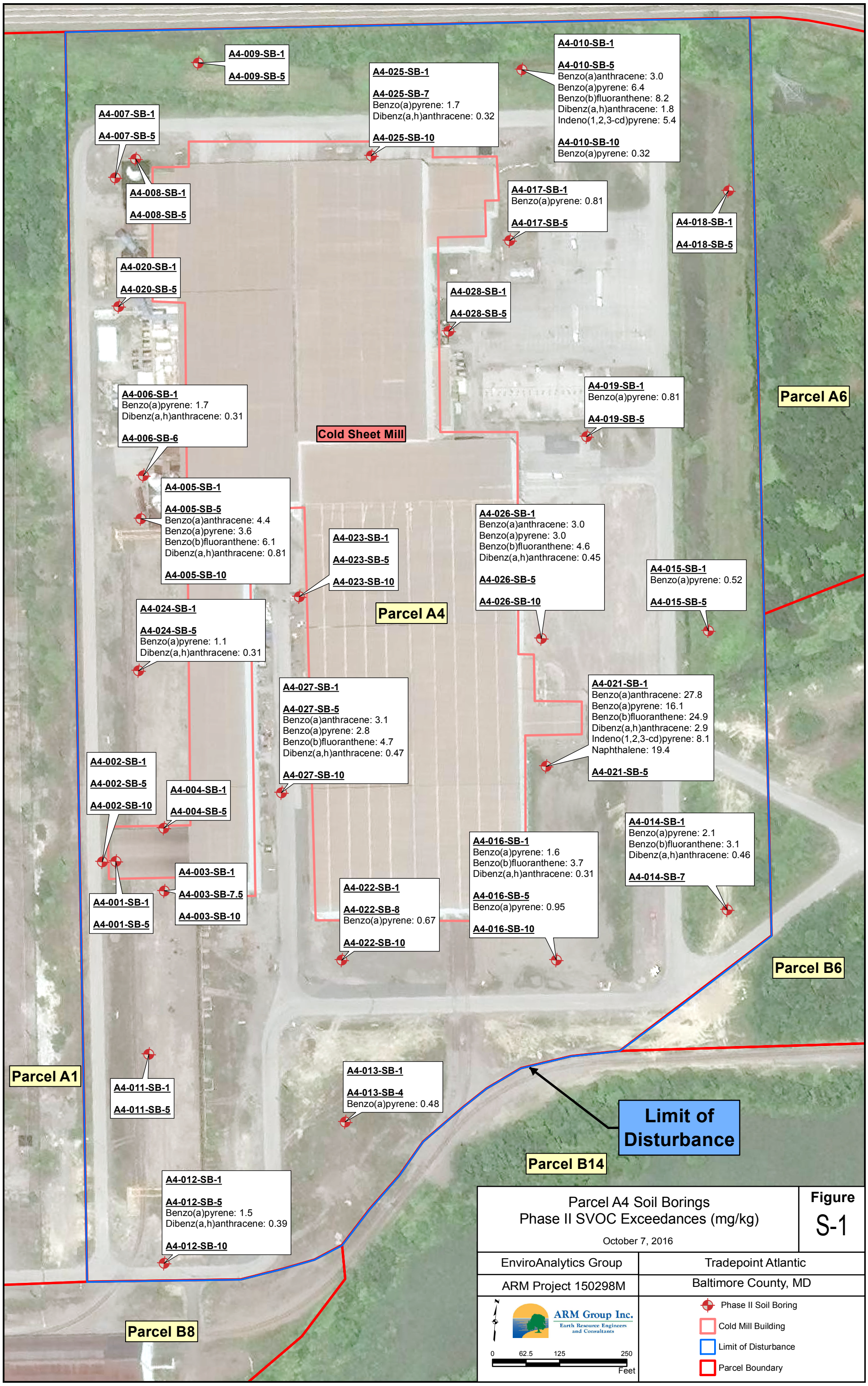
designed	JMA	scale	1" = 200'
checked	TNP	date	10/6/2016
drawn	JMA	project no.	160443M-2-1

0 200 400
SCALE IN FEET

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


A4-009-SB
A4-010-SB
A4-008-SB
A4-025-SB
A4-007-SB
A4-018-SB
A4-017-SB
A4-020-SB
A4-028-SB
Parcel A6
A4-019-SB
Cold Sheet Mill
A4-006-SB
A4-005-SB
A4-023-SB
Parcel A4
A4-026-SB
A4-015-SB
A4-024-SB
A4-021-SB
A4-027-SB
A4-004-SB
A4-002-SB
A4-001-SB
A4-003-SB
A4-014-SB
A4-022-SB
A4-016-SB
Parcel B6
A4-011-SB
Parcel A1
A4-013-SB
Limit of Disturbance
Parcel B14
A4-012-SB
Parcel B8
Parcel A4 Soil Borings
Final Field Sample Locations
October 7, 2016
Figure
3
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Phase II Soil Boring
Cold Mill Building
Limit of Disturbance
Parcel Boundary


A4-010-PZ
A4-007-PZ
SW04-PZM001
Parcel A6
Cold Sheet Mill
A4-019-PZ
A4-005-PZ
Parcel A4
A4-001-PZ
A4-014-PZ
Parcel B6
Parcel A1
A4-013-PZ
Limit of Disturbance
Parcel B14
A4-012-PZ
Parcel B8
Parcel A4 Shallow Groundwater
Final Field Sample Locations
October 7, 2016
Figure
4
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Piezometer
Piezometer (Detroyed)
Existing Well (Missing-Not Sampled)
Cold Mill Building
Limit of Disturbance
Parcel Boundary


A4-009-SB-1
A4-009-SB-5
A4-025-SB-1
A4-025-SB-7
Benzo(a)pyrene: 1.7
Dibenz(a,h)anthracene: 0.32
A4-025-SB-10
A4-010-SB-1
A4-010-SB-5
Benzo(a)anthracene: 3.0
Benzo(a)pyrene: 6.4
Benzo(b)fluoranthene: 8.2
Dibenz(a,h)anthracene: 1.8
Indeno(1,2,3-cd)pyrene: 5.4
A4-010-SB-10
Benzo(a)pyrene: 0.32
A4-007-SB-1
A4-007-SB-5
A4-008-SB-1
A4-008-SB-5
A4-017-SB-1
Benzo(a)pyrene: 0.81
A4-017-SB-5
A4-018-SB-1
A4-018-SB-5
A4-020-SB-1
A4-020-SB-5
A4-028-SB-1
A4-028-SB-5
A4-019-SB-1
Benzo(a)pyrene: 0.81
A4-019-SB-5
Parcel A6
A4-006-SB-1
Benzo(a)pyrene: 1.7
Dibenz(a,h)anthracene: 0.31
A4-006-SB-6
Cold Sheet Mill
A4-005-SB-1
A4-005-SB-5
Benzo(a)anthracene: 4.4
Benzo(a)pyrene: 3.6
Benzo(b)fluoranthene: 6.1
Dibenz(a,h)anthracene: 0.81
A4-005-SB-10
A4-023-SB-1
A4-023-SB-5
A4-023-SB-10
A4-026-SB-1
Benzo(a)anthracene: 3.0
Benzo(a)pyrene: 3.0
Benzo(b)fluoranthene: 4.6
Dibenz(a,h)anthracene: 0.45
A4-026-SB-5
A4-026-SB-10
A4-015-SB-1
Benzo(a)pyrene: 0.52
A4-015-SB-5
A4-024-SB-1
A4-024-SB-5
Benzo(a)pyrene: 1.1
Dibenz(a,h)anthracene: 0.31
Parcel A4
A4-027-SB-1
A4-027-SB-5
Benzo(a)anthracene: 3.1
Benzo(a)pyrene: 2.8
Benzo(b)fluoranthene: 4.7
Dibenz(a,h)anthracene: 0.47
A4-027-SB-10
A4-021-SB-1
Benzo(a)anthracene: 27.8
Benzo(a)pyrene: 16.1
Benzo(b)fluoranthene: 24.9
Dibenz(a,h)anthracene: 2.9
Indeno(1,2,3-cd)pyrene: 8.1
Naphthalene: 19.4
A4-021-SB-5
A4-002-SB-1
A4-002-SB-5
A4-002-SB-10
A4-004-SB-1
A4-004-SB-5
A4-014-SB-1
Benzo(a)pyrene: 2.1
Benzo(b)fluoranthene: 3.1
Dibenz(a,h)anthracene: 0.46
A4-014-SB-7
A4-016-SB-1
Benzo(a)pyrene: 1.6
Benzo(b)fluoranthene: 3.7
Dibenz(a,h)anthracene: 0.31
A4-016-SB-5
Benzo(a)pyrene: 0.95
A4-016-SB-10
A4-003-SB-1
A4-003-SB-7.5
A4-003-SB-10
A4-001-SB-1
A4-001-SB-5
A4-022-SB-1
A4-022-SB-8
Benzo(a)pyrene: 0.67
A4-022-SB-10
Parcel B6
Parcel A1
A4-011-SB-1
A4-011-SB-5
A4-013-SB-1
A4-013-SB-4
Benzo(a)pyrene: 0.48
Limit of Disturbance
Parcel B14
A4-012-SB-1
A4-012-SB-5
Benzo(a)pyrene: 1.5
Dibenz(a,h)anthracene: 0.39
A4-012-SB-10
Parcel B8
Parcel A4 Soil Borings
Phase II SVOC Exceedances (mg/kg)
October 7, 2016
Figure
S-1
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Phase II Soil Boring
Cold Mill Building
Limit of Disturbance
Parcel Boundary

A4-009-SB-1
A4-009-SB-5
A4-010-SB-1
A4-010-SB-5
A4-008-SB-1
A4-008-SB-5
A4-025-SB-1
A4-025-SB-7
A4-018-SB-1
A4-018-SB-5
A4-007-SB-1
A4-007-SB-5
A4-017-SB-1
A4-017-SB-5
A4-020-SB-1
A4-020-SB-5
A4-028-SB-1
A4-028-SB-5
Parcel A6
A4-019-SB-1
A4-019-SB-5
A4-006-SB-1
A4-006-SB-6
Cold Sheet Mill
A4-005-SB-1
A4-005-SB-5
A4-023-SB-1
A4-023-SB-5
A4-015-SB-1
A4-015-SB-5
Parcel A4
A4-026-SB-1
A4-026-SB-5
A4-024-SB-1
A4-024-SB-5
A4-021-SB-1
A4-021-SB-5
A4-027-SB-1
A4-027-SB-5
A4-002-SB-1
A4-002-SB-5
A4-004-SB-1
A4-004-SB-5
DRO: 2,310
A4-014-SB-1
A4-014-SB-7
A4-001-SB-1
A4-001-SB-5
A4-003-SB-1
A4-003-SB-7.5
A4-022-SB-1
A4-022-SB-8
A4-016-SB-1
A4-016-SB-5
Parcel B6
A4-011-SB-1
A4-011-SB-5
Parcel A1
A4-013-SB-1
A4-013-SB-4
Limit of Disturbance
Parcel B14
A4-012-SB-1
A4-012-SB-5
Parcel B8

Parcel A4 Soil Borings
Phase II TPH-DRO/GRO Exceedances (mg/kg)

October 7, 2016

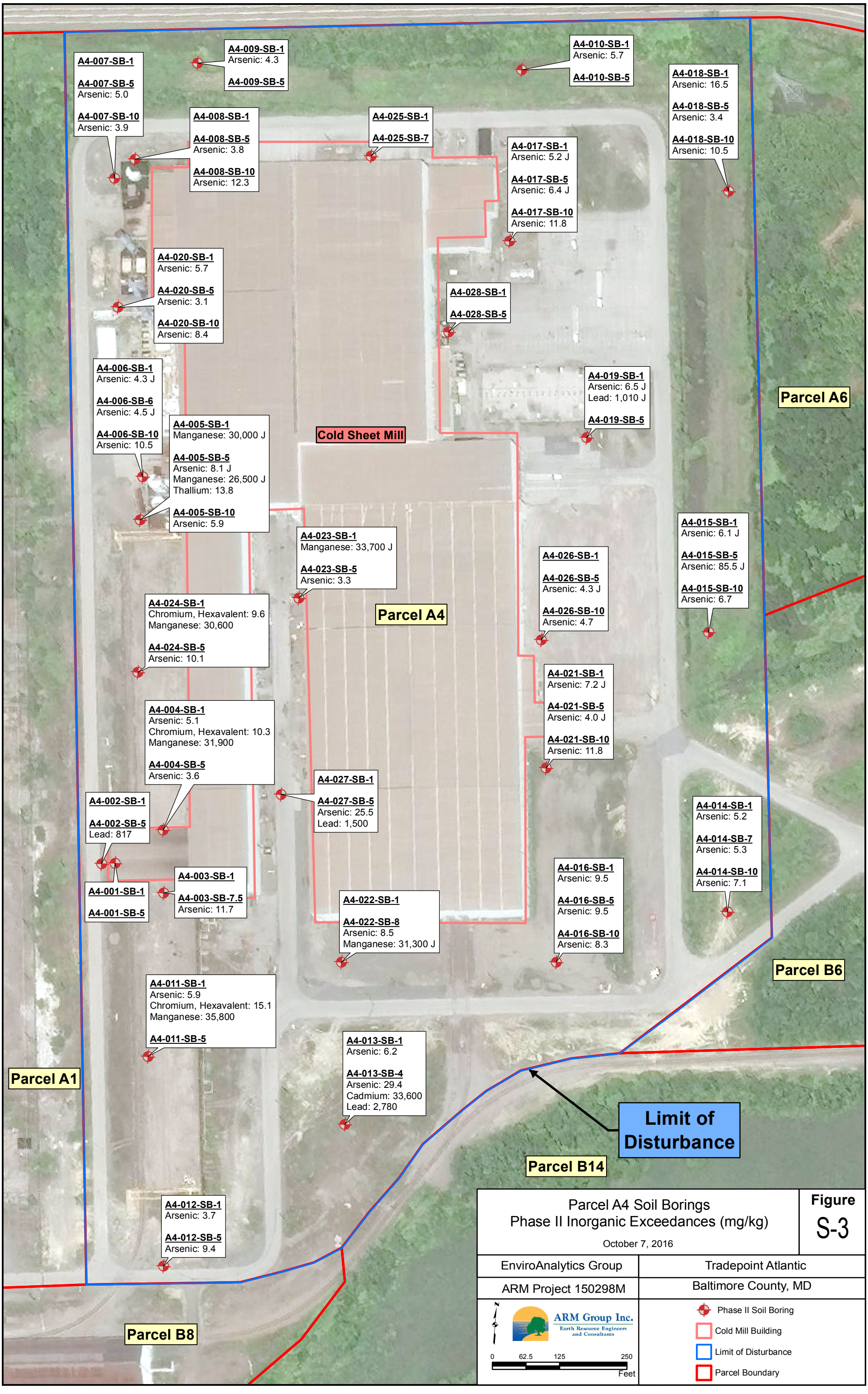
Figure
S-2

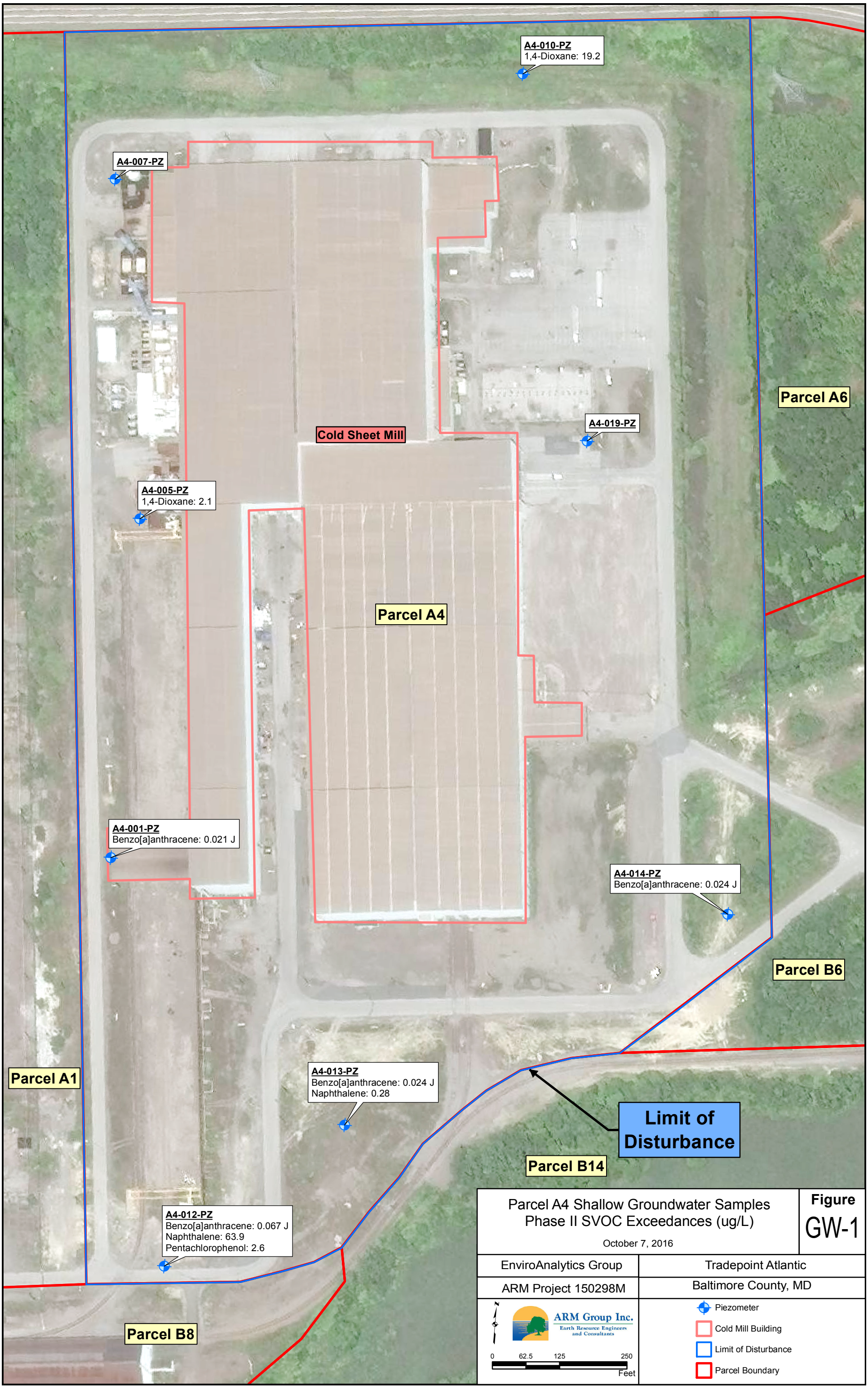
EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150298M	Baltimore County, MD

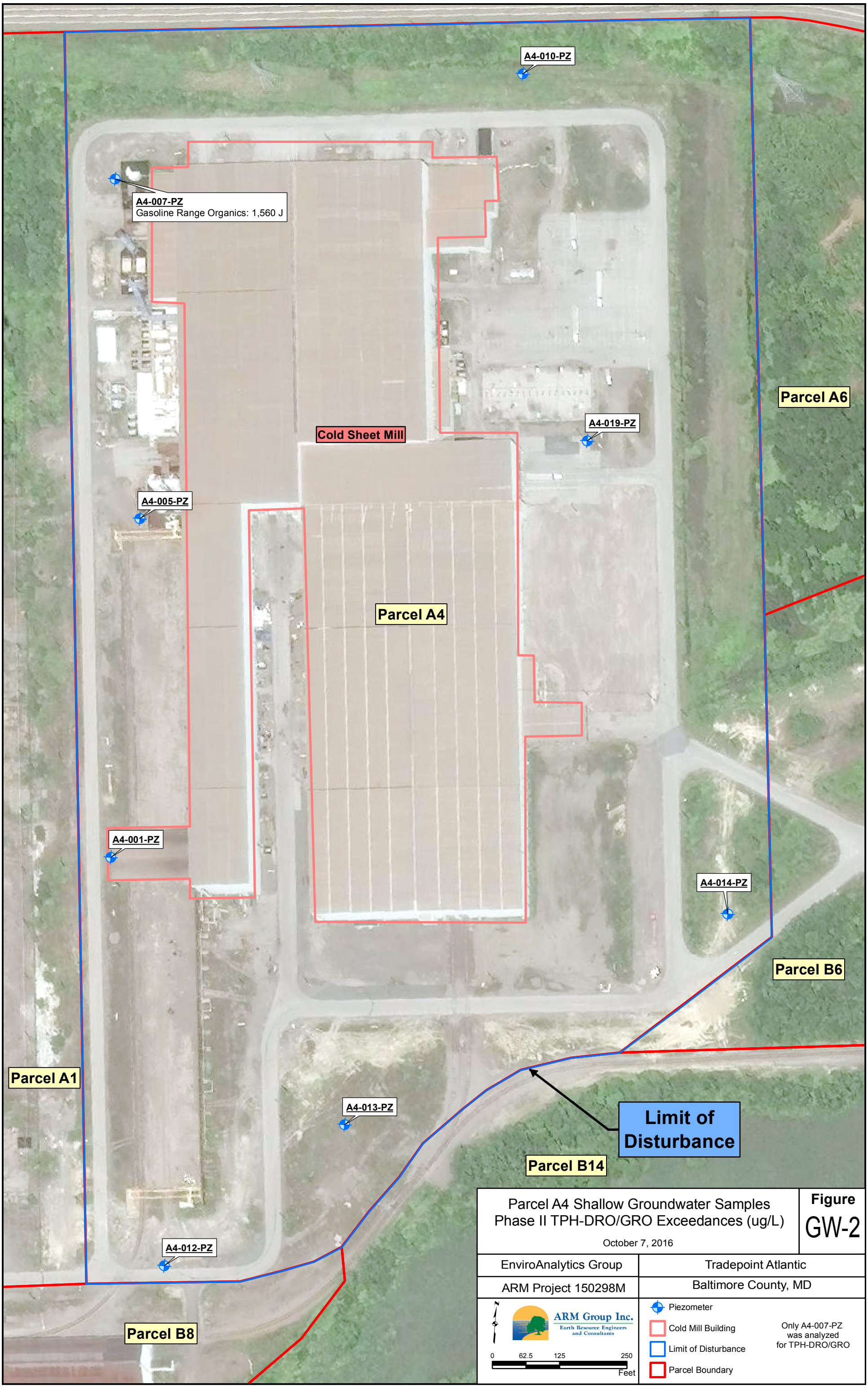
ARM Group Inc.
Earth Resource Engineers and Consultants

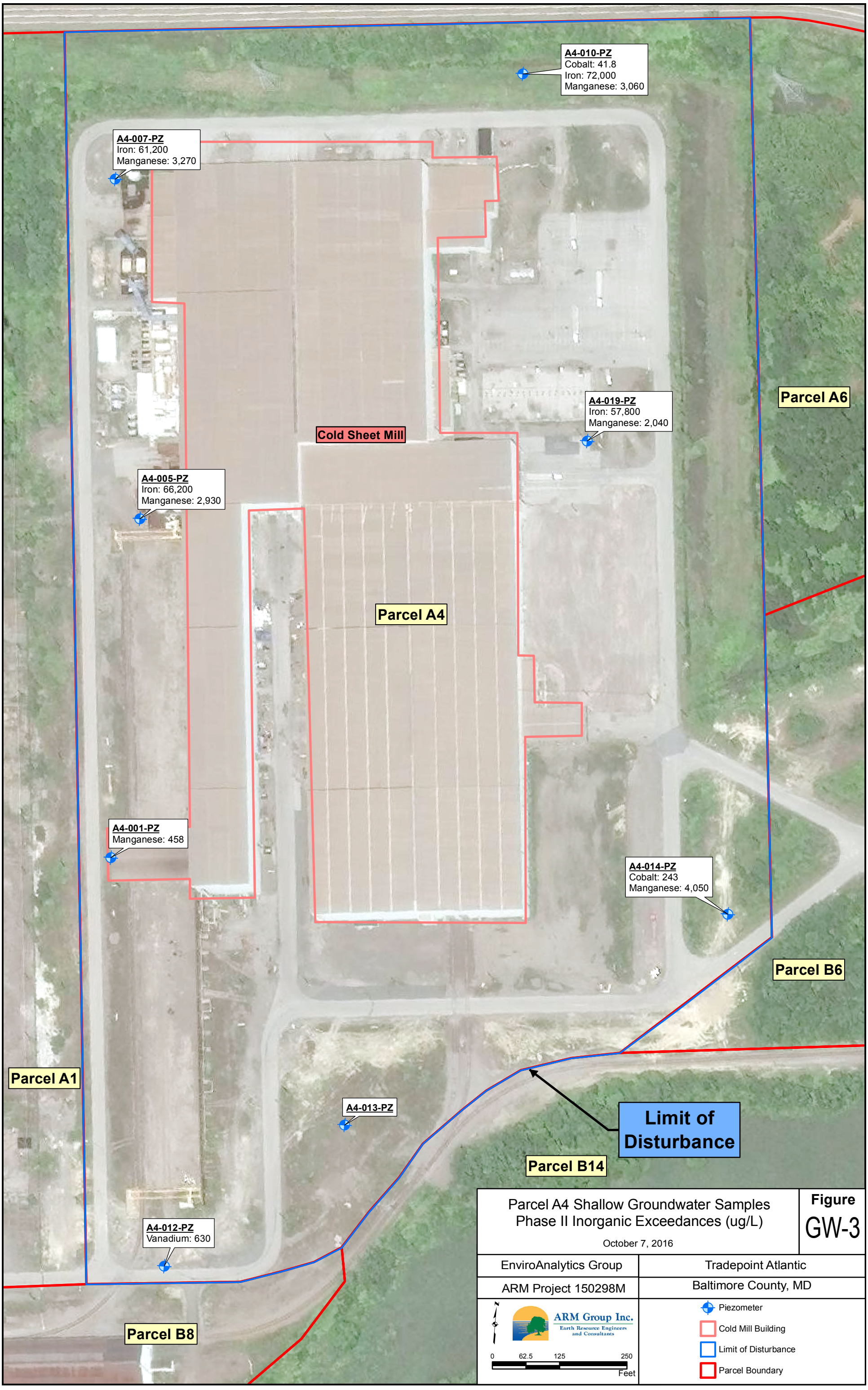
0 62.5 125 250
Feet

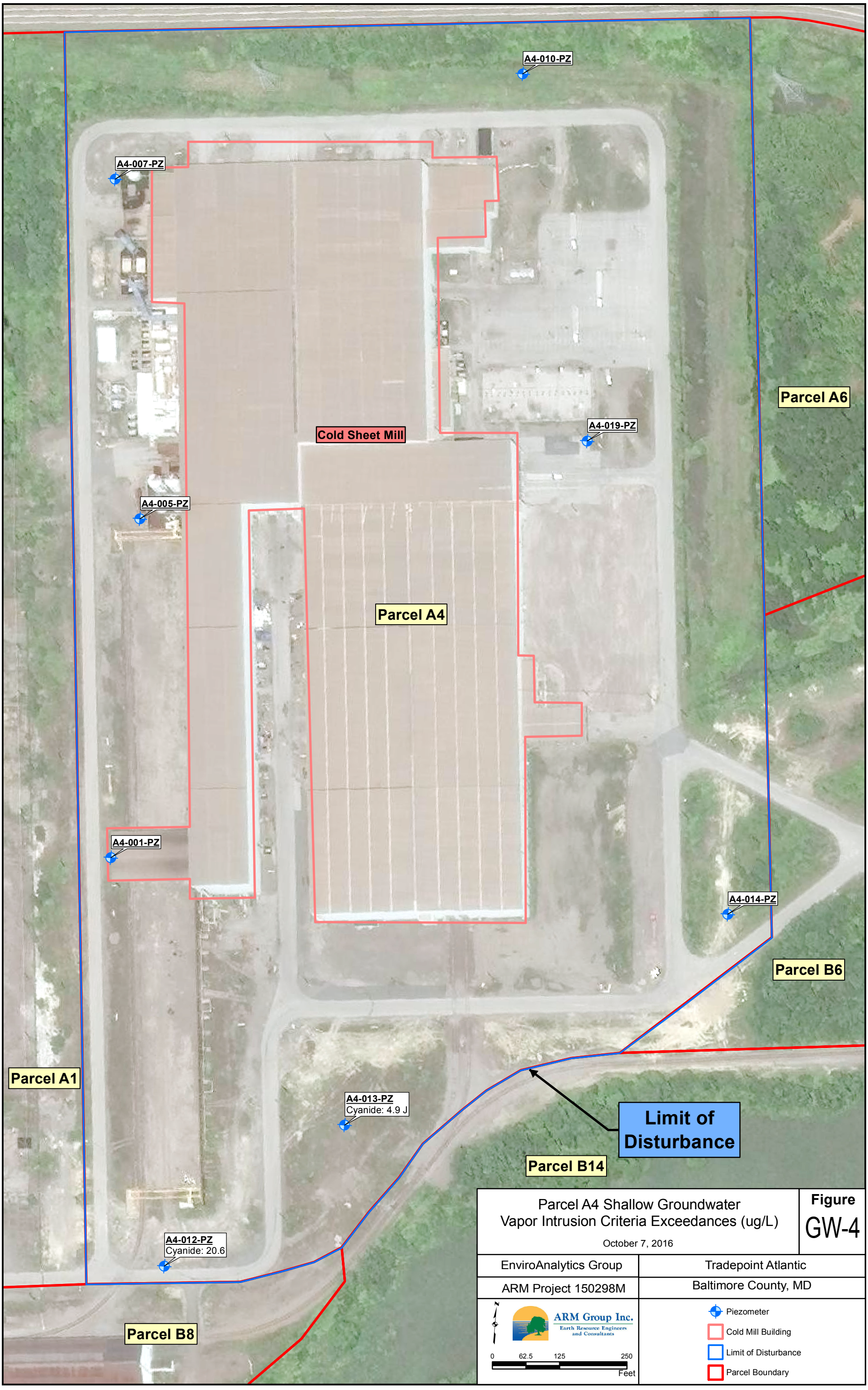
- Phase II Soil Boring (DRO&GRO)
- Phase II Soil Boring (TPH/DRO&GRO)
- Cold Mill Building
- Limit of Disturbance
- Parcel Boundary


A4-007-SB-1
A4-007-SB-5
Arsenic: 5.0
A4-007-SB-10
Arsenic: 3.9
A4-009-SB-1
Arsenic: 4.3
A4-009-SB-5
A4-008-SB-1
A4-008-SB-5
Arsenic: 3.8
A4-008-SB-10
Arsenic: 12.3
A4-025-SB-1
A4-025-SB-7
A4-010-SB-1
Arsenic: 5.7
A4-010-SB-5
A4-018-SB-1
Arsenic: 16.5
A4-018-SB-5
Arsenic: 3.4
A4-018-SB-10
Arsenic: 10.5
A4-017-SB-1
Arsenic: 5.2 J
A4-017-SB-5
Arsenic: 6.4 J
A4-017-SB-10
Arsenic: 11.8
A4-020-SB-1
Arsenic: 5.7
A4-020-SB-5
Arsenic: 3.1
A4-020-SB-10
Arsenic: 8.4
A4-028-SB-1
A4-028-SB-5
A4-019-SB-1
Arsenic: 6.5 J
Lead: 1,010 J
A4-019-SB-5
Parcel A6
A4-006-SB-1
Arsenic: 4.3 J
A4-006-SB-6
Arsenic: 4.5 J
A4-006-SB-10
Arsenic: 10.5
A4-005-SB-1
Manganese: 30,000 J
A4-005-SB-5
Arsenic: 8.1 J
Manganese: 26,500 J
Thallium: 13.8
A4-005-SB-10
Arsenic: 5.9
Cold Sheet Mill
A4-023-SB-1
Manganese: 33,700 J
A4-023-SB-5
Arsenic: 3.3
A4-024-SB-1
Chromium, Hexavalent: 9.6
Manganese: 30,600
A4-024-SB-5
Arsenic: 10.1
Parcel A4
A4-026-SB-1
A4-026-SB-5
Arsenic: 4.3 J
A4-026-SB-10
Arsenic: 4.7
A4-015-SB-1
Arsenic: 6.1 J
A4-015-SB-5
Arsenic: 85.5 J
A4-015-SB-10
Arsenic: 6.7
A4-021-SB-1
Arsenic: 7.2 J
A4-021-SB-5
Arsenic: 4.0 J
A4-021-SB-10
Arsenic: 11.8
A4-004-SB-1
Arsenic: 5.1
Chromium, Hexavalent: 10.3
Manganese: 31,900
A4-004-SB-5
Arsenic: 3.6
A4-027-SB-1
A4-027-SB-5
Arsenic: 25.5
Lead: 1,500
A4-014-SB-1
Arsenic: 5.2
A4-014-SB-7
Arsenic: 5.3
A4-014-SB-10
Arsenic: 7.1
A4-002-SB-1
A4-002-SB-5
Lead: 817
A4-001-SB-1
A4-001-SB-5
A4-003-SB-1
A4-003-SB-7.5
Arsenic: 11.7
A4-022-SB-1
A4-022-SB-8
Arsenic: 8.5
Manganese: 31,300 J
A4-016-SB-1
Arsenic: 9.5
A4-016-SB-5
Arsenic: 9.5
A4-016-SB-10
Arsenic: 8.3
Parcel B6
A4-011-SB-1
Arsenic: 5.9
Chromium, Hexavalent: 15.1
Manganese: 35,800
A4-011-SB-5
A4-013-SB-1
Arsenic: 6.2
A4-013-SB-4
Arsenic: 29.4
Cadmium: 33,600
Lead: 2,780
Parcel A1
Limit of Disturbance
Parcel B14
A4-012-SB-1
Arsenic: 3.7
A4-012-SB-5
Arsenic: 9.4
Parcel B8
Parcel A4 Soil Borings
Phase II Inorganic Exceedances (mg/kg)
October 7, 2016
Figure
S-3
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Phase II Soil Boring
Cold Mill Building
Limit of Disturbance
Parcel Boundary


A4-010-PZ
1,4-Dioxane: 19.2
A4-007-PZ
Parcel A6
Cold Sheet Mill
A4-019-PZ
A4-005-PZ
1,4-Dioxane: 2.1
Parcel A4
A4-001-PZ
Benzo[a]anthracene: 0.021 J
A4-014-PZ
Benzo[a]anthracene: 0.024 J
Parcel B6
Parcel A1
A4-013-PZ
Benzo[a]anthracene: 0.024 J
Naphthalene: 0.28
Limit of Disturbance
Parcel B14
A4-012-PZ
Benzo[a]anthracene: 0.067 J
Naphthalene: 63.9
Pentachlorophenol: 2.6
Parcel B8
Parcel A4 Shallow Groundwater Samples
Phase II SVOC Exceedances (ug/L)
October 7, 2016
Figure
GW-1
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Piezometer
Cold Mill Building
Limit of Disturbance
Parcel Boundary


A4-010-PZ
A4-007-PZ
Gasoline Range Organics: 1,560 J
Parcel A6
Cold Sheet Mill
A4-019-PZ
A4-005-PZ
Parcel A4
A4-001-PZ
A4-014-PZ
Parcel B6
Parcel A1
A4-013-PZ
Limit of Disturbance
Parcel B14
A4-012-PZ
Parcel B8
Parcel A4 Shallow Groundwater Samples
Phase II TPH-DRO/GRO Exceedances (ug/L)
October 7, 2016
Figure
GW-2
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Piezometer
Cold Mill Building
Limit of Disturbance
Parcel Boundary
Only A4-007-PZ was analyzed for TPH-DRO/GRO


A4-010-PZ
Cobalt: 41.8
Iron: 72,000
Manganese: 3,060
A4-007-PZ
Iron: 61,200
Manganese: 3,270
A4-019-PZ
Iron: 57,800
Manganese: 2,040
Parcel A6
Cold Sheet Mill
A4-005-PZ
Iron: 66,200
Manganese: 2,930
Parcel A4
A4-001-PZ
Manganese: 458
A4-014-PZ
Cobalt: 243
Manganese: 4,050
Parcel B6
Parcel A1
A4-013-PZ
Limit of Disturbance
Parcel B14
A4-012-PZ
Vanadium: 630
Parcel B8
Parcel A4 Shallow Groundwater Samples
Phase II Inorganic Exceedances (ug/L)
October 7, 2016
Figure
GW-3
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Piezometer
Cold Mill Building
Limit of Disturbance
Parcel Boundary


A4-010-PZ
A4-007-PZ
Parcel A6
Cold Sheet Mill
A4-019-PZ
A4-005-PZ
Parcel A4
A4-001-PZ
A4-014-PZ
Parcel B6
Parcel A1
A4-013-PZ
Cyanide: 4.9 J
Limit of Disturbance
Parcel B14
A4-012-PZ
Cyanide: 20.6
Parcel B8
Parcel A4 Shallow Groundwater
Vapor Intrusion Criteria Exceedances (ug/L)
October 7, 2016
Figure
GW-4
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0
62.5
125
250
Feet
Piezometer
Cold Mill Building
Limit of Disturbance
Parcel Boundary

FENCE

EXISTING PAVED DRIVE

HEAVY DUTY PAVING

HEAVY DUTY PAVING

EXISTING BUILDING

TRUCK WELL WITH DOCK LEVELER

EXISTING RAILROAD

TRUCK WELL WITH DOCK LEVELER

EXISTING BUILDING

HEAVY DUTY PAVING

BETHLEHEM BLVD

I-695

COMPACTED SLAG OR PAVEMENT

TRUCK WELL WITH DOCK LEVELER

CONCRETE PAD

FENCE

EXISTING FENCE

EXISTING PAVED DRIVE

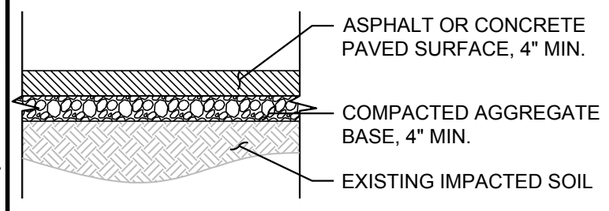
HEAVY DUTY PAVING

EXISTING RAILROAD

EXISTING PAVED DRIVE

EXISTING PAVED DRIVE

PARCEL A4 BOUNDARY



TYPICAL PAVING SECTION

NOT TO SCALE

LEGEND

BUILDING

PAVING

UNCAPPED AREA

P:\EnviroAnalytics Group\160443M EAG_TPA Redevelopment\Drwg\A4\Production\Figure 5 - Environmental Capping Detail.dwg Plotted: October 7, 2016

ARM Group Inc.

Earth Resource Engineers and Consultants

www.armgroup.net

designed JMA
checked TNP
drawn JMA

scale 1" = 200'
date 10/7/2016
project no. 160443M-2-1

0 200 400

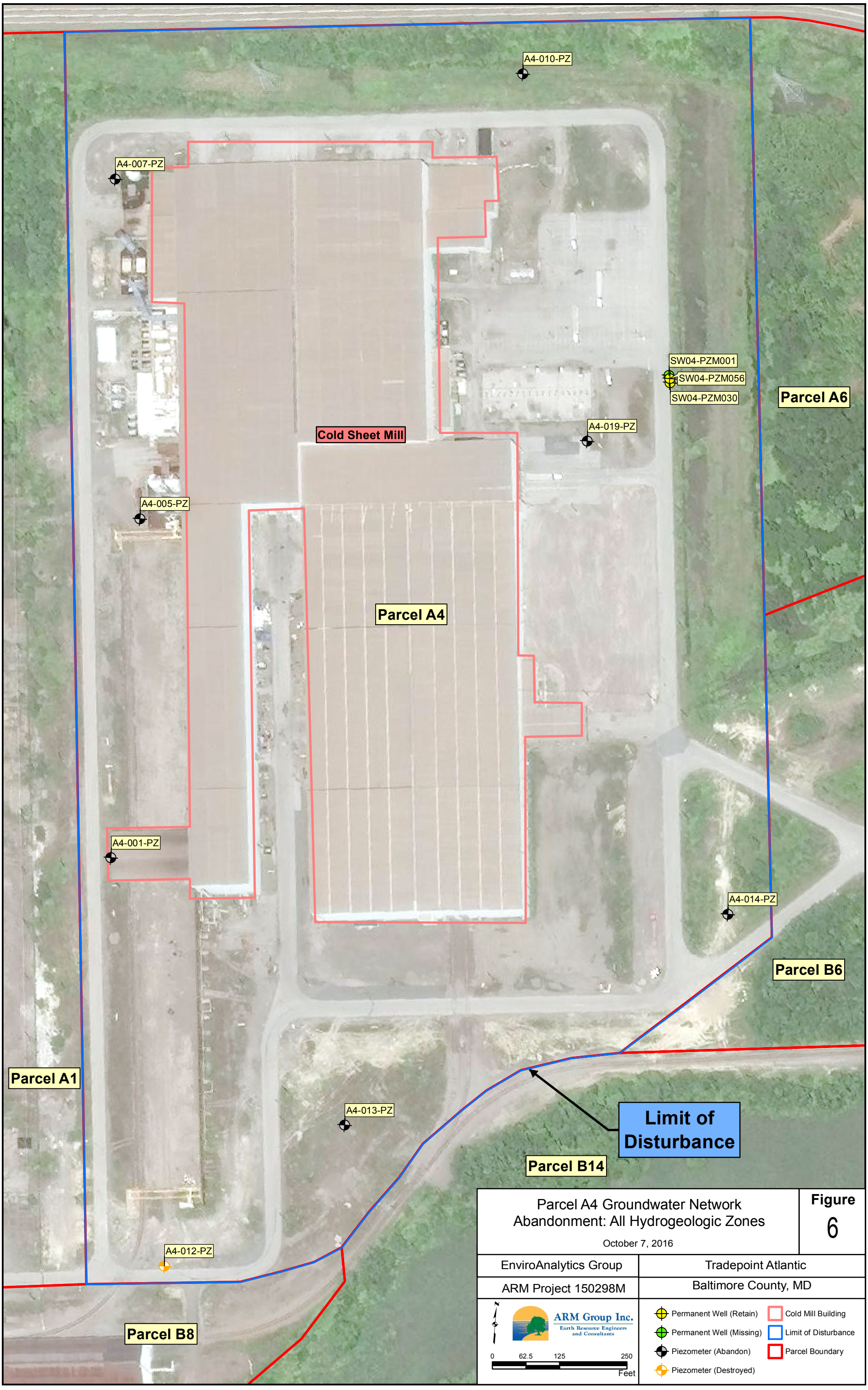
SCALE IN FEET

drawing title
ENVIRONMENTAL CAPPING PLAN AND DETAIL

project title
SPARROWS POINT AREA A
ENVIROANALYTICS GROUP

SPARROWS POINT
BALTIMORE COUNTY, MARYLAND

Figure 5


A4-010-PZ
A4-007-PZ
SW04-PZM001
SW04-PZM056
SW04-PZM030
Parcel A6
Cold Sheet Mill
A4-019-PZ
A4-005-PZ
Parcel A4
A4-001-PZ
A4-014-PZ
Parcel B6
Parcel A1
A4-013-PZ
Limit of Disturbance
Parcel B14
A4-012-PZ
Parcel B8
Parcel A4 Groundwater Network Abandonment: All Hydrogeologic Zones
October 7, 2016
Figure 6
EnviroAnalytics Group
Tradepoint Atlantic
ARM Project 150298M
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 62.5 125 250
Feet
Permanent Well (Retain)
Permanent Well (Missing)
Piezometer (Abandon)
Piezometer (Destroyed)
Cold Mill Building
Limit of Disturbance
Parcel Boundary

TABLES

Table 1
Summary of Organics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-001-SB-1	A4-001-SB-5	A4-002-SB-1	A4-002-SB-10	A4-002-SB-5	A4-003-SB-1	A4-003-SB-10	A4-003-SB-7.5	A4-004-SB-1	A4-004-SB-5	A4-005-SB-1	A4-005-SB-10	A4-005-SB-5	A4-006-SB-1	A4-006-SB-6	A4-007-SB-1	A4-007-SB-5	A4-008-SB-1
Volatile Organic Compounds																				
1,2-Dichlorobenzene	mg/kg	9,300	0.0055 U	0.0046 U	0.0052 U	N/A	0.0046 U	0.0045 U	N/A	0.0048 U	0.0044 U	0.0051 U	0.0048 U	N/A	0.0051 U	0.0048 U	0.0047 U	0.0046 U	0.0055 U	0.0048 U
2-Butanone (MEK)	mg/kg	190,000	**0.0035 J**	0.0091 U	**0.0045 J**	N/A	**0.0092 J**	**0.0028 J**	N/A	**0.059**	0.0088 U	0.01 U	**0.012**	N/A	**0.016**	**0.0042 J**	**0.0083 J**	0.0091 U	0.011 U	0.0097 U
2-Hexanone	mg/kg	1,300	0.011 U	0.0091 U	0.01 U	N/A	0.0092 U	0.0089 U	N/A	0.0096 U	0.0088 U	0.01 U	0.0096 U	N/A	0.01 U	0.0097 U	0.0093 U	0.0091 U	0.011 U	0.0097 U
Acetone	mg/kg	670,000	**0.028 J**	**0.023 J**	**0.039 J**	N/A	**0.057 J**	**0.037 J**	N/A	**0.065 J**	**0.013 J**	**0.072 J**	**0.074 J**	N/A	**0.11 J**	**0.042 J**	**0.061 J**	0.0091 R	**0.055 J**	0.0097 R
Benzene	mg/kg	5.1	**0.002 J**	0.0046 U	0.0052 U	N/A	**0.0013 J**	0.0045 U	N/A	**0.027**	0.0044 U	**0.012**	0.0048 U	N/A	**0.0036 J**	0.0048 U	0.0047 U	0.0046 U	**0.0094**	0.0048 U
Cyclohexane	mg/kg	27,000	0.011 U	0.0091 U	0.01 U	N/A	0.0092 U	0.0089 U	N/A	**0.052**	0.0088 U	**0.0026 J**	0.0096 U	N/A	0.01 U	0.0097 U	0.0093 U	0.0091 U	0.011 U	0.0097 U
Ethylbenzene	mg/kg	25	0.0055 U	0.0046 U	0.0052 U	N/A	**0.00051 J**	0.0045 U	N/A	**0.0065**	0.0044 U	**0.012**	0.0048 U	N/A	0.0051 U	0.0048 U	0.0047 U	0.0046 U	0.0055 U	0.0048 U
Isopropylbenzene	mg/kg	9,900	0.0055 U	0.0046 U	0.0052 U	N/A	0.0046 U	0.0045 U	N/A	**0.0012 J**	0.0044 U	**0.067**	0.0048 U	N/A	0.0051 U	0.0048 U	0.0047 U	0.0046 U	0.0055 U	0.0048 U
Methyl Acetate	mg/kg	1,200,000	0.055 U	0.046 U	0.052 U	N/A	0.046 U	0.045 U	N/A	0.048 U	0.044 U	0.051 U	0.048 U	N/A	0.051 U	0.048 U	0.047 U	0.046 R	0.055 R	0.048 R
Methylene Chloride	mg/kg	1,000	**0.0036 J**	**0.0057**	**0.0031 J**	N/A	0.0046 U	**0.0024 J**	N/A	**0.0021 J**	**0.0034 J**	**0.0032 J**	0.0048 U	N/A	0.0051 U	**0.0023 J**	**0.0036 J**	0.0046 U	0.0055 U	0.0048 U
Toluene	mg/kg	47,000	**0.0015 J**	0.0046 U	**0.00049 J**	N/A	**0.0023 J**	**0.00049 J**	N/A	**0.02**	**0.00057 J**	**0.0089**	0.0048 U	N/A	**0.0018 J**	**0.0007 J**	**0.00082 J**	0.0046 U	**0.0038 J**	0.0048 U
Trichloroethene	mg/kg	6	0.0055 U	0.0046 U	0.0052 U	N/A	0.0046 U	0.0045 U	N/A	0.0048 U	0.0044 U	0.0051 U	0.0048 U	N/A	0.0051 U	0.0048 U	0.0047 U	0.0046 U	0.0055 U	0.0048 U
Xylenes	mg/kg	2,800	0.016 U	0.014 U	0.016 U	N/A	**0.0025 J**	0.013 U	N/A	**0.0066 J**	0.013 U	**0.012 J**	0.014 U	N/A	0.015 U	0.015 U	0.014 U	0.014 U	0.016 U	0.015 U
Semi-Volatile Organic Compounds*																				
1,1-Biphenyl	mg/kg	200	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 U	**0.51**	**1.5**	0.075 U	0.077 U	**0.083**	0.08 U	**0.21**	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
2,4-Dimethylphenol	mg/kg	16,000	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 UJ	**0.024 J**	**0.095**	0.075 R	0.077 U	0.074 R	0.08 U	**0.035 J**	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
2,6-Dinitrotoluene	mg/kg	1.5	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	**0.043 J**	0.081 U	0.08 U	0.075 U	0.077 U	0.074 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
2-Chloronaphthalene	mg/kg	60,000	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 U	0.081 U	0.08 U	0.075 U	0.077 U	0.074 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
2-Methylnaphthalene	mg/kg	3,000	**0.017**	**0.0064 J**	**0.015**	N/A	0.15 U	**0.0046 J**	N/A	**0.011**	0.0072 U	**0.19**	**0.0037 J**	0.008 U	**0.17**	**0.041**	**0.056 J**	0.071 U	0.0093 U	**0.076 J**
2-Methylphenol	mg/kg	41,000	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 UJ	**0.025 J**	**0.11**	0.075 R	0.077 U	0.074 R	0.08 U	**0.023 J**	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.14 U	0.15 U	0.16 U	0.14 U	0.14 UJ	**0.13 J**	**0.55**	0.15 R	0.15 U	0.15 R	0.16 U	**0.021 J**	0.15 U	0.15 U	0.15 U	0.17 U	0.14 U
Acenaphthene	mg/kg	45,000	**0.01**	**0.0043 J**	**0.0067 J**	N/A	0.15 U	0.0073 U	N/A	0.0073 U	0.0072 U	**0.052**	0.0074 U	0.008 U	**0.16**	**0.1**	0.14 U	0.071 U	0.0093 U	0.14 U
Acenaphthylene	mg/kg	45,000	**0.0061 J**	**0.0029 J**	**0.011**	N/A	0.15 U	0.0073 U	N/A	**0.026**	0.0072 U	**0.0056 J**	0.0074 U	0.008 U	**0.22**	**0.077**	0.14 U	0.071 U	0.0093 U	0.14 U
Acetophenone	mg/kg	120,000	0.073 U	0.071 U	0.075 U	0.08 U	**0.038 J**	**0.11**	**0.03 J**	**0.076 J**	0.075 U	0.077 U	**0.028 J**	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
Anthracene	mg/kg	230,000	**0.024**	**0.021**	**0.023**	N/A	0.15 U	**0.0052 J**	N/A	**0.053**	0.0072 U	**0.074**	**0.0031 J**	0.008 U	**1.1**	**0.39**	**0.063 J**	0.071 U	0.0093 U	0.14 U
Benzaldehyde	mg/kg	120,000	0.073 R	0.071 R	0.075 R	**0.15 J**	**0.045 J**	**0.064 J**	**0.1 J**	0.08 R	0.075 R	0.077 R	0.074 R	0.08 UJ	**0.1 J**	0.075 R	0.075 R	0.075 R	0.083 R	0.072 R
Benzo[a]anthracene	mg/kg	2.9	**0.15**	**0.056**	**0.097**	N/A	**0.14 J**	**0.038**	N/A	**0.25**	**0.0029 J**	**0.13**	**0.0089**	**0.0036 J**	**4.4**	**1.7**	**0.27**	**0.06 J**	0.0093 U	**0.063 J**
Benzo[a]pyrene	mg/kg	0.29	**0.21**	**0.049**	**0.1**	N/A	**0.15 J**	**0.029**	N/A	**0.24**	0.0072 U	0.077 U	**0.0058 J**	**0.0028 J**	**3.6**	**1.7**	**0.25**	0.071 U	0.0093 U	**0.068 J**
Benzo[b]fluoranthene	mg/kg	2.9	**0.38**	**0.073**	**0.16**	N/A	**0.32**	**0.16**	N/A	**0.49**	**0.0068 J**	**0.18**	**0.023**	**0.0061 J**	**6.1**	**2.2**	**0.43**	**0.098**	0.0093 U	**0.18**
Benzo[g,h,i]perylene	mg/kg		**0.098**	**0.033**	**0.097**	N/A	**0.074 J**	**0.048**	N/A	**0.2**	**0.0027 J**	**0.097**	**0.0095**	**0.0021 J**	**1.8**	**0.68**	**0.19**	**0.033 J**	0.0093 UJ	**0.04 J**
Benzo[k]fluoranthene	mg/kg	29	**0.12**	**0.042**	**0.094**	N/A	**0.13 J**	**0.13**	N/A	**0.16**	**0.0058 J**	**0.08**	**0.0071 J**	**0.002 J**	**2.4**	**0.81**	**0.18**	**0.045 J**	0.0093 U	**0.082 J**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.073 UJ	0.071 U	0.075 U	0.08 UJ	**0.24 J**	0.072 U	0.081 UJ	0.8 U	0.075 U	0.077 U	0.074 UJ	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 UJ
Carbazole	mg/kg		**0.046 J**	0.071 U	**0.018 J**	0.08 U	**0.031 J**	0.072 U	**3**	**16**	0.075 U	0.077 U	**0.078**	0.08 U	**0.35**	**0.11**	**0.021 J**	0.075 U	0.083 U	0.072 U
Chrysene	mg/kg	290	**0.18**	**0.062**	**0.12**	N/A	**0.2**	**0.088**	N/A	**0.28**	**0.003 J**	**0.24**	**0.019**	**0.0026 J**	**4.3**	**1.8**	**0.32**	**0.05 J**	0.0093 U	**0.15**
Dibenz[a,h]anthracene	mg/kg	0.29	**0.041**	**0.012**	**0.033**	N/A	0.15 U	**0.017**	N/A	**0.086**	0.0072 U	0.077 U	0.0074 U	0.008 U	**0.81**	**0.31**	**0.072 J**	0.071 U	0.0093 U	0.14 U
Diethylphthalate	mg/kg	660,000	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 U	0.081 U	0.08 U	0.075 U	0.077 U	0.074 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
Di-n-butylphthalate	mg/kg	82,000	0.073 U	0.071 U	0.075 U	**0.12**	0.072 U	**0.017 B**	0.081 U	0.8 U	0.075 U	0.077 U	**0.029 B**	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
Di-n-ocytlphthalate	mg/kg	8,200	0.073 UJ	0.071 U	0.075 U	**0.027 J**	0.072 UJ	0.072 U	0.081 UJ	0.8 U	0.075 U	0.077 U	0.074 UJ	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 UJ
Fluoranthene	mg/kg	30,000	**0.19**	**0.1**	**0.14**	N/A	**0.3**	**0.1**	N/A	**0.55**	**0.0075**	**0.47**	**0.021**	**0.0051 J**	**7.9**	**3**	**0.47**	0.071 U	0.0093 U	**0.07 J**
Fluorene	mg/kg	30,000	**0.0061 J**	**0.0047 J**	**0.0041 J**	N/A	**0.017 J**	**0.00082 J**	N/A	**0.0069 J**	0.0072 U	**0.063**	0.0074 U	0.008 U	**0.19**	**0.079**	**0.031 J**	0.071 U	0.0093 U	0.14 U
Indeno[1,2,3-c,d]pyrene	mg/kg	2.9	**0.11**	**0.032**	**0.094**	N/A	0.15 U	**0.047**	N/A	**0.22**	0.0072 U	0.077 U	**0.0069 J**	**0.0019 J**	**2.1**	**0.73**	**0.16**	0.071 U	0.0093 U	0.14 U
Naphthalene	mg/kg	17	**0.012**	**0.0087**	**0.024**	N/A	0.15 U	**0.0098**	N/A	**0.033**	**0.0027 B**	**0.18**	**0.0085**	**0.0015 J**	**0.34**	**0.067**	0.14 U	0.071 U	**0.0015 B**	0.14 U
N-Nitrosodiphenylamine	mg/kg	470	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 U	0.081 U	0.8 U	0.075 U	0.077 U	0.074 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
Phenanthrene	mg/kg		**0.091**	**0.059**	**0.069**	N/A	0.15 U	**0.047**	N/A	**0.22**	0.0072 U	**0.3**	**0.016**	**0.0035 J**	**3.5**	**1.3**	**0.23**	0.071 U	0.0093 U	0.14 U
Phenol	mg/kg	250,000	0.073 U	0.071 U	0.075 U	0.08 U	0.072 U	0.072 UJ	**0.23**	**0.99**	0.075 R	0.077 U	0.074 R	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.083 U	0.072 U
Pyrene	mg/kg	23,000	**0.16**	**0.085**	**0.11**	N/A	**0.31**	**0.084**	N/A	**0.36**	**0.0047 J**	**0.44**	**0.018**	**0.0044 J**	**6.3**	**2.6**	**0.47**	**0.06 J**	0.0093 U	**0.09 J**
PCBs																				
Aroclor 1254	mg/kg	0.97	0.019 U	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.088 U	N/A	0.018 U	N/A	0.18 U
Aroclor 1260	mg/kg	0.99	**0.0089 J**	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.088 U	N/A	0.018 U	N/A	0.18 U
PCBs (total)	mg/kg	0.97	0.13 U	N/A	0.12 U	N/A	N/A	0.13 U	N/A	N/A	0.13 U	N/A	0.13 U	N/A	N/A	0.62 U	N/A	0.12 U	N/A	1.3 U
TPH/Oil and Grease																				
Diesel Range Organics	mg/kg	620	N/A	N/A	N/A	N/A	N/A	**33.4**	N/A	**22.1**	**13.1**	**2,310**	N/A	N/A	N/A	N/A	N/A	**24.1**	9.1 U	**428**
Gasoline Range Organics	mg/kg	620	N/A	N/A	N/A	N/A	N/A	9.6 U	N/A	**7.1 J**	9.2 U	**162**	N/A	N/A	N/A	N/A	N/A	9.2 U	11.2 U	9.5 U
Oil and Grease	mg/kg		**541**	**557**	**787**	N/A	**17,600**	**355**	N/A	**718**	**734**	**5,590**	**303**	N/A	**613**	**547**	**2,300**	**614**	**1,720**	**12,400**

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)
A glossary of laboratory flags can be viewed in the attached laboratory reports
*PAH compounds were analyzed via sim

Table 1
Summary of Organics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-008-SB-5	A4-009-SB-1	A4-009-SB-5	A4-010-SB-1	A4-010-SB-10	A4-010-SB-5	A4-011-SB-1	A4-011-SB-5	A4-012-SB-1	A4-012-SB-10	A4-012-SB-5	A4-013-SB-1	A4-013-SB-4	A4-014-SB-1	A4-014-SB-7	A4-015-SB-1	A4-015-SB-5	A4-016-SB-1	A4-016-SB-10
Volatile Organic Compounds																					
1,2-Dichlorobenzene	mg/kg	9,300	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	0.0044 U	0.0059 U	**0.0021 J**	N/A	0.0052 U	0.0087 UJ	0.007 U	0.0044 U	0.005 U	0.0063 U	0.0052 U	0.0054 U	N/A
2-Butanone (MEK)	mg/kg	190,000	0.0096 U	**0.022**	0.0093 U	0.0096 U	N/A	0.0096 U	**0.0043 J**	**0.0037 J**	**0.0041 J**	N/A	**0.0058 J**	0.017 U	**0.011 J**	**0.0082 J**	**0.0092 J**	**0.0075 J**	0.01 U	**0.0061 J**	N/A
2-Hexanone	mg/kg	1,300	0.0096 U	0.0096 U	0.0093 U	0.0096 U	N/A	0.0096 U	0.0087 U	0.012 U	0.01 U	N/A	0.01 U	0.017 U	0.014 U	0.0088 U	0.01 U	0.013 U	0.01 U	0.011 U	N/A
Acetone	mg/kg	670,000	0.0096 R	0.48 U	**0.07 J**	**0.17 J**	N/A	0.0096 R	**0.029 J**	**0.046 J**	**0.036 J**	N/A	**0.046 J**	**0.081 J**	**0.069 J**	**0.085 J**	**0.059 J**	**0.051 J**	**0.01 J**	**0.044 J**	N/A
Benzene	mg/kg	5.1	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	0.0044 U	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	**0.002 J**	0.0044 U	0.005 U	0.0063 U	0.0052 U	0.0054 U	N/A
Cyclohexane	mg/kg	27,000	0.0096 U	0.0096 U	0.0093 U	0.0096 U	N/A	0.0096 U	0.0087 U	**0.00072 J**	0.01 UJ	N/A	**0.0017 J**	0.017 UJ	**0.002 J**	0.0088 UJ	0.01 UJ	0.013 U	0.01 U	0.011 UJ	N/A
Ethylbenzene	mg/kg	25	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	**0.005 J**	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	0.007 U	0.0044 U	0.005 U	0.0063 U	0.0052 U	0.0054 U	N/A
Isopropylbenzene	mg/kg	9,900	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	0.0044 U	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	0.007 U	0.0044 U	0.005 U	0.0063 U	0.0052 U	0.0054 U	N/A
Methyl Acetate	mg/kg	1,200,000	0.048 R	0.048 R	0.046 R	0.048 R	N/A	0.048 R	0.044 U	0.059 U	0.05 U	N/A	0.052 U	0.087 U	0.07 U	0.044 U	**0.058**	0.063 U	0.052 U	0.054 U	N/A
Methylene Chloride	mg/kg	1,000	0.0048 U	0.0048 U	0.0046 U	**0.0037 J**	N/A	0.0048 U	0.0044 U	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	0.007 U	0.0044 U	0.005 U	**0.003 J**	0.0052 U	0.0054 U	N/A
Toluene	mg/kg	47,000	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	**0.08**	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	**0.0015 B**	**0.00075 B**	**0.0014 B**	0.0063 U	0.0052 U	**0.00074 B**	N/A
Trichloroethene	mg/kg	6	0.0048 U	0.0048 U	0.0046 U	0.0048 U	N/A	0.0048 U	0.0044 U	0.0059 U	0.005 U	N/A	0.0052 U	0.0087 U	0.007 U	0.0044 U	0.005 U	**0.0018 J**	0.0052 U	0.0054 U	N/A
Xylenes	mg/kg	2,800	0.014 U	0.014 U	0.014 U	0.014 U	N/A	0.014 U	**0.028 J**	0.018 U	0.015 U	N/A	0.016 U	0.026 U	0.021 U	0.013 U	0.015 U	0.019 U	0.016 U	0.016 U	N/A
Semi-Volatile Organic Compounds*																					
1,1-Biphenyl	mg/kg	200	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.026 J**	0.071 U	**0.019 J**	0.14 U	**0.039 J**	**0.079 J**	0.075 U	0.073 U	**0.034 J**	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
2,4-Dimethylphenol	mg/kg	16,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.073 J**	0.071 R	0.079 U	0.14 UJ	0.078 UJ	0.079 U	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
2,6-Dinitrotoluene	mg/kg	1.5	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 U	0.078 U	0.079 U	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
2-Chloronaphthalene	mg/kg	60,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 U	0.078 U	0.079 U	0.075 U	**0.024 J**	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
2-Methylnaphthalene	mg/kg	3,000	0.0079 U	**0.0074 J**	0.0072 U	0.0078 U	**0.0036 J**	**0.084**	0.007 U	**0.051**	0.14 U	N/A	**0.11**	**0.027**	**0.14**	0.38 U	**0.014**	**0.026**	0.0083 U	**0.089**	N/A
2-Methylphenol	mg/kg	41,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.016 J**	0.071 R	0.079 U	0.14 UJ	0.078 UJ	0.079 U	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.15 U	0.15 U	0.15 U	0.17 U	**0.13 J**	0.14 R	0.16 U	0.29 UJ	0.16 UJ	**0.036 J**	0.15 U	0.15 U	**0.022 J**	0.16 U	0.15 U	0.16 U	0.15 U	0.17 U
Acenaphthene	mg/kg	45,000	0.0079 U	0.0081 U	0.0072 U	**0.011**	**0.048**	**1**	0.007 U	0.0072 U	0.14 U	N/A	**0.092**	**0.033**	**0.011**	**0.049 J**	**0.0032 J**	**0.014**	0.0083 U	**0.052**	N/A
Acenaphthylene	mg/kg	45,000	0.0079 U	**0.014**	0.0072 U	0.0078 U	0.0086 U	0.071 U	0.007 U	**0.0096**	0.14 U	N/A	**0.2**	**0.023**	**0.092**	**0.18 J**	**0.0062 J**	**0.045**	0.0083 U	**0.053**	N/A
Acetophenone	mg/kg	120,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.019 J**	0.071 U	**0.031 J**	0.14 U	0.078 U	**0.037 J**	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Anthracene	mg/kg	230,000	0.0079 U	**0.0078 J**	0.0072 U	**0.0084**	**0.021**	**0.44**	0.007 U	**0.016**	0.14 U	N/A	**0.5**	**0.024**	**0.14**	**0.49**	**0.013**	**0.13**	0.0083 U	**0.45**	N/A
Benzaldehyde	mg/kg	120,000	0.073 R	0.074 R	0.074 R	0.074 R	0.087 UJ	0.074 R	0.071 R	**0.057 J**	0.14 R	**0.018 J**	**0.054 J**	0.075 R	0.073 R	0.074 R	0.08 R	0.073 R	0.079 R	0.073 R	0.083 UJ
Benzo[a]anthracene	mg/kg	2.9	0.0079 U	**0.047**	0.0072 U	**0.059**	**0.13**	**3**	**0.0026 J**	**0.043**	**0.31**	N/A	**1.5**	**0.094**	**0.63**	**2.2**	**0.038**	**0.63**	0.0083 U	**1.9**	N/A
Benzo[a]pyrene	mg/kg	0.29	0.0079 U	**0.059**	0.0072 U	**0.098**	**0.32**	**6.4**	0.007 U	**0.059**	**0.23**	N/A	**1.5**	**0.12**	**0.48**	**2.1**	**0.041**	**0.52**	0.0083 U	**1.6**	**0.11 J**
Benzo[b]fluoranthene	mg/kg	2.9	0.0079 U	**0.12**	0.0072 U	**0.12**	**0.39**	**8.2**	**0.011**	**0.12**	**0.45**	N/A	**2.5**	**0.3**	**1.1**	**3.1**	**0.11**	**1.1**	**0.0009 J**	**3.7**	N/A
Benzo[g,h,i]perylene	mg/kg		0.0079 UJ	**0.024 J**	0.0072 UJ	**0.085 J**	**0.24**	**5.2 J**	**0.0039 J**	**0.068**	**0.16**	N/A	**0.85**	**0.077**	**0.21**	**1.2**	**0.011**	**0.12**	0.0083 UJ	**0.48**	N/A
Benzo[k]fluoranthene	mg/kg	29	0.0079 U	**0.059**	0.0072 U	**0.052**	**0.13**	**3.2**	**0.009**	**0.042**	**0.17**	N/A	**1.3**	**0.083**	**1.4**	**1.3**	**0.099**	**0.47**	0.0083 U	**0.96**	N/A
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 UJ	0.078 U	0.079 UJ	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Carbazole	mg/kg		0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.43**	0.071 U	0.079 U	0.14 U	**0.16**	**0.27 J**	**0.027 J**	0.073 U	**0.47**	0.08 U	0.073 U	0.079 U	**0.024 J**	0.083 U
Chrysene	mg/kg	290	0.0079 U	**0.059**	0.0072 U	**0.063**	**0.13**	**3.1**	**0.0072**	**0.07**	**0.28**	N/A	**1.5**	**0.12**	**0.69**	**2.1**	**0.056**	**0.63**	**0.00064 J**	**2.2**	N/A
Dibenz[a,h]anthracene	mg/kg	0.29	0.0079 U	**0.01**	0.0072 U	**0.029**	**0.07**	**1.8**	0.007 U	**0.026**	0.14 U	N/A	**0.39**	**0.033**	**0.095**	**0.46**	**0.004 J**	**0.065**	0.0083 UJ	**0.31**	N/A
Diethylphthalate	mg/kg	660,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 U	0.078 U	0.079 U	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Di-n-butylphthalate	mg/kg	82,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 U	0.078 U	0.079 U	0.075 U	**0.021 B**	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Di-n-ocytlphthalate	mg/kg	8,200	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 UJ	0.078 U	0.079 UJ	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Fluoranthene	mg/kg	30,000	0.0079 U	**0.072**	0.0072 U	**0.071**	**0.15**	**3.1**	**0.012**	**0.071**	**0.46**	N/A	**2.1**	**0.15**	**1.2**	**3.1**	**0.061**	**1**	**0.0017 J**	**2.9**	N/A
Fluorene	mg/kg	30,000	0.0079 U	**0.0021 J**	0.0072 U	**0.0025 J**	**0.0096**	**0.17**	0.007 U	**0.0024 J**	0.14 U	N/A	**0.12**	**0.0066 J**	**0.016**	**0.06 J**	**0.011**	**0.012**	0.0083 U	**0.052**	N/A
Indeno[1,2,3-c,d]pyrene	mg/kg	2.9	0.0079 U	**0.028**	0.0072 UJ	**0.081**	**0.23**	**5.4**	0.007 U	**0.06**	0.14 U	N/A	**1**	**0.078**	**0.23**	**1.3**	**0.011**	**0.16**	0.0083 UJ	**0.69**	N/A
Naphthalene	mg/kg	17	0.0079 U	**0.014**	0.0072 U	**0.0047 B**	**0.014**	**0.21**	**0.0023 B**	**0.036**	0.14 U	N/A	**0.19**	**0.044**	**0.46**	**0.083 J**	**0.017**	**0.04**	0.0083 U	**0.22**	N/A
N-Nitrosodiphenylamine	mg/kg	470	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	0.074 U	0.071 U	0.079 U	0.14 U	0.078 U	0.079 U	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Phenanthrene	mg/kg		0.0079 U	**0.028**	0.0072 U	**0.024**	**0.069**	**1.3**	0.007 U	**0.071**	0.14 U	N/A	**1.3**	**0.072**	**0.69**	**1.2**	**0.037**	**0.36**	**0.0012 J**	**1.6**	N/A
Phenol	mg/kg	250,000	0.073 U	0.074 U	0.074 U	0.074 U	0.087 U	**0.046 J**	0.071 R	0.079 U	0.14 UJ	0.078 UJ	**0.031 J**	0.075 U	0.073 U	0.074 U	0.08 U	0.073 U	0.079 U	0.073 U	0.083 U
Pyrene	mg/kg	23,000	0.0079 U	**0.063**	0.0072 U	**0.07**	**0.14**	**2.9**	**0.0065 J**	**0.06**	**0.43**	N/A	**1.9**	**0.14**	**0.95**	**2.5**	**0.052**	**0.84**	**0.0015 J**	**2.5**	N/A
PCBs																					
Aroclor 1254	mg/kg	0.97	N/A	0.02 U	N/A	0.019 U	N/A	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.019 U	N/A	0.093 U	N/A	0.018 U	N/A	0.19 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.02 U	N/A	0.019 U	N/A	N/A	0.018 U	N/A	0.018 U	N/A	N/A	**0.044**	N/A	0.093 U	N/A	**0.055**	N/A	0.19 U	N/A
PCBs (total)	mg/kg	0.97	N/A	0.14 U	N/A	0.13 U	N/A	N/A	0.12 U	N/A	0.12 U	N/A	N/A	**0.044 J**	N/A	0.65 U	N/A	**0.055 J**	N/A	1.3 U	N/A
TPH/Oil and Grease																					
Diesel Range Organics	mg/kg	620	7.8 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	N/A	N/A	N/A	N/A	N/A	N/A
Gasoline Range Organics	mg/kg	620	9.1 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	N/A	N/A	N/A	N/A	N/A	N/A
Oil and Grease	mg/kg		**348**	**501**	**317**	**404**	N/A	**239**	**549**	**598**	**1,290**	N/A	**567**	**469**	**1,240**	**663**	**1,760**	**417**	**252**	**595**	N/A

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)
A glossary of laboratory flags can be viewed in the attached laboratory reports
*PAH compounds were analyzed via sim

Table 1
Summary of Organics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-016-SB-5	A4-017-SB-1	A4-017-SB-5	A4-018-SB-1	A4-018-SB-5	A4-019-SB-1	A4-019-SB-5	A4-020-SB-1	A4-020-SB-5	A4-021-SB-1	A4-021-SB-5	A4-022-SB-1	A4-022-SB-10	A4-022-SB-8	A4-023-SB-1	A4-023-SB-10	A4-023-SB-5	A4-024-SB-1	A4-024-SB-5
Volatile Organic Compounds																					
1,2-Dichlorobenzene	mg/kg	9,300	0.0057 U	0.0047 U	0.0051 U	0.0049 U	0.005 U	0.0039 U	0.0049 U	0.0044 U	0.0048 U	0.0055 U	0.0051 U	0.0051 U	N/A	0.0059 UJ	0.0058 U	N/A	0.008 U	0.0043 U	0.0055 U
2-Butanone (MEK)	mg/kg	190,000	0.011 U	**0.014**	0.01 U	0.0098 U	0.0099 U	**0.0029 J**	0.0097 U	0.0087 U	0.0095 U	**0.0046 J**	**0.0035 J**	**0.0037 J**	N/A	**0.012**	0.012 U	N/A	**0.0032 J**	**0.005 J**	**0.0067 J**
2-Hexanone	mg/kg	1,300	0.011 U	0.0095 U	0.01 U	0.0098 U	0.0099 U	0.0079 U	0.0097 U	0.0087 U	0.0095 U	0.011 U	0.01 U	0.01 U	N/A	0.012 U	0.012 U	N/A	0.016 U	0.0086 U	0.011 U
Acetone	mg/kg	670,000	**0.029 J**	**0.076 J**	**0.011 J**	**0.044 J**	0.0099 R	**0.024 J**	**0.0079 J**	**0.037 J**	0.0095 R	**0.059 J**	**0.052 J**	**0.03 J**	N/A	**0.095 J**	**0.028 J**	N/A	**0.027 J**	**0.044 J**	**0.078 J**
Benzene	mg/kg	5.1	0.0057 U	**0.0075**	0.0051 U	0.0049 U	0.005 U	0.0039 U	0.0049 U	0.0044 U	0.0048 U	**0.0016 J**	0.0051 U	0.0051 U	N/A	0.0059 U	0.0058 U	N/A	0.008 U	0.0043 U	**0.002 J**
Cyclohexane	mg/kg	27,000	0.011 UJ	**0.0006 J**	0.01 U	0.0098 U	0.0099 U	0.0079 U	0.0097 U	0.0087 U	0.0095 U	0.011 U	0.01 U	0.01 UJ	N/A	0.012 UJ	0.012 UJ	N/A	0.016 UJ	0.0086 U	**0.00065 J**
Ethylbenzene	mg/kg	25	0.0057 U	0.0047 U	0.0051 U	0.0049 U	0.005 U	0.0039 U	0.0049 U	0.0044 U	0.0048 U	0.0055 U	0.0051 U	0.0051 U	N/A	0.0059 U	0.0058 U	N/A	0.008 U	0.0043 U	0.0055 U
Isopropylbenzene	mg/kg	9,900	0.0057 U	0.0047 U	0.0051 U	0.0049 U	0.005 U	0.0039 U	0.0049 U	0.0044 U	0.0048 U	0.0055 U	0.0051 U	0.0051 U	N/A	0.0059 U	0.0058 U	N/A	0.008 U	0.0043 U	0.0055 U
Methyl Acetate	mg/kg	1,200,000	0.057 U	0.047 U	0.051 U	0.049 R	0.05 R	0.039 U	0.049 U	0.044 R	0.048 R	0.055 U	0.051 U	0.051 U	N/A	0.059 U	0.058 U	N/A	0.08 U	0.043 U	0.055 U
Methylene Chloride	mg/kg	1,000	0.0057 U	**0.003 J**	0.0051 U	0.0049 U	0.005 U	**0.0028 J**	**0.0043 J**	0.0044 U	**0.0038 J**	**0.0032 J**	**0.0041 J**	0.0051 U	N/A	0.0059 U	0.0058 U	N/A	**0.0073 J**	**0.0026 J**	0.0055 U
Toluene	mg/kg	47,000	0.0057 U	**0.0046 J**	0.0051 U	0.0049 U	0.005 U	**0.00043 J**	0.0049 U	0.0044 U	0.0048 U	0.0055 U	**0.00055 J**	**0.0011 B**	N/A	**0.0013 B**	0.0058 U	N/A	0.008 U	0.0043 U	**0.00094 J**
Trichloroethene	mg/kg	6	0.0057 U	0.0047 U	0.0051 U	0.0049 U	0.005 U	0.0039 U	0.0049 U	0.0044 U	0.0048 U	0.0055 U	0.0051 U	0.0051 U	N/A	0.0059 U	0.0058 U	N/A	0.008 U	0.0043 U	0.0055 U
Xylenes	mg/kg	2,800	0.017 U	0.014 U	0.015 U	0.015 U	0.015 U	0.012 U	0.015 U	0.013 U	0.014 U	0.016 U	0.015 U	0.015 U	N/A	0.018 U	0.017 U	N/A	0.024 U	**0.0018 J**	0.016 U
Semi-Volatile Organic Compounds*																					
1,1-Biphenyl	mg/kg	200	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	**0.022 J**	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	**0.42**	**0.2 J**	0.072 U	**0.038 J**	**0.06 J**	0.074 U	0.072 U
2,4-Dimethylphenol	mg/kg	16,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 UJ	0.077 UJ	0.072 U	0.078 R	0.078 U	0.074 R	0.072 U
2,6-Dinitrotoluene	mg/kg	1.5	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 U	0.077 U	0.072 U	0.078 U	0.078 U	0.074 U	0.072 U
2-Chloronaphthalene	mg/kg	60,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 U	0.077 U	0.072 U	0.078 U	0.078 U	0.074 U	0.072 U
2-Methylnaphthalene	mg/kg	3,000	**0.054**	**0.03**	**0.0013 J**	**0.042**	0.0082 U	**0.086**	0.0078 U	**0.0035 J**	0.008 U	**9.7**	0.0077 U	**0.01**	N/A	**0.029**	0.0072 U	N/A	**0.01**	**0.02**	**0.22**
2-Methylphenol	mg/kg	41,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 UJ	0.077 UJ	0.072 U	0.078 R	0.078 U	0.074 R	0.072 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	**0.022 J**	0.15 U	0.16 U	0.15 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	0.15 U	0.15 U	0.15 U	**0.025 J**	0.15 UJ	0.14 U	0.16 R	0.16 U	0.15 R	0.14 U
Acenaphthene	mg/kg	45,000	**0.26**	**0.11**	0.0079 U	**0.0086**	0.0082 U	**0.056**	0.0078 U	0.0072 U	0.008 U	**3.5**	0.0077 U	**0.0077**	N/A	**0.028**	0.0072 U	N/A	0.0075 U	0.0074 U	**0.061**
Acenaphthylene	mg/kg	45,000	**0.051**	**0.013**	0.0079 U	**0.016**	0.0082 U	**0.14**	0.0078 U	0.0072 U	0.008 U	**6.1**	**0.02**	**0.042**	N/A	**0.015**	0.0072 U	N/A	**0.0063 J**	0.0074 U	**0.36**
Acetophenone	mg/kg	120,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	**0.057 J**	**0.025 J**	0.072 U	**0.025 J**	0.078 U	0.074 U	0.072 U
Anthracene	mg/kg	230,000	**0.083**	**0.076**	**0.0021 J**	**0.021**	0.0082 U	**0.15**	0.0078 U	**0.011**	0.008 U	**69.5**	**0.016**	**0.082**	N/A	**0.17**	0.0072 U	N/A	**0.014**	**0.0021 J**	**0.32**
Benzaldehyde	mg/kg	120,000	0.074 R	0.075 R	0.081 R	0.074 R	0.081 R	0.074 R	0.075 R	0.071 R	0.085 R	0.075 R	0.076 R	0.073 R	**0.11 J**	**0.018 J**	0.072 R	**0.034 J**	0.078 R	0.074 R	0.072 R
Benzo[a]anthracene	mg/kg	2.9	**0.57**	**0.48**	**0.0043 J**	**0.1**	0.0082 U	**0.56**	**0.0022 J**	**0.041**	0.008 U	**27.8**	**0.053**	**0.32**	N/A	**0.71**	**0.016**	N/A	**0.053**	**0.0097**	**1.1**
Benzo[a]pyrene	mg/kg	0.29	**0.95**	**0.81**	**0.0026 J**	**0.14**	0.0082 U	**0.81**	**0.001 J**	**0.047**	0.008 U	**16.1**	**0.049**	**0.28**	N/A	**0.67**	**0.019**	N/A	**0.047**	**0.0082**	**1.1**
Benzo[b]fluoranthene	mg/kg	2.9	**1.5**	**1.2**	**0.0038 J**	**0.23**	0.0082 U	**2**	**0.0023 J**	**0.075**	0.008 U	**24.9**	**0.08**	**0.61**	N/A	**1.2**	**0.033**	N/A	**0.16**	**0.029**	**1.9**
Benzo[g,h,i]perylene	mg/kg		**0.35**	**0.28**	0.0079 U	**0.12 J**	0.0082 UJ	**0.22**	0.0078 U	**0.023 J**	0.008 UJ	**6.8**	**0.041**	**0.14**	N/A	**0.26**	**0.012**	N/A	**0.023**	**0.0099**	**0.59**
Benzo[k]fluoranthene	mg/kg	29	**0.49**	**0.49**	**0.0023 J**	**0.083**	0.0082 U	**0.53**	**0.00093 J**	**0.041**	0.008 U	**8.6**	**0.03**	**0.19**	N/A	**0.37**	**0.015**	N/A	**0.13**	**0.024**	**0.94**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	**0.13 J**	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 UJ	0.087 U	0.077 UJ	0.072 U	0.078 U	0.078 UJ	0.074 U	0.072 U
Carbazole	mg/kg		**0.058 J**	**0.032 J**	0.081 U	0.074 U	0.081 U	**0.028 J**	0.075 U	0.071 U	0.085 U	**0.054 J**	0.076 U	**0.062 J**	**0.21**	**0.34 J**	**0.022 J**	**0.42**	**0.21**	0.074 U	**0.021 J**
Chrysene	mg/kg	290	**0.57**	**0.46**	**0.0041 J**	**0.15**	0.0082 U	**0.57**	**0.0015 J**	**0.049**	0.008 U	**23.8**	**0.055**	**0.34**	N/A	**0.71**	**0.021**	N/A	**0.077**	**0.014**	**1.4**
Dibenz[a,h]anthracene	mg/kg	0.29	**0.2**	**0.13**	0.0079 U	**0.041**	0.0082 U	**0.092**	0.0078 U	**0.01**	0.008 U	**2.9**	**0.013**	**0.057**	N/A	**0.13**	0.0072 U	N/A	**0.01**	0.0074 U	**0.31**
Diethylphthalate	mg/kg	660,000	0.074 U	**0.044 J**	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 U	0.077 U	0.072 U	0.078 U	0.078 U	0.074 U	0.072 U
Di-n-butylphthalate	mg/kg	82,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 U	**0.041 B**	0.072 U	0.078 U	0.078 U	0.074 U	0.072 U
Di-n-ocytlphthalate	mg/kg	8,200	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 UJ	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 UJ	0.087 U	**0.021 J**	0.072 U	0.078 U	0.078 UJ	0.074 U	0.072 U
Fluoranthene	mg/kg	30,000	**0.66**	**0.51**	**0.0087**	**0.16**	0.0082 U	**0.69**	**0.0027 J**	**0.063**	0.008 U	**147**	**0.1**	**0.56**	N/A	**1.3**	**0.015**	N/A	**0.12**	**0.02**	**2**
Fluorene	mg/kg	30,000	**0.038**	**0.023**	**0.0019 J**	**0.0071 J**	0.0082 U	**0.031**	0.0078 U	**0.0017 J**	0.008 U	**79.1**	**0.0065 J**	**0.013**	N/A	**0.027**	0.0072 U	N/A	**0.0024 J**	**0.00075 J**	**0.076**
Indeno[1,2,3-c,d]pyrene	mg/kg	2.9	**0.45**	**0.32**	0.0079 U	**0.1**	0.0082 U	**0.28**	0.0078 U	**0.026**	0.008 U	**8.1**	**0.04**	**0.15**	N/A	**0.32**	**0.011**	N/A	**0.023**	**0.0086**	**0.79**
Naphthalene	mg/kg	17	**0.14**	**0.057**	**0.003 J**	**0.028**	0.0082 U	**0.25**	**0.0016 J**	**0.0073**	0.008 U	**19.4**	**0.018**	**0.03**	N/A	**0.08**	**0.0023 J**	N/A	**0.015**	**0.026**	**0.36**
N-Nitrosodiphenylamine	mg/kg	470	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	0.087 U	0.077 U	0.072 U	0.078 U	0.078 U	0.074 U	0.072 U
Phenanthrene	mg/kg		**0.27**	**0.24**	**0.0091**	**0.067**	0.0082 U	**0.36**	**0.0019 J**	**0.028**	0.008 U	**287**	**0.06**	**0.23**	N/A	**0.53**	0.0072 U	N/A	**0.045**	**0.031**	**1.2**
Phenol	mg/kg	250,000	0.074 U	0.075 U	0.081 U	0.074 U	0.081 U	0.074 U	0.075 U	0.071 U	0.085 U	0.075 U	0.076 U	0.073 U	**0.03 J**	0.077 UJ	0.072 U	0.078 R	0.078 U	0.074 R	0.072 U
Pyrene	mg/kg	23,000	**0.68**	**0.48**	**0.0067 J**	**0.16**	0.0082 U	**0.62**	**0.0022 J**	**0.058**	0.008 U	**104**	**0.075**	**0.47**	N/A	**1.2**	**0.018**	N/A	**0.099**	**0.015**	**1.6**
PCBs																					
Aroclor 1254	mg/kg	0.97	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	**0.12 J**	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.019 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	**0.027**	N/A	**0.036**	N/A	**0.13**	N/A	**0.01 J**	N/A	0.019 U	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.019 U	N/A
PCBs (total)	mg/kg	0.97	N/A	0.13 U	N/A	**0.036 J**	N/A	**0.13**	N/A	0.13 U	N/A	**0.12 J**	N/A	0.12 U	N/A	N/A	0.13 U	N/A	N/A	0.13 U	N/A
TPH/Oil and Grease																					
Diesel Range Organics	mg/kg	620	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	N/A	N/A	N/A	N/A
Gasoline Range Organics	mg/kg	620	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	N/A	N/A	N/A	N/A
Oil and Grease	mg/kg		**472**	**773**	**285**	**645**	**573**	**1,440**	**516**	**336**	**425**	**840**	**67.2 J**	**366**	N/A	**630**	**254**	N/A	**291**	**542**	**1,110**

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)
A glossary of laboratory flags can be viewed in the attached laboratory reports
*PAH compounds were analyzed via sim

Table 1
Summary of Organics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-025-SB-1	A4-025-SB-10	A4-025-SB-7	A4-026-SB-1	A4-026-SB-10	A4-026-SB-5	A4-027-SB-1	A4-027-SB-10	A4-027-SB-5	A4-028-SB-1	A4-028-SB-5
Volatile Organic Compounds													
1,2-Dichlorobenzene	mg/kg	9,300	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	0.005 U	0.0047 U
2-Butanone (MEK)	mg/kg	190,000	0.0092 U	N/A	0.01 U	**0.0057 J**	N/A	**0.0047 J**	0.0081 U	N/A	**0.0099 J**	**0.0034 J**	0.0095 U
2-Hexanone	mg/kg	1,300	0.0092 U	N/A	0.01 U	0.01 U	N/A	0.01 U	0.0081 U	N/A	0.011 U	**0.024**	0.0095 U
Acetone	mg/kg	670,000	**0.036 J**	N/A	0.01 R	**0.035 J**	N/A	**0.042 J**	**0.014 J**	N/A	**0.074 J**	**0.032 J**	**0.007 J**
Benzene	mg/kg	5.1	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	0.005 U	0.0047 U
Cyclohexane	mg/kg	27,000	0.0092 U	N/A	0.01 U	0.01 U	N/A	**0.00052 J**	0.0081 UJ	N/A	0.011 UJ	0.01 U	0.0095 U
Ethylbenzene	mg/kg	25	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	0.005 U	0.0047 U
Isopropylbenzene	mg/kg	9,900	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	0.005 U	0.0047 U
Methyl Acetate	mg/kg	1,200,000	0.046 R	N/A	0.05 R	0.051 U	N/A	0.052 U	0.041 U	N/A	0.057 U	0.05 U	0.047 U
Methylene Chloride	mg/kg	1,000	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	**0.0038 J**	**0.0039 J**
Toluene	mg/kg	47,000	0.0046 U	N/A	0.005 U	**0.00056 J**	N/A	**0.00081 J**	0.0041 U	N/A	**0.00092 B**	**0.00054 J**	0.0047 U
Trichloroethene	mg/kg	6	0.0046 U	N/A	0.005 U	0.0051 U	N/A	0.0052 U	0.0041 U	N/A	0.0057 U	0.005 U	0.0047 U
Xylenes	mg/kg	2,800	0.014 U	N/A	0.015 U	0.015 U	N/A	0.016 U	0.012 U	N/A	0.017 U	0.015 U	0.014 U
Semi-Volatile Organic Compounds*													
1,1-Biphenyl	mg/kg	200	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	**0.094**	**0.048 J**	**0.038 J**	0.077 U
2,4-Dimethylphenol	mg/kg	16,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	**0.015 J**	0.074 R	0.074 UJ	0.074 R	**0.03 J**	0.077 U
2,6-Dinitrotoluene	mg/kg	1.5	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	0.074 U	0.074 U	0.075 U	0.077 U
2-Chloronaphthalene	mg/kg	60,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	0.074 U	0.074 U	0.075 U	0.077 U
2-Methylnaphthalene	mg/kg	3,000	**0.0032 J**	0.0088 U	**0.071**	**0.072 J**	N/A	**0.0033 J**	**0.0037 J**	N/A	**0.28**	**0.013**	**0.0014 J**
2-Methylphenol	mg/kg	41,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	**0.014 J**	0.074 R	0.074 UJ	0.074 R	0.075 U	0.077 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	N/A	0.16 U	0.14 U	0.16 U	**0.038 J**	0.15 R	0.15 UJ	0.15 R	**0.034 J**	0.15 U
Acenaphthene	mg/kg	45,000	0.007 U	0.0088 U	**0.31**	**0.51**	N/A	**0.0027 J**	0.0071 U	N/A	**0.18**	**0.017**	0.0075 U
Acenaphthylene	mg/kg	45,000	0.007 U	0.0088 U	**0.01**	**0.14 J**	N/A	**0.0042 J**	0.0071 U	N/A	**0.25**	**0.0093**	0.0075 U
Acetophenone	mg/kg	120,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	0.074 U	**0.033 J**	0.075 U	0.077 U
Anthracene	mg/kg	230,000	**0.0087**	0.0088 U	**0.14**	**1.3**	N/A	**0.0086**	**0.0039 J**	N/A	**0.97**	**0.031**	0.0075 U
Benzaldehyde	mg/kg	120,000	0.072 R	N/A	0.082 R	0.072 R	0.082 UJ	0.074 R	0.074 R	0.074 UJ	**0.021 J**	0.075 R	0.077 R
Benzo[a]anthracene	mg/kg	2.9	**0.068**	0.0088 U	**0.96**	**3**	N/A	**0.032**	**0.05**	N/A	**3.1**	**0.14**	0.0075 U
Benzo[a]pyrene	mg/kg	0.29	**0.096**	0.0088 U	**1.7**	**3**	N/A	**0.034**	**0.054**	N/A	**2.8**	**0.18**	0.0075 U
Benzo[b]fluoranthene	mg/kg	2.9	**0.18**	**0.0037 J**	**2.2**	**4.6**	N/A	**0.058**	**0.16**	N/A	**4.7**	**0.3**	**0.0011 J**
Benzo[g,h,i]perylene	mg/kg		**0.037 J**	0.0088 U	**0.54 J**	**0.72**	N/A	**0.0087**	**0.028**	N/A	**0.73**	**0.074**	0.0075 U
Benzo[k]fluoranthene	mg/kg	29	**0.094**	**0.003 J**	**0.89**	**2.1**	N/A	**0.024**	**0.13**	N/A	**1.9**	**0.15**	0.0075 U
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.072 UJ	N/A	0.082 U	0.072 U	0.082 U	0.074 UJ	0.074 UJ	0.074 UJ	0.074 UJ	**0.2 J**	0.077 U
Carbazole	mg/kg		**0.054 J**	N/A	0.082 U	**0.14**	0.082 U	**0.73**	0.074 U	**1.3**	**0.32**	**0.17 J**	0.077 U
Chrysene	mg/kg	290	**0.096**	**0.00083 J**	**0.99**	**2.9**	N/A	**0.034**	**0.064**	N/A	**3.4**	**0.15**	**0.00059 J**
Dibenz[a,h]anthracene	mg/kg	0.29	**0.018**	0.0088 U	**0.32**	**0.45**	N/A	**0.0049 J**	**0.01**	N/A	**0.47**	**0.028**	0.0075 U
Diethylphthalate	mg/kg	660,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	0.074 U	0.074 U	0.075 U	0.077 U
Di-n-butylphthalate	mg/kg	82,000	0.072 U	N/A	0.082 U	**0.03 B**	0.082 U	0.074 U	0.074 U	0.074 U	0.074 U	0.075 U	0.077 U
Di-n-ocytlphthalate	mg/kg	8,200	0.072 UJ	N/A	0.082 U	0.072 U	0.082 U	0.074 UJ	0.074 UJ	0.074 UJ	0.074 UJ	0.075 UJ	0.077 U
Fluoranthene	mg/kg	30,000	**0.091**	**0.0014 J**	**1**	**5.3**	N/A	**0.061**	**0.072**	N/A	**4.4**	**0.16**	**0.00086 J**
Fluorene	mg/kg	30,000	**0.0017 J**	0.0088 U	**0.072**	**0.4**	N/A	**0.0029 J**	**0.00077 J**	N/A	**0.21**	**0.0053 J**	0.0075 U
Indeno[1,2,3-c,d]pyrene	mg/kg	2.9	**0.044**	0.0088 U	**0.72**	**0.92**	N/A	**0.011**	**0.028**	N/A	**0.99**	**0.082**	0.0075 U
Naphthalene	mg/kg	17	**0.0038 B**	0.0088 U	**0.1**	**0.18**	N/A	**0.0098**	**0.004 J**	N/A	**0.69**	**0.016**	**0.0017 J**
N-Nitrosodiphenylamine	mg/kg	470	0.072 U	N/A	0.082 U	0.072 U	0.082 U	0.074 U	0.074 U	0.074 U	0.074 U	**0.037 J**	0.077 U
Phenanthrene	mg/kg		**0.029**	**0.0026 J**	**0.46**	**3.7**	N/A	**0.032**	**0.02**	N/A	**2.6**	**0.076**	**0.0017 J**
Phenol	mg/kg	250,000	0.072 U	N/A	0.082 U	0.072 U	0.082 U	**0.037 J**	0.074 R	0.074 UJ	0.074 R	**0.022 J**	0.077 U
Pyrene	mg/kg	23,000	**0.088**	**0.0019 J**	**0.91**	**4.3**	N/A	**0.048**	**0.065**	N/A	**3.8**	**0.17**	**0.00081 J**
PCBs													
Aroclor 1254	mg/kg	0.97	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.018 U	N/A
Aroclor 1260	mg/kg	0.99	0.018 U	N/A	N/A	0.018 U	N/A	N/A	0.018 U	N/A	N/A	**0.013 J**	N/A
PCBs (total)	mg/kg	0.97	0.12 U	N/A	N/A	0.12 U	N/A	N/A	0.13 U	N/A	N/A	0.12 U	N/A
TPH/Oil and Grease													
Diesel Range Organics	mg/kg	620	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gasoline Range Organics	mg/kg	620	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil and Grease	mg/kg		**412**	N/A	**2,600**	**618**	N/A	**1,040**	**227**	N/A	**1,740**	**587**	**309**

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)
A glossary of laboratory flags can be viewed in the attached laboratory reports
*PAH compounds were analyzed via sim

Data Validation Qualifier Code Glossary

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

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

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

B 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 quantitation/ detection limit may be higher than reported.

NJ This analyte has been ñtentativelyò identified. The numeric value represents its approximate concentration.

Y This analyte coelutes with another target compound on the two chromatographic columns used for analysis.

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

Additional Notes

Bold values indicate a detection.

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

Additional Qualifier Keys can be view in the lab reports.

All Qualifier Keys may not be present in the table.

Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-001-SB-1	A4-001-SB-5	A4-002-SB-1	A4-002-SB-5	A4-003-SB-1	A4-003-SB-7.5	A4-004-SB-1	A4-004-SB-5
Metals										
Aluminum	mg/kg	1,100,000	**41,000**	**15,600**	**27,200**	**36,600**	**9,490**	**6,080**	**9,450**	**13,900**
Antimony	mg/kg	470	2.5 UJ	2.2 UJ	1.8 UJ	3.4 UJ	2 UJ	**5.4 J**	2.2 UJ	3.5 UJ
Arsenic	mg/kg	3	**1.8 B**	1.8 U	**1.2 B**	**2.7 B**	**2.7**	**11.7**	**5.1**	**3.6**
Barium	mg/kg	220,000	**417 J**	**108 J**	**277 J**	**689 J**	**50.8 J**	**83.8 J**	**31.3 J**	**95.6 J**
Beryllium	mg/kg	2,300	**7.3**	**1.7**	**4.7**	**2.8**	**0.17 J**	0.96 U	0.73 U	**0.7 B**
Cadmium	mg/kg	980	**0.34 J**	**0.3 J**	**0.34 J**	**6.3**	**0.44 J**	**0.36 J**	**0.41 J**	**0.43 J**
Chromium	mg/kg	120,000	**32.5**	**17.3**	**27.8**	**73.3**	**913**	**472**	**1,320**	**25.3**
Chromium VI	mg/kg	6.3	1.1 U	1.1 U	1.1 U	1.1 U	**1.1**	1.1 U	**10.3**	1.2 U
Cobalt	mg/kg	350	**1.4 B**	**2.9 B**	**1.3 B**	**30.5**	**1.9 J**	**17.9**	**1.2 B**	**11.2**
Copper	mg/kg	47,000	**7.2 J**	**34.4 J**	**5.9 J**	**30 J**	**34.5 J**	**224 J**	**21.2 J**	**18.2 J**
Iron	mg/kg	820,000	**20,900**	**10,700**	**9,960**	**20,700**	**105,000**	**140,000**	**160,000**	**18,200**
Lead	mg/kg	800	**11.8**	**14.7**	**17.3**	**817**	**13.7**	**84.8**	**1.9**	**92**
Manganese	mg/kg	26,000	**2,940**	**679**	**2,140**	**9,360**	**22,500**	**9,290**	**31,900**	**432**
Mercury	mg/kg	350	0.11 UJ	0.11 UJ	0.1 UJ	0.11 UJ	**0.0082 J**	**0.0061 J**	0.11 UJ	**0.19 J**
Nickel	mg/kg	22,000	**6 J**	**6.1 J**	**4 J**	**14.4 J**	**15.1 J**	**36.4 J**	**22 J**	**12.8 J**
Selenium	mg/kg	5,800	**2.6 J**	3 U	**2.1 J**	4.5 U	**2.3 J**	3.8 U	2.9 U	4.6 U
Silver	mg/kg	5,800	2.5 U	2.2 U	1.8 U	3.4 U	**1.6 J**	2.9 U	**3.1**	3.5 U
Thallium	mg/kg	12	8.2 UJ	7.4 UJ	5.9 UJ	11.2 UJ	6.6 UJ	9.6 UJ	7.3 UJ	11.5 UJ
Vanadium	mg/kg	5,800	**36.2**	**33**	**30.2**	**301**	**400**	**2,140**	**563**	**41.2**
Zinc	mg/kg	350,000	**96**	**76**	**69.5**	**8,500**	**94.3**	**71.6**	**21**	**223**
Other										
Cyanide	mg/kg	150	**0.28 J+**	0.6 U	**0.22 J+**	**0.23 J+**	**0.12 J+**	**0.06 J+**	**0.052 J+**	0.67 U

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
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A glossary of laboratory flags can be viewed in the attached laboratory reports

Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-005-SB-1	A4-005-SB-10	A4-005-SB-5	A4-006-SB-1	A4-006-SB-10	A4-006-SB-6	A4-007-SB-1	A4-007-SB-10
Metals										
Aluminum	mg/kg	1,100,000	**11,400**	N/A	**10,900**	**13,800**	N/A	**17,800**	**19,200**	N/A
Antimony	mg/kg	470	2.4 UJ	N/A	**2.4 J**	2.6 UJ	N/A	3.1 UJ	2 UJ	N/A
Arsenic	mg/kg	3	**2.6 J**	**5.9**	**8.1 J**	**4.3 J**	**10.5**	**4.5 J**	1.7 U	**3.9**
Barium	mg/kg	220,000	**75.8 J**	N/A	**159 J**	**107 J**	N/A	**139 J**	**163**	N/A
Beryllium	mg/kg	2,300	**0.38 B**	N/A	**0.21 B**	**1.4**	N/A	**2.3**	**2.9**	N/A
Cadmium	mg/kg	980	**1.2**	N/A	**4**	**1.1 B**	N/A	**0.6 B**	**0.39 B**	N/A
Chromium	mg/kg	120,000	**1,390**	N/A	**1,580**	**94.5**	N/A	**40.5**	**36.9**	N/A
Chromium VI	mg/kg	6.3	**4.2 J-**	N/A	1.1 UJ	1.1 UJ	N/A	1.1 UJ	1 U	N/A
Cobalt	mg/kg	350	**3.9 B**	N/A	**24.1**	**4.7**	N/A	**4.1 B**	**2 B**	N/A
Copper	mg/kg	47,000	**35.5**	N/A	**155**	**42.3**	N/A	**23.3**	**7.9**	N/A
Iron	mg/kg	820,000	**158,000 J**	N/A	**123,000 J**	**31,100 J**	N/A	**23,600 J**	**16,000**	N/A
Lead	mg/kg	800	**105 J**	N/A	**693 J**	**187 J**	N/A	**42.9 J**	**26.5**	N/A
Manganese	mg/kg	26,000	**30,000 J**	**46.3**	**26,500 J**	**2,050 J**	N/A	**1,330 J**	**2,230**	N/A
Mercury	mg/kg	350	**0.085 J**	N/A	**0.14**	**0.078 J**	N/A	**0.0025 J**	**0.012 J**	N/A
Nickel	mg/kg	22,000	**23.9**	N/A	**33**	**14.2**	N/A	**12.8**	**5.9 B**	N/A
Selenium	mg/kg	5,800	3.2 U	N/A	2.2 U	3.4 U	N/A	4.1 U	2.7 U	N/A
Silver	mg/kg	5,800	**2.7**	N/A	1.6 U	2.6 U	N/A	3.1 U	2 U	N/A
Thallium	mg/kg	12	7.9 U	10.2 U	**13.8**	8.5 U	N/A	**1.6 B**	6.8 U	N/A
Vanadium	mg/kg	5,800	**629 J**	N/A	**5,460 J**	**162 J**	N/A	**46.7 J**	**39.4**	N/A
Zinc	mg/kg	350,000	**350**	N/A	**1,720**	**346**	N/A	**171**	**71.2**	N/A
Other										
Cyanide	mg/kg	150	**1.3**	N/A	**1.6**	**0.3 J**	N/A	**0.6 J**	**0.075 J**	N/A

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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-007-SB-5	A4-008-SB-1	A4-008-SB-10	A4-008-SB-5	A4-009-SB-1	A4-009-SB-5	A4-010-SB-1	A4-010-SB-5
Metals										
Aluminum	mg/kg	1,100,000	**17,400**	**15,100**	N/A	**16,000**	**11,800**	**5,220**	**12,800**	**29,400**
Antimony	mg/kg	470	2.2 UJ	2.1 UJ	N/A	3.3 UJ	3.6 UJ	2.8 UJ	3.4 UJ	2.8 UJ
Arsenic	mg/kg	3	**5**	1.8 U	**12.3**	**3.8**	**4.3**	2.4 U	**5.7**	**2.6**
Barium	mg/kg	220,000	**47.5**	**98.9**	N/A	**72.7**	**69.3**	**16.2**	**62**	**250**
Beryllium	mg/kg	2,300	**1.1**	**1.6**	N/A	**0.82 B**	**0.62 B**	**0.23 B**	**0.71 B**	**3.9**
Cadmium	mg/kg	980	1.1 U	**0.36 B**	N/A	1.7 U	**0.82 B**	1.4 U	**0.28 B**	**0.34 B**
Chromium	mg/kg	120,000	**34.8**	**55**	N/A	**17.4**	**29.8**	**7.6**	**30.5**	**46.3**
Chromium VI	mg/kg	6.3	**0.87 J**	1.1 U	N/A	1.2 U	1.2 U	1.1 U	1.1 U	1.1 U
Cobalt	mg/kg	350	**3.8**	**4.1**	N/A	**5.1 B**	**4.5 B**	**0.76 B**	**6.2**	**3.1 B**
Copper	mg/kg	47,000	**9.6**	**9.1**	N/A	**10.3**	**19**	**3.9 J**	**10.4**	**15.7**
Iron	mg/kg	820,000	**37,200**	**19,900**	N/A	**6,150**	**16,900**	**3,690**	**20,100**	**30,900**
Lead	mg/kg	800	**27.3**	**10.1**	N/A	**12.7**	**53.2**	2.4 U	**15.2**	**10.7**
Manganese	mg/kg	26,000	**48.9**	**1,170**	N/A	**15.6**	**613**	**5.9**	**517**	**2,580**
Mercury	mg/kg	350	**0.055 J**	**0.0057 J**	N/A	**0.025 J**	**0.12**	0.1 U	**0.067 J**	**0.0053 J**
Nickel	mg/kg	22,000	**7.7**	**11.5**	N/A	**13.7**	**13.4**	**2.7 B**	**14.7**	**18.6**
Selenium	mg/kg	5,800	2.9 U	2.8 U	N/A	4.5 U	4.7 U	3.8 U	4.6 U	3.7 U
Silver	mg/kg	5,800	2.2 U	2.1 U	N/A	3.3 U	3.6 U	2.8 U	3.4 U	2.8 U
Thallium	mg/kg	12	7.3 U	7.1 U	N/A	11.2 U	11.9 U	9.5 U	11.4 U	9.3 U
Vanadium	mg/kg	5,800	**97.5**	**72.9**	N/A	**18.3**	**60.5**	**9.5**	**35**	**101**
Zinc	mg/kg	350,000	**29.8**	**97.8**	N/A	**23.6**	**192**	**7.3**	**75.6**	**20.8**
Other										
Cyanide	mg/kg	150	0.73 U	**0.084 J**	N/A	0.65 U	0.59 U	0.59 U	0.66 U	**2.4**

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-011-SB-1	A4-011-SB-5	A4-012-SB-1	A4-012-SB-5	A4-013-SB-1	A4-013-SB-4	A4-014-SB-1	A4-014-SB-10
Metals										
Aluminum	mg/kg	1,100,000	**8,040**	**20,600**	**15,600**	**11,800**	**12,100**	**4,840**	**11,200**	N/A
Antimony	mg/kg	470	3.1 UJ	2.4 UJ	3.1 UJ	2 UJ	3.3 UJ	**7.8 J**	3.1 UJ	N/A
Arsenic	mg/kg	3	**5.9**	**2.8**	**3.7**	**9.4**	**6.2**	**29.4**	**5.2**	**7.1**
Barium	mg/kg	220,000	**41.5 J**	**214 J**	**124**	**173**	**157**	**90.8**	**113**	N/A
Beryllium	mg/kg	2,300	1 U	**1.2 B**	**1.1**	**1**	**1.6**	**0.28 J**	**0.69 J**	N/A
Cadmium	mg/kg	980	**0.7 J**	**0.65 J**	**0.76 B**	**11.7**	**1.4 B**	**33,600**	**2.4**	N/A
Chromium	mg/kg	120,000	**1,810**	**31.3**	**687**	**399**	**89**	**126**	**219**	N/A
Chromium VI	mg/kg	6.3	**15.1**	1.1 U	1 UJ	1.1 UJ	1.1 UJ	1.3 UJ	1.1 UJ	N/A
Cobalt	mg/kg	350	5.2 U	**9.1**	**4.7 B**	**14.2**	**9.5**	**70.9**	**12.7**	N/A
Copper	mg/kg	47,000	**17.5 J**	**72.4 J**	**23.5 J**	**70.7 J**	**49.4 J**	**10,700 J**	**50.3 J**	N/A
Iron	mg/kg	820,000	**177,000**	**25,700**	**79,600**	**73,100**	**38,700**	**255,000**	**43,200**	N/A
Lead	mg/kg	800	**3.4**	**235**	**68**	**228**	**115**	**2,780**	**214**	N/A
Manganese	mg/kg	26,000	**35,800**	**1,370**	**16,100 J**	**9,020 J**	**3,060 J**	**3,580 J**	**3,470 J**	N/A
Mercury	mg/kg	350	0.1 UJ	**0.017 J**	**0.031 J**	**0.054 J**	**0.027 J**	**0.89 J**	**0.082 J**	N/A
Nickel	mg/kg	22,000	**13.8 J**	**14.9 J**	**13**	**35.8**	**24.4**	**213**	**22.9**	N/A
Selenium	mg/kg	5,800	4.1 U	3.1 U	**2.8 B**	2.6 U	4.4 U	3.9 U	4.1 U	N/A
Silver	mg/kg	5,800	**2.9 J**	2.4 U	3.1 U	2 U	3.3 U	**14.3**	3.1 U	N/A
Thallium	mg/kg	12	10.4 UJ	7.8 UJ	10.2 UJ	6.6 UJ	11 UJ	9.7 UJ	10.2 UJ	N/A
Vanadium	mg/kg	5,800	**630**	**121**	**324 J**	**1,060 J**	**228 J**	**106 J**	**558 J**	N/A
Zinc	mg/kg	350,000	**29.8**	**236**	**208**	**1,250**	**308**	**62,400**	**721**	N/A
Other										
Cyanide	mg/kg	150	0.65 U	0.59 U	**0.18 J**	**0.49 J**	**0.28 J**	0.72 U	**0.2 J**	N/A

Detections in bold
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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-014-SB-7	A4-015-SB-1	A4-015-SB-10	A4-015-SB-5	A4-016-SB-1	A4-016-SB-10	A4-016-SB-5	A4-017-SB-1
Metals										
Aluminum	mg/kg	1,100,000	**17,300**	**34,000**	N/A	**16,300**	**21,000**	N/A	**24,000**	**14,600**
Antimony	mg/kg	470	3.5 UJ	2.5 UJ	N/A	3 UJ	3 UJ	N/A	2.1 UJ	2.5 UJ
Arsenic	mg/kg	3	**5.3**	**6.1 J**	**6.7**	**85.5 J**	**9.5**	**8.3**	**9.5**	**5.2 J**
Barium	mg/kg	220,000	**74.5**	**314 J**	N/A	**20.6 J**	**210**	N/A	**308**	**137 J**
Beryllium	mg/kg	2,300	**0.82 J**	**3.1**	N/A	**1.2**	**2.6**	N/A	**3**	**1.3**
Cadmium	mg/kg	980	1.7 U	**1.2 B**	N/A	**0.23 B**	**3.7**	N/A	**1.6**	**0.71 B**
Chromium	mg/kg	120,000	**35.3**	**303**	N/A	**43**	**570**	N/A	**487**	**567**
Chromium VI	mg/kg	6.3	1.3 UJ	1.1 U	N/A	1.2 UJ	1.1 UJ	N/A	1.1 UJ	1.1 U
Cobalt	mg/kg	350	**7.2**	**8.6**	N/A	**4.1 B**	**7.3**	N/A	**6.1**	**7.3**
Copper	mg/kg	47,000	**18.8 J**	**73.5**	N/A	**9.1**	**59.9 J**	N/A	**54.5 J**	**71.1**
Iron	mg/kg	820,000	**19,100**	**102,000 J**	N/A	**73,000 J**	**96,300**	N/A	**118,000**	**150,000 J**
Lead	mg/kg	800	**19.3**	**101 J**	N/A	**17.1 J**	**776**	N/A	**272**	**135 J**
Manganese	mg/kg	26,000	**238 J**	**17,300 J**	N/A	**51.1 J**	**13,600 J**	N/A	**14,100 J**	**16,700 J**
Mercury	mg/kg	350	**0.036 J**	**0.042 J**	N/A	**0.0079 J**	0.11 UJ	N/A	0.11 UJ	**0.042 J**
Nickel	mg/kg	22,000	**15.4**	**46.1**	N/A	**9.6 B**	**21.7**	N/A	**17.7**	**54.6**
Selenium	mg/kg	5,800	4.6 U	**2.9 B**	N/A	4 U	**3 B**	N/A	**3.5**	3.3 U
Silver	mg/kg	5,800	3.5 U	2.5 U	N/A	**0.39 J**	3 U	N/A	2.1 U	2.5 U
Thallium	mg/kg	12	11.6 UJ	8.4 U	N/A	**2.2 B**	9.9 UJ	N/A	7.1 UJ	8.4 U
Vanadium	mg/kg	5,800	**38 J**	**430 J**	N/A	**72.8 J**	**663 J**	N/A	**1,360 J**	**935 J**
Zinc	mg/kg	350,000	**80**	**332**	N/A	**39.8**	**1,180**	N/A	**274**	**211**
Other										
Cyanide	mg/kg	150	0.63 U	**0.86**	N/A	0.71 U	**3.1**	N/A	**0.77**	**0.2 J**

Detections in bold
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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-017-SB-10	A4-017-SB-5	A4-018-SB-1	A4-018-SB-10	A4-018-SB-5	A4-019-SB-1	A4-019-SB-5	A4-020-SB-1
Metals										
Aluminum	mg/kg	1,100,000	N/A	**14,100**	**11,400**	N/A	**17,100**	**6,190**	**10,900**	**7,740**
Antimony	mg/kg	470	N/A	2.6 UJ	**0.97 B**	N/A	2.3 UJ	2 UJ	2.4 UJ	1.7 UJ
Arsenic	mg/kg	3	**11.8**	**6.4 J**	**16.5**	**10.5**	**3.4**	**6.5 J**	**1.8 J**	**5.7**
Barium	mg/kg	220,000	N/A	**32.5 J**	**110**	N/A	**53.1**	**62.5 J**	**40.2 J**	**53.9**
Beryllium	mg/kg	2,300	N/A	**0.87 B**	**2.5**	N/A	**0.8**	**0.61 B**	**0.63 B**	**0.27 B**
Cadmium	mg/kg	980	N/A	1.3 U	**1.4**	N/A	**0.14 B**	**3**	1.2 U	**0.29 B**
Chromium	mg/kg	120,000	N/A	**25.4**	**117**	N/A	**36.1**	**219**	**15.3**	**25.3**
Chromium VI	mg/kg	6.3	N/A	1.2 U	1.1 U	N/A	1.2 U	1.1 U	1.2 U	1.1 U
Cobalt	mg/kg	350	N/A	**4.6**	**17.6**	N/A	**5.7**	**12.3**	**3 B**	**8.4**
Copper	mg/kg	47,000	N/A	**4 B**	**138**	N/A	**13.5**	**119**	**6.8**	**8.1**
Iron	mg/kg	820,000	N/A	**48,700 J**	**259,000**	N/A	**20,000**	**152,000 J**	**14,300 J**	**12,700**
Lead	mg/kg	800	N/A	**15.4 J**	**182**	N/A	**17.7**	**1,010 J**	**13.9 J**	**8.8**
Manganese	mg/kg	26,000	N/A	**47.5 J**	**3,910**	N/A	**37.5**	**5,460 J**	**27.8 J**	**452**
Mercury	mg/kg	350	N/A	**0.013 J**	**0.12**	N/A	**0.0045 J**	**0.84**	**0.0069 J**	**0.0074 J**
Nickel	mg/kg	22,000	N/A	**9.5 B**	**94.2**	N/A	**14.5**	**49.9**	**7.1 B**	**9.1**
Selenium	mg/kg	5,800	N/A	3.5 U	2.7 U	N/A	3 U	2.6 U	3.2 U	2.3 U
Silver	mg/kg	5,800	N/A	**0.29 B**	**3.1**	N/A	2.3 U	**1.1 B**	2.4 U	1.7 U
Thallium	mg/kg	12	N/A	8.7 U	6.9 U	N/A	7.6 U	6.5 U	8 U	5.8 U
Vanadium	mg/kg	5,800	N/A	**62.2 J**	**178**	N/A	**43.6**	**441 J**	**18.5 J**	**26.9**
Zinc	mg/kg	350,000	N/A	**35**	**509**	N/A	**42.8**	**462**	**18.6**	**29.1**
Other										
Cyanide	mg/kg	150	N/A	0.68 U	**0.29 J**	N/A	0.65 U	**0.75**	**0.89**	0.54 U

Detections in bold
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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-020-SB-10	A4-020-SB-5	A4-021-SB-1	A4-021-SB-10	A4-021-SB-5	A4-022-SB-1	A4-022-SB-8	A4-023-SB-1
Metals										
Aluminum	mg/kg	1,100,000	N/A	**13,300**	**17,600**	N/A	**18,700**	**21,100**	**10,100**	**11,500**
Antimony	mg/kg	470	N/A	2.7 UJ	2.9 UJ	N/A	2.4 UJ	3.1 UJ	2.4 UJ	2 UJ
Arsenic	mg/kg	3	**8.4**	**3.1**	**7.2 J**	**11.8**	**4 J**	**2.3 B**	**8.5**	**2.2**
Barium	mg/kg	220,000	N/A	**35.4**	**116 J**	N/A	**53.9 J**	**184**	**157**	**56.5**
Beryllium	mg/kg	2,300	N/A	**0.3 B**	**1.2**	N/A	**0.54 B**	**3.1**	**0.3 J**	**0.5 J**
Cadmium	mg/kg	980	N/A	1.3 U	**1.4 B**	N/A	**0.42 B**	**2.6**	**2.4**	**0.44 B**
Chromium	mg/kg	120,000	N/A	**18.7**	**166**	N/A	**117**	**188**	**1,140**	**1,370**
Chromium VI	mg/kg	6.3	N/A	1.2 U	1.1 U	N/A	1.1 U	1.1 UJ	1.1 UJ	1.1 UJ
Cobalt	mg/kg	350	N/A	**2.6 B**	**10**	N/A	**6.3**	**4.8 B**	**12.1**	**0.79 J**
Copper	mg/kg	47,000	N/A	**6.4**	**46.1**	N/A	**15.3**	**29.5 J**	**99.1 J**	**16.4 J**
Iron	mg/kg	820,000	N/A	**12,800**	**56,200 J**	N/A	**27,100 J**	**35,400**	**138,000**	**155,000**
Lead	mg/kg	800	N/A	**7.5**	**140 J**	N/A	**28.3 J**	**89.7**	**123**	**2.2**
Manganese	mg/kg	26,000	N/A	**44.3**	**5,060 J**	N/A	**4,040 J**	**5,030 J**	**31,300 J**	**33,700 J**
Mercury	mg/kg	350	N/A	**0.04 J**	**0.077 J**	N/A	**0.081 J**	0.1 UJ	**0.0097 J**	0.1 UJ
Nickel	mg/kg	22,000	N/A	**8 B**	**25.2**	N/A	**16.7**	**14.6**	**39.7**	**13.5**
Selenium	mg/kg	5,800	N/A	3.5 U	3.8 U	N/A	3.2 U	4.1 U	3.3 U	**2.1 B**
Silver	mg/kg	5,800	N/A	2.7 U	2.9 U	N/A	2.4 U	3.1 U	2.4 U	**1 B**
Thallium	mg/kg	12	N/A	8.9 U	9.6 U	N/A	8.1 U	10.3 UJ	8.1 UJ	6.5 UJ
Vanadium	mg/kg	5,800	N/A	**27.5**	**411 J**	N/A	**397 J**	**179 J**	**4,890 J**	**623 J**
Zinc	mg/kg	350,000	N/A	**19.1**	**439**	N/A	**127**	**249**	**213**	**13.1**
Other										
Cyanide	mg/kg	150	N/A	0.73 U	0.64 U	N/A	**0.72**	**0.5 J**	**0.37 J**	**0.039 J**

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)
A glossary of laboratory flags can be viewed in the attached laboratory reports

Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-023-SB-5	A4-024-SB-1	A4-024-SB-5	A4-025-SB-1	A4-025-SB-7	A4-026-SB-1	A4-026-SB-10	A4-026-SB-5
Metals										
Aluminum	mg/kg	1,100,000	**42,300**	**12,600**	**11,000**	**35,300**	**14,300**	**16,700**	N/A	**19,500**
Antimony	mg/kg	470	2.1 UJ	2.9 UJ	**2.2 B**	2.9 UJ	2.5 UJ	2.7 UJ	N/A	2.1 UJ
Arsenic	mg/kg	3	**3.3**	**2.8**	**10.1**	2.4 U	**2.7**	**2.9 J**	**4.7**	**4.3 J**
Barium	mg/kg	220,000	**339**	**33.2 J**	**185 J**	**328**	**129**	**154 J**	N/A	**98.2 J**
Beryllium	mg/kg	2,300	**6.5**	0.96 U	**0.9 B**	**5.8**	**1.8**	**2**	N/A	**1**
Cadmium	mg/kg	980	**5.6**	**0.34 J**	**4.4**	**0.36 B**	**0.35 B**	**1.1 B**	N/A	**0.46 B**
Chromium	mg/kg	120,000	**17.4**	**1,600**	**130**	**20.3**	**511**	**184**	N/A	**25.4**
Chromium VI	mg/kg	6.3	1.1 UJ	**9.6**	1.1 U	1.1 U	1.1 U	1.1 U	N/A	1.2 U
Cobalt	mg/kg	350	**3.2 B**	4.8 U	**9.2**	**1.6 J**	**3.9 J**	**3.9 B**	N/A	**6.7**
Copper	mg/kg	47,000	**24.5 J**	**16.3 J**	**134 J**	**8.9**	**46.7**	**27**	N/A	**14.8**
Iron	mg/kg	820,000	**19,000**	**170,000**	**53,100**	**16,500**	**71,100**	**44,600 J**	N/A	**20,700 J**
Lead	mg/kg	800	**69.3**	2.4 U	**350**	**3.2**	**188**	**121 J**	N/A	**32.8 J**
Manganese	mg/kg	26,000	**2,530 J**	**30,600**	**3,940**	**2,240**	**6,580**	**5,740 J**	N/A	**862 J**
Mercury	mg/kg	350	0.11 UJ	0.11 UJ	**0.075 J**	0.1 U	**0.027 J**	0.099 U	N/A	**0.18**
Nickel	mg/kg	22,000	**7.5**	**12.5 J**	**26.2 J**	**5.7 B**	**27.1**	**15.5**	N/A	**12.7**
Selenium	mg/kg	5,800	**3.5**	3.8 U	4.5 U	**2.1 B**	3.4 U	3.6 U	N/A	2.8 U
Silver	mg/kg	5,800	2.1 U	**1.5 J**	3.4 U	2.9 U	2.5 U	2.7 U	N/A	2.1 U
Thallium	mg/kg	12	7 UJ	9.6 UJ	11.2 UJ	9.6 U	8.4 U	9.1 U	N/A	7.1 U
Vanadium	mg/kg	5,800	**27.2 J**	**1,240**	**687**	**16**	**357**	**460 J**	N/A	**42.6 J**
Zinc	mg/kg	350,000	**3,150**	**27.4**	**1,620**	**21.1**	**109**	**298**	N/A	**184**
Other										
Cyanide	mg/kg	150	**2**	0.57 U	**0.72 J+**	**1.3**	**0.91**	**0.54 J**	N/A	0.66 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)
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Table 2
Summary of Inorganics Detected in Soil
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-027-SB-1	A4-027-SB-5	A4-028-SB-1	A4-028-SB-5
Metals						
Aluminum	mg/kg	1,100,000	**16,200**	**10,000**	**28,600**	**14,100**
Antimony	mg/kg	470	2 UJ	2.8 UJ	2.7 UJ	2.9 UJ
Arsenic	mg/kg	3	**1.4 J**	**25.5**	2.2 UJ	**2.4 J**
Barium	mg/kg	220,000	**125**	**202**	**348 J**	**40.6 J**
Beryllium	mg/kg	2,300	**1.9**	**0.73 J**	**5.6**	**0.64 B**
Cadmium	mg/kg	980	**0.26 B**	**8.9**	**0.54 B**	1.5 U
Chromium	mg/kg	120,000	**1,070**	**603**	**79.8**	**45.7**
Chromium VI	mg/kg	6.3	1.1 UJ	1.1 UJ	1.1 U	1.1 U
Cobalt	mg/kg	350	**0.93 B**	**26.9**	**2.9 B**	**3.7 B**
Copper	mg/kg	47,000	**17 J**	**182 J**	**25.4**	**6.5**
Iron	mg/kg	820,000	**145,000**	**153,000**	**34,300 J**	**26,900 J**
Lead	mg/kg	800	**2**	**1,500**	**79 J**	**12.7 J**
Manganese	mg/kg	26,000	**25,800 J**	**20,700 J**	**4,780 J**	**446 J**
Mercury	mg/kg	350	0.1 UJ	**0.61 J**	0.1 U	**0.0065 J**
Nickel	mg/kg	22,000	**12.6**	**73.2**	**11.1**	**8.5 B**
Selenium	mg/kg	5,800	**1.9 J**	3.7 U	3.5 U	3.9 U
Silver	mg/kg	5,800	**0.81 B**	**2.4 B**	2.7 U	2.9 U
Thallium	mg/kg	12	6.6 UJ	9.4 UJ	8.9 U	9.8 U
Vanadium	mg/kg	5,800	**500 J**	**1,650 J**	**127 J**	**81.5 J**
Zinc	mg/kg	350,000	**25.1**	**3,720**	**83.1**	**26.7**
Other						
Cyanide	mg/kg	150	0.52 U	**4.7**	**0.24 J**	0.62 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)
A glossary of laboratory flags can be viewed in the attached laboratory reports

Data Validation Qualifier Code Glossary

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

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

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NJ This analyte has been ñtentativelyò identified. The numeric value represents its approximate concentration.

Y This analyte coelutes with another target compound on the two chromatographic columns used for analysis.

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

Additional Notes

Bold values indicate a detection.

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

Additional Qualifier Keys can be view in the lab reports.

All Qualifier Keys may not be present in the table.

Table 3
Summary of Organics Detected in Groundwater
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-001-PZ	A4-005-PZ	A4-007-PZ	A4-010-PZ	A4-012-PZ	A4-013-PZ	A4-014-PZ	A4-019-PZ
Volatile Organic Compounds										
Benzene	Õg/L	5	1 U	1 U	1 U	1 U	**2.1**	1 U	1 U	1 U
Ethhlbenzene	Õg/L	700	1 U	1 U	1 U	1 U	**0.56 J**	1 U	1 U	1 U
Toulene	Õg/L	1,000	1 U	1 U	1 U	1 U	**1.6**	**0.31 J**	1 U	1 U
Xylene	Õg/L	10,000	3 U	3 U	3 U	3 U	**3.6**	3 U	3 U	3 U
Semi-Volatile Organic Compounds *										
1,1-Biphenyl	Õg/L	0.83	1 U	1 U	1 U	1 U	**0.39 J**	1 U	1 U	1 U
1,4-Dioxane	Õg/L	0.46	0.1 UJ	**2.1**	**0.025 B**	**19.2**	0.1 U	0.1 U	**0.069 B**	0.1 U
2,3,4,6-Tetrachlorophenol	Õg/L	240	1 U	1 U	1 U	1 U	**0.33 J**	1 U	1 U	1 U
2,4-Dimethylphenol	Õg/L	360	1 U	1 U	1 U	1 U	**1.2**	1 U	1 U	1 U
2-Methylnaphthalene	Õg/L	36	0.1 U	0.1 U	0.1 U	0.1 U	**2.9**	**0.064 J**	0.1 U	0.1 U
2-Methylphenol	Õg/L	930	1 U	1 U	1 U	1 U	**0.3 J**	1 U	1 U	1 U
3&4-Methylphenol(m&p Cresol)	Õg/L	930	2.1 U	2 U	2 U	2 U	**1.4 J**	2 U	2 U	2 U
Acenaphthene	Õg/L	530	0.1 U	0.1 U	0.1 U	0.1 U	**2.3**	**0.056 J**	0.1 U	0.1 U
Acenaphthylene	Õg/L	530	0.1 U	0.1 U	0.1 U	0.1 U	**0.41**	**0.02 J**	0.1 U	0.1 U
Anthracene	Õg/L	1,800	**0.018 J**	0.1 U	0.1 U	0.1 U	**0.6**	**0.057 J**	0.1 U	0.1 U
Benzo[a]anthracene	Õg/L	0.012	**0.021 J**	0.1 U	0.1 U	0.1 U	**0.067 J**	**0.024 J**	**0.024 J**	0.1 U
Benzo[a]pyrene	Õg/L	0.2	0.1 U	0.1 U	0.1 U	0.1 U	**0.0082 J**	**0.0097 J**	**0.0098 J**	0.1 U
Benzo[b]fluoranthene	Õg/L	0.034	0.1 U	0.1 U	0.1 U	0.1 U	**0.026 J**	0.1 U	**0.016 J**	0.1 U
Benzo[k]fluoranthene	Õg/L	0.34	0.1 U	0.1 U	0.1 U	0.1 U	**0.023 J**	0.1 U	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	Õg/L	6	**0.22 J**	1 U	1 U	1 U	**0.26 J**	1 U	1 U	1 U
Carbazole	Õg/L		1 U	1 U	1 U	1 U	**4.7**	1 U	1 U	1 U
Chrysene	Õg/L	3.4	**0.01 J**	0.1 U	0.1 U	0.1 U	**0.067 J**	**0.011 J**	**0.016 J**	0.1 U
Fluoranthene	Õg/L	800	**0.024 J**	0.1 U	0.1 U	0.1 U	**0.77**	**0.054 J**	**0.029 J**	0.1 U
Fluorene	Õg/L	290	**0.018 J**	0.1 U	0.1 U	0.1 U	**2.3**	**0.085 J**	0.1 U	0.1 U
Naphthalene	Õg/L	0.17	**0.063 J**	**0.038 B**	**0.064 B**	**0.061 B**	**63.9**	**0.28**	**0.034 B**	**0.028 B**
Pentachlorophenol	Õg/L	1	2.6 U	2.5 U	2.5 U	2.5 U	**2.6**	2.5 U	2.5 U	2.5 U
Phenanthrene	Õg/L		**0.044 J**	0.1 U	0.1 U	0.1 U	**4.4**	**0.17**	**0.032 J**	0.1 U
Pyrene	Õg/L	120	**0.018 J**	0.1 U	0.1 U	0.1 U	**0.51**	**0.047 J**	**0.024 J**	0.1 U
TPH/Oil and Grease										
Gasoline Range Organics	Õg/L	47	N/A	N/A	**1,560 J**	N/A	N/A	N/A	N/A	N/A
Oil and Grease	Õg/L		4,850 U	**1,400 J**	**1,500 J**	4,870 U	4,820 U	4,820 U	4,850 U	4,850 U

Detections in bold
N/A indicates that the parameter was not analyzed for this sample
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*PAH compounds were analyzed via sim

Data Validation Qualifier Code Glossary

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Additional Notes

Bold values indicate a detection.

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Additional Qualifier Keys can be view in the lab reports.

All Qualifier Keys may not be present in the table.

Table 4
Summary of Inorganics Detected in Groundwater
Parcel A4 - Development Area
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	A4-001-PZ	A4-005-PZ	A4-007-PZ	A4-010-PZ	A4-012-PZ	A4-013-PZ	A4-014-PZ	A4-019-PZ
Metals										
Aluminum, Dissolved	Õg/L	20,000	**38.6 B**	50 U	50 U	**17.9 B**	**677**	**31.3 J**	**178**	50 U
Arsenic, Dissolved	Õg/L	10	5 U	5 U	5 U	5 U	**5**	5 U	5 U	5 U
Barium, Dissolved	Õg/L	2,000	**37.8**	**91**	**89**	**146**	**38.1**	**29.2**	**19.4**	**107**
Beryllium, Dissolved	Õg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	**0.98 J**	1 U
Cadmium, Dissolved	Õg/L	5	3 U	3 U	3 U	3 U	3 U	3 U	**2.5 J**	3 U
Chromium, Dissolved	Õg/L	100	**2.4 B**	**1 B**	**0.81 B**	**1.2 B**	**1 B**	**0.91 B**	**1.9 B**	5 U
Cobalt, Dissolved	Õg/L	6	5 U	5 U	5 U	**41.8**	5 U	5 U	**243**	5 U
Copper, Dissolved	Õg/L	1,300	**4.7 B**	**2.2 B**	**1.8 B**	**2 B**	**1.5 B**	5 U	5 U	5 U
Iron, Dissolved	Õg/L	14,000	**3,870**	**66,200**	**61,200**	**72,000**	**22.3 B**	**326**	**9,570**	**57,800**
Manganese, Dissolved	Õg/L	430	**458**	**2,930**	**3,270**	**3,060**	**0.88 B**	**282**	**4,050**	**2,040**
Nickel, Dissolved	Õg/L	390	**0.89 J**	**1.3 J**	10 U	**41.4**	10 U	10 U	**278**	**1 B**
Selenium, Dissolved	Õg/L	50	8 U	8 U	8 U	8 U	**7.2 B**	8 U	8 U	8 U
Silver, Dissolved	Õg/L	94	6 U	**0.59 J**	**0.78 J**	6 U	6 U	6 U	6 U	**0.99 J**
Vanadium, Dissolved	Õg/L	86	**45.2**	5 U	5 U	**1.2 B**	**630**	**63.7**	**1.6 B**	**0.81 B**
Zinc, Dissolved	Õg/L	6,000	**8.3 B**	**11.2**	**0.89 B**	**59.8**	10 U	10 U	**307**	**0.96 J**
Other										
Cyanide	Õg/L	200	10 U	10 U	10 U	10 U	**20.6**	**4.9 J**	10 U	10 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
A glossary of laboratory flags can be viewed in the attached laboratory reports

Data Validation Qualifier Code Glossary

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Y This analyte coelutes with another target compound on the two chromatographic columns used for analysis.

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

Additional Notes

Bold values indicate a detection.

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

Additional Qualifier Keys can be view in the lab reports.

All Qualifier Keys may not be present in the table.

Table 5 - Parcel A4
Development Area
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Arithmetic Mean (mg/kg)
Site-Wide (43.30 ac.)	Surface	124.80
	Sub-Surface	275.27

Table 6 - Parcel A4
Development Area EPCs - Surface Soils

Parameter	PAL (mg/kg)	EPC Type Site-Wide Exposure Unit	EPC Site-Wide Exposure Unit (mg/kg)
Arsenic	3.00	95% GROS Adjusted Gamma UCL	**5.66**
Cadmium	980	95% Chebyshev (Mean, Sd) UCL	**1.75**
Chromium VI	6.30	95% KM (t) UCL	3.49
Manganese	26,000	95% H-UCL	29,715
Thallium	12.0	N/A	N/A
Benzo[a]anthracene	2.90	97.5% Chebyshev (Mean, Sd) UCL	7.59
Benzo[a]pyrene	0.29	99% KM (Chebyshev) UCL	**6.76**
Benzo[b]fluoranthene	2.90	95% Chebyshev (Mean, Sd) UCL	5.54
Dibenz[a,h]anthracene	0.29	99% KM (Chebyshev) UCL	**1.22**
Indeno[1,2,3-c,d]pyrene	2.90	99% KM (Chebyshev) UCL	3.37
Naphthalene	17.0	99% KM (Chebyshev) UCL	7.63

Bold indicates UCL higher than PAL
N/A indicates no detections

Table 7 - Parcel A4
Development Area EPCs - Sub-Surface Soils

Parameter	PAL (mg/kg)	EPC Type Site-Wide Exposure Unit	EPC Site-Wide Exposure Unit (mg/kg)
Arsenic	3.00	95% KM (Chebyshev) UCL	**18.5**
Cadmium	980	99% KM (Chebyshev) UCL	**13,230**
Chromium VI	6.30	Maximum Result	0.87
Manganese	26,000	95% Adjusted Gamma UCL	9,901
Thallium	12.0	95% KM (t) UCL	3.25
Benzo[a]anthracene	2.90	95% KM (Chebyshev) UCL	1.40
Benzo[a]pyrene	0.29	95% KM (Chebyshev) UCL	**1.69**
Benzo[b]fluoranthene	2.90	95% KM (Chebyshev) UCL	2.56
Dibenz[a,h]anthracene	0.29	95% GROS Adjusted Gamma UCL	**0.40**
Indeno[1,2,3-c,d]pyrene	2.90	95% GROS Adjusted Gamma UCL	1.09
Naphthalene	17.0	95% KM (Chebyshev) UCL	0.22

Bold indicates UCL higher than PAL

Table 8 - Parcel A4
Development Area Surface Soils
Risk Ratios

Parameter	Target Organs	Site-Wide Exposure Unit (43.30 ac.)				
		EPC (mg/kg)	Composite Worker			
			PRGs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	5.66	3.0	480	1.89E-06	0.01
Cadmium	**Urinary**	1.75	9300.0	980		0.002
Chromium VI	**Respiratory**	3.49	6.3	3500		0.001
Manganese	**Nervous**	29,715		26,000		1
Thallium	**None Specified**	N/A		12		
Benzo(a)anthracene	**None Specified**	7.59	2.9		2.62E-06	
Benzo(a)pyrene	**None Specified**	6.76	0.29		2.33E-05	
Benzo(b)fluoranthene	**None Specified**	5.54	2.9		1.91E-06	
Dibenz(a,h)anthracene	**None Specified**	1.22	0.29		4.22E-06	
Indeno(1,2,3-cd)pyrene	**None Specified**	3.37	2.9		1.16E-06	
Naphthalene	**Nervous; Respiratory**	7.63	17	590	4.49E-07	0.01
					4E-05	↓

Total HI	Cardiovascular	0.01
	Dermal	0.01
	Urinary	0.002
	Respiratory	0.01
	Nervous	1
	None Specified	0

N/A indicates not detections
PRGs were obtained from the EPA Regional Screening Levels at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

Table 9 - Parcel A4
Development Area Sub-Surface Soils
Risk Ratios

Parameter	Target Organs	Site-Wide Exposure Unit (43.30 ac.)				
		EPC (mg/kg)	Construction Worker			
			PRGs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	18.5	23.6	140	7.85E-07	0.1
Cadmium	**Urinary**	13,230	9620	267	1.38E-06	50
Chromium VI	**Respiratory**	**0.87**	40	1660	2.18E-08	0.001
Manganese	**Nervous**	9,901		4,830		2
Thallium	**None Specified**	3.25		13.6		0.2
Benzo(a)anthracene	**None Specified**	1.40	23.5		5.94E-08	
Benzo(a)pyrene	**None Specified**	1.69	2.4		7.05E-07	
Benzo(b)fluoranthene	**None Specified**	2.56	24		1.07E-07	
Dibenz(a,h)anthracene	**None Specified**	0.40	2.4		1.65E-07	
Indeno(1,2,3-cd)pyrene	**None Specified**	1.09	24		4.53E-08	
Naphthalene	**Nervous; Respiratory**	0.22	42.6	59.5	5.27E-09	0.004
					3E-06	↓

Total HI	Cardiovascular	0.1
	Dermal	0.1
	Urinary	50
	Respiratory	0.004
	Nervous	2
	None Specified	0.2

Bold indicates max value

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

Construction worker parameters:

	Site-Wide
Areal Extent of Dozing (ac)	43
Areal Extent of Excavation (m2)	4,000
Areal Extent of Grading (ac)	43
Areal Extent of Tilling (ac)	0
Blade Lengths (m)	2
Times Dozed/Graded	1
Average Excavation Depth (m)	3
Acres (ac)	43

Table 10
Vapor Intrusion Criteria Comparison

Sample Location	Parameter	Result (ug/L)	Final Flag	Target Groundwater Concentration (ug/L) TCR=1E-05 or THQ=1	Exceeds Criteria	Comparison = Result / Target	Toxicity Type
A4-012-PZ	Cyanide	20.6		3.5	YES	5.89	NC
A4-013-PZ	Cyanide	4.9	J	3.5	YES	1.40	NC

NC indicates non-carcinogenic
A glossary of laboratory flags can be viewed in the attached laboratory reports

Table 11
Cumulative Vapor Intrusion Criteria Comparison

Parameter	Type	Organ Systems	A4-001-PZ	A4-005-PZ	A4-007-PZ	A4-010-PZ	A4-012-PZ	A4-013-PZ	A4-014-PZ	A4-019-PZ
Cancerous Risk										
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	1.6E-10	1.9E-12	1.5E-09	0	0	5.3E-12	0
Naphthalene	SVOC	Nervous; Respiratory	3.2E-09	1.9E-09	3.2E-09	3.05E-09	3.2E-06	1.4E-08	1.7E-09	1.4E-09
Benzene	VOC	Immune	0	0	0	0	3.04E-07	0	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	3.7E-08	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			3E-09	2E-09	3E-09	5E-09	4E-06	1E-08	2E-09	1E-09
Non-Cancerous Risk										
Cyanide	Other	None Specified	0	0	0	0	5.9	1.4	0	0
Cumulative Vapor Intrusion - Target Hazard Index =			0	0	0	0	5.9	1.4	0	0

Values highlights in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1 E-05
THI > 1

APPENDIX A

TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

October 7, 2016

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review for Parcel A-4

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). Parcel A-4 is part of the acreage that remains subject to the Multimedia Consent Decree between Bethlehem Steel Corporation, the United States Environmental Protection Agency (EPA), and the Department (effective October 8, 1997) as amended.

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 A-4 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

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

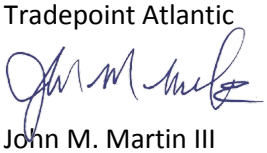
such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of 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.

Sincerely,
Tradepoint Atlantic



John M. Martin III
Development Director

APPENDIX B

ARM Group Inc.
Earth Resource Engineers and Consultants

April 13, 2015

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Boulevard.
Baltimore, Maryland 21230-1719

Re: Building Occupancy Assessment
New Cold Mill Complex
Sparrows Point Terminal Property
Sparrows Point, Maryland
ARM Project M14152

Dear Ms. Brown:

ARM Group, Inc. (ARM), on behalf of Enviro Analytics Group (EAG), recently com pleted a Building Occupancy Assessment (BOA) of the New Cold Mill Com plex (NCMC) located on the Sparrows Point Term inal, LLC (SPT) property, in Sparrows Point, Maryland. The BOA was completed in accordance with the MDE-appro ved Work Plan dated March 10, 2015. As SPT i s seeking to put the NCMC back into commercial us e, the BOA was perform ed to verify that the current conditions within and below the NCMC would not pose a poten tial unacceptable risk to commercial workers occupying the NCMC.

The NCMC is located south of Bethlehem Boulevard on the northwest portion of the Sparrows Point Terminal property (the Site). The southeastern portion of the building consists of primarily warehouse space, while the rem ainder of the bu ilding, aside from a s mall area used as office space, was used for the production of light, flat-rolled sheet steel. The area immediately surrounding the building is paved with asphalt or concrete. The anticipated use of the NCMC would be warehouse/m anufacturing/logistics with workers utilizing the warehouse and office space. The exterior of the building would be used only for worker parking and truck traffic.

Background

The fully-automated NCMC produced light, flat-ro lled sheet steel from hot-rolled steel; which was supplied from Sparrows Point's hot strip mill. The cold-rolled products from Sparrows Point were used in containers, tubing, machinery, stor age tanks, autom otive parts, m etal furniture, electrical lighting equipment and hardware.

9175 Guilford Road • Suite 310 • Columbia, MD • 21046
voice: (410) 290-7775 • fax: (410) 290-7776 • e-mail: info@armgroup.net

The NCMC, which replaced the old cold mill, housed an in-line continuous pickler, which cleaned steel prior to rolling. The pickler was linked to a sheet steel cold reduction section that consisted of a five-stand tandem mill. Additionally, the NCMC contained a hydrogen batch annealing facility, a combination skin pass mill and tension leveling line, a coil build-up and inspection line, a packaging line, cranes, storage areas and offices.

According to the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants, dated May 19, 2014, no recognized environmental conditions were identified directly associated with the NCMC. Based on conversations with Weaver Boos consultants, while petroleum products in metal secondary containment and petroleum /chemical storage containers were observed, they and their secondary containment appeared to be in good condition during their site visit and were therefore not identified as recognized environmental conditions.

As part of the Work Plan development process, ARM and EAG conducted a walkthrough inspection of the NCMC on February 13, 2015. During the walk through inspection ARM observed the NCMC to be inactive, and the equipment within the NCMC being decommissioned and prepared for removal from the property.

The following observations of petroleum use were made during the inspection:

- An oil skimmer associated with the cooling water sumps was present along the northern wall of the complex;
- an air compressor room was present in the northwest corner of the building with oil stained floors and floor drains;
- a bulk oil storage room, located south of the compressor room, contained two large tanks surrounded by concrete containment; and
- multiple collection trenches and depressed floor areas throughout the NCMC were noted to contain what appeared to be oil or hydraulic fluid.

Areas of interest observed during the walkthrough and subsequently targeted by the sub-slab soil gas sampling, are provided on **Figure 1** (attached), and the sub-slab soil gas sample locations are provided on **Figure 2** (attached).

Soil Gas Investigation

To determine if historical on-site activities have negatively impacted the soil or groundwater beneath the NCMC, and to determine if there is a potentially unacceptable risk associated with the vapor intrusion to indoor air risk pathway, a total of 19 sub-slab soil gas samples were

collected utilizing temporary soil gas monitoring probes at each of the following locations (which are also provided on **Figure 2**):

- one sample from within the Oil Compressor Room;
- one sample from within the Bulk Oil Storage Room;
- one sample adjacent to the oil skimmer associated with the cooling water sumps along the northern wall of the complex;
- multiple samples associated with the collection trenches and depressed floor areas observed throughout the NCMC where oil or hydraulic fluid were noted; and
- multiple samples throughout the remainder of the building; which were collected to provide an overall sample density of one sample per 40,000 square feet.

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

Prior to sampling, a syringe was attached to the three-way valve and three purge volumes of air were removed. After the probe had been purged of any ambient air, an evacuated stainless steel canister (summa canisters) with a flow restrictor set for a 24-hour intake time was attached to the tubing. The soil gas sample was then collected over a period of twenty-four (24) hours. At the completion of the sampling period, the valve of the summa canister was closed, and an identification tag was attached to the canister. The probes were then removed, the borehole filled, and the surface repaired.

Laboratory Analysis

EAG contracted Pace Analytical Services, Inc. (PACE) of Greensburg, Pennsylvania to perform the laboratory analysis for this project. The sub-slab soil gas samples were analyzed for Volatile Organic Compounds (VOCs) via USEPA Method TO-15. All sub-slab soil gas samples that were submitted to the laboratory were accompanied by a Chain of Custody (CoC) form.

The laboratory results for the detected compounds have been summarized on **Table 1** (attached), and compared to the MDE Tier 1 and Tier 2 Commercial Target Soil Gas Levels provided on ñTable 2 ï Commercial Ambient Airò from the MDEôs Vapor Intrusion Fact Sheet (September 2012). The laboratory reports showing results for all analyses have been included as **Attachment 1**.

Data Validation

The data provided in this report has not undergone a full EPA level 2B verification/validation review. Once the Data Validation Report (DVR) is provided to ARM, this report will be appended**.**

Summary of Results

As provided on **Table 1**:

- there were no exceedances of the MDEôs Tier 1 or Tier 2 Commercial Target Soil Gas Levels identified in any of the sub-slab soil gas samples submitted for analysis;
- detectable but insignificant levels of petroleum hydrocarbon vapors (e.g. BTEX) were identified in each sample submitted for analysis; and
- detectable but insignificant levels of acetone, 2-butanone (MEK), carbon disulfide and chloroform, which are all common laboratory contaminants, were identified in each sample submitted for analysis.

Conclusions

The objective of this Building Occupancy Assessment (BOA) was to evaluate the potential for current conditions within and below the New Cold Mill Complex (NCMC) to cause an unacceptable risk to commercial workers occupying the NCMC. The anticipated use of the NCMC would be warehouse/manufacturing/logistics with workers utilizing the warehouse space and office space. The exterior of the building would be used only for worker parking and truck traffic.

Areas outside of the building to be used by commercial workers for parking, and ingress and egress to the building are paved with asphalt and concrete. Therefore, direct contact with the soil outside of the building, and potential exposure by dermal contact or incidental ingestion or by inhalation of vapors in an excavation, are not pathways of concern.

The building is served by public water and there is no groundwater use on site. Therefore, exposure to groundwater is not a potential concern.

Compounds identified in the sub-slab soil gas sam ples collected from the locations identified on **Figure 1** were all belo w the MDEôs Tier 1 and Ti er 2 Commercial Target Soil Gas Levels; therefore, there is not an unacceptable risk to the health of a commercial worker.

As no unacceptable risk to hum an health was identified during this BOA, the current conditions within and below the NCMC wo uld not pos e a poten tial unacceptable risk to commercial workers.

We therefore believe the building is suitable for immediate occupancy.

If you have any questions or require additional information please do not hesitate to contact the undersigned at 410-290-7775. Thank you very much.

Respectfully Submitted,

ARM Group Inc.

Eric S. Magdar
Senior Geologist

Attachments: Figure 1
Figure 2
Table 1
Attachm ent 1

cc: Andrew Fan, EPA Region III

FIGURES

Figure **1**	New Cold Mill Complex Site Drawings March 30, 2015	EnviroAnalytics Group Building Occupancy Assessment	Project No.: M14152 designed ESM	ARM Group Inc. Earth Resource Engineers and Consultants
		Sparrows Point Baltimore County, MD	checked ESM drawn SCK	

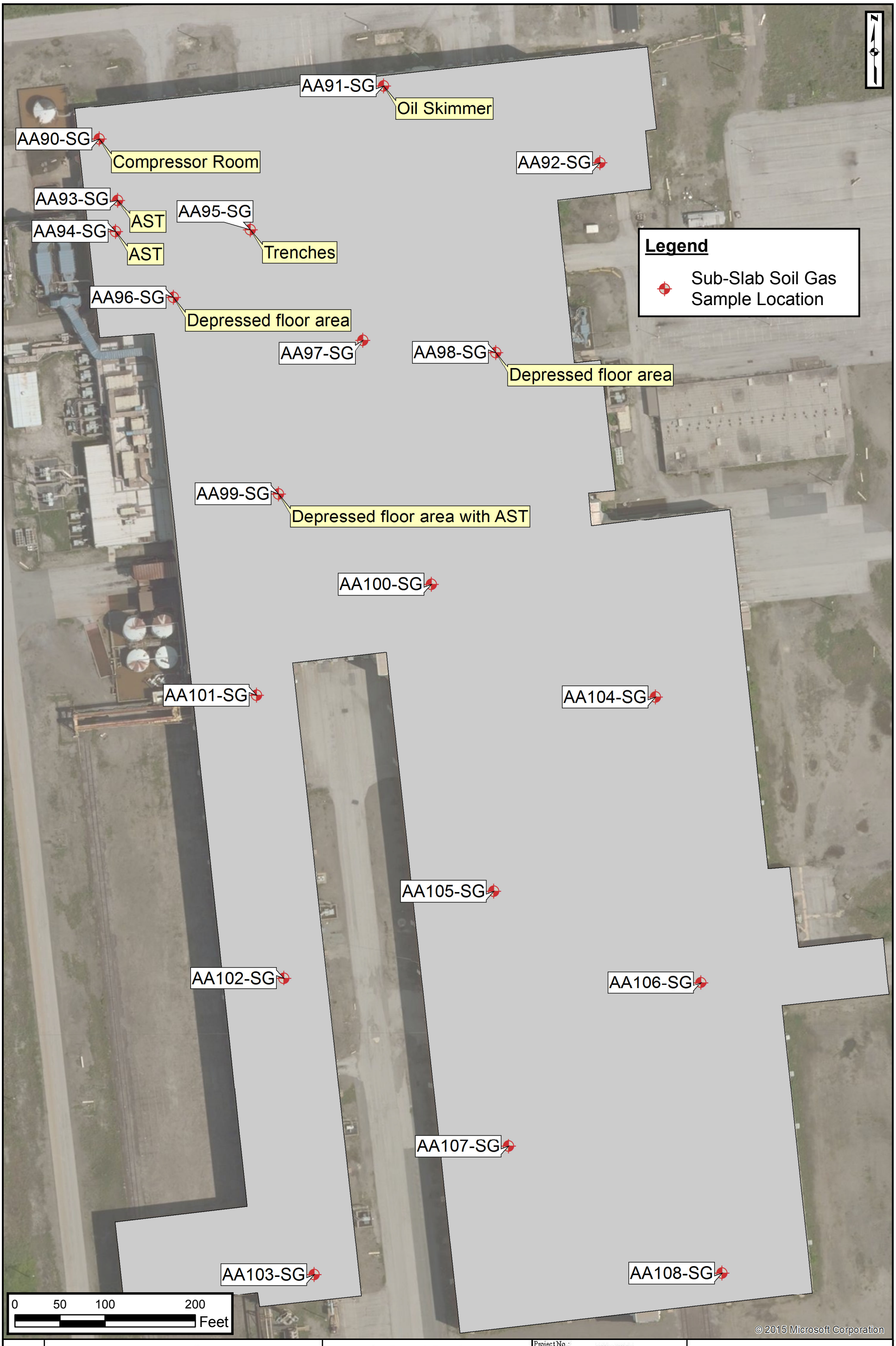


Figure 2	New Cold Mill Complex Sub-Slab Soil Gas Sample Locations March 30, 2015	EnviroAnalytics Group Building Occupancy Assessment	Project No.: M14152 designed ESM checked ESM drawn SCK	ARM Group Inc. Earth Resource Engineers and Consultants
		Sparrows Point Baltimore County, MD		

TABLES

Building Occupancy Assessment - New Cold Mill Complex

Sub-Slab Soil Gas - Detection and Exceedance Report

Samples Collected - March 20, 2015

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA100-SG*					
2-Butanone (MEK)	3.80	µg/m3	2,200,000	No	11,000,000	No
Acetone	33.00	µg/m3	14,000,000	No	70,000,000	No
Benzene	3.70	µg/m3	1,600	No	8,000	No
Bromodichloromethane	1.80	µg/m3	340	No	1,700	No
Carbon disulfide	31.80	µg/m3	310,000	No	1,550,000	No
Chloroform	13.30	µg/m3	540	No	2,700	No
Ethylbenzene	1.60	µg/m3	5,000	No	25,000	No
m&p-xylene	5.60	µg/m3	44,000	No	220,000	No
o-xylene	2.30	µg/m3	44,000	No	220,000	No
Styrene	1.10	µg/m3	440,000	No	2,200,000	No
Toluene	8.40	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA101-SG*					
2-Butanone (MEK)	4.10	µg/m3	2,200,000	No	11,000,000	No
Acetone	52.30	µg/m3	14,000,000	No	70,000,000	No
Benzene	3.60	µg/m3	1,600	No	8,000	No
Bromodichloromethane	1.90	µg/m3	340	No	1,700	No
Carbon disulfide	28.40	µg/m3	310,000	No	1,550,000	No
Chloroform	23.30	µg/m3	540	No	2,700	No
m&p-xylene	3.80	µg/m3	44,000	No	220,000	No
o-xylene	1.60	µg/m3	44,000	No	220,000	No
Toluene	6.00	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA102-SG*					
2-Butanone (MEK)	3.30	µg/m3	2,200,000	No	11,000,000	No
Acetone	33.00	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.60	µg/m3	1,600	No	8,000	No
Carbon disulfide	4.60	µg/m3	310,000	No	1,550,000	No
Chloroform	15.30	µg/m3	540	No	2,700	No
m&p-xylene	4.30	µg/m3	44,000	No	220,000	No
o-xylene	1.80	µg/m3	44,000	No	220,000	No
Toluene	5.20	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA103-SG*					
2-Butanone (MEK)	3.00	µg/m3	2,200,000	No	11,000,000	No
Acetone	38.60	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.00	µg/m3	1,600	No	8,000	No
Carbon disulfide	8.50	µg/m3	310,000	No	1,550,000	No
Chloroform	3.60	µg/m3	540	No	2,700	No
m&p-xylene	3.50	µg/m3	44,000	No	220,000	No
o-xylene	1.60	µg/m3	44,000	No	220,000	No
Toluene	3.70	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA104-SG*					
1,1-Dichloroethane	5.40	µg/m3	7,700	No	38,500	No
2-Butanone (MEK)	4.30	µg/m3	2,200,000	No	11,000,000	No
Acetone	33.70	µg/m3	14,000,000	No	70,000,000	No
Benzene	8.90	µg/m3	1,600	No	8,000	No
Carbon disulfide	174.00	µg/m3	310,000	No	1,550,000	No
Chloroethane	1.50	µg/m3	4,400,000	No	22,000,000	No
Chloroform	54.70	µg/m3	540	No	2,700	No
Chloromethane	10.90	µg/m3	40,000	No	200,000	No
Ethylbenzene	2.60	µg/m3	5,000	No	25,000	No
m&p-xylene	9.20	µg/m3	44,000	No	220,000	No
o-xylene	3.50	µg/m3	44,000	No	220,000	No
Toluene	9.30	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA105-SG*					
2-Butanone (MEK)	4.20	µg/m3	2,200,000	No	11,000,000	No
Acetone	91.50	µg/m3	14,000,000	No	70,000,000	No
Benzene	7.10	µg/m3	1,600	No	8,000	No
Bromodichloromethane	3.50	µg/m3	340	No	1,700	No
Carbon disulfide	21.20	µg/m3	310,000	No	1,550,000	No
Chloroform	49.10	µg/m3	540	No	2,700	No
Ethylbenzene	1.70	µg/m3	5,000	No	25,000	No
m&p-xylene	7.00	µg/m3	44,000	No	220,000	No
o-xylene	2.70	µg/m3	44,000	No	220,000	No
Toluene	14.20	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA106-SG*					
2-Butanone (MEK)	3.30	µg/m3	2,200,000	No	11,000,000	No
Acetone	25.40	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.80	µg/m3	1,600	No	8,000	No
Bromodichloromethane	2.50	µg/m3	340	No	1,700	No
Carbon disulfide	16.20	µg/m3	310,000	No	1,550,000	No
Chloroform	24.90	µg/m3	540	No	2,700	No
Ethylbenzene	1.70	µg/m3	5,000	No	25,000	No
m&p-xylene	6.50	µg/m3	44,000	No	220,000	No
o-xylene	2.60	µg/m3	44,000	No	220,000	No
Toluene	6.90	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA107-SG*					
2-Butanone (MEK)	2.10	µg/m3	2,200,000	No	11,000,000	No
Acetone	40.70	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.70	µg/m3	1,600	No	8,000	No
Carbon disulfide	20.30	µg/m3	310,000	No	1,550,000	No
Chloroform	21.50	µg/m3	540	No	2,700	No
Ethylbenzene	1.40	µg/m3	5,000	No	25,000	No
m&p-xylene	5.50	µg/m3	44,000	No	220,000	No
o-xylene	2.30	µg/m3	44,000	No	220,000	No
Toluene	7.20	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA108-SG*					
2-Butanone (MEK)	3.70	µg/m3	2,200,000	No	11,000,000	No
Acetone	44.20	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.40	µg/m3	1,600	No	8,000	No
Carbon disulfide	8.60	µg/m3	310,000	No	1,550,000	No
Chloroform	13.00	µg/m3	540	No	2,700	No
Ethylbenzene	1.60	µg/m3	5,000	No	25,000	No
m&p-xylene	6.90	µg/m3	44,000	No	220,000	No
o-xylene	2.90	µg/m3	44,000	No	220,000	No
Toluene	5.50	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA90-SG*					
2-Butanone (MEK)	8.30	µg/m3	2,200,000	No	11,000,000	No
Acetone	72.50	µg/m3	14,000,000	No	70,000,000	No
Benzene	1.70	µg/m3	1,600	No	8,000	No
Carbon disulfide	7.20	µg/m3	310,000	No	1,550,000	No
Chloroform	15.80	µg/m3	540	No	2,700	No
Toluene	5.90	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA91-SG*					
2-Butanone (MEK)	5.50	µg/m3	2,200,000	No	11,000,000	No
Acetone	58.70	µg/m3	14,000,000	No	70,000,000	No
Benzene	5.80	µg/m3	1,600	No	8,000	No
Bromodichloromethane	6.00	µg/m3	340	No	1,700	No
Bromomethane	1.20	µg/m3	2,200	No	11,000	No
Carbon disulfide	138.00	µg/m3	310,000	No	1,550,000	No
Chloroform	143.00	µg/m3	540	No	2,700	No
Chloromethane	1.60	µg/m3	40,000	No	200,000	No
Ethylbenzene	1.20	µg/m3	5,000	No	25,000	No
m&p-xylene	4.50	µg/m3	44,000	No	220,000	No
o-xylene	1.90	µg/m3	44,000	No	220,000	No
Toluene	6.60	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA92-SG*					
2-Butanone (MEK)	5.10	µg/m3	2,200,000	No	11,000,000	No
Acetone	48.20	µg/m3	14,000,000	No	70,000,000	No
Benzene	2.60	µg/m3	1,600	No	8,000	No
Bromodichloromethane	6.80	µg/m3	340	No	1,700	No
Carbon disulfide	19.60	µg/m3	310,000	No	1,550,000	No
Chloroform	124.00	µg/m3	540	No	2,700	No
Ethylbenzene	1.30	µg/m3	5,000	No	25,000	No
m&p-xylene	4.80	µg/m3	44,000	No	220,000	No
o-xylene	2.10	µg/m3	44,000	No	220,000	No
Toluene	6.10	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA93-SG*					
2-Butanone (MEK)	2.20	µg/m3	2,200,000	No	11,000,000	No
Acetone	17.50	µg/m3	14,000,000	No	70,000,000	No
Benzene	0.52	µg/m3	1,600	No	8,000	No
Carbon disulfide	9.40	µg/m3	310,000	No	1,550,000	No
Chloroform	2.90	µg/m3	540	No	2,700	No
Toluene	1.40	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA94-SG*					
2-Butanone (MEK)	5.60	µg/m3	2,200,000	No	11,000,000	No
Acetone	55.60	µg/m3	14,000,000	No	70,000,000	No
Benzene	4.80	µg/m3	1,600	No	8,000	No
Bromodichloromethane	5.00	µg/m3	340	No	1,700	No
Carbon disulfide	197.00	µg/m3	310,000	No	1,550,000	No
Chloroform	139.00	µg/m3	540	No	2,700	No
Chloromethane	1.90	µg/m3	40,000	No	200,000	No
Ethylbenzene	1.30	µg/m3	5,000	No	25,000	No
m&p-xylene	4.90	µg/m3	44,000	No	220,000	No
o-xylene	2.20	µg/m3	44,000	No	220,000	No
Toluene	6.10	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA95-SG*					
2-Butanone (MEK)	9.10	µg/m3	2,200,000	No	11,000,000	No
Acetone	117.00	µg/m3	14,000,000	No	70,000,000	No
Benzene	2.00	µg/m3	1,600	No	8,000	No
Bromodichloromethane	4.40	µg/m3	340	No	1,700	No
Carbon disulfide	52.00	µg/m3	310,000	No	1,550,000	No
Chloroform	99.30	µg/m3	540	No	2,700	No
Ethylbenzene	1.20	µg/m3	5,000	No	25,000	No
m&p-xylene	4.20	µg/m3	44,000	No	220,000	No
o-xylene	1.20	µg/m3	44,000	No	220,000	No
Toluene	4.60	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA96-SG*					
2-Butanone (MEK)	4.10	µg/m3	2,200,000	No	11,000,000	No
Acetone	44.80	µg/m3	14,000,000	No	70,000,000	No
Benzene	3.20	µg/m3	1,600	No	8,000	No
Bromodichloromethane	2.20	µg/m3	340	No	1,700	No
Carbon disulfide	22.80	µg/m3	310,000	No	1,550,000	No
Chloroform	40.80	µg/m3	540	No	2,700	No
m&p-xylene	4.20	µg/m3	44,000	No	220,000	No
o-xylene	1.70	µg/m3	44,000	No	220,000	No
Toluene	8.60	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA97-SG*					
2-Butanone (MEK)	5.80	µg/m3	2,200,000	No	11,000,000	No
Acetone	49.60	µg/m3	14,000,000	No	70,000,000	No
Benzene	3.50	µg/m3	1,600	No	8,000	No
Carbon disulfide	157.00	µg/m3	310,000	No	1,550,000	No
Chloroform	97.20	µg/m3	540	No	2,700	No
Ethylbenzene	1.40	µg/m3	5,000	No	25,000	No
m&p-xylene	4.80	µg/m3	44,000	No	220,000	No
o-xylene	2.00	µg/m3	44,000	No	220,000	No
Toluene	6.40	µg/m3	2,200,000	No	11,000,000	No

Parameter	Result	Unit	MDE Tier I	Exceeds Tier I?	MDE Tier II	Exceeds Tier II?
Sample:	*AA98-SG*					
2-Butanone (MEK)	56.20	µg/m3	2,200,000	No	11,000,000	No
Acetone	188.00	µg/m3	14,000,000	No	70,000,000	No
Benzene	2.50	µg/m3	1,600	No	8,000	No
Carbon disulfide	9.40	µg/m3	310,000	No	1,550,000	No
Chloroform	23.60	µg/m3	540	No	2,700	No
Toluene	55.70	µg/m3	2,200,000	No	11,000,000	No
Sample:	*AA99-SG*					
2-Butanone (MEK)	5.00	µg/m3	2,200,000	No	11,000,000	No
Acetone	39.40	µg/m3	14,000,000	No	70,000,000	No
Benzene	3.60	µg/m3	1,600	No	8,000	No
Bromodichloromethane	3.00	µg/m3	340	No	1,700	No
Carbon disulfide	4.60	µg/m3	310,000	No	1,550,000	No
Chloroform	66.00	µg/m3	540	No	2,700	No
m&p-xylene	4.30	µg/m3	44,000	No	220,000	No
o-xylene	1.90	µg/m3	44,000	No	220,000	No
Toluene	5.30	µg/m3	2,200,000	No	11,000,000	No

ATTACHMENT 1

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 10, 2015

James Calenda
Environmental Liability Transfer
1430 Sparrows Point Blvd
Sparrows Point, MD 21219

RE: Project: NCM BOA
Pace Project No.: 10300341

Dear James Calenda:
Enclosed are the analytical results for sample(s) received by the laboratory on March 23, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This project was revised to match desired VOC list, per client's request. -NB3 4/1/15

This project was revised to include EDB to the final report

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
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CERTIFICATIONS

Project: NCM BOA
Pace Project No.: 10300341

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Pace Analytical Services, Inc.
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SAMPLE SUMMARY

Project: NCM BOA
Pace Project No.: 10300341

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10300341001	AA108-SG	Air	03/20/15 09:35	03/23/15 08:50
10300341002	AA106-SG	Air	03/20/15 09:37	03/23/15 08:50
10300341003	AA107-SG	Air	03/20/15 09:38	03/23/15 08:50
10300341004	AA105-SG	Air	03/20/15 09:39	03/23/15 08:50
10300341005	AA104-SG	Air	03/20/15 09:41	03/23/15 08:50
10300341006	AA100-SG	Air	03/20/15 09:43	03/23/15 08:50
10300341007	AA97-SG	Air	03/20/15 09:45	03/23/15 08:50
10300341008	AA98-SG	Air	03/20/15 09:46	03/23/15 08:50
10300341009	AA92-SG	Air	03/20/15 09:47	03/23/15 08:50
10300341010	AA91-SG	Air	03/20/15 09:49	03/23/15 08:50
10300341011	AA90-SG	Air	03/20/15 09:50	03/23/15 08:50
10300341012	AA93-SG	Air	03/20/15 09:51	03/23/15 08:50
10300341013	AA94-SG	Air	03/20/15 09:51	03/23/15 08:50
10300341014	AA96-SG	Air	03/20/15 09:52	03/23/15 08:50
10300341015	AA99-SG	Air	03/20/15 09:53	03/23/15 08:50
10300341016	AA101-SG	Air	03/20/15 09:54	03/23/15 08:50
10300341017	AA102-SG	Air	03/20/15 09:56	03/23/15 08:50
10300341018	AA103-SG	Air	03/20/15 09:57	03/23/15 08:50
10300341019	AA95-SG	Air	03/21/15 11:30	03/23/15 08:50

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: NCM BOA
Pace Project No.: 10300341

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10300341001	**AA108-SG**	TO-15	MLS	37	PASI-M
10300341002	**AA106-SG**	TO-15	MLS	37	PASI-M
10300341003	**AA107-SG**	TO-15	MLS	37	PASI-M
10300341004	**AA105-SG**	TO-15	MLS	37	PASI-M
10300341005	**AA104-SG**	TO-15	MLS	37	PASI-M
10300341006	**AA100-SG**	TO-15	MLS	37	PASI-M
10300341007	**AA97-SG**	TO-15	MLS	37	PASI-M
10300341008	**AA98-SG**	TO-15	MLS	37	PASI-M
10300341009	**AA92-SG**	TO-15	MLS	37	PASI-M
10300341010	**AA91-SG**	TO-15	MLS	37	PASI-M
10300341011	**AA90-SG**	TO-15	MLS	37	PASI-M
10300341012	**AA93-SG**	TO-15	MLS	37	PASI-M
10300341013	**AA94-SG**	TO-15	MLS	37	PASI-M
10300341014	**AA96-SG**	TO-15	MLS	37	PASI-M
10300341015	**AA99-SG**	TO-15	MLS	37	PASI-M
10300341016	**AA101-SG**	TO-15	MLS	37	PASI-M
10300341017	**AA102-SG**	TO-15	MLS	37	PASI-M
10300341018	**AA103-SG**	TO-15	MLS	37	PASI-M
10300341019	**AA95-SG**	TO-15	MLS	37	PASI-M

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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PROJECT NARRATIVE

Project: NCM BOA
Pace Project No.: 10300341

Method: **TO-15**
Description: TO15 MSV AIR
Client: Enviro Analytics Group
Date: April 10, 2015

General Information:
19 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

QC Batch: AIR/22835

IQ: The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

- AA108-SG (Lab ID: 10300341001)
- AA93-SG (Lab ID: 10300341012)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: AIR/22835

R1: RPD value was outside control limits.

- DUP (Lab ID: 1926218)
  - Acetone

Additional Comments:

Analyte Comments:

QC Batch: AIR/22835

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- AA105-SG (Lab ID: 10300341004)
  - Acetone
- AA95-SG (Lab ID: 10300341019)
  - Acetone

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: NCM BOA
Pace Project No.: 10300341

Method: **TO-15**
Description: TO15 MSV AIR
Client: Enviro Analytics Group
Date: April 10, 2015

Analyte Comments:

QC Batch: AIR/22835

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- DUP (Lab ID: 1926218)
  - Carbon disulfide
  - Acetone

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA108-SG **Lab ID: 10300341001** Collected: 03/20/15 09:35 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**44.2**	ug/m3	3.5	1.44		03/25/15 15:34	67-64-1	
Benzene	**1.4**	ug/m3	0.47	1.44		03/25/15 15:34	71-43-2	
Bromodichloromethane	**1.2J**	ug/m3	2.0	1.44		03/25/15 15:34	75-27-4	
Bromoform	**<0.47**	ug/m3	7.6	1.44		03/25/15 15:34	75-25-2	
Bromomethane	**<0.39**	ug/m3	1.1	1.44		03/25/15 15:34	74-83-9	
2-Butanone (MEK)	**3.7**	ug/m3	0.86	1.44		03/25/15 15:34	78-93-3	
Carbon disulfide	**8.6**	ug/m3	0.91	1.44		03/25/15 15:34	75-15-0	
Carbon tetrachloride	**<0.46**	ug/m3	0.92	1.44		03/25/15 15:34	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.4	1.44		03/25/15 15:34	108-90-7	
Chloroethane	**<0.23**	ug/m3	0.78	1.44		03/25/15 15:34	75-00-3	
Chloroform	**13.0**	ug/m3	0.71	1.44		03/25/15 15:34	67-66-3	
Chloromethane	**<0.28**	ug/m3	0.60	1.44		03/25/15 15:34	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.5	1.44		03/25/15 15:34	124-48-1	
1,2-Dibromoethane (EDB)	**<0.34**	ug/m3	2.2	1.44		03/25/15 15:34	106-93-4	
1,1-Dichloroethane	**<0.20**	ug/m3	1.2	1.44		03/25/15 15:34	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.59	1.44		03/25/15 15:34	107-06-2	
1,1-Dichloroethene	**<0.15**	ug/m3	1.2	1.44		03/25/15 15:34	75-35-4	
cis-1,2-Dichloroethene	**<0.28**	ug/m3	2.9	1.44		03/25/15 15:34	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.2	1.44		03/25/15 15:34	156-60-5	
1,2-Dichloropropane	**<0.22**	ug/m3	1.4	1.44		03/25/15 15:34	78-87-5	
cis-1,3-Dichloropropene	**<0.20**	ug/m3	1.3	1.44		03/25/15 15:34	10061-01-5	
trans-1,3-Dichloropropene	**<0.22**	ug/m3	1.3	1.44		03/25/15 15:34	10061-02-6	
Ethylbenzene	**1.6**	ug/m3	1.3	1.44		03/25/15 15:34	100-41-4	
Isopropylbenzene (Cumene)	**<0.72**	ug/m3	3.6	1.44		03/25/15 15:34	98-82-8	
Methylene Chloride	**<0.33**	ug/m3	5.1	1.44		03/25/15 15:34	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.25**	ug/m3	3.0	1.44		03/25/15 15:34	108-10-1	
Methyl-tert-butyl ether	**<0.13**	ug/m3	1.1	1.44		03/25/15 15:34	1634-04-4	
Styrene	**0.95J**	ug/m3	1.3	1.44		03/25/15 15:34	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.34**	ug/m3	1.0	1.44		03/25/15 15:34	79-34-5	
Tetrachloroethene	**<0.27**	ug/m3	0.99	1.44		03/25/15 15:34	127-18-4	
Toluene	**5.5**	ug/m3	1.1	1.44		03/25/15 15:34	108-88-3	
1,1,1-Trichloroethane	**<0.20**	ug/m3	1.0	1.44		03/25/15 15:34	71-55-6	
1,1,2-Trichloroethane	**<0.35**	ug/m3	0.80	1.44		03/25/15 15:34	79-00-5	
Trichloroethene	**<0.26**	ug/m3	0.79	1.44		03/25/15 15:34	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.37	1.44		03/25/15 15:34	75-01-4	
m&p-Xylene	**6.9**	ug/m3	2.5	1.44		03/25/15 15:34	179601-23-1	
o-Xylene	**2.9**	ug/m3	1.3	1.44		03/25/15 15:34	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA106-SG **Lab ID: 10300341002** Collected: 03/20/15 09:37 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**25.4**	ug/m3	3.4	1.39		03/25/15 16:02	67-64-1	
Benzene	**1.8**	ug/m3	0.45	1.39		03/25/15 16:02	71-43-2	
Bromodichloromethane	**2.5**	ug/m3	1.9	1.39		03/25/15 16:02	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 16:02	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/25/15 16:02	74-83-9	
2-Butanone (MEK)	**3.3**	ug/m3	0.83	1.39		03/25/15 16:02	78-93-3	
Carbon disulfide	**16.2**	ug/m3	0.88	1.39		03/25/15 16:02	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/25/15 16:02	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 16:02	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/25/15 16:02	75-00-3	
Chloroform	**24.9**	ug/m3	0.69	1.39		03/25/15 16:02	67-66-3	
Chloromethane	**<0.27**	ug/m3	0.58	1.39		03/25/15 16:02	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 16:02	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 16:02	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/25/15 16:02	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 16:02	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 16:02	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 16:02	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 16:02	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 16:02	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 16:02	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 16:02	10061-02-6	
Ethylbenzene	**1.7**	ug/m3	1.2	1.39		03/25/15 16:02	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 16:02	98-82-8	
Methylene Chloride	**1.8J**	ug/m3	4.9	1.39		03/25/15 16:02	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/25/15 16:02	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 16:02	1634-04-4	
Styrene	**<0.19**	ug/m3	1.2	1.39		03/25/15 16:02	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 16:02	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/25/15 16:02	127-18-4	
Toluene	**6.9**	ug/m3	1.1	1.39		03/25/15 16:02	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 16:02	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 16:02	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 16:02	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 16:02	75-01-4	
m&p-Xylene	**6.5**	ug/m3	2.4	1.39		03/25/15 16:02	179601-23-1	
o-Xylene	**2.6**	ug/m3	1.2	1.39		03/25/15 16:02	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA107-SG **Lab ID: 10300341003** Collected: 03/20/15 09:38 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**40.7**	ug/m3	3.5	1.44		03/25/15 16:30	67-64-1	
Benzene	**1.7**	ug/m3	0.47	1.44		03/25/15 16:30	71-43-2	
Bromodichloromethane	**1.6J**	ug/m3	2.0	1.44		03/25/15 16:30	75-27-4	
Bromoform	**<0.47**	ug/m3	7.6	1.44		03/25/15 16:30	75-25-2	
Bromomethane	**<0.39**	ug/m3	1.1	1.44		03/25/15 16:30	74-83-9	
2-Butanone (MEK)	**2.1**	ug/m3	0.86	1.44		03/25/15 16:30	78-93-3	
Carbon disulfide	**20.3**	ug/m3	0.91	1.44		03/25/15 16:30	75-15-0	
Carbon tetrachloride	**<0.46**	ug/m3	0.92	1.44		03/25/15 16:30	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.4	1.44		03/25/15 16:30	108-90-7	
Chloroethane	**<0.23**	ug/m3	0.78	1.44		03/25/15 16:30	75-00-3	
Chloroform	**21.5**	ug/m3	0.71	1.44		03/25/15 16:30	67-66-3	
Chloromethane	**0.37J**	ug/m3	0.60	1.44		03/25/15 16:30	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.5	1.44		03/25/15 16:30	124-48-1	
1,2-Dibromoethane (EDB)	**<0.34**	ug/m3	2.2	1.44		03/25/15 16:30	106-93-4	
1,1-Dichloroethane	**<0.20**	ug/m3	1.2	1.44		03/25/15 16:30	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.59	1.44		03/25/15 16:30	107-06-2	
1,1-Dichloroethene	**<0.15**	ug/m3	1.2	1.44		03/25/15 16:30	75-35-4	
cis-1,2-Dichloroethene	**<0.28**	ug/m3	2.9	1.44		03/25/15 16:30	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.2	1.44		03/25/15 16:30	156-60-5	
1,2-Dichloropropane	**<0.22**	ug/m3	1.4	1.44		03/25/15 16:30	78-87-5	
cis-1,3-Dichloropropene	**<0.20**	ug/m3	1.3	1.44		03/25/15 16:30	10061-01-5	
trans-1,3-Dichloropropene	**<0.22**	ug/m3	1.3	1.44		03/25/15 16:30	10061-02-6	
Ethylbenzene	**1.4**	ug/m3	1.3	1.44		03/25/15 16:30	100-41-4	
Isopropylbenzene (Cumene)	**<0.72**	ug/m3	3.6	1.44		03/25/15 16:30	98-82-8	
Methylene Chloride	**<0.33**	ug/m3	5.1	1.44		03/25/15 16:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.25**	ug/m3	3.0	1.44		03/25/15 16:30	108-10-1	
Methyl-tert-butyl ether	**<0.13**	ug/m3	1.1	1.44		03/25/15 16:30	1634-04-4	
Styrene	**0.89J**	ug/m3	1.3	1.44		03/25/15 16:30	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.34**	ug/m3	1.0	1.44		03/25/15 16:30	79-34-5	
Tetrachloroethene	**<0.27**	ug/m3	0.99	1.44		03/25/15 16:30	127-18-4	
Toluene	**7.2**	ug/m3	1.1	1.44		03/25/15 16:30	108-88-3	
1,1,1-Trichloroethane	**<0.20**	ug/m3	1.0	1.44		03/25/15 16:30	71-55-6	
1,1,2-Trichloroethane	**<0.35**	ug/m3	0.80	1.44		03/25/15 16:30	79-00-5	
Trichloroethene	**<0.26**	ug/m3	0.79	1.44		03/25/15 16:30	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.37	1.44		03/25/15 16:30	75-01-4	
m&p-Xylene	**5.5**	ug/m3	2.5	1.44		03/25/15 16:30	179601-23-1	
o-Xylene	**2.3**	ug/m3	1.3	1.44		03/25/15 16:30	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA105-SG **Lab ID: 10300341004** Collected: 03/20/15 09:39 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**91.5**	ug/m3	3.2	1.34		03/25/15 16:57	67-64-1	E
Benzene	**7.1**	ug/m3	0.44	1.34		03/25/15 16:57	71-43-2	
Bromodichloromethane	**3.5**	ug/m3	1.8	1.34		03/25/15 16:57	75-27-4	
Bromoform	**<0.43**	ug/m3	7.0	1.34		03/25/15 16:57	75-25-2	
Bromomethane	**<0.36**	ug/m3	1.1	1.34		03/25/15 16:57	74-83-9	
2-Butanone (MEK)	**4.2**	ug/m3	0.80	1.34		03/25/15 16:57	78-93-3	
Carbon disulfide	**21.2**	ug/m3	0.84	1.34		03/25/15 16:57	75-15-0	
Carbon tetrachloride	**<0.43**	ug/m3	0.86	1.34		03/25/15 16:57	56-23-5	
Chlorobenzene	**<0.14**	ug/m3	1.3	1.34		03/25/15 16:57	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.72	1.34		03/25/15 16:57	75-00-3	
Chloroform	**49.1**	ug/m3	0.66	1.34		03/25/15 16:57	67-66-3	
Chloromethane	**0.36J**	ug/m3	0.56	1.34		03/25/15 16:57	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.3	1.34		03/25/15 16:57	124-48-1	
1,2-Dibromoethane (EDB)	**<0.31**	ug/m3	2.1	1.34		03/25/15 16:57	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.34		03/25/15 16:57	75-34-3	
1,2-Dichloroethane	**<0.16**	ug/m3	0.55	1.34		03/25/15 16:57	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.34		03/25/15 16:57	75-35-4	
cis-1,2-Dichloroethene	**<0.26**	ug/m3	2.7	1.34		03/25/15 16:57	156-59-2	
trans-1,2-Dichloroethene	**<0.22**	ug/m3	1.1	1.34		03/25/15 16:57	156-60-5	
1,2-Dichloropropane	**<0.20**	ug/m3	1.3	1.34		03/25/15 16:57	78-87-5	
cis-1,3-Dichloropropene	**<0.18**	ug/m3	1.2	1.34		03/25/15 16:57	10061-01-5	
trans-1,3-Dichloropropene	**<0.20**	ug/m3	1.2	1.34		03/25/15 16:57	10061-02-6	
Ethylbenzene	**1.7**	ug/m3	1.2	1.34		03/25/15 16:57	100-41-4	
Isopropylbenzene (Cumene)	**<0.67**	ug/m3	3.4	1.34		03/25/15 16:57	98-82-8	
Methylene Chloride	**1.1J**	ug/m3	4.7	1.34		03/25/15 16:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.23**	ug/m3	2.8	1.34		03/25/15 16:57	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	0.98	1.34		03/25/15 16:57	1634-04-4	
Styrene	**0.85J**	ug/m3	1.2	1.34		03/25/15 16:57	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.31**	ug/m3	0.94	1.34		03/25/15 16:57	79-34-5	
Tetrachloroethene	**<0.25**	ug/m3	0.92	1.34		03/25/15 16:57	127-18-4	
Toluene	**14.2**	ug/m3	1.0	1.34		03/25/15 16:57	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.94	1.34		03/25/15 16:57	71-55-6	
1,1,2-Trichloroethane	**<0.33**	ug/m3	0.74	1.34		03/25/15 16:57	79-00-5	
Trichloroethene	**<0.24**	ug/m3	0.73	1.34		03/25/15 16:57	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.35	1.34		03/25/15 16:57	75-01-4	
m&p-Xylene	**7.0**	ug/m3	2.4	1.34		03/25/15 16:57	179601-23-1	
o-Xylene	**2.7**	ug/m3	1.2	1.34		03/25/15 16:57	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA104-SG **Lab ID: 10300341005** Collected: 03/20/15 09:41 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**33.7**	ug/m3	3.4	1.39		03/25/15 17:26	67-64-1	
Benzene	**8.9**	ug/m3	0.45	1.39		03/25/15 17:26	71-43-2	
Bromodichloromethane	**1.5J**	ug/m3	1.9	1.39		03/25/15 17:26	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 17:26	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/25/15 17:26	74-83-9	
2-Butanone (MEK)	**4.3**	ug/m3	0.83	1.39		03/25/15 17:26	78-93-3	
Carbon disulfide	**174**	ug/m3	17.5	27.8		03/27/15 09:01	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/25/15 17:26	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 17:26	108-90-7	
Chloroethane	**1.5**	ug/m3	0.75	1.39		03/25/15 17:26	75-00-3	
Chloroform	**54.7**	ug/m3	0.69	1.39		03/25/15 17:26	67-66-3	
Chloromethane	**10.9**	ug/m3	0.58	1.39		03/25/15 17:26	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 17:26	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 17:26	106-93-4	
1,1-Dichloroethane	**5.4**	ug/m3	1.1	1.39		03/25/15 17:26	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 17:26	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 17:26	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 17:26	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 17:26	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 17:26	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 17:26	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 17:26	10061-02-6	
Ethylbenzene	**2.6**	ug/m3	1.2	1.39		03/25/15 17:26	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 17:26	98-82-8	
Methylene Chloride	**3.5J**	ug/m3	4.9	1.39		03/25/15 17:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	**1.0J**	ug/m3	2.9	1.39		03/25/15 17:26	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 17:26	1634-04-4	
Styrene	**0.94J**	ug/m3	1.2	1.39		03/25/15 17:26	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 17:26	79-34-5	
Tetrachloroethene	**0.71J**	ug/m3	0.96	1.39		03/25/15 17:26	127-18-4	
Toluene	**9.3**	ug/m3	1.1	1.39		03/25/15 17:26	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 17:26	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 17:26	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 17:26	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 17:26	75-01-4	
m&p-Xylene	**9.2**	ug/m3	2.4	1.39		03/25/15 17:26	179601-23-1	
o-Xylene	**3.5**	ug/m3	1.2	1.39		03/25/15 17:26	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA100-SG **Lab ID: 10300341006** Collected: 03/20/15 09:43 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**33.0**	ug/m3	3.0	1.26		03/25/15 17:53	67-64-1	
Benzene	**3.7**	ug/m3	0.41	1.26		03/25/15 17:53	71-43-2	
Bromodichloromethane	**1.8**	ug/m3	1.7	1.26		03/25/15 17:53	75-27-4	
Bromoform	**<0.41**	ug/m3	6.6	1.26		03/25/15 17:53	75-25-2	
Bromomethane	**<0.34**	ug/m3	1.0	1.26		03/25/15 17:53	74-83-9	
2-Butanone (MEK)	**3.8**	ug/m3	0.76	1.26		03/25/15 17:53	78-93-3	
Carbon disulfide	**31.8**	ug/m3	0.79	1.26		03/25/15 17:53	75-15-0	
Carbon tetrachloride	**<0.40**	ug/m3	0.81	1.26		03/25/15 17:53	56-23-5	
Chlorobenzene	**<0.13**	ug/m3	1.2	1.26		03/25/15 17:53	108-90-7	
Chloroethane	**<0.20**	ug/m3	0.68	1.26		03/25/15 17:53	75-00-3	
Chloroform	**13.3**	ug/m3	0.62	1.26		03/25/15 17:53	67-66-3	
Chloromethane	**<0.24**	ug/m3	0.53	1.26		03/25/15 17:53	74-87-3	
Dibromochloromethane	**<1.1**	ug/m3	2.2	1.26		03/25/15 17:53	124-48-1	
1,2-Dibromoethane (EDB)	**<0.29**	ug/m3	2.0	1.26		03/25/15 17:53	106-93-4	
1,1-Dichloroethane	**<0.18**	ug/m3	1.0	1.26		03/25/15 17:53	75-34-3	
1,2-Dichloroethane	**<0.15**	ug/m3	0.52	1.26		03/25/15 17:53	107-06-2	
1,1-Dichloroethene	**<0.13**	ug/m3	1.0	1.26		03/25/15 17:53	75-35-4	
cis-1,2-Dichloroethene	**<0.25**	ug/m3	2.5	1.26		03/25/15 17:53	156-59-2	
trans-1,2-Dichloroethene	**<0.21**	ug/m3	1.0	1.26		03/25/15 17:53	156-60-5	
1,2-Dichloropropane	**<0.19**	ug/m3	1.2	1.26		03/25/15 17:53	78-87-5	
cis-1,3-Dichloropropene	**<0.17**	ug/m3	1.2	1.26		03/25/15 17:53	10061-01-5	
trans-1,3-Dichloropropene	**<0.19**	ug/m3	1.2	1.26		03/25/15 17:53	10061-02-6	
Ethylbenzene	**1.6**	ug/m3	1.1	1.26		03/25/15 17:53	100-41-4	
Isopropylbenzene (Cumene)	**<0.63**	ug/m3	3.2	1.26		03/25/15 17:53	98-82-8	
Methylene Chloride	**1.7J**	ug/m3	4.4	1.26		03/25/15 17:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	**0.52J**	ug/m3	2.6	1.26		03/25/15 17:53	108-10-1	
Methyl-tert-butyl ether	**<0.11**	ug/m3	0.92	1.26		03/25/15 17:53	1634-04-4	
Styrene	**1.1**	ug/m3	1.1	1.26		03/25/15 17:53	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.29**	ug/m3	0.88	1.26		03/25/15 17:53	79-34-5	
Tetrachloroethene	**<0.24**	ug/m3	0.87	1.26		03/25/15 17:53	127-18-4	
Toluene	**8.4**	ug/m3	0.97	1.26		03/25/15 17:53	108-88-3	
1,1,1-Trichloroethane	**<0.18**	ug/m3	0.88	1.26		03/25/15 17:53	71-55-6	
1,1,2-Trichloroethane	**<0.31**	ug/m3	0.70	1.26		03/25/15 17:53	79-00-5	
Trichloroethene	**<0.22**	ug/m3	0.69	1.26		03/25/15 17:53	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.33	1.26		03/25/15 17:53	75-01-4	
m&p-Xylene	**5.6**	ug/m3	2.2	1.26		03/25/15 17:53	179601-23-1	
o-Xylene	**2.3**	ug/m3	1.1	1.26		03/25/15 17:53	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA97-SG **Lab ID: 10300341007** Collected: 03/20/15 09:45 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**49.6**	ug/m3	33.6	13.9		03/27/15 10:11	67-64-1	
Benzene	**3.5**	ug/m3	0.45	1.39		03/25/15 18:21	71-43-2	
Bromodichloromethane	**1.9J**	ug/m3	1.9	1.39		03/25/15 18:21	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 18:21	75-25-2	
Bromomethane	**0.58J**	ug/m3	1.1	1.39		03/25/15 18:21	74-83-9	
2-Butanone (MEK)	**5.8**	ug/m3	0.83	1.39		03/25/15 18:21	78-93-3	
Carbon disulfide	**157**	ug/m3	8.8	13.9		03/27/15 10:11	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/25/15 18:21	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 18:21	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/25/15 18:21	75-00-3	
Chloroform	**97.2**	ug/m3	0.69	1.39		03/25/15 18:21	67-66-3	
Chloromethane	**<0.27**	ug/m3	0.58	1.39		03/25/15 18:21	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 18:21	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 18:21	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/25/15 18:21	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 18:21	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 18:21	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 18:21	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 18:21	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 18:21	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 18:21	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 18:21	10061-02-6	
Ethylbenzene	**1.4**	ug/m3	1.2	1.39		03/25/15 18:21	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 18:21	98-82-8	
Methylene Chloride	**1.8J**	ug/m3	4.9	1.39		03/25/15 18:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/25/15 18:21	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 18:21	1634-04-4	
Styrene	**0.84J**	ug/m3	1.2	1.39		03/25/15 18:21	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 18:21	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/25/15 18:21	127-18-4	
Toluene	**6.4**	ug/m3	1.1	1.39		03/25/15 18:21	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 18:21	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 18:21	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 18:21	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 18:21	75-01-4	
m&p-Xylene	**4.8**	ug/m3	2.4	1.39		03/25/15 18:21	179601-23-1	
o-Xylene	**2.0**	ug/m3	1.2	1.39		03/25/15 18:21	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA98-SG **Lab ID: 10300341008** Collected: 03/20/15 09:46 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**188**	ug/m3	8.9	3.67		03/25/15 19:20	67-64-1	
Benzene	**2.5**	ug/m3	1.2	3.67		03/25/15 19:20	71-43-2	
Bromodichloromethane	**<0.67**	ug/m3	5.0	3.67		03/25/15 19:20	75-27-4	
Bromoform	**<1.2**	ug/m3	19.3	3.67		03/25/15 19:20	75-25-2	
Bromomethane	**<0.99**	ug/m3	2.9	3.67		03/25/15 19:20	74-83-9	
2-Butanone (MEK)	**56.2**	ug/m3	2.2	3.67		03/25/15 19:20	78-93-3	
Carbon disulfide	**9.4**	ug/m3	2.3	3.67		03/25/15 19:20	75-15-0	
Carbon tetrachloride	**<1.2**	ug/m3	2.3	3.67		03/25/15 19:20	56-23-5	
Chlorobenzene	**<0.39**	ug/m3	3.4	3.67		03/25/15 19:20	108-90-7	
Chloroethane	**<0.59**	ug/m3	2.0	3.67		03/25/15 19:20	75-00-3	
Chloroform	**23.6**	ug/m3	1.8	3.67		03/25/15 19:20	67-66-3	
Chloromethane	**<0.70**	ug/m3	1.5	3.67		03/25/15 19:20	74-87-3	
Dibromochloromethane	**<3.2**	ug/m3	6.3	3.67		03/25/15 19:20	124-48-1	
1,2-Dibromoethane (EDB)	**<0.86**	ug/m3	5.7	3.67		03/25/15 19:20	106-93-4	
1,1-Dichloroethane	**<0.51**	ug/m3	3.0	3.67		03/25/15 19:20	75-34-3	
1,2-Dichloroethane	**<0.44**	ug/m3	1.5	3.67		03/25/15 19:20	107-06-2	
1,1-Dichloroethene	**<0.38**	ug/m3	3.0	3.67		03/25/15 19:20	75-35-4	
cis-1,2-Dichloroethene	**<0.72**	ug/m3	7.4	3.67		03/25/15 19:20	156-59-2	
trans-1,2-Dichloroethene	**<0.60**	ug/m3	3.0	3.67		03/25/15 19:20	156-60-5	
1,2-Dichloropropane	**<0.56**	ug/m3	3.4	3.67		03/25/15 19:20	78-87-5	
cis-1,3-Dichloropropene	**<0.50**	ug/m3	3.4	3.67		03/25/15 19:20	10061-01-5	
trans-1,3-Dichloropropene	**<0.55**	ug/m3	3.4	3.67		03/25/15 19:20	10061-02-6	
Ethylbenzene	**1.8J**	ug/m3	3.2	3.67		03/25/15 19:20	100-41-4	
Isopropylbenzene (Cumene)	**<1.8**	ug/m3	9.2	3.67		03/25/15 19:20	98-82-8	
Methylene Chloride	**6.6J**	ug/m3	13.0	3.67		03/25/15 19:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	**4.5J**	ug/m3	7.6	3.67		03/25/15 19:20	108-10-1	
Methyl-tert-butyl ether	**<0.33**	ug/m3	2.7	3.67		03/25/15 19:20	1634-04-4	
Styrene	**<0.50**	ug/m3	3.2	3.67		03/25/15 19:20	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.86**	ug/m3	2.6	3.67		03/25/15 19:20	79-34-5	
Tetrachloroethene	**<0.69**	ug/m3	2.5	3.67		03/25/15 19:20	127-18-4	
Toluene	**55.7**	ug/m3	2.8	3.67		03/25/15 19:20	108-88-3	
1,1,1-Trichloroethane	**<0.51**	ug/m3	2.6	3.67		03/25/15 19:20	71-55-6	
1,1,2-Trichloroethane	**<0.89**	ug/m3	2.0	3.67		03/25/15 19:20	79-00-5	
Trichloroethene	**<0.65**	ug/m3	2.0	3.67		03/25/15 19:20	79-01-6	
Vinyl chloride	**<0.34**	ug/m3	0.95	3.67		03/25/15 19:20	75-01-4	
m&p-Xylene	**6.4J**	ug/m3	6.5	3.67		03/25/15 19:20	179601-23-1	
o-Xylene	**2.6J**	ug/m3	3.2	3.67		03/25/15 19:20	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA92-SG **Lab ID: 10300341009** Collected: 03/20/15 09:47 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**48.2**	ug/m3	3.0	1.26		03/25/15 20:21	67-64-1	
Benzene	**2.6**	ug/m3	0.41	1.26		03/25/15 20:21	71-43-2	
Bromodichloromethane	**6.8**	ug/m3	1.7	1.26		03/25/15 20:21	75-27-4	
Bromoform	**<0.41**	ug/m3	6.6	1.26		03/25/15 20:21	75-25-2	
Bromomethane	**<0.34**	ug/m3	1.0	1.26		03/25/15 20:21	74-83-9	
2-Butanone (MEK)	**5.1**	ug/m3	0.76	1.26		03/25/15 20:21	78-93-3	
Carbon disulfide	**19.6**	ug/m3	0.79	1.26		03/25/15 20:21	75-15-0	
Carbon tetrachloride	**<0.40**	ug/m3	0.81	1.26		03/25/15 20:21	56-23-5	
Chlorobenzene	**<0.13**	ug/m3	1.2	1.26		03/25/15 20:21	108-90-7	
Chloroethane	**<0.20**	ug/m3	0.68	1.26		03/25/15 20:21	75-00-3	
Chloroform	**124**	ug/m3	0.62	1.26		03/25/15 20:21	67-66-3	
Chloromethane	**0.42J**	ug/m3	0.53	1.26		03/25/15 20:21	74-87-3	
Dibromochloromethane	**<1.1**	ug/m3	2.2	1.26		03/25/15 20:21	124-48-1	
1,2-Dibromoethane (EDB)	**<0.29**	ug/m3	2.0	1.26		03/25/15 20:21	106-93-4	
1,1-Dichloroethane	**<0.18**	ug/m3	1.0	1.26		03/25/15 20:21	75-34-3	
1,2-Dichloroethane	**<0.15**	ug/m3	0.52	1.26		03/25/15 20:21	107-06-2	
1,1-Dichloroethene	**<0.13**	ug/m3	1.0	1.26		03/25/15 20:21	75-35-4	
cis-1,2-Dichloroethene	**<0.25**	ug/m3	2.5	1.26		03/25/15 20:21	156-59-2	
trans-1,2-Dichloroethene	**<0.21**	ug/m3	1.0	1.26		03/25/15 20:21	156-60-5	
1,2-Dichloropropane	**<0.19**	ug/m3	1.2	1.26		03/25/15 20:21	78-87-5	
cis-1,3-Dichloropropene	**<0.17**	ug/m3	1.2	1.26		03/25/15 20:21	10061-01-5	
trans-1,3-Dichloropropene	**<0.19**	ug/m3	1.2	1.26		03/25/15 20:21	10061-02-6	
Ethylbenzene	**1.3**	ug/m3	1.1	1.26		03/25/15 20:21	100-41-4	
Isopropylbenzene (Cumene)	**<0.63**	ug/m3	3.2	1.26		03/25/15 20:21	98-82-8	
Methylene Chloride	**1.7J**	ug/m3	4.4	1.26		03/25/15 20:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.22**	ug/m3	2.6	1.26		03/25/15 20:21	108-10-1	
Methyl-tert-butyl ether	**<0.11**	ug/m3	0.92	1.26		03/25/15 20:21	1634-04-4	
Styrene	**0.80J**	ug/m3	1.1	1.26		03/25/15 20:21	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.29**	ug/m3	0.88	1.26		03/25/15 20:21	79-34-5	
Tetrachloroethene	**<0.24**	ug/m3	0.87	1.26		03/25/15 20:21	127-18-4	
Toluene	**6.1**	ug/m3	0.97	1.26		03/25/15 20:21	108-88-3	
1,1,1-Trichloroethane	**<0.18**	ug/m3	0.88	1.26		03/25/15 20:21	71-55-6	
1,1,2-Trichloroethane	**<0.31**	ug/m3	0.70	1.26		03/25/15 20:21	79-00-5	
Trichloroethene	**<0.22**	ug/m3	0.69	1.26		03/25/15 20:21	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.33	1.26		03/25/15 20:21	75-01-4	
m&p-Xylene	**4.8**	ug/m3	2.2	1.26		03/25/15 20:21	179601-23-1	
o-Xylene	**2.1**	ug/m3	1.1	1.26		03/25/15 20:21	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA91-SG **Lab ID: 10300341010** Collected: 03/20/15 09:49 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**58.7**	ug/m3	3.0	1.26		03/25/15 20:54	67-64-1	
Benzene	**5.8**	ug/m3	0.41	1.26		03/25/15 20:54	71-43-2	
Bromodichloromethane	**6.0**	ug/m3	1.7	1.26		03/25/15 20:54	75-27-4	
Bromoform	**<0.41**	ug/m3	6.6	1.26		03/25/15 20:54	75-25-2	
Bromomethane	**1.2**	ug/m3	1.0	1.26		03/25/15 20:54	74-83-9	
2-Butanone (MEK)	**5.5**	ug/m3	0.76	1.26		03/25/15 20:54	78-93-3	
Carbon disulfide	**138**	ug/m3	7.9	12.61		03/27/15 09:48	75-15-0	
Carbon tetrachloride	**0.73J**	ug/m3	0.81	1.26		03/25/15 20:54	56-23-5	
Chlorobenzene	**<0.13**	ug/m3	1.2	1.26		03/25/15 20:54	108-90-7	
Chloroethane	**<0.20**	ug/m3	0.68	1.26		03/25/15 20:54	75-00-3	
Chloroform	**143**	ug/m3	6.3	12.61		03/27/15 09:48	67-66-3	
Chloromethane	**1.6**	ug/m3	0.53	1.26		03/25/15 20:54	74-87-3	
Dibromochloromethane	**<1.1**	ug/m3	2.2	1.26		03/25/15 20:54	124-48-1	
1,2-Dibromoethane (EDB)	**<0.29**	ug/m3	2.0	1.26		03/25/15 20:54	106-93-4	
1,1-Dichloroethane	**<0.18**	ug/m3	1.0	1.26		03/25/15 20:54	75-34-3	
1,2-Dichloroethane	**<0.15**	ug/m3	0.52	1.26		03/25/15 20:54	107-06-2	
1,1-Dichloroethene	**<0.13**	ug/m3	1.0	1.26		03/25/15 20:54	75-35-4	
cis-1,2-Dichloroethene	**<0.25**	ug/m3	2.5	1.26		03/25/15 20:54	156-59-2	
trans-1,2-Dichloroethene	**<0.21**	ug/m3	1.0	1.26		03/25/15 20:54	156-60-5	
1,2-Dichloropropane	**<0.19**	ug/m3	1.2	1.26		03/25/15 20:54	78-87-5	
cis-1,3-Dichloropropene	**<0.17**	ug/m3	1.2	1.26		03/25/15 20:54	10061-01-5	
trans-1,3-Dichloropropene	**<0.19**	ug/m3	1.2	1.26		03/25/15 20:54	10061-02-6	
Ethylbenzene	**1.2**	ug/m3	1.1	1.26		03/25/15 20:54	100-41-4	
Isopropylbenzene (Cumene)	**<0.63**	ug/m3	3.2	1.26		03/25/15 20:54	98-82-8	
Methylene Chloride	**1.6J**	ug/m3	4.4	1.26		03/25/15 20:54	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.22**	ug/m3	2.6	1.26		03/25/15 20:54	108-10-1	
Methyl-tert-butyl ether	**<0.11**	ug/m3	0.92	1.26		03/25/15 20:54	1634-04-4	
Styrene	**0.82J**	ug/m3	1.1	1.26		03/25/15 20:54	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.29**	ug/m3	0.88	1.26		03/25/15 20:54	79-34-5	
Tetrachloroethene	**<0.24**	ug/m3	0.87	1.26		03/25/15 20:54	127-18-4	
Toluene	**6.6**	ug/m3	0.97	1.26		03/25/15 20:54	108-88-3	
1,1,1-Trichloroethane	**<0.18**	ug/m3	0.88	1.26		03/25/15 20:54	71-55-6	
1,1,2-Trichloroethane	**<0.31**	ug/m3	0.70	1.26		03/25/15 20:54	79-00-5	
Trichloroethene	**<0.22**	ug/m3	0.69	1.26		03/25/15 20:54	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.33	1.26		03/25/15 20:54	75-01-4	
m&p-Xylene	**4.5**	ug/m3	2.2	1.26		03/25/15 20:54	179601-23-1	
o-Xylene	**1.9**	ug/m3	1.1	1.26		03/25/15 20:54	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA90-SG **Lab ID: 10300341011** Collected: 03/20/15 09:50 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**72.5**	ug/m3	9.8	4.04		03/25/15 21:26	67-64-1	
Benzene	**1.7**	ug/m3	1.3	4.04		03/25/15 21:26	71-43-2	
Bromodichloromethane	**<0.74**	ug/m3	5.5	4.04		03/25/15 21:26	75-27-4	
Bromoform	**<1.3**	ug/m3	21.2	4.04		03/25/15 21:26	75-25-2	
Bromomethane	**<1.1**	ug/m3	3.2	4.04		03/25/15 21:26	74-83-9	
2-Butanone (MEK)	**8.3**	ug/m3	2.4	4.04		03/25/15 21:26	78-93-3	
Carbon disulfide	**7.2**	ug/m3	2.5	4.04		03/25/15 21:26	75-15-0	
Carbon tetrachloride	**<1.3**	ug/m3	2.6	4.04		03/25/15 21:26	56-23-5	
Chlorobenzene	**<0.43**	ug/m3	3.8	4.04		03/25/15 21:26	108-90-7	
Chloroethane	**<0.65**	ug/m3	2.2	4.04		03/25/15 21:26	75-00-3	
Chloroform	**15.8**	ug/m3	2.0	4.04		03/25/15 21:26	67-66-3	
Chloromethane	**<0.78**	ug/m3	1.7	4.04		03/25/15 21:26	74-87-3	
Dibromochloromethane	**<3.5**	ug/m3	7.0	4.04		03/25/15 21:26	124-48-1	
1,2-Dibromoethane (EDB)	**<0.95**	ug/m3	6.3	4.04		03/25/15 21:26	106-93-4	
1,1-Dichloroethane	**<0.57**	ug/m3	3.3	4.04		03/25/15 21:26	75-34-3	
1,2-Dichloroethane	**<0.48**	ug/m3	1.7	4.04		03/25/15 21:26	107-06-2	
1,1-Dichloroethene	**<0.42**	ug/m3	3.3	4.04		03/25/15 21:26	75-35-4	
cis-1,2-Dichloroethene	**<0.79**	ug/m3	8.1	4.04		03/25/15 21:26	156-59-2	
trans-1,2-Dichloroethene	**<0.66**	ug/m3	3.3	4.04		03/25/15 21:26	156-60-5	
1,2-Dichloropropane	**<0.61**	ug/m3	3.8	4.04		03/25/15 21:26	78-87-5	
cis-1,3-Dichloropropene	**<0.55**	ug/m3	3.7	4.04		03/25/15 21:26	10061-01-5	
trans-1,3-Dichloropropene	**<0.61**	ug/m3	3.7	4.04		03/25/15 21:26	10061-02-6	
Ethylbenzene	**<0.72**	ug/m3	3.6	4.04		03/25/15 21:26	100-41-4	
Isopropylbenzene (Cumene)	**<2.0**	ug/m3	10.1	4.04		03/25/15 21:26	98-82-8	
Methylene Chloride	**4.3J**	ug/m3	14.3	4.04		03/25/15 21:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.69**	ug/m3	8.4	4.04		03/25/15 21:26	108-10-1	
Methyl-tert-butyl ether	**<0.36**	ug/m3	2.9	4.04		03/25/15 21:26	1634-04-4	
Styrene	**<0.55**	ug/m3	3.5	4.04		03/25/15 21:26	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.94**	ug/m3	2.8	4.04		03/25/15 21:26	79-34-5	
Tetrachloroethene	**<0.76**	ug/m3	2.8	4.04		03/25/15 21:26	127-18-4	
Toluene	**5.9**	ug/m3	3.1	4.04		03/25/15 21:26	108-88-3	
1,1,1-Trichloroethane	**<0.56**	ug/m3	2.8	4.04		03/25/15 21:26	71-55-6	
1,1,2-Trichloroethane	**<0.98**	ug/m3	2.2	4.04		03/25/15 21:26	79-00-5	
Trichloroethene	**<0.72**	ug/m3	2.2	4.04		03/25/15 21:26	79-01-6	
Vinyl chloride	**<0.38**	ug/m3	1.1	4.04		03/25/15 21:26	75-01-4	
m&p-Xylene	**3.9J**	ug/m3	7.1	4.04		03/25/15 21:26	179601-23-1	
o-Xylene	**1.9J**	ug/m3	3.6	4.04		03/25/15 21:26	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA93-SG **Lab ID: 10300341012** Collected: 03/20/15 09:51 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**17.5**	ug/m3	3.4	1.39		03/25/15 21:59	67-64-1	
Benzene	**0.52**	ug/m3	0.45	1.39		03/25/15 21:59	71-43-2	
Bromodichloromethane	**<0.25**	ug/m3	1.9	1.39		03/25/15 21:59	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 21:59	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/25/15 21:59	74-83-9	
2-Butanone (MEK)	**2.2**	ug/m3	0.83	1.39		03/25/15 21:59	78-93-3	
Carbon disulfide	**9.4**	ug/m3	0.88	1.39		03/25/15 21:59	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/25/15 21:59	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 21:59	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/25/15 21:59	75-00-3	
Chloroform	**2.9**	ug/m3	0.69	1.39		03/25/15 21:59	67-66-3	
Chloromethane	**<0.27**	ug/m3	0.58	1.39		03/25/15 21:59	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 21:59	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 21:59	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/25/15 21:59	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 21:59	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 21:59	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 21:59	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 21:59	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 21:59	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 21:59	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 21:59	10061-02-6	
Ethylbenzene	**<0.25**	ug/m3	1.2	1.39		03/25/15 21:59	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 21:59	98-82-8	
Methylene Chloride	**<0.32**	ug/m3	4.9	1.39		03/25/15 21:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/25/15 21:59	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 21:59	1634-04-4	
Styrene	**<0.19**	ug/m3	1.2	1.39		03/25/15 21:59	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 21:59	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/25/15 21:59	127-18-4	
Toluene	**1.4**	ug/m3	1.1	1.39		03/25/15 21:59	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 21:59	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 21:59	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 21:59	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 21:59	75-01-4	
m&p-Xylene	**0.87J**	ug/m3	2.4	1.39		03/25/15 21:59	179601-23-1	
o-Xylene	**<0.61**	ug/m3	1.2	1.39		03/25/15 21:59	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA94-SG **Lab ID: 10300341013** Collected: 03/20/15 09:51 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**55.6**	ug/m3	3.4	1.39		03/25/15 22:29	67-64-1	
Benzene	**4.8**	ug/m3	0.45	1.39		03/25/15 22:29	71-43-2	
Bromodichloromethane	**5.0**	ug/m3	1.9	1.39		03/25/15 22:29	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 22:29	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/25/15 22:29	74-83-9	
2-Butanone (MEK)	**5.6**	ug/m3	0.83	1.39		03/25/15 22:29	78-93-3	
Carbon disulfide	**197**	ug/m3	8.8	13.9		03/27/15 09:24	75-15-0	
Carbon tetrachloride	**0.56J**	ug/m3	0.89	1.39		03/25/15 22:29	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 22:29	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/25/15 22:29	75-00-3	
Chloroform	**139**	ug/m3	6.9	13.9		03/27/15 09:24	67-66-3	
Chloromethane	**1.9**	ug/m3	0.58	1.39		03/25/15 22:29	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 22:29	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 22:29	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/25/15 22:29	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 22:29	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 22:29	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 22:29	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 22:29	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 22:29	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 22:29	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 22:29	10061-02-6	
Ethylbenzene	**1.3**	ug/m3	1.2	1.39		03/25/15 22:29	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 22:29	98-82-8	
Methylene Chloride	**1.7J**	ug/m3	4.9	1.39		03/25/15 22:29	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/25/15 22:29	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 22:29	1634-04-4	
Styrene	**0.90J**	ug/m3	1.2	1.39		03/25/15 22:29	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 22:29	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/25/15 22:29	127-18-4	
Toluene	**6.1**	ug/m3	1.1	1.39		03/25/15 22:29	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 22:29	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 22:29	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 22:29	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 22:29	75-01-4	
m&p-Xylene	**4.9**	ug/m3	2.4	1.39		03/25/15 22:29	179601-23-1	
o-Xylene	**2.2**	ug/m3	1.2	1.39		03/25/15 22:29	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA96-SG **Lab ID: 10300341014** Collected: 03/20/15 09:52 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**44.8**	ug/m3	3.6	1.49		03/25/15 23:01	67-64-1	
Benzene	**3.2**	ug/m3	0.48	1.49		03/25/15 23:01	71-43-2	
Bromodichloromethane	**2.2**	ug/m3	2.0	1.49		03/25/15 23:01	75-27-4	
Bromoform	**<0.48**	ug/m3	7.8	1.49		03/25/15 23:01	75-25-2	
Bromomethane	**<0.40**	ug/m3	1.2	1.49		03/25/15 23:01	74-83-9	
2-Butanone (MEK)	**4.1**	ug/m3	0.89	1.49		03/25/15 23:01	78-93-3	
Carbon disulfide	**22.8**	ug/m3	0.94	1.49		03/25/15 23:01	75-15-0	
Carbon tetrachloride	**<0.48**	ug/m3	0.95	1.49		03/25/15 23:01	56-23-5	
Chlorobenzene	**<0.16**	ug/m3	1.4	1.49		03/25/15 23:01	108-90-7	
Chloroethane	**<0.24**	ug/m3	0.80	1.49		03/25/15 23:01	75-00-3	
Chloroform	**40.8**	ug/m3	0.74	1.49		03/25/15 23:01	67-66-3	
Chloromethane	**<0.29**	ug/m3	0.63	1.49		03/25/15 23:01	74-87-3	
Dibromochloromethane	**<1.3**	ug/m3	2.6	1.49		03/25/15 23:01	124-48-1	
1,2-Dibromoethane (EDB)	**<0.35**	ug/m3	2.3	1.49		03/25/15 23:01	106-93-4	
1,1-Dichloroethane	**<0.21**	ug/m3	1.2	1.49		03/25/15 23:01	75-34-3	
1,2-Dichloroethane	**<0.18**	ug/m3	0.61	1.49		03/25/15 23:01	107-06-2	
1,1-Dichloroethene	**<0.15**	ug/m3	1.2	1.49		03/25/15 23:01	75-35-4	
cis-1,2-Dichloroethene	**<0.29**	ug/m3	3.0	1.49		03/25/15 23:01	156-59-2	
trans-1,2-Dichloroethene	**<0.24**	ug/m3	1.2	1.49		03/25/15 23:01	156-60-5	
1,2-Dichloropropane	**<0.23**	ug/m3	1.4	1.49		03/25/15 23:01	78-87-5	
cis-1,3-Dichloropropene	**<0.20**	ug/m3	1.4	1.49		03/25/15 23:01	10061-01-5	
trans-1,3-Dichloropropene	**<0.22**	ug/m3	1.4	1.49		03/25/15 23:01	10061-02-6	
Ethylbenzene	**1.2J**	ug/m3	1.3	1.49		03/25/15 23:01	100-41-4	
Isopropylbenzene (Cumene)	**<0.74**	ug/m3	3.7	1.49		03/25/15 23:01	98-82-8	
Methylene Chloride	**2.8J**	ug/m3	5.3	1.49		03/25/15 23:01	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.25**	ug/m3	3.1	1.49		03/25/15 23:01	108-10-1	
Methyl-tert-butyl ether	**<0.13**	ug/m3	1.1	1.49		03/25/15 23:01	1634-04-4	
Styrene	**0.91J**	ug/m3	1.3	1.49		03/25/15 23:01	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.35**	ug/m3	1.0	1.49		03/25/15 23:01	79-34-5	
Tetrachloroethene	**<0.28**	ug/m3	1.0	1.49		03/25/15 23:01	127-18-4	
Toluene	**8.6**	ug/m3	1.1	1.49		03/25/15 23:01	108-88-3	
1,1,1-Trichloroethane	**<0.21**	ug/m3	1.0	1.49		03/25/15 23:01	71-55-6	
1,1,2-Trichloroethane	**<0.36**	ug/m3	0.83	1.49		03/25/15 23:01	79-00-5	
Trichloroethene	**<0.27**	ug/m3	0.81	1.49		03/25/15 23:01	79-01-6	
Vinyl chloride	**<0.14**	ug/m3	0.39	1.49		03/25/15 23:01	75-01-4	
m&p-Xylene	**4.2**	ug/m3	2.6	1.49		03/25/15 23:01	179601-23-1	
o-Xylene	**1.7**	ug/m3	1.3	1.49		03/25/15 23:01	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA99-SG **Lab ID: 10300341015** Collected: 03/20/15 09:53 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**39.4**	ug/m3	3.4	1.39		03/25/15 23:29	67-64-1	
Benzene	**3.6**	ug/m3	0.45	1.39		03/25/15 23:29	71-43-2	
Bromodichloromethane	**3.0**	ug/m3	1.9	1.39		03/25/15 23:29	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/25/15 23:29	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/25/15 23:29	74-83-9	
2-Butanone (MEK)	**5.0**	ug/m3	0.83	1.39		03/25/15 23:29	78-93-3	
Carbon disulfide	**4.6**	ug/m3	0.88	1.39		03/25/15 23:29	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/25/15 23:29	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/25/15 23:29	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/25/15 23:29	75-00-3	
Chloroform	**66.0**	ug/m3	0.69	1.39		03/25/15 23:29	67-66-3	
Chloromethane	**<0.27**	ug/m3	0.58	1.39		03/25/15 23:29	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/25/15 23:29	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/25/15 23:29	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/25/15 23:29	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/25/15 23:29	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/25/15 23:29	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/25/15 23:29	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/25/15 23:29	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/25/15 23:29	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/25/15 23:29	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/25/15 23:29	10061-02-6	
Ethylbenzene	**1.1J**	ug/m3	1.2	1.39		03/25/15 23:29	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/25/15 23:29	98-82-8	
Methylene Chloride	**<0.32**	ug/m3	4.9	1.39		03/25/15 23:29	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/25/15 23:29	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/25/15 23:29	1634-04-4	
Styrene	**0.82J**	ug/m3	1.2	1.39		03/25/15 23:29	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/25/15 23:29	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/25/15 23:29	127-18-4	
Toluene	**5.3**	ug/m3	1.1	1.39		03/25/15 23:29	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/25/15 23:29	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/25/15 23:29	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/25/15 23:29	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/25/15 23:29	75-01-4	
m&p-Xylene	**4.3**	ug/m3	2.4	1.39		03/25/15 23:29	179601-23-1	
o-Xylene	**1.9**	ug/m3	1.2	1.39		03/25/15 23:29	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA101-SG **Lab ID: 10300341016** Collected: 03/20/15 09:54 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**52.3**	ug/m3	3.2	1.34		03/25/15 23:57	67-64-1	
Benzene	**3.6**	ug/m3	0.44	1.34		03/25/15 23:57	71-43-2	
Bromodichloromethane	**1.9**	ug/m3	1.8	1.34		03/25/15 23:57	75-27-4	
Bromoform	**<0.43**	ug/m3	7.0	1.34		03/25/15 23:57	75-25-2	
Bromomethane	**<0.36**	ug/m3	1.1	1.34		03/25/15 23:57	74-83-9	
2-Butanone (MEK)	**4.1**	ug/m3	0.80	1.34		03/25/15 23:57	78-93-3	
Carbon disulfide	**28.4**	ug/m3	0.84	1.34		03/25/15 23:57	75-15-0	
Carbon tetrachloride	**<0.43**	ug/m3	0.86	1.34		03/25/15 23:57	56-23-5	
Chlorobenzene	**<0.14**	ug/m3	1.3	1.34		03/25/15 23:57	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.72	1.34		03/25/15 23:57	75-00-3	
Chloroform	**23.3**	ug/m3	0.66	1.34		03/25/15 23:57	67-66-3	
Chloromethane	**<0.26**	ug/m3	0.56	1.34		03/25/15 23:57	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.3	1.34		03/25/15 23:57	124-48-1	
1,2-Dibromoethane (EDB)	**<0.31**	ug/m3	2.1	1.34		03/25/15 23:57	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.34		03/25/15 23:57	75-34-3	
1,2-Dichloroethane	**<0.16**	ug/m3	0.55	1.34		03/25/15 23:57	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.34		03/25/15 23:57	75-35-4	
cis-1,2-Dichloroethene	**<0.26**	ug/m3	2.7	1.34		03/25/15 23:57	156-59-2	
trans-1,2-Dichloroethene	**<0.22**	ug/m3	1.1	1.34		03/25/15 23:57	156-60-5	
1,2-Dichloropropane	**<0.20**	ug/m3	1.3	1.34		03/25/15 23:57	78-87-5	
cis-1,3-Dichloropropene	**<0.18**	ug/m3	1.2	1.34		03/25/15 23:57	10061-01-5	
trans-1,3-Dichloropropene	**<0.20**	ug/m3	1.2	1.34		03/25/15 23:57	10061-02-6	
Ethylbenzene	**1.0J**	ug/m3	1.2	1.34		03/25/15 23:57	100-41-4	
Isopropylbenzene (Cumene)	**<0.67**	ug/m3	3.4	1.34		03/25/15 23:57	98-82-8	
Methylene Chloride	**<0.31**	ug/m3	4.7	1.34		03/25/15 23:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.23**	ug/m3	2.8	1.34		03/25/15 23:57	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	0.98	1.34		03/25/15 23:57	1634-04-4	
Styrene	**0.77J**	ug/m3	1.2	1.34		03/25/15 23:57	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.31**	ug/m3	0.94	1.34		03/25/15 23:57	79-34-5	
Tetrachloroethene	**<0.25**	ug/m3	0.92	1.34		03/25/15 23:57	127-18-4	
Toluene	**6.0**	ug/m3	1.0	1.34		03/25/15 23:57	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.94	1.34		03/25/15 23:57	71-55-6	
1,1,2-Trichloroethane	**<0.33**	ug/m3	0.74	1.34		03/25/15 23:57	79-00-5	
Trichloroethene	**<0.24**	ug/m3	0.73	1.34		03/25/15 23:57	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.35	1.34		03/25/15 23:57	75-01-4	
m&p-Xylene	**3.8**	ug/m3	2.4	1.34		03/25/15 23:57	179601-23-1	
o-Xylene	**1.6**	ug/m3	1.2	1.34		03/25/15 23:57	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA102-SG **Lab ID: 10300341017** Collected: 03/20/15 09:56 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**33.0**	ug/m3	3.4	1.39		03/26/15 00:25	67-64-1	
Benzene	**1.6**	ug/m3	0.45	1.39		03/26/15 00:25	71-43-2	
Bromodichloromethane	**0.96J**	ug/m3	1.9	1.39		03/26/15 00:25	75-27-4	
Bromoform	**<0.45**	ug/m3	7.3	1.39		03/26/15 00:25	75-25-2	
Bromomethane	**<0.38**	ug/m3	1.1	1.39		03/26/15 00:25	74-83-9	
2-Butanone (MEK)	**3.3**	ug/m3	0.83	1.39		03/26/15 00:25	78-93-3	
Carbon disulfide	**4.6**	ug/m3	0.88	1.39		03/26/15 00:25	75-15-0	
Carbon tetrachloride	**<0.44**	ug/m3	0.89	1.39		03/26/15 00:25	56-23-5	
Chlorobenzene	**<0.15**	ug/m3	1.3	1.39		03/26/15 00:25	108-90-7	
Chloroethane	**<0.22**	ug/m3	0.75	1.39		03/26/15 00:25	75-00-3	
Chloroform	**15.3**	ug/m3	0.69	1.39		03/26/15 00:25	67-66-3	
Chloromethane	**<0.27**	ug/m3	0.58	1.39		03/26/15 00:25	74-87-3	
Dibromochloromethane	**<1.2**	ug/m3	2.4	1.39		03/26/15 00:25	124-48-1	
1,2-Dibromoethane (EDB)	**<0.33**	ug/m3	2.2	1.39		03/26/15 00:25	106-93-4	
1,1-Dichloroethane	**<0.19**	ug/m3	1.1	1.39		03/26/15 00:25	75-34-3	
1,2-Dichloroethane	**<0.17**	ug/m3	0.57	1.39		03/26/15 00:25	107-06-2	
1,1-Dichloroethene	**<0.14**	ug/m3	1.1	1.39		03/26/15 00:25	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/m3	2.8	1.39		03/26/15 00:25	156-59-2	
trans-1,2-Dichloroethene	**<0.23**	ug/m3	1.1	1.39		03/26/15 00:25	156-60-5	
1,2-Dichloropropane	**<0.21**	ug/m3	1.3	1.39		03/26/15 00:25	78-87-5	
cis-1,3-Dichloropropene	**<0.19**	ug/m3	1.3	1.39		03/26/15 00:25	10061-01-5	
trans-1,3-Dichloropropene	**<0.21**	ug/m3	1.3	1.39		03/26/15 00:25	10061-02-6	
Ethylbenzene	**1.1J**	ug/m3	1.2	1.39		03/26/15 00:25	100-41-4	
Isopropylbenzene (Cumene)	**<0.70**	ug/m3	3.5	1.39		03/26/15 00:25	98-82-8	
Methylene Chloride	**<0.32**	ug/m3	4.9	1.39		03/26/15 00:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.24**	ug/m3	2.9	1.39		03/26/15 00:25	108-10-1	
Methyl-tert-butyl ether	**<0.12**	ug/m3	1.0	1.39		03/26/15 00:25	1634-04-4	
Styrene	**0.82J**	ug/m3	1.2	1.39		03/26/15 00:25	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.32**	ug/m3	0.97	1.39		03/26/15 00:25	79-34-5	
Tetrachloroethene	**<0.26**	ug/m3	0.96	1.39		03/26/15 00:25	127-18-4	
Toluene	**5.2**	ug/m3	1.1	1.39		03/26/15 00:25	108-88-3	
1,1,1-Trichloroethane	**<0.19**	ug/m3	0.97	1.39		03/26/15 00:25	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/m3	0.77	1.39		03/26/15 00:25	79-00-5	
Trichloroethene	**<0.25**	ug/m3	0.76	1.39		03/26/15 00:25	79-01-6	
Vinyl chloride	**<0.13**	ug/m3	0.36	1.39		03/26/15 00:25	75-01-4	
m&p-Xylene	**4.3**	ug/m3	2.4	1.39		03/26/15 00:25	179601-23-1	
o-Xylene	**1.8**	ug/m3	1.2	1.39		03/26/15 00:25	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA103-SG **Lab ID: 10300341018** Collected: 03/20/15 09:57 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**38.6**	ug/m3	3.0	1.26		03/26/15 00:53	67-64-1	
Benzene	**1.0**	ug/m3	0.41	1.26		03/26/15 00:53	71-43-2	
Bromodichloromethane	**<0.23**	ug/m3	1.7	1.26		03/26/15 00:53	75-27-4	
Bromoform	**<0.41**	ug/m3	6.6	1.26		03/26/15 00:53	75-25-2	
Bromomethane	**<0.34**	ug/m3	1.0	1.26		03/26/15 00:53	74-83-9	
2-Butanone (MEK)	**3.0**	ug/m3	0.76	1.26		03/26/15 00:53	78-93-3	
Carbon disulfide	**8.5**	ug/m3	0.79	1.26		03/26/15 00:53	75-15-0	
Carbon tetrachloride	**<0.40**	ug/m3	0.81	1.26		03/26/15 00:53	56-23-5	
Chlorobenzene	**<0.13**	ug/m3	1.2	1.26		03/26/15 00:53	108-90-7	
Chloroethane	**<0.20**	ug/m3	0.68	1.26		03/26/15 00:53	75-00-3	
Chloroform	**3.6**	ug/m3	0.62	1.26		03/26/15 00:53	67-66-3	
Chloromethane	**<0.24**	ug/m3	0.53	1.26		03/26/15 00:53	74-87-3	
Dibromochloromethane	**<1.1**	ug/m3	2.2	1.26		03/26/15 00:53	124-48-1	
1,2-Dibromoethane (EDB)	**<0.29**	ug/m3	2.0	1.26		03/26/15 00:53	106-93-4	
1,1-Dichloroethane	**<0.18**	ug/m3	1.0	1.26		03/26/15 00:53	75-34-3	
1,2-Dichloroethane	**<0.15**	ug/m3	0.52	1.26		03/26/15 00:53	107-06-2	
1,1-Dichloroethene	**<0.13**	ug/m3	1.0	1.26		03/26/15 00:53	75-35-4	
cis-1,2-Dichloroethene	**<0.25**	ug/m3	2.5	1.26		03/26/15 00:53	156-59-2	
trans-1,2-Dichloroethene	**<0.21**	ug/m3	1.0	1.26		03/26/15 00:53	156-60-5	
1,2-Dichloropropane	**<0.19**	ug/m3	1.2	1.26		03/26/15 00:53	78-87-5	
cis-1,3-Dichloropropene	**<0.17**	ug/m3	1.2	1.26		03/26/15 00:53	10061-01-5	
trans-1,3-Dichloropropene	**<0.19**	ug/m3	1.2	1.26		03/26/15 00:53	10061-02-6	
Ethylbenzene	**0.99J**	ug/m3	1.1	1.26		03/26/15 00:53	100-41-4	
Isopropylbenzene (Cumene)	**<0.63**	ug/m3	3.2	1.26		03/26/15 00:53	98-82-8	
Methylene Chloride	**<0.29**	ug/m3	4.4	1.26		03/26/15 00:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.22**	ug/m3	2.6	1.26		03/26/15 00:53	108-10-1	
Methyl-tert-butyl ether	**<0.11**	ug/m3	0.92	1.26		03/26/15 00:53	1634-04-4	
Styrene	**0.75J**	ug/m3	1.1	1.26		03/26/15 00:53	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.29**	ug/m3	0.88	1.26		03/26/15 00:53	79-34-5	
Tetrachloroethene	**<0.24**	ug/m3	0.87	1.26		03/26/15 00:53	127-18-4	
Toluene	**3.7**	ug/m3	0.97	1.26		03/26/15 00:53	108-88-3	
1,1,1-Trichloroethane	**<0.18**	ug/m3	0.88	1.26		03/26/15 00:53	71-55-6	
1,1,2-Trichloroethane	**<0.31**	ug/m3	0.70	1.26		03/26/15 00:53	79-00-5	
Trichloroethene	**<0.22**	ug/m3	0.69	1.26		03/26/15 00:53	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.33	1.26		03/26/15 00:53	75-01-4	
m&p-Xylene	**3.5**	ug/m3	2.2	1.26		03/26/15 00:53	179601-23-1	
o-Xylene	**1.6**	ug/m3	1.1	1.26		03/26/15 00:53	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: NCM BOA
Pace Project No.: 10300341

Sample: AA95-SG **Lab ID: 10300341019** Collected: 03/21/15 11:30 Received: 03/23/15 08:50 Matrix: Air

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Acetone	**117**	ug/m3	3.0	1.26		03/26/15 01:20	67-64-1	E
Benzene	**2.0**	ug/m3	0.41	1.26		03/26/15 01:20	71-43-2	
Bromodichloromethane	**4.4**	ug/m3	1.7	1.26		03/26/15 01:20	75-27-4	
Bromoform	**<0.41**	ug/m3	6.6	1.26		03/26/15 01:20	75-25-2	
Bromomethane	**<0.34**	ug/m3	1.0	1.26		03/26/15 01:20	74-83-9	
2-Butanone (MEK)	**9.1**	ug/m3	0.76	1.26		03/26/15 01:20	78-93-3	
Carbon disulfide	**52.0**	ug/m3	0.79	1.26		03/26/15 01:20	75-15-0	
Carbon tetrachloride	**<0.40**	ug/m3	0.81	1.26		03/26/15 01:20	56-23-5	
Chlorobenzene	**<0.13**	ug/m3	1.2	1.26		03/26/15 01:20	108-90-7	
Chloroethane	**<0.20**	ug/m3	0.68	1.26		03/26/15 01:20	75-00-3	
Chloroform	**99.3**	ug/m3	0.62	1.26		03/26/15 01:20	67-66-3	
Chloromethane	**<0.24**	ug/m3	0.53	1.26		03/26/15 01:20	74-87-3	
Dibromochloromethane	**<1.1**	ug/m3	2.2	1.26		03/26/15 01:20	124-48-1	
1,2-Dibromoethane (EDB)	**<0.29**	ug/m3	2.0	1.26		03/26/15 01:20	106-93-4	
1,1-Dichloroethane	**<0.18**	ug/m3	1.0	1.26		03/26/15 01:20	75-34-3	
1,2-Dichloroethane	**<0.15**	ug/m3	0.52	1.26		03/26/15 01:20	107-06-2	
1,1-Dichloroethene	**<0.13**	ug/m3	1.0	1.26		03/26/15 01:20	75-35-4	
cis-1,2-Dichloroethene	**<0.25**	ug/m3	2.5	1.26		03/26/15 01:20	156-59-2	
trans-1,2-Dichloroethene	**<0.21**	ug/m3	1.0	1.26		03/26/15 01:20	156-60-5	
1,2-Dichloropropane	**<0.19**	ug/m3	1.2	1.26		03/26/15 01:20	78-87-5	
cis-1,3-Dichloropropene	**<0.17**	ug/m3	1.2	1.26		03/26/15 01:20	10061-01-5	
trans-1,3-Dichloropropene	**<0.19**	ug/m3	1.2	1.26		03/26/15 01:20	10061-02-6	
Ethylbenzene	**1.2**	ug/m3	1.1	1.26		03/26/15 01:20	100-41-4	
Isopropylbenzene (Cumene)	**<0.63**	ug/m3	3.2	1.26		03/26/15 01:20	98-82-8	
Methylene Chloride	**1.0J**	ug/m3	4.4	1.26		03/26/15 01:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<0.22**	ug/m3	2.6	1.26		03/26/15 01:20	108-10-1	
Methyl-tert-butyl ether	**<0.11**	ug/m3	0.92	1.26		03/26/15 01:20	1634-04-4	
Styrene	**0.71J**	ug/m3	1.1	1.26		03/26/15 01:20	100-42-5	
1,1,2,2-Tetrachloroethane	**<0.29**	ug/m3	0.88	1.26		03/26/15 01:20	79-34-5	
Tetrachloroethene	**<0.24**	ug/m3	0.87	1.26		03/26/15 01:20	127-18-4	
Toluene	**4.6**	ug/m3	0.97	1.26		03/26/15 01:20	108-88-3	
1,1,1-Trichloroethane	**<0.18**	ug/m3	0.88	1.26		03/26/15 01:20	71-55-6	
1,1,2-Trichloroethane	**<0.31**	ug/m3	0.70	1.26		03/26/15 01:20	79-00-5	
Trichloroethene	**<0.22**	ug/m3	0.69	1.26		03/26/15 01:20	79-01-6	
Vinyl chloride	**<0.12**	ug/m3	0.33	1.26		03/26/15 01:20	75-01-4	
m&p-Xylene	**4.2**	ug/m3	2.2	1.26		03/26/15 01:20	179601-23-1	
o-Xylene	**1.2**	ug/m3	1.1	1.26		03/26/15 01:20	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: NCM BOA
Pace Project No.: 10300341

QC Batch: AIR/22835 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10300341001, 10300341002, 10300341003, 10300341004, 10300341005, 10300341006, 10300341007, 10300341008, 10300341009, 10300341010, 10300341011, 10300341012, 10300341013, 10300341014, 10300341015, 10300341016, 10300341017, 10300341018, 10300341019

METHOD BLANK: 1925412 Matrix: Air
Associated Lab Samples: 10300341001, 10300341002, 10300341003, 10300341004, 10300341005, 10300341006, 10300341007, 10300341008, 10300341009, 10300341010, 10300341011, 10300341012, 10300341013, 10300341014, 10300341015, 10300341016, 10300341017, 10300341018, 10300341019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.14	0.70	03/25/15 15:00	
1,1,2,2-Tetrachloroethane	ug/m3	<0.23	0.70	03/25/15 15:00	
1,1,2-Trichloroethane	ug/m3	<0.24	0.56	03/25/15 15:00	
1,1-Dichloroethane	ug/m3	<0.14	0.82	03/25/15 15:00	
1,1-Dichloroethene	ug/m3	<0.10	0.81	03/25/15 15:00	
1,2-Dibromoethane (EDB)	ug/m3	<0.23	1.6	03/25/15 15:00	
1,2-Dichloroethane	ug/m3	<0.12	0.41	03/25/15 15:00	
1,2-Dichloropropane	ug/m3	<0.15	0.94	03/25/15 15:00	
2-Butanone (MEK)	ug/m3	<0.27	0.60	03/25/15 15:00	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.17	2.1	03/25/15 15:00	
Acetone	ug/m3	<1.2	2.4	03/25/15 15:00	
Benzene	ug/m3	<0.12	0.32	03/25/15 15:00	
Bromodichloromethane	ug/m3	<0.18	1.4	03/25/15 15:00	
Bromoform	ug/m3	<0.32	5.3	03/25/15 15:00	
Bromomethane	ug/m3	<0.27	0.79	03/25/15 15:00	
Carbon disulfide	ug/m3	<0.072	0.63	03/25/15 15:00	
Carbon tetrachloride	ug/m3	<0.32	0.64	03/25/15 15:00	
Chlorobenzene	ug/m3	<0.11	0.94	03/25/15 15:00	
Chloroethane	ug/m3	<0.16	0.54	03/25/15 15:00	
Chloroform	ug/m3	<0.18	0.50	03/25/15 15:00	
Chloromethane	ug/m3	<0.19	0.42	03/25/15 15:00	
cis-1,2-Dichloroethene	ug/m3	<0.20	2.0	03/25/15 15:00	
cis-1,3-Dichloropropene	ug/m3	<0.14	0.92	03/25/15 15:00	
Dibromochloromethane	ug/m3	<0.87	1.7	03/25/15 15:00	
Ethylbenzene	ug/m3	<0.18	0.88	03/25/15 15:00	
Isopropylbenzene (Cumene)	ug/m3	<0.50	2.5	03/25/15 15:00	
m&p-Xylene	ug/m3	<0.14	1.8	03/25/15 15:00	
Methyl-tert-butyl ether	ug/m3	<0.089	0.73	03/25/15 15:00	
Methylene Chloride	ug/m3	<0.23	3.5	03/25/15 15:00	
o-Xylene	ug/m3	<0.44	0.88	03/25/15 15:00	
Styrene	ug/m3	<0.14	0.87	03/25/15 15:00	
Tetrachloroethene	ug/m3	<0.19	0.69	03/25/15 15:00	
Toluene	ug/m3	<0.14	0.77	03/25/15 15:00	
trans-1,2-Dichloroethene	ug/m3	<0.16	0.81	03/25/15 15:00	
trans-1,3-Dichloropropene	ug/m3	<0.15	0.92	03/25/15 15:00	
Trichloroethene	ug/m3	<0.18	0.55	03/25/15 15:00	
Vinyl chloride	ug/m3	<0.093	0.26	03/25/15 15:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: NCM BOA
Pace Project No.: 10300341

LABORATORY CONTROL SAMPLE: 1925413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	55.5	57.6	104	72-140	
1,1,2,2-Tetrachloroethane	ug/m3	69.8	78.3	112	68-137	
1,1,2-Trichloroethane	ug/m3	55.5	54.7	98	66-138	
1,1-Dichloroethane	ug/m3	41.2	34.0	83	68-137	
1,1-Dichloroethene	ug/m3	40.3	33.5	83	73-138	
1,2-Dibromoethane (EDB)	ug/m3	78.1	101	129	75-132	
1,2-Dichloroethane	ug/m3	41.2	37.6	91	73-139	
1,2-Dichloropropane	ug/m3	47	52.1	111	70-130	
2-Butanone (MEK)	ug/m3	30	24.5	82	67-131	
4-Methyl-2-pentanone (MIBK)	ug/m3	41.7	51.1	123	68-134	
Acetone	ug/m3	24.2	21.9	90	63-144	
Benzene	ug/m3	32.5	30.2	93	64-139	
Bromodichloromethane	ug/m3	68.2	79.1	116	75-134	
Bromoform	ug/m3	105	117	112	72-130	
Bromomethane	ug/m3	39.5	30.8	78	71-132	
Carbon disulfide	ug/m3	31.7	26.2	83	56-139	
Carbon tetrachloride	ug/m3	64	73.8	115	75-150	
Chlorobenzene	ug/m3	46.8	45.9	98	71-132	
Chloroethane	ug/m3	26.8	21.5	80	71-129	
Chloroform	ug/m3	49.7	46.9	94	73-136	
Chloromethane	ug/m3	21	16.2	77	52-143	
cis-1,2-Dichloroethene	ug/m3	40.3	37.0	92	64-137	
cis-1,3-Dichloropropene	ug/m3	46.2	46.5	101	75-128	
Dibromochloromethane	ug/m3	86.6	99.1	114	75-136	
Ethylbenzene	ug/m3	44.2	52.6	119	71-136	
Isopropylbenzene (Cumene)	ug/m3	50	59.0	118	72-139	
m&p-Xylene	ug/m3	88.3	104	118	71-134	
Methyl-tert-butyl ether	ug/m3	36.7	34.2	93	73-134	
Methylene Chloride	ug/m3	35.3	27.4	78	64-130	
o-Xylene	ug/m3	44.2	51.5	117	75-134	
Styrene	ug/m3	43.3	45.2	104	75-133	
Tetrachloroethene	ug/m3	69	73.7	107	66-137	
Toluene	ug/m3	38.3	36.8	96	70-129	
trans-1,2-Dichloroethene	ug/m3	40.3	33.2	82	61-140	
trans-1,3-Dichloropropene	ug/m3	46.2	46.6	101	75-134	
Trichloroethene	ug/m3	54.6	49.5	91	70-134	
Vinyl chloride	ug/m3	26	19.9	77	72-129	

SAMPLE DUPLICATE: 1926218

Parameter	Units	10300341007 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	<0.19	<0.19		25	
1,1,2,2-Tetrachloroethane	ug/m3	<0.32	<0.32		25	
1,1,2-Trichloroethane	ug/m3	<0.34	<0.34		25	
1,1-Dichloroethane	ug/m3	<0.19	<0.19		25	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: NCM BOA
Pace Project No.: 10300341

SAMPLE DUPLICATE: 1926218

Parameter	Units	10300341007 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethene	ug/m3	<0.14	<0.14		25	
1,2-Dibromoethane (EDB)	ug/m3	<0.33	<0.33		25	
1,2-Dichloroethane	ug/m3	<0.17	<0.17		25	
1,2-Dichloropropane	ug/m3	<0.21	<0.21		25	
2-Butanone (MEK)	ug/m3	5.8	5.3	9	25	
4-Methyl-2-pentanone (MIBK)	ug/m3	<0.24	<0.24		25	
Acetone	ug/m3	49.6	88.7	57	25	E,R1
Benzene	ug/m3	3.5	3.4	4	25	
Bromodichloromethane	ug/m3	1.9J	1.8J		25	
Bromoform	ug/m3	<0.45	<0.45		25	
Bromomethane	ug/m3	0.58J	0.56J		25	
Carbon disulfide	ug/m3	157	170	8	25	E
Carbon tetrachloride	ug/m3	<0.44	<0.44		25	
Chlorobenzene	ug/m3	<0.15	<0.15		25	
Chloroethane	ug/m3	<0.22	<0.22		25	
Chloroform	ug/m3	97.2	93.5	4	25	
Chloromethane	ug/m3	<0.27	<0.27		25	
cis-1,2-Dichloroethene	ug/m3	<0.27	<0.27		25	
cis-1,3-Dichloropropene	ug/m3	<0.19	<0.19		25	
Dibromochloromethane	ug/m3	<1.2	<1.2		25	
Ethylbenzene	ug/m3	1.4	1.4	3	25	
Isopropylbenzene (Cumene)	ug/m3	<0.70	<0.70		25	
m&p-Xylene	ug/m3	4.8	5.0	4	25	
Methyl-tert-butyl ether	ug/m3	<0.12	<0.12		25	
Methylene Chloride	ug/m3	1.8J	1.8J		25	
o-Xylene	ug/m3	2.0	2.2	7	25	
Styrene	ug/m3	0.84J	0.86J		25	
Tetrachloroethene	ug/m3	<0.26	<0.26		25	
Toluene	ug/m3	6.4	6.2	3	25	
trans-1,2-Dichloroethene	ug/m3	<0.23	<0.23		25	
trans-1,3-Dichloropropene	ug/m3	<0.21	<0.21		25	
Trichloroethene	ug/m3	<0.25	<0.25		25	
Vinyl chloride	ug/m3	<0.13	<0.13		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: NCM BOA
Pace Project No.: 10300341

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

SAMPLE QUALIFIERS

Sample: 10300341001

[1]	The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10300341012

[1]	The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
R1	RPD value was outside control limits.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCM BOA
Pace Project No.: 10300341

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300341001	**AA108-SG**	TO-15	AIR/22835		
10300341002	**AA106-SG**	TO-15	AIR/22835		
10300341003	**AA107-SG**	TO-15	AIR/22835		
10300341004	**AA105-SG**	TO-15	AIR/22835		
10300341005	**AA104-SG**	TO-15	AIR/22835		
10300341006	**AA100-SG**	TO-15	AIR/22835		
10300341007	**AA97-SG**	TO-15	AIR/22835		
10300341008	**AA98-SG**	TO-15	AIR/22835		
10300341009	**AA92-SG**	TO-15	AIR/22835		
10300341010	**AA91-SG**	TO-15	AIR/22835		
10300341011	**AA90-SG**	TO-15	AIR/22835		
10300341012	**AA93-SG**	TO-15	AIR/22835		
10300341013	**AA94-SG**	TO-15	AIR/22835		
10300341014	**AA96-SG**	TO-15	AIR/22835		
10300341015	**AA99-SG**	TO-15	AIR/22835		
10300341016	**AA101-SG**	TO-15	AIR/22835		
10300341017	**AA102-SG**	TO-15	AIR/22835		
10300341018	**AA103-SG**	TO-15	AIR/22835		
10300341019	**AA95-SG**	TO-15	AIR/22835		

1030341

Pace Analytical®
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

14389

Section A Required Client Information:

Company: EnviroAnalytics Group
Address: 1430 Sparrows Point Blvd
Sparrows Point, MD 21219
Email To: jcalenda@enviroanalyticsgroup.com
Phone: 314-620-3056 Fax:
Requested Due Date/TAT: 3 Day

Section B Required Project Information:

Report To: James Calenda
Copy To:
Purchase Order No.: EAG-SPT-2527
Project Name: NCM BOA
Project Number:

Section C Invoice Information:

Attention: Laura Sargent
Company Name: EnviroAnalytics Group
Address: 1650 Des Peres Rd, Suite 303 St. Louis, MO 63131
Pace Quote Reference: 00018597
Pace Project Manager/Sales Rep.: Rachael Christner
Pace Profile #:

Program: UST | Superfund | Emissions | Clean Air Act | Voluntary Clean Up | Dry Clean | RCRA | Other

Location of Sampling by State:

Reporting Units: ug/m³ mg/m³ PPBV PPMV Other

Report Level II. III. IV. Other

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START END/GRAB DATE	COLLECTED COMPOSITE START END/GRAB TIME	COLLECTED COMPOSITE - DATE	COLLECTED COMPOSITE - TIME	Canister Pressure (Initial Field - psig)	Canister Pressure (Final Field - psig)	Summa Can Number	Flow Control Number	Method: PM10	3C- Fixed Gas (%)	TO-3	TO-3M (Methane)	TO-4 (PCBs)	TO-13 (PAH)	TO-14	TO-15	TO15 Short List*	Pace Lab ID
1	AA108-SG			3-19-15	9:35	3-20-15	9:35	-30	-4	2390								X			001
2	AA106-SG				9:37		9:37	-30	-4	1486											002
3	AA107-SG				9:38		9:38	-30	-4	0657											003
4	AA105-SG				9:39		9:39	-30	-4	0399											004
5	AA104-SG				9:41		9:41	-28	-3	570											005
6	AA100-SG				9:43		9:43	-26	-2	1289											006
7	AA97-SG				9:45		9:45	-30	-3	2742											007
8	AA98-SG				9:46		9:46	-27	-20	0839											008
9	AA92-SG				9:47		9:47	-30	-1	682											009
10	AA91-SG				9:49		9:49	-28	-1	2808											010
11	AA90-SG				9:50		9:50	-29	-21	2702											011
12	AA93-SG				9:51		9:51	-30	-4	859											012

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Stew Kabis/EAG	3/21/15	12:45	[signature] Pace	32315	0850

SAMPLE CONDITIONS

	Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact
	Amb	Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Stew Kabis
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM / DD / YY): 3-21-15

ORIGINAL

1030341

Pace Analytical®
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

14388

Section A Required Client Information:

Company: EnviroAnalytics Group
Address: 1430 Sparrows Point Blvd
Sparrows Point, MD 21219
Email To: jcalenda@enviroanalyticsgroup.com
Phone: 314-620-3056 Fax:
Requested Due Date/TAT: 3-Day

Section B Required Project Information:

Report To: James Calenda
Copy To:
Purchase Order No.: EAG-SPT-2527
Project Name: NCM BOA
Project Number:

Section C Invoice Information:

Attention: Laura Sargent
Company Name: EnviroAnalytics Group
Address: 1650 Des Peres Rd, Suite 303 St. Louis, MO 63131
Pace Quote Reference: 00018597
Pace Project Manager/Sales Rep.: Rachael Christner
Pace Profile #:

Program: UST Superfund Emissions Clean Air Act Voluntary Clean Up Dry Clean RCRA Other

Location of Sampling by State:

Reporting Units: ug/m³ mg/m³ PPBV PPMV Other

Report Level II. III. IV. Other

'Section D Required Client Information

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START END/GRAB DATE	COLLECTED COMPOSITE START END/GRAB TIME	COLLECTED COMPOSITE - DATE	COLLECTED COMPOSITE - TIME	Canister Pressure (Initial Field - psig)	Canister Pressure (Final Field - psig)	Summa Can Number	Flow Control Number	Method: TO-15	Pace Lab ID
1	AA94-SG			3-19-15	9:51	3-20	9:51	-30	-4	2094		X	013
2	AA96-SG			3-19-15	9:52	3-20	9:52	-30	-6	955			014
3	AA99-SG			3-19-15	9:53	3-20	9:53	-28	-1.5	2335			015
4	AA101-SG			3-19-15	9:54	3-20	9:54	-30	-2	2749			016
5	AA102-SG			3-19-15	9:56	3-20	9:56	-30	-4	1666			017
6	AA103-SG			3-19-15	9:57	3-20	9:57	-30	-1	963			018
7	AA95-SG			3-20-15	11:30	3-21-15	11:30	-28	-4	1046			019
8													
9													
10													
11													
12													

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Steve Kabis/EAG	3-21-15	12:45	[signature] Pace	32315	0850

SAMPLE CONDITIONS

Amb	Y/N	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N	Y/N
	Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Steve Kabis

SIGNATURE of SAMPLER: [signature] DATE Signed (MM / DD / YY): 3-21-15

ORIGINAL

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 Air Technical Phone: 612.607.6386

Pace Analytical	Document Name: **SCUR Exceptions Form**	Document Revised: 16Apr2012 Page 1 of 1
	Document No.: **F-MN-L-220-Rev.00**	Issuing Authority: Pace Minnesota Quality Office

Workorder #: _____

Issue	Sample ID	Container Type/#
6322 3807 7425		
6322 3807 7447		
6322 3807 7458		
6322 3807 7414		
6322 3807 7436		

Pace Analytical®	Document Name: Air Sample Condition Upon Receipt	Document Revised: 26Dec2013 Page 1 of 1
	Document No.: F-MN-A-106-rev.09	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: enviro Analytics Group

Project #: WO# : 10300341

10300341

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: on other sheet

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other: **Temp Blank rec:** ☐ Yes ☒ No

Temp. (TO17 and TO13 samples only) (°C): **Corrected Temp (°C):** **Thermom. Used:** ☐ B88A912167504 ☐ B88A9132521491 ☐ 72337080 ☐ 80512447

Temp should be above freezing to 6°C **Correction Factor:** **Date & Initials of Person Examining Contents:** 3/23/15

Type of ice Received ☐ Blue ☐ Wet ☒ None

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7. 3 day
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Media: air can				11.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.

Samples Received:

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID
108	2390	0146	90	2702	0745
106	1486	1052	93	0859	0279
107	0657	0376	94	2094	0437
105	0399	0752	96	0955	0743
104	0570	1046	99	2335	0892
100	1289	0069	101	2749	0742
97	2742	0389	102	1666	0210
98	0839	0313	103	0963	0306
92	0682	0094	95	1046	0543
91	2808	0599			

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

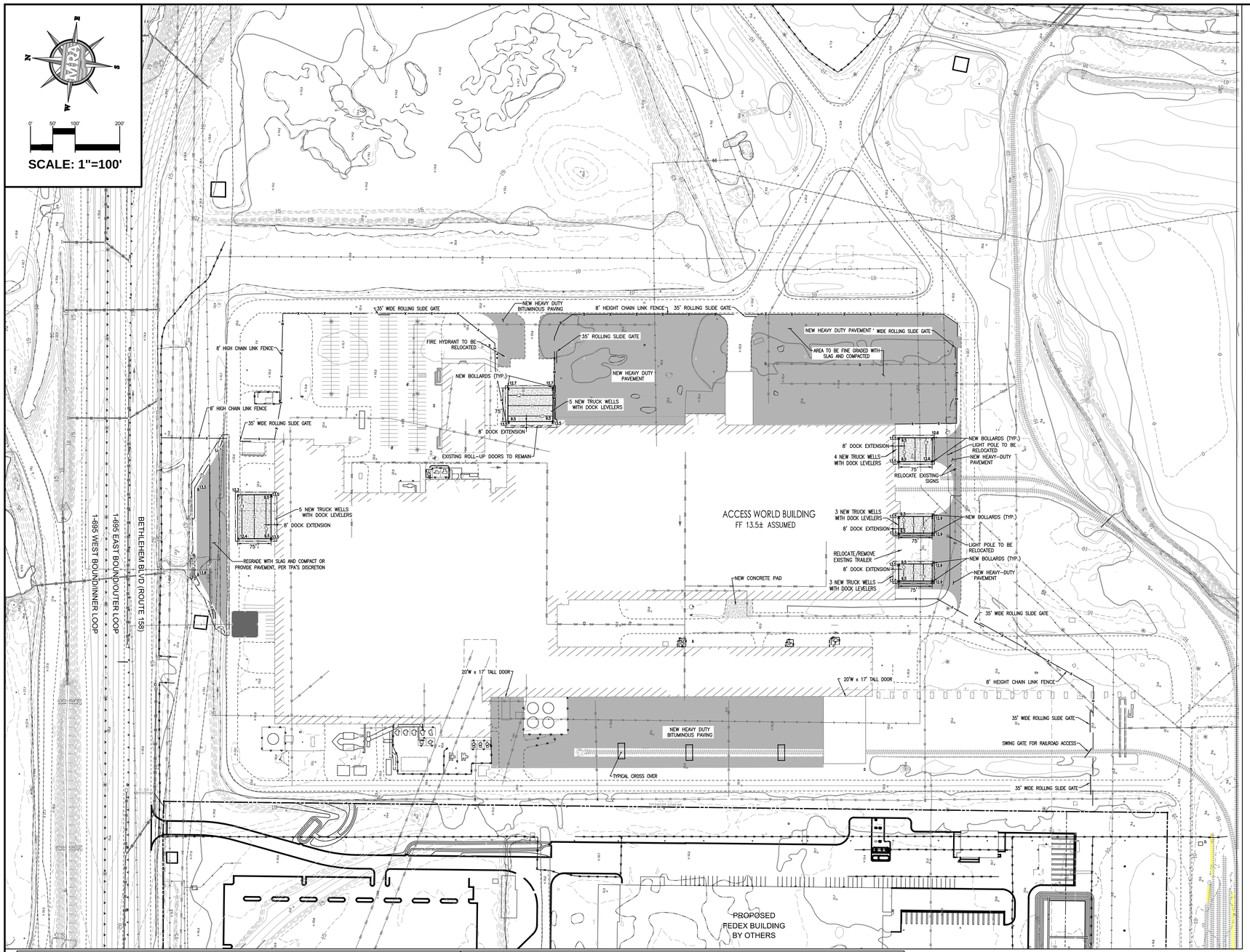
Person Contacted: Date/Time:

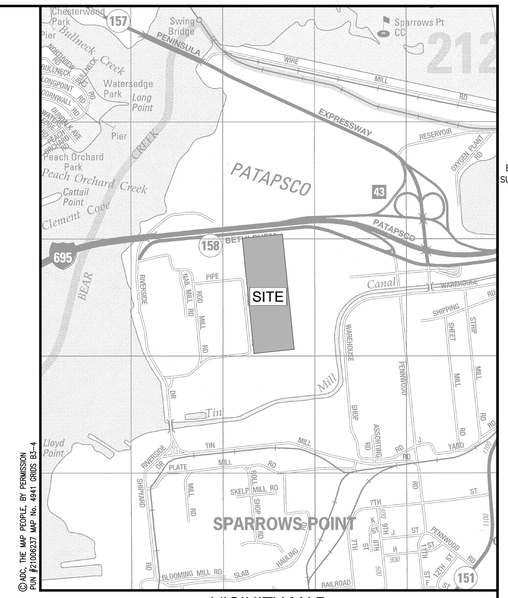
Comments/Resolution:

Project Manager Review: **Date:** 3/23/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

APPENDIX C

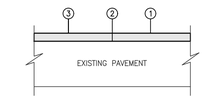




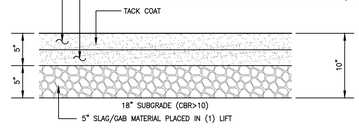
VICINITY MAP
SCALE: 1" = 1,200'

LEGEND

1. 4" HOT MIX ASPHALT SUPERPAVE 12.5 mm FOR SURFACE, PG 64.22, LEVEL 2.
2. TOP OF EXISTING PAVEMENT BEFORE 2" MILL.
3. TOP OF EXISTING PAVEMENT AFTER 2" MILL.



MILL & OVERLAY
NOT TO SCALE



NOTES

1. SUPERPAVE LEVEL 1 HOT MIX ASPHALT
2. SUPERPAVE PERFORMANCE GRADE ASPHALT CEMENTS SHALL BE PERFORMANCE GRADES PG64-22 AND DESIGNED AS LEVEL 1 MIXES @ 50 GYRATIONS N-DESIGN.
3. THE DIRECTOR MAY REQUIRE WETTING OF THE BASE COURSE BEFORE LAYING THE FIRST LIFT.
4. CONTRACTOR TO REVIEW GEO-TECHNICAL SITE MANUAL FOR FINAL PAVING SECTION THICKNESSES NOTES, AND DETAILS.
5. PRIOR TO BIDDING AND CONSTRUCTION, CONTRACTOR TO VERIFY PAVEMENT SECTION, DETAIL AND THICKNESS WITH ON-SITE GEO-TECHNICAL ENGINEER AND DESIGN GEO-TECHNICAL ENGINEER AND REVIEW ON-SITE GEO-TECH REPORT.

HEAVY DUTY PAVEMENT SECTION
NOT TO SCALE

LEGEND

PROPOSED	EXISTING
PROPERTY LINE	PROPERTY LINE
RIGHT OF WAY	RIGHT OF WAY
CL OF ROAD/STATIONS	CL OF ROAD
EDGE OF PAVING	EDGE OF PAVING
CURB	CURB
8' C/L FENCE	BUILDING
BUILDING SETBACK	1' CONTOURS
EASEMENT	5' CONTOURS
1' CONTOUR	WETLANDS
2' CONTOUR	25' WETLANDS BUFFER
5' CONTOUR	WATERS OF THE U.S.
STORM DRAIN	STREAM BUFFER
WATER	STREAM
SANITARY SEWER	STORM DRAIN
CLEARING LIMIT	WATER
BUILDING	SANITARY SEWER
CONCRETE	GAS MAIN
PAVEMENT	ELECTRIC-OVERHEAD
	ELECTRIC-UNDERGROUND
	WOODS
	FENCE
	RAILROAD

NOTE: ALL GATES ARE TO BE MANUAL.

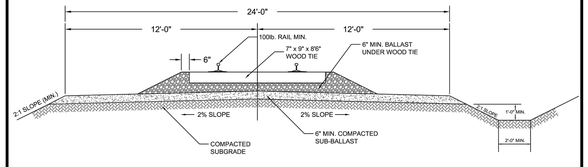
SITE ANALYSIS

TOTAL AREA OF SITE:	2,482,920 S.F. / 57.00+/- AC.
AREA WITHIN LIMITS OF DISTURBANCE SHOWN:	65,776 S.F. / 1.51 AC.
AREA TO BE VEGETATIVELY STABILIZED:	0 S.F. / 0.00 AC.
AREA TO BE IMPERVIOUS (BLDGS & PAVED AREAS):	65,776 S.F. / 1.51 AC.
ESTIMATED TOTAL CUT (NOT INCLUDING TOPSOIL):	2,728 CY
ESTIMATED TOTAL FILL:	701 CY
TOPSOIL:	N/A

" THE EARTHWORK QUANTITIES SHOWN HEREON ARE FOR INFORMATION PURPOSES ONLY. MRA MAKES NO GUARANTEES OF ACCURACY OF QUANTITIES OR BALANCE OF SITE. THE DEVELOPER AND CONTRACTOR SHALL TAKE FULL RESPONSIBILITY OF ACTUAL EARTHWORK QUANTITIES ENCOUNTERED DURING CONSTRUCTION. "

SITE DATA

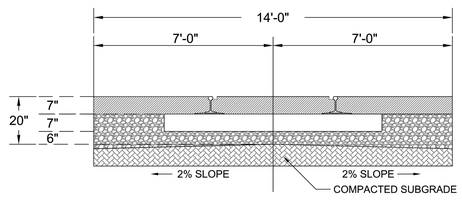
TOTAL ONSITE AREA:	57.00 AC
ONSITE DISTURBED AREA (LOD):	1.51 AC
ONSITE EXISTING IMPERVIOUS AREA:	51.08 AC
ONSITE PROPOSED IMPERVIOUS AREA:	51.56 AC
WATERSHED:	BEAR CREEK/PATAPSCO RIVER [PATAPSCO RIVER AREA SUB-BASIN 02-13-09]



STANDARD TRACK SECTION

SCALE:	DRAWN BY:	DATE:	DRAWING:
N.T.S.	SJY	6/15/16	TPR-0101

TRADEPOINT RAIL
Sparrows Point, Maryland



TRACK SECTION FOR EXISTING PAVED AREA - AFP SITE

SCALE:	DRAWN BY:	DATE:	DRAWING:
N.T.S.	SJY	6/15/16	TPR-0101

TRADEPOINT RAIL
Sparrows Point, Maryland

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS & LANDSCAPE ARCHITECTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
(410) 515-9000
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www.mragta.com

TRADEPOINTATLANTIC
TRADEPOINT ATLANTIC
1600 SPARROWS POINT BOULEVARD
BALTIMORE, MARYLAND 21219

WHITING-TURNER
300 EAST JOPPA ROAD
BALTIMORE, MD 21286

ACCESS WORLD
TWO STAMFORD PLAZA
281 TRESSER BLVD
STAMFORD, CT 06901

Rev	Date	Description

DEVELOPMENT PLAN
ACCESS MILL SITE (FKA COLD MILL)
at Tradepoint Atlantic

Project No.:	19391
Date:	SEPT. 23, 2016
Drawn By:	AGD
Checked By:	PTM
Scale:	1"=100'

ACCESS WORLD DEVELOPMENT PLAN

15TH ELECTION DISTRICT
7TH COUNCILMANIC DISTRICT
BALTIMORE COUNTY, MARYLAND

D-1

APPENDIX D

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
- 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)

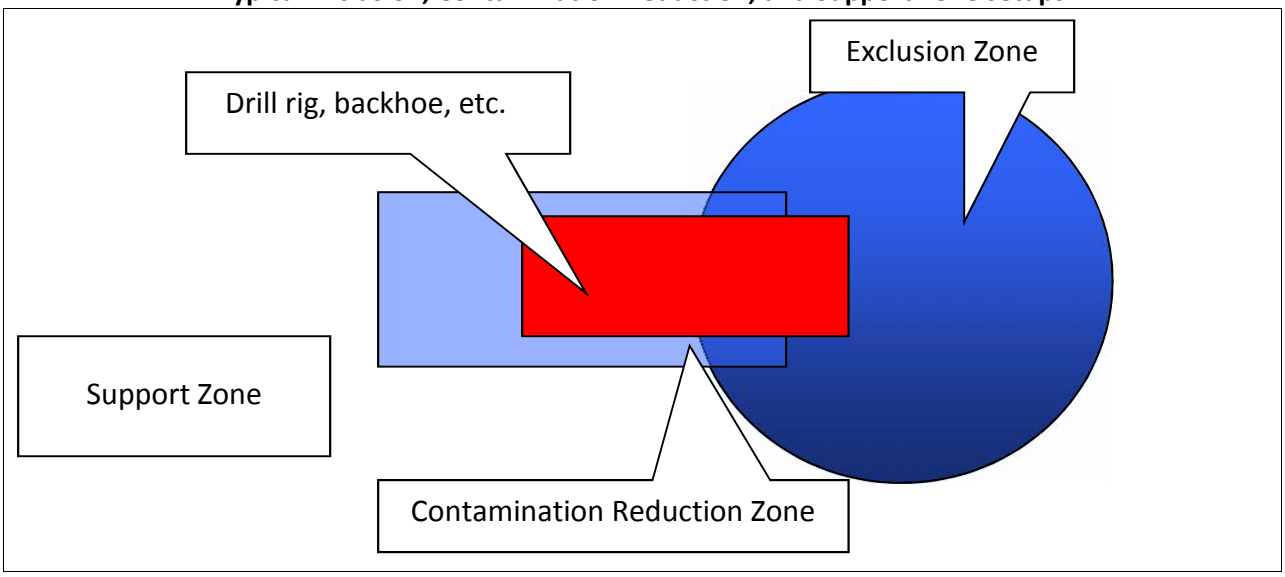
Between the EZ and the SZ will be the CRZ, which will provide a transition between the potentially contaminated EZ and the clean SZ. The CRZ (located upwind of the EZ, if possible) will be a corridor leading from the EZ and will serve as a buffer to further reduce the probability of the SZ becoming contaminated. 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

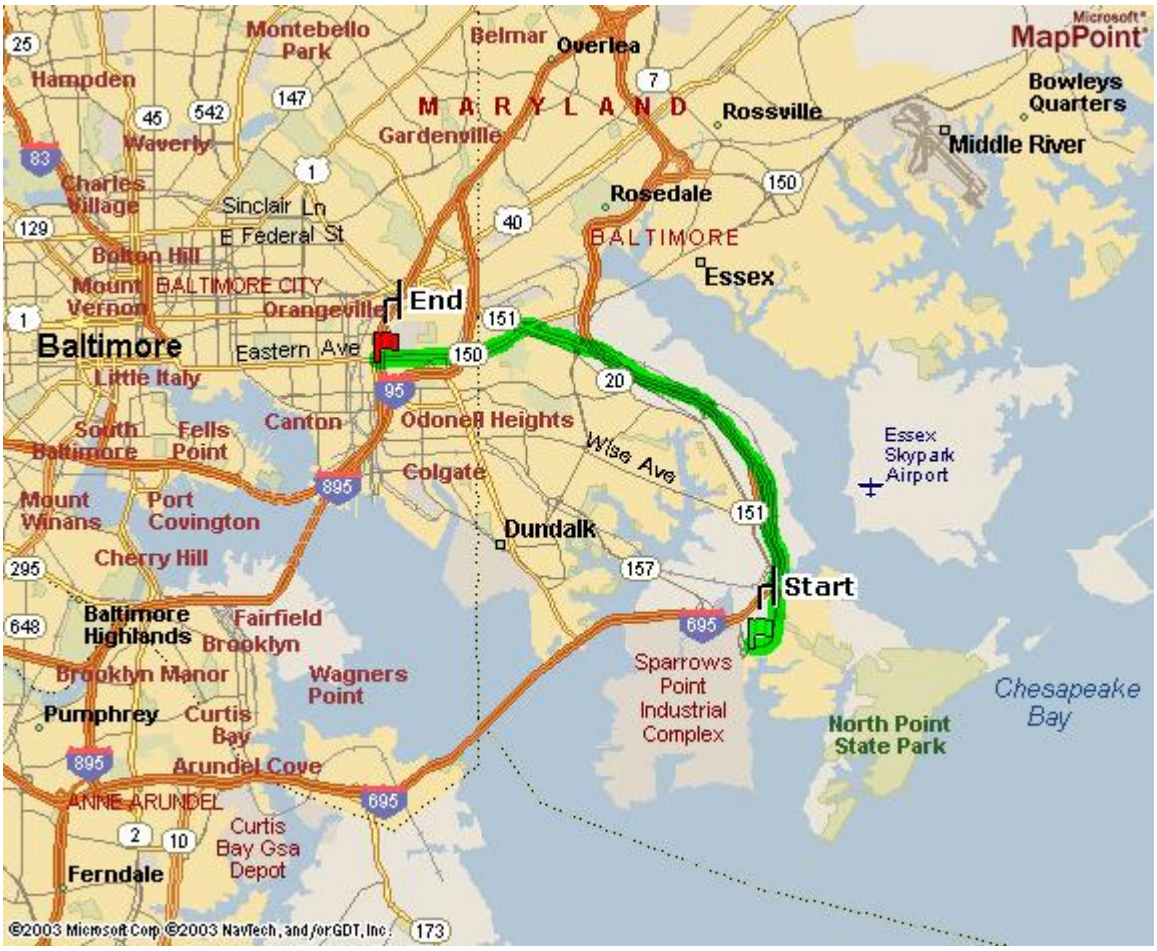
Hospital

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 E

CONTAINMENT REMEDY OPERATIONS AND MAINTENANCE PLAN
PARCEL ! τ FORMER SPARROWS POINT STEEL MILL

Containment Remedy Operations and Maintenance Overview

In accordance with the Response Action Plan (RAP) for the Parcel A4 development area located on the northern portion of the Sparrows Point Peninsula in Sparrows Point, Maryland (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 (capping) will be constructed as described in the MDE-approved RAP. 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 asphalt-paved areas will consist of a 10-inch thick combination of base and asphalt. The mill & overlay section will consist of 4 inches of asphalt over the underlying older pavement. The designated paved areas, as identified in the RAP, will be maintained to ensure the 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	Parcel A4 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	Parcel A4 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: