RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B14-1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:

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1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area B: Sub-Parcel B14-1 (the Site). Tradepoint Atlantic submitted a letter (**Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. As shown on **Figure 1**, Sub-Parcel B14-1 consists of approximately 55.6 acres located primarily within Parcel B14, but extending slightly into Parcel B8 and Parcel B16, of the approximately 3,100-acre former steel plant property.

As shown on **Figure 2**, Sub-Parcel B14-1 is slated for development as an automotive parking lot or laydown area. The planned development activities will generally include grading and fill, utility installation, asphalt paving, and landscaping. Proposed development follows the Filling and Capping Corrective Measure Alternative evaluated as part of the Humphrey Impoundment Corrective Measures Study (CMS) Report (Revision 0 dated April 27, 2021). Outside of the main development area designated as Sub-Parcel B14-1, a temporary construction zone (not intended for occupancy) with a total area of less than 0.05 acre within the Limit of Disturbance (LOD) will be utilized to install a Tin Mill Canal (TMC) stormwater outfall for the project.

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 (MDE), 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 (USEPA), effective November 25, 2014.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial) and plans for the property include demolition and redevelopment over the next several years. Sub-Parcel B14-1 is part of the acreage that remains subject to the requirements of the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from the USEPA on September 12, 2014.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled

Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B14-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

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

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the RADWP, 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 RADWP.

This RADWP provides a Site description and history; summary of environmental conditions identified by the Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the Parcel B14 Phase II Investigation; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and any necessary engineering and/or institutional controls to facilitate the planned development and address the impacts and potential human health exposures. These controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering/institutional controls approved and installed for this RADWP shall be described in closure certification documentation submitted to the MDE demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.

The remaining acreages of Parcel B8, Parcel B14, and Parcel B16 will be addressed in future work associated with completion of the obligations of the ACO and associated VCP requirements. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use. As noted above, a temporary construction zone with a total area of less than 0.05 acre will be utilized to install a TMC outfall for the project outside of the sub-parcel. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel B14-1 development project consists of approximately 55.6 acres comprising the majority of Parcel B14 as well as small portions of Parcel B8 and Parcel B16 (**Figure 1**). The proposed development on this sub-parcel will include an automotive parking lot or laydown area (**Figure 2**). Outside of the main development area designated as Sub-Parcel B14-1, a temporary construction zone (not intended for occupancy) with a total area of less than 0.05 acre within the construction LOD will be utilized to install a TMC outfall for the project. The Site is not currently occupied. The Site contains the majority of the Humphrey Impoundment, which will be filled as part of the proposed development. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Ground surface elevations at the Site range from approximately 4 to 32 feet above mean sea level (amsl). Elevations are generally flat within the Humphrey Impoundment, ranging from 4 to 8 feet amsl, and it is enclosed by elevated berms with elevations up to 32 ft amsl. According to Figure B-2 of the property Stormwater Pollution Prevention Plan (SWPPP) Revision 8 dated April 30, 2020, surface water runoff from the Site flows through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014 beyond the Humphrey Creek Wastewater Treatment Plant (HCWWTP), which discharges to Bear Creek.

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.

Parcel B14 contains the Humphrey Impoundment. Prior to 1970, Humphrey Creek existed as open water (the impoundment did not yet exist) and received wastewater from various steel processing areas including the Hot Strip Mill, Cold Sheet Mill, Tin Mill, and Rod & Wire Mill. After the completion of the TMC (ca. 1969), from 1970 to 1985 the Humphrey Impoundment is believed to have been used as a dewatering area for on-site sludges and slurry materials generated from the Basic Oxygen Furnace (BOF) and various on-site water treatment plants. Materials that were dewatered within the impoundment included: BOF slurry, Blast Furnace G, H, J, K, and L thickener sludges, HCWWTP sludge, Sinter Plant slurry, Open Hearth (No.4) slurry, waste oil pit sludge and non-recoverable waste oil residue, and pre-limer clarifier sludge. Since 1985, the impoundment was used for sludge/slurry dewatering in emergency scenarios only (i.e., when upsets had occurred in the on-site water treatment systems). According to the Description of

Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure, dated January 1998 (included with Weaver Boos' 2014 Phase I ESA), all of the wastes that were placed inside the impoundment were determined to be non-hazardous. More information on the historical activities conducted at the Site can be found in the agency-approved Parcel B14 Phase II Investigation Work Plan (Revision 0 dated August 3, 2017).

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These Recognized Environmental Conditions (RECs) included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) conducted in 1991 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 VSI is regularly cited in DCC Report.

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. The following REC was identified in Sub-Parcel B14-1:

Humphrey Impoundment Area (REC 2A, Finding 61, SWMU 190):
According to the Phase I ESA, this area was used to receive wastewater from various steel processing areas, as a sludge dewatering area, and for the storage of process slurry and other materials. These materials may have contained hazardous substances and/or petroleum products. The Humphrey Impoundment is included as a Special Study Area (SSA) under the Consent Decree. Based on this information, the potential exists for past releases which may have impacted the environment.

Relevant SWMUs and AOCs were also identified as located on Figure 3-1 from the DCC Report. This figure generally shows the SWMUs, AOCs, and main facility areas within the property boundaries. Apart from the co-listed REC above, there were no SWMUs or AOCs identified within the Sub-Parcel B14-1 boundary.

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL B14-1

A Phase II Investigation specific to soil and groundwater conditions was performed for the area encompassing Sub-Parcel B14-1 in accordance with the requirements outlined in the ACO as further described in the agency-approved Parcel B14 Phase II Investigation Work Plan (Revision 0 dated August 3, 2017). All soil and groundwater samples were collected and analyzed in

accordance with agency-approved protocols during the Phase II Investigation, the specific details of which can be reviewed in the Work Plan.

The Phase II Investigation was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment (such as the Humphrey Impoundment). Samples were also collected at site-wide locations to ensure full coverage of the investigation area. The full analytical results and conclusions have been presented in the Parcel B14 Phase II Investigation Report (Revision 0 dated March 27, 2018). This RADWP summarizes the relevant soil and groundwater findings from the Phase II Investigation with respect to the proposed development of Sub-Parcel B14-1.

3.2.1 Phase II Soil Investigation Findings

Based on the scope of development for Sub-Parcel B14-1, 64 soil samples collected from 28 soil borings during the Parcel B14 Phase II Investigation were included for a representative evaluation of Sub-Parcel B14-1. The 28 boring locations are shown on **Figure 3**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions.

Soil samples collected during the Phase II Investigation were analyzed for the Target Compound List (TCL) semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO), Oil & Grease, Target Analyte List (TAL) metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot below ground surface (bgs)) were analyzed for polychlorinated biphenyls (PCBs). Samples from any depth interval with a sustained photoionization detector (PID) reading above 10 ppm were also analyzed for TCL volatile organic compounds (VOCs). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (50% validated soil data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance. Several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 1** and **Table 2** provide summaries of the detected organic compounds and inorganics in the soil samples collected from the 28 soil borings at the Site. **Figure S1** through **Figure S4** present the soil sample results that exceeded the PALs among these soil borings. PAL exceedances consisted of one SVOC (benzo[a]pyrene), three PCB mixtures (Aroclor 1254, Aroclor 1260, and total PCBs), TPH-DRO, Oil & Grease, and four inorganics (arsenic, hexavalent chromium, lead, and manganese).

Evidence of non-aqueous phase liquid (NAPL) was observed at 10 Phase II soil boring locations (B14-006-SB, B14-010-SB, B14-011-SB, B14-012-SB, B14-013-SB, B14-015-SB, B14-017-SB, B14-021-SB, B14-022-SB, and B14-028-SB). NAPL screening piezometers were installed at these locations to identify the presence of NAPL on the water table, as described in the following Section 3.2.2. Contingency measures to address the presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated as reported in the Parcel B14 Phase II Investigation Report. This report included aqueous sample data from six wells sampled during the Parcel B14 Phase II Investigation (HI04-PZM006, TM02-PZM009, TM04-PZM006, TM06-PZM008, TM08-PZM007, and Well 2) and two wells (HI02-PZM006 and HI07-PZM005) which were sampled during the preceding Parcel B8 Phase II Investigation. The eight monitoring wells which provided relevant analytical data for the proposed Sub-Parcel B14-1 development project are shown on **Figure 4**; each well is located along the perimeter of the Humphrey Impoundment. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2.

The groundwater samples collected in 2017 during the Parcel B14 Phase II Investigation were analyzed for TCL-VOCs, TCL-SVOCs and PAHs, TPH-DRO/GRO, Oil & Grease, TAL-dissolved/total metals, total cyanide, and available cyanide. The two samples collected in 2015 during the Parcel B8 Phase II Investigation (HI02-PZM006 and HI07-PZM005) were not analyzed for TPH-DRO/GRO, TAL-dissolved metals, or available cyanide based on the Parcel B8 Work Plan requirements. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (50% validated groundwater data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance. Similar to the evaluation of soil data, several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 3** and **Table 4** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** through **Figure GW4** present the groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of one VOC (benzene), five SVOCs (1,1-biphenyl, 1,4-dioxane, benz[a]anthracene, naphthalene, and pentachlorophenol), TPH-DRO, TPH-GRO, Oil & Grease, and six total and/or dissolved metals (chromium, hexavalent chromium, iron, lead,

manganese, and vanadium). For simplicity, the inorganic PAL exceedances shown on **Figure GW4** do not include duplicate exceedances of total/dissolved metals. If both total and dissolved concentrations exceeded the PAL, the value for total metals is displayed.

Each perimeter groundwater monitoring well was also inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the perimeter wells relevant for the proposed development project showed evidence of NAPL during these checks. However, 22 temporary NAPL screening piezometers were installed as shown on **Figure 4** to investigate NAPL conditions within the Humphrey Impoundment. Measurable or trace NAPL was gauged at 12 of these NAPL screening piezometers, indicating the presence of NAPL on the water table. Contingency measures to address the presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

3.2.3 Locations of Potential Concern

Groundwater data were screened to determine whether any sample results exceeded the USEPA Vapor Intrusion (VI) TCR (carcinogen) or THQ (non-carcinogen) Screening Levels. None of the individual sample results exceeded the cumulative VI non-cancer Hazard Index (HI) value of 1, however one well location (TM04-PZM006) exceeded the cumulative VI cancer risk screening level of 1E-5. This exceedance, located directly south of the impoundment, is driven by elevated benzene and naphthalene concentrations. The VI risk evaluation is summarized in **Table 5**. Additionally, as described in the Humphrey Impoundment CMS Report (Revision 0 dated April 27, 2021), methane concentrations were detected above the lower explosive limit (LEL) in air within multiple NAPL piezometers at the Site. Methane concentrations exceeded 10% by volume in three piezometers (B14-013-PZ, B14-038-PZ, and B14-006-PDI). Therefore, elevated methane is considered a VI risk. A methane collection and venting system will be completed below the asphalt pavement as part of the development phase.

Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH/Oil & Grease in soil. The soil data for Sub-Parcel B14-1 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH/Oil & Grease concentrations above 6,200 mg/kg. There were no soil concentrations of lead, PCBs, or TPH-GRO above the specified criteria; however, several locations shown on **Figure S3** exhibited TPH-DRO and Oil & Grease exceedances.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. Several soil borings had visual observations or other physical evidence of NAPL as shown on **Figure S3**. NAPL was detected on the water table in multiple NAPL screening piezometers within the Humphrey Impoundment as shown on **Figure 4**. Subsequent NAPL transmissivity testing has been conducted, with the results reported in the

Humphrey Impoundment CMS Report (Revision 0 dated April 27, 2021). As stated in the CMS Report, NAPL identified in the impoundment is generally immobile and unrecoverable.

Overall, elevated methane and VOC/SVOC concentrations, as well as significant NAPL presence in both soil and groundwater, indicate that the entirety of the Site is considered an area of potential concern. The methane collection and venting system will be completed to mitigate VI risk within the Site and prevent the accumulation of methane below the asphalt pavement. No structures are proposed to be constructed for occupancy during this development project. Contingency measures to address the presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP. Utility placement will mainly occur in fill materials, thus reducing the likelihood of encountering NAPL during construction. The utility installation/trenching design will also account for the methane collection system mitigation measures being employed at the Site.

3.3 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

3.3.1 Analysis Process

A human health Screening Level Risk Assessment (SLRA) has been completed based on the analytical data obtained from the characterization of surface and subsurface soils. The SLRA was conducted to evaluate the existing soil conditions to determine if any response measures are necessary. It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline SLRA, Sub-Parcel B14-1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): The SLRA was evaluated using a single site-wide EU with an area of 55.6 acres. The same EU and associated soil datasets were used for the evaluation of the Composite Worker and Construction Worker scenarios.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, compounds that were present at concentrations at or above the USEPA's Regional Screening Levels (RSLs) set at a target cancer risk of 1E-6 or target non-cancer Hazard Quotient (HQ) of 0.1 were identified as COPCs to be included in the SLRA. A COPC screening analysis is provided in **Table 6** to identify all compounds above the relevant screening levels.

All aroclor mixtures (e.g., Aroclor 1248, Aroclor 1260) are taken into account for the reported concentrations of total PCBs. The total PCBs concentrations are used to evaluate the carcinogenic risk associated with PCBs. Aroclor 1254, which is included in the total

PCBs summation for the carcinogenic risk estimate, is also evaluated separately for systemic toxicity (i.e., non-cancer hazard).

The results for thallium were eliminated from the SLRA because this compound was very infrequently detected in the dataset for Sub-Parcel B14-1. Thallium was only detected in 1.9% of the samples analyzed for this compound (1 sample out of 52). If the detection frequency of a COPC is less than 5% in a dataset with a minimum of 20 samples, the COPC can be eliminated from the SLRA assuming the detections are not extremely high (based on agency discretion). A single detection that is extremely high could require delineation rather than elimination. In this case it is reasonable to remove thallium.

Exposure Point Concentrations (EPCs): The COPC soil datasets for the site-wide EU were divided into surface (0 to 2 feet bgs), subsurface (>2 feet bgs), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with the site-wide EU. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values (presented in **Table 7**).

Risk Ratios: The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Worker and to site-specific Soil Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). Risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer Hazard Index (HI).

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum allowable exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 120 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction

Worker exposure to groundwater during development, health and safety plans and management procedures shall be followed to limit exposure risk.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled 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 calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 1,050 mg/kg, which is the most conservative (i.e., lowest) concentration which would yield a probability of 5% of a blood lead concentration of 5 ug/dL. If the arithmetic mean concentrations for the EU were below 1,050 mg/kg, the EU was identified as requiring no further action for lead. The lead averages are presented for surface, subsurface, and pooled soils in **Table 7**. Neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). As described in Section 3.2.3, several TPH-DRO and Oil & Grease exceedances were observed among the Phase II soil samples. Additionally, physical evidence of NAPL was identified in several soil borings and accumulated above the water table in multiple NAPL screening piezometers. Contingency measures to address the potential presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

Risk Characterization Approach: Generally, if the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1, and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of 1E-5, then a no further action determination will be recommended. If the baseline estimate of cumulative cancer risk exceeds 1E-5 but is less than or equal to 1E-4, then capping of the EU will be considered to be an acceptable remedy for the Composite Worker. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability. For the Construction Worker, cumulative cancer risks exceeding 1E-5 (but less than or equal to 1E-4) or HI values exceeding 1 will be mitigated via site-specific health and safety requirements.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline assessment, Sub-Parcel B14-1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials. The goal of the

SLRA is therefore to determine whether additional response actions beyond capping may be needed due to current conditions at the Site.

The USEPA's acceptable risk range is between 1E-6 and 1E-4. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of any non-carcinogen HI 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.

For lead, if the ALM results indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 5 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 1,050 mg/kg and 1,400 mg/kg, respectively. If the ALM indicates that the mean concentrations would present a >10% probability of a blood concentration of 5 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 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel B14-1 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for the SLRA.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled soils) in the site-wide EU. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the datasets. 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 for the surface, subsurface, and pooled exposure scenarios are provided in **Table 8**.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations to determine lead averages for each dataset, is also included as an electronic attachment. The screening criterion for lead was set at an arithmetic mean of 800 mg/kg (the RSL), with a secondary limit of 1,050 mg/kg based on the May 2017 updated ALM developed by the USEPA (corresponding to a 5% probability of a blood lead level of 5 ug/dL). The average and maximum lead concentrations are presented for each dataset in **Table 7**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker baseline scenario prior to the placement of industrial fill at the Site are shown in **Table 9** (surface), **Table 10** (subsurface), and **Table 11** (pooled). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	Site-Wide EU (55.6 acres)	Surface Soil	none	1E-5
		Subsurface Soil	none	1E-5
		Pooled Soil	none	1E-5

Based on the risk ratios for Sub-Parcel B14-1, no further action is required for the surface, subsurface, and pooled exposure scenarios. None of the carcinogenic risk estimates for the Composite Worker were greater than the acceptable risk level of 1E-5 or the secondary risk level of 1E-4 which would warrant consideration of toxicity reduction. None of the non-carcinogenic HI values exceeded 1. However, subsurface NAPL within the Site poses an unquantified risk to the potential future Composite Worker. Since potential exposure to NAPL cannot be quantified, it was not included in the risk assessment and the risks presented above may be biased low.

Based on the proposed placement of industrial fill at the Site and the presence of subsurface NAPL, environmental capping (100% of the Site) is an acceptable remedy to be protective of future Composite Workers. Capping and institutional controls (to maintain the integrity of the cap) are suitable response measures to protect against exposure to NAPL and industrial fill materials including slag aggregate which will be used as the primary fill material and pavement subbase at the Site.

Construction Worker Assessment:

Ground intrusive activities which could result in potential Construction Worker exposures are expected to be limited primarily to utility installation tasks performed by specific work crews. Construction Worker risks were evaluated for several different exposure scenarios to determine the maximum exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (120 days) are shown in **Table 12** (surface), **Table 13** (subsurface), and **Table 14** (pooled). The variables entered for calculation of the site-specific Construction Worker SSLs (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific Construction Worker SSLs is included as **Appendix B**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	Site-Wide EU (55.6 acres) (120 exposure days)	Surface Soil	none	1E-6
		Subsurface Soil	none	1E-6
		Pooled Soil	none	1E-6

Using the selected exposure duration for the site-wide EU (120 days), the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 120 days were to be exceeded for an individual worker.

Subsurface NAPL within the Site poses an unquantified risk to the potential future Construction Worker. Since potential exposure to NAPL cannot be quantified, it was not included in the risk assessment and the risks presented above may be biased low. During development, as a precautionary measure, all of the required ground intrusive construction work or activities which require contact with potentially impacted materials will be performed by Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) trained workers. The use of OSHA HAZWOPER trained workers will mitigate potential risks to Construction Workers by ensuring that the on-site work is performed by personnel who are trained and equipped for the conditions at the Site.

The OSHA HAZWOPER trained workers will adhere to the Personal Protective Equipment (PPE) Standard Operating Procedure (SOP) provided as **Appendix C**. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP. The contractor will develop a site-specific Health and Safety Plan (HASP) which will be applied to all on-site OSHA HAZWOPER trained workers who may be engaged in ground intrusive construction work or activities which require contact with potentially impacted materials. OSHA HAZWOPER trained workers will not be required during construction activities which do not have a significant exposure risk, such as above-grade construction.

Institutional controls will be required to be established for the protection of Construction Workers in the event of any future long-term construction projects which could include ground intrusive activities. The anticipated institutional controls, including notification requirements, health and safety requirements, and materials management requirements, are specified in Section 5.5.

3.3.3 Evaluation of RCRA Criteria

Based on the data obtained from the characterization of surface and subsurface soils, results from the SLRA indicate that no further action is required within the development area to mitigate potential Composite Worker risks. However, Tradepoint Atlantic will be using industrial fill (including processed slag aggregate) throughout the Site. The placement of materials other than approved clean fill will necessitate that Sub-Parcel B14-1 will be subject to surface engineering controls (i.e., capping) based on prior MDE guidance. The entirety of the Site (55.6 acres) will therefore require a remedy of capping with institutional controls to mitigate potential Composite Worker risks.

Site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE and OSHA HAZWOPER trained workers. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include ground intrusive activities.

The proposed VCP capping remedy with institutional controls was evaluated for consistency with the RCRA Threshold Criteria and Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at the Site. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials, and to protect the environment by preventing surface water from contacting potentially impacted materials in place. The capping and institutional control remedy would eliminate risk to current and future Composite Workers by preventing exposure to on-site media and areas of the Site where industrial fill including processed slag aggregate has been placed. Groundwater does not present a direct human health hazard since there is no groundwater use on the property. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect current/future Composite Workers and Construction Workers from potential exposures to constituents present in industrial fill and on-site media at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas for the COPCs evaluated in the SLRA; however, NAPL was observed at various soil boring locations and in several NAPL screening piezometers (as described in Section 3.2.3). NAPL transmissivity testing has indicated that NAPL at the Site is unrecoverable and immobile. The control measures included in the proposed remedy, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning for intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by the industrial fill (including slag aggregate), treatment residuals, and/or untreated wastes. The proposed capping remedies have been proven to be effective in the long-term at similar sites with similar conditions. The capping remedy will permanently contain the slag aggregate and other potentially contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be required to determine if erosion or cracks have formed that could expose workers to contaminated materials.

Institutional controls will be implemented to protect future Composite and Construction Workers against inadvertent contact with potentially impacted media. The anticipated institutional controls are specified in Section 5.5. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in the industrial fill or existing on-site media.

The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The capping remedy will prevent the spread of contaminants in wind-blown dust or stormwater and will prevent infiltration through the unsaturated zone from carrying contaminants to the groundwater. Thus, the mobility of contaminants will be reduced by the capping remedy.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the Modified Level D PPE requirements outlined in **Appendix C** and use of OSHA HAZWOPER trained workers. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future on-site workers and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent uncontrolled discharge(s) offsite. Security and fences will be used to maintain controlled access during construction.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy will use readily available, typically acceptable, and proven technologies.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual Operating and Maintenance (O&M) costs, and the net present value (NPV) of this remedy relative to alternatives. The capping remedy costs (paving) would be incurred as

part of any future proposed site development, regardless of the findings of the SLRA or the placement of slag aggregate and other industrial fill.

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

A capping remedy with institutional controls will satisfy the RCRA Threshold Criteria and Balancing Criteria and will do so in a manner that ensures reliable implementation and effectiveness. The remedy is cost-effective and consistent with the proposed development plan.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing to construct an automotive parking lot or laydown area. Final usage has not yet been determined. Based on future use, additional utilities (lighting) may be installed. An additional Work Plan will be submitted to the agencies for review and approval prior to any additional work commencing. The proposed development will include permanent improvements on approximately 55.6 acres of land primarily within Parcel B14 but extending slightly into Parcel B8 and Parcel B16. The proposed future use of Sub-Parcel B14-1 is Tier 3 – Industrial. The remainder of these parcels will be addressed in separate plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. As shown on **Figure 5**, the Site will be fully capped by surface engineering controls.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs (as shown on **Figure S1** through **Figure S4**). Therefore, soil is considered a potential media of concern. The SLRA indicated that Composite Worker risks are acceptable, however, the development plan provides for a containment remedy of surface engineering controls (capping of the entire area) and institutional controls (deed restrictions) that will mitigate risks associated with Composite Workers potentially contacting impacted soil or NAPL at the Site. In addition, industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site. The placement of materials other than approved clean fill requires the installation of surface engineering controls regardless of the existing soil conditions.

Construction Workers may contact impacted surface and/or subsurface soil during earth movement activities associated with construction activities. The findings of the Construction Worker SLRA using the selected exposure frequency for the site-wide EU (120 days) indicated the estimate of Construction Worker cancer risk was less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action). This evaluation indicates that site-specific health and safety protocols or further action would be required only if this duration were exceeded.

During development, as a precautionary measure, all of the required ground intrusive construction work or activities which require contact with potentially impacted materials will be performed by OSHA HAZWOPER trained workers. The use of OSHA HAZWOPER trained workers will mitigate potential risks to Construction Workers by ensuring that the on-site work is performed by personnel who are trained and equipped for the conditions at the Site. The OSHA HAZWOPER trained workers will adhere to the PPE SOP provided as **Appendix C**. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP. The contractor will develop a site-specific HASP which will be applied to all on-site OSHA HAZWOPER trained workers who may be engaged in ground intrusive construction work or

activities which require contact with potentially impacted materials. OSHA HAZWOPER trained workers will not be required during construction activities which do not have a significant exposure risk, such as above-grade construction.

A restriction prohibiting the use of groundwater will be included as an institutional control in the NFA and COC issued by the MDE, and a deed restriction prohibiting the use of groundwater will be filed. The groundwater use restriction will protect future Composite Workers from potential direct exposures. Proper water management is required to prevent unacceptable discharges or risks to Construction Workers during development. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for (OSHA HAZWOPER trained) Construction Workers involved with development at the Site.

The development plan for the Site is shown on **Figure 2,** and the detailed development drawings (provided by Bohler Engineering) are included as **Appendix D**. The various types of surface engineering controls proposed to be installed on the Site are summarized on **Figure 5**. This development project will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel B14-1 Development Completion Report.

4.1 RESPONSE PHASE – GROUNDWATER NETWORK ABANDONMENT

Abandonment of several groundwater monitoring wells and piezometers located within Parcel B14 will be required as part of the proposed development work. The locations of these wells and piezometers are shown on **Figure 6**. All abandonments will be completed in accordance with COMAR 26.04.04.34 through 36. The abandonment of any permitted groundwater wells will be reported to the Water Management Administration as per COMAR 26.04.04, and records of all groundwater well and piezometer abandonments (including abandonment forms, if available) will be included in the Development Completion Report. It is understood that the agencies may require the installation of additional monitoring wells in the future following site development.

Figure 6 also shows several wells are proposed to be retained as part of this development plan. To ensure that the locations are not damaged or destroyed during construction, these wells should be protected using sonotubes, flagging, and/or barriers as needed.

4.2 DEVELOPMENT PHASE

4.2.1 Erosion and Sediment Control Installation

Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils which are disturbed during the installation of erosion and sediment controls will be placed on-site below the cap.

4.2.2 Monitoring Well Network Installation

This RADWP modifies the monitoring well network previously proposed as part of the Humphrey Impoundment CMS Report (Revision 0 dated April 27, 2021). The proposed monitoring well network locations are shown on **Figure 6**. The network includes six existing shallow perimeter monitoring wells and nine proposed perimeter monitoring wells. As described in the CMS Report, the future groundwater monitoring program will consist of groundwater sampling for benzene, toluene, ethylbenzene, and xylenes (BTEX), naphthalene, and TPH/Oil & Grease. The six existing shallow perimeter monitoring wells will be sampled quarterly during the construction phase, and the full perimeter network (as shown on **Figure 6**) will be sampled annually following development completion. This perimeter network will ultimately be incorporated into the site-wide groundwater monitoring well network and monitoring program.

4.2.3 Grading and Site Preparation

As indicated on the development plans in **Appendix D**, grading activities including both cut and fill will occur within the Sub-Parcel B14-1 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site.

In the case that there is excess material (not anticipated), 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.

4.2.4 Installation of Underground Utilities

Utilities will be installed as shown on the development plans in **Appendix D**. Excavated soils may be placed on-site below the cap. All utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use (which may include approved utility trench spoils). Additional protocols for the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be managed as detailed in Section 5.2.

Except for the locations where the utilities pass through the berm surrounding the perimeter of the Humphrey Impoundment, the majority of the utility trenches will be placed in fill material that will be added to raise the grade of the Site, thus reducing the likelihood of encountering NAPL during construction. As further described in Section 5.1.2, any trenches passing through the perimeter berm will be plugged using 1) low permeability backfill material (less than or equal to the permeability of the existing subgrade); or 2) trench plugs.

4.2.5 Paving and Methane Collection Layer

The majority of the Site will be covered with a pavement cap as indicated on **Figure 5**. As proposed in the Humphrey Impoundment CMS Report (Revision 0 dated April 27, 2021), the cap design will incorporate a vapor collection layer below the pavement (consisting of a minimum of 4-inches of asphalt or concrete over 4-inches of 57 stone or equivalent aggregate material). The required minimum thicknesses of all site-wide paving sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**.

The cap will include appropriate vents to allow for venting to prevent accumulation of methane in areas where methane has been detected. **Figure 7** shows a typical cross-section of the impoundment with a cap, vapor collection layer, and venting system. A methane investigation has not yet covered the eastern portion of the Site, but will be conducted through the use of temporary monitoring points that will be installed during development activities. Based on these results, the eastern portion of the Site may or may not require a methane venting system. The results of this investigation will be provided to the MDE. This RADWP presents a conceptual design of the methane collection system including the cap and vapor collection layer. A RADWP Addendum will be submitted to specify the detailed methane collection system design.

4.2.6 Landscaping

A portion of the Site perimeter will be covered with landscaping caps as indicated on **Figure 5**. The required minimum thicknesses of all site-wide landscaping sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. All landscaped areas will require a minimum of 24 inches of VCP clean fill, with a geotextile marker fabric between the VCP clean fill and any underlying material.

4.2.7 Stormwater Management

The proposed stormwater utility layout for the Site is provided on the development plan drawings in **Appendix D**. New stormwater infrastructure will be installed throughout the Site. The new stormwater infrastructure will consist of high-density polyethylene (HDPE) heat sealed piping with sealed catch basin systems. The new stormwater infrastructure in the western half of the Site will connect to an existing subgrade stormwater utility, and the new stormwater infrastructure in the eastern half of the Site will connect to a new TMC outfall that will be constructed as part of this development project. Trench plugs shall be installed within the HDPE piping corridors that pass through or run under the berm surrounding the impoundment. The utility corridors shall be plugged using 1) low permeability backfill material (less than or equal to the permeability of the existing subgrade); or 2) trench plugs in accordance with the details shown on the utility trench plug detail within the Utility Excavation NAPL Contingency Plan.

Tradepoint Atlantic is working with the MDE Industrial & General Permits Division to renew the property-wide NPDES permit. The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel B14-1. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site (shown on **Figure S1** through **Figure S4**). The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate potential risks for material remaining on-site during the development phase. There were no locations within the proposed development boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg), or TPH-GRO (6,200 mg/kg). However, as described in Section 3.2.3, TPH-DRO and Oil & Grease exceedances were observed among several Phase II soil samples within the Site. Additionally, physical evidence of NAPL was identified in several soil borings and accumulated above the water table in multiple NAPL screening piezometers.

Following completion of the SLRA, the findings of the Construction Worker evaluation using the selected exposure frequency for the site-wide EU (120 days) indicated the estimates of Construction Worker cancer risk were less than 1E-5 and no HI values exceeded 1 for any target organ system (the acceptable thresholds for no further action). During development, as a precautionary measure, all of the required ground intrusive construction work or activities which require contact with potentially impacted materials will be performed by OSHA HAZWOPER trained workers. The use of OSHA HAZWOPER trained workers will mitigate potential risks to Construction Workers by ensuring that the on-site work is performed by personnel who are trained and equipped for the conditions at the Site. The OSHA HAZWOPER trained workers will adhere to the PPE SOP provided as **Appendix C**. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP. The contractor will develop a site-specific HASP which will be applied to all on-site OSHA HAZWOPER workers who may be engaged in ground intrusive construction work or activities which require contact with potentially impacted materials. OSHA HAZWOPER workers will not be required during construction activities which do not have a significant exposure risk, such as above-grade construction.

Based on the characterization of surface and subsurface soils and the SLRA findings, surface engineering controls are not required at the Site to be protective of future adult Composite Workers who could potentially contact surface soil (or relocated subsurface soil) at the Site. However,

Tradepoint Atlantic will be using industrial fill (including processed slag aggregate) throughout the Site. The placement of materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping) based on prior MDE guidance. The proposed capping sections will meet the required minimum thicknesses for surface engineering controls, which are provided in **Appendix E**.

5.1.1 Erosion/Sediment Control

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

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

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the Environmental Professional (EP) providing oversight on the project. During the meeting, the construction manager and the EP shall review the proposed excavation/trenching locations and any associated utility invert elevations. The construction manager will be responsible for conveying all relevant information regarding excavation/grading and/or utility work to the workers who will be involved with these activities. The HASP and PPE SOP for the project shall also be reviewed and discussed.

The Utility Excavation NAPL Contingency Plan (discussed below) must also be reviewed during the pre-excavation meeting. As described in Section 3.2.3, TPH-DRO and Oil & Grease exceedances were observed among several Phase II soil samples (**Figure S3**). Additionally, physical evidence of NAPL was identified in several soil borings (**Figure S3**) and accumulated above the water table in multiple NAPL screening piezometers (**Figure 4**). The entirety of the Site is considered an area of potential concern with respect to NAPL impacts. Except for the locations where utilities pass through the berm surrounding the perimeter of the Humphrey Impoundment, the majority of the utility trenches will be placed in fill material that will be added to raise the grade of the Site, thus reducing the likelihood of encountering NAPL during construction. Soil screening will be especially important during any excavation of existing soil (rather than fill).

The EP will provide oversight of soil excavation/trenching activities as described in Section 5.7. Soil excavation/trenching will occur during various phases of construction. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site, with the possible exception of TPH/Oil & Grease and NAPL impacted materials described above (if encountered). The EP will monitor the soil excavation activities for signs of significantly contaminated material which may not be suitable for reuse (as described below). The EP will also be responsible for monitoring organic vapor concentrations in the worker breathing zone within utility trenches and excavations (as further described in Section 5.4).

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

All utility trenches will be backfilled with bedding and backfill materials approved by the MDE. A general utility cross section is provided as **Appendix F**. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated materials will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix G**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan. As noted above, the entirety of the Site is considered an area of potential concern with respect to NAPL impacts, and soil screening will be especially important during any excavation of existing soil (rather than fill). All utility corridors which pass through the perimeter berm surrounding the Humphrey Impoundment shall be plugged using 1) low permeability backfill material (less than or equal to the permeability of the existing subgrade); or 2) trench plugs in accordance with the details shown on the utility trench plug detail within the Utility Excavation NAPL Contingency Plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management.

Excavated material exhibiting evidence of significant contamination (including NAPL) shall be placed in stockpiles (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with reuse and/or waste disposal requirements. If not suitable for reuse, the material will be disposed of onsite at Greys Landfill or at an appropriate offsite permitted disposal facility. Plans for analysis of segregated soils for any use other than disposal must be submitted to the MDE for approval. The quantities of all materials that require disposal, if any, will be recorded and identified in the Development Completion Report.

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be covered with a polyethylene tarp to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of the property depending on the analytical results. A sampling Work Plan including a description of the material, estimated volume, and sampling parameters will be submitted to the MDE for approval. The resulting analytical data will be submitted to the MDE to determine the suitability of the material for reuse. If the MDE determines that the materials are unsuitable for reuse, the materials will be sampled to determine if they require regulated disposal.

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

5.1.4 Fill

Materials approved by the MDE for industrial use will be used as structural fill. In an effort to consolidate waste, the fill materials on this Site may include petroleum-impacted materials from elsewhere on the Tradepoint Atlantic property (if approved by MDE). The Site will be capped by surface engineering controls. Soil excavated on the sub-parcel has been determined to be suitable for re-use at the Site below the surface engineering controls, unless such materials are determined by the EP/MDE to be unsuitable for use as outlined in Section 5.1.2 and Section 5.1.3.

All utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use (which may include approved utility trench spoils). Any utility backfill which will extend into the cap (i.e., top 2 feet of backfill in landscaped areas) must meet the VCP clean fill requirements,

and a geotextile marker fabric will be placed between the VCP clean fill and any underlying material. A general utility detail drawing is provided as **Appendix F**. Material imported to the Site will be screened according to MDE guidance for suitability.

All utility corridors which pass through the perimeter berm surrounding the Humphrey Impoundment shall be plugged using 1) low permeability backfill material (less than or equal to the permeability of the existing subgrade); or 2) trench plugs in accordance with the details shown in the Utility Excavation NAPL Contingency Plan (**Appendix G**).

5.1.5 Dust Control

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property outside of the immediate work zone. To limit worker exposure to contaminants borne on dust and windblown particulates, dust monitoring will be performed in the immediate work zone and at the upwind and downwind perimeter of the Site, and dust control measures will be implemented if warranted based on the monitoring results. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) during the development activities at the Site will be 3.0 mg/m^3. The lowest of the site-specific dust action levels, OSHA PELs, and ACGIH TLV was selected as the proposed action level.

The EP will be responsible for the dust monitoring program. Air monitoring will be performed using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices. The EP will set-up dust monitoring equipment at the outset of ground intrusive work or other dust-generating activities, and continuous dust monitoring will be performed during this work. In addition to work area monitoring, a dust monitor will be placed at selected perimeter locations that will correspond to the upwind and downwind boundaries based on the prevailing wind direction predicted for that day. The prevailing wind direction will be assessed during the day, and the positions of the perimeter monitors will be adjusted if there is a substantial shift in the prevailing wind direction.

Once all dust-generating activities are complete (which may occur at a later stage of the project once ground intrusive work has been completed or after the Site has been capped), the dust monitoring program may be discontinued. If additional dust-generating activities commence, additional dust monitoring activities will be performed.

If sustained dust concentrations exceed the action level (3.0 mg/m^3) at any of the monitoring locations as a result of conditions occurring at the Site, operations will be stopped temporarily until dust suppression can be implemented. Operations may be resumed once monitoring indicates that dust concentrations are below the action level. The background dust concentration will be utilized

to evaluate whether Site activities are the source of the action level exceedance. The background dust concentration will be based on measurements over a minimum of a 1-hour period at the upwind Site boundary. The upwind data will be used to calculate a time weighted average background dust concentration. As noted above, the locations of the perimeter dust monitors may be adjusted periodically if there is a substantial shift in the prevailing wind direction.

As applicable, air monitoring will be conducted during development implementation activities 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 at the upwind and downwind Site boundaries to ensure contaminants are not migrating off-site. The concentration measured at the downwind perimeter shall not exceed the action level of 3.0 mg/m^3, unless caused by background dust from upwind of the Site. If exceedances of the action level are identified downwind for more than five minutes, the background dust concentration shall be evaluated to determine whether the action level exceedances are attributable to Site conditions. If on-site activities are the source of the exceedances, dust control measures and additional monitoring will be implemented. The dust suppression measures may include wetting or misting using a hose connected to a water supply or a water truck stationed at the Site.

Dust control measures will be implemented as described above to address dust generated as a result of construction activities conducted at the Site. However, based on the nature of the area and/or ongoing 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 area. A pre-construction meeting will be held to discuss the potential of windblown particulates from other activities impacting the air monitoring required for this RADWP. Site contact information will be provided to address the possibility of upwind dust impacts. If sustained dust is observed above the action level (3.0 mg/m^3) and it is believed to originate from off-site (i.e., upwind) sources, this will immediately be reported to TPA and the MDE-VCP team, as well as the MDE Air and Radiation Administration (ARA).

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel B14-1 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigation from eight monitoring wells within and surrounding the Site. Aqueous PAL exceedances in groundwater in the vicinity of the development LOD included both inorganics and organic compounds. The aqueous PAL exceedances obtained during the Parcel B14 Phase II Investigation are summarized on **Figure GW1** through **Figure GW4**.

While the concentrations of PAL exceedances are not deemed to be a significant human health hazard for future workers since there is no on-site groundwater use which could lead to direct exposures, proper water management is required during construction to prevent unacceptable discharges or risks to Construction Workers.

5.2.2 **Dewatering**

Dewatering may be necessary to facilitate the placement and compaction of structural fill and during the installation of underground utilities and within excavations/trenches. **Figure 8** displays the groundwater elevations underlying the Site for the shallow aquifer zone, based on prior investigation data. If dewatering is required during construction, it shall be done in accordance with all local, state, and federal regulations. Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and/or dust control waters will be transported to the HCWWTP. The water will be treated and discharged in accordance with NPDES Permit No. 90-DP-0064A; I. Special Conditions; A.4; Effluent Limitations and Monitoring Requirements.

It is the intent that any water that must be removed will be ultimately sent (via pumping or trucking) to the HCWWTP via the TMC, following any pretreatment, if necessary. Water in the TMC feeds into the HCWWTP where it is treated prior to release into Bear Creek. Dewatering fluids will be evaluated and then tested (if required) pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol. If the groundwater does not meet the constituent threshold limits specified in the protocol, the groundwater will be pre-treated. Any water discharged to the TMC will be pumped through a filter bag or equivalent to remove suspended solids prior to discharge.

Note that additional analyses could be required if warranted based on field observations by the EP. The EP will inspect any water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (sheen, odor, discoloration, presence of product), the water may be sampled and analyzed for some or all of the analyses listed below. In such case, the analyses run will be dependent on the suspected source of contamination and local site conditions. The EP will oversee oil/water separation and disposal of NAPL as necessary.

The results of the analyses will be reviewed by the HCWWTP operator to determine if any wastewater treatment system adjustments are necessary. If the results of the analyses are above the threshold levels listed below, the water will be further evaluated to confirm acceptable treatment at the HCWWTP, or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water may be disposed of at an appropriate off-site facility.

Analysis	**Threshold Levels**
• Total metals by USEPA Method 6020A	1,000 ppm
• PCBs by USEPA Method 8082	>Non-Detect
• SVOCs by USEPA Method 8270C	1 ppm

- VOCs by USEPA Method 8260B 1 ppm
- Oil & Grease by USEPA Method 1664 200 ppm
- TPH-DRO by USEPA Method 8015B 200 ppm
- TPH-GRO by USEPA Method 8015B 200 ppm

Documentation of any water testing, as well as the selected disposal option, will be reported to the MDE in the Development Completion Report. Any permits or permit modifications related to dewatering will be provided to the agencies as addenda to this RADWP.

5.3 CONTINGENCY CORRECTIVE MEASURE – NAPL RECOVERY

As described in the Humphrey Impoundment CMS Report (Revision 0 dated April 27, 2021), transmissivity testing has indicated that observed NAPL is immobile and unrecoverable. As described above, existing and proposed perimeter monitoring wells will serve to detect any migration of NAPL or dissolved-phase contamination during construction or after development activities have been completed. A contingent alternative may be utilized if NAPL or contaminant migration is identified in perimeter wells. NAPL recovery may be initiated via the monitoring well network or new recovery wells or trenches. If future NAPL recovery is warranted, such activities will be coordinated with the MDE and USEPA under separate cover.

5.4 HEALTH AND SAFETY

A property-wide HASP has been developed and is provided with this RADWP (as an electronic attachment) to present the minimum requirements for worker health and safety protection for all development projects. All of the required ground intrusive construction work or activities which require contact with potentially impacted materials will be performed by OSHA HAZWOPER trained workers. The use of OSHA HAZWOPER trained workers will mitigate potential risks to Construction Workers by ensuring that the on-site work is performed by personnel who are trained and equipped for the conditions at the Site. The contractor providing the OSHA HAZWOPER trained workers will develop a site-specific HASP which will be applied to all on-site workers who may be engaged in the above-referenced activities. The HASP will specify workspace monitoring, Action Levels, and the appropriate PPE for worker health and safety protection for the project. At a minimum, the OSHA HAZWOPER trained workers will adhere to the modified Level D PPE requirements provided as **Appendix C**.

A Site Safety Officer must be designated within the contractor's HASP. A copy of the HASP will be maintained on-site and will be made available to the EP. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the trenches and will coordinate with the designated Site Safety Officer (provided by the contractor) to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required. The designated Site Safety Officer will be responsible for ensuring compliance with the requirements of the HASP, and for enforcing these requirements.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the HASP and the PPE SOP. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following established safety procedures to prevent contact with potentially contaminated material. The EP may elect to adopt the contractor's HASP, or can prepare their own site-specific HASP.

OSHA HAZWOPER trained workers will not be required during construction activities which do not have a significant exposure risk, such as above-grade construction.

5.5 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

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

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Implementation of a perimeter groundwater monitoring program to assess BTEX, naphthalene, and TPH/Oil & Grease concentrations outside of the impoundment. Long-term perimeter monitoring of the impoundment will ultimately be incorporated into the site-wide groundwater monitoring program.
- Notice to the MDE at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy (i.e., through the pavement cap or marker fabric in landscaped areas).
- Notice to the USEPA at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy, only if the proposed duration of ground intrusive activity would exceed the allowable exposure duration determined in the SLRA and the contractor will not use the modified Level D PPE specified in the approved SOP.
- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any material excavated/pumped at the Site in accordance with applicable local, state, and federal requirements.
- Requirement to further evaluate vapor control measures if an enclosed structure is proposed in the future on the Site.
- Implementation of inspection procedures and maintenance of the containment remedies.

The owner/operator will file the above deed restrictions as defined by the MDE-VCP in the NFA and COC. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. Tradepoint Atlantic will notify the Tenant of this requirement and will provide MDE with contact information for the Tenant prior to issuance of the NFA.

5.6 POST REMEDIATION REQUIREMENTS

Post remediation requirements will include compliance with the conditions specified in the NFA, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA. In addition, the MDE and USEPA will be provided with a written notice of any future excavations (as applicable) in accordance with the requirements given in Section 5.5. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements. Written notice may consist of email correspondence and/or hard copy correspondence.

Additional requirements will include inspection procedures and maintenance of the containment remedies to minimize degradation which could lead to future exposures, as well as continued perimeter groundwater monitoring. An Operations and Maintenance Plan (O&M Plan) will be submitted for MDE approval. This O&M Plan will include long-term inspection and maintenance requirements for the capped areas of the Site. The responsible party will perform cap inspections, perform maintenance of the cap, and retain inspection records, as required by the O&M Plan.

5.7 CONSTRUCTION OVERSIGHT

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

The EP will monitor all soil excavation and utility trenching activities for signs of contamination that may indicate materials that are not suitable for reuse. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for staining, petroleum waste materials, or other indications of significant contamination. 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 (as described in Section 5.1.2; Soil Excavation and Utility Trenching). The EP will also perform routine periodic breathing zone monitoring and PPE spot checks during ground intrusive activities. The EP will also inspect any water that collects in the excavations/trenches on an as-needed basis to coordinate appropriate sampling prior to disposal (as described in Section 5.2.2; Dewatering).

Daily inspections, as necessary, will be performed during general site grading and cap construction activities to verify that appropriate fill materials are being used (as described in Section 5.1.4; Fill), dust monitoring and control measures are being implemented as appropriate (as described in Section 5.1.5; Dust Control), the requirements of the HASP and the PPE SOP are being enforced by the designated Site Safety Officer (as described in Section 5.4; Health and Safety), and surface engineering controls are being installed with the appropriate thicknesses (shown on the RADWP

attachments). Oversight by an EP will not be required during construction activities which do not have a significant environmental component, such as above-grade construction.

Records will be developed by the EP to document:

- Compliance with soil screening requirements
- Proper water management, including documentation of any testing and water disposal
- Observations of construction activities during site grading and cap construction
- 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. Any permits or permit modifications from State or local authorities will be provided as addenda to this RADWP.

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

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.

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

3. Modified Level D PPE will be used for the entire scope of ground intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project are outlined in the PPE SOP provided as **Appendix C**. If it is not possible to implement the PPE SOP as provided, the agencies will be notified and a RADWP Addendum will be submitted to detail any appropriate mitigative measures.

7.0 IMPLEMENTATION SCHEDULE

Progress reports will be submitted to the MDE on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

- Development Progress
- Soil Management (imported materials, screening, stockpiling)
- Soil Sampling and Disposal
- Water Management
- Dust Monitoring
- Notable Occurrences (if applicable)
- Additional Associated Work (if applicable)

The proposed implementation schedule is shown below:

Task	**Proposed Completion Date**
Anticipated RADWP Approval	July 2, 2021
Response:	
Groundwater Network Abandonments	August 2021
Development:	
Installation of Erosion and Sediment Controls	September 2021
Existing Well Protection	September 2021
Site Preparation	September 2021
Slag (or Alternative Fill) Delivery and Placement	September 2021
Grading	September 2021
Utility Installations	November 2021
Perimeter Monitoring Well Network Installation	December 2021

Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	May 2022
Request for NFA from the MDE	August 2022
Recordation of institutional controls in the land records office of Baltimore County	Within 30 days of receiving the approval of NFA from the MDE
Submit proof of recordation with Baltimore County	Upon receipt from Baltimore County

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

FIGURES


B14-1 Development Boundary
Site Boundary
Parcel Boundaries
Private Property
Parcel A9
Parcel A13
Parcel A5
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A2
Parcel A15
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B14
Parcel B8
B14-1
Parcel B21
Parcel B22
Parcel B16
Parcel B24
Parcel B15
Parcel B23
Parcel B7
Parcel B25
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic
Area A and Area B Parcels
June 7, 2021
Figure
1
ARM Group LLC
Engineers and Scientists
0 500 1,000 2,000
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 200101
Area B: Project 200102
Sub-Parcel B14-1: 20010214

Temporary Construction Area

Site Boundary

Parcel Boundary

Parcel A1

Parcel A4

Parcel B6

Parcel B8

Parcel B14

Parcel B24

Parcel B16

Parcel B15

SHEET C-405

SHEET C-404

SHEET C-403

SHEET C-402

N 570,450

E 1,457,350

N 570,450

E 1,459,350

PART OF
MAP 111, GRID 14
PARCEL 318
LANDS N/F
TRADEPOINT ATLANTIC, LLC
D.B. 35478, PG. 379
ZONE: MH-IM
USE: VACANT

TINMILL CANAL

Sub-Parcel B14-1
Development Grading Plan

June 7, 2021

Figure 2

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010214

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Sub-Parcel B14-1
Phase II Soil Boring Locations

June 7, 2021

Figure 3

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Phase II Soil Boring
Temporary Construction
Site Boundary
Parcel Boundary

Parcel A1
Parcel A4
Parcel B6
Parcel B8
Parcel B14
Parcel B24
Parcel B16
Parcel B15

B14-027-SB-1
B14-027-SB-5
B14-003-SB-1
B14-003-SB-5
B14-002-SB-1
Benzo[a]pyrene: 4.4
B14-026-SB-1
B14-026-SB-8.5
B14-025-SB-1
B14-025-SB-5
B14-006-SB-1
B14-006-SB-5
B14-024-SB-1
B14-023-SB-1
B14-021-SB-1
B14-021-SB-9
B14-022-SB-1
B14-022-SB-7.5
B14-009-SB-1
B14-009-SB-5
B14-008-SB-1
B14-008-SB-9
B14-011-SB-1
B14-011-SB-5
B14-007-SB-1
B14-007-SB-8
B14-007-SB-10
B14-010-SB-1
B14-010-SB-5
B14-012-SB-1
B14-012-SB-9
B14-012-SB-10
B14-013-SB-1
B14-013-SB-9
B14-013-SB-10
B14-014-SB-1
B14-014-SB-5
Benzo[a]pyrene: 5.9
B14-015-SB-1
B14-015-SB-5
B14-028-SB-1
B14-028-SB-8
B14-034-SB-1
B14-034-SB-5
B14-016-SB-1
B14-016-SB-7.5
B14-017-SB-1
B14-017-SB-4
B14-030-SB-1
B14-030-SB-6
B14-030-SB-10
B14-029-SB-1
B14-029-SB-5
B14-019-SB-1
B14-019-SB-4
B14-020-SB-1
Benzo[a]pyrene: 7.9
B14-031-SB-1
B14-031-SB-7

Sub-Parcel B14-1
Phase II Soil SVOC Exceedances (mg/kg)

June 7, 2021

Figure
S1

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Phase II Soil Boring
Temporary Construction
Site Boundary
Parcel Boundary

Parcel A1
Parcel A4
Parcel B6
Parcel B8
Parcel B14
Parcel B24
Parcel B16
Parcel B15

B14-027-SB-1
B14-003-SB-1
B14-002-SB-1
Aroclor 1254: 1.3 J
PCBs (total): 1.3
B14-026-SB-1
B14-025-SB-1
B14-006-SB-1
Aroclor 1254: 3.4
PCBs (total): 3.4
B14-024-SB-1
B14-023-SB-1
B14-021-SB-1
Aroclor 1260: 2.8 J
PCBs (total): 2.8
B14-022-SB-1
B14-009-SB-1
B14-011-SB-1
Aroclor 1260: 3.4 J
PCBs (total): 3.4
B14-008-SB-1
B14-010-SB-1
B14-007-SB-1
B14-034-SB-1
Aroclor 1260: 3.1 J
PCBs (total): 3.1
B14-012-SB-1
B14-013-SB-1
B14-014-SB-1
B14-015-SB-1
B14-028-SB-1
B14-016-SB-1
B14-017-SB-1
B14-030-SB-1
B14-029-SB-1
B14-019-SB-1
B14-020-SB-1
B14-031-SB-1

Sub-Parcel B14-1
Phase II Soil PCB Exceedances (mg/kg)

June 7, 2021

Figure
S2

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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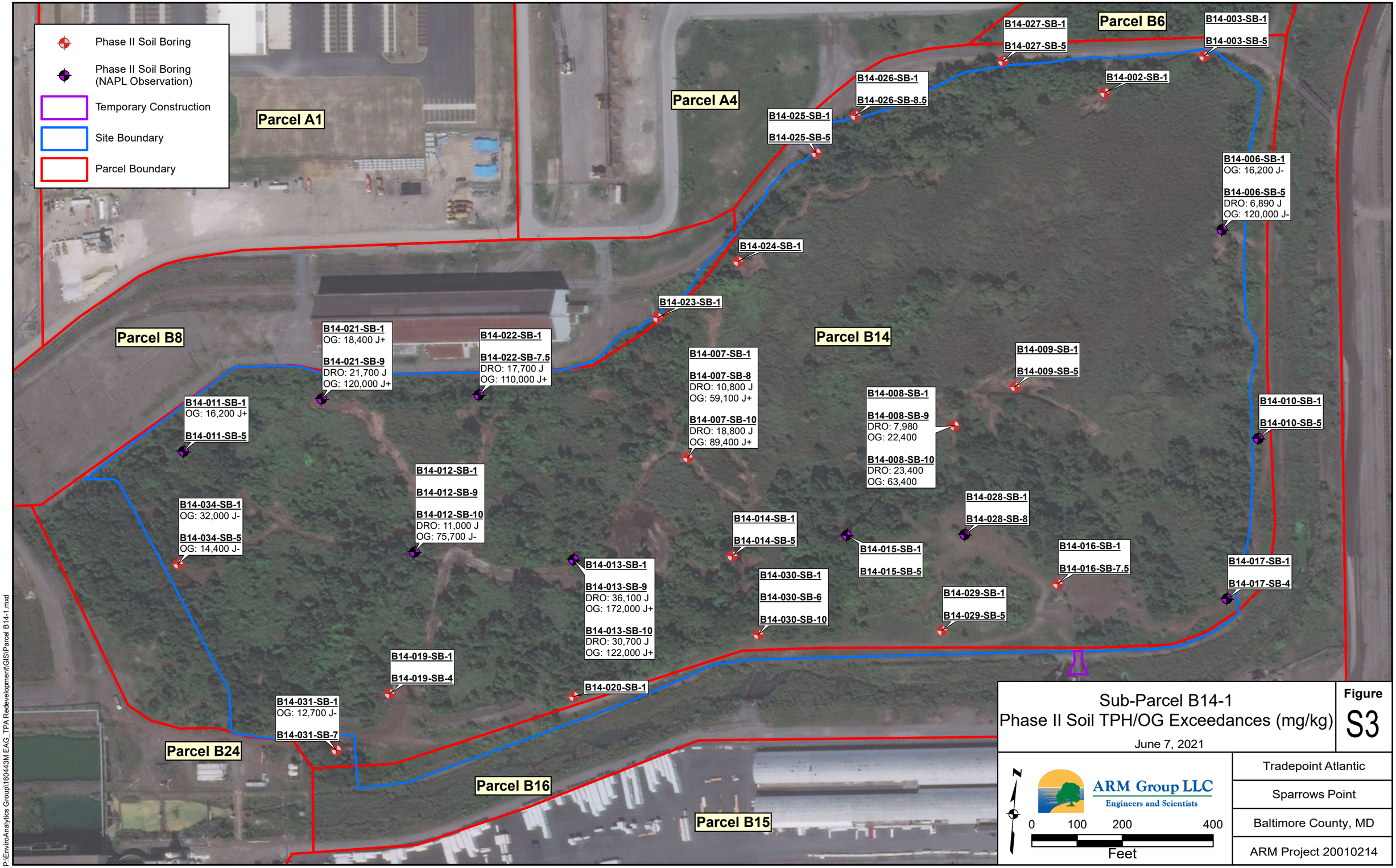

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Sub-Parcel B14-1
Phase II Soil TPH/OG Exceedances (mg/kg)

June 7, 2021

Figure
S3

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

Phase II Soil Boring
Temporary Construction
Site Boundary
Parcel Boundary

Parcel A1
Parcel A4
Parcel B6
Parcel B8
Parcel B14
Parcel B24
Parcel B16
Parcel B15

B14-026-SB-1
B14-026-SB-8.5
Arsenic: 8.2

B14-027-SB-1
Arsenic: 4.8
B14-027-SB-5
Arsenic: 6.7
B14-027-SB-10
Arsenic: 7.0

B14-002-SB-1
Arsenic: 11.4

B14-003-SB-1
Arsenic: 4.6
B14-003-SB-5
Chromium VI: 11.6 J-

B14-025-SB-1
B14-025-SB-5

B14-006-SB-1
Arsenic: 26.6
B14-006-SB-5
Arsenic: 56.3

B14-024-SB-1
Arsenic: 4.5

B14-023-SB-1
Arsenic: 7.5

B14-021-SB-1
Arsenic: 44.0
B14-021-SB-9
Arsenic: 73.9
Lead: 1,440

B14-022-SB-1
Arsenic: 30.2
Lead: 1,160
B14-022-SB-7.5
Arsenic: 51.4

B14-007-SB-1
Arsenic: 26.7
Lead: 1,600
B14-007-SB-8
Arsenic: 55.0
Lead: 2,020
B14-007-SB-10
Arsenic: 50.2
Lead: 1,390

B14-008-SB-1
Arsenic: 32.6
B14-008-SB-9
Arsenic: 28.6
Lead: 1,510
B14-008-SB-10
Arsenic: 136

B14-009-SB-1
Arsenic: 33.1
B14-009-SB-5
Arsenic: 24.3

B14-010-SB-1
B14-010-SB-5
Arsenic: 3.0

B14-011-SB-1
Arsenic: 42.1
B14-011-SB-5
Arsenic: 38.8
Lead: 820
B14-011-SB-10
Arsenic: 7.8

B14-012-SB-1
Arsenic: 43.7
Lead: 1,330 J
B14-012-SB-9
Arsenic: 33.8
Lead: 1,020 J
B14-012-SB-10
Arsenic: 30.3
Lead: 868 J

B14-013-SB-1
Arsenic: 36.3
B14-013-SB-9
Arsenic: 51.8
Lead: 916
B14-013-SB-10
Arsenic: 19.3
Lead: 818

B14-014-SB-1
Arsenic: 39.1
B14-014-SB-5
Arsenic: 38.2
Lead: 3,550

B14-015-SB-1
Arsenic: 23.4
Lead: 1,580
B14-015-SB-5
Arsenic: 37.9
Lead: 1,810
B14-015-SB-10
Arsenic: 5.1

B14-028-SB-1
Arsenic: 8.7
B14-028-SB-8
Arsenic: 7.0
Manganese: 26,100
B14-028-SB-10
Arsenic: 9.2

B14-017-SB-1
B14-017-SB-4
Arsenic: 3.7
B14-017-SB-10
Arsenic: 3.7

B14-016-SB-1
Arsenic: 14.7
B14-016-SB-7.5
Arsenic: 8.0
B14-016-SB-10
Arsenic: 12.5

B14-029-SB-1
Arsenic: 10.7
Lead: 1,370
B14-029-SB-5
Arsenic: 6.3
Lead: 2,660
B14-029-SB-10
Arsenic: 5.9

B14-030-SB-1
B14-030-SB-6
Arsenic: 3.0
B14-030-SB-10
Arsenic: 9.8

B14-034-SB-1
Arsenic: 46.0
Lead: 1,010 J
B14-034-SB-5
Arsenic: 20.2

B14-019-SB-1
B14-019-SB-4
Manganese: 32,600

B14-020-SB-1
Arsenic: 10.8

B14-031-SB-1
Arsenic: 12.3
B14-031-SB-7
Arsenic: 3.7
Manganese: 33,700

Sub-Parcel B14-1
Phase II Soil Inorganic Exceedances (mg/kg)

June 7, 2021

Figure S4

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Monitoring Well
NAPL Piezometer (No NAPL)
NAPL Piezometer (Trace NAPL)
NAPL Piezometer (Measurable NAPL)
Temporary Construction
Site Boundary
Parcel Boundary

Parcel A1
Parcel A4
Parcel B6
Parcel B8
Parcel B14
Parcel B24
Parcel B16
Parcel B15

HI04-PZM006
B14-002-PZ
B14-035-PZ
B14-006-PZ
TM08-PZM007
HI07-PZM005
HI02-PZM006
B14-021-PZ
B14-022-PZ
B14-008-PZ
B14-010-PZ
B14-011-PZ
B14-036-PZ
B14-040-PZ
B14-007-PZ
B14-015-PZ
B14-028-PZ
B14-034-PZ
B14-042-PZ
B14-012-PZ
B14-039-PZ
B14-013-PZ
B14-043-PZ
B14-017-PZ
TM06-PZM008
B14-041-PZ
B14-038-PZ
TM04-PZM006
TM02-PZM009
Well 2

Sub-Parcel B14-1 Groundwater Locations

June 7, 2021

Figure 4

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Sub-Parcel B14-1
Phase II GW VOC Exceedances (ug/L)

June 7, 2021

Figure
GW1

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Monitoring Well
Temporary Construction
Site Boundary
Parcel Boundary

Parcel A1
Parcel A4
Parcel B6
Parcel B8
Parcel B14
Parcel B24
Parcel B16
Parcel B15

HI04-PZM006
Naphthalene: 0.15

HI07-PZM005
Benz[a]anthracene: 0.058 J
Naphthalene: 26.1
Pentachlorophenol: 2.8

TM08-PZM007

HI02-PZM006
Naphthalene: 5.1

TM06-PZM008
Benz[a]anthracene: 0.061 J
Naphthalene: 0.57

TM04-PZM006
1,4-Dioxane: 2
Naphthalene: 405

TM02-PZM009
1,1-Biphenyl: 0.96 J
Benz[a]anthracene: 0.095 J
Naphthalene: 65.8

Well 2
Benz[a]anthracene: 0.052 J
Naphthalene: 5

Sub-Parcel B14-1
Phase II GW SVOC Exceedances (ug/L)

June 7, 2021

Figure
GW2

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Sub-Parcel B14-1
Phase II GW TPH/OG Exceedances (ug/L)
June 7, 2021

Figure
GW3

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

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Sub-Parcel B14-1
Phase II GW Inorganic Exceedances (ug/L)
June 7, 2021

Figure
GW4

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010214

Sub-Parcel B14-1
Development Plan Layout - Cap Types

June 7, 2021

Figure 5

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010214

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Proposed Monitoring Well (Sample)

Monitoring Well (Retain and Sample)

Monitoring Well (Retain)

Monitoring Well (Abandon)

Piezometer (Abandon)

Temporary Construction

Site Boundary

Parcel Boundary

Parcel A1

Parcel A4

Parcel B6

Parcel B8

Parcel B14

Parcel B24

Parcel B16

Parcel B15

SHEET C-405

SHEET C-404

SHEET C-403

SHEET C-402

HI04-PZM034

HI04-PZM006

B14-009-PDI

B14-002-PZ

B14-035-PZ

HI05-PZM012

HI05-PZM108

HI05-PZM046

B14-006-PZ

TM08-PZM007

TM08-PZM038

HI07-PZM094

HI07-PZM005

HI07-PZM032

Well 5

HI02-PZM006

Well 4

HI02-PZM032

B14-002-PDI

B14-022-PZ

B14-021-PZ

B14-011-PZ

B14-036-PZ

B14-040-PZ

B14-008-PZ

B14-010-PZ

B14-007-PZ

B14-015-PZ

B14-028-PZ

B14-042-PZ

B14-012-PZ

B14-039-PZ

B14-013-PZ

B14-043-PZ

B14-003-PDI

B14-006-PDI

B14-017-PZ

TM06-PZM008

B14-041-PZ

B14-038-PZ

TM04-PZM006

TM04-PZM056

TM04-PZM082

TM06-PZM034

TM04-PZM028

Well 3

Well 1

Well 2

TINMILL CANAL

PART OF
MAP 111, GRID 14
PARCEL 318
LANDS OF
TRADEPOINT ATLANTIC, LLC
D.B. 35478, PG. 379
ZONE: MH-IM
USE: VACANT

N 570,450

E 1,459,350

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Sub-Parcel B14-1 Groundwater Network Abandonment and Monitoring Plan

June 7, 2021

Figure 6

ARM Group LLC
Engineers and Scientists

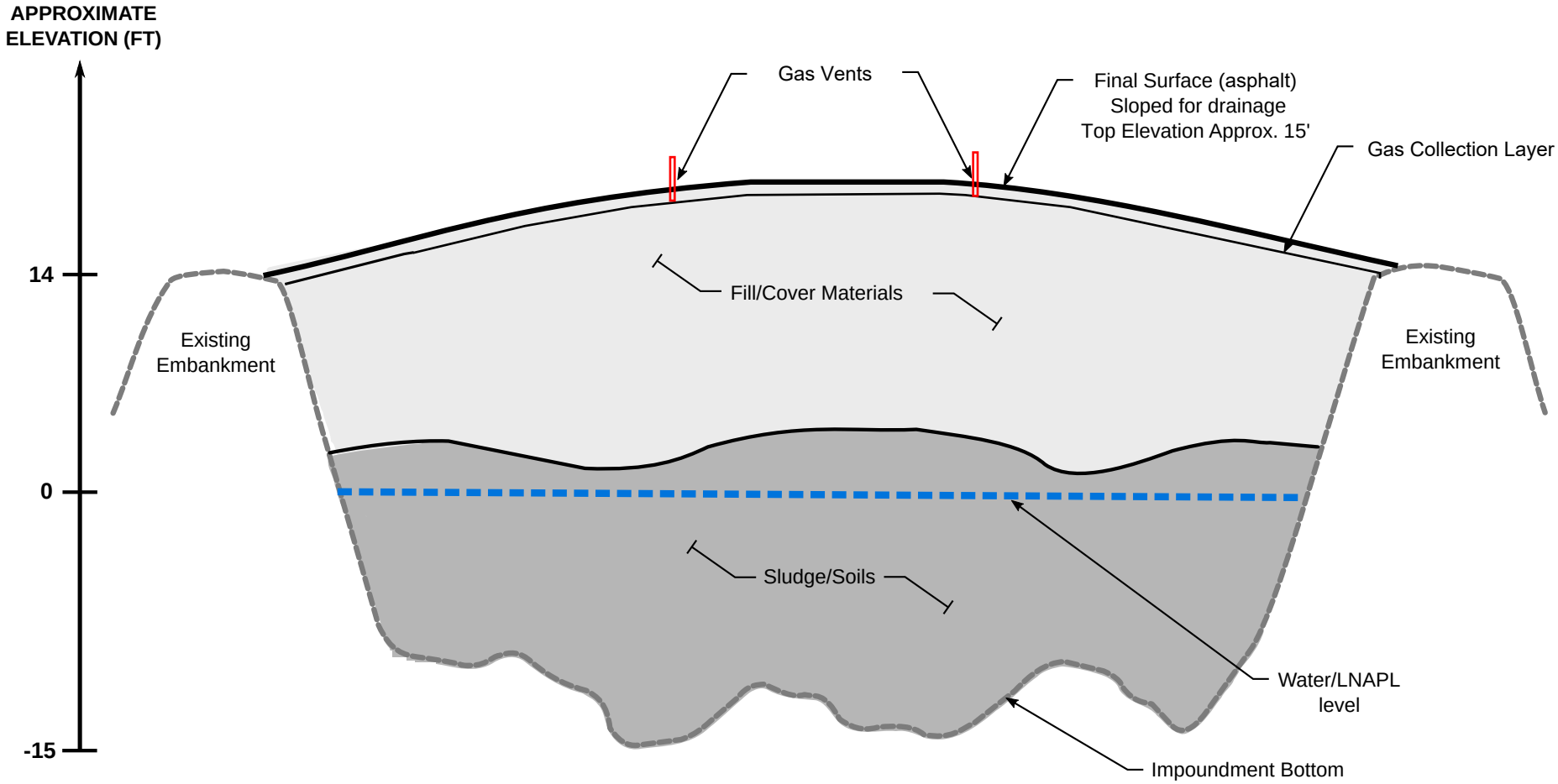
0 100 200 400
Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010214



TYPICAL CROSS-SECTION THROUGH CLOSED IMPOUNDMENT

NOT TO SCALE

Sub-Parcel B14-1 Typical Cross-Section June 7, 2021	**Figure** 7
Tradepoint Atlantic	
Sparrows Point	
Baltimore County, MD	
ARM Project 20010214	

ARM Group LLC
Engineers and Scientists

Monitoring Well
GW Elev. (feet amsl)

Groundwater Elevation
Contour (feet amsl)

Temporary Construction

Site Boundary

Parcel Boundary

Gauged 12/21/17

Parcel A1

Parcel A4

Parcel B6

Parcel B8

Parcel B14

Parcel B24

Parcel B16

Parcel B15

HI04-PZM006
1.42'

HI07-PZM005
2.03'

HI02-PZM006
1.68'

TM08-PZM007
0.69'

TM06-PZM008
0.23'

TM04-PZM006
-0.97'

TM02-PZM009
0.17'

Well 2
0.10'

SHEET C-405

SHEET C-404

SHEET C-403

SHEET C-402

PART OF
MAP 111, GRID 14
PARCEL 318
LANDS N/F
TRADEPOINT ATLANTIC, LLC
ZONE: MH-IM
USE: VACANT

TINMILL CANAL

N 570,450

E 1,459,200

1.5

1

0.5

0

-0.5

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Sub-Parcel B14-1 Shallow GW Contours Development Grading Plan

June 7, 2021

Figure 8

ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010214

TABLES

Table 1 - Sub-Parcel B14-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B14-002-SB-1 9/14/2017	B14-003-SB-1 9/13/2017	B14-003-SB-5 9/13/2017	B14-006-SB-1 9/13/2017	B14-006-SB-5 9/13/2017	B14-007-SB-1 9/7/2017	B14-007-SB-8 9/7/2017	B14-007-SB-10 9/7/2017	B14-008-SB-1* 9/12/2017	B14-008-SB-9* 9/12/2017	B14-008-SB-10* 9/12/2017	B14-009-SB-1* 9/15/2017	B14-009-SB-5* 9/15/2017	B14-010-SB-1 9/13/2017	B14-010-SB-5 9/13/2017
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.011**	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	0.0077 U	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	0.0077 U	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	mg/kg	9,300	N/A	N/A	N/A	N/A	N/A	N/A	**0.0061 J**	**0.0099 J**	N/A	**0.0074 J**	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethene (Total)	mg/kg	2,300	N/A	N/A	N/A	N/A	N/A	N/A	0.027 U	0.025 U	N/A	**0.14**	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane	mg/kg	4.4	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.0021 J**	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	mg/kg		N/A	N/A	N/A	N/A	N/A	N/A	**0.038**	0.012 U	N/A	0.0077 U	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11	N/A	N/A	N/A	N/A	N/A	N/A	**0.037**	**0.014**	N/A	**0.0051 J**	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.064**	**0.065**	N/A	**0.054**	N/A	N/A	N/A	N/A	N/A
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	N/A	N/A	N/A	N/A	N/A	N/A	0.027 U	0.025 U	N/A	**0.024**	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.18 J**	**0.26 J**	N/A	**0.17**	N/A	N/A	N/A	N/A	N/A
Benzene	mg/kg	5.1	N/A	N/A	N/A	N/A	N/A	N/A	**0.012 J**	**0.017**	N/A	**0.38**	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.026**	N/A	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	mg/kg	2,300	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.14**	N/A	N/A	N/A	N/A	N/A
Cyclohexane	mg/kg	27,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.029**	0.025 U	N/A	**0.0035 J**	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	25	N/A	N/A	N/A	N/A	N/A	N/A	**0.02**	**0.012 J**	N/A	**0.06**	N/A	N/A	N/A	N/A	N/A
Isopropylbenzene	mg/kg	9,900	N/A	N/A	N/A	N/A	N/A	N/A	**0.018**	**0.0041 J**	N/A	**0.0068 J**	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	mg/kg	1,000	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.0096**	N/A	N/A	N/A	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	N/A	N/A	N/A	0.013 U	0.012 U	N/A	**0.0039 J**	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.018**	**0.035**	N/A	**5.6**	N/A	N/A	N/A	N/A	N/A
Xylenes	mg/kg	2,800	N/A	N/A	N/A	N/A	N/A	N/A	**0.051**	**0.044**	N/A	**0.21**	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	**0.21**	1.4 U	0.078 U	**0.11**	N/A	0.084 U	0.081 U	1.5 U	**0.45 J**
2,4-Dimethylphenol	mg/kg	16,000	1.8 U	1.5 U	0.072 R	2.1 U	**0.78 J**	0.086 U	0.13 U	**4.3**	0.078 U	**4**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
2,4-Dinitrophenol	mg/kg	1,600	4.4 U	3.7 U	0.18 R	5.2 U	5.8 U	0.22 UJ	0.33 UJ	3.6 UJ	0.2 U	0.23 U	N/A	0.21 U	0.2 U	3.7 U	3.7 U
2,4-Dinitrotoluene	mg/kg	7.4	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	**0.055 J**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
2,6-Dinitrotoluene	mg/kg	1.5	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	0.091 U	N/A	0.084 U	0.081 U	1.5 U	1.5 U
2-Chloronaphthalene	mg/kg	60,000	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	0.091 U	N/A	0.084 U	0.081 U	1.5 U	1.5 U
2-Methylnaphthalene	mg/kg	3,000	**0.18**	**0.045 J**	**0.005 J**	**0.053 J**	**0.28**	**0.0086 J**	**0.59**	**0.91**	**0.013**	**0.67**	N/A	**0.0027 J**	**0.048**	**0.031 J**	**0.1**
2-Methylphenol	mg/kg	41,000	1.8 U	1.5 U	0.072 R	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	**0.75**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	3.5 U	2.9 U	0.14 R	4.1 U	4.6 U	0.17 U	**0.084 J**	2.9 U	0.16 U	**2.2**	N/A	0.17 U	0.16 U	3 U	2.9 U
4-Chloroaniline	mg/kg	11	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	**0.58**	**0.64 J**	0.078 U	0.091 U	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Acenaphthene	mg/kg	45,000	**0.64**	**0.0054 J**	**0.00087 J**	**0.0087 J**	**0.083 J**	0.0086 U	**0.25 J**	**0.68 J**	**0.002 J**	**0.13**	N/A	0.0084 U	**0.0012 J**	0.074 U	**0.014 J**
Acenaphthylene	mg/kg	45,000	**0.27**	**0.14**	**0.002 J**	**0.11**	**0.065 J**	**0.0075 J**	**0.1 J**	**0.19 J**	**0.0072 J**	**0.18**	N/A	**0.0032 J**	**0.04**	**0.11**	**0.44**
Acetophenone	mg/kg	120,000	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	**0.19**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Anthracene	mg/kg	230,000	**2.4**	**0.097**	**0.0046 J**	**0.095 J**	**0.085 J**	**0.0042 J**	**0.45**	**0.74**	**0.023**	**0.31**	N/A	**0.0055 J**	**0.042**	**0.058 J**	**0.7**
Benz[a]anthracene	mg/kg	21	**5.2**	**0.25**	**0.037**	**0.095 J**	**0.17**	**0.017**	**0.19 J**	**0.78**	**0.076**	**0.58**	N/A	**0.014**	**0.14**	**0.31**	**2.9**
Benzaldehyde	mg/kg	120,000	1.8 R	1.5 R	0.072 R	2.1 R	2.3 R	0.086 R	**0.078 J**	1.4 R	**0.031 J**	0.091 U	N/A	0.084 U	0.081 U	1.5 R	1.5 R
Benzo[a]pyrene	mg/kg	2.1	**4.4**	**0.68**	**0.057**	**0.087 J**	**0.19**	**0.028**	**0.13 J**	**0.47 J**	**0.064**	**0.3**	N/A	**0.017**	**0.21**	**0.26**	**1.9**
Benzo[b]fluoranthene	mg/kg	21	**7**	**0.93**	**0.098**	**0.2**	**0.65**	**0.04**	**0.24 J**	**0.98**	**0.24**	**1.2**	N/A	**0.047**	**0.38**	**0.88**	**6**
Benzo[g,h,i]perylene	mg/kg		**1.9**	**0.58**	**0.048**	**0.14**	**0.064 J**	**0.022**	**0.055 J**	**0.24 J**	**0.079**	**0.11**	N/A	**0.013**	**0.13**	**0.15**	**1**
Benzo[k]fluoranthene	mg/kg	210	**5.4**	**0.72**	**0.076**	**0.15**	**0.5**	**0.035**	**0.2 J**	**0.87**	**0.2**	**1**	N/A	**0.036**	**0.3**	**0.68**	**4.6**
bis(2-Ethylhexyl)phthalate	mg/kg	160	1.8 U	1.5 U	0.072 U	2.1 U	**3.5**	0.086 U	0.13 UJ	**8.2**	0.078 U	**1.2**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Caprolactam	mg/kg	400,000	4.4 U	3.7 U	0.18 U	5.2 U	5.8 U	0.22 U	**0.98**	3.6 U	0.2 U	**0.11 J**	N/A	0.21 U	0.2 U	3.7 U	3.7 U
Carbazole	mg/kg		1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	0.091 U	N/A	0.084 U	0.081 U	1.5 U	**0.68 J**
Chrysene	mg/kg	2,100	**4.4**	**0.26**	**0.042**	**0.097 J**	**0.87**	**0.014**	**0.33**	**1.3**	**0.095**	**1.3**	N/A	**0.019**	**0.18**	**0.29**	**2.5**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.63**	**0.13**	**0.011**	**0.021 J**	0.12 U	**0.0048 J**	0.27 U	0.73 U	**0.022**	**0.039 J**	N/A	**0.0041 J**	**0.039**	**0.054 J**	**0.45**
Di-n-butylphthalate	mg/kg	82,000	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	0.091 U	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Di-n-ocytlphthalate	mg/kg	8,200	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 UJ	1.4 UJ	0.078 U	0.91 U	N/A	0.084 U	0.081 U	1.5 U	1.5 UJ
Fluoranthene	mg/kg	30,000	**11.4**	**0.36**	**0.045**	**0.17**	**0.38**	**0.026**	**0.48**	**2.5**	**0.12**	**1.4**	N/A	**0.026**	**0.22**	**0.51**	**5.9**
Fluorene	mg/kg	30,000	**0.61**	**0.014 J**	**0.00074 J**	**0.018 J**	**0.14**	**0.002 J**	**0.36**	**0.98**	**0.0047 J**	**0.42**	N/A	**0.00069 J**	**0.0079 J**	**0.0067 J**	**0.075**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**1.9**	**0.48**	**0.039**	**0.082 J**	**0.032 J**	**0.02**	0.27 U	**0.16 J**	**0.065**	**0.083 J**	N/A	**0.013**	**0.12**	**0.17**	**1.3**
Naphthalene	mg/kg	8.6	**0.36**	**0.27 J**	**0.0083 J**	**0.083 J**	**0.17 J**	**0.17 J**	**0.49 J**	**1.1 J**	**0.023**	**1.3**	N/A	**0.0062 J**	**0.22**	**0.14 J**	**0.75 J**
N-Nitrosodiphenylamine	mg/kg	470	1.8 U	1.5 U	0.072 U	2.1 U	2.3 U	0.086 U	0.13 U	1.4 U	0.078 U	**0.11**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Phenanthrene	mg/kg		**7.8**	**0.28**	**0.022**	**0.17**	**0.46**	**0.016**	**1.2**	**4.8**	**0.092**	**1.6**	N/A	**0.017**	**0.075**	**0.21**	**3.4**
Phenol	mg/kg	250,000	1.8 U	1.5 U	0.072 R	2.1 U	2.3 U	0.086 U	**0.051 J**	1.4 U	0.078 U	**0.44**	N/A	0.084 U	0.081 U	1.5 U	1.5 U
Pyrene	mg/kg	23,000	**9.4**	**0.36**	**0.045**	**0.16**	**0.63**	**0.027**	**1.4**	**2.6**	**0.073**	**1.3**	N/A	**0.019**	**0.2**	**0.39**	**4.2**
PCBs																	
Aroclor 1248	mg/kg	0.94	0.11 U	0.18 U	N/A	0.26 U	N/A	0.022 U	N/A	N/A	0.019 U	N/A	N/A	0.021 U	N/A	0.094 U	N/A
Aroclor 1254	mg/kg	0.97	**1.3 J**	**0.097 J**	N/A	**3.4**	N/A	0.022 U	N/A	N/A	0.019 U	N/A	N/A	0.021 U	N/A	0.094 U	N/A
Aroclor 1260	mg/kg	0.99	0.11 UJ	0.18 U	N/A	0.26 U	N/A	**0.089 J**	N/A	N/A	**0.031**	N/A	N/A	**0.027**	N/A	**0.064 J**	N/A
PCBs (total)	mg/kg	0.97	**1.3**	1.7 U	N/A	**3.4**	N/A	**0.089 J**	N/A	N/A	0.18 U	N/A	N/A	0.19 U	N/A	0.84 U	N/A
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**170 J**	**56.2 J**	**9.9 J**	**2,080 J**	**6,890 J**	**220 J**	**10,800 J**	**18,800 J**	**82.8**	**7,980**	**23,400**	**53.2**	**98.4**	**36.7 J**	**87.7 J**
Gasoline Range Organics	mg/kg	6,200	13.5 U	12.2 U	11 U	17.7 U	**8.8 J**	18.9 UJ	**45.2 J**	**8.4 B**	13.6 U	**23.9**	**62.8**	**3.4 B**	**5.3 B**	13.3 U	13.7 U
Oil & Grease	mg/kg	6,200	**3,980 J-**	**736 J-**	**124 J-**	**16,200 J-**	**120,000 J-**	**1,410 J+**	**59,100 J+**	**89,400 J+**	**423**	**22,400**	**63,400**	**528**	**527**	**289 J-**	**229 J-**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data

^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample

Table 1 - Sub-Parcel B14-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B14-011-SB-1 9/7/2017	B14-011-SB-5 9/7/2017	B14-012-SB-1 9/6/2017	B14-012-SB-9 9/6/2017	B14-012-SB-10 9/6/2017	B14-013-SB-1 9/7/2017	B14-013-SB-9 9/7/2017	B14-013-SB-10 9/7/2017	B14-014-SB-1* 9/29/2017	B14-014-SB-5* 9/29/2017	B14-015-SB-1* 9/12/2017	B14-015-SB-5* 9/12/2017	B14-016-SB-1* 9/12/2017	B14-016-SB-7.5* 9/12/2017	B14-017-SB-1 9/13/2017
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	N/A	0.0049 U	**0.47 J**	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	N/A	0.0049 U	**0.46 J**	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	mg/kg	9,300	N/A	N/A	N/A	0.0049 U	**0.84**	N/A	**0.016**	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethene (Total)	mg/kg	2,300	N/A	N/A	N/A	0.0097 U	1.2 U	N/A	0.022 U	0.026 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane	mg/kg	4.4	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	mg/kg		N/A	N/A	N/A	0.0049 U	0.59 U	N/A	**0.011 J**	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11	N/A	N/A	N/A	0.0049 U	**0.34 J**	N/A	**0.026**	**0.0085 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	**0.0071 J**	1.2 U	N/A	0.022 U	**0.12**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	N/A	N/A	N/A	0.0097 U	1.2 U	N/A	0.022 U	0.026 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	N/A	**0.033 J**	1.2 UJ	N/A	**0.34**	**0.44**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	mg/kg	5.1	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	**0.02**	**0.038**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	**0.0061 J**	**0.0082 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	mg/kg	2,300	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyclohexane	mg/kg	27,000	N/A	N/A	N/A	0.0097 U	**0.35 J**	N/A	**0.052**	0.026 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	25	N/A	N/A	N/A	0.0049 U	**1.1**	N/A	**0.069**	**0.026**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Isopropylbenzene	mg/kg	9,900	N/A	N/A	N/A	0.0049 U	**1.2**	N/A	**0.044**	**0.0056 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	mg/kg	1,000	N/A	N/A	N/A	0.0049 U	0.51 B	N/A	0.011 UJ	0.013 UJ	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	N/A	0.0049 U	0.59 U	N/A	0.011 U	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	N/A	0.0049 U	**0.83**	N/A	**0.14**	**0.12**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylenes	mg/kg	2,800	N/A	N/A	N/A	0.015 U	**4.4**	N/A	**0.29**	**0.087**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	1 U	0.097 U	0.084 U	0.087 U	**1.5 J**	0.079 U	**2.3**	**0.82**	0.078 U	**0.13**	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
2,4-Dimethylphenol	mg/kg	16,000	1 U	**0.06 J**	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	3 U	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
2,4-Dinitrophenol	mg/kg	1,600	2.6 UJ	0.24 UJ	0.21 R	0.22 R	6.4 R	0.2 UJ	3 UJ	0.37 UJ	0.2 U	**0.1 J**	0.21 U	0.19 U	0.17 U	0.18 U	0.17 U
2,4-Dinitrotoluene	mg/kg	7.4	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	**0.32**	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
2,6-Dinitrotoluene	mg/kg	1.5	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 U	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
2-Chloronaphthalene	mg/kg	60,000	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 U	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
2-Methylnaphthalene	mg/kg	3,000	**0.063 J**	**0.0026 J**	**0.016**	**0.0088 J**	**8.2**	**0.0062 J**	**5.4**	**0.8**	**0.02 J**	**0.29**	**0.031**	**0.006 J**	**0.011 J**	**0.0023 J**	**0.0055 J**
2-Methylphenol	mg/kg	41,000	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 U	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	2 U	**0.031 J**	0.17 U	0.17 U	5.1 U	0.16 U	**0.3 J**	**0.21 J**	0.16 U	**0.024 J**	0.17 U	0.15 U	0.14 U	0.14 U	0.14 U
4-Chloroaniline	mg/kg	11	1 U	0.097 U	0.084 U	0.087 U	**3.6**	0.079 U	1.2 U	**1.2 J**	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Acenaphthene	mg/kg	45,000	0.1 U	0.0097 U	**0.0018 J**	**0.0012 J**	**1.1**	**0.00066 J**	**3.7**	**0.4**	0.078 U	**0.01 J**	**0.0059 J**	**0.00063 J**	0.07 U	**0.0012 J**	**0.0017 J**
Acenaphthylene	mg/kg	45,000	**0.15**	**0.003 J**	**0.016**	**0.0092**	**0.79**	**0.0013 J**	**1.1**	**0.13 J**	**0.24**	**0.79**	**0.0062 J**	**0.0025 J**	**0.16**	**0.01**	**0.024**
Acetophenone	mg/kg	120,000	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 U	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Anthracene	mg/kg	230,000	**0.13**	**0.0057 J**	**0.017**	**0.011**	**1.7**	**0.0024 J**	**3.1**	**0.44**	**0.058 J**	**0.39**	**0.054**	**0.011**	**0.053 J**	**0.016**	**0.02**
Benz[a]anthracene	mg/kg	21	**0.055 J**	0.0097 U	**0.065**	**0.023**	**1.1**	**0.014**	**1.1**	**0.44**	**0.73**	**4.6**	**0.21**	**0.057**	**0.29**	**0.13**	**0.17**
Benzaldehyde	mg/kg	120,000	1 R	0.097 R	**0.025 J**	0.087 R	2.5 R	0.079 R	1.2 R	0.15 R	0.078 U	**0.051 J**	0.084 U	0.076 U	0.07 U	0.072 U	0.07 R
Benzo[a]pyrene	mg/kg	2.1	**0.065 J**	0.0097 U	**0.074**	**0.023**	**0.78**	**0.018**	**0.72**	**0.2 J**	**1.8**	**5.9**	**0.15**	**0.05**	**0.33**	**0.13**	**0.12**
Benzo[b]fluoranthene	mg/kg	21	**0.11**	0.0097 U	**0.16**	**0.041**	**1.3**	**0.032**	**1.2**	**0.51**	**3.1**	**10.2**	**0.59**	**0.17**	**0.78**	**0.31**	**0.39**
Benzo[g,h,i]perylene	mg/kg		**0.086 J**	**0.0063 J**	**0.097**	**0.022**	**0.25 J**	**0.017**	**0.12**	**0.055 J**	**0.86**	**2.4**	**0.16**	**0.073**	**0.16**	**0.05**	**0.11**
Benzo[k]fluoranthene	mg/kg	210	**0.095 J**	0.0097 U	**0.14**	**0.036**	**1.1**	**0.029**	**1.1**	**0.43**	**2.8**	**9.2**	**0.5**	**0.15**	**0.66**	**0.26**	**0.3**
bis(2-Ethylhexyl)phthalate	mg/kg	160	1 UJ	0.097 UJ	0.084 U	0.087 U	**18.9**	0.079 U	**20**	**15.5**	**0.031 J**	**0.043 J**	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Caprolactam	mg/kg	400,000	2.6 U	0.24 U	0.21 U	0.22 U	6.4 U	0.2 U	3 U	7.4 U	0.2 U	0.22 U	0.21 U	0.19 U	0.17 U	0.18 U	0.17 U
Carbazole	mg/kg		1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 UJ	0.078 U	**0.13**	**0.022 J**	0.076 U	0.07 U	0.072 U	0.07 U
Chrysene	mg/kg	2,100	**0.058 J**	0.0097 U	**0.067**	**0.024**	**1.2**	**0.014**	**1.2**	**0.66**	**0.71**	**3**	**0.26**	**0.082**	**0.28**	**0.12**	**0.17**
Dibenz[a,h]anthracene	mg/kg	2.1	0.1 U	0.0097 U	**0.027**	**0.0055 J**	**0.052 J**	**0.0045 J**	0.12 U	0.29 U	**0.3**	**0.76**	**0.065**	**0.022**	**0.042 J**	**0.017**	**0.041**
Di-n-butylphthalate	mg/kg	82,000	1 U	0.097 U	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	**0.39 J**	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Di-n-ocytlphthalate	mg/kg	8,200	1 UJ	0.097 UJ	0.084 U	0.087 U	**2.7 J**	0.079 U	1.2 UJ	0.15 UJ	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Fluoranthene	mg/kg	30,000	**0.062 J**	**0.0025 J**	**0.085**	**0.037**	**2.4**	**0.014**	**5.3**	**1.4**	**0.42**	**7**	**0.31**	**0.07**	**0.41**	**0.1**	**0.31**
Fluorene	mg/kg	30,000	**0.016 J**	0.0097 U	**0.0044 J**	**0.0054 J**	**1.8**	**0.00076 J**	**4.7**	**0.69**	**0.0068 J**	**0.085 J**	**0.011**	**0.0027 J**	**0.0099 J**	**0.0011 J**	**0.0019 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.033 J**	0.0097 U	**0.077**	**0.02**	**0.19 J**	**0.013**	**0.078 J**	0.29 U	**0.95**	**2.7**	**0.16**	**0.061**	**0.15**	**0.049**	**0.11**
Naphthalene	mg/kg	8.6	**0.075 J**	**0.0073 J**	**0.021**	**0.075**	**5.9**	**0.0065 J**	**1.8 J**	**2.4 J**	**0.074 J**	**2.7**	**0.034**	**0.0066 J**	**0.037 J**	**0.0035 J**	**0.017 J**
N-Nitrosodiphenylamine	mg/kg	470	1 U	0.097 U	0.084 U	0.087 U	**2 J**	0.079 U	1.2 U	0.15 UJ	0.078 U	0.086 U	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Phenanthrene	mg/kg		**0.088 J**	**0.0039 J**	**0.078**	**0.038**	**5.1**	**0.012**	**15.7**	**2.5**	**0.071 J**	**1.1**	**0.24**	**0.058**	**0.16**	**0.039**	**0.098**
Phenol	mg/kg	250,000	1 U	**0.11**	0.084 U	0.087 U	2.5 U	0.079 U	1.2 U	0.15 U	0.078 U	**0.028 J**	0.084 U	0.076 U	0.07 U	0.072 U	0.07 U
Pyrene	mg/kg	23,000	**0.087 J**	**0.0026 J**	**0.066**	**0.031**	**3.5**	**0.013**	**9**	**1.9**	**1.2**	**7.9**	**0.18**	**0.049**	**0.33**	**0.13**	**0.22**
PCBs																	
Aroclor 1248	mg/kg	0.94	0.26 U	N/A	0.021 U	N/A	N/A	0.02 U	N/A	N/A	0.02 U	N/A	0.021 U	N/A	0.017 U	N/A	0.018 U
Aroclor 1254	mg/kg	0.97	0.26 U	N/A	0.021 U	N/A	N/A	0.02 U	N/A	N/A	0.02 U	N/A	0.021 U	N/A	0.017 U	N/A	0.018 U
Aroclor 1260	mg/kg	0.99	**3.4 J**	N/A	**0.15 J**	N/A	N/A	0.02 U	N/A	N/A	0.02 U	N/A	**0.063**	N/A	**0.036**	N/A	**0.018 J**
PCBs (total)	mg/kg	0.97	**3.4**	N/A	**0.15 J**	N/A	N/A	0.18 U	N/A	N/A	0.18 U	N/A	**0.063 J**	N/A	0.16 U	N/A	0.16 U
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**942 J**	**857 J**	**50.7 J**	**582 J**	**11,000 J**	**65.1 J**	**36,100 J**	**30,700 J**	**33.5**	**161**	**116**	**87.5**	**23.7**	**22.1**	**8.1 J**
Gasoline Range Organics	mg/kg	6,200	21.2 UJ	15.5 UJ	10 U	**2.5 B**	**126**	7.2 UJ	**47.4 J**	**8.6 B**	10.4 U	10.8 U	8.3 U	8.1 U	10.7 U	9.6 U	12.2 U
Oil & Grease	mg/kg	6,200	**16,200 J+**	**3,750 J+**	**176 J-**	**535 J-**	**75,700 J-**	**212 J+**	**172,000 J+**	**122,000 J+**	**534**	**557**	**193**	**171**	**228**	**177**	**189 J-**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data

^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample

Table 1 - Sub-Parcel B14-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B14-017-SB-4 9/13/2017	B14-019-SB-1 9/6/2017	B14-019-SB-4 9/6/2017	B14-020-SB-1* 9/11/2017	B14-021-SB-1 9/7/2017	B14-021-SB-9 9/7/2017	B14-022-SB-1 9/7/2017	B14-022-SB-7.5 9/7/2017	B14-023-SB-1* 9/15/2017	B14-024-SB-1* 9/15/2017	B14-025-SB-1 9/14/2017	B14-025-SB-5 9/14/2017	B14-026-SB-1 9/14/2017	B14-026-SB-8.5 9/14/2017	B14-027-SB-1 9/14/2017
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	mg/kg	9,300	0.0054 U	N/A	0.0059 U	N/A	N/A	**0.008 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethene (Total)	mg/kg	2,300	0.011 U	N/A	0.012 U	N/A	N/A	0.027 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane	mg/kg	4.4	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	mg/kg		0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	0.011 U	N/A	**0.018**	N/A	N/A	**0.03**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	0.011 U	N/A	0.012 U	N/A	N/A	0.027 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	**0.036**	N/A	**0.051 J**	N/A	N/A	**0.13 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	mg/kg	5.1	0.0054 U	N/A	0.0059 U	N/A	N/A	**0.013 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
cis-1,2-Dichloroethene	mg/kg	2,300	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyclohexane	mg/kg	27,000	0.011 U	N/A	0.012 U	N/A	N/A	0.027 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	25	0.0054 U	N/A	0.0059 U	N/A	N/A	**0.0062 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Isopropylbenzene	mg/kg	9,900	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	mg/kg	1,000	**0.013**	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Styrene	mg/kg	35,000	0.0054 U	N/A	0.0059 U	N/A	N/A	0.013 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	0.0054 U	N/A	0.0059 U	N/A	N/A	**0.01 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylenes	mg/kg	2,800	0.016 U	N/A	0.018 U	N/A	N/A	**0.026 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.074 U	0.073 U	0.073 U	**0.03 J**	1.1 U	0.17 U	0.91 U	**0.053 J**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
2,4-Dimethylphenol	mg/kg	16,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
2,4-Dinitrophenol	mg/kg	1,600	0.19 U	0.18 R	0.18 R	0.28 U	2.8 UJ	0.42 UJ	2.3 UJ	0.33 UJ	3.6 U	0.17 U	0.18 U	3.6 U	3.6 U	4.1 U	0.18 U
2,4-Dinitrotoluene	mg/kg	7.4	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
2,6-Dinitrotoluene	mg/kg	1.5	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	**0.16**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
2-Chloronaphthalene	mg/kg	60,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	**3.1**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
2-Methylnaphthalene	mg/kg	3,000	**0.0066 J**	**0.0025 J**	**0.024**	**0.078 J**	**0.044 J**	**1.7**	**0.048 J**	**0.71**	**0.06 J**	**0.015 J**	0.0066 B	0.0062 B	0.02 B	**2.5**	0.0061 B
2-Methylphenol	mg/kg	41,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.15 U	0.15 U	0.23 U	2.2 U	**0.23 J**	1.8 U	**0.08 J**	2.9 U	0.14 U	0.14 U	2.8 U	2.9 U	3.3 U	0.15 U
4-Chloroaniline	mg/kg	11	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	**0.24**	**0.26 J**	**1.7**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Acenaphthene	mg/kg	45,000	**0.001 J**	0.0074 U	**0.0045 J**	**0.089 J**	0.11 U	**0.68**	**0.009 J**	**0.47**	**0.028 J**	**0.0086 J**	**0.0093 J**	**0.0067 J**	**0.023 J**	**11.4**	**0.0058 J**
Acenaphthylene	mg/kg	45,000	**0.0044 J**	**0.0082**	**0.017**	**0.027 J**	**0.071 J**	**0.26 J**	**0.066 J**	**0.17 J**	**0.069 J**	**0.025 J**	**0.0064 J**	**0.0053 J**	**0.053 J**	**0.39**	**0.02**
Acetophenone	mg/kg	120,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Anthracene	mg/kg	230,000	**0.0041 J**	**0.0074 J**	**0.034**	**0.09 J**	**0.064 J**	**1.8**	**0.066 J**	**0.88**	**0.055 J**	**0.036 J**	**0.027 J**	**0.031**	**0.098**	**2.9**	**0.035**
Benz[a]anthracene	mg/kg	21	**0.022**	**0.034**	**0.18**	**3.8**	**0.087 J**	**1.1**	**0.14**	**0.43**	**0.25**	**0.089**	**0.14**	**0.12**	**0.4**	**1.5**	**0.24**
Benzaldehyde	mg/kg	120,000	0.074 R	**0.025 J**	0.073 R	**0.074 J**	1.1 R	0.17 R	0.91 R	**0.25 J**	1.4 U	0.07 U	0.07 R	1.4 R	1.4 R	1.6 R	0.074 R
Benzo[a]pyrene	mg/kg	2.1	**0.024**	**0.033**	**0.19**	**7.9**	**0.089 J**	**0.46**	**0.18**	**0.26 J**	**0.31**	**0.1**	**0.17**	**0.14**	**0.4**	**1.1**	**0.23**
Benzo[b]fluoranthene	mg/kg	21	**0.05**	**0.061**	**0.38**	**14.1**	**0.15**	**1.3**	**0.32**	**0.5**	**0.68**	**0.37**	**0.18**	**0.27**	**0.82**	**2.6**	**0.45**
Benzo[g,h,i]perylene	mg/kg		**0.017**	**0.022**	**0.15**	**3.4**	**0.18**	**0.11 J**	**0.1**	**0.091 J**	**0.15**	**0.065 J**	**0.11**	**0.099**	**0.26**	**0.44**	**0.14**
Benzo[k]fluoranthene	mg/kg	210	**0.039**	**0.054**	**0.34**	**12**	**0.13**	**1.2**	**0.28**	**0.43**	**0.53**	**0.29**	**0.14**	**0.21**	**0.63**	**2**	**0.35**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.074 U	0.073 U	0.073 U	**0.035 J**	1.1 U	**5.4**	0.91 U	**2.9**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Caprolactam	mg/kg	400,000	0.19 U	0.18 U	0.18 U	0.28 U	2.8 U	0.42 U	2.3 U	0.33 U	3.6 U	0.17 U	0.18 U	3.6 U	3.6 U	4.1 U	0.18 U
Carbazole	mg/kg		0.074 U	0.073 U	0.073 U	**0.072 J**	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Chrysene	mg/kg	2,100	**0.022**	**0.033**	**0.23**	**3.9**	**0.063 J**	**2.8**	**0.13**	**0.8**	**0.25**	**0.15**	**0.15**	**0.11**	**0.37**	**1.5**	**0.21**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.0061 J**	**0.0069 J**	**0.043**	**1.1**	**0.022 J**	0.17 U	**0.032 J**	0.27 U	**0.051 J**	**0.021 J**	**0.033 J**	**0.026**	**0.08**	**0.18**	**0.048**
Di-n-butylphthalate	mg/kg	82,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Di-n-ocytlphthalate	mg/kg	8,200	0.074 U	0.073 U	0.073 U	0.11 U	1.1 UJ	0.17 UJ	0.91 U	0.13 UJ	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Fluoranthene	mg/kg	30,000	**0.032**	**0.054**	**0.37**	**2.3**	**0.098 J**	**3.3**	**0.17**	**1**	**0.29**	**0.21**	**0.19**	**0.2**	**0.65**	**6.1**	**0.36**
Fluorene	mg/kg	30,000	0.0075 U	**0.0009 J**	**0.0025 J**	**0.02 J**	0.11 U	**1.7**	**0.0094 J**	**0.7**	0.073 U	0.071 U	**0.008 J**	**0.0064 J**	**0.014 J**	**3.7**	**0.005 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.017**	**0.02**	**0.13**	**3.4**	**0.074 J**	**0.072 J**	**0.097**	**0.051 J**	**0.15**	**0.063 J**	**0.062 J**	**0.084**	**0.24**	**0.48**	**0.13**
Naphthalene	mg/kg	8.6	**0.013 J**	**0.0064 J**	**0.049**	**0.1 J**	**0.059 J**	**0.42 J**	**0.058 J**	**0.33 J**	**0.15**	0.071 U	0.071 U	**0.011**	**0.045 J**	**1.3**	**0.013**
N-Nitrosodiphenylamine	mg/kg	470	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	0.17 U	0.91 U	0.13 U	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Phenanthrene	mg/kg		**0.016**	**0.019**	**0.13**	**0.33**	**0.083 J**	**8**	**0.16**	**2.3**	**0.13**	**0.053 J**	**0.1**	**0.11**	**0.29**	**4.8**	**0.11**
Phenol	mg/kg	250,000	0.074 U	0.073 U	0.073 U	0.11 U	1.1 U	**0.12 J**	0.91 U	**0.11 J**	1.4 U	0.07 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U
Pyrene	mg/kg	23,000	**0.028**	**0.042**	**0.29**	**2.8**	**0.099 J**	**3.9**	**0.15**	**2.8**	**0.26**	**0.18**	**0.2**	**0.17**	**0.57**	**4.3**	**0.3**
PCBs																	
Aroclor 1248	mg/kg	0.94	N/A	0.018 U	N/A	0.028 U	0.28 U	N/A	0.045 U	N/A	0.018 U	0.017 U	0.017 U	N/A	0.018 U	N/A	0.019 U
Aroclor 1254	mg/kg	0.97	N/A	0.018 U	N/A	**0.12**	0.28 U	N/A	0.045 U	N/A	0.018 U	0.017 U	0.017 UJ	N/A	0.018 UJ	N/A	0.019 UJ
Aroclor 1260	mg/kg	0.99	N/A	0.018 U	N/A	0.028 U	**2.8 J**	N/A	**0.52 J**	N/A	**0.035**	**0.05**	0.017 UJ	N/A	**0.08 J**	N/A	**0.092 J**
PCBs (total)	mg/kg	0.97	N/A	0.17 U	N/A	**0.12 J**	**2.8**	N/A	**0.52**	N/A	0.16 U	**0.05 J**	0.16 U	N/A	**0.08 J**	N/A	**0.092 J**
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**53.1 J**	**12.8 J**	**47.2 J**	**85.6**	**550 J**	**21,700 J**	**448 J**	**17,700 J**	**60.9**	**22.8**	**15.9 J**	**42 J**	**110 J**	**144 J**	**30.4 J**
Gasoline Range Organics	mg/kg	6,200	**2.1 J**	**3.8 B**	10.1 U	21.7 U	16.3 UJ	**20.8 B**	15.6 UJ	**7.4 B**	**3.2 B**	**3.2 B**	**2.5 B**	10.8 U	11.2 U	12.5 U	11.4 U
Oil & Grease	mg/kg	6,200	**292 J-**	**292 J-**	**261 J-**	**834**	**18,400 J+**	**120,000 J+**	**1,510 J+**	**110,000 J+**	**590**	**145**	**477 J-**	**247 J-**	**761 J-**	**2,990 J-**	**673 J-**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data

^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample

Table 1 - Sub-Parcel B14-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B14-027-SB-5 9/14/2017	B14-028-SB-1* 9/11/2017	B14-028-SB-8* 9/11/2017	B14-029-SB-1* 9/11/2017	B14-029-SB-5* 9/11/2017	B14-030-SB-1* 9/11/2017	B14-030-SB-6* 9/11/2017	B14-030-SB-10* 9/11/2017	B14-031-SB-1 9/6/2017	B14-031-SB-7 9/6/2017	B14-034-SB-1 9/6/2017	B14-034-SB-5 9/6/2017
Volatile Organic Compounds														
1,1-Dichloroethane	mg/kg	16	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,2-Dichlorobenzene	mg/kg	9,300	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,2-Dichloroethene (Total)	mg/kg	2,300	N/A	N/A	0.0099 U	N/A	N/A	0.011 U	0.011 U	0.012 U	N/A	0.0091 U	N/A	N/A
1,2-Dichloropropane	mg/kg	4.4	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,3-Dichlorobenzene	mg/kg		N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	0.0099 U	N/A	N/A	0.011 U	0.011 U	0.012 U	N/A	0.0091 U	N/A	N/A
4-Methyl-2-pentanone (MIBK)	mg/kg	56,000	N/A	N/A	0.0099 U	N/A	N/A	0.011 U	0.011 U	0.012 U	N/A	0.0091 U	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	**0.036**	N/A	N/A	0.011 U	**0.019**	0.012 U	N/A	**0.01 J**	N/A	N/A
Benzene	mg/kg	5.1	N/A	N/A	**0.0021 J**	N/A	N/A	0.0057 U	**0.0022 J**	0.006 U	N/A	0.0045 U	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	**0.0033 J**	0.006 U	N/A	0.0045 U	N/A	N/A
cis-1,2-Dichloroethene	mg/kg	2,300	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
Cyclohexane	mg/kg	27,000	N/A	N/A	0.0099 U	N/A	N/A	0.011 U	0.011 U	0.012 U	N/A	0.0091 U	N/A	N/A
Ethylbenzene	mg/kg	25	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
Isopropylbenzene	mg/kg	9,900	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
Methylene Chloride	mg/kg	1,000	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
Styrene	mg/kg	35,000	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	0.0054 U	0.006 U	N/A	0.0045 U	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	0.005 U	N/A	N/A	0.0057 U	**0.0018 J**	0.006 U	N/A	0.0045 U	N/A	N/A
Xylenes	mg/kg	2,800	N/A	N/A	0.015 U	N/A	N/A	0.017 U	0.016 U	0.018 U	N/A	0.014 U	N/A	N/A
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	1.5 U	1.4 U	**0.083**	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	**0.036 J**	0.73 U	2.5 U	0.11 U
2,4-Dimethylphenol	mg/kg	16,000	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
2,4-Dinitrophenol	mg/kg	1,600	3.9 U	3.6 U	0.19 U	0.18 U	0.17 U	0.17 U	0.17 U	0.19 U	0.21 R	1.8 R	6.2 R	0.26 R
2,4-Dinitrotoluene	mg/kg	7.4	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
2,6-Dinitrotoluene	mg/kg	1.5	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
2-Chloronaphthalene	mg/kg	60,000	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
2-Methylnaphthalene	mg/kg	3,000	0.016 B	**0.011 J**	**0.44**	**0.026 J**	**0.0058 J**	**0.0092**	**0.012**	**0.029 J**	**0.09**	**0.1**	**0.12 J**	**0.013 J**
2-Methylphenol	mg/kg	41,000	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	3.1 U	2.8 U	0.15 U	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.17 U	1.5 U	5 U	0.21 U
4-Chloroaniline	mg/kg	11	1.5 U	1.4 U	**0.043 J**	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
Acenaphthene	mg/kg	45,000	**0.0067 J**	**0.066 J**	**0.037 J**	**0.01 J**	**0.0039 J**	**0.00081 J**	**0.0028 J**	**0.0058 J**	**0.014 J**	**0.065 J**	0.25 U	0.11 U
Acenaphthylene	mg/kg	45,000	**0.044 J**	**0.045 J**	**0.43**	**0.059 J**	**0.0068 J**	**0.011**	**0.0063 J**	**0.027 J**	**0.094**	**0.2**	**0.27**	**0.0098 J**
Acetophenone	mg/kg	120,000	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	**0.031 J**	**0.025 J**	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
Anthracene	mg/kg	230,000	**0.036 J**	**0.17**	**0.35**	**0.035 J**	**0.011**	**0.0062 J**	**0.016**	**0.043 J**	**0.077 J**	**0.23**	**0.21 J**	**0.04 J**
Benz[a]anthracene	mg/kg	21	**0.17**	**1**	**0.74**	**0.15**	**0.064**	**0.022**	**0.02**	**0.16**	**0.17**	**1.2**	**0.12 J**	**0.04 J**
Benzaldehyde	mg/kg	120,000	1.5 R	1.4 U	0.076 U	**0.033 J**	0.069 U	**0.085**	**0.068 J**	**0.03 J**	**0.13 J**	0.73 R	2.5 R	**0.1 J**
Benzo[a]pyrene	mg/kg	2.1	**0.18**	**1.7**	**0.66**	**0.22**	**0.089**	**0.046**	**0.022**	**0.12**	**0.21**	**1.4**	**0.088 J**	**0.018 J**
Benzo[b]fluoranthene	mg/kg	21	**0.37**	**2.9**	**1.4**	**0.48**	**0.25**	**0.089**	**0.047**	**0.37**	**0.35**	**2.5**	**0.11 J**	**0.052 J**
Benzo[g,h,i]perylene	mg/kg		**0.12**	**0.7**	**0.22**	**0.13**	**0.052**	**0.023**	**0.0096**	**0.044 J**	**0.23**	**0.84**	**0.27**	**0.039 J**
Benzo[k]fluoranthene	mg/kg	210	**0.29**	**2.5**	**1.2**	**0.41**	**0.22**	**0.076**	**0.04**	**0.31**	**0.31**	**2.2**	**0.093 J**	**0.046 J**
bis(2-Ethylhexyl)phthalate	mg/kg	160	1.5 U	1.4 U	**0.45**	0.07 U	0.069 U	**0.02 J**	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	**0.14 J**
Caprolactam	mg/kg	400,000	3.9 U	3.6 U	0.19 U	0.18 U	0.17 U	0.17 U	0.17 U	0.19 U	0.21 U	1.8 U	6.2 U	0.26 U
Carbazole	mg/kg		1.5 U	**0.92 J**	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
Chrysene	mg/kg	2,100	**0.16**	**0.85**	**0.66**	**0.18**	**0.077**	**0.027**	**0.025**	**0.17**	**0.16**	**1.1**	**0.053 J**	**0.021 J**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.035 J**	**0.23**	**0.083**	**0.036 J**	**0.018**	**0.0065 J**	**0.0037 J**	**0.018 J**	**0.046 J**	**0.24**	0.25 U	0.11 U
Di-n-butylphthalate	mg/kg	82,000	1.5 U	1.4 U	**0.024 J**	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
Di-n-ocytlphthalate	mg/kg	8,200	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 UJ	0.73 U	2.5 UJ	0.11 UJ
Fluoranthene	mg/kg	30,000	**0.33**	**1.2**	**1.4**	**0.19**	**0.083**	**0.022**	**0.032**	**0.29**	**0.24**	**1.5**	**0.081 J**	**0.022 J**
Fluorene	mg/kg	30,000	0.077 U	**0.022 J**	**0.17**	**0.0064 J**	**0.0031 J**	**0.0012 J**	**0.0039 J**	**0.0096 J**	**0.012 J**	**0.033 J**	0.25 U	0.11 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.11**	**0.71**	**0.23**	**0.11**	**0.048**	**0.02**	**0.009**	**0.05 J**	**0.15**	**0.81**	**0.061 J**	0.11 U
Naphthalene	mg/kg	8.6	**0.17**	**0.034 J**	**3.6**	**0.048 J**	**0.017**	**0.014**	**0.012**	**0.056 J**	**0.21**	**0.4**	**0.15 J**	0.11 U
N-Nitrosodiphenylamine	mg/kg	470	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	0.11 U
Phenanthrene	mg/kg		**0.11**	**0.44**	**1.1**	**0.1**	**0.041**	**0.018**	**0.066**	**0.14**	**0.25**	**0.54**	**0.15 J**	**0.025 J**
Phenol	mg/kg	250,000	1.5 U	1.4 U	0.076 U	0.07 U	0.069 U	0.069 U	0.07 U	0.076 U	0.085 U	0.73 U	2.5 U	**0.1 J**
Pyrene	mg/kg	23,000	**0.28**	**1.1**	**1.1**	**0.17**	**0.08**	**0.023**	**0.031**	**0.25**	**0.21**	**1.9**	**0.1 J**	**0.025 J**
PCBs														
Aroclor 1248	mg/kg	0.94	N/A	**0.049**	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.021 U	N/A	0.31 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	N/A	0.021 U	N/A	0.31 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.018 U	N/A	**0.089**	N/A	**0.061**	N/A	N/A	**0.22 J**	N/A	**3.1 J**	N/A
PCBs (total)	mg/kg	0.97	N/A	**0.049 J**	N/A	**0.089 J**	N/A	**0.061 J**	N/A	N/A	**0.22**	N/A	**3.1**	N/A
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	**29.7 J**	**64.9**	**415**	**51.5**	**15.1**	**77.6**	**114**	**323**	**344 J**	**200 J**	**678 J**	**1,220 J**
Gasoline Range Organics	mg/kg	6,200	11.9 U	9.9 U	9.5 U	11 U	11.8 U	**3 J**	12.5 U	9.9 U	**5.7 B**	**7.3 B**	31.6 U	19.9 U
Oil & Grease	mg/kg	6,200	**307 J-**	**326**	**1,950**	**287**	**332**	**447**	**155**	**1,200**	**12,700 J-**	**819 J-**	**32,000 J-**	**14,400 J-**

Detections in bold
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N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data

^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample

Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-002-SB-1 9/14/2017	B14-003-SB-1 9/13/2017	B14-003-SB-5 9/13/2017	B14-006-SB-1 9/13/2017	B14-006-SB-5 9/13/2017	B14-007-SB-1 9/7/2017	B14-007-SB-8 9/7/2017	B14-007-SB-10 9/7/2017	B14-008-SB-1* 9/12/2017	B14-008-SB-9* 9/12/2017
Metals												
Aluminum	mg/kg	1,100,000	**9,310**	**11,300**	**4,700**	**4,130**	**1,720**	**2,130**	**4,180**	N/A	**1,480**	**762**
Antimony	mg/kg	470	3.1 UJ	**1.7 J**	**4.4 J**	**39.2 J**	**11.6 J**	**1.8 J**	4.7 UJ	N/A	**4.1**	**7.9**
Arsenic	mg/kg	3	**11.4**	**4.6**	**2.4**	**26.6**	**56.3**	**26.7**	**55**	**50.2**	**32.6**	**28.6**
Barium	mg/kg	220,000	**163 J**	**135**	**63.4**	**134**	**57.5**	**32.7 J**	**212 J**	N/A	**15**	**28.1**
Beryllium	mg/kg	2,300	0.56 B	**1.2**	0.87 U	0.32 B	0.2 B	**0.38 J**	**0.48 J**	N/A	**0.24 J**	1.1 U
Cadmium	mg/kg	980	**8.7**	**0.73 J**	**0.56 J**	**35.2**	**2.7**	**14.8 J**	**96.8 J**	N/A	**6.8**	**9.4**
Chromium	mg/kg	120,000	**838 J**	**611 J**	**1,050 J**	**3,250 J**	**527 J**	**233**	**5,670**	N/A	**398**	**378**
Chromium VI	mg/kg	6.3	0.67 B	0.62 B	**11.6 J-**	1.1 B	0.97 B	0.81 B	0.91 B	N/A	0.96 B	0.49 B
Cobalt	mg/kg	350	**10**	**3 J**	**1.3 J**	**7.6**	**36.6**	**10.5**	**17.7**	N/A	**12.5**	**16.6**
Copper	mg/kg	47,000	**123**	**34.2**	**18.3**	**184**	**905**	**183**	**552**	N/A	**188**	**247**
Iron	mg/kg	820,000	**93,000**	**94,800**	**124,000**	**122,000**	**328,000**	**404,000**	**421,000**	N/A	**373,000**	**527,000**
Lead	mg/kg	800	**374 J**	**43.5**	**24.6**	**340**	**191**	**1,600**	**2,020**	**1,390**	**690**	**1,510**
Manganese	mg/kg	26,000	**5,130**	**12,600**	**17,700**	**3,900**	**2,010**	**6,570**	**4,820**	N/A	**7,960**	**9,620**
Mercury	mg/kg	350	**0.37 J**	**0.073 J**	0.1 U	**0.79**	**2.2**	**0.4 J+**	**0.29 J+**	N/A	**0.2**	**0.17**
Nickel	mg/kg	22,000	**40.2**	**19.8**	**13.3**	**75.4**	**117**	**61.5 J**	**194 J**	N/A	**143**	**114**
Selenium	mg/kg	5,800	4.1 U	3.5 U	3.5 U	**3.3 J**	5.6 U	**1.8 J**	6.3 U	N/A	**4.3**	**2.8 J**
Silver	mg/kg	5,800	**10.5 J**	**22.5**	**24.2**	**11.2**	**22.5**	**9.1 J**	**16.3 J**	N/A	**6.5**	**13.5**
Thallium	mg/kg	12	10.2 U	8.8 U	8.7 U	11.7 U	8.3 U	10.1 U	9.4 U	N/A	8.9 U	10.6 U
Vanadium	mg/kg	5,800	**229 J**	**462 J**	**564 J**	**106 J**	**36 J**	**51.5**	**37**	N/A	**87.9**	**75.1**
Zinc	mg/kg	350,000	**2,550**	**220 J**	**151 J**	**7,540 J**	**566 J**	**15,400**	**27,800**	N/A	**5,950**	**11,000**
Other												
Cyanide	mg/kg	150	**1.9 J-**	**0.53 J**	1 U	**6.7**	**0.57 J**	**12.3 J+**	**7.5 J+**	N/A	**44.2**	**2.1**

Detections in bold
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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-008-SB-10* 9/12/2017	B14-009-SB-1* 9/15/2017	B14-009-SB-5* 9/15/2017	B14-010-SB-1 9/13/2017	B14-010-SB-5 9/13/2017	B14-011-SB-1 9/7/2017	B14-011-SB-5 9/7/2017	B14-011-SB-10* 9/7/2017	B14-012-SB-1 9/6/2017	B14-012-SB-9 9/6/2017
Metals												
Aluminum	mg/kg	1,100,000	N/A	**638**	**267**	**36,400**	**32,300**	**3,460**	**4,920**	N/A	**2,380**	**1,720**
Antimony	mg/kg	470	N/A	**4.2**	**2.5 J**	2.7 UJ	2.7 UJ	3.5 UJ	3.5 UJ	N/A	**6.7 J**	**4.4 J**
Arsenic	mg/kg	3	**136**	**33.1**	**24.3**	**2.5**	**3**	**42.1**	**38.8**	**7.8**	**43.7**	**33.8**
Barium	mg/kg	220,000	N/A	**10.5**	**13.4**	**530**	**432**	**208 J**	**186 J**	N/A	**31.7 J**	**45.2 J**
Beryllium	mg/kg	2,300	N/A	0.94 U	0.97 U	**4.8**	**3.8**	1.2 U	**0.29 J**	N/A	**0.49 J**	**0.27 J**
Cadmium	mg/kg	980	N/A	**6.7**	**3.7**	**0.6 J**	1.4 U	**62.6 J**	**62.5 J**	N/A	**17.7**	**17.3**
Chromium	mg/kg	120,000	N/A	**357**	**246**	**85.7 J**	**108 J**	**3,760**	**4,230**	N/A	**262**	**521**
Chromium VI	mg/kg	6.3	N/A	0.85 B	0.6 B	0.46 B	0.86 B	**2 J-**	1 B	N/A	0.91 B	0.77 B
Cobalt	mg/kg	350	N/A	**13.4**	**10.6**	**2 J**	**2 J**	**22.4**	**17**	N/A	**13.2**	**11.3**
Copper	mg/kg	47,000	N/A	**190**	**126**	**10.4**	**10.9**	**591**	**453**	N/A	**191 J**	**220 J**
Iron	mg/kg	820,000	N/A	**474,000**	**482,000**	**23,500**	**20,500**	**375,000**	**292,000**	N/A	**374,000**	**392,000**
Lead	mg/kg	800	**440**	**600**	**366**	**26.3**	**11.4**	**401**	**820**	**16.4**	**1,330 J**	**1,020 J**
Manganese	mg/kg	26,000	N/A	**10,000**	**8,070**	**5,270**	**6,020**	**3,100**	**5,510**	N/A	**6,990**	**5,590**
Mercury	mg/kg	350	N/A	**0.44**	**0.08 J**	**0.068 J**	**0.038 J**	**0.96 J+**	**0.04 J+**	N/A	**1.1**	**0.11 J**
Nickel	mg/kg	22,000	N/A	**141**	**60.9**	**5.3 J**	**5.8 J**	**382 J**	**203 J**	N/A	**99.8**	**84.3**
Selenium	mg/kg	5,800	N/A	3.8 U	3.9 U	**2.8 J**	3.6 U	4.6 U	4.6 U	N/A	**2.2 J**	4.1 U
Silver	mg/kg	5,800	N/A	**7.3**	**7.2**	**21.6**	**21.7**	**6.4 J**	**13.4 J**	N/A	**9.4 J**	**9.4 J**
Thallium	mg/kg	12	N/A	9.4 U	9.7 U	9 U	9 U	11.6 U	11.6 U	N/A	9.6 U	10.2 U
Vanadium	mg/kg	5,800	N/A	**69.7**	**43.9**	**262 J**	**466 J**	**30.7**	**193**	N/A	**59.3**	**61.7**
Zinc	mg/kg	350,000	N/A	**10,900**	**3,330**	**112 J**	**21.6 J**	**12,300**	**18,100**	N/A	**6,870**	**14,100**
Other												
Cyanide	mg/kg	150	N/A	**26**	**3**	**0.94 J**	**0.87 J**	**7.8 J+**	**1 J+**	N/A	**8.2**	**7.8**

Detections in bold
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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-012-SB-10 9/6/2017	B14-013-SB-1 9/7/2017	B14-013-SB-9 9/7/2017	B14-013-SB-10 9/7/2017	B14-014-SB-1* 9/29/2017	B14-014-SB-5* 9/29/2017	B14-015-SB-1* 9/12/2017	B14-015-SB-5* 9/12/2017	B14-015-SB-10* 9/12/2017
Metals											
Aluminum	mg/kg	1,100,000	N/A	**2,250**	**3,260**	N/A	**1,140**	**4,210**	**3,110**	**931**	N/A
Antimony	mg/kg	470	N/A	2.7 UJ	4.2 UJ	N/A	**6.5**	**8.1**	**6.8**	**5.7**	N/A
Arsenic	mg/kg	3	**30.3**	**36.3**	**51.8**	**19.3**	**39.1**	**38.2**	**23.4**	**37.9**	**5.1**
Barium	mg/kg	220,000	N/A	**34.6 J**	**253 J**	N/A	**13.8**	**89.2**	**20.7**	**17.8**	N/A
Beryllium	mg/kg	2,300	N/A	**0.36 J**	1.4 U	N/A	**0.14 J**	**0.62 J**	**0.57 J**	**0.18 J**	N/A
Cadmium	mg/kg	980	N/A	**5.6 J**	**114 J**	N/A	**11.2**	**40.4**	**14.6**	**28.6**	N/A
Chromium	mg/kg	120,000	N/A	**174**	**6,450**	N/A	**427**	**164**	**375**	**267**	N/A
Chromium VI	mg/kg	6.3	N/A	0.64 B	1 B	N/A	1.1 B	0.76 B	0.82 B	0.69 B	N/A
Cobalt	mg/kg	350	N/A	**11.5**	**18.3**	N/A	**14.2**	**9.5**	**13**	**15.3**	N/A
Copper	mg/kg	47,000	N/A	**187**	**674**	N/A	**220**	**189**	**151**	**261**	N/A
Iron	mg/kg	820,000	N/A	**494,000**	**258,000**	N/A	**412,000**	**335,000**	**352,000**	**356,000**	N/A
Lead	mg/kg	800	**868 J**	**794**	**916**	**818**	**603**	**3,550**	**1,580**	**1,810**	**189**
Manganese	mg/kg	26,000	N/A	**7,810**	**2,280**	N/A	**8,180**	**5,890**	**6,980**	**5,920**	N/A
Mercury	mg/kg	350	N/A	**0.51 J+**	**0.66 J+**	N/A	**0.073 J**	**0.69**	**1.3**	**2.9**	N/A
Nickel	mg/kg	22,000	N/A	**69.1 J**	**238 J**	N/A	**151**	**69.1**	**137**	**145**	N/A
Selenium	mg/kg	5,800	N/A	**2.8 J**	5.6 U	N/A	3.7 U	**3.2 J**	**6.7**	3.6 U	N/A
Silver	mg/kg	5,800	N/A	**8.9 J**	**11.8 J**	N/A	**4.4**	**14.3**	**7.2**	**10.7**	N/A
Thallium	mg/kg	12	N/A	8.9 U	8.4 U	N/A	9.2 U	9.9 U	10.2 U	9.1 U	N/A
Vanadium	mg/kg	5,800	N/A	**41.5**	**17.2**	N/A	**80.1**	**62.6**	**111**	**28.5**	N/A
Zinc	mg/kg	350,000	N/A	**7,040**	**24,200**	N/A	**46,500**	**25,100**	**12,000**	**9,090**	N/A
Other											
Cyanide	mg/kg	150	N/A	**18.8 J+**	**2.4 J+**	N/A	**14**	**22.2**	**29.5**	**5.5**	N/A

Detections in bold
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B: This analyte was not detected substantially above the level of the associated method or field blank.
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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-016-SB-1* 9/12/2017	B14-016-SB-7.5* 9/12/2017	B14-016-SB-10* 9/12/2017	B14-017-SB-1 9/13/2017	B14-017-SB-4 9/13/2017	B14-017-SB-10 9/13/2017	B14-019-SB-1 9/6/2017	B14-019-SB-4 9/6/2017	B14-020-SB-1* 9/11/2017
Metals											
Aluminum	mg/kg	1,100,000	**5,820**	**4,130**	N/A	**32,000**	**28,400**	N/A	**38,600**	**16,700**	**16,600**
Antimony	mg/kg	470	**4.1**	**7.8**	N/A	2.5 UJ	**2.1 J**	N/A	2.5 UJ	2.5 UJ	4 U
Arsenic	mg/kg	3	**14.7**	**8**	**12.5**	**2.1**	**3.7**	**3.7**	2.1 U	**2.8**	**10.8**
Barium	mg/kg	220,000	**42.3**	**138**	N/A	**350**	**446**	N/A	**315 J**	**153 J**	**235**
Beryllium	mg/kg	2,300	**0.44 J**	0.84 U	N/A	**4**	**4.2**	N/A	**6.4**	**2.2**	**1.5**
Cadmium	mg/kg	980	**3.2**	**2.5**	N/A	1.2 U	1.3 U	N/A	**1 J**	**0.66 J**	**2.5**
Chromium	mg/kg	120,000	**454**	**854**	N/A	**49.5 J**	**384 J**	N/A	**280**	**985**	**852**
Chromium VI	mg/kg	6.3	0.63 B	**2**	N/A	0.48 B	0.66 B	N/A	0.5 B	0.64 B	0.87 B
Cobalt	mg/kg	350	**13**	**8.1**	N/A	**4.3**	**6.3**	N/A	0.91 B	1.9 B	**8.8**
Copper	mg/kg	47,000	**62.2**	**53.3**	N/A	**6.7**	**13**	N/A	**11.3 J**	**43.3 J**	**110**
Iron	mg/kg	820,000	**61,500**	**99,800**	N/A	**16,100**	**25,600**	N/A	**39,700**	**130,000**	**199,000**
Lead	mg/kg	800	**187**	**122**	N/A	**8.7**	**10.7**	N/A	**69 J**	**16.4 J**	**158**
Manganese	mg/kg	26,000	**2,000**	**9,190**	N/A	**3,350**	**4,150**	N/A	**6,610**	**32,600**	**22,100**
Mercury	mg/kg	350	**0.06 J**	**0.0093 J**	N/A	**0.024 J**	**0.017 J**	N/A	**0.052 J**	0.11 U	**0.099 J**
Nickel	mg/kg	22,000	**64.1**	**51.2**	N/A	**18.2**	**28.5**	N/A	**9**	**17.8**	**48.6**
Selenium	mg/kg	5,800	3.2 U	3.4 U	N/A	3.3 U	**2.6 J**	N/A	3.3 U	3.4 U	5.3 U
Silver	mg/kg	5,800	**5.2**	**23.7**	N/A	**25.2**	**19.9**	N/A	**11.1 J**	**22.3 J**	**30.5**
Thallium	mg/kg	12	8.1 U	8.4 U	N/A	8.2 U	8.5 U	N/A	8.2 U	8.5 U	7.9 U
Vanadium	mg/kg	5,800	**284**	**1,040**	N/A	**129 J**	**154 J**	N/A	**76.4**	**524**	**641**
Zinc	mg/kg	350,000	**1,400**	**1,120**	N/A	**14.9 J**	**41.8 J**	N/A	**334**	**132**	**862**
Other											
Cyanide	mg/kg	150	**3.4**	**0.93 J**	N/A	**1.3**	**0.79 J**	N/A	**1.5**	**1.3**	**4.5**

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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-021-SB-1 9/7/2017	B14-021-SB-9 9/7/2017	B14-022-SB-1 9/7/2017	B14-022-SB-7.5 9/7/2017	B14-023-SB-1* 9/15/2017	B14-024-SB-1* 9/15/2017	B14-025-SB-1 9/14/2017	B14-025-SB-5 9/14/2017	B14-026-SB-1 9/14/2017
Metals											
Aluminum	mg/kg	1,100,000	**5,680**	**3,940**	**3,170**	**4,130**	**10,900**	**35,200**	**43,400**	**21,900**	**16,600**
Antimony	mg/kg	470	3.9 UJ	**13 J**	3.3 UJ	4.5 UJ	**2.9**	2.4 U	2.4 UJ	2.4 UJ	2.6 UJ
Arsenic	mg/kg	3	**44**	**73.9**	**30.2**	**51.4**	**7.5**	**4.5**	2 U	**2.2**	**2.6**
Barium	mg/kg	220,000	**222 J**	**101 J**	**55 J**	**215 J**	**121**	**335**	**461 J**	**267 J**	**92.9 J**
Beryllium	mg/kg	2,300	**0.42 J**	2 U	**0.77 J**	**0.23 J**	**1.2**	**6.4**	**7.5**	**3.6**	0.86 B
Cadmium	mg/kg	980	**73.4 J**	**15.9 J**	**13.1 J**	**153 J**	**2.1**	**1.3**	1.2 U	**1 J**	**1.9**
Chromium	mg/kg	120,000	**5,220**	**3,890**	**655**	**11,100**	**797**	**79.2**	**48.6 J**	**502 J**	**236 J**
Chromium VI	mg/kg	6.3	1.6 B	6.2 B	0.94 B	0.8 B	0.59 B	0.29 B	0.52 B	0.57 B	0.55 B
Cobalt	mg/kg	350	**19.1**	**50.3**	**15**	**18.9**	**7.5**	**1.8 J**	**0.89 J**	**4.2**	**5.1**
Copper	mg/kg	47,000	**515**	**1,080**	**185**	**718**	**50.3**	**14.4**	**5.1**	**42.6**	**28.5**
Iron	mg/kg	820,000	**303,000**	**250,000**	**508,000**	**263,000**	**153,000**	**23,600**	**20,100**	**98,700**	**43,800**
Lead	mg/kg	800	**757**	**1,440**	**1,160**	**567**	**98.5**	**45.8**	**6.7 J**	**116 J**	**111 J**
Manganese	mg/kg	26,000	**5,600**	**1,400**	**10,800**	**2,020**	**18,700**	**3,510**	**3,820**	**10,800**	**5,160**
Mercury	mg/kg	350	**0.57 J+**	**2.4 J+**	**0.23 J+**	**0.63 J+**	**0.053 J**	**0.015 J**	0.11 U	**0.065 J**	**0.11 J**
Nickel	mg/kg	22,000	**237 J**	**231 J**	**88.9 J**	**227 J**	**25.4**	**6.7 J**	**4.8 J**	**21.5**	**13.6**
Selenium	mg/kg	5,800	5.3 U	**6.2 J**	4.4 U	6.1 U	3.5 U	3.2 U	3.2 U	3.2 U	3.5 U
Silver	mg/kg	5,800	**16.5 J**	**34.2 J**	**10.1 J**	**13.1 J**	**42.5**	**12.3**	**10.8 J**	**15.6 J**	**7.4 J**
Thallium	mg/kg	12	7.9 U	11.8 U	10.9 U	9.1 U	8.8 U	8.1 U	8.1 U	8 U	8.8 U
Vanadium	mg/kg	5,800	**290**	**205**	**68.7**	**4.8 J**	**1,710**	**116**	**30.8 J**	**302 J**	**212 J**
Zinc	mg/kg	350,000	**19,300**	**5,940**	**6,680**	**24,900**	**606**	**527**	**48.2**	**613**	**1,160**
Other											
Cyanide	mg/kg	150	**10.4 J+**	**8.1 J+**	**13.7 J+**	**6.5 J+**	**1.1**	**0.88 J**	**0.84 J-**	**0.45 J-**	**0.41 J-**

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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-026-SB-8.5 9/14/2017	B14-027-SB-1 9/14/2017	B14-027-SB-5 9/14/2017	B14-027-SB-10* 9/14/2017	B14-028-SB-1* 9/11/2017	B14-028-SB-8* 9/11/2017	B14-028-SB-10 9/11/2017	B14-029-SB-1* 9/11/2017
Metals										
Aluminum	mg/kg	1,100,000	**25,400**	**13,200**	**18,200**	N/A	**11,800**	**10,300**	N/A	**8,370**
Antimony	mg/kg	470	3 UJ	2.7 UJ	2.7 UJ	N/A	**3.2**	**4.1**	N/A	**3.6**
Arsenic	mg/kg	3	**8.2**	**4.8**	**6.7**	**7**	**8.7**	**7**	**9.2**	**10.7**
Barium	mg/kg	220,000	**359 J**	**70.5 J**	**132 J**	N/A	**102**	**139**	N/A	**101**
Beryllium	mg/kg	2,300	**3.5**	0.72 B	**1.1**	N/A	**1.2**	**0.54 J**	N/A	**0.66 J**
Cadmium	mg/kg	980	**3**	**0.85 J**	**0.62 J**	N/A	**0.86 J**	**2**	N/A	**2.7**
Chromium	mg/kg	120,000	**35.3 J**	**84.4 J**	**77.7 J**	N/A	**760**	**626**	N/A	**561**
Chromium VI	mg/kg	6.3	0.63 B	0.57 B	0.53 B	N/A	0.68 B	0.47 B	N/A	0.49 B
Cobalt	mg/kg	350	**12.5**	**6.2**	**8.1**	N/A	**10.1**	**8.4**	N/A	**11.3**
Copper	mg/kg	47,000	**36.8**	**30.9**	**26.2**	N/A	**61.7**	**74.9**	N/A	**91**
Iron	mg/kg	820,000	**33,900**	**27,500**	**35,200**	N/A	**97,300**	**71,900**	N/A	**81,200**
Lead	mg/kg	800	**393 J**	**162 J**	**79.3 J**	N/A	**58.4**	**128**	N/A	**1,370**
Manganese	mg/kg	26,000	**2,240**	**1,340**	**1,650**	N/A	**5,050**	**26,100**	**2,010**	**7,070**
Mercury	mg/kg	350	**1 J**	**0.12 J**	**0.033 J**	N/A	**0.18**	**0.16**	N/A	**0.088 J**
Nickel	mg/kg	22,000	**12.4**	**14**	**14.5**	N/A	**59.3**	**27.6**	N/A	**72.6**
Selenium	mg/kg	5,800	4 U	3.6 U	3.6 U	N/A	3.2 U	3.5 U	N/A	3.3 U
Silver	mg/kg	5,800	**10.7 J**	**4.5 J**	**4.4 J**	N/A	**8.1**	**33.2**	N/A	**20.5**
Thallium	mg/kg	12	10.1 U	9.1 U	9.1 U	N/A	8.1 U	8.8 U	N/A	8.2 U
Vanadium	mg/kg	5,800	**60 J**	**147 J**	**145 J**	N/A	**203**	**1,630**	N/A	**1,050**
Zinc	mg/kg	350,000	**567**	**299**	**275**	N/A	**454**	**545**	N/A	**957**
Other										
Cyanide	mg/kg	150	**0.5 J-**	1.1 UJ	0.95 UJ	N/A	**3.2**	**4.2**	N/A	**4.8**

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Table 2 - Sub-Parcel B14-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B14-029-SB-5* 9/11/2017	B14-029-SB-10 9/11/2017	B14-030-SB-1* 9/11/2017	B14-030-SB-6* 9/11/2017	B14-030-SB-10* 9/11/2017	B14-031-SB-1 9/6/2017	B14-031-SB-7 9/6/2017	B14-034-SB-1 9/6/2017	B14-034-SB-5 9/6/2017
Metals											
Aluminum	mg/kg	1,100,000	**3,180**	N/A	**37,800**	**3,650**	N/A	**22,900**	**8,260**	**4,580**	**11,800**
Antimony	mg/kg	470	**5.1**	N/A	2.6 U	**2.3 J**	N/A	2.9 UJ	2.6 UJ	4.4 UJ	3.6 UJ
Arsenic	mg/kg	3	**6.3**	**5.9**	**2.2**	**3**	**9.8**	**12.3**	**3.7**	**46**	**20.2**
Barium	mg/kg	220,000	**29.2**	N/A	**373**	**30.1**	N/A	**243 J**	**101 J**	**381 J**	**90.2 J**
Beryllium	mg/kg	2,300	**0.14 J**	N/A	**5.6**	0.83 U	N/A	**3.6**	0.86 U	1.5 U	**3.2**
Cadmium	mg/kg	980	**1.1 J**	N/A	**0.82 J**	**0.61 J**	N/A	**12.1**	**1.7**	**109**	**45.8**
Chromium	mg/kg	120,000	**708**	N/A	**72.4**	**431**	N/A	**955**	**1,240**	**6,240**	**7,270**
Chromium VI	mg/kg	6.3	**1.6**	N/A	0.39 B	0.84 B	N/A	1.1 B	0.69 B	1.7 B	1.1 B
Cobalt	mg/kg	350	**18.4**	N/A	**2 J**	**6.4**	N/A	**10.3**	**8.9**	**25.9**	**35**
Copper	mg/kg	47,000	**59.5**	N/A	**31.2**	**18.1**	N/A	**134 J**	**62 J**	**841 J**	**386 J**
Iron	mg/kg	820,000	**44,500**	N/A	**34,400**	**36,100**	N/A	**107,000**	**160,000**	**318,000**	**233,000**
Lead	mg/kg	800	**2,660**	**194**	**35.2**	**41.9**	N/A	**252 J**	**169 J**	**1,010 J**	**627 J**
Manganese	mg/kg	26,000	**2,500**	N/A	**2,190**	**4,810**	N/A	**4,270**	**33,700**	**2,970**	**1,580**
Mercury	mg/kg	350	**0.11**	N/A	**0.02 J**	**0.0064 J**	N/A	**0.57**	**0.058 J**	**1.1**	**0.83**
Nickel	mg/kg	22,000	**206**	N/A	**7.1 J**	**83.2**	N/A	**76.3**	**24**	**339**	**180**
Selenium	mg/kg	5,800	3.2 U	N/A	**2.2 J**	3.3 U	N/A	3.9 U	3.4 U	**3.6 J**	4.8 U
Silver	mg/kg	5,800	**9.6**	N/A	**14.5**	**17.4**	N/A	**15.5 J**	**87.8 J**	**12.9 J**	**8.2 J**
Thallium	mg/kg	12	7.9 U	N/A	8.7 U	8.3 U	N/A	9.7 U	**6.2 J**	14.7 U	12 U
Vanadium	mg/kg	5,800	**368**	N/A	**45.1**	**745**	N/A	**242**	**3,450**	**67.4**	**46.4**
Zinc	mg/kg	350,000	**606**	N/A	**156**	**266**	N/A	**1,900**	**401**	**21,400**	**10,400**
Other											
Cyanide	mg/kg	150	**2.7**	N/A	**4.4**	**0.58 J**	N/A	**4.3**	**1**	**12.9**	**11.3**

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Table 3 - Sub-Parcel B14-1
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	HI02-PZM006	HI04-PZM006*	HI07-PZM005	TM02-PZM009	TM04-PZM006*	TM06-PZM008	TM08-PZM007	Well 2*
			11/16/2015	10/16/2017	11/16/2015	10/9/2017	10/13/2017	10/9/2017	10/9/2017	10/13/2017
Volatile Organic Compounds										
2-Butanone (MEK)	µg/L	5,600	10 U	**936**	10 U	10 U	10 U	10 U	**7.3 J**	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	**1.1 J**	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	**1,080**	10 U	8.9 B	**3.7 J**	4.9 B	**16.5 J**	**5.6 J**
Benzene	µg/L	5	**0.88 J**	1 U	**16.2**	**11**	**653**	1 U	1 U	1 U
Bromomethane	µg/L	7.5	1 U	**1.3**	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	700	1 U	1 U	**0.36 J**	**0.75 J**	**14.2**	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	**0.27 J**	1 U	1 U	1 U	1 U
Styrene	µg/L	100	1 U	1 U	1 U	**0.48 J**	**3.4**	1 U	1 U	1 U
Toluene	µg/L	1,000	**0.32 J**	1 U	**5.5**	**6**	**3.4**	1 U	1 U	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	**1.6**	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	1 U	1 U	**0.84 J**	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	**6**	**12.3**	**24.6**	3 U	3 U	3 U
Semi-Volatile Organic Compounds^										
1,1-Biphenyl	µg/L	0.83	1 U	0.98 U	**0.3 J**	**0.96 J**	**0.5 J**	0.98 U	0.97 U	**0.13 J**
1,4-Dioxane	µg/L	0.46	0.1 UJ	0.098 U	0.1 U	**0.02 J**	**2**	**0.052 J**	0.097 U	**0.091 J**
2,4-Dimethylphenol	µg/L	360	**22.2**	**3.1**	**9.2**	**18.2**	**18**	**0.24 J**	**0.32 J**	**0.19 J**
2-Chloronaphthalene	µg/L	750	1 U	0.98 U	1 U	0.98 U	0.98 U	0.98 U	0.97 U	0.97 U
2-Methylnaphthalene	µg/L	36	**0.64**	0.098 U	**1.7**	**4.8**	**2.9**	0.098 U	0.097 U	**0.56**
2-Methylphenol	µg/L	930	**0.97 J**	**0.26 J**	**0.45 J**	**1.1**	**0.2 J**	0.98 U	0.97 U	0.97 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	**8.8**	**0.26 J**	**3.9**	**7.8**	2 U	2 U	1.9 U	1.9 U
Acenaphthene	µg/L	530	**0.81**	**0.63**	**0.6**	**2.2**	**0.59**	**0.95**	**0.035 J**	**1.1**
Acenaphthylene	µg/L	530	0.1 U	0.098 U	**0.65**	**1.1**	**6.9**	**0.036 J**	0.097 U	**0.24**
Acetophenone	µg/L	1,900	1 U	0.98 U	**0.61 J**	**0.49 J**	0.98 U	0.98 U	0.97 U	0.97 U
Anthracene	µg/L	1,800	**0.12**	**0.24**	**0.27**	**0.64**	**0.13**	**0.27**	**0.09 J**	**0.26**
Benz[a]anthracene	µg/L	0.03	0.1 U	0.098 U	**0.058 J**	**0.095 J**	0.098 U	**0.061 J**	0.097 U	**0.052 J**
Benzaldehyde	µg/L	1,900	1 U	**0.76 J**	1 U	0.98 U	0.98 U	0.98 U	0.97 U	0.97 U
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.098 U	0.1 U	0.098 U	0.098 U	0.098 U	0.097 U	0.097 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	**0.41 J**	**0.21 J**	0.98 U	**0.29 J**	0.98 U	0.97 U	0.97 U
Carbazole	µg/L		**1.3**	0.98 U	**2.4**	**5.6**	**1.1**	0.98 U	0.97 U	**1.2**
Chrysene	µg/L	25	0.1 U	0.098 U	**0.03 J**	**0.091 J**	0.098 U	**0.042 J**	0.097 U	**0.046 J**
Di-n-butylphthalate	µg/L	900	1 U	0.98 U	1 U	0.98 U	**0.14 J**	0.98 U	0.97 U	0.97 U
Di-n-ocytlphthalate	µg/L	200	1 U	**0.18 J**	1 U	**0.22 J**	0.98 U	0.98 U	0.97 U	0.97 U
Fluoranthene	µg/L	800	**0.19**	**0.082 J**	**0.63**	**1.6**	**0.086 J**	**0.74**	0.097 U	**0.71**
Fluorene	µg/L	290	**0.63**	**0.096 J**	**0.9**	**2.8**	**0.41**	**0.54**	**0.043 J**	**1.1**
Naphthalene	µg/L	0.12	**5.1**	**0.15**	**26.1**	**65.8**	**405**	**0.57**	**0.096 J**	**5**
N-Nitrosodiphenylamine	µg/L	12	1 U	0.98 U	1 U	0.98 U	**0.55 J**	0.98 U	0.97 U	0.97 U
Pentachlorophenol	µg/L	1	2.6 U	2.5 U	**2.8**	2.4 U	2.4 U	2.5 U	2.4 U	2.4 U
Phenanthrene	µg/L		**0.95**	**0.038 J**	**1.9**	**4.4**	**0.5**	**0.83**	**0.06 J**	**1.8**
Phenol	µg/L	5,800	1 U	**0.1 J**	1 U	0.98 U	**0.25 J**	0.98 U	**0.07 J**	0.97 U
Pyrene	µg/L	120	**0.13**	**0.076 J**	**0.38**	**1**	**0.069 J**	**0.41**	0.097 U	**0.53**
TPH/Oil &Grease										
Diesel Range Organics	µg/L	47	N/A	**1,570**	N/A	**899 J**	**2,770**	**1,500 J**	**1,200 J**	**412**
Gasoline Range Organics	µg/L	47	N/A	200 U	N/A	**87.9 J**	**1,450**	200 U	200 U	200 U
Oil & Grease	µg/L	47	4,820 U	4,750 U	**1,200 J**	4,770 U	**1,200 J**	4,770 U	4,770 U	4,770 U

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

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.

Table 4 - Sub-Parcel B14-1
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	HI02-PZM006 11/16/2015	HI04-PZM006* 10/16/2017	HI07-PZM005 11/16/2015	TM02-PZM009 10/10/2017	TM02-PZM009 10/9/2017	TM04-PZM006* 10/13/2017	TM06-PZM008 10/10/2017	TM06-PZM008 10/9/2017	TM08-PZM007 10/10/2017	TM08-PZM007 10/9/2017	Well 2* 10/13/2017
Total Metals													
Aluminum	µg/L	20,000	**137**	**461**	**162**	N/A	**98.7**	**66.9**	N/A	**22 J**	N/A	**11,400**	**274**
Arsenic	µg/L	10	5 U	**3.1 J**	5 U	N/A	5 U	5 U	N/A	**3.9 J**	N/A	5 U	5 U
Barium	µg/L	2,000	**41.4**	**208**	**74**	N/A	**65.8**	**28**	N/A	**31.7**	N/A	**205**	**49.2**
Beryllium	µg/L	4	1 U	1 U	1 U	N/A	1 U	**0.31 J**	N/A	**0.25 J**	N/A	**1.5**	1 U
Cadmium	µg/L	5	3 U	**0.92 J**	3 U	N/A	3 U	**3.7**	N/A	**0.92 J**	N/A	**4**	3 U
Chromium	µg/L	100	**0.9 J**	**23.7**	2 B	N/A	**2.2 J**	**9**	N/A	**1.4 J**	N/A	**365**	**1.3 J**
Chromium VI	µg/L	0.035	10 U	10 U	10 U	N/A	8.5 B	**15.2**	N/A	8.5 B	N/A	8.5 B	8.5 B
Cobalt	µg/L	6	5 U	5 U	5 U	N/A	5 U	5 U	N/A	5 U	N/A	**4.3 J**	5 U
Copper	µg/L	1,300	5 U	**3.5 J**	5 U	N/A	5 U	5 U	N/A	5 U	N/A	**69.1**	5 U
Iron	µg/L	14,000	70 U	**7,260**	70 U	N/A	**48.6 J**	**132**	N/A	**86.5**	N/A	**21,300**	**75.8**
Lead	µg/L	15	5 U	**9.3**	5 U	N/A	5 U	5 U	N/A	5 U	N/A	**61.3**	5 U
Manganese	µg/L	430	5 U	**1,700**	5 U	N/A	**3 J**	**18.9**	N/A	**134**	N/A	**2,160**	**4.5 J**
Mercury	µg/L	2	0.2 U	0.2 U	0.2 U	N/A	0.2 U	0.2 U	N/A	0.2 U	N/A	**0.1 J**	0.2 U
Nickel	µg/L	390	0.87 B	**4.5 J**	1.5 B	N/A	**4.5 J**	**3.8 J**	N/A	10 U	N/A	**25.2**	10 U
Selenium	µg/L	50	8 U	8 U	8 U	N/A	8 U	8 U	N/A	8 U	N/A	8 U	**8.7**
Silver	µg/L	94	6 U	6 U	6 U	N/A	6 U	6 U	N/A	6 U	N/A	**11.4**	6 U
Vanadium	µg/L	86	**68.9**	**9.3**	**53**	N/A	**48.7**	**10.6**	N/A	**3.2 J**	N/A	**80.6**	**310**
Zinc	µg/L	6,000	10 U	**108**	10 U	N/A	**4.2 J**	**4.3 J**	N/A	**6 J**	N/A	**640**	**3.3 J**
Dissolved Metals													
Aluminum, Dissolved	µg/L	20,000	N/A	**817**	N/A	N/A	**91.4**	50 U	N/A	50 U	N/A	**21.1 J**	**286**
Arsenic, Dissolved	µg/L	10	N/A	5 U	N/A	N/A	5 U	**3.5 J**	N/A	5 U	N/A	5 U	5 U
Barium, Dissolved	µg/L	2,000	N/A	**208**	N/A	N/A	**62.5**	**24.6**	N/A	**31**	N/A	**61.8**	**48.6**
Chromium VI, Dissolved	µg/L	0.035	N/A	10 U	N/A	N/A	8.5 B	**16.4**	N/A	9.6 B	N/A	8.5 B	9.6 B
Chromium, Dissolved	µg/L	100	N/A	**30.3**	N/A	N/A	5 U	**9**	N/A	5 U	N/A	**1.2 J**	5 U
Copper, Dissolved	µg/L	1,300	N/A	**4 J**	N/A	N/A	5 U	5 U	N/A	5 U	N/A	5 U	5 U
Iron, Dissolved	µg/L	14,000	N/A	**7,810**	N/A	N/A	12.6 B	**25.6 J**	N/A	14 B	N/A	**330**	**23 J**
Lead, Dissolved	µg/L	15	N/A	**7.9**	N/A	N/A	5 U	5 U	N/A	5 U	N/A	5 U	5 U
Manganese, Dissolved	µg/L	430	N/A	**1,660**	N/A	N/A	5 U	**13.2**	N/A	**132**	N/A	**413**	5 U
Nickel, Dissolved	µg/L	390	N/A	**5.7 J**	N/A	N/A	**3.6 J**	**3 J**	N/A	10 U	N/A	**6.1 J**	10 U
Selenium, Dissolved	µg/L	50	N/A	8 U	N/A	N/A	8 U	8 U	N/A	8 U	N/A	8 U	**8 J**
Thallium, Dissolved	µg/L	2	N/A	10 U	N/A	N/A	10 U	10 U	N/A	10 U	N/A	10 U	4.2 B
Vanadium, Dissolved	µg/L	86	N/A	**9.9**	N/A	N/A	**46**	**7.4**	N/A	**2.5 J**	N/A	**2.7 J**	**278**
Zinc, Dissolved	µg/L	6,000	N/A	**116**	N/A	N/A	10 U	10 U	N/A	1.7 B	N/A	2.7 B	10 U
Other													
Available Cyanide	µg/L	200	N/A	**4.5**	N/A	**1.4 J+**	N/A	**0.87 J**	**1.9 J+**	N/A	**1.7 J+**	N/A	**1.2 J**
Cyanide	µg/L	200	10 U	**8.3 J**	10 U	N/A	**25**	**37**	N/A	**18**	N/A	**3.5 J**	**31**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
*indicates non-validated data
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.

Table 5 - Sub-Parcel B14-1
Cumulative Vapor Intrusion Criteria Comparison

				HI02-PZM006 11/16/2015		HI04-PZM006 10/16/2017		HI07-PZM005 11/16/2015		TM02-PZM009 10/9/2017		TM04-PZM006 10/13/2017		TM06-PZM008 10/9/2017		TM08-PZM007 10/9/2017		Well 2 10/13/2017	
Parameter	Type	Organ Systems	VI Screening Criteria	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																			
1,4-Dioxane	SVOC		130,000	0.1 UJ	0	0.098 U	0	0.1 U	0	0.02 J	1.5E-12	2	1.5E-10	0.052 J	4.0E-12	0.097 U	0	0.091 J	7.0E-12
Naphthalene	SVOC		200	5.1	2.6E-07	0.15	7.5E-09	26.1	1.3E-06	65.8	3.3E-06	405	2.0E-05	0.57	2.9E-08	0.096 J	4.8E-09	5	2.5E-07
Benzene	VOC		69	0.88 J	1.3E-07	1 U	0	16.2	2.3E-06	11	1.6E-06	653	9.5E-05	1 U	0	1 U	0	1 U	0
Ethylbenzene	VOC		150	1 U	0	1 U	0	0.36 J	2.4E-08	0.75 J	5.0E-08	14.2	9.5E-07	1 U	0	1 U	0	1 U	0
Vinyl chloride	VOC		25	1 U	0	1 U	0	1 U	0	1 U	0	0.84 J	3.4E-07	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Risk =					4E-07		8E-09		4E-06		5E-06		1E-04		3E-08		5E-09		3E-07
Non-Cancer Hazard																			
Cumulative Vapor Intrusion Non-Cancer Hazard =					0		0		0		0		0		0		0		0

Highlighted values indicate an exceedance of the cumulative vapor intrusion criteria:
TCR>1E-05
THI>1
Conc. = Concentration

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive value reported for this analyte is a quantitative estimate.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

Table 6 - Sub-Parcel B14-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	B14-013-SB-9	2.3		0.03	0.52	56	19.64	410	20	no
1,1-Dichloroethane	75-34-3	B14-008-SB-9	0.01		0.01	0.01	15	6.67	16	23,000	no
1,2,3-Trichlorobenzene	87-61-6	B14-012-SB-10	0.47	J	0.47	0.47	15	6.67		93	no
1,2,4-Trichlorobenzene	120-82-1	B14-012-SB-10	0.46	J	0.46	0.46	15	6.67	110	26	no
1,2-Dichlorobenzene	95-50-1	B14-012-SB-10	0.84		0.006	0.15	15	40.00		930	no
1,2-Dichloropropane	78-87-5	B14-008-SB-9	0.0021	J	0.002	0.002	15	6.67	11	6.6	no
1,3-Dichlorobenzene	541-73-1	B14-007-SB-8	0.038		0.01	0.02	15	13.33			no
1,4-Dichlorobenzene	106-46-7	B14-012-SB-10	0.34	J	0.005	0.07	15	40.00	11	2,500	no
2,4-Dimethylphenol	105-67-9	B14-007-SB-10	4.3		0.06	2.29	55	7.27		1,600	no
2,4-Dinitrophenol	51-28-5	B14-014-SB-5	0.1	J	0.1	0.10	46	2.17		160	no
2,4-Dinitrotoluene	121-14-2	B14-013-SB-10	0.32		0.06	0.19	56	3.57	7.4	160	no
2,6-Dinitrotoluene	606-20-2	B14-022-SB-7.5	0.16		0.16	0.16	56	1.79	1.5	25	no
2-Butanone (MEK)	78-93-3	B14-013-SB-10	0.12		0.007	0.05	15	46.67		19,000	no
2-Chloronaphthalene	91-58-7	B14-022-SB-7.5	3.1		3.1	3.10	56	1.79		6,000	no
2-Methylnaphthalene	91-57-6	B14-012-SB-10	8.2		0.002	0.47	56	91.07		300	no
2-Methylphenol	95-48-7	B14-008-SB-9	0.75		0.75	0.75	55	1.82		4,100	no
4-Chloroaniline	106-47-8	B14-012-SB-10	3.6		0.04	1.03	56	14.29	11	330	no
4-Methyl-2-pentanone (MIBK)	108-10-1	B14-008-SB-9	0.024		0.02	0.02	15	6.67		14,000	no
Acenaphthene	83-32-9	B14-026-SB-8.5	11.4		0.0006	0.44	56	80.36		4,500	no
Acenaphthylene	208-96-8	B14-013-SB-9	1.1		0.001	0.13	56	100.00			no
Acetone	67-64-1	B14-013-SB-10	0.44		0.01	0.14	15	80.00		67,000	no
Acetophenone	98-86-2	B14-008-SB-9	0.19		0.03	0.08	56	5.36		12,000	no
Aluminum	7429-90-5	B14-025-SB-1	43,400		267	11,602	52	100.00		110,000	no
Anthracene	120-12-7	B14-013-SB-9	3.1		0.002	0.33	56	100.00		23,000	no
Antimony	7440-36-0	B14-006-SB-1	39.2	J	1.7	6.55	52	48.08		47	no
Aroclor 1248	12672-29-6	B14-028-SB-1	0.049		0.05	0.05	28	3.57	1		no
Aroclor 1254	11097-69-1	B14-006-SB-1	3.4		0.10	1.23	28	14.29	0.97	1.5	YES (C/NC)
Aroclor 1260	11096-82-5	B14-011-SB-1	3.4	J	0.02	0.6	28	67.86	0.99		YES (C)
Arsenic	7440-38-2	B14-008-SB-10	136		2.1	22	64	96.88	3	48	YES (C/NC)
Barium	7440-39-3	B14-010-SB-1	530		10.5	162	52	100.00		22,000	no
Benz[a]anthracene	56-55-3	B14-002-SB-1	5.2		0.01	0.58	56	98.21	21		no
Benzaldehyde	100-52-7	B14-022-SB-7.5	0.25	J	0.03	0.08	26	50.00	820	12,000	no
Benzene	71-43-2	B14-008-SB-9	0.38		0.002	0.06	15	53.33	5.1	42	no

Table 6 - Sub-Parcel B14-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Benzo[a]pyrene	50-32-8	B14-020-SB-1	7.9		0.02	0.65	56	98.21	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	B14-020-SB-1	14.1		0.03	1.25	56	98.21	21		no
Benzo[g,h,i]perylene	191-24-2	B14-020-SB-1	3.4		0.006	0.30	56	100.00			no
Benzo[k]fluoranthene	207-08-9	B14-020-SB-1	12		0.03	1.05	56	98.21	210		no
Beryllium	7440-41-7	B14-025-SB-1	7.5		0.14	2.01	52	69.23	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B14-013-SB-9	20		0.02	5.45	56	25.00	160	1,600	no
Cadmium	7440-43-9	B14-022-SB-7.5	153	J	0.56	21.1	52	92.31	9,300	98	YES (NC)
Caprolactam	105-60-2	B14-007-SB-8	0.98		0.11	0.55	56	3.57		40,000	no
Carbazole	86-74-8	B14-028-SB-1	0.92	J	0.02	0.36	56	8.93			no
Carbon disulfide	75-15-0	B14-008-SB-9	0.026		0.003	0.01	15	26.67		350	no
Chromium	7440-47-3	B14-022-SB-7.5	11,100		35.3	1,458	52	100.00		180,000	no
Chromium VI	18540-29-9	B14-003-SB-5	11.6	J-	1.6	4.30	52	7.69	6.3	350	YES (C)
Chrysene	218-01-9	B14-002-SB-1	4.4		0.01	0.61	56	98.21	2,100		no
cis-1,2-Dichloroethene	156-59-2	B14-008-SB-9	0.14		0.14	0.14	15	6.67		230	no
Cobalt	7440-48-4	B14-021-SB-9	50.3		0.89	12.3	52	96.15	1,900	35	YES (NC)
Copper	7440-50-8	B14-021-SB-9	1,080		5.1	206	52	100.00		4,700	no
Cyanide	57-12-5	B14-008-SB-1	44.2		0.41	6.73	52	94.23		120	no
Cyclohexane	110-82-7	B14-012-SB-10	0.35	J	0.004	0.11	15	26.67		2,700	no
Dibenz[a,h]anthracene	53-70-3	B14-020-SB-1	1.1		0.004	0.11	56	80.36	2.1		no
Di-n-butylphthalate	84-74-2	B14-013-SB-10	0.39	J	0.02	0.21	56	3.57		8,200	no
Di-n-ocytlphthalate	117-84-0	B14-012-SB-10	2.7	J	2.7	2.70	56	1.79		820	no
Ethylbenzene	100-41-4	B14-012-SB-10	1.1		0.006	0.18	15	46.67	25	2,000	no
Fluoranthene	206-44-0	B14-002-SB-1	11.4		0.003	1.11	56	100.00		3,000	no
Fluorene	86-73-7	B14-013-SB-9	4.7		0.0007	0.34	56	85.71		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B14-020-SB-1	3.4		0.009	0.32	56	92.86	21		no
Iron	7439-89-6	B14-008-SB-9	527,000		16,100	204,648	52	100.00		82,000	YES (NC)
Isopropylbenzene	98-82-8	B14-012-SB-10	1.2		0.004	0.21	15	40.00		990	no
Lead^	7439-92-1	B14-014-SB-5	3,550		6.7	617	59	100.00		800	YES (NC)
Manganese	7439-96-5	B14-031-SB-7	33,700		1,340	7,495	53	100.00		2,600	YES (NC)
Mercury	7439-97-6	B14-015-SB-5	2.9		0.006	0.45	52	94.23		35	no
Methylene Chloride	75-09-2	B14-017-SB-4	0.013		0.010	0.01	15	13.33	1,000	320	no
Naphthalene	91-20-3	B14-012-SB-10	5.9		0.004	0.48	56	94.64	8.6	59	no
Nickel	7440-02-0	B14-011-SB-1	382	J	4.8	91.9	52	100.00	64,000	2,200	no

Table 6 - Sub-Parcel B14-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
N-Nitrosodiphenylamine	86-30-6	B14-012-SB-10	2	J	0.11	1.06	56	3.57	470		no
PCBs (total)*	1336-36-3	B14-011-SB-1	3.4		0.05	0.92	28	60.71	0.94		YES (C)
Phenanthrene	85-01-8	B14-013-SB-9	15.7		0.004	1.16	56	100.00			no
Phenol	108-95-2	B14-008-SB-9	0.44		0.03	0.14	55	12.73		25,000	no
Pyrene	129-00-0	B14-002-SB-1	9.4		0.003	1.19	56	100.00		2,300	no
Selenium	7782-49-2	B14-015-SB-1	6.7		1.8	3.42	52	25.00		580	no
Silver	7440-22-4	B14-031-SB-7	87.8	J	4.4	16.1	52	100.00		580	no
Styrene	100-42-5	B14-008-SB-9	0.004	J	0.004	0.004	15	6.67		3,500	no
Thallium	7440-28-0	B14-031-SB-7	6.2	J	6.2	6.2	52	1.92		1.2	YES (NC)
Toluene	108-88-3	B14-008-SB-9	5.6		0.002	0.84	15	53.33		4,700	no
Vanadium	7440-62-2	B14-031-SB-7	3,450		4.8	330	52	100.00		580	YES (NC)
Xylenes	1330-20-7	B14-012-SB-10	4.4		0.03	0.73	15	46.67		250	no
Zinc	7440-66-6	B14-014-SB-1	46,500		14.9	6,976	52	100.00		35,000	YES (NC)

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

COPC = Constituent of Potential Concern
TR = Target Risk
HQ = Hazard Quotient

C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC

*PCBs (total) include the sum of all detected aroclor mixtures, including those without RSLs (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^Lead is assessed separately through the ALM and IEUBK models.

Table 7 - Sub-Parcel B14-1
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
Site-Wide EU1 (55.6 ac.)	Surface	1,600	495
	Sub-Surface	3,550	738
	Pooled	3,550	617

Table 8 - Sub-Parcel B14-1
Soil Exposure Point Concentrations

	Site-Wide EU1 (55.6 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% GROS Adjusted Gamma UCL	27.1	95% H-UCL	41.8	95% KM (Chebyshev) UCL	34.4
Cadmium	Gamma Adjusted KM-UCL	29.2	95% KM (Chebyshev) UCL	62.2	KM H-UCL	45.1
Chromium VI	Maximum Value	**2.00**	95% KM (t) UCL	2.01	95% KM (Chebyshev) UCL	1.71
Cobalt	95% KM (t) UCL	11.9	95% GROS Adjusted Gamma UCL	21.5	95% GROS Approximate Gamma UCL	14.8
Iron	95% Chebyshev (Mean, Sd) UCL	342,706	95% Student's-t UCL	263,927	95% Chebyshev (Mean, Sd) UCL	303,619
Manganese	95% Adjusted Gamma UCL	8,450	95% H-UCL	13,139	95% H-UCL	9,306
Vanadium	95% Adjusted Gamma UCL	362	95% Adjusted Gamma UCL	757	95% H-UCL	522
Zinc	95% Adjusted Gamma UCL	11,630	97.5% Chebyshev (Mean, Sd) UCL	19,815	95% Chebyshev (Mean, Sd) UCL	12,876
Aroclor 1254	95% KM (t) UCL	0.44	NA	NA	95% KM (t) UCL	0.44
Total PCBs	95% KM (Chebyshev) UCL	1.52	NA	NA	95% KM (Chebyshev) UCL	1.52
Benzo[a]pyrene	95% Chebyshev (Mean, Sd) UCL	2.08	KM H-UCL	1.45	KM H-UCL	1.05

Bold indicates maximum value used as the EPC
NA = No Detections

Table 9 - Sub-Parcel B14-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (55.6 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	27.1	3.00	480	9.0E-06	0.06
Cadmium	**Urinary**	29.2	9,300	980	3.1E-09	0.03
Chromium VI	**Respiratory**	**2.00**	6.30	3,500	3.2E-07	0.0006
Cobalt	**Thyroid**	11.9	1,900	350	6.3E-09	0.03
Iron	**Gastrointestinal**	342,706		820,000		0.4
Manganese	**Nervous**	8,450		26,000		0.3
Vanadium	**Dermal**	362		5,800		0.06
Zinc	**Hematologic; Immune**	11,630		350,000		0.03
Aroclor 1254	**Dermal; Immune; Ocular**	0.44	NE	15.0		0.03
PCBs (Total)		1.52	0.94		1.6E-06	
Benzo(a)pyrene	**Developmental**	2.08	2.10	220	9.9E-07	0.009
					1E-05	↓

NE = Not Evaluated
Bold indicates maximum value used as the EPC
RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

Table 10 - Sub-Parcel B14-1
Subsurface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (55.6 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	41.8	3.00	480	1.4E-05	0.09
Cadmium	**Urinary**	62.2	9,300	980	6.7E-09	0.06
Chromium VI	**Respiratory**	2.01	6.30	3,500	3.2E-07	0.0006
Cobalt	**Thyroid**	21.5	1,900	350	1.1E-08	0.06
Iron	**Gastrointestinal**	263,927		820,000		0.3
Manganese	**Nervous**	13,139		26,000		0.5
Vanadium	**Dermal**	757		5,800		0.1
Zinc	**Hematologic; Immune**	19,815		350,000		0.06
Aroclor 1254	**Dermal; Immune; Ocular**	NA	NE	15.0		
PCBs (Total)		NA	0.94			
Benzo(a)pyrene	**Developmental**	1.45	2.10	220	6.9E-07	0.007
					1E-05	↓

NE = Not Evaluated
NA = No Detections
RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

Table 11 - Sub-Parcel B14-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (55.6 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	34.4	3.00	480	1.1E-05	0.07
Cadmium	**Urinary**	45.1	9,300	980	4.8E-09	0.05
Chromium VI	**Respiratory**	1.71	6.30	3,500	2.7E-07	0.0005
Cobalt	**Thyroid**	14.8	1,900	350	7.8E-09	0.04
Iron	**Gastrointestinal**	303,619		820,000		0.4
Manganese	**Nervous**	9,306		26,000		0.4
Vanadium	**Dermal**	522		5,800		0.09
Zinc	**Hematologic; Immune**	12,876		350,000		0.04
Aroclor 1254	**Dermal; Immune; Ocular**	0.44	NE	15.0		0.03
PCBs (Total)		1.52	0.94		1.6E-06	
Benzo(a)pyrene	**Developmental**	1.05	2.10	220	5.0E-07	0.005
					1E-05	↓

NE = Not Evaluated
RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

Table 12 - Sub-Parcel B14-1
Surface Soils
Construction Worker Risk Ratios

120 Day		Site-Wide EU1 (55.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	27.1	31.5	201	8.6E-07	0.1
Cadmium	**Urinary**	29.2	58,680	631	5.0E-10	0.05
Chromium VI	**Respiratory**	**2.00**	45.2	1,670	4.4E-08	0.001
Cobalt	**Thyroid**	11.9	11,736	2,005	1.0E-09	0.006
Iron	**Gastrointestinal**	342,706		501,128		0.7
Manganese	**Nervous**	8,450		8,917		0.9
Vanadium	**Dermal**	362		3,348		0.1
Zinc	**Hematologic; Immune**	11,630		214,769		0.05
Aroclor 1254	**Dermal; Immune; Ocular**	0.44	NE	15.6		0.03
PCBs (Total)		1.52	9.50		1.6E-07	
Benzo(a)pyrene	**Developmental**	2.08	35.6	13.2	5.8E-08	0.2
					1E-06	↓

NE = Not Evaluated
Bold indicates maximum value used as the EPC
SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	1
	Nervous	1
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

Table 13 - Sub-Parcel B14-1
Subsurface Soils
Construction Worker Risk Ratios

120 Day		Site-Wide EU1 (55.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	41.8	31.5	201	1.3E-06	0.2
Cadmium	Urinary	62.2	58,680	631	1.1E-09	0.1
Chromium VI	Respiratory	2.01	45.2	1,670	4.4E-08	0.001
Cobalt	Thyroid	21.5	11,736	2,005	1.8E-09	0.01
Iron	Gastrointestinal	263,927		501,128		0.5
Manganese	Nervous	13,139		8,917		1
Vanadium	Dermal	757		3,348		0.2
Zinc	Hematologic; Immune	19,815		214,769		0.09
Aroclor 1254	Dermal; Immune; Ocular	NA	NE	15.6		
PCBs (Total)		NA	9.50			
Benzo(a)pyrene	Developmental	1.45	35.6	13.2	4.1E-08	0.1
					1E-06	↓

NE = Not Evaluated
NA = No Detections
SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	1
	Nervous	1
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

Table 14 - Sub-Parcel B14-1
Pooled Soils
Construction Worker Risk Ratios

120 Day		Site-Wide EU1 (55.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	34.4	31.5	201	1.1E-06	0.2
Cadmium	**Urinary**	45.1	58,680	631	7.7E-10	0.07
Chromium VI	**Respiratory**	1.71	45.2	1,670	3.8E-08	0.001
Cobalt	**Thyroid**	14.8	11,736	2,005	1.3E-09	0.007
Iron	**Gastrointestinal**	303,619		501,128		0.6
Manganese	**Nervous**	9,306		8,917		1
Vanadium	**Dermal**	522		3,348		0.2
Zinc	**Hematologic; Immune**	12,876		214,769		0.06
Aroclor 1254	**Dermal; Immune; Ocular**	0.44	NE	15.6		0.03
PCBs (Total)		1.52	9.50		1.6E-07	
Benzo(a)pyrene	**Developmental**	1.05	35.6	13.2	2.9E-08	0.08
					1E-06	↓

NE = Not Evaluated
SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	0
	Thyroid	0
	Gastrointestinal	1
	Nervous	1
	Developmental	0
	Urinary	0
	Respiratory	0
	Hematologic	0
	Immune	0
	Ocular	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

May 5, 2021

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230
Attention: Ms. Barbara Brown

Subject: **Request to Enter Temporary CHS Review**
Tradepoint Atlantic Parcel B14-1; Humphrey Impoundment

Dear Ms. Brown:

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

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

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

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B14-1 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

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

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

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

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

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

Thank you,

Peter Haid

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

APPENDIX B

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B14-1

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

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B14-1

Area of site (ac)	Ac	55.6
Overall duration of construction (wk/yr)	EW	24
Exposure frequency (day/yr)	EF	**120**
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	**11**
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**13.5**
Overall duration of construction (hr)	tc	**4,032**
Overall duration of traffic (s)	Tt	**3,456,000**
Surface area (m2)	AR	**225,005**
Length (m)	LR	**474**
Distance traveled (km)	ΣVKT	**569**
Particulate emission factor (m3/kg)	PEFsc	**165,360,850**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**6.48**
Total time of construction (s)	Tcv	**3,456,000**

→ Site-Wide EU

Input
Calculation

Chemical	RfD & RfC Sources	^Ingestion SF (mg/kg-day)$^{-1}$	^Inhalation Unit Risk (ug/m^3)$^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				31.6	24,564	31.5	203	22,634	201
Cadmium	A/I	-	1.80E-03	1.00E-03	1.00E-05	0.025	2.50E-05	0.001	1			-	7.50E+01					58,680	58,680	658	15,089	631
Chromium(VI)	A/C/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	0.01	1			-	1.90E+01				46.9	1,257	45.2	1,676	452,675	1,670
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	0.01	1			-	4.50E+01					11,736	11,736	2,148	30,178	2,005
Iron	P	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							501,128		501,128
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							10,113	75,446	8,917
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							3,424	150,892	3,348
Zinc	I	-	-	3.00E-01	-	1	3.00E-01	0.01	1			-	6.20E+01							214,769		214,769
Aroclor 1254	A/I	2.00E+00	5.71E-04	3.00E-05	-	1	3.00E-05	0.14	1	2.40E-02	6.10E-06	1.16E-02	7.80E+02	1.30E+05	1.91E-08	2.78E+4	18.2	31.1	NE	15.6		15.6
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.78E+4	18.2	19.9	9.50			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	7.90E+5	37.1	837	35.6	159	14.4	13.2

NE = Not Evaluated
*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php

APPENDIX C

Sparrows Point Development - PPE Standard Operational Procedure, Revision 3

Planning, Tracking/Supervision, Enforcement, and Documentation

Planning

- Response and Development Work Plan (RDWP) for each individual redevelopment sub-parcel identifies and documents site conditions.
- RDWP is reviewed and approved by regulators.
- Contractor HASP to address site-specific conditions and PPE requirements:
    - Contractor H&S professional to sign-off on PPE requirements for site workers;
    - Job Safety Analysis (JSA) to be performed for ground intrusive work.
- Project Environmental Professional (EP) assigned to each construction project – monitors project during environmentally sensitive project phases and is available to construction contractor on an as needed basis. EP responsibilities include the following:
    - Dust monitoring
    - Routine ground intrusive breathing space air monitoring
    - Soil tracking
    - Water handling oversight
    - Ground intrusive work observation
    - Notification for unexpected conditions
- Pre-construction meeting identifies EP roles and responsibilities and reviews site conditions.
- Contractor to perform job-site HazCom. HazCom to be addressed in Contractor HASP and include:
    - PPE requirements,
    - Exposure time limits,
    - Identification of chemicals of concern and potential effects of over-exposure (adverse reactions),
    - Methods and routes of potential exposure.
- All personnel that will be performing ground intrusive work within impacted soils shall sign-off on HazCom.
- If, based on a thorough review of Site conditions, it is expected that construction workers will have the potential to encounter materials considered hazardous waste under RCRA or DOT regulations, HAZWOPER-trained personnel will be utilized.

Tracking/Supervision

- Contractor to record any day that there is ground intrusive work and confirm that proper PPE is being worn.
- EP will note ground intrusive work on daily work sheets and perform at least one spot check per day.
- EP will log on daily work sheets PPE compliance for all intrusive work areas at least once per day.

- EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically.

Work Zones Delineation

- Exclusion Zone – The Exclusion Zones will include the areas proposed for excavation or with active trenches, excavations, or ground intrusive work, at a minimum. Personnel working within the exclusion zone will be required to wear Modified Level D PPE as described in this SOP. EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically. The Exclusion Zones will be identified each work day.
- Contamination Reduction Zone – This work zone is located outside of the exclusion zone, but inside of the limits of development (LOD). The Contamination Reduction Zone will be located adjacent to the Exclusion Zone, and all personal decontamination including removal of all disposable PPE/removal of soil from boots will be completed in the Contamination Reduction Zone.

Documentation

- Contractor HASP and HazCom.
- Contractor ground intrusive tracking record.
- HASP and HazCom sign-in sheets.
- EP pre-con memos.
- EP daily work sheets.
- Records documenting intrusive work and proper PPE use to be provided in completion report.

Enforcement

- Non-compliance of PPE requirements will result in disciplinary action up to and including prohibition from working on Sparrows Point.

Unknown and/or Unexpected Conditions

If unknown and/or unexpected conditions are encountered during the project that the EP determines to have a reasonable potential to significantly impact construction worker health and safety, the following will be initiated:

1. Job stoppage,
2. TPA and MDE notification,
3. Re-assessment of conditions.

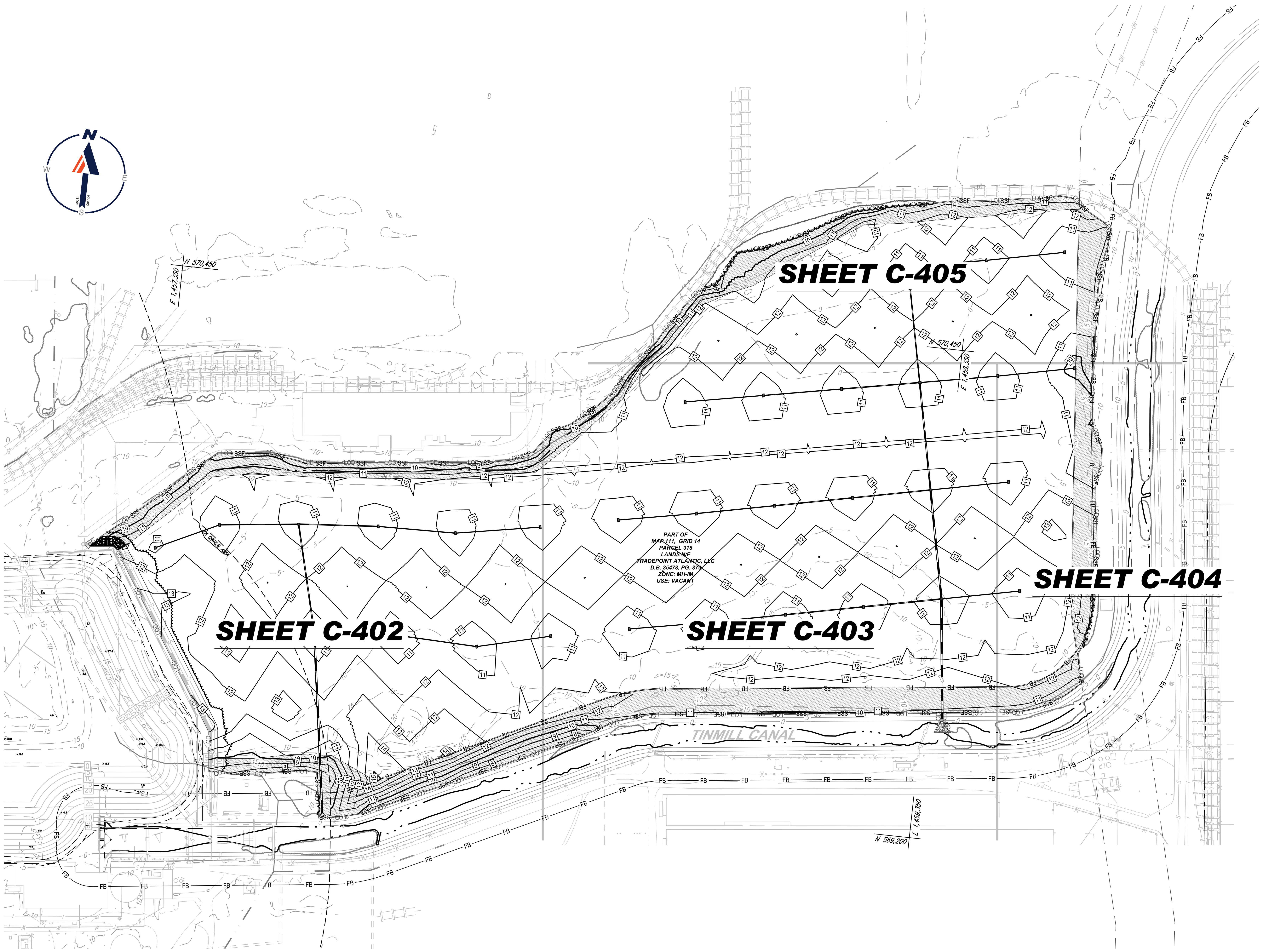
Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

Modified Level D PPE will include, at a minimum, overalls such as polyethylene-coated Tyvek or clean washable cloth overalls, latex (or similar) disposable gloves (when working in wet/chemical surroundings) or work gloves, steel-toe/steel-shank high ankle work boots with taped chemical-protective over-boots (as necessary), dust mask, hard hat, safety glasses with

side shields, and hearing protection (as necessary). If chemical-protective over-boots create increased slip/trip/fall hazardous, then standard leather or rubber work boots could be used, but visible soils from the sides and bottoms of the boots must be removed upon exiting the Exclusion Zone.

APPENDIX D



NOTES

1. APPROXIMATE CUT = 24,450 CY
   APPROXIMATE FILL = 502,260 CY
2. EXCAVATED MATERIAL TO BE REUSED ON-SITE IF DEEMED SUITABLE FOR REUSE.

150 75 37.5 0 150
1"=150'

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/21

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SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.: MD16206642
DRAWN BY: RMS
CHECKED BY: MJG
DATE: 4/15/2021
CAD I.D.: RDWP-0

PROJECT:

MDE PLAN

FOR

TRADEPOINT ATLANTIC
HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT
TRADEPOINT AVENUE
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER//
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
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Fax: (410) 821-7987
MD@BohlerEng.com

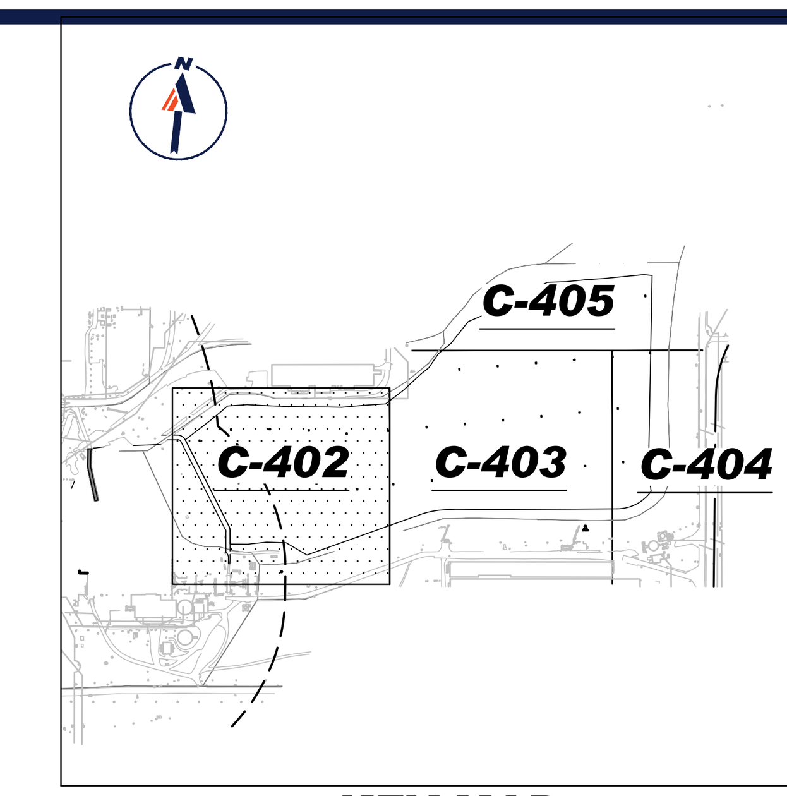
M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097

SHEET TITLE:

OVERALL SITE AND GRADING PLAN

SHEET NUMBER:
C-401

ORG. DATE - 4/15/2021



KEY MAP
NOT TO SCALE

LEGEND

- STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED AREA TO BE LANDSCAPED
- FB — FOREST BUFFER
- IDA CRITICAL AREA

LEGEND

EXISTING / PROPOSED

- PROPERTY LINE
- CONTOURS
- SANITARY SEWER
- WATER
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND GAS
- STORMDRAIN
- CURB AND GUTTER
- SPILL CURB

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SUPER SILT FENCE	SSF	SSF
LIMITS OF DISTURBANCE		LOD
GABION INLET PROTECTION	GIP	

APPROXIMATE UTILITY DEPTHS NOTE

1. WATER - BETWEEN 4' AND 7' BELOW GRADE
2. STORM DRAIN - BETWEEN 2' AND 15' BELOW GRADE
3. SANITARY SEWER - BETWEEN 4' AND 8' BELOW GRADE
4. GAS, ELECTRIC, AND TELEPHONE - BETWEEN 2.5' AND 4' BELOW GRADE

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50 25 12.5 0 50
1"= 50'

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DATE:	4/15/2021
CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

TRADEPOINT ATLANTIC
HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT TRADEPOINT AVENUE
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
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COUNCILMANIC DISTRICT 7
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MD@BohlerEng.com

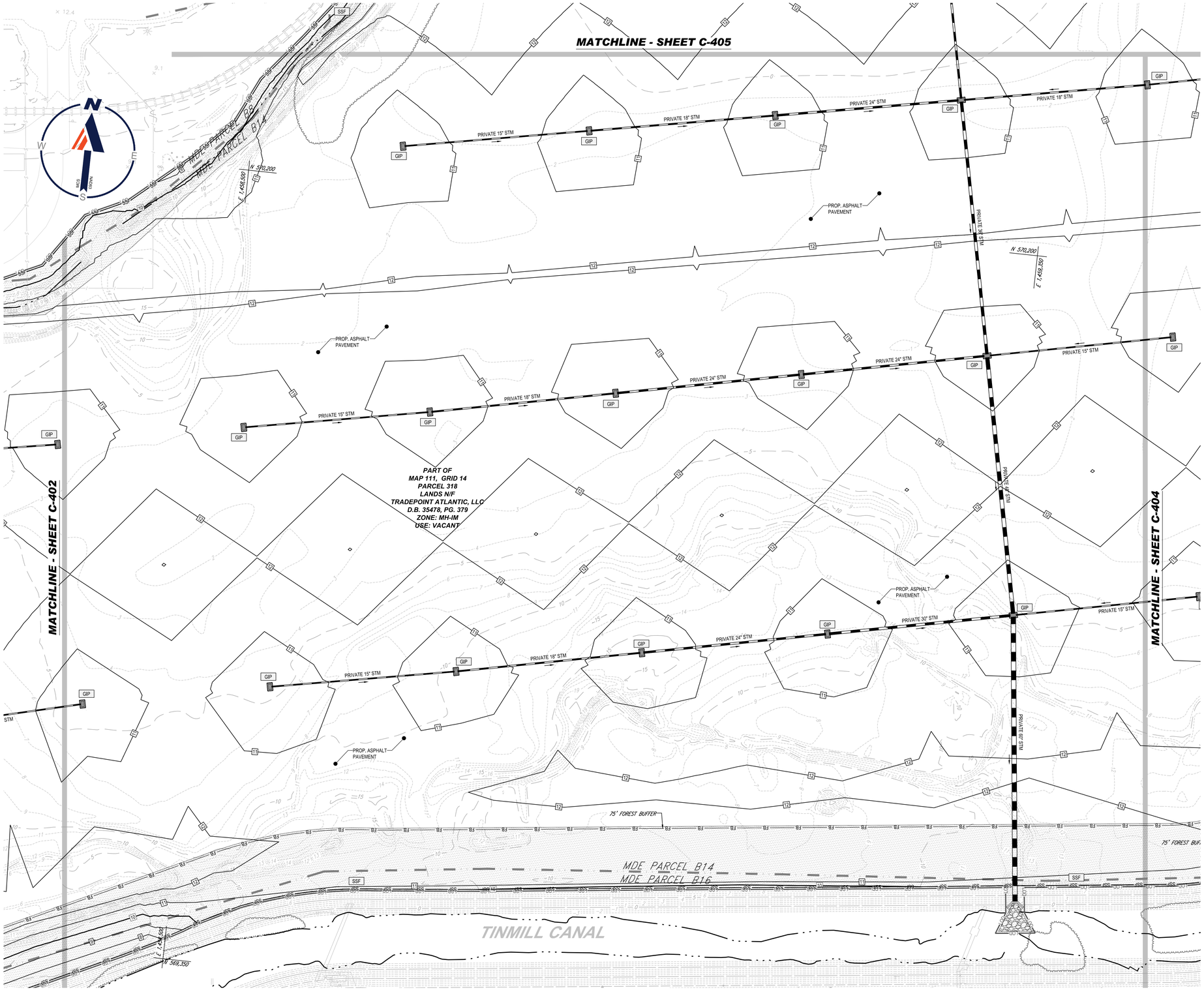
M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097

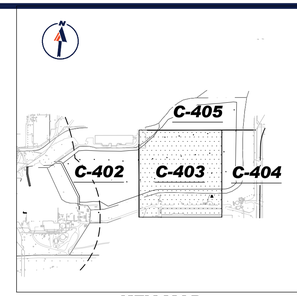
SHEET TITLE:

SITE AND GRADING PLAN

SHEET NUMBER:
C-402

ORG. DATE - 4/15/2021





KEY MAP
NOT TO SCALE

LEGEND

- STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED AREA TO BE LANDSCAPED
- FB — FOREST BUFFER
- IDA CRITICAL AREA

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
198	CONTOURS	198
200		200
SL FM S	SANITARY SEWER	SL FM S
W W	WATER	W W
E E	UNDERGROUND ELECTRIC	E E
OH OH	OVERHEAD ELECTRIC	OH OH
T T	UNDERGROUND TELEPHONE	T T
G G	UNDERGROUND GAS	G G
	STORMDRAIN	
	CURB AND GUTTER	
	SPILL CURB	

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SUPER SILT FENCE	SSF	SSF
LIMITS OF DISTURBANCE		LOD
GABION INLET PROTECTION	GIP	

APPROXIMATE UTILITY DEPTHS NOTE

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3. SANITARY SEWER - BETWEEN 4' AND 8' BELOW GRADE
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50 25 12.5 0 50
1"= 50'

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STORMWATER DESIGN
PERMITTING SERVICES
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DRAWN BY:	RMS
CHECKED BY:	MJG
DATE:	4/15/2021
CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

TRADEPOINT ATLANTIC
HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT TRADEPOINT AVENUE
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

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M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097

SHEET TITLE:

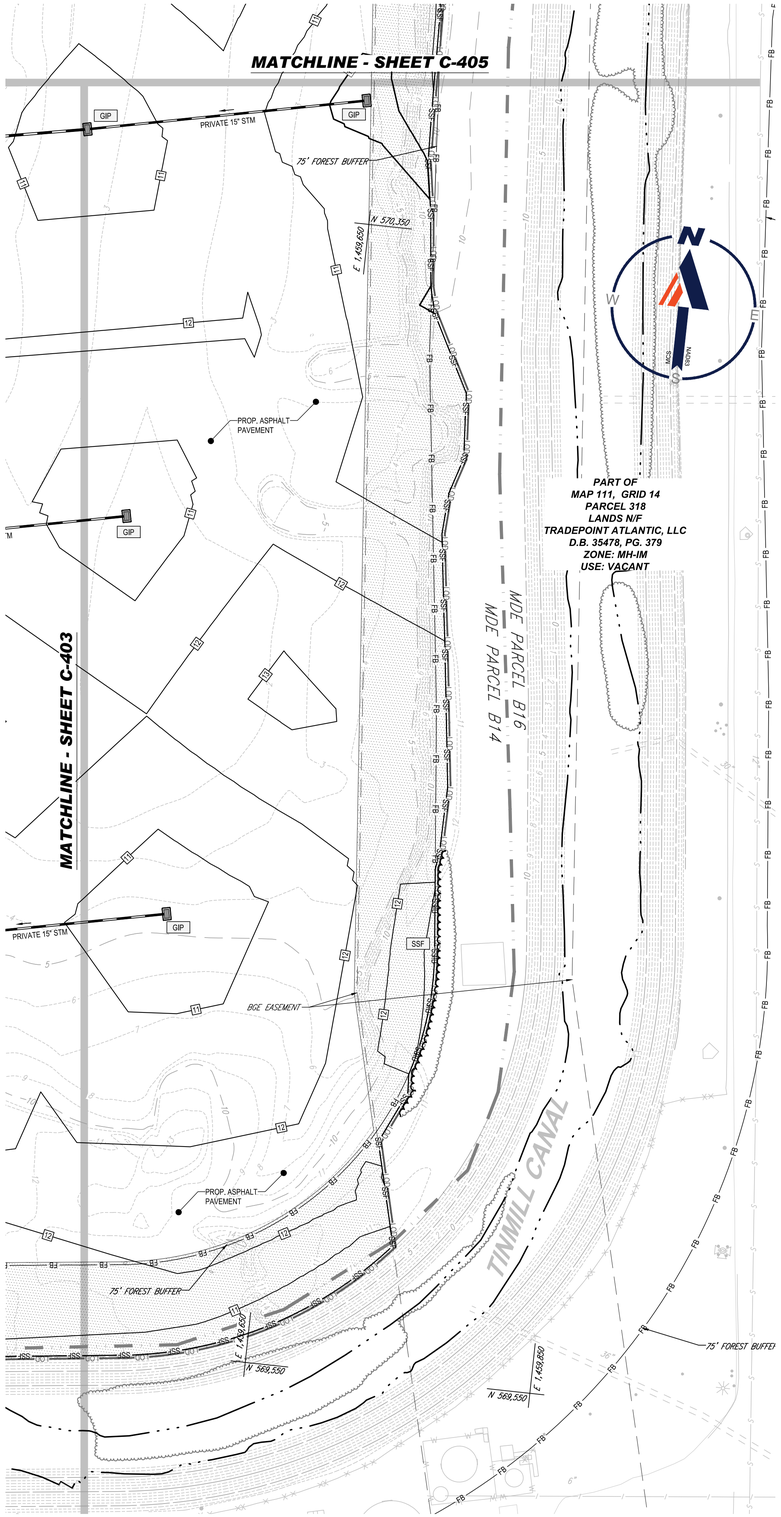
SITE AND GRADING PLAN

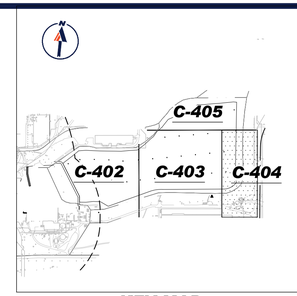
SHEET NUMBER:

C-403

ORG. DATE - 4/15/2021

Apr 21, 2021
C:\PROGRAMDATA\TURBOHLERC\S2020\TEMP\ACPUBLISH_8488\MD16206642_RDWP_0---LAYOUT C-403 - SITE AND GRADING





KEY MAP
NOT TO SCALE

LEGEND

- STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED AREA TO BE LANDSCAPED
- FB — FOREST BUFFER
- IDA CRITICAL AREA

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
198	CONTOURS	198
200		200
	SANITARY SEWER	SL — FM — S
W	WATER	W — W
E	UNDERGROUND ELECTRIC	E — E
OH	OVERHEAD ELECTRIC	OH — OH
T	UNDERGROUND TELEPHONE	T — T
G	UNDERGROUND GAS	G — G
	STORMDRAIN	
	CURB AND GUTTER	
	SPILL CURB	

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SUPER SILT FENCE	SSF	SSF
LIMITS OF DISTURBANCE		LOD
GABION INLET PROTECTION	GP	

APPROXIMATE UTILITY DEPTHS NOTE

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2. STORM DRAIN - BETWEEN 2' AND 15' BELOW GRADE
3. SANITARY SEWER - BETWEEN 4' AND 8' BELOW GRADE
4. GAS, ELECTRIC, AND TELEPHONE - BETWEEN 2.5' AND 4' BELOW GRADE

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DRAWN BY:	RMS
CHECKED BY:	MJG
DATE:	4/15/2021
CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

TRADEPOINT ATLANTIC
HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT TRADEPOINT AVENUE
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
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M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097

SHEET TITLE:

SITE AND GRADING PLAN

SHEET NUMBER:

C-404

ORG. DATE - 4/15/2021

Apr 21, 2021
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RS

LEGEND

STANDARD DUTY ASPHALT PAVEMENT

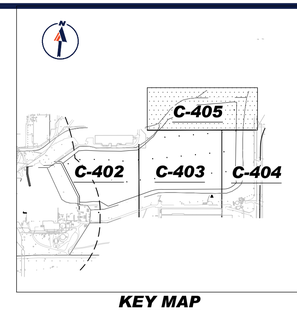
PROPOSED AREA TO BE LANDSCAPED

FB — FOREST BUFFER

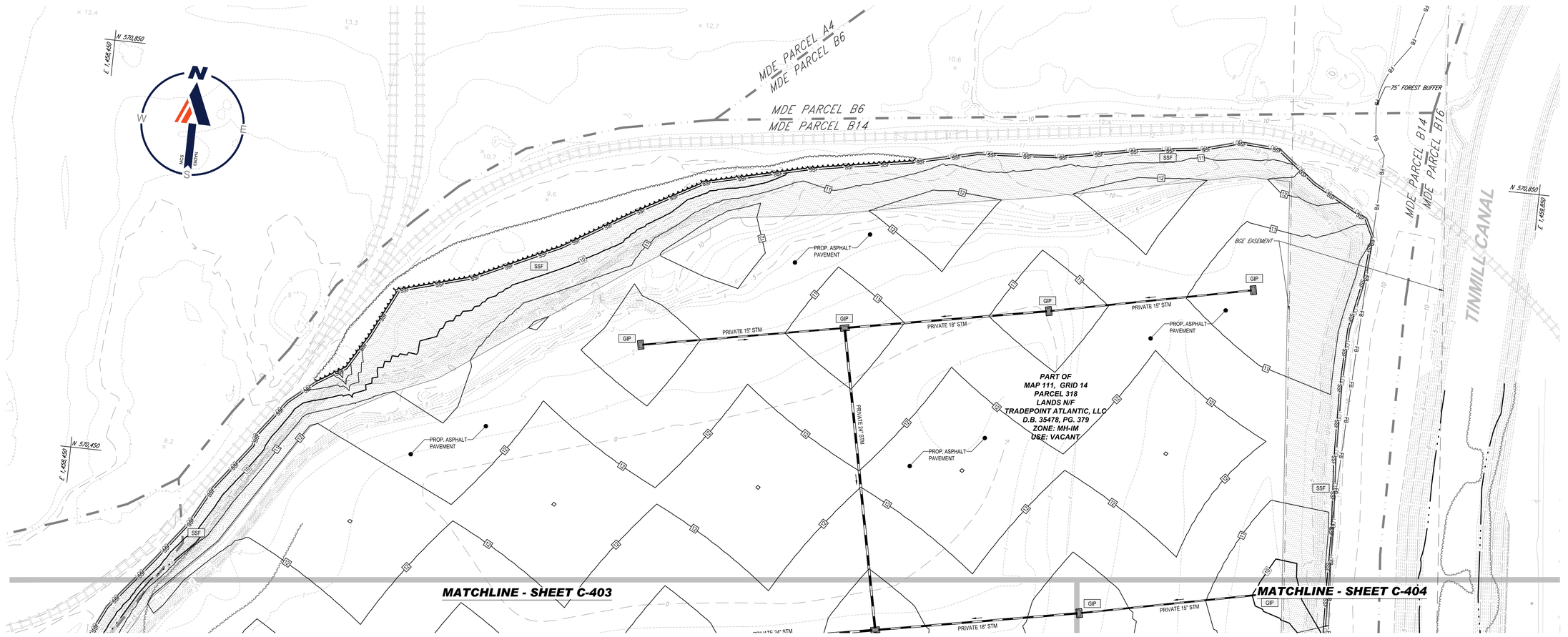
IDA CRITICAL AREA

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
CONTOURS	198 / 200	198 / 200
SANITARY SEWER		SL — FM — S
WATER		W — W
UNDERGROUND ELECTRIC		E — E
OVERHEAD ELECTRIC		OH — OH
UNDERGROUND TELEPHONE		T — T
UNDERGROUND GAS		G — G
STORMDRAIN		
CURB AND GUTTER		
SPILL CURB		



KEY MAP
NOT TO SCALE



STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	
SUPER SILT FENCE	SSF	SSF
LIMITS OF DISTURBANCE		LOD
GABION INLET PROTECTION	GP	

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DRAWN BY:	RMS
CHECKED BY:	MJG
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CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

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MARYLAND LICENSE No. 44097

SHEET TITLE:

SITE AND GRADING PLAN

SHEET NUMBER:

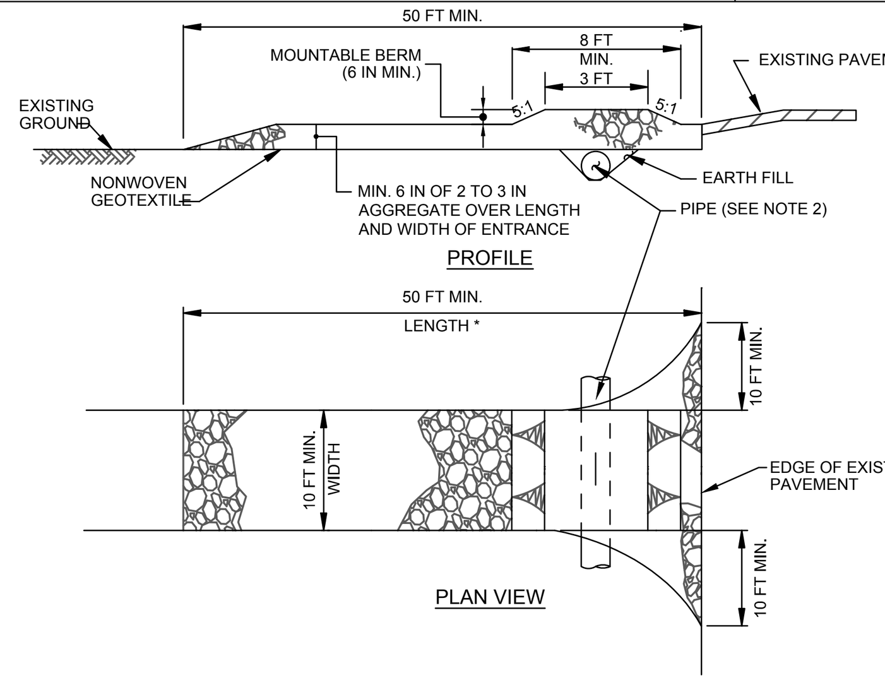
C-405

ORG. DATE - 4/15/2021

Apr 21, 2021
C:\PROGRAMDATA\BOHLER\C3D2020TEMP\ACPUBLISH_9488\MD16206642_RDWP_0---LAYOUT C-405_SITE AND GRADING
HS

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

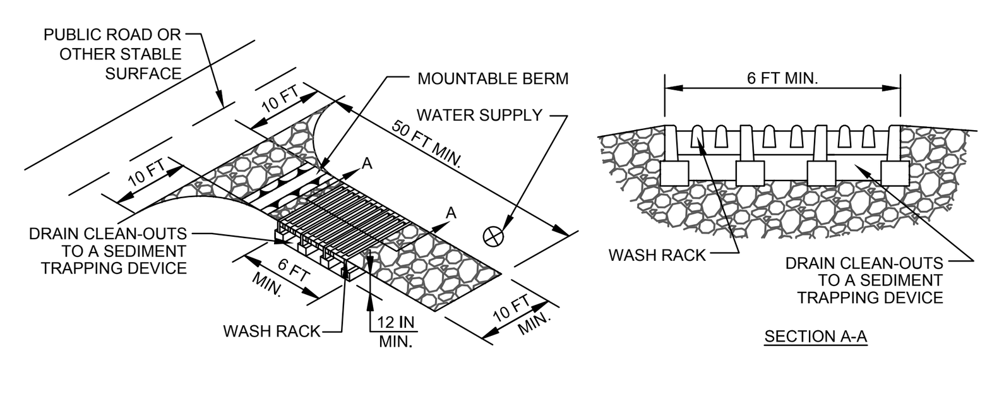
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

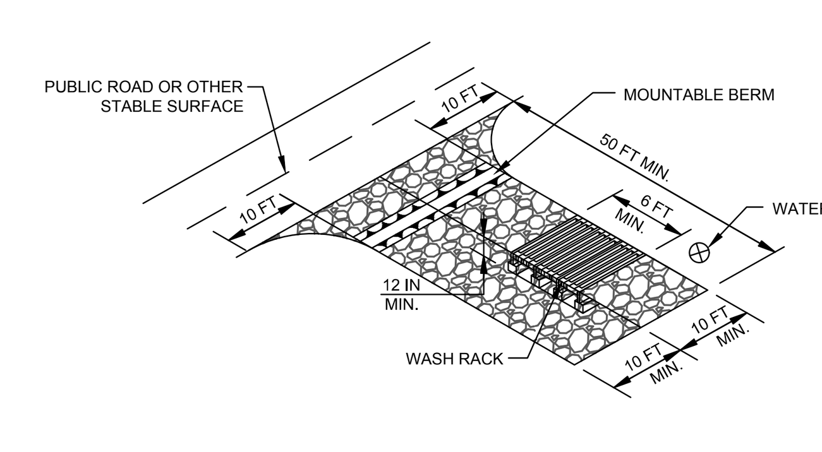
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-2 WASH RACK OPTION

STANDARD SYMBOL: WR



ISOMETRIC VIEW - WASH RACK IN SCE



ISOMETRIC VIEW- WASH RACK ALONG SCE

CONSTRUCTION SPECIFICATIONS

1. USE A WASH RACK DESIGNED AND CONSTRUCTED/MANUFACTURED FOR THE ANTICIPATED TRAFFIC LOADS. CONCRETE, STEEL, OR OTHER MATERIALS ARE ACCEPTABLE. PRE-FABRICATED UNITS SUCH AS CATTLE GUARDS ARE ACCEPTABLE. USE MINIMUM DIMENSION OF 6 FEET x 10 FEET. ORIENT DIRECTION OF RIBS AS SHOWN ON THE DETAIL.
2. INSTALL PRIOR TO, ALONG SIDE OF, OR AS PART OF THE SCE.
3. DIRECT WASH WATER TO AN APPROVED SEDIMENT TRAPPING DEVICE.
4. KEEP AREA UNDER WASH RACK FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, REPAIR OR REPLACE WASH RACK.

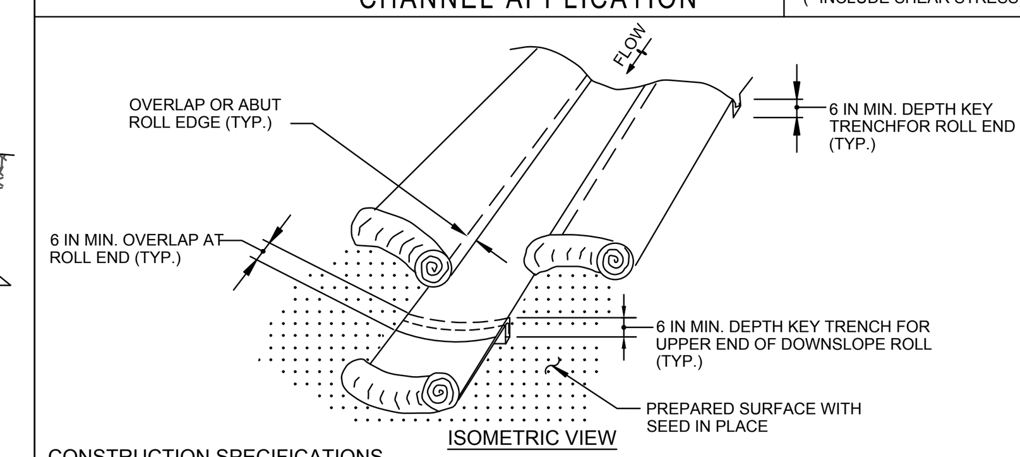
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL

TSSMC - * 2.25 lb/ft²
(* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

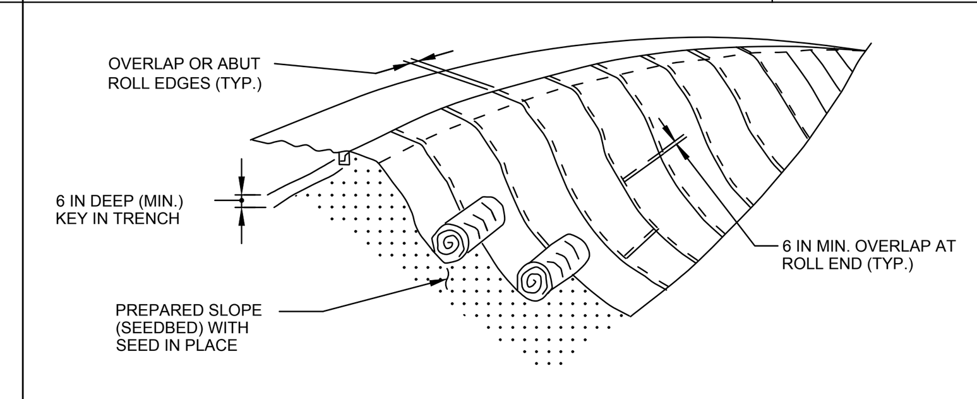
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

TSSMS - * 2.25 lb/ft²
(* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

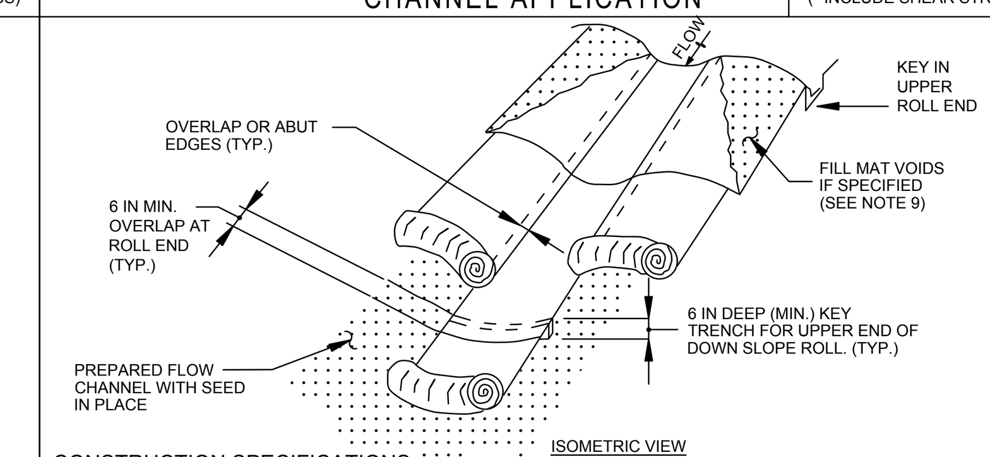
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL

PSSMC - * 2.25 lb/ft²
(* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

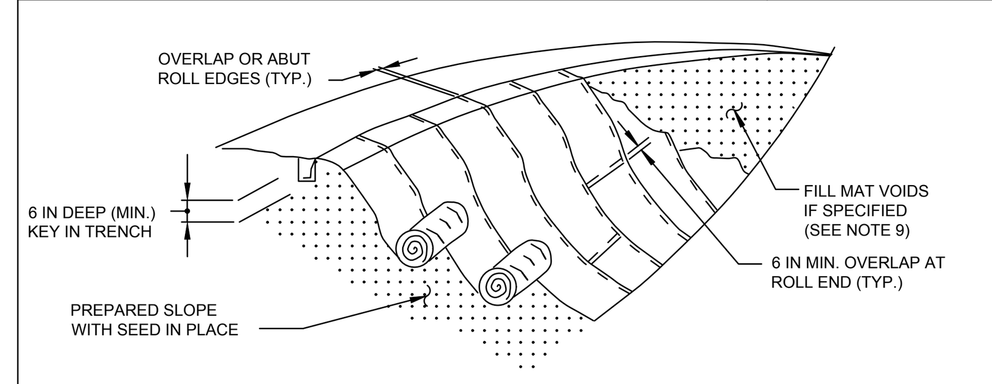
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

PSSMS - * 2.25 lb/ft²
(* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

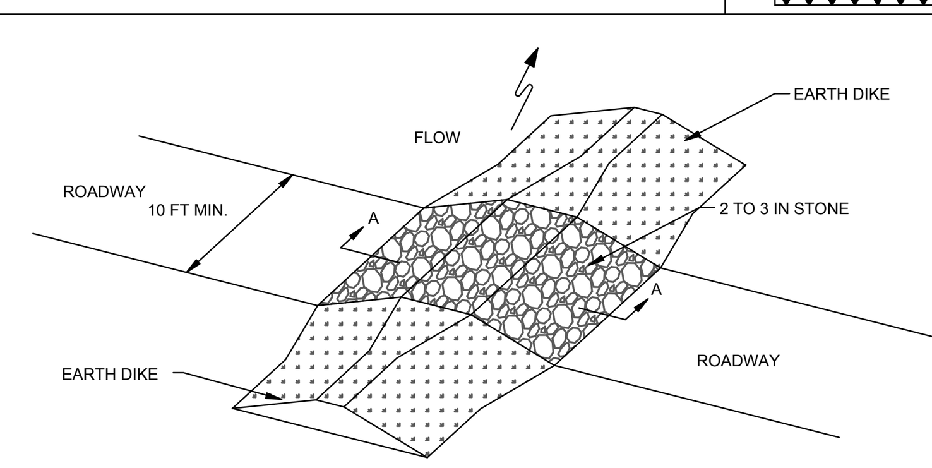
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

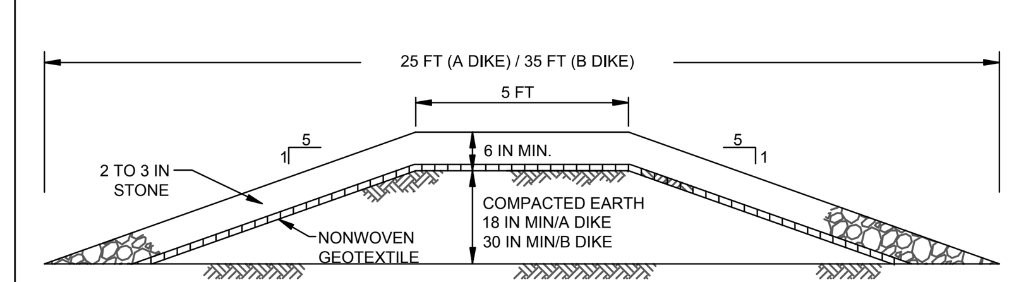
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



ISOMETRIC VIEW



SECTION A-A

CONSTRUCTION SPECIFICATIONS

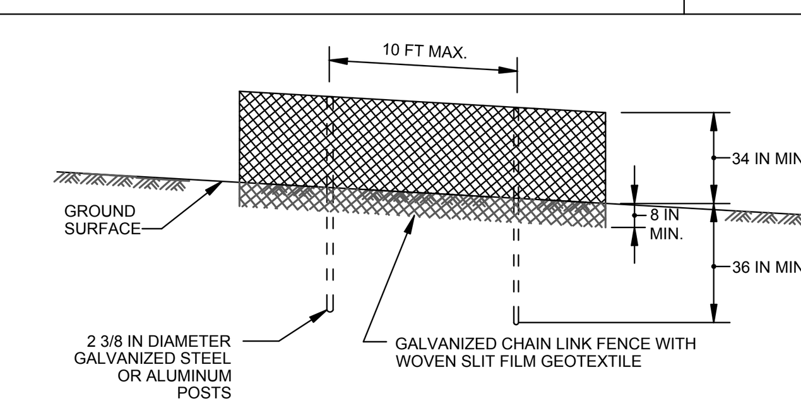
1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

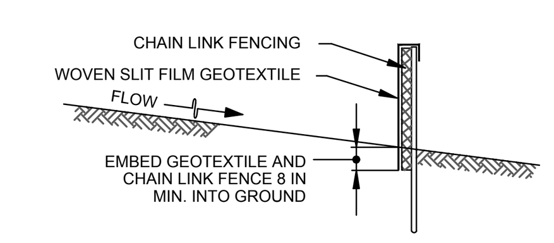
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



ELEVATION



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

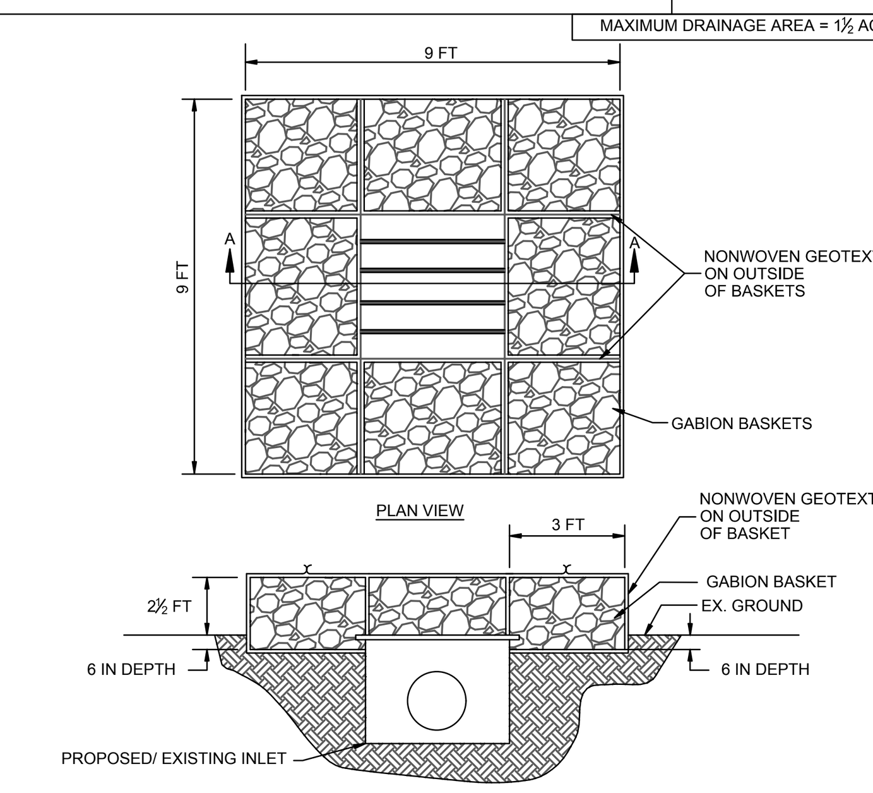
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-7 GABION INLET PROTECTION

STANDARD SYMBOL: GIP

MAXIMUM DRAINAGE AREA = 1½ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
2. WRAP 3 FEET x 3 FEET GABION BASKETS (LENGTH VARIABLE) WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVERLAPPING AT THE TOP AND FASTEN THE GEOTEXTILE AT THE TOP OF THE BASKET WITH WIRE FASTENERS (HOG RINGS) AT A MAXIMUM OF 1 FOOT INTERVALS ALONG THE SEAM.
3. AVOID TEARING OR DAMAGING GEOTEXTILE.
4. ENTRENCH GABION BASKETS TO A DEPTH OF 6 INCHES.
5. PLACE AND INTERLOCK GABION BASKETS WITH NO GAPS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR MESH.
7. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/21

BOHLER
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PROJECT No.:	MD16206642
DRAWN BY:	RMS
CHECKED BY:	MJG
DATE:	4/15/2021
CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

TRADEPOINT ATLANTIC
HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT TRADEPOINT AVENUE
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
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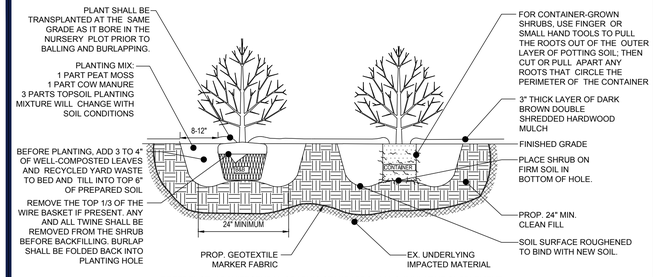
M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097

SHEET TITLE:

SECTIONS AND DETAILS

SHEET NUMBER:
C-901

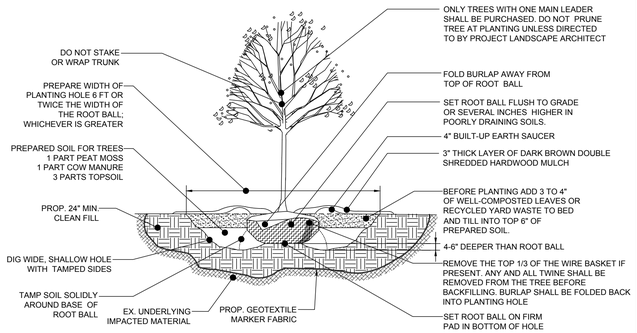
ORG. DATE - 4/15/2021



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE



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DECIDUOUS TREE PLANTING DETAIL

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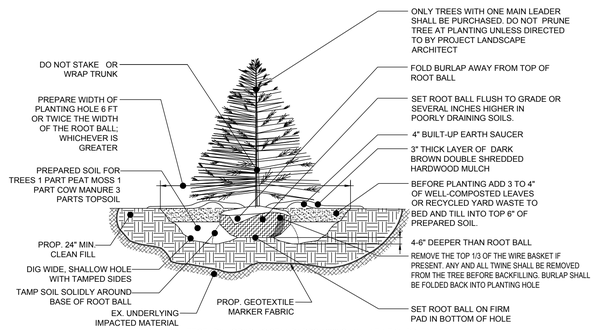

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EVERGREEN TREE PLANTING DETAIL

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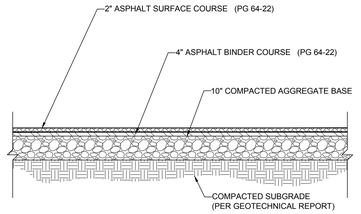
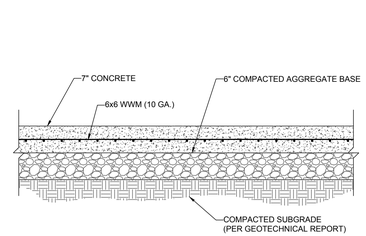


NOTE:

1. SECTION SHOWN WAS PREPARED WITHOUT THE BENEFIT OF A GEOTECHNICAL REPORT. FINAL DESIGN TO BE PROVIDED BY GEOTECHNICAL ENGINEER ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

HEAVY DUTY ASPHALT PAVEMENT SECTION

NOT TO SCALE

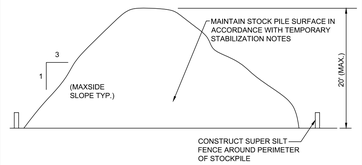


NOTE:

1. SECTION SHOWN WAS PREPARED WITHOUT THE BENEFIT OF A GEOTECHNICAL REPORT. FINAL DESIGN TO BE PROVIDED BY GEOTECHNICAL ENGINEER ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

HEAVY DUTY CONCRETE SECTION

NOT TO SCALE



TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

SEQUENCE OF CONSTRUCTION:

1. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL (410-887-3226) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON SITE. HIGH VISIBILITY ORANGE SAFETY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF DISTURBANCE (LOD) WHEREVER THE LOD IS WITHIN 50 FEET OF ANY FOREST BUFFER OR FOREST CONSERVATION EASEMENT. THIS FENCE SHALL BE INSPECTED BY DEPS AT THE PRECONSTRUCTION MEETING.
2. STAKE OVERALL LIMIT OF DISTURBANCE PER THE APPROVED EROSION AND SEDIMENT CONTROL PLANS. INSTALL SAFETY FENCE AS NECESSARY.
3. CLEAR, GRUB AND REMOVE ANY NECESSARY EXISTING FEATURES INTERFERING WITH PERIMETER SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES ONLY, INCLUDING RAILROAD TRACKS AS NECESSARY. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM, SUPER SILT FENCE, AND CONCRETE WASHOUT STATION AS DIRECTED BY THE BALTIMORE COUNTY SEDIMENT CONTROL INSPECTOR AS SHOWN ON PLAN. SUPER SILT FENCE SHALL BE INSPECTED & MAINTAINED EACH DAY AND AFTER EACH STORM EVENT. MAINTENANCE SHALL INCLUDE BUT NOT BE LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION.
4. WITH THE APPROVAL OF BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL AND THE SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB REMAINDER OF THE SITE. REMOVE REMAINDER OF PAVING, CURB, PORTIONS OF THE BUILDING SLAB, NECESSARY UTILITIES, ETC. AS SHOWN ON THE DEMOLITION PLANS . ALL OPEN PIPE ENDS TO BE BLOCKED DAILY TO PREVENT SEDIMENT FROM ENTERING THE STORMDRAIN SYSTEM. ALL AREAS OUTSIDE OF THE PERIMETER CONTROL MEASURES SHALL BE COMPLETED PER THE "WORK OUTSIDE PERIMETER CONTROLS NOTES" AND "UTILITY NOTES ON THE APPROVED SEDIMENT CONTROL PLANS". DISPOSAL MATERIAL WILL EITHER NEED TO BE TAKEN TO A RUBBLE LANDFILL WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN, OR AN EXISTING ASPHALT RECYCLING FACILITY SUBJECT TO THE SAME.
5. IMMEDIATELY AFTER DEMOLITION ACTIVITIES HAVE OCCURRED; BEGIN SITE GRADING.
6. BEGIN INSTALLATION OF STORM DRAIN STRUCTURES ALONG WITH ASSOCIATES STORM DRAIN PIPES. IMMEDIATELY INSTALL INLET PROTECTION ON PROPOSED INLETS AS SHOWN ON THE APPROVED SEDIMENT CONTROL PLANS. CONTRACTOR SHALL PERFORM SUFFICIENT GRADING SURROUNDING INLETS, TO ENSURE THAT IT IS CAPABLE OF FUNCTIONING AND CAPTURING ALL UPSLOPE FLOWS.
7. COMPLETE FINE GRADING OF SITE. SITE SHALL BE BROUGHT TO GRADE AS SOON AS POSSIBLE AND STABILIZED WITH EITHER STONE SUBBASE OR PERMANENT SEED AND MULCH.
8. INSTALL ANY REMAINING STONE SUBBASE AND BEGIN PAVING.

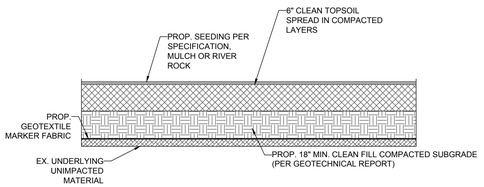
   UPON STABILIZATION OF THE CONTRIBUTING DRAINAGE AREA WITH ESTABLISHED VEGETATION AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, INSTALL LANDSCAPING ON THE REST OF THE SITE PER THE APPROVED LANDSCAPING PLAN.
9. UPON STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

SEEDING SPECIFICATIONS

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING , CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

PERENNIAL RYEGRASS	½ LB/1,000 S.F.
KENTUCKY BLUEGRASS	1 LB/1,000 S.F.
RED FESCUE	1 ½ LBS/1,000 S.F.
SPREADING FESCUE	1 ½ LBS/1,000 S.F.
FERTILIZER (20:10:10)	14 LBS/1,000 S.F.
MULCH	90 LBS/1,000 S.F.

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.



LANDSCAPE TYPICAL SECTION (LAWN AREA)

NOT TO SCALE

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/21

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
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PROJECT No.:	MD16206642
DRAWN BY:	RMS
CHECKED BY:	MJG
DATE:	4/15/2021
CAD I.D.:	RDWP-0

PROJECT:

MDE PLAN

FOR

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HUMPHREY'S IMPOUNDMENT
SHIPYARD ROAD AT TRADEPOINT AVENUE
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M.J. GESELL
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MARYLAND LICENSE No. 44097

SHEET TITLE:

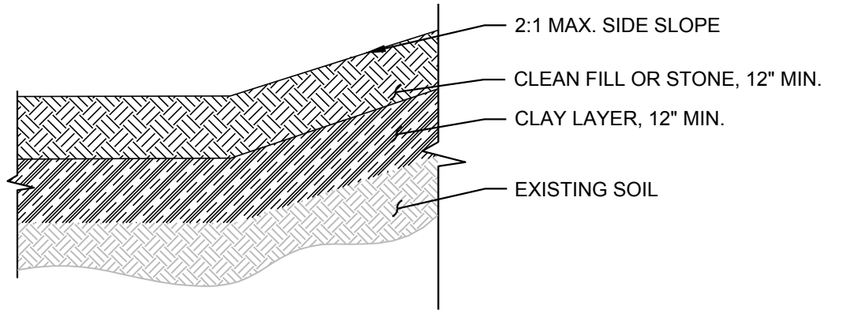
SECTIONS AND DETAILS

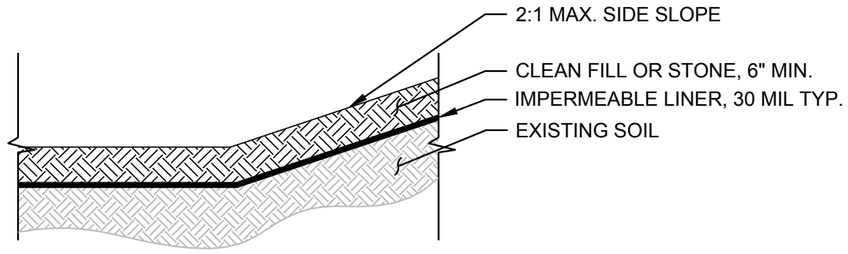
SHEET NUMBER:

C-902

ORG. DATE - 4/15/2021

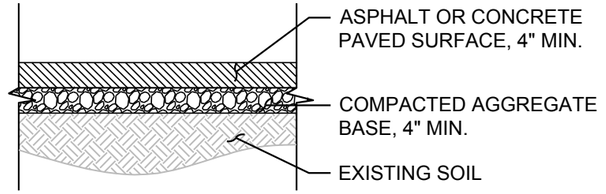
APPENDIX E





TYPICAL POND SECTIONS
NOT TO SCALE

TYPICAL LANDSCAPE SECTION
NOT TO SCALE



TYPICAL PAVING SECTION
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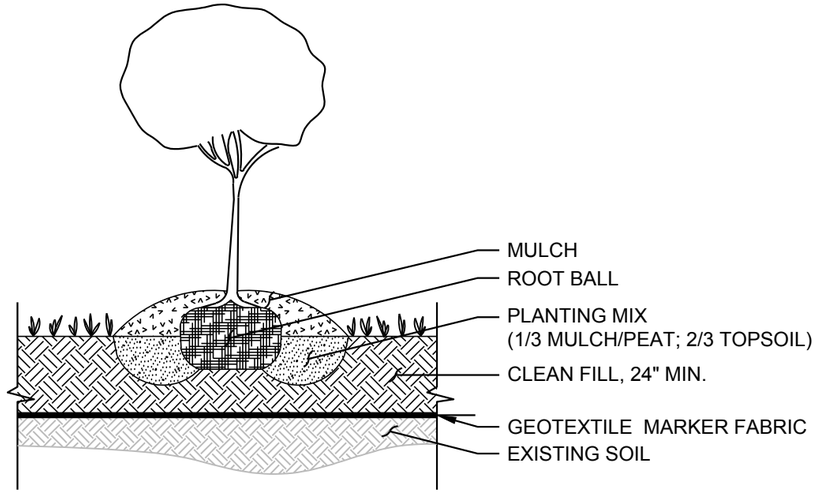


TYPICAL PLANTING SECTION
NOT TO SCALE

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

THE GEOTEXTILE MARKER FABRIC SHALL BE A NONWOVEN PERVIOUS SHEET OF POLYPROPYLENE MATERIAL. ADD STABILIZERS AND/OR INHIBITORS TO THE BASE MATERIAL, AS NEEDED, TO MAKE THE FILAMENTS RESISTANT TO DETERIORATION BY ULTRAVIOLET LIGHT, OXIDATION AND HEAT EXPOSURE. REGRIND MATERIAL, WHICH CONSISTS OF EDGE TRIMMINGS AND OTHER SCRAPS THAT HAVE NEVER REACHED THE CONSUMER, MAY BE USED TO PRODUCE THE GEOTEXTILE. POST-CONSUMER RECYCLED MATERIAL MAY BE USED. GEOTEXTILE SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. GEOTEXTILES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 1. WHERE APPLICABLE, TABLE 1 PROPERTY VALUES REPRESENT THE MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES

TABLE 1

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	135 (5500)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

ARM Group LLC
Engineers and Scientists

designed RJC
checked TNP
drawn RJC
scale N/A
date 9/8/2020
project no. 160443M

drawing title: MINIMUM CAPPING SECTION DETAILS

project title: SPARROWS POINT TRADEPOINT ATLANTIC

SPARROWS POINT
BALT. COUNTY, MARYLAND

Sheet 1

APPENDIX F

GENERAL NOTES:

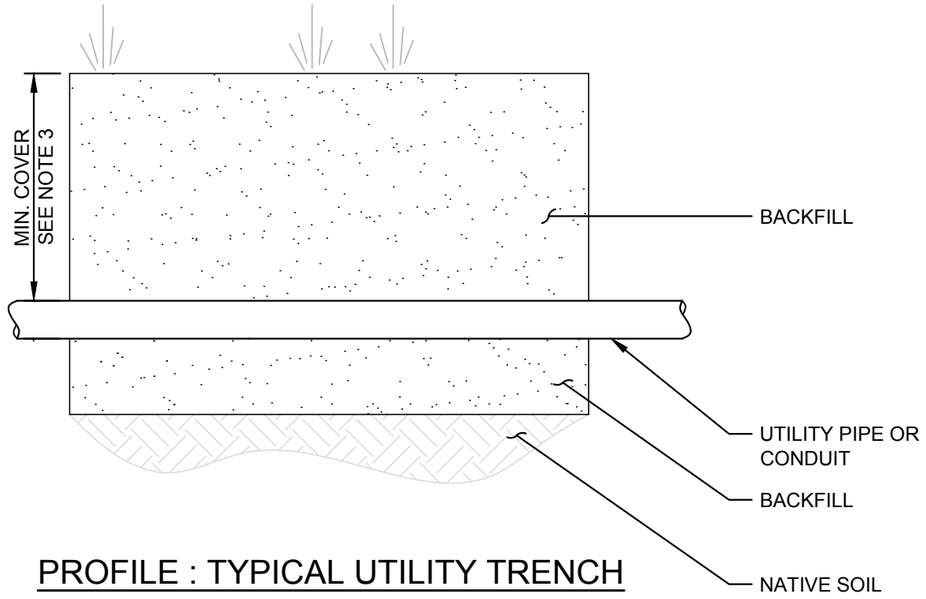
1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

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

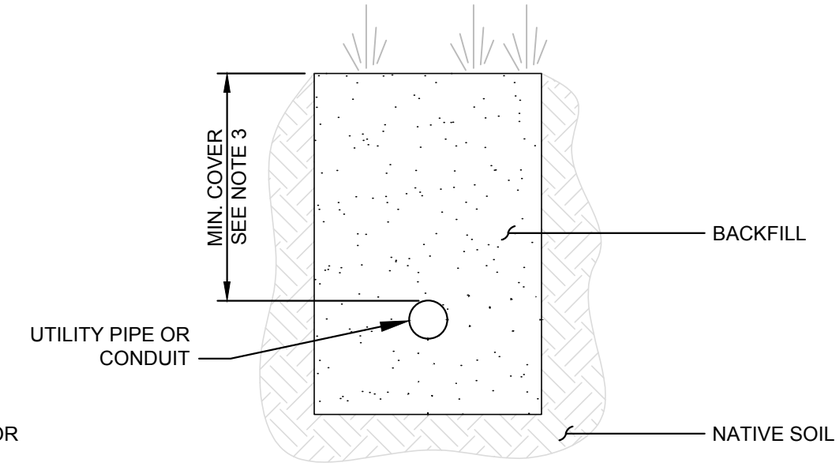
3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

4. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

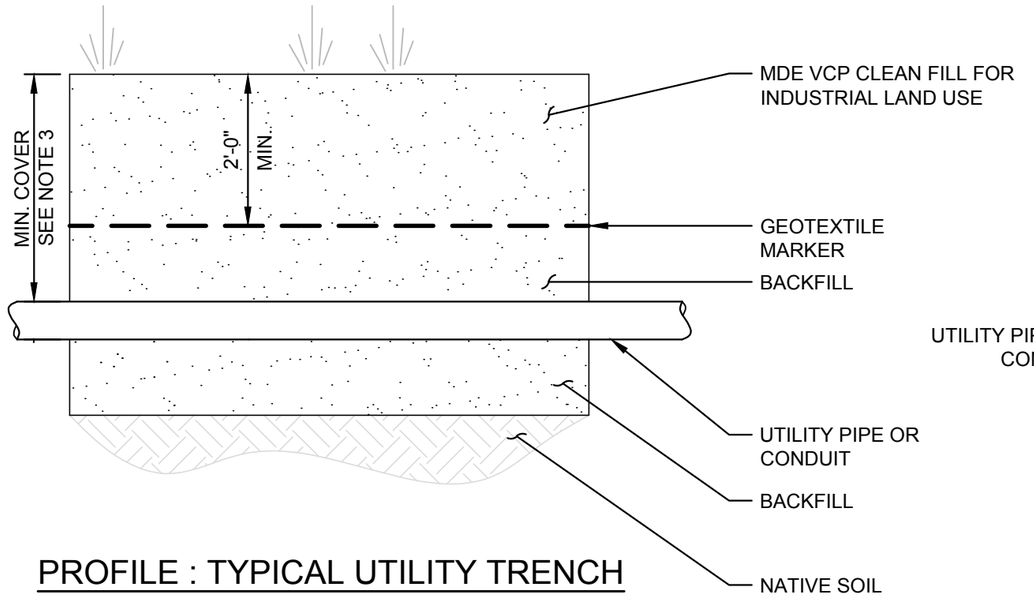
5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS WHICH GO THROUGH AREAS WHICH DO NOT REQUIRE CAPPING OR ARE DESIGNATED TO RECEIVED A PAVED CAP WILL BE BACKFILLED WITH MATERIALS APPROVED BY MDE FOR THIS USE.



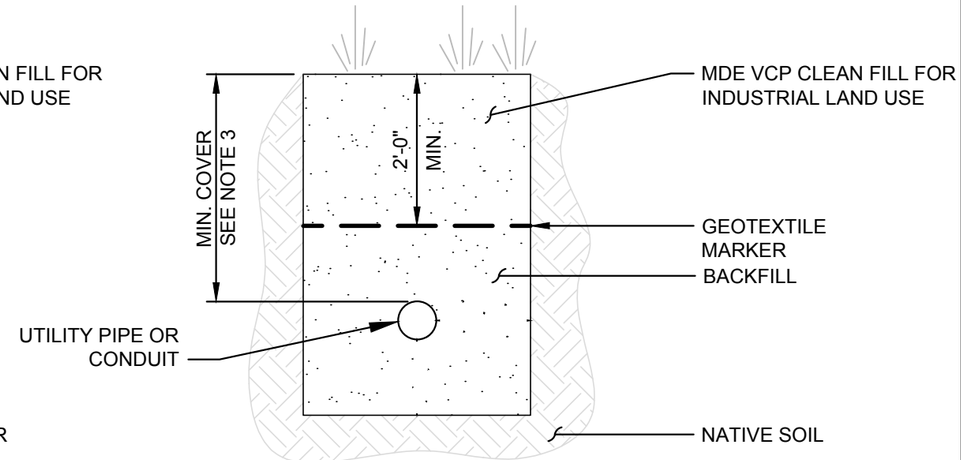
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

ARM Group LLC
Engineers and Scientists

TYPICAL UTILITY
CROSS SECTIONS
Sparrows Point Site
Tradepoint Atlantic

September 2020
1/2" = 1'-0"
160443M

Figure
1

APPENDIX G

Utility Excavation NAPL Contingency Plan

Revision 4 – June 19, 2017

Introduction:

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

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

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

Objectives:

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

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

Identification of Oil & Grease and Petroleum Contaminated Soil:

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

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

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

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

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

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized. Excavated material that is visibly stained or that exhibits a sustained PID reading of greater than 10 ppm will be segregated and containerized or placed in a stockpile on polyethylene or impervious surface until the material can be analyzed using the PetroFLAG™ test kit to characterize the material for appropriate disposal. If a PetroFLAG™ test kit is not available to the contractor, or if the contractor prefers to use fixed laboratory analysis, samples may be characterized via submittal to a laboratory for TPH/Oil & Grease analysis. However, any excavated material containing NAPL (i.e., containing free oil) cannot be characterized for waste disposal using the PetroFLAG™ test kit and must instead be characterized via fixed laboratory analysis, as described in the final paragraph of this section. In addition, any hydrocarbon contaminated soil discovered during construction activities that was not previously

characterized must also be analyzed for PCBs prior to removal and transport to an appropriate disposal facility. If excavated and stockpiled, such materials will be covered with a plastic tarp so that the entire stockpile is encapsulated, and anchored to prevent the elements from affecting the integrity of the containment. The MDE will be notified if such materials are encountered during utility work.

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

Any recovered NAPL will be collected for off-site disposal. As required by the appropriate and MDE approved facility, samples impacted by NAPL (i.e., containing free oil) will be collected for profiling/waste characterization and submitted to a fixed laboratory, as mentioned above, for the following analyses: metals, VOCs, TPH-DRO/GRO, and/or additional analysis required by the selected disposal facility. Upon receipt of any additional characterization analytical results, the MDE will be notified of the proposed disposal facility. Non-impacted material with no evidence of NAPL (i.e. soils that may contain measureable concentrations of TPH/Oil & Grease but below percentage levels) may be placed on the Site in areas to be paved or capped as long as all other requirements specified in the Response and Development Work Plan (or similar governing document) are met.

Initial Reporting:

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

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

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of Oil & Grease or petroleum contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. All trench backfill will meet the MDE definition of clean fill, or otherwise be approved by the MDE. Pipe bedding will be installed to minimize the potential for accumulation of water and concentrated infiltration. This can be achieved by using a relatively small amount of low-permeability pipe bedding; open-graded stone will be avoided or only used in thicknesses of 6 inches or less. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs will be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

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

Attachment 1 - PetroFLAG™ Procedure

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

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

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

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

References:

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

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

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

GENERAL NOTES:

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

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

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

4. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

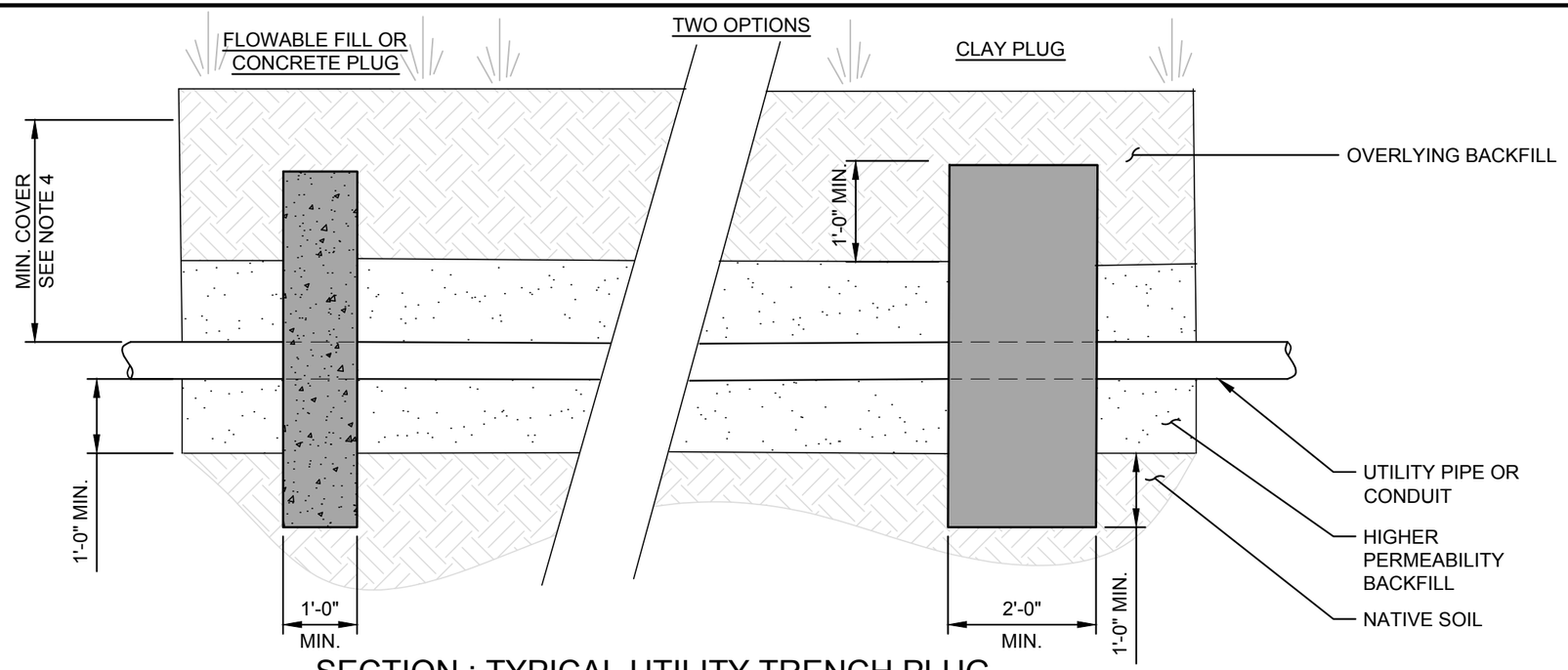
5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

6. FOR ADDITIONAL REQUIREMENTS, INCLUDING THE USE OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE AND INSTALLATION OF GEOTEXTILE MARKER FABRIC, REFER TO NOTE 5 ON THE TYPICAL UTILITY CROSS SECTIONS.

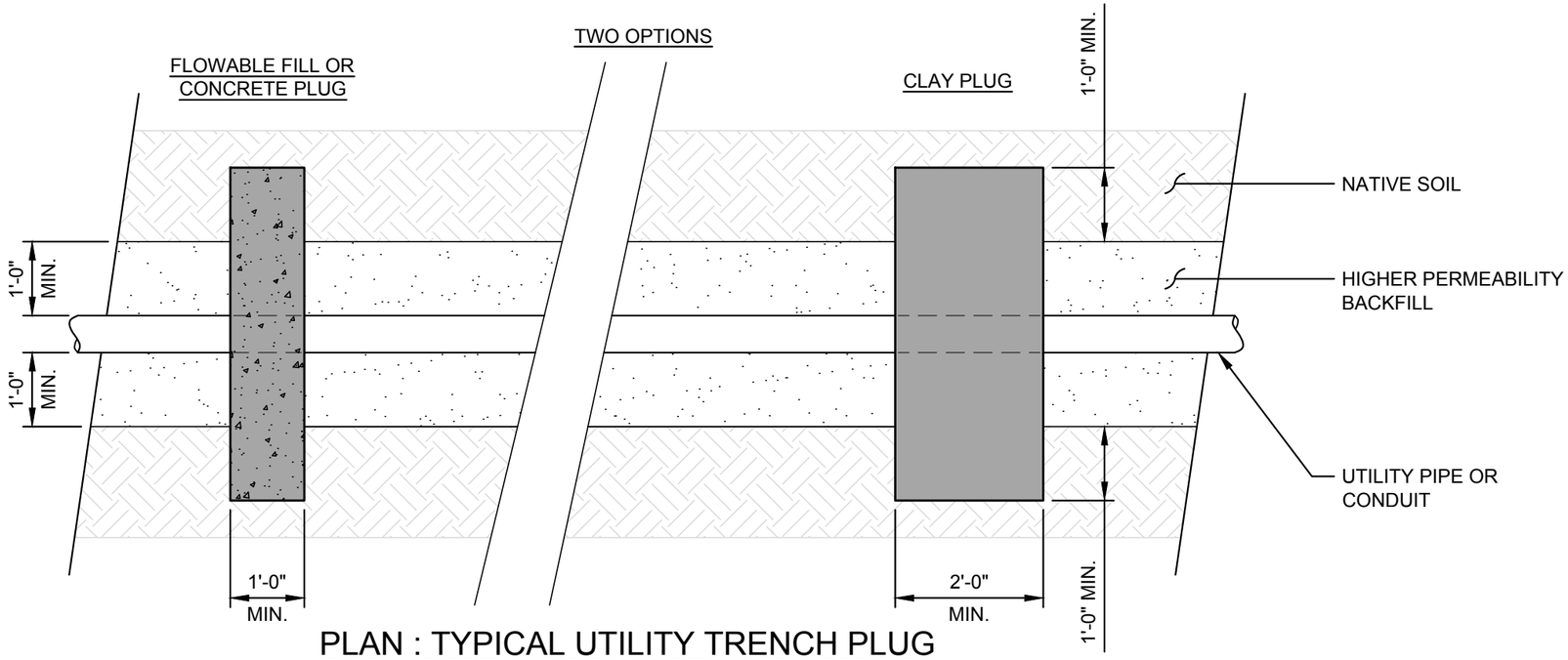
7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED WITH TRENCH PLUGS ALONG THE ALIGNMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN AND THE FOLLOWING NOTES:

   A.) UTILITY TRENCH PLUGS SHALL BE INSTALLED AT 100-FOOT (MAX.) INTERVALS THROUGH ALL AREAS OF NAPL CONTAMINATION.

   B.) UTILITY TRENCH PLUGS SHALL EXTEND A MINIMUM OF 1-FOOT IN ALL DIRECTIONS BEYOND ANY HIGHER PERMEABILITY BACKFILL MATERIALS (I.E., MATERIALS EXCEEDING THE PERMEABILITY OF THE EXISTING SUBGRADE).



SECTION : TYPICAL UTILITY TRENCH PLUG



PLAN : TYPICAL UTILITY TRENCH PLUG

ARM Group LLC
Engineers and Scientists

UTILITY TRENCH PLUG
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
Not to Scale	1
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