ARM Group LLC

Engineers and Scientists

April 24, 2023

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

Re: RADWP Addendum: SLRA
Area B: Sub-Parcel B4-2 – Revision 4
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic (TPA), is submitting this Response and Development Work Plan (RADWP) Addendum to assess future Composite Worker and Construction Worker risks within southern expansion of Sub-Parcel B4-2 (the Site), which is part of Area B of the TPA property located in Sparrows Point, Maryland. The original scope of development work was presented to the Maryland Department of the Environment (MDE) and United States Environmental Protection Agency (USEPA) (herein after referred to as the Agencies) in the Sub-Parcel B4-2 RADWP (Revision 0 dated September 15, 2020). The scope of development was subsequently reduced through submission of the revised RADWP (Revision 1 dated September 22, 2020) to include only the northern portion of the Sub-Parcel. RADWP Addendum (Revision 2) modified the previous RADWP Addendum (Revision 1 dated November 11, 2021) and proposes completion of the previously proposed southern expansion of Sub-Parcel B4-2 and presents the results of a Screening Level Risk Assessment (SLRA) that has been completed to assess Composite Worker and Construction Worker risks for this area. RADWP Addendum (Revision 3) was updated based on Agency comments received via email on March 27, 2023. This RADWP Addendum (Revision 4) has been updated based on Agency comments received via email on April 17, 2023.

As shown on **Figure 1**, the southern expansion of Sub-Parcel B4-2 consists of approximately 24.2 acres located primarily within Parcel B18 but extending slightly into Parcel B4 and Parcel B5 of the approximately 3,100-acre former steel plant property. The southern expansion of Sub-Parcel B4-2 is slated for development and use as an Automotive Roll-On, Roll-Off (RORO) Distribution Center. Outside of the main development area, an external construction area (not intended for permanent use or occupancy) with a total area of 3.96 acres within the Limit of Disturbance (LOD) will be utilized to accommodate construction of an access road. Development plans for the expansion are provided as **Attachment 1** and shown on **Figure 2**. The revised RADWP already specified a remedy consisting of in-place containment with surface engineering controls (i.e., capping) to be protective of Composite Workers in the northern portion of Sub-Parcel B4-2. The remedy details are specified in the Sub-Parcel B4-2 RADWP (Revision 1 dated September 22, 2020). **Figure 3** presents the locations of relevant soil borings completed during the original Parcel B4, Parcel B5, and Parcel B18 Phase II Investigations. Organic and inorganic soil project action limit (PAL) exceedances within the Sub-Parcel B4-2 southern expansion are shown on **Figure 4** and **Figure 5**, respectively. **Figure GW1** presents the locations of relevant groundwater piezometers and monitoring wells. Groundwater conditions were investigated as reported in the Area B Groundwater and Parcel B18 Phase II Investigation Reports. During the Phase II Investigation, the depth to groundwater ranged from 7 to 11 feet bgs. Groundwater PAL exceedances are also shown in **Figure GW1**.

Note that, as shown in **Figure 2**, the southern expansion of Sub-Parcel B4-2 contains existing railway lines. The existing railway lines will be removed and replaced. These replacement lines will be capped in accordance with previously approved specifications. The proposed cap sections for the two types of proposed replacement railways, 1) track section for paved area, and 2) standard track section, are provided as **Attachment 2**. The track sections in paved areas will include a minimum of 13 inches of ballast material and a minimum of 7 inches of overlying pavement surface. The standard track section will not include a paved barrier between the surface and the ballast material; therefore, the ballast and sub-ballast material (each with a minimum thickness of 6 inches) will consist of MDE-approved clean fill materials.

As part of the proposed work, stormwater lines will be installed throughout the Site, and connect in three locations to the existing 87-inch by 136-inch storm drain running along the northern portion of the Site (refer to C-402 in **Attachment 1**). According to Figure B-2 of the Stormwater Pollution Prevention Plan (SWPPP) Revision 8 dated April 30, 2020, stormwater from the majority of the sub-parcel is directed to the west and discharged through National Pollution Discharge Elimination System (NPDES) Outfalls 012.

SLRA ANALYSIS PROCESS

A human health SLRA has been completed for the Composite Worker and Construction Worker scenarios based on the analytical data obtained from the characterization of surface and subsurface soils in the Sub-Parcel B4-2 southern expansion.

The SLRA included the following evaluation process:

> **Identification of Exposure Units (EUs):** The southern expansion Composite Worker SLRA was evaluated using a site-wide EU (designated as EU1) with an area of 24.2 acres. The Construction Worker SLRA was evaluated using a similar EU (designated as EU1-EXP to recognize the surrounding temporary construction zones) with an area of 28.2 acres.

Note that, during Phase II Investigation sampling, stockpiled materials had been temporarily placed on Parcel B18 in support of ongoing development elsewhere on the Tradepoint Atlantic property. There were two borings (B18-019-SB and B18-020-SB) that were completed in areas with clean soil stockpiles above the ground surface. At each of these locations, the Geoprobe® advanced through the soil stockpile and the field personnel identified the interval of the stockpiled material on the boring log. The 0 to 1 foot interval at each of these locations was collected at the true ground surface (below the stockpiled material). For example, sample B18-020-SB-11 is considered to be the shallow sample at this location because it was collected from beneath 10 feet of stockpile materials.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, compounds that were present at concentrations at or above the USEPA 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 1** to identify compounds above the relevant screening levels.

Exposure Point Concentrations (EPCs): The COPC soil datasets for the site-wide EU were divided into surface (0 to 1 foot), subsurface (>1 foot), 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 5.1) 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, and any results above 10,000 mg/kg would be delineated for possible excavation and removal (not applicable at this Site). For PCBs, all results above 50 mg/kg would be delineated for excavation and removal (not applicable at this Site).

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 exposure frequency for

EU1-EXP 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 10 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the TPA property (and is not proposed to be utilized). In the event that any future 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. Groundwater elevation is approximately 6 feet above mean sea level (AMSL), and the deepest utilities are proposed to extend to -3 feet AMSL, so groundwater is expected to be encountered during the proposed development activities. If groundwater is encountered, dewatering will be implemented as described in the Water Management section below.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for EU1 and EU1-EXP were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were below 800 mg/kg, the Site 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 2,518 mg/kg, which represents the concentrations such that there would be no more than a 5% probability that fetuses exposed to lead would exceed a blood lead of 10 µg/L. If the arithmetic mean concentrations were below 2,518 mg/kg, the Site was identified as requiring no further action for lead. The average and maximum lead concentrations are presented for surface, subsurface, and pooled soils in **Table 2**. None of the arithmetic mean lead concentrations exceeded the initial screening threshold of 800 mg/kg, indicating no further action is needed with respect to lead.

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual soil results were compared to the TPH/Oil & Grease PAL set to a HQ of 1 (6,200 mg/kg). As shown on **Figure 6**, two soil boring locations (B18-047-SB and B18-050-SB) within, or adjacent to, the proposed development boundary exceeded the TPH/Oil & Grease PAL. Five locations (B18-017-SB, B18-034-SB, B18-047-SB, B18-050-SB, and B18-059-SB) showed indications of NAPL in the soil cores. The soil borings with physical evidence of NAPL are plotted with respect to the proposed development plan in **Figure 6**. Detailed TPH/Oil & Grease and NAPL results can be found in the Parcel B4, Parcel B5, and Parcel B18 Phase II Investigation Reports. Contingency measures to address the potential presence of NAPL that could be encountered during construction are addressed in the main RADWP.

Risk Characterization Approach: 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 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 of the COPC. 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.

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.

SLRA RESULTS AND RISK CHARACTERIZATION

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel B4-2 to evaluate potential exposure scenarios. Each of these potential exposure scenarios is relevant for both the Composite Worker and Construction Worker.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled depths) for both EU1 and EU1-EXP. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with 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 3**. These EPCs were used for both the Composite Worker and Construction Worker assessments.

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 based on 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 2**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead value of 800 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker scenario for EU1 are shown in **Table 4** (surface), **Table 5** (subsurface), and **Table 6** (pooled soils). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	EU1 (24.2 acres)	Surface Soil	none	3E-6
		Subsurface Soil	none	1E-5
		Pooled Soil	none	4E-6

Based on the risk ratios for Sub-Parcel B4-2 southern expansion, capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. None of the cancer risk values exceeded 1E-5 and none of the non-carcinogenic HI values exceeded 1. However, slag aggregate will be used as the primary fill material and pavement subbase at the Site. Therefore, environmental capping will be required to be protective of future Composite Workers. Details regarding the implementation and maintenance of the capping remedy are included in the main RADWP.

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 EU1-EXP 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 (10 days) are shown in **Table 7** (surface), **Table 8** (subsurface), and **Table 9** (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 **Attachment 3**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	EU1-EXP (28.2 acres) (10 exposure days)	Surface Soil	none	4E-8
		Subsurface Soil	none	5E-7
		Pooled Soil	none	2E-7

Using the selected exposure duration of 10 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 10 days were to be exceeded for an individual worker.

In the event that this exposure day limit would be exceeded, additional site-specific health and safety requirements would be warranted to be protective of Construction Workers during intrusive work. While the SLRA indicated no unacceptable risks to the Construction Worker for an exposure duration of up to 10 days, upgraded Personal Protective Equipment (PPE) beyond standard Level D protection will be used for the entire scope of intrusive work covered by this RADWP Addendum as a protective measure. The modified Level D PPE requirements which will be applied during this project, as described in the Sub-Parcel B4-2 RADWP (Revision 1 dated September 22, 2020). As specified in the RADWP, institutional controls will be required to be established for the protection of future Construction Workers in the event of any future long-term development which could include intrusive activities.

WATER MANAGEMENT

Dewatering may be necessary to facilitate the placement and compaction of structural fill as well as during ground intrusive work such as the installation of underground utilities or within excavations/trenches. 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 managed via one of the following options:

- Transported to be treated at the Humphrey Creek Wastewater Treatment Plant (HCWWTP), following any pretreatment necessary and discharged in accordance with NPDES Permit No. 90-DP-0064; Special Conditions; A.1, A.4, or A.6 (whichever is currently in effect); Effluent Limitations and Monitoring Requirements;
- Discharged to the Baltimore County sanitary sewer system;

- Discharged locally in accordance with the requirements of Special Condition AF, Section 2, Mobile Dewatering Collection and Treatment Unit of NPDES Permit No. 90-DP-0064; or
- Off-site disposal.

The Agencies will be notified which option is selected prior to the generation of groundwater. If water is sent to the HCWWTP via the Tin Mill Canal, trucking, or direct discharge to a drainage system that flows to the HCWWTP, an applicable outfall dewatering fluid sample will be evaluated pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol. Water discharged to the TMC will be pumped through a filter bag, weir frac tank, or equivalent to remove suspended solids prior to discharge.

The EP will inspect water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (e.g., sheen, odor, discoloration, presence of product), the water may be sampled to confirm conditions. If the results of the analyses are above the threshold levels listed below, groundwater at the Site will be further evaluated to confirm acceptable treatment by the HCWWTP or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water could 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 water testing and the selected disposal option will be reported to the Agencies in the Development Completion Report. Associated permits or permit modifications related to dewatering will also be included in the Development Completion Report. The most recent sample concentrations for each groundwater location shown in **Figure GW1** were compared to the above thresholds. None of the concentrations exceeded the thresholds.

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

The proposed implementation schedule is shown below:

Task	Proposed Completion Date
Anticipated RADWP Addendum Approval	April 2023
Development:	
Installation of Erosion and Sediment Controls	April 2023
Site Preparation	April 2023
Slag (or Alternative Fill) Delivery and Placement	April 2023
Site Grading	April 2023
Utility Installations	May 2023
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	October 2023
Request for NFA from the MDE	January 2024

If you have questions regarding any information covered in this document, please feel free to contact Peter Haid at Tradepoint Atlantic: 443-649-5055.

Respectfully Submitted,
ARM Group LLC

Joshua M. Barna, G.I.T.
Project Geologist

Kaye Guille, P.E., PMP
Senior Engineer

FIGURES

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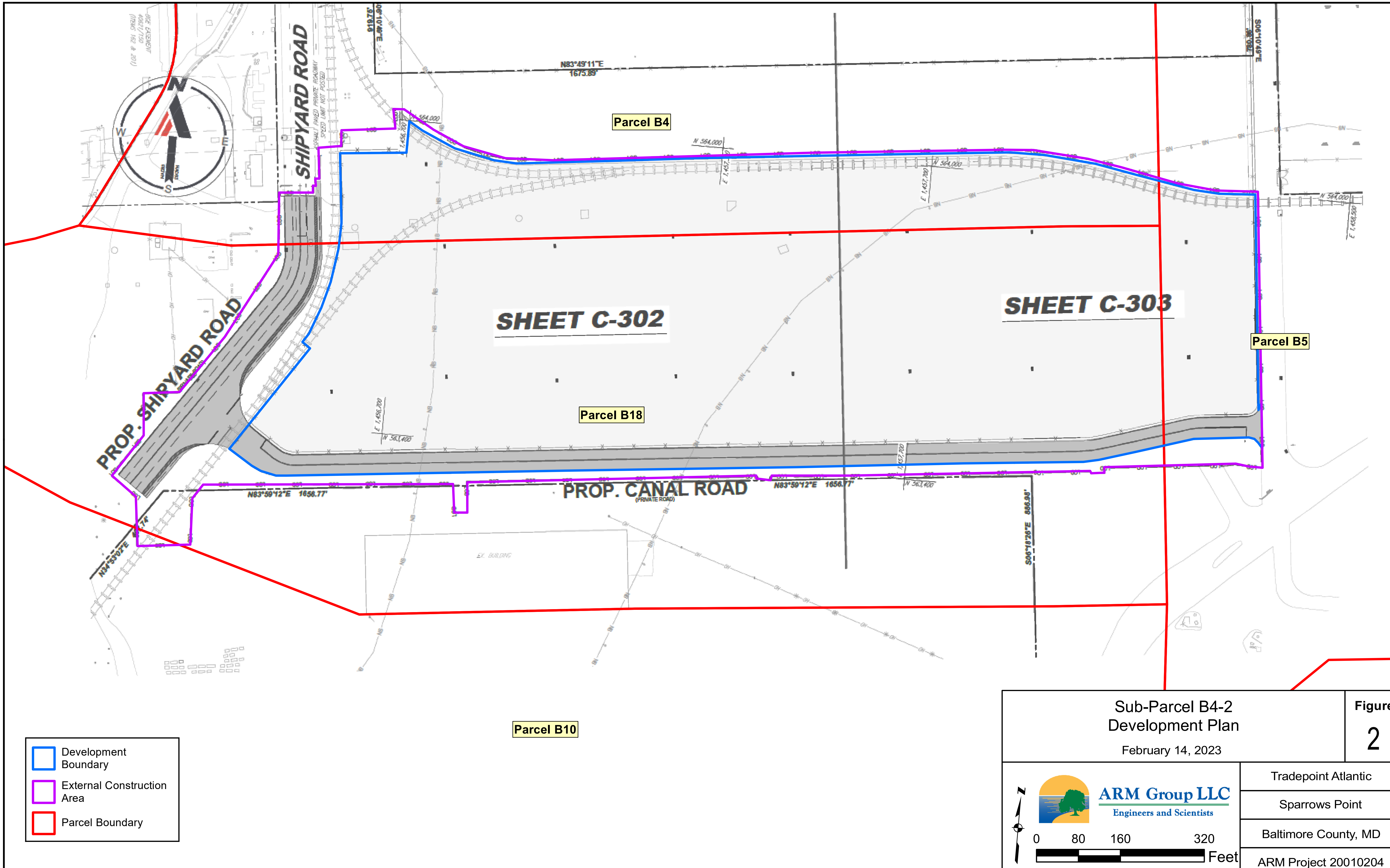

Sub-Parcel B4-2
Development Plan

February 14, 2023

Figure

2

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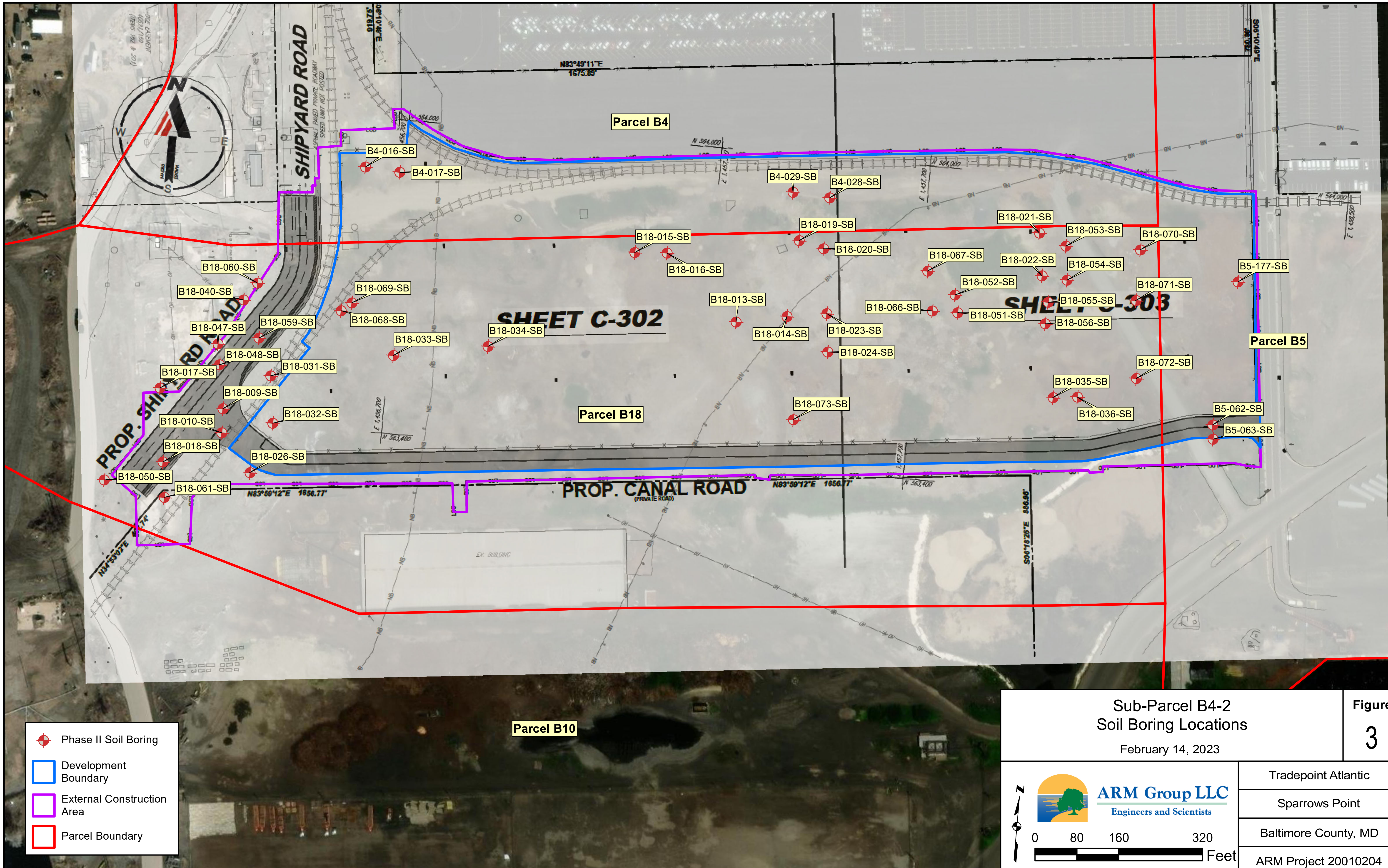
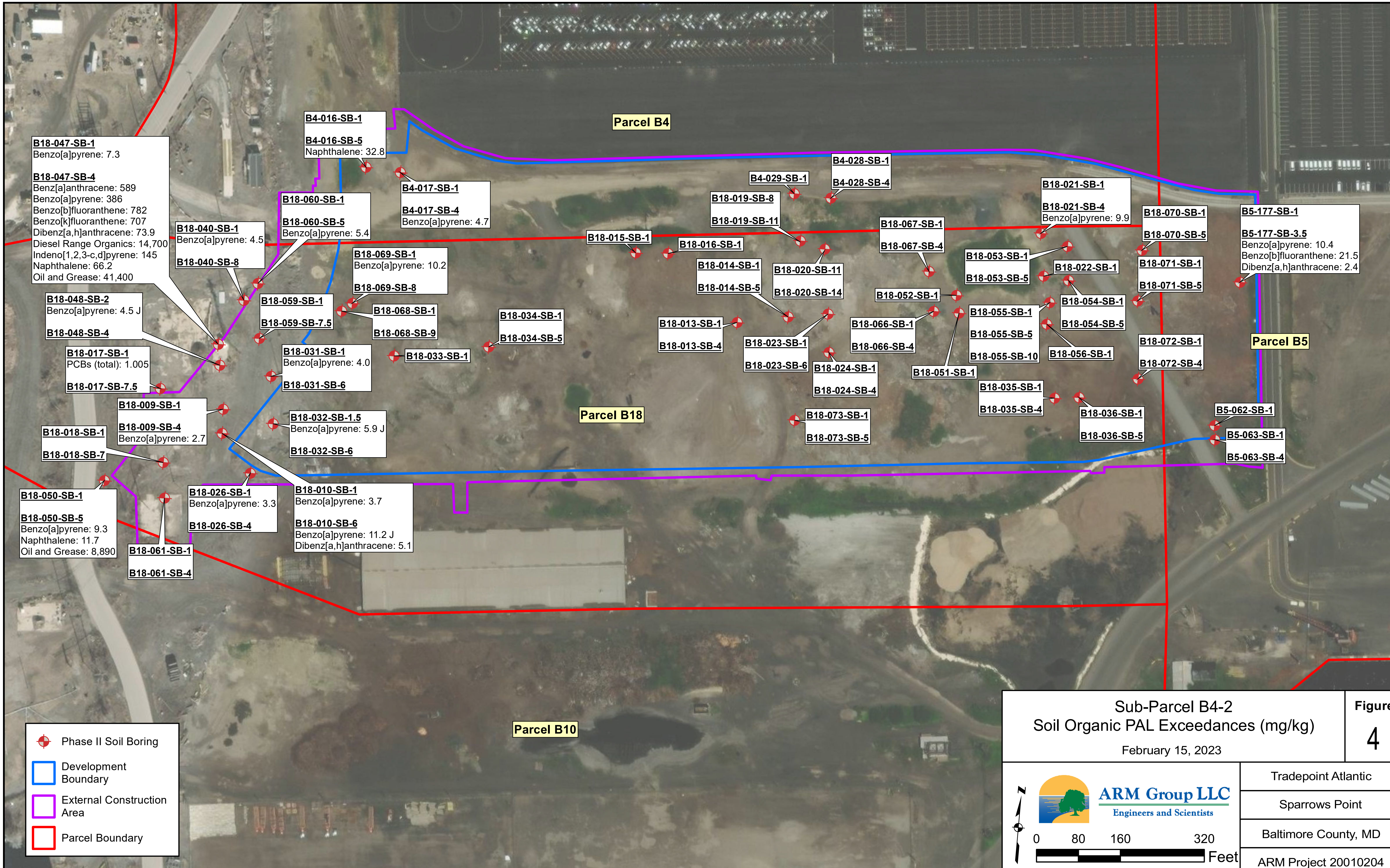
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204



Sub-Parcel B4-2
Soil Boring Locations
February 14, 2023

Figure 3

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204



Sub-Parcel B4-2
Soil Organic PAL Exceedances (mg/kg)
February 15, 2023

Figure 4

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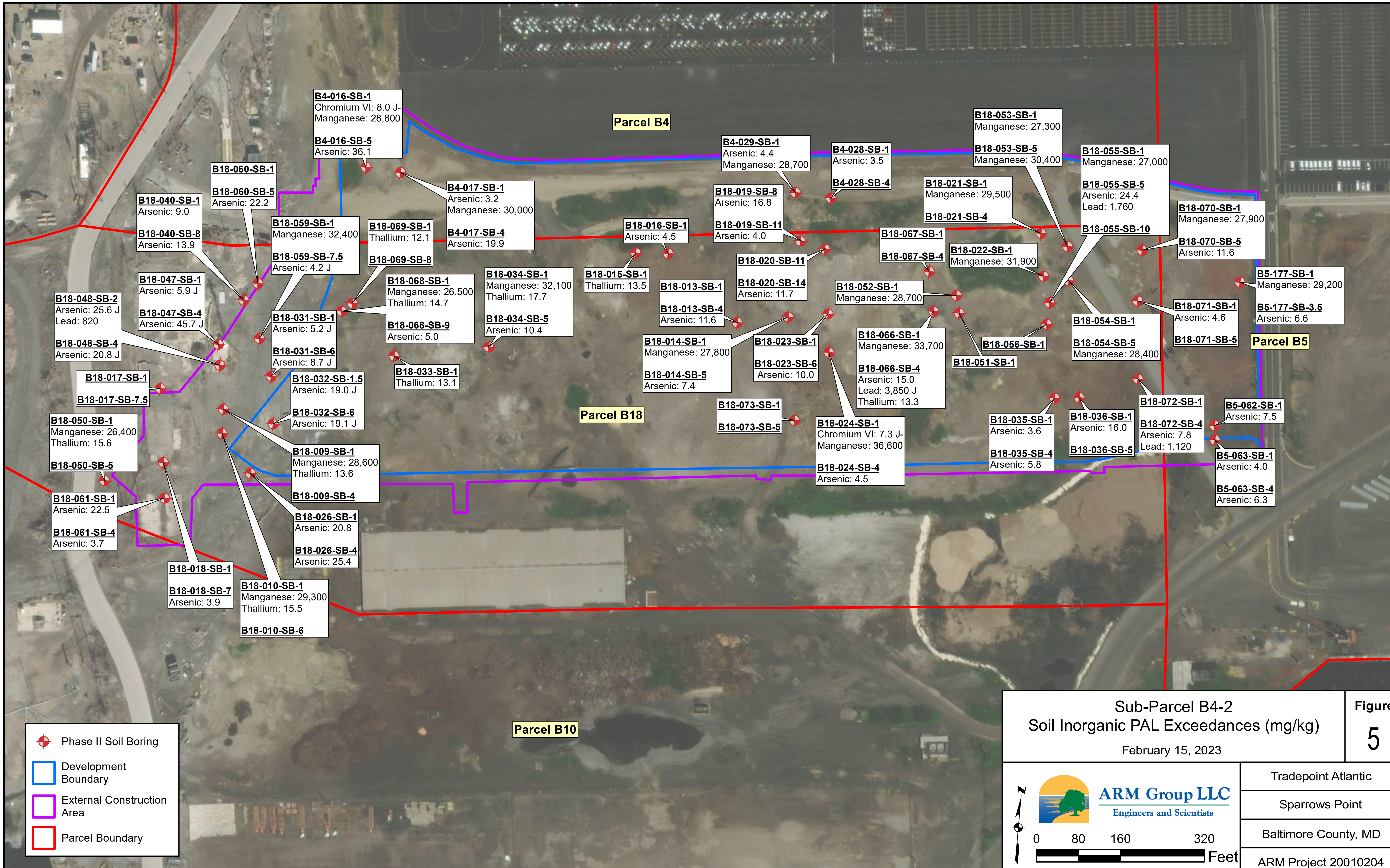
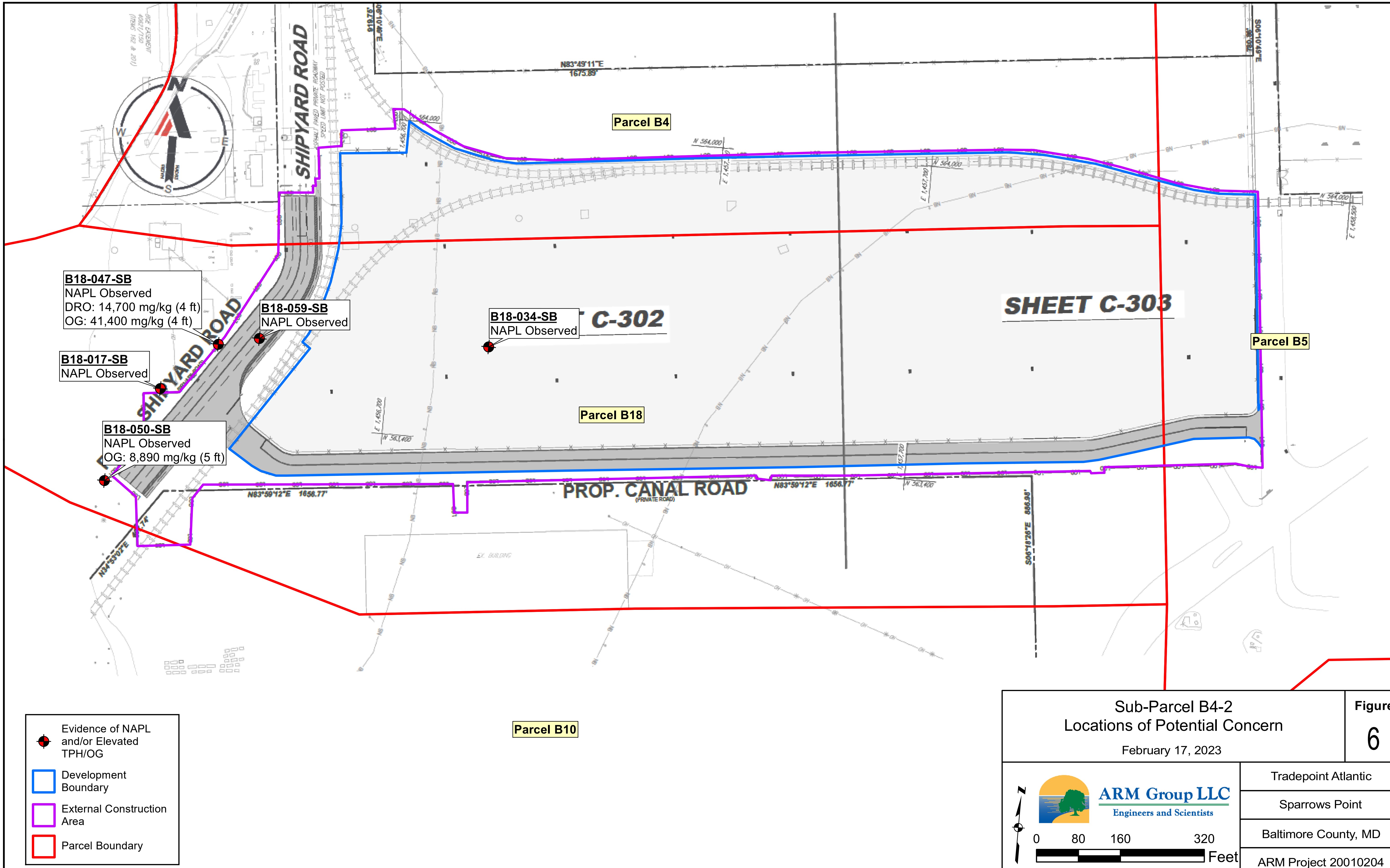
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204



Sub-Parcel B4-2
Soil Inorganic PAL Exceedances (mg/kg)
February 15, 2023

Figure
5

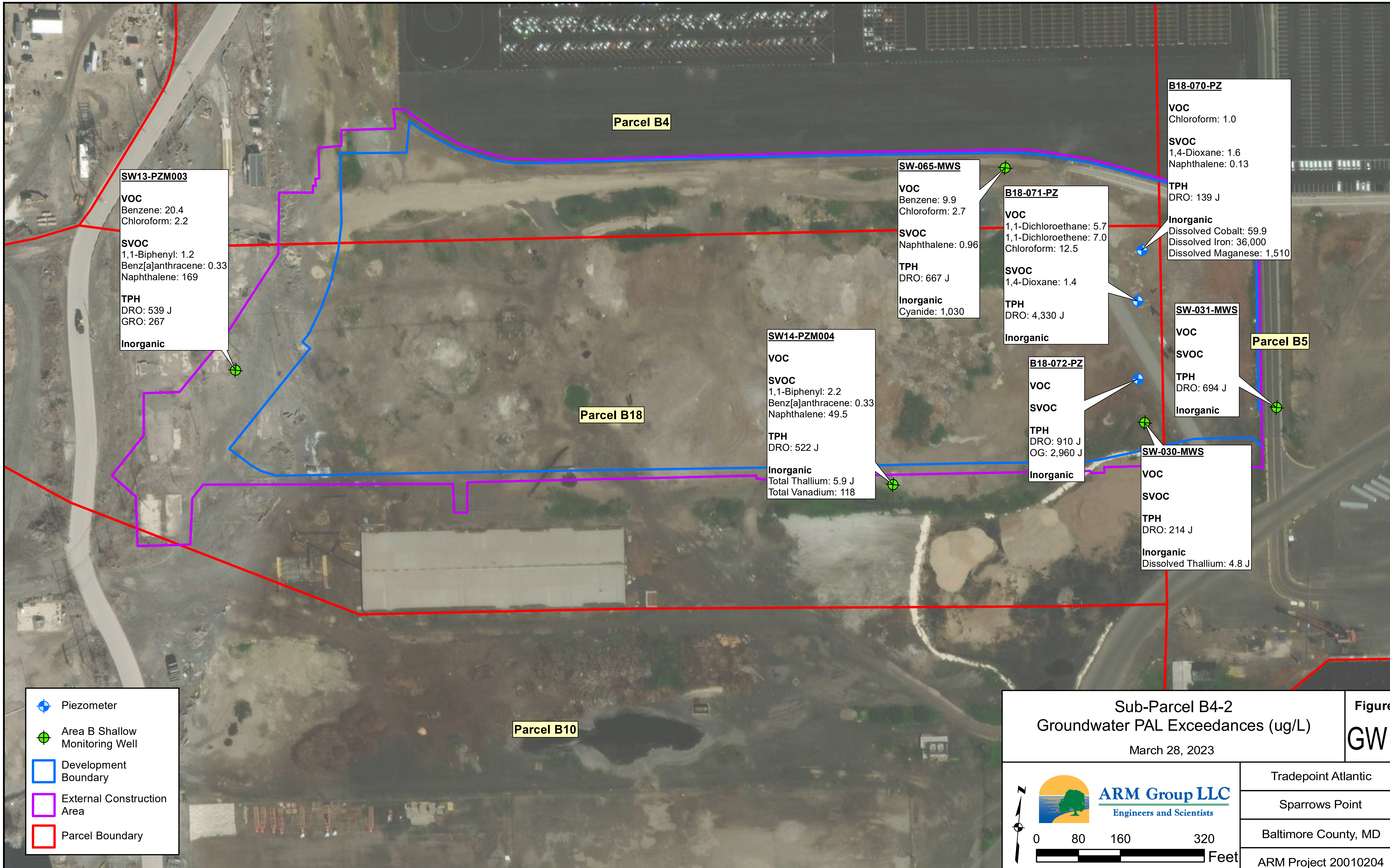
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204



Sub-Parcel B4-2
Locations of Potential Concern
February 17, 2023

Figure 6

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204


Parcel B4
Parcel B18
Parcel B5
Parcel B10
SW13-PZM003
VOC
Benzene: 20.4
Chloroform: 2.2
SVOC
1,1-Biphenyl: 1.2
Benz[a]anthracene: 0.33
Naphthalene: 169
TPH
DRO: 539 J
GRO: 267
Inorganic
SW-065-MWS
VOC
Benzene: 9.9
Chloroform: 2.7
SVOC
Naphthalene: 0.96
TPH
DRO: 667 J
Inorganic
Cyanide: 1,030
B18-071-PZ
VOC
1,1-Dichloroethane: 5.7
1,1-Dichloroethene: 7.0
Chloroform: 12.5
SVOC
1,4-Dioxane: 1.4
TPH
DRO: 4,330 J
Inorganic
B18-070-PZ
VOC
Chloroform: 1.0
SVOC
1,4-Dioxane: 1.6
Naphthalene: 0.13
TPH
DRO: 139 J
Inorganic
Dissolved Cobalt: 59.9
Dissolved Iron: 36,000
Dissolved Maganese: 1,510
SW-031-MWS
VOC
SVOC
TPH
DRO: 694 J
Inorganic
SW14-PZM004
VOC
SVOC
1,1-Biphenyl: 2.2
Benz[a]anthracene: 0.33
Naphthalene: 49.5
TPH
DRO: 522 J
Inorganic
Total Thallium: 5.9 J
Total Vanadium: 118
B18-072-PZ
VOC
SVOC
TPH
DRO: 910 J
OG: 2,960 J
Inorganic
SW-030-MWS
VOC
SVOC
TPH
DRO: 214 J
Inorganic
Dissolved Thallium: 4.8 J
Piezometer
Area B Shallow Monitoring Well
Development Boundary
External Construction Area
Parcel Boundary
N
0
80
160
320
Feet
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Sub-Parcel B4-2
Groundwater PAL Exceedances (ug/L)
March 28, 2023
Figure
GW1
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010204

TABLES

Table 1 - Sub-Parcel B4-2 Expansion
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	B18-050-SB-5	0.82		0.015	1.35E-01	89	35.96	410	20	no
1,2,4,5-Tetrachlorobenzene	95-94-3	B18-019-SB-8	0.11		0.11	1.10E-01	89	1.12		35	no
2,4-Dichlorophenol	120-83-2	B18-032-SB-1.5	0.043	J	0.043	4.30E-02	60	1.67		250	no
2,4-Dimethylphenol	105-67-9	B18-047-SB-4	0.92		0.024	1.52E-01	62	14.52		1,600	no
2,4-Dinitrophenol	51-28-5	B18-061-SB-1	0.076	J	0.076	7.60E-02	60	1.67		160	no
2,4-Dinitrotoluene	121-14-2	B18-013-SB-1	0.081		0.081	8.10E-02	89	1.12	7.4	160	no
2,6-Dinitrotoluene	606-20-2	B18-061-SB-1	0.16		0.16	1.60E-01	89	1.12	1.5	25	no
2-Butanone (MEK)	78-93-3	B4-029-SB-1	0.025		0.0031	9.64E-03	36	22.22		19,000	no
2-Chloronaphthalene	91-58-7	B18-019-SB-8	0.14		0.089	1.15E-01	89	2.25		6,000	no
2-Chlorophenol	95-57-8	B18-047-SB-4	0.93		0.93	9.30E-01	60	1.67		580	no
2-Hexanone	591-78-6	B4-029-SB-1	0.0022	J	0.0022	2.20E-03	36	2.78		130	no
2-Methylnaphthalene	91-57-6	B18-047-SB-4	22.9		0.0025	5.33E-01	89	88.76		300	no
2-Methylphenol	95-48-7	B18-047-SB-4	1		0.021	1.81E-01	61	13.11		4,100	no
2-Nitroaniline	88-74-4	B18-047-SB-4	0.13	J	0.13	1.30E-01	89	1.12		800	no
3,3'-Dichlorobenzidine	91-94-1	B18-072-SB-4	0.15		0.037	9.35E-02	89	2.25	5.1		no
4-Chloroaniline	106-47-8	B18-019-SB-8	0.024	J	0.024	2.40E-02	89	1.12	11	330	no
Acenaphthene	83-32-9	B18-047-SB-4	31.5		0.00048	5.53E-01	89	77.53		4500	no
Acenaphthylene	208-96-8	B18-047-SB-4	171		0.0006	2.64E+00	89	84.27			no
Acetone	67-64-1	B5-062-SB-1	0.14		0.0064	3.92E-02	36	36.11		67,000	no
Acetophenone	98-86-2	B5-177-SB-3.5	0.07	J	0.018	3.50E-02	89	17.98		12,000	no
Aluminum	7429-90-5	B18-067-SB-1	86,900		3,280	1.98E+04	89	100.00		110,000	no
Anthracene	120-12-7	B18-047-SB-4	280		0.00077	3.89E+00	89	94.38		23,000	no
Antimony	7440-36-0	B18-070-SB-5	2	J	1.1	1.55E+00	89	2.25		47	no
Aroclor 1248	12672-29-6	B18-010-SB-1	0.0934		0.0934	9.34E-02	49	2.04	0.95		no
Aroclor 1254	11097-69-1	B18-017-SB-1	0.715		0.0298	2.93E-01	49	10.20	0.97	1.5	no
Aroclor 1260	11096-82-5	B18-017-SB-1	0.29		0.0532	1.72E-01	49	4.08	0.99		no
Arsenic	7440-38-2	B18-047-SB-4	45.7	J	2	1.08E+01	90	57.78	3	48	YES (C)

Table 1 - Sub-Parcel B4-2 Expansion
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?
Barium	7440-39-3	B18-031-SB-6	1,310		21.9	2.29E+02	89	100.00		22,000	no
Benz[a]anthracene	56-55-3	B18-047-SB-4	589		0.00098	8.18E+00	89	95.51	21		YES (C)
Benzaldehyde	100-52-7	B18-032-SB-1.5	2.6		0.021	2.04E-01	78	25.64	820	12,000	no
Benzene	71-43-2	B18-047-SB-4	0.035		0.0014	1.02E-02	36	19.44	5.1	42	no
Benzo[a]pyrene	50-32-8	B18-047-SB-4	386		0.0012	5.78E+00	90	95.56	2.1	22	YES (C/NC)
Benzo[b]fluoranthene	205-99-2	B18-047-SB-4	782		0.0014	1.13E+01	89	96.63	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	B18-047-SB-4	129		0.0011	2.44E+00	89	94.38			no
Benzo[k]fluoranthene	207-08-9	B18-047-SB-4	707		0.0016	9.65E+00	89	96.63	210		YES (C)
Beryllium	7440-41-7	B18-059-SB-7.5	8.5		0.16	2.10E+00	89	60.67	6,900	230	no
bis(2-chloroethoxy)methane	111-91-1	B18-032-SB-1.5	0.18		0.18	1.80E-01	89	1.12		250	no
bis(2-Chloroethyl)ether	111-44-4	B18-020-SB-14	0.085		0.085	8.50E-02	89	1.12	1		no
bis(2-Ethylhexyl)phthalate	117-81-7	B18-050-SB-5	1.3	J	0.016	3.00E-01	89	12.36	160	1,600	no
Bromodichloromethane	75-27-4	B18-026-SB-1	0.0031	J	0.0031	3.10E-03	36	2.78	1.3	2,300	no
Cadmium	7440-43-9	B18-072-SB-4	22		0.28	2.78E+00	89	70.79	9,300	10	YES (NC)
Caprolactam	105-60-2	B18-017-SB-1	0.56		0.022	1.19E-01	89	15.73		40,000	no
Carbazole	86-74-8	B18-047-SB-4	7.1		0.018	6.67E-01	89	43.82			no
Chloroform	67-66-3	B18-026-SB-1	0.035		0.0058	1.62E-02	36	11.11	1.4	100	no
Chromium	7440-47-3	B4-029-SB-1	1400		2.6	6.17E+02	89	100.00		180,000	no
Chromium VI	18540-29-9	B4-016-SB-1	8	J-	0.18	3.14E+00	88	19.32	6.3	350	YES (C)
Chrysene	218-01-9	B18-047-SB-4	501		0.00094	7.06E+00	89	97.75	2,100		no
Cobalt	7440-48-4	B18-019-SB-8	30.9		0.32	7.88E+00	89	74.16	1,900	35	no
Copper	7440-50-8	B18-072-SB-4	554		2.3	8.95E+01	89	100.00		4,700	no
Cyanide	57-12-5	B4-029-SB-1	87.2	J+	0.063	4.69E+00	89	95.51		120	no
Cyclohexane	110-82-7	B18-019-SB-8	0.0054	J	0.0052	5.30E-03	36	5.56		2,700	no
Dibenz[a,h]anthracene	53-70-3	B18-047-SB-4	73.9		0.0016	1.27E+00	89	86.52	2.1		YES (C)
Di-n-butylphthalate	84-74-2	B18-034-SB-5	0.082		0.082	8.20E-02	89	1.12		8,200	no
Di-n-ocytlphthalate	117-84-0	B18-072-SB-4	0.09		0.025	5.03E-02	89	4.49		820	no

Table 1 - Sub-Parcel B4-2 Expansion
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?
Ethylbenzene	100-41-4	B18-031-SB-6	0.0098		0.0023	6.05E-03	36	5.56	25	2,000	no
Fluoranthene	206-44-0	B18-047-SB-4	1,600		0.00081	2.01E+01	89	100.00		3,000	no
Fluorene	86-73-7	B18-047-SB-4	116		0.00074	2.04E+00	89	74.16		3,000	no
Hexachloroethane	67-72-1	B18-019-SB-8	0.031	J	0.031	3.10E-02	89	1.12	8	46	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B18-047-SB-4	145		0.0013	2.65E+00	89	92.13	21		YES (C)
Iron	7439-89-6	B18-013-SB-4	459,000		4370	1.36E+05	89	100.00		82,000	YES (NC)
Isophorone	78-59-1	B18-072-SB-4	0.056	J	0.03	4.30E-02	89	2.25	2,400	16,000	no
Lead^	7439-92-1	B18-066-SB-4	3,850	J	2.8	2.35E+02	90	96.67		800	YES (NC)
Manganese	7439-96-5	B18-024-SB-1	36,600		332	1.52E+04	89	100.00		2,600	YES (NC)
Mercury	7439-97-6	B18-040-SB-1	41.5		0.0027	1.48E+00	89	74.16		35	YES (NC)
Naphthalene	91-20-3	B18-047-SB-4	66.2		0.0021	1.89E+00	89	88.76	8.6	59	YES (C/NC)
Nickel	7440-02-0	B5-063-SB-4	184		1.2	3.60E+01	89	97.75	64,000	2,200	no
N-Nitrosodiphenylamine	86-30-6	B18-019-SB-8	0.031	J	0.017	2.60E-02	89	3.37	470		no
PCBs (total)*	1336-36-3	B18-017-SB-1	1.005		0.0298	2.48E-01	49	16.33	0.94		YES (C)
Pentachlorophenol	87-86-5	B5-063-SB-4	0.031	J	0.031	3.10E-02	60	1.67	4	280	no
Phenanthrene	85-01-8	B18-047-SB-4	584		0.00085	8.08E+00	89	97.75			no
Phenol	108-95-2	B18-047-SB-4	1.9		0.017	2.05E-01	62	20.97		25,000	no
Pyrene	129-00-0	B18-047-SB-4	920		0.00067	1.25E+01	89	98.88		2,300	no
Selenium	7782-49-2	B18-069-SB-8	7.6		1.4	3.46E+00	89	15.73		580	no
Silver	7440-22-4	B18-072-SB-4	9.3		0.54	2.14E+00	89	59.55		580	no
Styrene	100-42-5	B18-047-SB-4	0.035	J	0.0031	1.91E-02	36	5.56		3,500	no
Thallium	7440-28-0	B18-034-SB-1	17.7		4	9.71E+00	89	44.94		1.2	YES (NC)
Toluene	108-88-3	B18-047-SB-4	0.029		0.0018	8.92E-03	36	33.33		4,700	no
Vanadium	7440-62-2	B4-016-SB-1	938		7	3.95E+02	89	100.00		580	YES (NC)
Xylenes	1330-20-7	B18-047-SB-4	0.031		0.003	1.05E-02	36	19.44		250	no
Zinc	7440-66-6	B18-072-SB-4	27,800		5.7	1.47E+03	89	97.75		35,000	no

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

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 regional screening levels (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^The COPC screening level for lead was not adjusted to the HQ=0.1 because lead is not assessed in the SLRA. The 800 mg/kg PAL is relevant to the Adult Lead Model pr

Table 2 - Sub-Parcel B4-2 Expansion
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1 (24.2 ac.)	Surface	684	118
	Sub-Surface	3,850	433
	Pooled	3,850	256
EU1-EXP (28.2 ac.)	Surface	820	136
	Sub-Surface	3,850	336
	Pooled	3,850	227

Table 3 - Sub-Parcel B4-2 Expansion
Soil Exposure Point Concentrations

	Site-Wide EU1 (24.2 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	KM H-UCL	4.27	95% GROS Adjusted Gamma UCL	15.0	95% GROS Approximate Gamma UCL	7.80
Cadmium	95% KM (Chebyshev) UCL	4.62	KM H-UCL	5.25	95% KM (Chebyshev) UCL	4.90
Chromium VI	95% KM (t) UCL	1.94	**Maximum Value**	**2.80**	95% KM (t) UCL	1.28
Iron	95% Student's-t UCL	192,344	95% Adjusted Gamma UCL	177,336	95% Student's-t UCL	174,302
Manganese	95% Chebyshev (Mean, Sd) UCL	28,699	95% Student's-t UCL	13,618	95% Chebyshev (Mean, Sd) UCL	22,870
Mercury	95% KM (Chebyshev) UCL	1.25	97.5% KM (Chebyshev) UCL	7.71	95% KM (Chebyshev) UCL	2.70
Thallium	95% KM (t) UCL	9.54	95% KM (t) UCL	7.84	95% KM (t) UCL	8.58
Vanadium	95% Chebyshev (Mean, Sd) UCL	730	95% Adjusted Gamma UCL	415	95% Chebyshev (Mean, Sd) UCL	598
Benz[a]anthracene	95% KM (Chebyshev) UCL	1.32	97.5% KM (Chebyshev) UCL	4.90	95% KM (Chebyshev) UCL	1.97
Benzo[a]pyrene	95% KM (Chebyshev) UCL	1.92	97.5% KM (Chebyshev) UCL	4.31	95% KM (Chebyshev) UCL	2.03
Benzo[b]fluoranthene	95% KM (Chebyshev) UCL	2.71	97.5% KM (Chebyshev) UCL	8.01	95% KM (Chebyshev) UCL	3.45
Benzo[k]fluoranthene	95% KM (Chebyshev) UCL	1.20	Gamma Adjusted KM-UCL	2.50	95% KM (Chebyshev) UCL	1.64
Dibenz[a,h]anthracene	95% KM (Chebyshev) UCL	0.36	97.5% KM (Chebyshev) UCL	0.84	95% KM (Chebyshev) UCL	0.39
Indeno[1,2,3-c,d]pyrene	95% KM (Chebyshev) UCL	1.07	97.5% KM (Chebyshev) UCL	2.46	95% KM (Chebyshev) UCL	1.14
Naphthalene	95% KM (Chebyshev) UCL	0.65	97.5% KM (Chebyshev) UCL	9.09	95% KM (Chebyshev) UCL	3.03
PCBs (total)	95% KM (BCA) UCL	0.04	NA	NA	95% KM (BCA) UCL	0.04

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 3 - Sub-Parcel B4-2 Expansion
Soil Exposure Point Concentrations

	Site-Wide EU1-EXP (28.2 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	6.78	95% GROS Adjusted Gamma UCL	14.7	KM H-UCL	8.15
Cadmium	95% KM (Chebyshev) UCL	3.86	KM H-UCL	4.0	95% KM (Chebyshev) UCL	3.86
Chromium VI	95% KM (t) UCL	1.65	**Maximum Value**	**2.80**	95% KM (t) UCL	1.06
Iron	95% Chebyshev (Mean, Sd) UCL	203,728	95% Adjusted Gamma UCL	137,677	95% Student's-t UCL	151,387
Manganese	95% Chebyshev (Mean, Sd) UCL	26,903	95% Adjusted Gamma UCL	11,418	95% Chebyshev (Mean, Sd) UCL	20,255
Mercury	97.5% KM (Chebyshev) UCL	6.53	97.5% KM (Chebyshev) UCL	5.41	KM H-UCL	0.94
Thallium	95% KM (t) UCL	9.57	95% KM (t) UCL	7.67	95% KM (t) UCL	8.52
Vanadium	95% Chebyshev (Mean, Sd) UCL	697	95% Adjusted Gamma UCL	315	95% Chebyshev (Mean, Sd) UCL	532
Benz[a]anthracene	97.5% KM (Chebyshev) UCL	2.56	97.5% KM (Chebyshev) UCL	108	95% KM (Chebyshev) UCL	36.6
Benzo[a]pyrene	97.5% KM (Chebyshev) UCL	2.95	97.5% KM (Chebyshev) UCL	69.6	95% KM (Chebyshev) UCL	24.2
Benzo[b]fluoranthene	97.5% KM (Chebyshev) UCL	4.94	97.5% KM (Chebyshev) UCL	144	95% KM (Chebyshev) UCL	49.2
Benzo[k]fluoranthene	97.5% KM (Chebyshev) UCL	3.15	97.5% KM (Chebyshev) UCL	130	95% KM (Chebyshev) UCL	43.9
Dibenz[a,h]anthracene	97.5% KM (Chebyshev) UCL	0.61	97.5% KM (Chebyshev) UCL	13.7	95% KM (Chebyshev) UCL	4.73
Indeno[1,2,3-c,d]pyrene	97.5% KM (Chebyshev) UCL	1.82	97.5% KM (Chebyshev) UCL	27.3	95% KM (Chebyshev) UCL	9.57
Naphthalene	95% KM (Chebyshev) UCL	1.06	97.5% KM (Chebyshev) UCL	14.7	KM H-UCL	3.17
PCBs (total)	95% KM (BCA) UCL	0.04	NA	NA	95% KM (BCA) UCL	0.04

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 4 - Sub-Parcel B4-2 Expansion
Surface Soils
Composite Worker Risk Ratios

		Site-Wide EU1 (24.2 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	4.27	3.00	480	1.4E-06	0.009
Cadmium	Urinary	4.62	9,300	100	5.0E-10	0.05
Chromium VI	Respiratory	1.94	6.30	3,500	3.1E-07	0.0006
Iron	Gastrointestinal	192,344		820,000		0.2
Manganese	Nervous	28,699		26,000		1
Mercury	Nervous	1.25		350		0.004
Thallium	Dermal	9.54		12		0.8
Vanadium	Dermal	730		5,800		0.1
Benz[a]anthracene		1.32	21		6.3E-08	
Benzo[a]pyrene	Developmental	1.92	2.1	220	9.1E-07	0.009
Benzo[b]fluoranthene		2.71	21		1.3E-07	
Benzo[k]fluoranthene		1.20	210		5.7E-09	
Dibenz[a,h]anthracene		0.36	2.1		1.7E-07	
Indeno[1,2,3-c,d]pyrene		1.07	21		5.1E-08	
Naphthalene	Nervous; Respiratory	0.65	8.6	590	7.6E-08	0.001
PCBs (total)		0.04	0.94		4.3E-08	
					3E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	1
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 5 - Sub-Parcel B4-2 Expansion
Subsurface Soils
Composite Worker Risk Ratios

		Site-Wide EU1 (24.2 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
Parameter	**Target Organs**	**EPC (mg/kg)**	**Cancer**	**Non-Cancer**	**Risk**	**HQ**
Arsenic	**Cardiovascular; Dermal**	15.0	3.00	480	5.0E-06	0.03
Cadmium	**Urinary**	5.25	9,300	100	5.6E-10	0.05
Chromium VI	**Respiratory**	**2.80**	6.30	3,500	4.4E-07	0.0008
Iron	**Gastrointestinal**	177,336		820,000		0.2
Manganese	**Nervous**	13,618		26,000		0.5
Mercury	**Nervous**	7.71		350		0.02
Thallium	**Dermal**	7.84		12		0.7
Vanadium	**Dermal**	415		5,800		0.07
Benz[a]anthracene		4.90	21		2.3E-07	
Benzo[a]pyrene	**Developmental**	4.31	2.1	220	2.1E-06	0.02
Benzo[b]fluoranthene		8.01	21		3.8E-07	
Benzo[k]fluoranthene		2.50	210		1.2E-08	
Dibenz[a,h]anthracene		0.84	2.1		4.0E-07	
Indeno[1,2,3-c,d]pyrene		2.46	21		1.2E-07	
Naphthalene	**Nervous; Respiratory**	9.09	8.6	590	1.1E-06	0.02
PCBs (total)		NA	0.94			
					1E-05	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
Bold indicates maximum value used as the EPC
NA indicates no detections
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	1
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 6 - Sub-Parcel B4-2 Expansion
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (24.2 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	7.80	3.00	480	2.6E-06	0.02
Cadmium	Urinary	4.90	9,300	100	5.3E-10	0.05
Chromium VI	Respiratory	1.28	6.30	3,500	2.0E-07	0.0004
Iron	Gastrointestinal	174,302		820,000		0.2
Manganese	Nervous	22,870		26,000		0.9
Mercury	Nervous	2.70		350		0.008
Thallium	Dermal	8.58		12		0.7
Vanadium	Dermal	598		5,800		0.1
Benz[a]anthracene		1.97	21		9.4E-08	
Benzo[a]pyrene	Developmental	2.03	2.1	220	9.7E-07	0.009
Benzo[b]fluoranthene		3.45	21		1.6E-07	
Benzo[k]fluoranthene		1.64	210		7.8E-09	
Dibenz[a,h]anthracene		0.39	2.1		1.9E-07	
Indeno[1,2,3-c,d]pyrene		1.14	21		5.4E-08	
Naphthalene	Nervous; Respiratory	3.03	8.6	590	3.5E-07	0.005
PCBs (total)		0.04	0.94		4.3E-08	
					5E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	1
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 7 - Sub-Parcel B4-2 Expansion
Surface Soils
Construction Worker Risk Ratios

10 Day		Site-Wide EU1-EXP (28.2 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.78	378	2,406	1.8E-08	0.003
Cadmium	Urinary	3.86	521,411	7,461	7.4E-12	0.0005
Chromium VI	Respiratory	1.65	536	20,010	3.1E-09	0.00008
Iron	Gastrointestinal	203,728		6,013,533		0.03
Manganese	Nervous	26,903		102,751		0.3
Mercury	Nervous	6.53		61.9		0.1
Thallium	Dermal	9.57		344		0.03
Vanadium	Dermal	697		39,861		0.02
Benz[a]anthracene		2.56	2,565		1.0E-09	
Benzo[a]pyrene	Developmental	2.95	391	53.6	7.5E-09	0.06
Benzo[b]fluoranthene		4.94	3,862		1.3E-09	
Benzo[k]fluoranthene		3.15	38,773		8.1E-11	
Dibenz[a,h]anthracene		0.61	445		1.4E-09	
Indeno[1,2,3-c,d]pyrene		1.82	4,174		4.4E-10	
Naphthalene	Nervous; Respiratory	1.06	107	160	9.9E-09	0.007
PCBs (total)		0.04	56.5		7.1E-10	
					4E-08	↓

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
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0

Table 8 - Sub-Parcel B4-2 Expansion
Subsurface Soils
Construction Worker Risk Ratios

10 Day		**Site-Wide EU1-EXP (28.2 ac.)**				
			Construction Worker			
			SSLs (mg/kg)		**Risk Ratios**	
Parameter	**Target Organs**	**EPC (mg/kg)**	**Cancer**	**Non-Cancer**	**Risk**	**HQ**
Arsenic	**Cardiovascular; Dermal**	14.7	378	2,406	3.9E-08	0.006
Cadmium	**Urinary**	4.0	521,411	7,461	7.6E-12	0.0005
Chromium VI	**Respiratory**	**2.80**	536	20,010	5.2E-09	0.0001
Iron	**Gastrointestinal**	137,677		6,013,533		0.02
Manganese	**Nervous**	11,418		102,751		0.1
Mercury	**Nervous**	5.41		61.9		0.09
Thallium	**Dermal**	7.67		344		0.02
Vanadium	**Dermal**	315		39,861		0.008
Benz[a]anthracene		108	2,565		4.2E-08	
Benzo[a]pyrene	**Developmental**	69.6	391	53.6	1.8E-07	1
Benzo[b]fluoranthene		144	3,862		3.7E-08	
Benzo[k]fluoranthene		130	38,773		3.4E-09	
Dibenz[a,h]anthracene		13.7	445		3.1E-08	
Indeno[1,2,3-c,d]pyrene		27.3	4,174		6.5E-09	
Naphthalene	**Nervous; Respiratory**	14.7	107	160	1.4E-07	0.09
PCBs (total)		NA	56.5			
					5E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Bold indicates maximum value used as the EPC
NA indicates no detections
Guidance Equation Input Assumptions:
- 5 cars/day (2 tons/car)
- 5 trucks/day (20 tons/truck)
- 3 meter source depth thickness

EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	0
	Developmental	1

Table 9 - Sub-Parcel B4-2 Expansion
Pooled Soils
Construction Worker Risk Ratios

10 Day		Site-Wide EU1-EXP (28.2 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	8.15	378	2,406	2.2E-08	0.003
Cadmium	Urinary	3.86	521,411	7,461	7.4E-12	0.0005
Chromium VI	Respiratory	1.06	536	20,010	2.0E-09	0.00005
Iron	Gastrointestinal	151,387		6,013,533		0.03
Manganese	Nervous	20,255		102,751		0.2
Mercury	Nervous	0.94		61.9		0.02
Thallium	Dermal	8.52		344		0.02
Vanadium	Dermal	532		39,861		0.01
Benz[a]anthracene		36.6	2,565		1.4E-08	
Benzo[a]pyrene	Developmental	24.2	391	53.6	6.2E-08	0.5
Benzo[b]fluoranthene		49.2	3,862		1.3E-08	
Benzo[k]fluoranthene		43.9	38,773		1.1E-09	
Dibenz[a,h]anthracene		4.73	445		1.1E-08	
Indeno[1,2,3-c,d]pyrene		9.57	4,174		2.3E-09	
Naphthalene	Nervous; Respiratory	3.17	107	160	3.0E-08	0.02
PCBs (total)		0.04	56.5		7.1E-10	
					2E-07	↓

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

EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Respiratory	0
	Urinary	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0

ATTACHMENT 1

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

RORO PHASE III

SHIPYARD ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 419
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

STANDARD DRAWING LEGEND

FOR ENTIRE PLAN SET

EXISTING	DESCRIPTION	PROPOSED
LOW	LIMIT OF WORK	LOW
LOD	LIMIT OF DISTURBANCE	LOD
EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER; SPILL; TRANSITION; DEPRESSED CURB AND GUTTER
	UTILITY POLE WITH LIGHT	
	POLE LIGHT	
	TRAFFIC LIGHT	
	UTILITY POLE	
	TYPICAL LIGHT	
	ACORN LIGHT	
	TYPICAL SIGN	
	PARKING COUNTS	
170; 169	CONTOUR LINE	190; 187
TC 516.4; OR 516.4	SPOT ELEVATIONS	TC 516.00; TC 516.00 BC 515.55; MATCH EX 518.02 ±
SAN #	SANITARY LABEL	SAN #
#	STORM LABEL	#
SL	SANITARY SEWER LATERAL	SL
W	UNDERGROUND WATER LINE	W
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
C	UNDERGROUND CABLE LINE	C
	STORM SEWER	
S	SANITARY SEWER MAIN	S
	HYDRANT	
S	SANITARY MANHOLE	
D	STORM MANHOLE	D
WM	WATER METER	
WV	WATER VALVE	
	GAS VALVE	
	GAS METER	
	TYPICAL END SECTION	
	HEADWALL OR ENDWALL	
	GRATE INLET	
	CURB INLET	
	CLEAN OUT	
E	ELECTRIC MANHOLE	E
T	TELEPHONE MANHOLE	T
EB	ELECTRIC BOX	EB
EP	ELECTRIC PEDESTAL	EP
	MONITORING WELL	
	TEST PIT	
	BENCHMARK	
	BORING	

STANDARD ABBREVIATIONS

FOR ENTIRE PLAN SET

AC	ACRES
ADA	AMERICANS WITH DISABILITY ACT
ARCH	ARCHITECTURAL
BC	BOTTOM OF CURB
BF	BASEMENT FLOOR
BK	BLOCK
BL	BASELINE
BLDG	BUILDING
BM	BUILDING BENCHMARK
BRL	BUILDING RESTRICTION LINE
CF	CUBIC FEET
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONN	CONNECTION
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARDS
DEC	DECORATIVE
DEP	DEPRESSED
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
ELEC	ELECTRIC
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ES	EDGE OF SHOULDER
EW	END WALL
EX	EXISTING
FES	FLARED END SECTION
FF	FINISHED FLOOR
FH	FIRE HYDRANT
FG	FINISHED GRADE
G	GRADE
GF	GARAGE FLOOR (AT DOOR)
GH	GRADE HIGHER SIDE OF WALL
GL	GRADE LOWER SIDE OF WALL
GRT	GRATE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
HOR	HORIZONTAL
HW	HEADWALL
INT	INTERSECTION
INV	INVERT
LF	LINEAR FOOT
LOC	LIMITS OF CLEARING
LOD	LIMITS OF DISTURBANCE
LOS	LINE OF SIGHT
LP	LOW POINT
L/S	LANDSCAPE
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
OC	ON CENTER
PA	POINT OF ANALYSIS
PC	POINT CURVATURE
PCCR	POINT OF COMPOUND CURVATURE, CURB RETURN
PI	POINT OF INTERSECTION
POG	POINT OF GRADE
PROP	PROPOSED
PT	POINT OF TANGENCY
PTCR	POINT OF TANGENCY, CURB RETURN
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RET WALL	RETAINING WALL
R/W	RIGHT OF WAY
S	SLOPE
SAN	SANITARY SEWER
SF	SQUARE FEET
STA	STATION
STM	STORM
S/W	SIDEWALK
TBR	TO BE REMOVED
TBRL	TO BE RELOCATED
TC	TOP OF CURB
TELE	TELEPHONE
TPF	TREE PROTECTION FENCE
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UP	UTILITY POLE
W	WIDE
W/L	WATER LINE
W/M	WATER METER
±	PLUS OR MINUS
°	DEGREE
Ø	DIAMETER
#	NUMBER

REFERENCES

- EXISTING CONDITIONS
  CAD FILES PROVIDED BY TRADEPOINT ATLANTIC
  ENTITLED: "BASE - UTILITIES", "BASE - TOPO", "BASE - PLANOMETRICS"
  RECEIVED: 5/27/16
- RORO PHASE II PLANS
  PREPARED BY: MORRIS AND RITCHIE ASSOCIATES, INC.
  ENTITLED: "RORO PHASE 2 - IMPORT FACILITY AND PROCESSING CENTER FOR; TPA - RORO PHASE 2; 1300 AND 1301 SHIPYARD ROAD"
  DATED: 12/10/2020
- SHIPYARD ROAD PHASE II PLANS
  PREPARED BY: BOHLER ENGINEERING, VA LLC.
  ENTITLED: "SHIPYARD ROAD PHASE II ROAD PLAN FOR; TRADEPOINT ATLANTIC; CONSTRUCTION DOCUMENTS"
  DATED: 05/03/2021

UTILITY CONTACTS

- WATER AND SEWER
  BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306
- GAS AND ELECTRIC:
  BGE
  1068 N. FRONT ST. ROOM 401
  BALTIMORE, MD 21202
  PHONE: (410) 850-4620
- STORM DRAIN:
  BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306
- TELEPHONE
  VERIZON
  99 SHAWAN ROAD
  COCKEYSVILLE, MD 21030
  PHONE: (410) 393-5793
- CABLE:
  COMCAST BUSINESS SERVICES
  5001 METRO DRIVE
  BALTIMORE, MD 21215
  PHONE: (800) 391-3000

GOVERNING AGENCIES

- BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: D'ANDREA WALKER
  PHONE: (410) 887-3306
- MARYLAND DEPARTMENT OF THE ENVIRONMENT
  1800 WASHINGTON BOULEVARD
  BALTIMORE, MD 21230
  CONTACT: DANIEL LAIRD, P.E.
  PHONE: (410) 537-4311
- BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY
  111 WEST CHESAPEAKE AVENUE, ROOM 319
  TOWSON, MD 21204
  CONTACT: KRITTY UDHIN, P.E.
  PHONE: (410) 887-4488
- BALTIMORE COUNTY DEPARTMENT OF DEVELOPMENT MANAGEMENT
  111 WEST CHESAPEAKE AVENUE
  TOWSON, MD 21204
  CONTACT: LLOYD MOXLEY
  PHONE: (410) 887-3321

ISSUED FOR CONSTRUCTION

SIGNATURE DATE

SIGNATURE DATE SIGNATURE DATE

THIS DOCUMENT IS NOT ISSUED BY BOHLER FOR CONSTRUCTION WITHOUT (3) SIGNATURES

PROJECT #

REVISION DATE:

SHEET INDEX

SHEET TITLE	SHEET NUMBER
COVER SHEET	C-101
GENERAL NOTES	C-201
OVERALL SITE PLAN	C-301
SITE PLAN	C-302 - C-303
OVERALL FINAL GRADING PLAN	C-401
FINAL GRADING PLAN	C-402 - C-403
OVERALL PHASE I EROSION AND SEDIMENT CONTROL PLAN	C-601 (ESC-31 OF 38)
PHASE I EROSION AND SEDIMENT CONTROL PLAN	C-602 - C-603 (ESC-32-33 OF 38)
PHASE I EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP	C-604 (ESC-34 OF 38)
OVERALL PHASE II EROSION AND SEDIMENT CONTROL PLAN	C-605 (ESC-35 OF 38)
PHASE II EROSION AND SEDIMENT CONTROL PLAN	C-606 - C-607 (ESC-36-37 OF 38)
PHASE II EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP	C-608 (ESC-38 OF 38)
STORM DRAIN PROFILES	C-801 - C-803
SITE DETAILS	C-901
MRA FINAL GRADING PLANS	01-05
MRA EROSION AND SEDIMENT CONTROL PLANS	06-35 (ESC-1-30 OF 38)

LOCATION MAP

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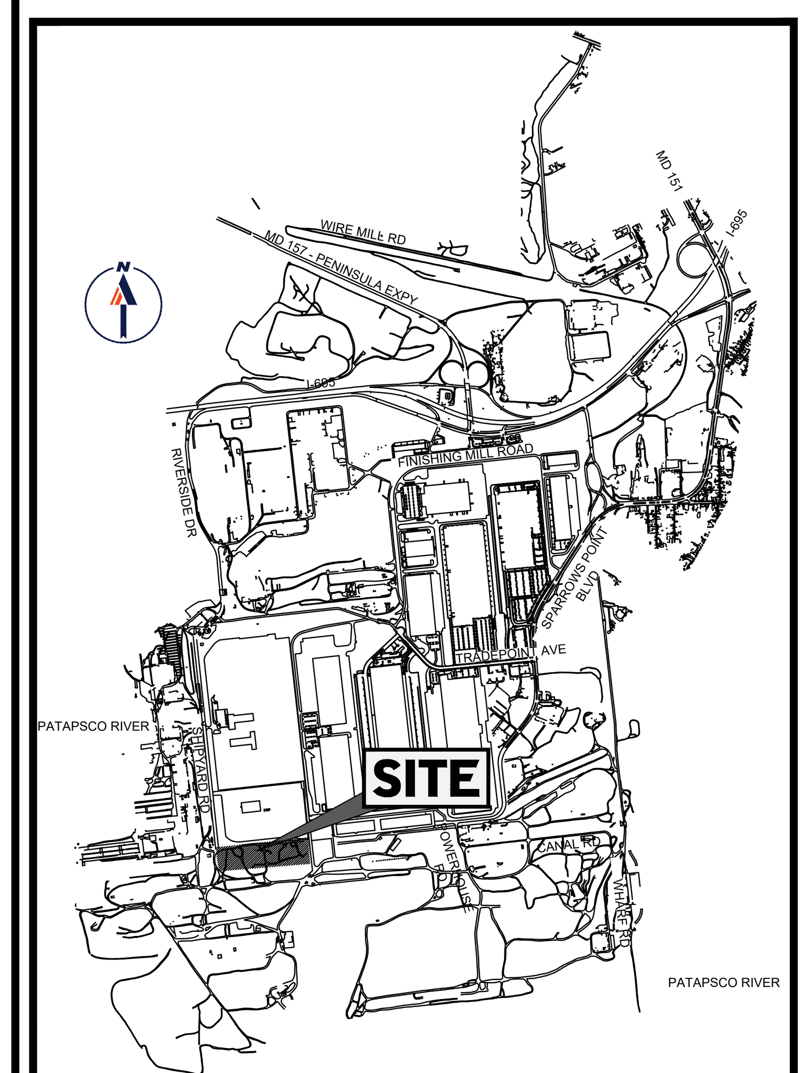
SCALE: 1"=1,000'



VICINITY MAP

SCALE: 1"=3000'

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BOULEVARD
SPARROWS POINT, MD 21219
CONTACT: TOM CASO
PHONE: 410-382-6667

PREPARED BY

BOHLER

CONTACT: JENNIFER BASS

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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PROJECT No.: MDA220208.00
DRAWN BY: DMD
CHECKED BY: MJG
DATE: 1/20/23
CAD I.D.: MDA220208.00 - CNDS - 0

PROJECT:
TRADEPOINT ATLANTIC RORO PHASE III
FOR
TRADEPOINT ATLANTIC
SHIPYARD ROAD
SPARROWS POINT, MD 21219

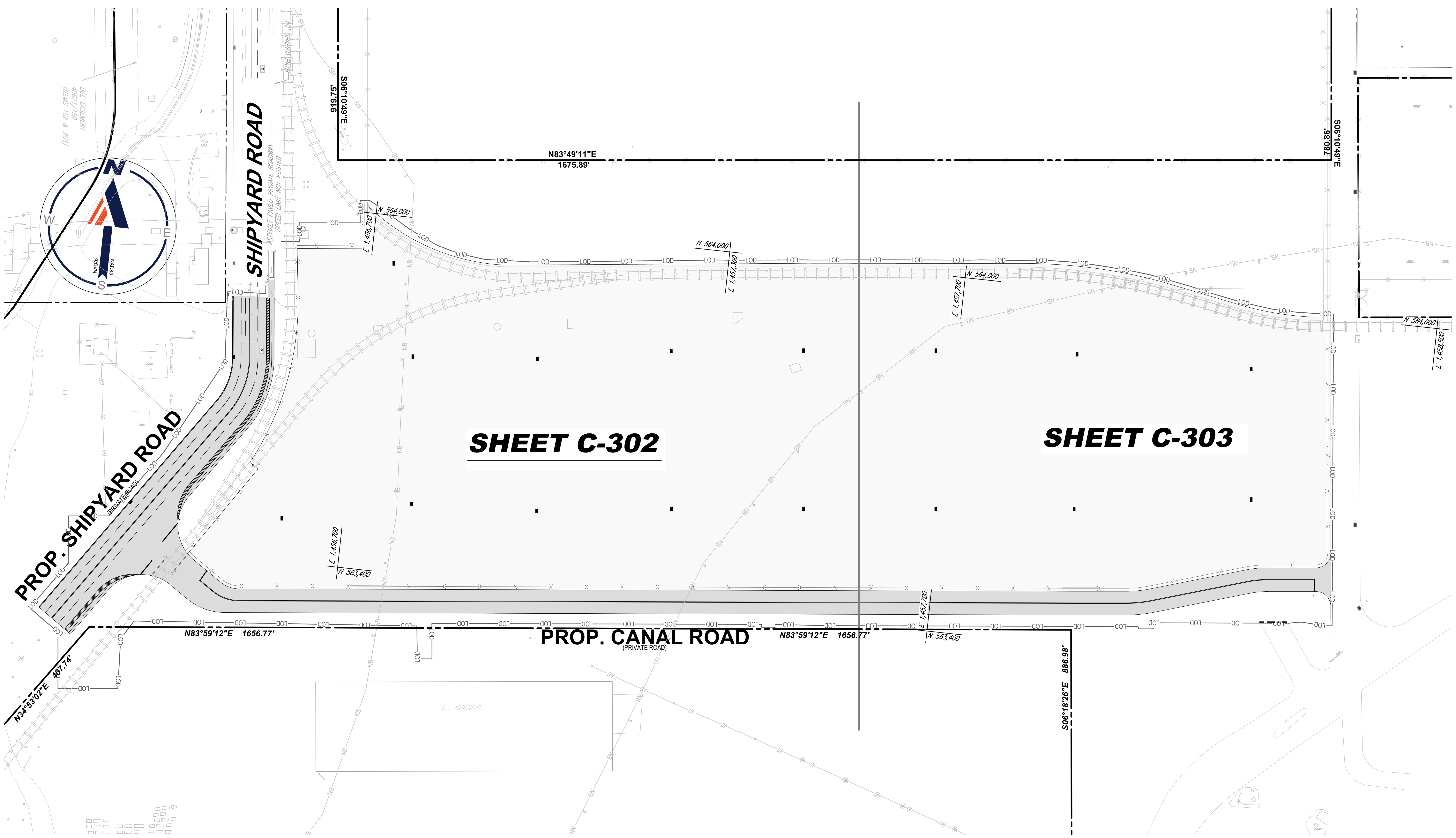
BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
JBASS@BOHLERENG.COM

M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
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: 6/9/23

SHEET TITLE:
COVER SHEET

SHEET NUMBER:
C-101

MDE PROJECT # 21-SF-0032



SITE NOTES

1. TOTAL SITE AREA: 132,225,998 S.F. OR 3,035.49 AC.
2. DEVELOPMENT SITE AREA: 1,204,269 S.F. OR 27.65 AC.
3. PROPOSED FLOOR AREA: 0 S.F.
4. DEED REFERENCE: LIBER 35478, FOLIO 379
5. ELECTION DISTRICT: 15TH
6. COUNCILMANIC DISTRICT: 7TH
7. TAX MAP 111, GRID 14, PARCEL 419

   TAX. ACCT. NOS.: 2500016890
8. OWNER:
   TRADEPOINT ATLANTIC, LLC.
   6995 BETHLEHEM BLVD
   BALTIMORE, MD 21219
9. DEVELOPER/APPLICANT:
   TRADEPOINT ATLANTIC, LLC.
   6995 BETHLEHEM BLVD
   BALTIMORE, MD 21219
10. ZONE: MH-IM (MANUFACTURING - HEAVY - INDUSTRIAL - MAJOR)
11. PREVIOUS ZONING CASES: NONE
12. WATERSHED: BALTIMORE HARBOR
13. CENSUS TRACT: 9800.00
14. ALL SOILS ARE URBAN LAND, UDORTHENTS, 0 TO 8% SLOPES
15. EXISTING USE: VACANT

    PROPOSED USE: ROLL-ON/ROLL-OFF STORAGE YARD
16. THERE ARE NO KNOWN WELLS OR SEPTIC SYSTEMS LOCATED WITHIN THE PROPOSED DEVELOPMENT AREA.

100 50 25 0 100
1"= 100'

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PROJECT No.:	MDA220208.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	1/20/23
CAD I.D.:	MDA220208.00 - SITE - 0

PROJECT:

TRADEPOINT ATLANTIC RORO PHASE III

FOR

TRADEPOINT ATLANTIC

SHIPYARD ROAD
SPARROWS POINT, MD 21219

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

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MARYLAND LICENSE No. 44097
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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: 6/9/23

SHEET TITLE:

OVERALL SITE PLAN

SHEET NUMBER:

C-301

MDE PROJECT # 21-SF-0032

SITE SPECIFIC GRADING NOTES

1. ALL UTILITIES SHOWN ARE PRIVATE UNLESS OTHERWISE NOTED.
2. THE SUBJECT DEVELOPMENT AREA IS LOCATED IN FLOOD ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, BALTIMORE COUNTY, MARYLAND (UNINCORPORATED AREAS) PANEL 555 OF 580", MAP NUMBER 240010555G, MAP REVISED MAY 5, 2014, AND PLAN PREPARED BY PAI, DEV. PLANS REVIEW, DATED SEPTEMBER 21, 2016, PER MAP 0555F, DATED SEPTEMBER 26, 2008
3. ADDITIONAL EXISTING UTILITIES AND SITE FEATURES LOCATED WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" OR "TO BE RELOCATED" MAY REQUIRE REMOVAL, TO BE FILLED WITH GROUT, OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR ORSTED. CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT AND COORDINATE WITH THE GEOTECHNICAL ENGINEER TO DETERMINE WHICH EXISTING UTILITIES SHOULD BE GROUTED.
4. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.
5. ANY BENCHMARK THAT IS LOCATED WITHIN THE LOD AND WILL BE DISTURBED DURING CONSTRUCTION IS TO BE RESET PRIOR TO BEGINNING CONSTRUCTION.
6. EXISTING GRADES WERE TAKEN FROM TRIMBLE STRATUS (TPA'S AERIAL SURVEY) ON 12/22/22. CONTRACTOR SHALL VERIFY EXISTING GRADES PRIOR TO START OF CONSTRUCTION.
7. EXISTING MANHOLE, CLEANOUT, AND VALVE COVERS WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" ARE TO BE ADJUSTED TO MEET FINAL GRADES.
8. LOCATION OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE, SOURCE INFORMATION FROM PLANS AND MARKINGS HAS BEEN COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP A VIEW OF THOSE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE NECESSARY.

CRITICAL AREA COVERAGES NOTE

PRE-DEVELOPMENT COVERAGES:

IMPERVIOUS AREA = 169,025 S.F. OR 3.88 AC.

PERVIOUS AREA= 590,649 S.F. OR 13.56 AC.

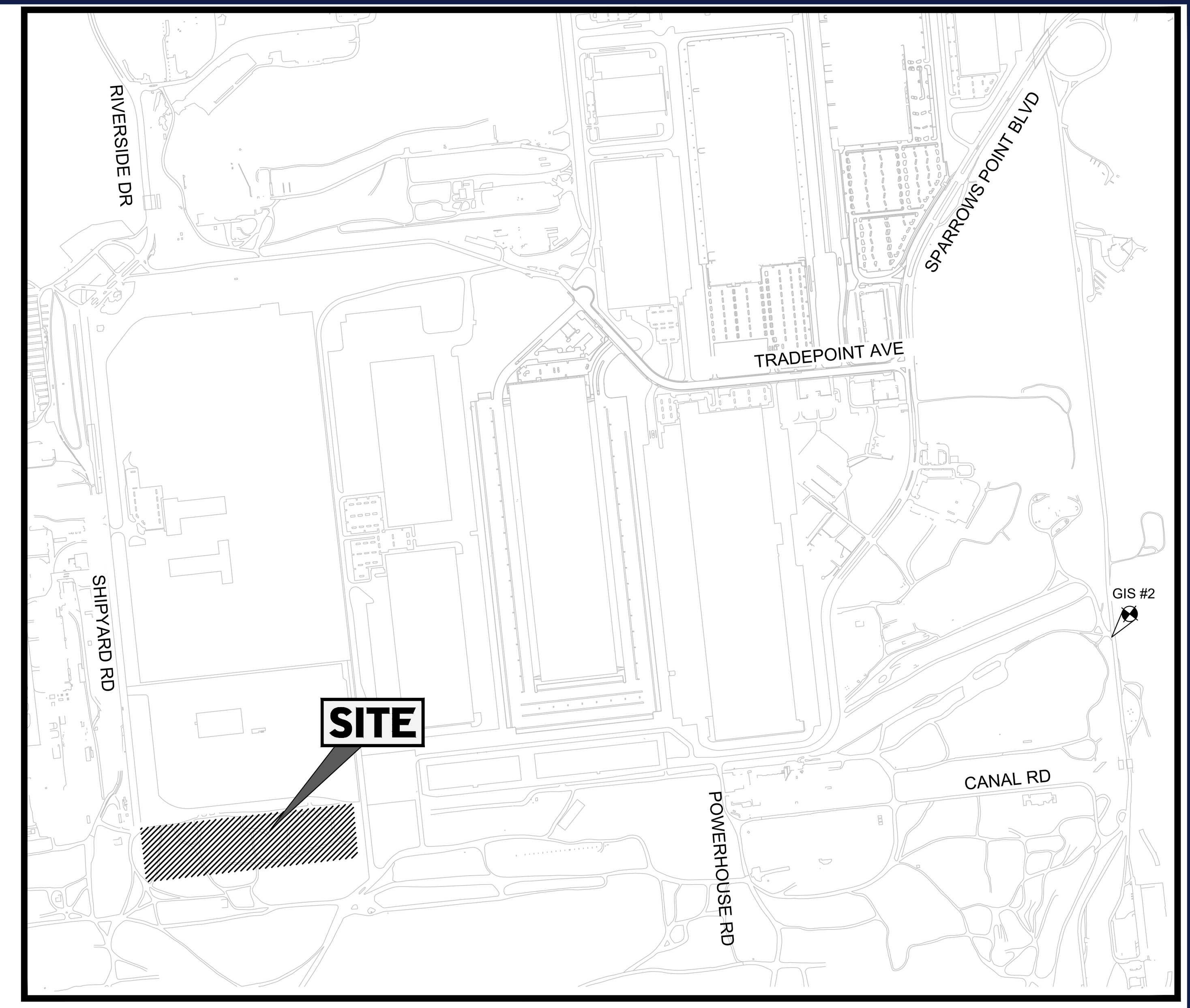
TOTAL AREA= 759,674 S.F. OR 17.44 AC.

POST-DEVELOPMENT COVERAGES:

IMPERVIOUS AREA = 645,053 S.F. OR 14.81 AC.

PERVIOUS AREA = 114,621 S.F. OR 2.63 AC.

TOTAL AREA = TOTAL AREA= 759,674 S.F. OR 17.44 AC.



LOCATION MAP

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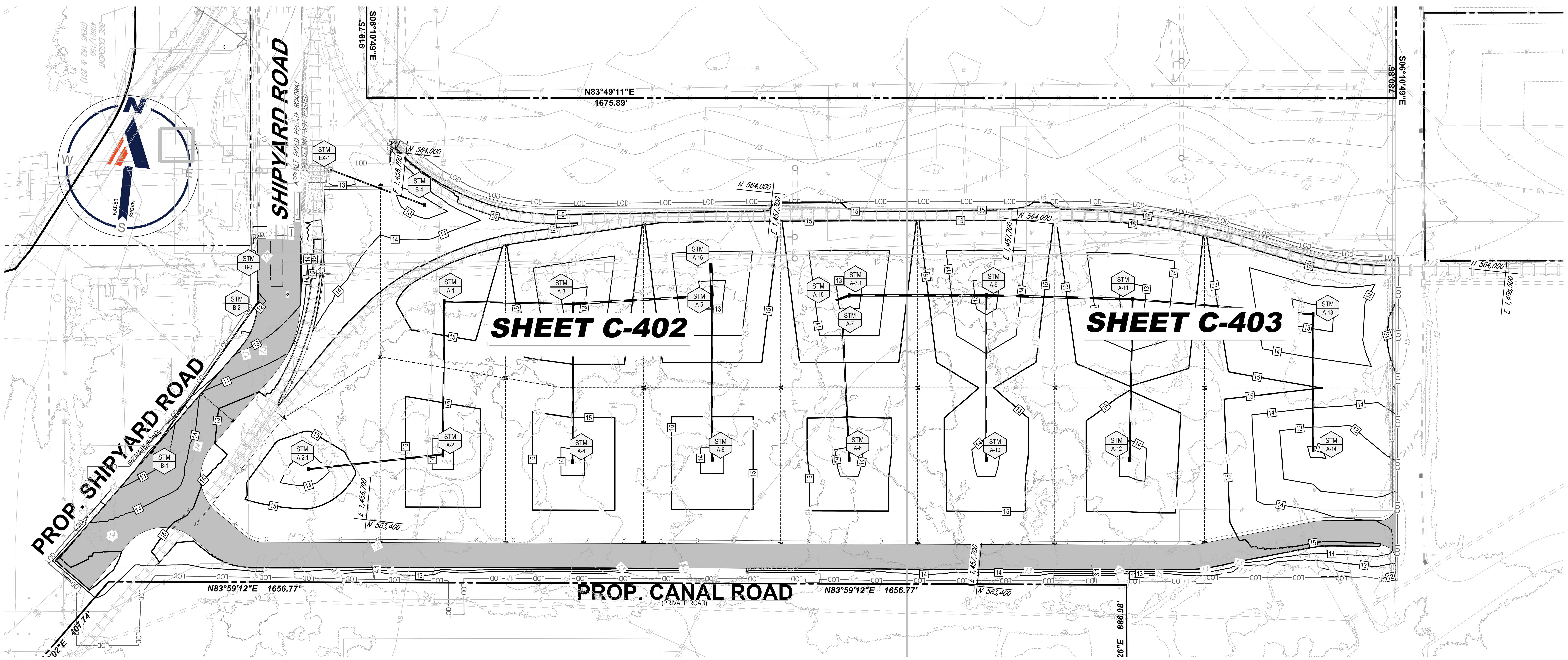

BENCHMARK INFORMATION

ELEVATIONS ARE BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 ; TC 516.00 BC 515.50
SL SL	SANITARY SEWER LINE	SL / S
W	UNDERGROUND WATER LINE	W
I	INDUSTRIAL WATER LINE	I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
	LIMIT OF DISTURBANCE	LOD LOD
	RIDGE LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB
NB	IDA CRITICAL AREA BOUNDARY	

GRADING 6 OF 8

MARYLAND COORDINATE SYSTEM (MCS)

100 50 25 0 100
1"= 100'

LIMIT OF DISTURBANCE: 3,127,608 S.F. OR 71.80 AC.

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	MDA220208.00
DRAWN BY:	DMD
CHECKED BY:	MJG
DATE:	1/20/23
CAD I.D.:	MDA220208.00 - SITE - 0

PROJECT:

TRADEPOINT ATLANTIC RORO PHASE III

FOR

TRADEPOINT ATLANTIC

SHIPYARD ROAD
SPARROWS POINT, MD 21219

BOHLER//
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
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: 6/9/23

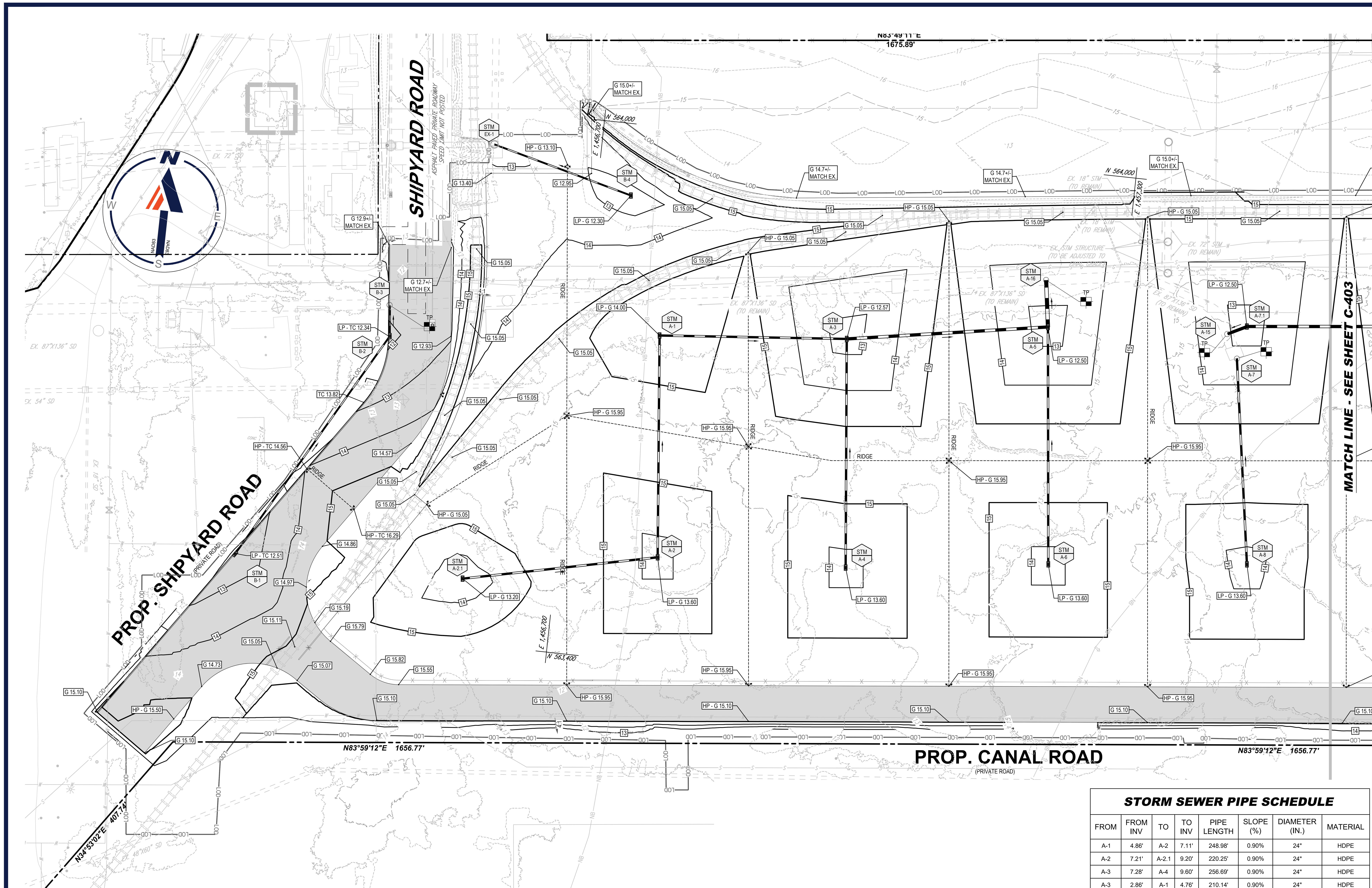
SHEET TITLE:

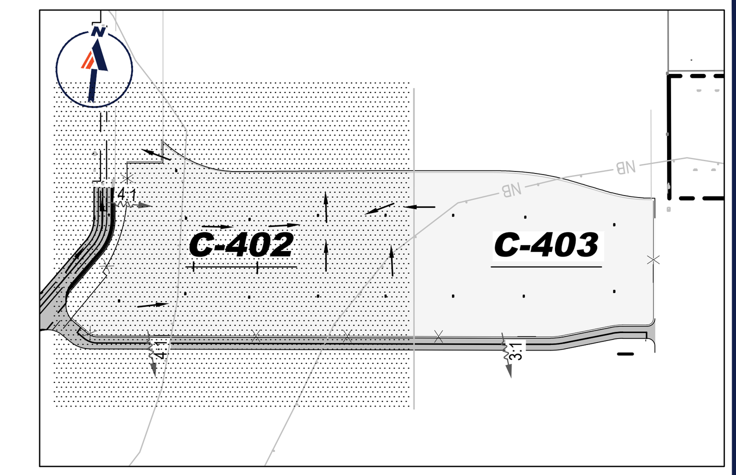
OVERALL FINAL GRADING PLAN

SHEET NUMBER:

C-401

MDE PROJECT # 21-SF-0032





KEY MAP

NOT TO SCALE

LEGEND

EXISTING NOTE		PROPOSED NOTE
	TYPICAL NOTE TEXT	
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 or 516.4	SPOT ELEVATIONS	TC 516.00; TC 516.00 BC 515.50
	SANITARY SEWER LINE	
	UNDERGROUND WATER LINE / INDUSTRIAL WATER LINE	
	UNDERGROUND ELECTRIC LINE	
	UNDERGROUND GAS LINE	
OH	OVERHEAD WIRE	OH
	UNDERGROUND TELEPHONE LINE	
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
	LIMIT OF DISTURBANCE	LOD
	RIDGE LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB
NB	IDA CRITICAL AREA BOUNDARY	

STORM STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS
A-1	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	14.00'	INV IN = 4.86' (24") INV OUT = 4.76' (24")
A-2	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV IN = 7.21' (24") INV OUT = 7.11' (24")
A-2.1	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.20'	INV OUT = 9.20' (24")
A-3	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.57'	INV IN = 2.86' (24") INV IN = 7.28' (24") INV OUT = 2.76' (36")
A-4	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV OUT = 9.60' (24")
A-5	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.50'	INV IN = 0.72' (36") INV IN = 7.19' (24") INV OUT = -2.55' (48")
A-6	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV OUT = 9.60' (24")
A-7	EX. BOX STRUCTURE	13.31'	INV IN = 7.19' (24") *INV OUT = -2.95' (EX. 87"X136")
A-7.1	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.51'	INV IN = -1.75' (36") INV OUT = -1.75' (36")
A-8	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV OUT = 9.60' (24")
A-15	FIELD CONNECTION	-	*INV IN = -2.95' (EX. 87"X136") *INV IN = -1.87' (36") INV OUT = -2.95' (EX. 87"X136")
A-16	FIELD CONNECTION	-	INV IN = -2.82' (48") *INV IN = -2.98' (EX. 87"X136") *INV OUT = -2.98' (EX. 87"X136")
B-1	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.01'	INV OUT = 8.44' (18")
B-2	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	11.84'	INV IN = 5.43' (18") INV OUT = 0.31' (18")
B-3	FIELD CONNECTION	-	INV IN = -3.16' (18") *INV IN = -3.74' (EX. 87"X136") *INV OUT = -3.74' (EX. 87"X136")
B-4	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.30'	INV OUT = 8.80' (18")
EX-1	EXISTING MANHOLE	13.00'	INV IN = 7.16' (18") *INV OUT = -0.38' (EX. 72")

STORM SEWER PIPE SCHEDULE

FROM	FROM INV	TO	TO INV	PIPE LENGTH	SLOPE (%)	DIAMETER (IN.)	MATERIAL
A-1	4.86'	A-2	7.11'	248.98'	0.90%	24"	HDPE
A-2	7.21'	A-2.1	9.20'	220.25'	0.90%	24"	HDPE
A-3	7.28'	A-4	9.60'	256.69'	0.90%	24"	HDPE
A-3	2.86'	A-1	4.76'	210.14'	0.90%	24"	HDPE
A-5	7.19'	A-6	9.60'	266.38'	0.90%	24"	HDPE
A-5	0.72'	A-3	2.76'	226.23'	0.90%	36"	HDPE
A-7	7.19'	A-8	9.60'	231.70'	1.04%	24"	HDPE
A-7.1	-1.75'	A-9	0.25'	222.73'	0.90%	36"	HDPE
A-15	-1.87'	A-7.1	-1.75'	24.04'	0.50%	36"	HDPE
A-16	-2.82'	A-5	-2.55'	52.85'	0.51%	48"	HDPE
B-2	5.43'	B-1	8.44'	300.05'	1.00%	18"	HDPE
B-3	-3.16'	B-2	0.31'	34.77'	9.98%	18"	HDPE
EX-1	7.16'	B-4	8.80'	163.76'	1.00%	18"	HDPE

* EXISTING INVERTS ARE BASED UPON RECORD DRAWINGS. CONTRACTOR TO VERIFY EXISTING INVERTS AND PIPE SIZES PRIOR TO ORDERING STORMDRAIN STRUCTURES AND BEGINNING STORMDRAIN IMPROVEMENTS.

TEST PIT NOTE

TP

CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY OR 2' BELOW PROPOSED UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING VA, LLC. IN WRITING.

GRADING 7 OF 8

MARYLAND COORDINATE SYSTEM (MCS)

60 30 15 0 60

1"= 60'

LIMIT OF DISTURBANCE: 3,127,608 S.F. OR 71.80 AC.

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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SHEET TITLE:

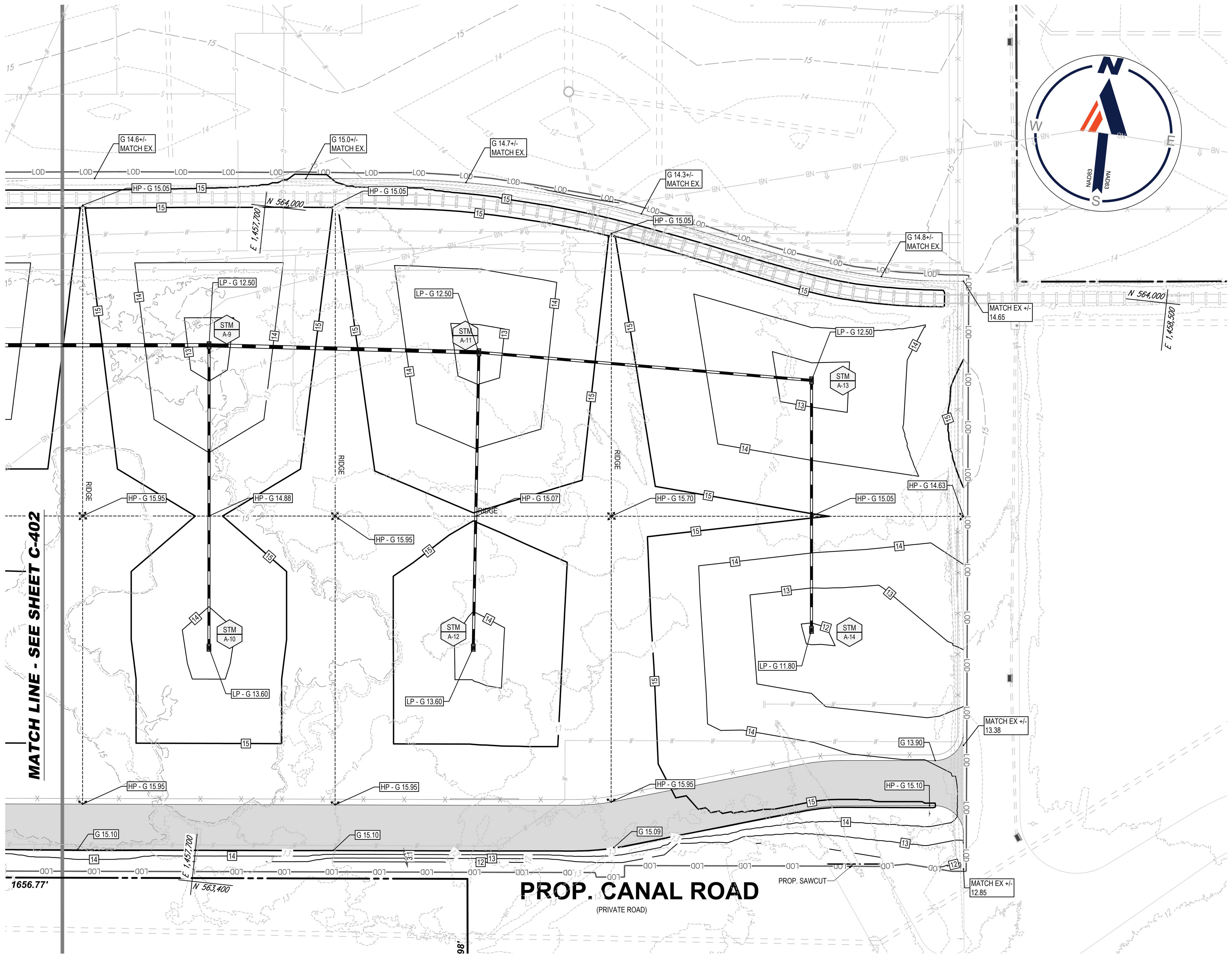
FINAL GRADING PLAN

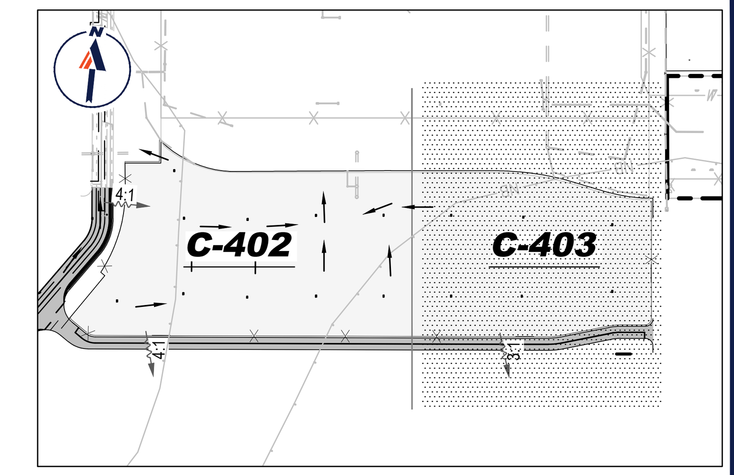
SHEET NUMBER:

C-402

O7 OF 08

MDE PROJECT # 21-SF-0032





KEY MAP

NOT TO SCALE

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	TYPICAL NOTE TEXT	
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TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 / TC 516.00 BC 515.50
S	SANITARY SEWER LINE	SL / S
W	UNDERGROUND WATER LINE / INDUSTRIAL WATER LINE	W / I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
	LIMIT OF DISTURBANCE	LOD
	RIDGE LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB
NB	IDA CRITICAL AREA BOUNDARY	

STORM STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS
A-9	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.50'	INV IN = 0.35' (36") INV IN = 7.19' (24") INV OUT = 0.25' (36")
A-10	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV OUT = 9.60' (24")
A-11	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.50'	INV IN = 2.60' (24") INV IN = 7.25' (24") INV OUT = 2.50' (36")
A-12	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	13.60'	INV OUT = 9.60' (24")
A-13	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	12.50'	INV IN = 5.36' (24") INV OUT = 5.26' (24")
A-14	PRECAST DOUBLE TYPE S INLET (SHA STD. MD-374.70)	11.80'	INV OUT = 7.35' (24")

STORM SEWER PIPE SCHEDULE

FROM	FROM INV	TO	TO INV	PIPE LENGTH	SLOPE (%)	DIAMETER (IN.)	MATERIAL
A-7.1	-1.75'	A-9	0.25'	222.73'	0.90%	36"	HDPE
A-9	7.19'	A-10	9.60'	266.95'	0.90%	24"	HDPE
A-9	0.35'	A-11	2.50'	238.29'	0.90%	36"	HDPE
A-11	7.25'	A-12	9.60'	260.82'	0.90%	24"	HDPE
A-11	2.60'	A-13	5.26'	294.79'	0.90%	24"	HDPE
A-13	5.36'	A-14	7.35'	220.22'	0.90%	24"	HDPE

GRADING 8 OF 8

MARYLAND COORDINATE SYSTEM (MCS)

60 30 15 0 60

1"= 60'

LIMIT OF DISTURBANCE: 3,127,608 S.F. OR 71.80 AC.

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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SHEET TITLE:

FINAL GRADING PLAN

SHEET NUMBER:

C-403

08 OF 08

MDE PROJECT # 21-SF-0032

ESC-31 THROUGH ESC-38

PHASE I 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, CRITICAL AREA OR CRITICAL AREA BUFFER. THIS FENCE SHALL BE INSPECTED BY DEPS AT THE PRE-CONSTRUCTION MEETING. (WEEK 1)

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. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM, SUPER SILT FENCE, SMARTFENCE42, AND SILT FENCE AS DIRECTED BY THE BALTIMORE COUNTY SEDIMENT CONTROL INSPECTOR AND AS SHOWN ON THE APPROVED PLANS. SUPER SILT FENCE, SMARTFENCE42 AND SILT FENCE SHALL BE INSPECTED AND MAINTAINED EACH DAY AND AFTER EACH STORM EVENT. MAINTENANCE SHALL INCLUDE BUT NOT LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION (WEEK 1).

4. WITH THE APPROVAL OF BALTIMORE COUNTY DEPARTMENTS OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL AND THE SEDIMENT CONTROL INSPECTOR CLEAR AND GRUB REMAINDER OF THE SITE. REMOVE REMAINDER OF PAVING, CURB, NECESSARY UTILITIES, ETC. AS SHOWN ON THE PLANS. ALL AREAS OUTSIDE OF THE PERIMETER CONTROL MEASURES SHALL BE COMPLETED PER THE "WORK OUTSIDE PERIMETER CONTROL NOTES" AND "UTILITY NOTES". 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. (WEEKS 2-3)

5. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS, SEDIMENT CONTROL UPON COMPLETION OF INSPECTION AND NECESSARY SEDIMENT CONTROL REPAIRS. (WEEK 4)

PHASE II SEQUENCE OF CONSTRUCTION:

1. BEGIN ROUGH GRADING THE SITE. BEGIN INSTALLATION OF UNDERGROUND UTILITIES. IMMEDIATELY UPON INSTALLATION, INSTALL INLET PROTECTION AROUND ALL PROPOSED INLETS. CONTRACTOR TO MAINTAIN POSITIVE FLOW TO ALL INLETS. (WEEKS 5-10)

3. 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. AREAS WITH SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH PERMANENT SEED AND SOIL STABILIZATION MATTING. (WEEKS 10-14)

4. INSTALL ANY REMAINING STONE SUBBASE AND BEGIN PAVING. (WEEKS 15-19)

5. FLUSH STORM DRAIN SYSTEM AND TAKE THE SPOIL TO A SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN. (WEEK 20)

6. INSTALL LANDSCAPING PER THE APPROVED LANDSCAPE PLAN (WEEK 21-22)

7. 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. (WEEK 23)

SOIL STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES AFTER EVERY STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION. SUPER SILT FENCE STORAGE AREAS SHALL BE DEWATERED AND SEDIMENT CLEANED OUT AFTER EVERY STORM EVENT.

TEMPORARY STOCKPILE NOTES

TEMPORARY STOCKPILES SHALL BE:

1. LOCATED WITHIN THE LIMIT OF DISTURBANCE (LOD).
2. DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
3. POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
4. POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

THESE ITEMS SHOULD BE INCORPORATED INTO ANY NOTE REFERENCING TEMPORARY STOCKPILES, AND WHEN ACTUALLY DELINEATING THEM ON PLAN VIEWS.

INLET PROTECTION NOTE

THE CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS WITH THE EXCEPTION OF THE FOLLOWING:

*1) ANY INLET OUTFALLING DIRECTLY INTO A SEDIMENT TRAPPING DEVICE.
2) INLETS ON PRIVATE OR PUBLIC PAVED ROAD OPEN TO THE PUBLIC.
3) IF AN AREA AROUND THE GABION INLET PROTECTION DOES NOT DRAIN WITHIN 24 HOURS OF A RAIN EVENT, CONTRACTOR TO PUMP AREA THROUGH A FILTER BAG TO AN EXISTING UNDERGROUND STORM DRAIN SYSTEM OR PUMP TO AN EXISTING INLET THAT DRAINS DIRECTLY TO THE TINMILL CANAL WASTEWATER TREATMENT PLANT.

ALL INLET PROTECTION WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE E-23. THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

*STORM DRAIN TO BE FLUSHED PRIOR TO TRAPPING DEVICE REMOVAL.

QUANTITY TAKEOFF OF SEDIMENT CONTROL MEASURES

**ALL PHASES	
SUPER SILT FENCE OR SMARTFENCE42:	5,575 L.F.
SILT FENCE	370 L.F.
REMOVABLE PUMP STATION	3 EA.
FILTER BAG	3 EA.
AT-GRADE INLET PROTECTION	3 EA.
GABION INLET PROTECTION	15 EA.
STABILIZED CONSTRUCTION ENTRANCE:	2 EA.
MOUNTABLE BERM	2 EA.

EARTH WORK (TOTAL DEVELOPMENT)	
CUT:	6,070 C.Y.
FILL:	45,760 C.Y.
NET:	39,690 C.Y. (FILL)

SPOIL MATERIAL SHALL BE DISCARDED AT A SITE WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN. BORROW MATERIAL SHALL BE OBTAINED FROM AN APPROVED SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.

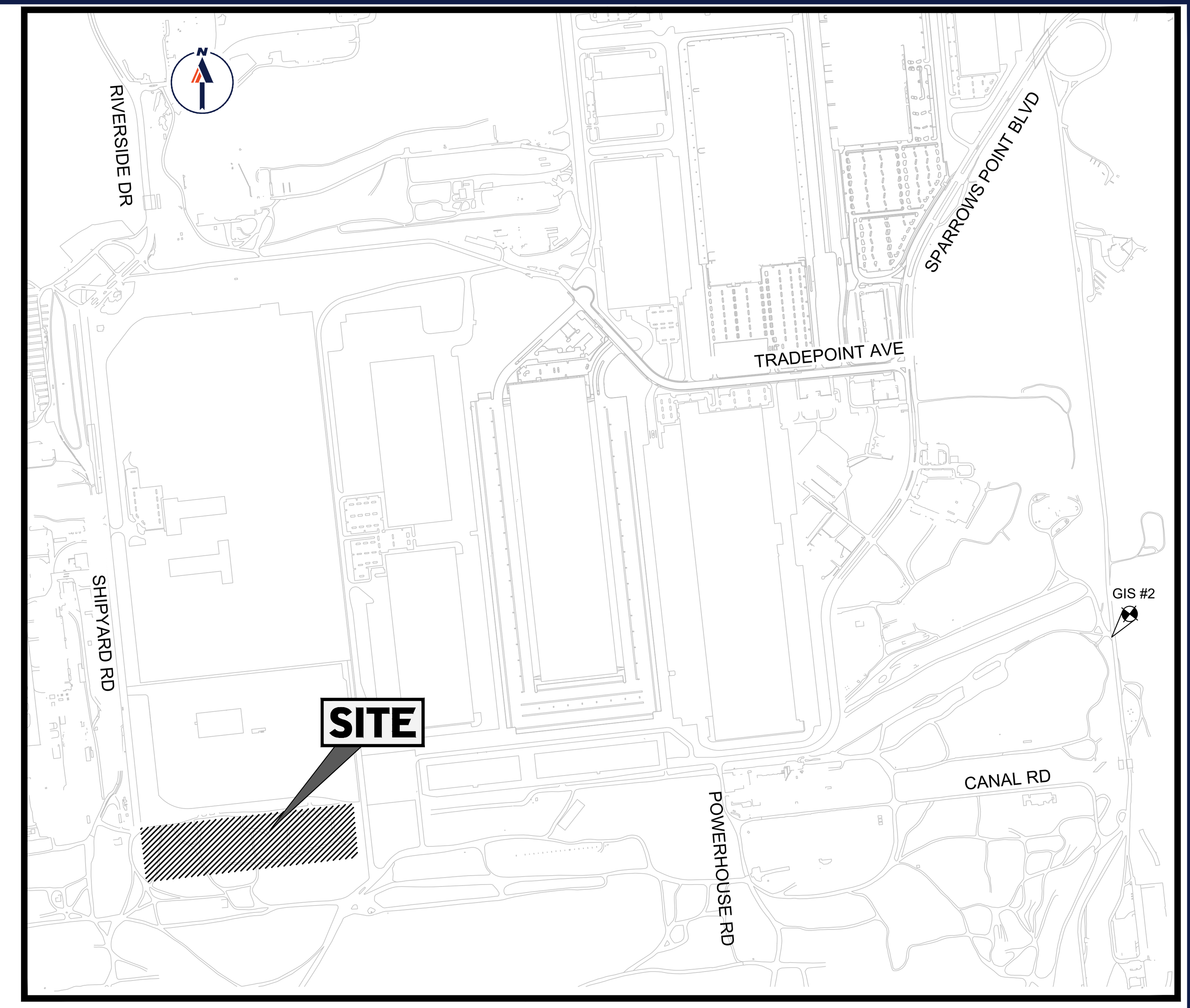
EARTH QUANTITIES LISTED ABOVE ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR ESTIMATING AND BONDING PURPOSES.

WORK OUTSIDE PERIMETER CONTROLS NOTES

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREA TO BE PAVED, THE APPLICATION OF STONE BASE
2. FOR AREAS TO BE VEGETATIVELY STABILIZED
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWN SLOPE SIDE.

WORK TO BE COMPLETED OUTSIDE THE SEDIMENT CONTROL MEASURES SHALL BE DONE PER THE "WORK OUTSIDE PERIMETER CONTROLS NOTES" AND "UTILITY NOTES" ON THIS SHEET.



LOCATION MAP

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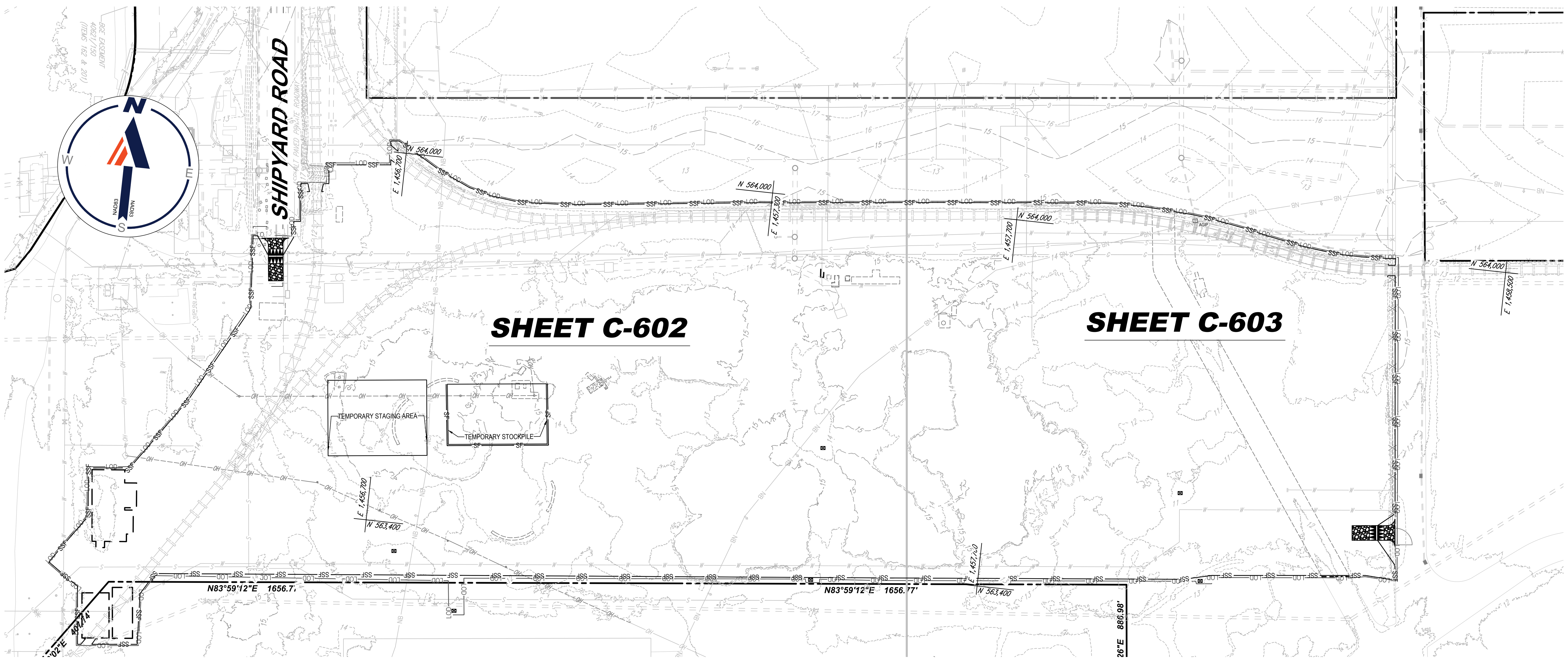
PERMIT USE NO. 20602153-5
SCALE: 1"=1,000'

BENCHMARK INFORMATION

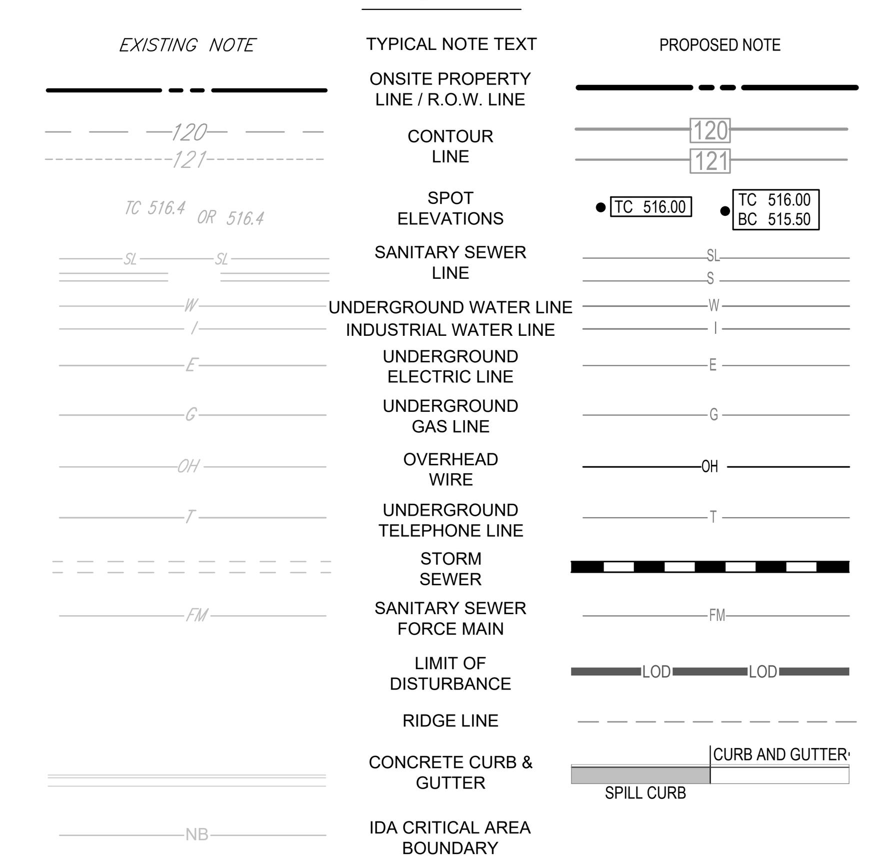
ELEVATIONS ARE BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER



LEGEND



SOILS INFORMATION

SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.

NOTE TO CONTRACTOR:

EROSION/SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

LIMIT OF DISTURBANCE: 3,127,608 S.F. OR 71.80 AC.

ESC-31 OF 38

MARYLAND COORDINATE SYSTEM (MCS)

100 50 25 0 100
1"= 100'

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PROFESSIONAL ENGINEER
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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: 6/9/23

SHEET TITLE:

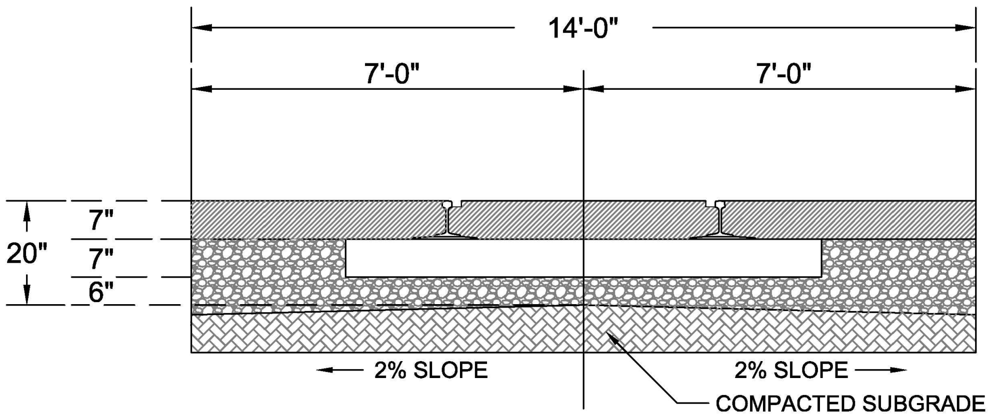
OVERALL PHASE I EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:

C-601

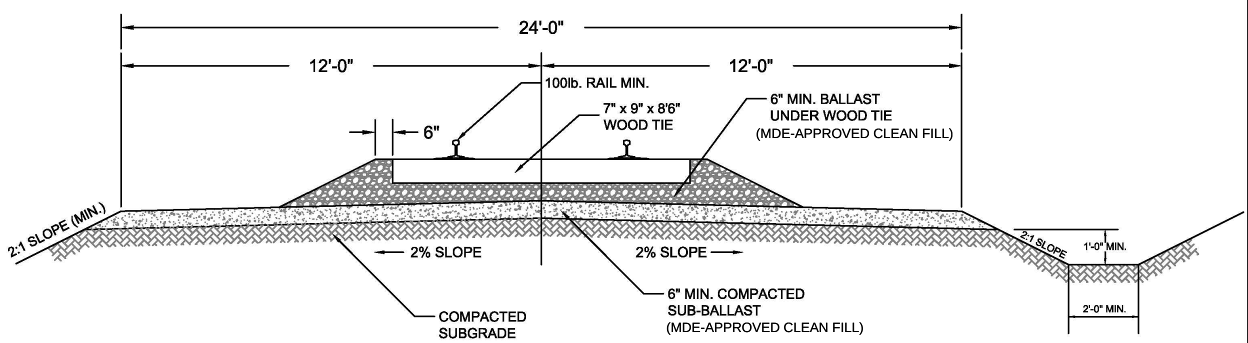
MDE PROJECT # 21-SF-0032

ATTACHMENT 2



TRADEPOINT RAIL

Track Section for Paved Area			
SCALE: N.T.S.	DRAWN BY: SJY	DATE: 6/15/16	DRAWING:
TRADEPOINT RAIL Sparrows Point, Maryland			**TPR-0101**



TRADEPOINT RAIL

Standard Track Section			
SCALE: N.T.S.	DRAWN BY: SJY	DATE: 6/15/16	DRAWING:
TRADEPOINT RAIL Sparrows Point, Maryland			**TPR-0101**

ATTACHMENT 3

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B4-2 Expansion

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 B4-2 Expansion

Area of site (ac)	Ac	28.2
Overall duration of construction (wk/yr)	EW	2
Exposure frequency (day/yr)	EF	10
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	11
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	14.0
Overall duration of construction (hr)	tc	336
Overall duration of traffic (s)	Tt	288,000
Surface area (m2)	AR	114,121
Length (m)	LR	338
Distance traveled (km)	ΣVKT	34
Particulate emission factor (m3/kg)	PEFsc	122,444,849
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	7.16
Total time of construction (s)	Tcv	288,000

→ Site-Wide EU1-EXP

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				379	218,265	378	2,435	201,116	2,406
Cadmium	A/I	-	1.80E-03	1.00E-03	1.00E-05	0.025	2.50E-05	0.001	1			-	7.50E+01					521,411	521,411	7,900	134,077	7,461
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				563	11,173	536	20,110	4,022,313	20,010
Iron	P	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							6,013,533		6,013,533
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							121,351	670,386	102,751
Mercuric Chloride (and other salts)	A/I	-	-	1.00E-05	3.00E-04	0.07	7.00E-07	0.01	1			-								61.9	4,022,313	61.9
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	0.01	1			-	7.10E+01							344		344
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							41,082	1,340,771	39,861
Benz[a]anthracene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	2.60E-02	6.70E-06	4.91E-04	1.08E+03	1.80E+05	6.71E-10	4.73E+4	4,456	6,045	2,565			
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	2.52E+5	446	3,214	391	1,910	55.1	53.6
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	2.27E+5	4,456	28,980	3,862			
Benzo[k]fluoranthene	I	1.00E-02	6.00E-06	-	-	1		0.13	1	4.80E-02	5.60E-06	2.39E-05	3.54E+03	5.90E+05	2.74E-11	2.34E+5	44,561	298,538	38,773			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	6.03E+5	446	1,564,233	445			
Indeno[1,2,3-c,d]pyrene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.50E-02	5.20E-06	1.42E-05	1.20E+04	2.00E+06	5.62E-12	5.18E+5	4,456	65,835	4,174			
Naphthalene	C/I/A	1.20E-01	3.40E-05	2.00E-02	3.00E-03	1	2.00E-02	0.13	1	6.00E-02	8.40E-06	1.80E-02	9.00E+00	1.50E+03	6.35E-06	4.87E+2	3,713	110	107	127,316	160	160
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	5.68E+3	218.1	76.2	56.5			

*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