

RESPONSE AND DEVELOPMENT COMPLETION REPORT

AREA A: PARCEL A4
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:



TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Sparrows Point, Maryland 21219

Prepared By:



ARM GROUP LLC
9175 Guilford Road
Suite 310
Columbia, Maryland 20146

ARM Project No. 20010102

Respectfully Submitted,
ARM Group LLC

A handwritten signature in black ink that reads "Melissa R. Hritz".

Melissa Replogle Hritz, E.I.T.
Staff Engineer

A handwritten signature in black ink that reads "Neil Peters".

T. Neil Peters, P.E.
Senior Vice President

Revision 0 – September 23, 2020

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1.	Report Purpose	1
1.2.	Project Background	2
1.2.1	Site Description and History	2
1.2.2	Historical Environmental Activities	2
1.2.3	Phase II Investigation.....	3
1.3.	Site Development and Response Actions.....	3
2.0	Response Activities.....	4
2.1.	Supplemental DRO Delineation.....	4
2.2.	Supplemental Cadmium Delineation	4
2.1.	Well Abandonment	5
3.0	Site Development Activities	6
3.1.	Pre-Construction Meeting	6
3.2.	Grading and Site Preparation	6
3.3.	Capping	6
3.4.	Soil Removal	7
3.5.	Water Management	7
3.6.	Dust Control	7
3.7.	Health and Safety	8
3.8.	Institutional Controls (Future Land Use Controls)	8
3.9.	Post Remediation Requirements	9
4.0	Conclusion.....	10

TABLE OF CONTENTS (CONT.)

FIGURES

Figure 1	Area A & B Parcels.....	Following Text
Figure 2	Development Area	Following Text
Figure 3	Cadmium Delineation Results	Following Text
Figure 4	Groundwater Network Abandonment	Following Text

APPENDICES

Appendix A	Reference List.....	Following Text
Appendix B	Email Communications.....	Following Text
Appendix C	Request Letter from Tradepoint Atlantic.....	Following Text
Appendix D	Response Action Completion Report: A4-013 Cadmium Response Area	Following Text
Appendix E	Well Abandonment Records.....	Following Text
Appendix F	Pavement Cap/Summary Letter	Following Text
Appendix G	Development Plan Drawings	Following Text
Appendix H	Development Photograph Log	Following Text
Appendix I	Bethlehem Boulevard Access Road Development Plan Drawing	Following Text
Appendix J	Stockpile Soil Laboratory Reports.....	Following Text

1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Completion Report for a portion of the Tradepoint Atlantic property that has been designated as Area A: Parcel A4, (the Site). All documents related to the investigation and development of the parcel are listed in the Reference List in **Appendix A**. Copies of relevant email communication are provided in **Appendix B**.

Tradepoint Atlantic submitted a letter (**Appendix C**) requesting an expedited remedial plan review to achieve construction deadlines for the proposed development on this Site. The Cold Mill Redevelopment Work Plan (Revision 1) was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on November 29, 2016. Approval to proceed with development work was received on December 2, 2016.

Parcel A4 comprises approximately 61.4 acres of the approximately 3,100-acre former plant property located as shown on **Figure 1**. Parcel A4 includes an 800,000 square foot building (18.1 ac) that was the former New Cold Mill Complex (NCMC) and 10 acres of existing paved laydown areas. The NCMC was previously investigated by a building occupancy assessment (BOA) and will be retained during development. The results of the BOA were presented to the agencies in the Building Occupancy Assessment for the New Cold Mill Complex (dated April 13, 2015).

This report documents completion of the development performed on Parcel A4 in accordance with the Cold Mill Redevelopment Work Plan). Details regarding environmental conditions encountered at the Site are presented in the Parcel A4 Phase II Investigation Report (Revision 2 dated November 6, 2017).

1.1. REPORT PURPOSE

The purpose of this Response and Development Completion Report is to document response action and development activities undertaken in order to secure a No Further Action (NFA) Letter and Certificate of Completion (COC) for the Site. In addition, this report is being submitted in accordance with 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.

The following section (Section 1.2) provides the project background, and Section 1.3 provides an overview of the Site development and response action activities. The response and development actions performed are described in Section 2 and Section 3, respectively, and conclusions are provided in Section 4.

1.2. PROJECT BACKGROUND

Site Description and 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. A demolition contractor has been demolishing the majority of the above-grade structures on the site-wide property from 2013 to present day.

The Site is identified as Parcel A4, which includes an area of 61.4 acres of an approximately 3,100-acre former steel mill (**Figure 1**) that operated for over one hundred years. Parcel A4 includes an existing 18.1 acre building that was the former NCMC, with 10 additional acres of associated existing paved laydown areas and roadways. All steel finishing equipment has been removed from the NCMC, and the complex was in use as a materials warehouse prior to the start of development activities. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM).

There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

1.2.2 Historical Environmental Activities

The Parcel A4 Development Area was formerly occupied by the NCMC which contained numerous steel manufacturing processes. The NCMC was constructed in 2000. Former operations at the NCMC delivered cold flat-rolled sheeting for either sale or further coating operations conducted elsewhere on the property. The western portion of Parcel A4 historically operated as a pipe production facility (Pipe Mill) beginning in the 1940s. In May 1984, the Pipe Mill was closed under a Closure Plan approved by the MDE on December 12, 1983. Closure activities occurred on the Site and surrounding area through the 1980s and 1990s. In 1998, the Pipe Mill was demolished. More information regarding previous steel finishing activities can be found in the Phase II Investigation Work Plan – Area A: Parcel A4 (Revision 2 dated October 29, 2015).

A Phase I Environmental Site Assessment (ESA) was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. The results of the Phase I ESA are described in more detail in the Parcel A4 Phase II Investigation Work Plan (Revision 2) and the Phase II Investigation Report (Revision 2 dated November 6, 2017). There were no Recognized Environmental Concerns (RECs) identified within the Parcel A4 development boundaries.

Relevant Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were also identified as located in Figure 3-1 from the DCC Report. The following SWMUs/AOCs were identified within the Development Area:

- Pipe Mill Trenches/Sumps (SWMU 49)
- Hydraulic Oil Storage Area (AOC O)

Phase II Investigation

A Phase II Investigation was conducted for all of Parcel A4 in accordance with the Parcel A4 Phase II Investigation Work Plan. The results of the Phase II Investigation are presented in the Parcel A4 Phase II Investigation Report (Revision 2 dated November 6, 2017).

1.3. SITE DEVELOPMENT AND RESPONSE ACTIONS

Parcel A4 has been redeveloped for reuse as a distribution facility (**Figure 2**). The parcel contains the existing NCMC building which has been retained for reuse as a distribution warehouse. The completed development consists of minor modifications to the existing facility including paving of additional area, truck bay construction, minor utility relocation and storm drain connections, and lighting and security improvements. The development area consisted of the entirety of the 61.4 acre parcel.

The response and development actions approved for protection of human health and the environment at the Site included proper abandonment of wells and temporary groundwater sample points (piezometers), delineation of cadmium-contaminated media and environmental capping of the areas shown on **Figure 2** and **Figure 3**.

2.0 RESPONSE ACTIVITIES

2.1. SUPPLEMENTAL DRO DELINEATION

Elevated Oil & Grease was identified above the PAL (6,200 mg/kg) in two soil samples collected from Parcel A4 (A4-002-SB-5 at 17,600 mg/kg and A4-008-SB-1 at 12,400 mg/kg). TPH-DRO and GRO were analyzed at four soil boring locations including A4-008-SB, with no detections above the action limit of 6,200 mg/kg. The potential mobility of non-aqueous phase liquid (NAPL) to groundwater was investigated via the installation of two temporary screening piezometers (installed October 10 and 11, 2016) at location A4-002-SB (the most heavily impacted boring with a detection of 17,600 mg/kg) with screen intervals from 18 to 28 and 5 to 20 feet below ground surface (bgs). During the 0-hour, 48-hour, and 30-day measurements, NAPL was not identified and it was determined that free petroleum product (NAPL) is not present at quantities that are likely to migrate.

The delineation of elevated detections of Oil & Grease is complete. Boring location A4-002-SB was identified as the most likely source area where NAPL could potentially be present at quantities that could migrate. Soils potentially impacted by Oil & Grease have been present for many years and migration pathways associated with existing utilities that may cause off-site migration or surface discharges should be apparent by now. None of the piezometers installed in Parcel A4 showed any evidence of NAPL, and no additional investigation is warranted.

2.2. SUPPLEMENTAL CADMIUM DELINEATION AND EXCAVATION

The Phase II investigation identified an elevated concentration of cadmium (33,600 mg/kg) within the subsurface soil sample collected from the 3 to 4 feet bgs interval from A4-013-SB. Excavation of the soil containing elevated concentrations of cadmium was selected as the preferred remedial response action to address the impacts in the vicinity of A4-013-SB. To delineate the elevated cadmium impacts at location A4-013-SB, a total of 67 supplemental borings (including resampling at the original location) were completed between December 8, 2016 and December 20, 2016. Following the delineation, a remedial excavation was implemented on October 3, 2019 in accordance with the approved Work Plan entitled Delineation Activities and Proposed Excavation of Cadmium Impacted Soil for Parcel A4 (dated April 21, 2017).

The completed excavation activities were documented in the Response Action Completion Report for the A4-013 Cadmium Response Area (dated July 14, 2020 and approved on September 14, 2020) included in **Appendix D**. A total of approximately 26 cubic yards (bank) of soil was removed during excavation. Waste characterization sample results indicated that some of the excavated material was hazardous (with a reported cadmium TCLP concentration of 10 mg/L) and was hauled offsite on for disposal at Envirite of Pennsylvania, Inc. in York, PA.

The non-hazardous excavated material was disposed of onsite at Greys Landfill. Additional details, including the disposal manifest and Land Disposal Restriction and Certification forms are provided in the Response Action Work Plan. Post-excavation sidewall and bottom samples were collected to confirm removal above the excavation criterion (determined through preliminary risk screening) of 550 mg/kg. Both the northern and southern excavations were backfilled to the existing grade with clean fill. Backfilling was conducted on February 21, 2020 by ECLS.

2.1. WELL ABANDONMENT

Piezometers A4-001-PZ, A4-007-PZ, A4-010-PZ, A4-012-PZ, A4-013-PZ, A4-014-PZ, and A4-019-PZ installed for the Phase II investigation were properly abandoned in accordance with Code of Maryland Regulations (COMAR) COMAR 26.04.04.34 through 36 in January 2017. Piezometers A4-005-PZ, A4-007-PZ, and A4-012-PZ were scheduled to be abandoned but were found to be destroyed during development activities. NAPL screening piezometers A4-002-PZ and A4-002a-PZ were installed due to visual observations of NAPL in the soil core at soil boring location A4-002-SB and an elevated concentration of Oil & Grease. NAPL was not detected in either piezometer during the required 0-hour, 48-hour, and 30-day gauging measurements. Both locations were observed to have been destroyed (following the completion of the 30-day NAPL gauging measurements) by vehicle traffic or other causes. Piezometer abandonment records are provided in **Appendix E**.

3.0 SITE DEVELOPMENT ACTIVITIES

This section presents a summary of the completed development work as well as materials management and other protocols that were followed during the development of Parcel A4 to adequately mitigate potential risks for future uses of the property.

Oversight was performed by a field technician provided by Geo-Technology Associates, Inc. (GTA) during development activities to perform dust monitoring and ensure compliance with environmental regulations and the development plans. The Pavement/Cap Summary (Revised) letter provided by GTA (**Appendix F**) states that development activities were completed in general accordance with the development plans (**Appendix G**). This letter serves as the Completion of Remedial Actions letter for this project. Development activities began on December 23, 2016 with Whiting-Turner as the General Contractor. Select photos from general development activities and notable occurrences are included in **Appendix H**.

Tradepoint Atlantic submitted a proposed development plan to construct an access road to connect the site development with the adjacent Bethlehem Boulevard (**Figure 3**). The MDE approved the plan on May 16, 2017. Development plans for the access road are provided in **Appendix I**.

3.1. PRE-CONSTRUCTION MEETING

Prior to any earthwork being conducted on-site, a pre-construction meeting was held to address proper operating procedures for working on-site and handling potentially contaminated material.

3.2. GRADING AND SITE PREPARATION

Site grading activities were minimal, with no major excavations conducted. The maximum depth of excavation was 6 feet to allow for installation of new footers for the truck wells. Development activities were primarily limited to the placement of concrete or asphalt pavement and aggregate subbase where needed. Any material that was not suitable for compaction was excavated and replaced with subbase material. Borrow materials were obtained from MDE-approved common borrow site stockpiles or processed slag aggregate as necessary and were free of organic material, frozen material, or other deleterious material.

3.3. CAPPING

The majority of the site is covered with existing floor slabs or new/existing paving as indicated in **Appendix G** and **Appendix I**. The full thickness of the pavement section (i.e., asphalt or concrete cap) placed over the existing soils is provided in the Pavement/Cap Summary letter (**Appendix F**). A Screening Level Risk Assessment (SLRA) was completed based on the analytical data obtained from the characterization of surface and subsurface soils in Parcel A4.

The results of the SLRA, presented in the Phase II Investigation Report, indicated that no capping remedy would be required. However, due to the use of slag fill as subbase across the site, the entire parcel requires a remedy of capping with institutional controls to mitigate potential future Composite Worker risks. Because the cadmium contamination discussed in Section 2.3 was observed at depths of at least 4 feet bgs, the existing overlying soils are sufficient to be protective of potential future Composite Workers.

3.4. SOIL REMOVAL

The field technician monitored utility trenching activities for signs of potential contamination. In particular, soils were visually inspected for the presence of staining, petroleum waste materials, or other indications of contamination that may be different than what was already characterized. No visibly impacted materials were noted during development activities.

Soil removed from any lighting or minor utility excavations (minor storm drain connections for each new truck well) was stockpiled in a suitable location in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Papadopoulos & Associates, et al., June 17, 2015). Approximately 4,200 tons of soil were stockpiled in the northeast corner of the site. Stockpiles were managed to prevent the erosion and off-site migration of stockpiled materials. Samples of stockpiled materials were submitted for laboratory analysis prior to removal from the Site. Two laboratory reports are provided in **Appendix J**. All stockpiled soil was transported to Parcel B6 by MCM Management Co. for use as fill. No excess material left the 3,100 acre property.

3.5. WATER MANAGEMENT

No new stormwater facilities were proposed for construction at the Site. Minimal dewatering was required for the truck well on the north side of the building. All water removed from the truck well excavation was directed to existing stormwater infrastructure that conveyed water to the Tradepoint Atlantic wastewater treatment plant.

3.6. DUST CONTROL

To limit worker exposure to contaminants borne on dust and windblown particulates, dust control measures were implemented, if warranted when construction activities were performed in areas with impacted soil. The action level used to determine the need for dust suppression techniques (e.g. watering and/or misting) and/or continuous monitoring during the development activities on Site was 1.0 mg/m³. This is more stringent than the site-specific dust action levels, OSHA PELs, and ACGIH TLV.

If visible dust was generated in the breathing zone, air monitoring was implemented as follows:

- At the start of intrusive activities;
- Periodically during intrusive activities;

Air monitoring was performed using a TSI DustTrak II testing device. Dust monitor readings were recorded on the daily field logs. If the action level (1.0 mg/m³) was exceeded as a result of conditions occurring at the Site, dust suppression measures were implemented.

Concurrent with the work zone air monitoring, perimeter air monitoring was also performed to ensure contaminants were not migrating off-site. Perimeter monitoring included monitoring at both the downwind and upwind boundaries of the Site. If exceedances attributable to Site conditions were identified downwind for more than five minutes or if visible dust was detected, dust control measures and additional monitoring were implemented. The dust suppression measures included wetting or misting through use of a hose connected to an available water supply or a water truck stationed on Site.

Dust control measures were implemented as described above to address dust generated as a result of construction and response activities conducted on Site. However, based on the nature of the area and/or activities performed in areas surrounding the Site, it is possible that windblown particulates may have come from surrounding areas. The dust concentration in the upwind portion of the Site was considered when monitoring dust levels in the work zone.

3.7. HEALTH AND SAFETY

All Response Phase activities were conducted under the site-specific health and safety plan (HASP) provided as *Appendix C* of the Cold Mill Building Redevelopment Work Plan (Revision 1) dated November 29, 2016. All development work was conducted under the Cold Mill Redevelopment Work Plan.

3.8. INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be described within the No Further Action Letter (NFA) and COC. These conditions are anticipated to include the following:

- A restriction that limits the use of the property to industrial land use.
- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Notice to MDE prior to any future soil disturbance activities at the Site below areas designated for engineering controls. This written notice will be required at least 30 days prior to any planned excavation activities at the Site that will penetrate through the cap.
- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any future material excavated from beneath the cap in accordance with applicable local, state, and federal requirements.

- Implementation of inspection procedures and maintenance of the containment remedies as outlined the following section.

The responsible party will file the above deed restrictions as defined by the MDE VCP in the NFA and COC. The soil disturbance and maintenance requirements will apply to the capped areas shown in **Figure 2** and **Figure 3**. The entire Site will be subject to the industrial use groundwater use restrictions.

3.9. 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.

Maintenance requirements will include inspection and maintenance of capped areas to minimize degradation of the cap and exposure to the underlying soil. Specific inspection protocols and maintenance schedules will be addressed in an Institutional Controls and Operations & Maintenance Plan, specific to Parcel A4, to be submitted under separate cover.

The responsible party will perform cap maintenance inspections, perform maintenance of the cap, and retain cap inspection records. Areas of the cap that have degraded will be repaired in accordance with the Institutional Controls and Operations & Maintenance Plan. MDE shall be notified within ten business days of any repairs that are the result of cap failure. The notification will include documentation of the conditions being repaired and the location of the repair.

In addition, the MDE will be provided with a written notice at least 30 days prior to any planned excavation activities at the Site that will penetrate through the cap. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal procedures.

4.0 CONCLUSION

Between December 23, 2016 and May 2017, response and development actions were conducted as part of the redevelopment of the Site identified as Parcel A4. The primary response and development actions included a supplemental DRO delineation, a supplemental cadmium delineation, abandonment of temporary groundwater collection points and wells, grading, paving, and security improvements.

As a result of the information contained herein, it has been demonstrated that the response and development actions have been completed in accordance with the recommendations for remediation specified in the Phase II Investigation Report and the approved Cold Mill Redevelopment Work Plan. An As-Built Certification Letter prepared by the EP, a Professional Engineer registered in Maryland, is provided in **Appendix E** to certify that the response actions have been completed in accordance with the recommendations specified in the Phase II Investigation Report and the Cold Mill Redevelopment Work Plan and that the Site is suitable for occupancy and use.

With construction of the engineering controls (cap) in conjunction with redevelopment of the Site, the applicable requirements for obtaining a NFA Letter and COC for this Site have been fulfilled. Therefore, Tradepoint Atlantic is respectfully requesting issuance of a NFA Letter for the Site at this time. Tradepoint Atlantic will record the NFA Letter and the deed restrictions identified in the Cold Mill Redevelopment Work Plan within 30 days after receipt of the final NFA Letter. Proof of recordation will be submitted to MDE upon receipt from Baltimore County.

FIGURES



Tradepoint Atlantic
Area A and Area B Parcels
September 15, 2020

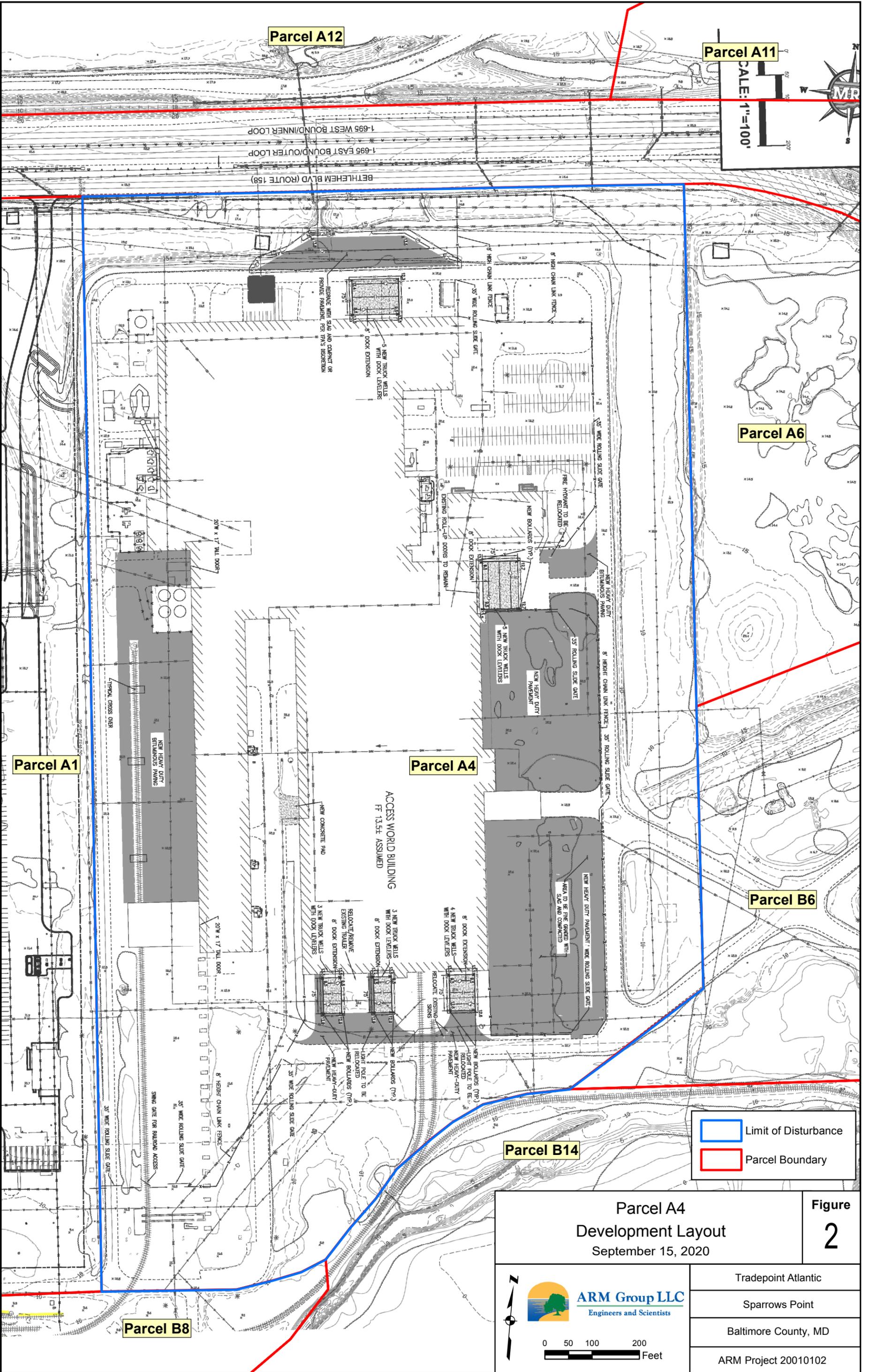
Figure
1



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



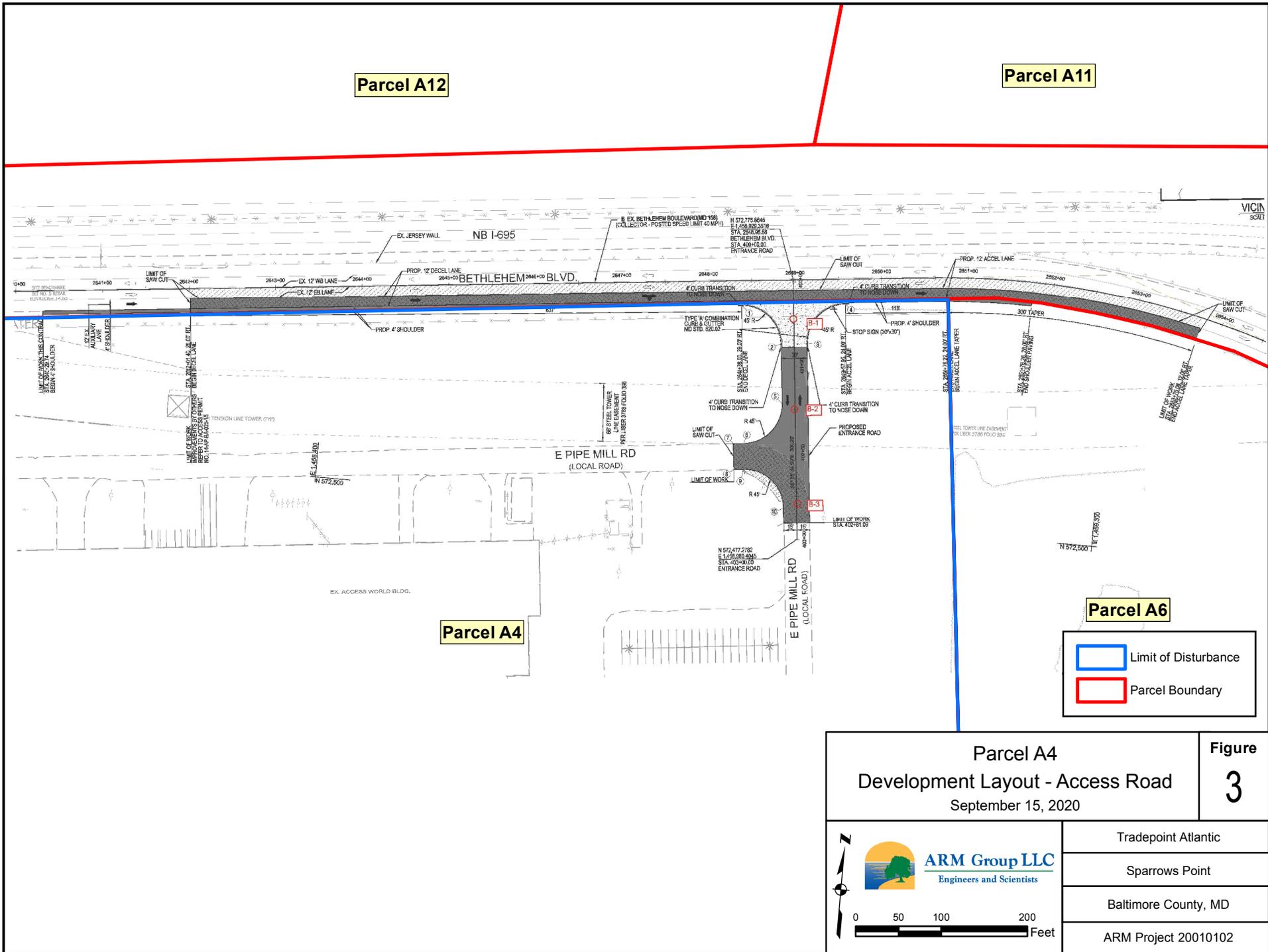
Parcel A4
Development Layout
September 15, 2020

Figure
2

ARM Group LLC
Engineers and Scientists

0 50 100 200
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010102



Parcel A12

Parcel A11

Parcel A4

Parcel A6

Parcel A4
 Development Layout - Access Road
 September 15, 2020

Figure
3



ARM Group LLC
 Engineers and Scientists

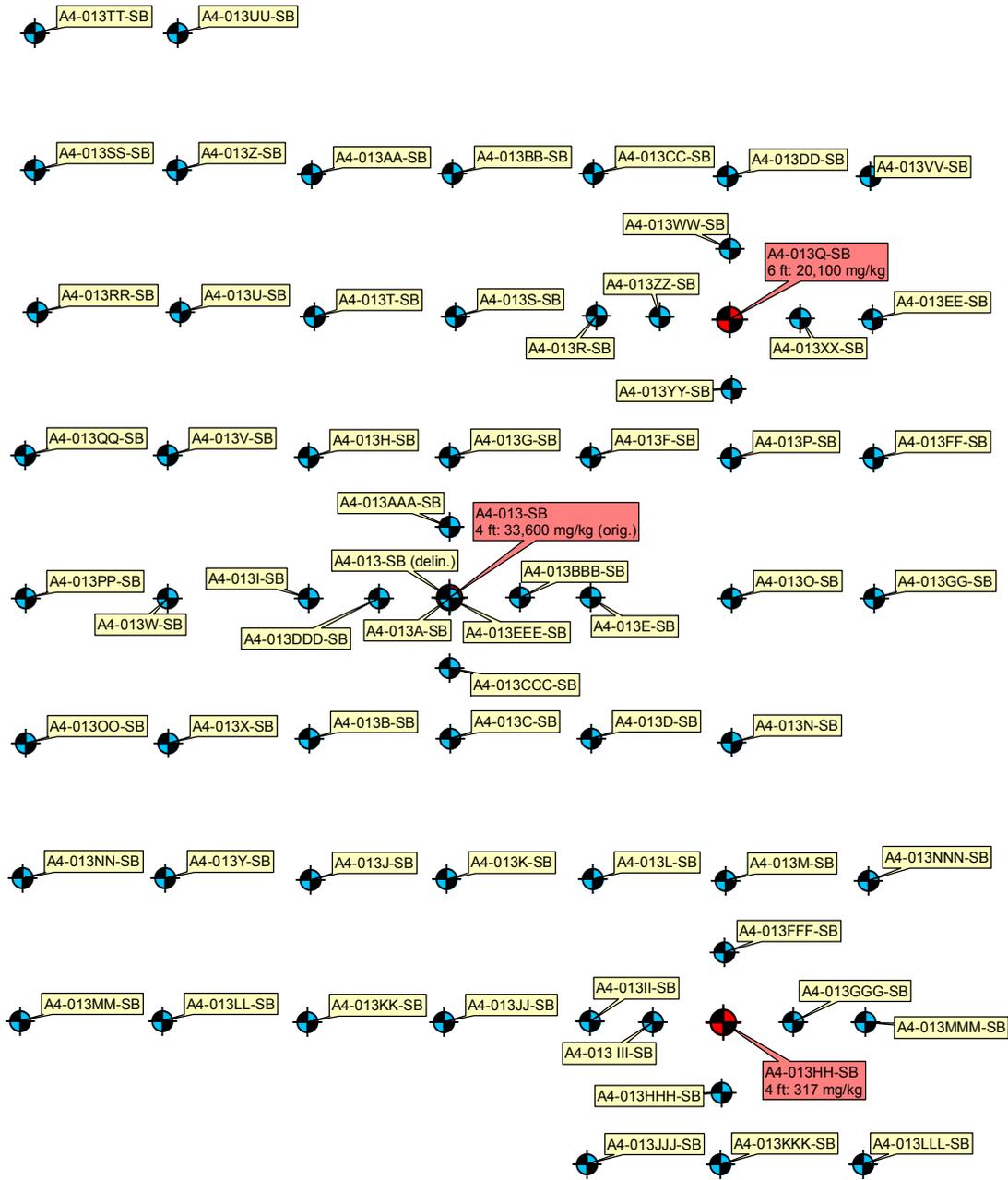
0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010102



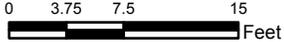
 Below Delineation Criteria
 Above Delineation Criteria
 Cadmium Criteria
 Results > 154 mg/kg



Parcel A4 Cadmium Delineation Analytical Results
September 15, 2020

Figure 4



 ARM Group LLC
 Engineers and Scientists


Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010102

APPENDIX A

Reference List

Parcel A4

- Weaver Boos Consultants (2014). *Phase I Environmental Site Assessment: Former RG Steel Facility*. Final Draft. May 19, 2014.
- ARM Group, Inc. (2015). *Building Occupancy Assessment for New Cold Mill Complex Area A: Parcel A4*. April 13, 2015.
- S.S Papadopulos & Associates, Inc. and Jenkins Environmental Inc. (2015). *Materials Management Plan for the Sparrows Point Facility*. June 17, 2015.
- ARM Group, Inc. (2015). *Phase II Investigation Work Plan, Area A: Parcel A4*. Revision 2. October 29, 2015.
- ARM Group, Inc. (2016). *Cold Mill Building Redevelopment Work Plan Area A: Parcel A4*. Revision 1. November 29, 2016.
- ARM Group, Inc. (2017). *Delineation Activities and Proposed Excavation of Cadmium Impacted Soil, Area A: Parcel A4*. Revision 0. April 21, 2017.
- ARM Group, Inc. (2017). *Phase II Investigation Report Area A: Parcel A4*. Revision 2. November 6, 2017.

APPENDIX B

From: James Calenda [<mailto:jcalenda@enviroanalyticsgroup.com>]
Sent: Friday, December 02, 2016 11:55 AM
To: Taylor Smith
Subject: RE: Parcel A-4 Cold Mill Building Redevelopment Plan Truck Dock Installation

Just heard back from Ruth and all they needed was the revised Appendix C.

From: Taylor Smith [<mailto:tsmith@armgroup.net>]
Sent: Friday, December 02, 2016 10:16 AM
To: James Calenda <jcalenda@enviroanalyticsgroup.com>
Subject: RE: Parcel A-4 Cold Mill Building Redevelopment Plan Truck Dock Installation

James,

Please see the attached HASP for the Parcel A4 Cold Mill Redevelopment Plan which was revised in accordance with Ruth's comment.

I was able to modify the PDF (this document was generated by EAG) to add the Dusk Mask to Section 5.2. Please let me know if any other changes are required.

Thank you,

Taylor R. Smith
Staff Engineer



ARM Group Inc.
9175 Guilford Road
Suite 310
Columbia, MD 21042
Phone: 410-290-7775 (x2007)
Cell: 443-340-1248

Vision.
Partnership.
Results.

www.armgroup.net



 Consider the environment. Please don't unnecessarily print this e-mail.

This electronic message and its attachments are forwarded to you for convenience and "for information only." This electronic message contains information that is intended solely for the person or entity to which it is addressed and may contain information that is confidential or otherwise protected from disclosure. Any review, retransmission, dissemination or other use of or taking of action in reliance upon this information by persons or entities other than the intended recipient is prohibited.

From: James Calenda [<mailto:jcalenda@enviroanalyticsgroup.com>]
Sent: Friday, December 02, 2016 9:45 AM
To: Eric Magdar; Neil Peters; Taylor Smith
Subject: Fwd: Parcel A-4 Cold Mill Building Redevelopment Plan Truck Dock Installation

See below from Ruth. Let me know if you can make this requested revision.

From: Prince, Ruth <prince.ruth@epa.gov>
Sent: Friday, December 2, 2016 9:40 AM
Subject: RE: Parcel A-4 Cold Mill Building Redevelopment Plan Truck Dock Installation
To: Barbara Brown -MDE- <barbara.brown1@maryland.gov>, Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>, James Calenda <jcalenda@enviroanalyticsgroup.com>, Mark Mank -MDE- <mark.mank@maryland.gov> <mark.mank@maryland.gov>, Weissbart, Erich <weissbart.erich@epa.gov>
Cc: Craven, Laura <lcraven@wcgrp.com>, Russ Becker <rbecker@enviroanalyticsgroup.com>, RLUTZ@SAUL.COM <rlutz@saul.com>, Dorgan, Doug <ddorgan@wcgrp.com>

Hi All – EPA has reviewed this plan and there is one omission in the Appendix C Health and Safety Plan, Section 5.2, modified Level D Protection. The list of PPE does not include the dust mask. Please revise to include, send to the Agencies electronically today and according to our discussion yesterday, the plan is approved for a Monday Dec. 5 start.

Ruth Prince, PhD Toxicologist
3LC10
Land and Chemicals Division
U.S. Environmental Protection Agency Region III
1650 Arch St.
Philadelphia, PA 19103-2029
215-814-3118
prince.ruth@epa.gov

From: James Calenda [<mailto:jcalenda@enviroanalyticsgroup.com>]
Sent: Tuesday, November 29, 2016 5:48 PM
To: Barbara Brown -MDE- <barbara.brown1@maryland.gov>; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>; Mark Mank -MDE- (mark.mank@maryland.gov) <mark.mank@maryland.gov>; Weissbart, Erich <Weissbart.Erich@epa.gov>; Prince, Ruth <Prince.Ruth@epa.gov>
Cc: Russ Becker <rbecker@enviroanalyticsgroup.com>; Dorgan, Doug <ddorgan@wcgrp.com>; Craven, Laura <lcraven@wcgrp.com>; RLUTZ@SAUL.COM
Subject: Parcel A-4 Cold Mill Building Redevelopment Plan Truck Dock Installation

All,

Per our discussion earlier today during the conference call, please use the link below to download a streamlined version of the A-4 Cold Mill Building Redevelopment Plan that solely addresses the proposed truck dock installation. This work plan has been revised in order to facilitate an expedited review from both EPA and MDE in order to gain approval for the truck dock installation. Hard copies will be prepared tomorrow and should be delivered Thursday morning via Fed Ex. If anyone has questions regarding this work plan submission, feel free to contact me directly.

<https://app.box.com/s/15p3day6adz1at88kkqa7sqhlhgh4isi>

Thanks
James

James Calenda
Project Manager
EnviroAnalytics Group, LLC
1650 Des Peres Road, Suite 303
St. Louis, Missouri 63131
Cell: 314-620-3056
jcalenda@enviroanalyticsgroup.com

www.enviroanalyticsgroup.com

From: Barbara Brown -MDE- [<mailto:barbara.brown1@maryland.gov>]
Sent: Tuesday, May 16, 2017 9:57 AM
To: Pete Haid <phaid@tradepointatlantic.com>; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>
Cc: James Calenda <jcalenda@enviroanalyticsgroup.com>
Subject: Re: Access World Entry Road Extension

Hello Pete

TPA may proceed with the installation of the access road as described with the following requirements:

1. All work must be completed under a site specific Health and Safety Plan.
2. Grading work, including soil management and dust monitoring must comply with the Soil Management Plan.
3. Contact MDE if any unusual conditions are encountered-for example petroleum soils.

Please provide the contact information for the environmental professional who will be on-site for the work.

If you have any questions regarding this approval please contact me.

Barbara Brown
MDE Project Coordinator

On Tue, May 2, 2017 at 10:12 AM, Pete Haid <phaid@tradepointatlantic.com> wrote:

Barbara:

Good morning. Attached is the drawing of the proposed section of entry road for the Access World building. We had discussed this briefly during our site meeting last week. This work will result in minimal ground disturbance or fill. It will connect two existing roads that are roughly on the same grade and will run a new 4' strip along an existing road shoulder. The work will take between one to two weeks.

Please let me know if you require additional information.

Thanks.

Pete

--

Barbara Brown
MDE-LRP-VCP Section Head
direct 410 537 3212
general 410 537 3493

[Click here](#) to complete a three question customer experience survey.

APPENDIX C



**TRADEPOINT
ATLANTIC**

1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

October 7, 2016

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

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

Ms. Brown:

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

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

On September 11, 2014, TradePoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP). Parcel A-4 is part of the acreage that remains subject to the Multimedia Consent Decree between Bethlehem Steel Corporation, the United States Environmental Protection Agency (EPA), and the Department (effective October 8, 1997) as amended.

In consultation with the Department, TradePoint Atlantic affirms that it desires to accelerate the assessment, remediation and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and TradePoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel A-4 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article).

Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At



**TRADEPOINT
ATLANTIC**

1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

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

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

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

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

Sincerely,

Tradepoint Atlantic

John M. Martin III
Development Director

APPENDIX D



ARM Group LLC

Engineers and Scientists

July 14, 2020

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

Re: Response Action Completion Report:
A4-013 Cadmium Response Area
Area A: Parcel A4
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

ARM Group LLC (ARM), on behalf of EnviroAnalytics Group, LLC (EAG), has prepared this Response Action Completion Report for the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) to document the implementation of a remedial excavation to remove material containing elevated cadmium on a portion of the Tradepoint Atlantic property that is designated as Area A: Parcel A4 (the Site), which is shown on **Figure 1**.

Project Background

During the Phase II Investigation of Parcel A4, an elevated concentration of cadmium (33,600 mg/kg) was identified within the subsurface soil sample collected from 3 to 4 feet below ground surface (bgs) from soil boring A4-013-SB. Additional delineation of the elevated cadmium impacts at A4-013-SB was performed, and excavation of the material containing elevated concentrations of cadmium was selected as the preferred remedial response action to address the impacts observed in the vicinity of A4-013-SB (the Response Area). The complete findings of the delineation and the implementation protocols for the proposed remedial excavation were presented within a Work Plan entitled Delineation Activities and Proposed Excavation of Cadmium Impacted Soil for Parcel A4 (dated April 21, 2017). The criterion for material removal (determined through a preliminary risk screening analysis) was established as a cadmium concentration of 550 mg/kg. The Work Plan was approved by the MDE and USEPA on April 24, 2017.

Response Action Implementation

The preliminary extents of the excavations required to remove the cadmium contaminated soil, as presented in the Work Plan, were based on the cadmium data from the preceding delineation. Two locations exceeded 550 mg/kg of cadmium (A4-013-SB and A4-013Q-SB). Soil was excavated from the Response Area on October 3, 2019. The excavations were completed to final depths of 6 feet and 8 feet bgs at locations A4-013-SB and A4-013Q-SB, respectively. A total of approximately 26 cubic yards (bank) of potentially impacted material was removed. The completed excavation boundaries for the Response Area are shown on **Figure 2**. A photograph log of the implementation is included as **Attachment 1**.

All response activities were conducted in accordance with the property-wide Health and Safety Plan (HASP) developed by EAG. Excavation work was performed by Enterprise Network Resolutions Contracting, LLC (ENRC). Response Action oversight was performed by an ARM Environmental Professional (EP).

Materials Management and Disposal

Excavated material was segregated into two stockpiles, one for the excavation around A4-013-SB and the other for the excavation around A4-013Q-SB. Each of the stockpiles was placed adjacent to the respective excavation on polyethylene sheeting to protect the ground surface. Weighted polyethylene sheets were used to cover the stockpiles at the end of the excavation activities and the piles remained covered in order to minimize the generation of dust and prevent run-on/off until disposal. Visual dust monitoring was performed during excavation. No visual dust migration was observed; therefore, no dust suppression techniques were implemented. Groundwater was not encountered during excavation; thus, water management was not required.

One composite sample was collected from each of the excavation stockpiles. Each composite sample consisted of 10 randomly selected grab aliquots from the designated stockpile. The composite samples were submitted to Caliber Analytical Services for TCLP analysis to facilitate proper disposal. Analytical results from the waste characterization soil samples are summarized (detections only) in **Table 1**. The complete laboratory report from the waste characterization testing is included as **Attachment 2**. The waste characterization sample results indicated that excavated material in the southern stockpile (associated with location A4-013-SB) was hazardous (with a reported cadmium TCLP concentration of 10 mg/L) and required appropriate disposal offsite. The material in the northern stockpile (associated with location A4-013Q-SB) was non-hazardous and was disposed of onsite at Greys Landfill on February 29, 2020.

Because the analytical results indicated that the stockpiled material from the southern excavation must be handled as hazardous waste, the material was hauled offsite on February 20, 2020 for disposal at Envirite of Pennsylvania, Inc. in York, PA. The disposal manifest and Land Disposal Restriction and Certification forms are included in **Attachment 3**.



Confirmation Sampling

Once excavation activities were completed, confirmation soil samples were collected from the sidewalls at a rate of one sample from each sidewall, and from the bottom of each of the excavation pits to confirm that all soils exceeding 550 mg/kg of cadmium were removed. The confirmation samples were submitted to Pace Analytical Services, Inc. (PACE) and analyzed for cadmium via USEPA Method 6010C. The analytical cadmium results for the confirmation soil samples are provided in **Table 2**. The complete laboratory report from the cadmium confirmation sampling is included as **Attachment 4**. The confirmation sample locations and results are shown on **Figure 3**. Confirmation samples collected from the bottom of the excavations and along the sidewalls all yielded cadmium concentrations below 550 mg/kg, indicating that the extent of the elevated cadmium contamination was adequately removed.

Backfilling

Both the northern and southern excavations were backfilled to the existing grade with clean fill (#57 stone from Martin Marietta). Backfilling was conducted on February 21, 2020 by ECLS. The stone was placed in 6-inch lifts and compacted with the excavator bucket. Photographs of the completed backfilling are provided in **Attachment 1**.

If you have any questions, or if we can provide any additional information at this time, please do not hesitate to contact ARM Group LLC at 410-290-7775.

Respectfully Submitted,
ARM Group LLC



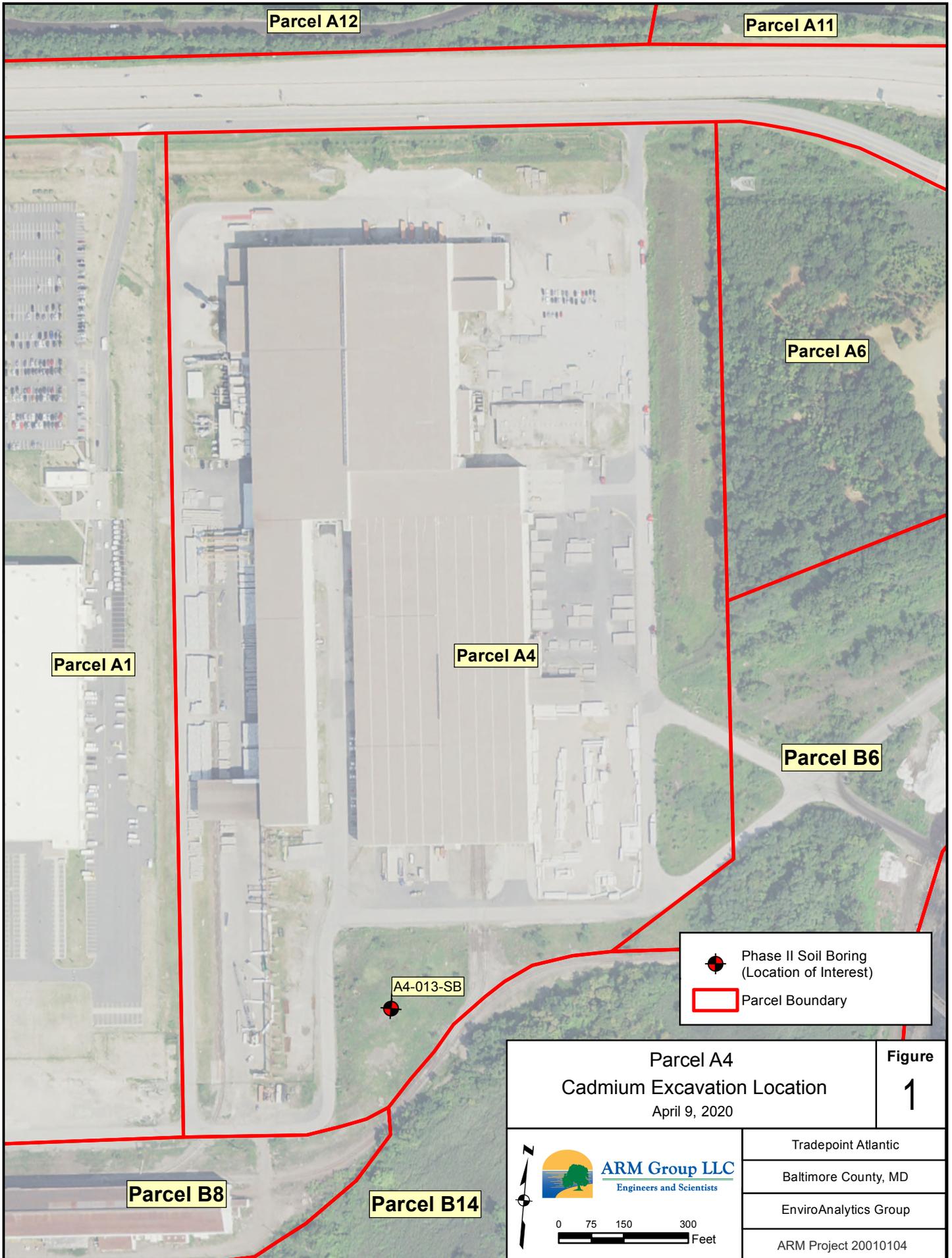
Melissa Replogle, E.I.T.
Project Engineer



Eric S. Magdar, P.G.
Vice President



FIGURES



Parcel A12

Parcel A11

Parcel A6

Parcel A1

Parcel A4

Parcel B6

A4-013-SB

Phase II Soil Boring
(Location of Interest)

Parcel Boundary

Parcel A4
Cadmium Excavation Location
April 9, 2020

Figure
1



ARM Group LLC
Engineers and Scientists

0 75 150 300
Feet

Tradepoint Atlantic

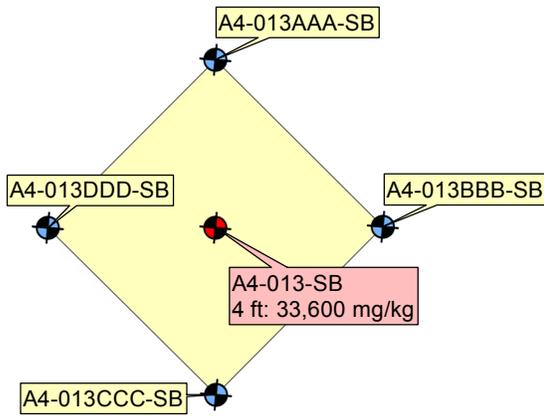
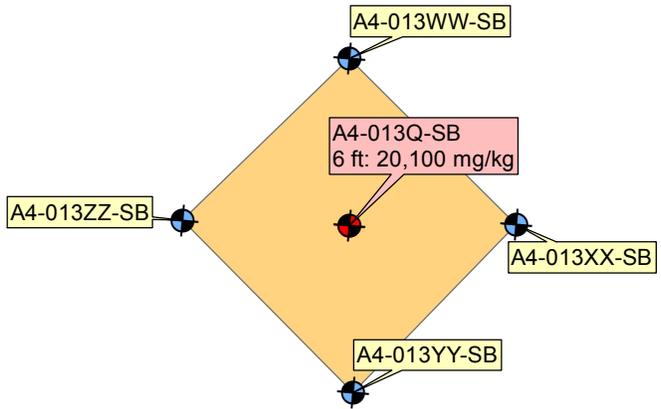
Baltimore County, MD

EnviroAnalytics Group

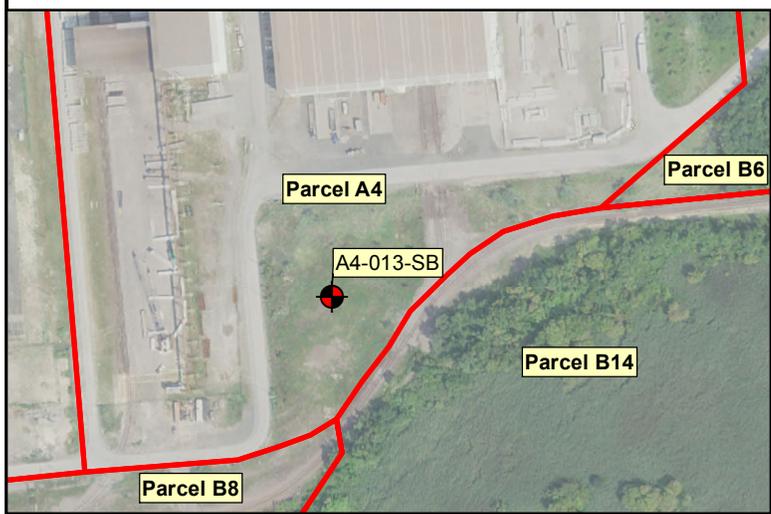
ARM Project 20010104

Parcel B8

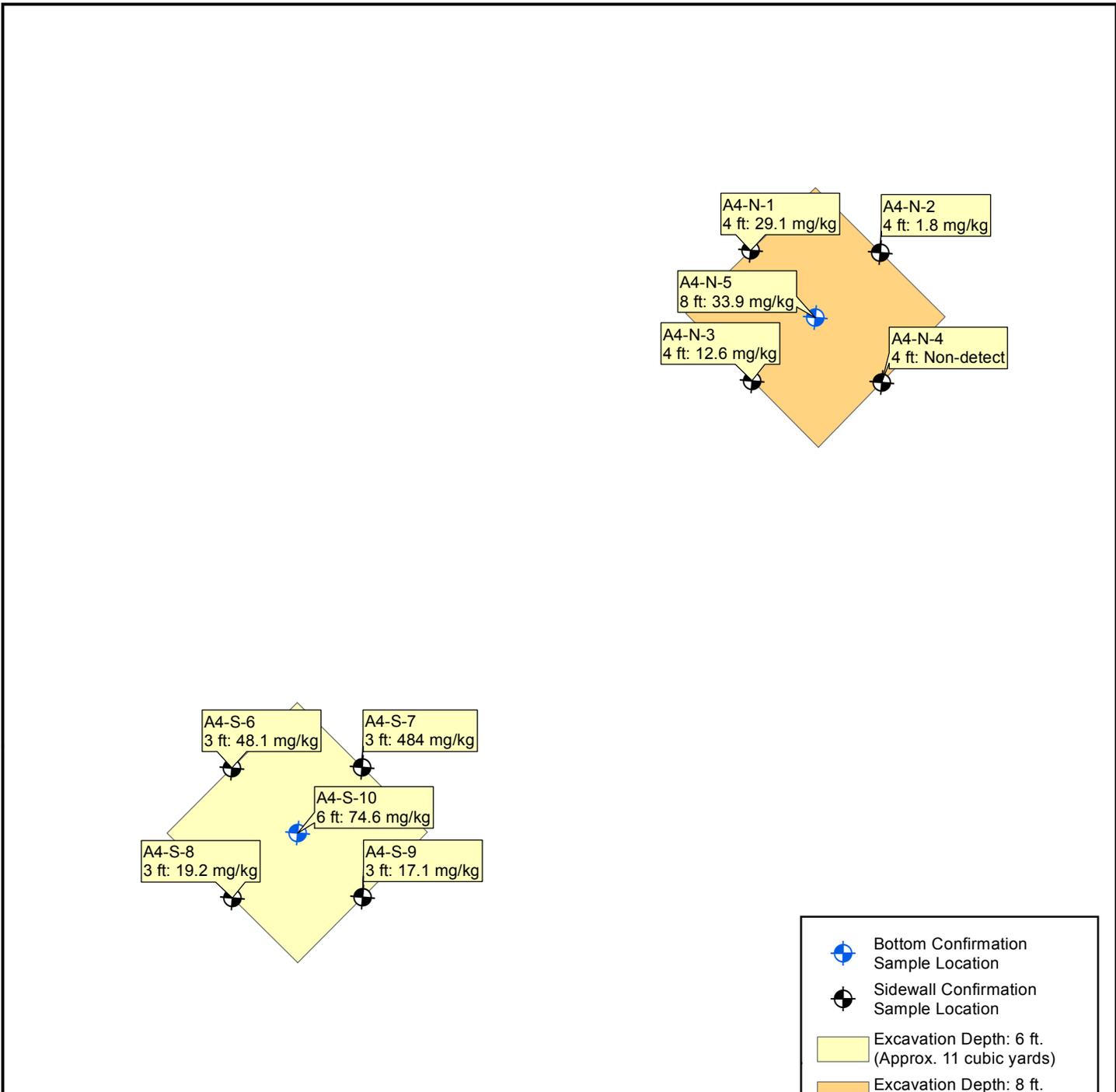
Parcel B14



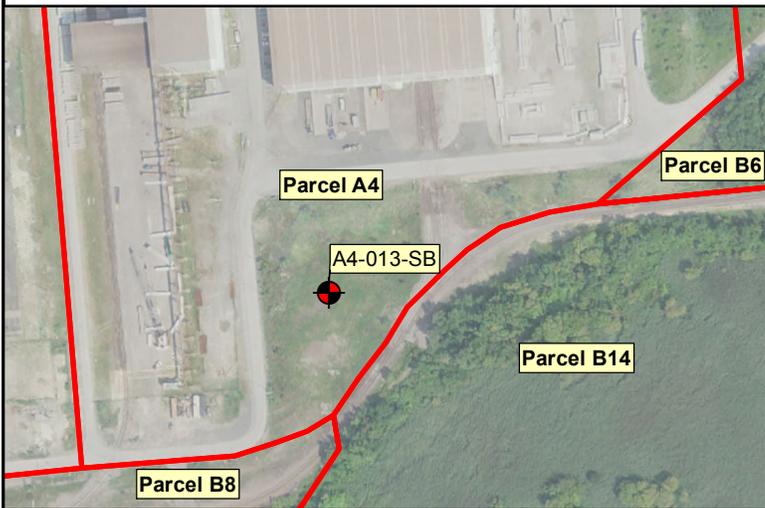
	Above Excavation Criteria
	Below Excavation Criteria
	Excavation Depth: 6 ft. (Approx. 11 cubic yards)
	Excavation Depth: 8 ft. (Approx. 15 cubic yards)
	Parcel Boundary
Cadmium Excavation Criterion Results > 550 mg/kg	



Parcel A4 Cadmium Excavation Final Boundaries 04/19, 2020		Figure 2
 ARM Group LLC Engineers and Scientists		Tradepoint Atlantic
		Baltimore County, MD
		EnviroAnalytics Group
		ARM Project 20010104



Bottom Confirmation Sample Location
 Sidewall Confirmation Sample Location
 Excavation Depth: 6 ft. (Approx. 11 cubic yards)
 Excavation Depth: 8 ft. (Approx. 15 cubic yards)
 Parcel Boundary
 Cadmium Excavation Criterion Results > 550 mg/kg



Parcel A4 Cadmium Excavation Confirmation Samples 01/19, 2020		Figure 3
 ARM Group LLC Engineers and Scientists 		Tradepoint Atlantic
		Baltimore County, MD
		EnviroAnalytics Group
		ARM Project 20010104

TABLES

Table 1
Summary of Waste Characterization Sample Results
Parcel A4 - A4-013-SB Excavation
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	Regulatory Limit	Minimum Detection Limit	A4 North	A4 South
Cadmium	mg/L	1	0.1	ND	10
Lead	mg/L	5	0.5	ND	0.73

ND: Non-detect

Bold indicates regulatory limit exceedance

Table 2
Cadmium Confirmation Sample Results
Parcel A4 - A4-013-SB Excavation
Tradepoint Atlantic
Sparrows Point, Maryland

Sample ID	Removal Criterion (mg/kg)	Cadmium Concentration (mg/kg)
A4-N-1	550	29.1
A4-N-2	550	1.8
A4-N-3	550	12.6
A4-N-4	550	1.2U
A4-N-5	550	33.9
A4-S-6	550	48.1
A4-S-7	550	484
A4-S-8	550	19.2
A4-S-9	550	17.1
A4-S-10	550	74.6

U: indicates that the analyte was not detected in the sample.
The numeric value represents the sample quantitation/detection limit

ATTACHMENT 1

**Excavation of Cadmium-Contaminated Media
Area A: Parcel A4-013 Response Area
Sparrows Point, Maryland**



100419-1: View to the southwest of the completed northern excavation.



100419-2: View to the northeast of the completed southern excavation.

**Excavation of Cadmium-Contaminated Media
Area A: Parcel A4-013 Response Area
Sparrows Point, Maryland**



100419-3: View to the northeast of the completed southern excavation. Covered stockpiles are visible to the east of the excavation.



100419-4: View to the southwest of the completed northern excavation. Covered stockpiles are visible to the west of the excavation.

**Excavation of Cadmium-Contaminated Media
Area A: Parcel A4-013 Response Area
Sparrows Point, Maryland**



100419-5: View to the south of the completed A4 cadmium excavations and stockpiled soil.



030620-1: View to the north of final backfilled state of A4-013 Response Area.

ATTACHMENT 2



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

EnviroAnalytics Group, LLC
 1650 Des Peres Rd.
 Suite 303
 St. Louis, MO 63131

Date Sampled: 10/03/19 10:00
 Date Received: 10/04/19 10:28
 Date Issued: 10/11/19

Project: A4 Cadmium Excavation
 Site Location: Sparrows Point, MD

SDG Number: 19100404

Field Sample ID:	A4 North		Matrix:	Soil		Lab ID:	19100404-01		
	Result	Unit	LLQ	REGL	Method	Prepared	Analyzed	Init.	
Percent Solids									Batch: 22774
Percent Solids	89	%			SM2540G	10/04/19	10/08/19 11:09	DBS	
Polychlorinated Biphenyls									Batch: 22780
Aroclor 1016	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1221	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1232	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1242	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1248	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1254	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
Aroclor 1260	ND	mg/kg	0.052	50	EPA 8082	10/07/19	10/08/19 18:57	DBS	
TCLP Metals									Batch: 22784
Arsenic	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Barium	ND	mg/L	10	100	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Cadmium	ND	mg/L	0.1	1	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Chromium	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Lead	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Mercury	ND	mg/L	0.02	0.2	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Selenium	ND	mg/L	0.1	1	1311/6020A	10/08/19	10/08/19 15:55	MBC	
Silver	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 15:55	MBC	
TCLP Semi-Volatiles									Batch: 22792
2-Methylphenol	ND	ug/L	100	200000	1311/8270	10/10/19	10/10/19 20:12	GFH	
3+4-Methylphenol	ND	ug/L	200	200000	1311/8270	10/10/19	10/10/19 20:12	GFH	
2,4-Dinitrotoluene	ND	ug/L	100	130	1311/8270	10/10/19	10/10/19 20:12	GFH	
Hexachloroethane	ND	ug/L	100	3000	1311/8270	10/10/19	10/10/19 20:12	GFH	
Hexachlorobenzene	ND	ug/L	100	130	1311/8270	10/10/19	10/10/19 20:12	GFH	
Nitrobenzene	ND	ug/L	100	2000	1311/8270	10/10/19	10/10/19 20:12	GFH	
Pentachlorophenol	ND	ug/L	500	100000	1311/8270	10/10/19	10/10/19 20:12	GFH	
Pyridine	ND	ug/L	100	5000	1311/8270	10/10/19	10/10/19 20:12	GFH	
2,4,5-Trichlorophenol	ND	ug/L	100	400000	1311/8270	10/10/19	10/10/19 20:12	GFH	
2,4,6-Trichlorophenol	ND	ug/L	100	2000	1311/8270	10/10/19	10/10/19 20:12	GFH	
Hexachlorobutadiene`	ND	ug/L	100	500	1311/8270	10/10/19	10/10/19 20:12	GFH	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

EnviroAnalytics Group, LLC
1650 Des Peres Rd.
Suite 303
St. Louis, MO 63131

Date Sampled: 10/03/19 10:00
Date Received: 10/04/19 10:28
Date Issued: 10/11/19

Project: A4 Cadmium Excavation
Site Location: Sparrows Point, MD

SDG Number: 19100404

Field Sample ID:	A4 North	Matrix:	Soil	Lab ID:	19100404-01			
	Result	Unit	LLQ	REGL	Method	Prepared	Analyzed	Init.
TCLP Volatiles								
								Batch: 22788
Benzene	ND	ug/L	7	500	1311/8260	10/09/19	10/09/19 14:17	GFH
Carbon Tetrachloride	ND	ug/L	7	500	1311/8260	10/09/19	10/09/19 14:17	GFH
Chloroform	ND	ug/L	7	6000	1311/8260	10/09/19	10/09/19 14:17	GFH
1,2-Dichloroethane (EDC)	ND	ug/L	7	500	1311/8260	10/09/19	10/09/19 14:17	GFH
Tetrachloroethene	ND	ug/L	7	700	1311/8260	10/09/19	10/09/19 14:17	GFH
Vinyl Chloride	ND	ug/L	7	200	1311/8260	10/09/19	10/09/19 14:17	GFH
2-Butanone (MEK)	ND	ug/L	14	200000	1311/8260	10/09/19	10/09/19 14:17	GFH
Chlorobenzene	ND	ug/L	7	100000	1311/8260	10/09/19	10/09/19 14:17	GFH
1,4-Dichlorobenzene	ND	ug/L	7	7500	1311/8260	10/09/19	10/09/19 14:17	GFH
1,1-Dichloroethene	ND	ug/L	7	700	1311/8260	10/09/19	10/09/19 14:17	GFH
Trichloroethene	ND	ug/L	7	500	1311/8260	10/09/19	10/09/19 14:17	GFH

Notes/Qualifiers:

LLQ- Lowest Level of Quantitation

ND - Not Detected at a concentration greater than or equal to the LLQ.

REGL - RCRA Regulatory Limit. For TCLP reference 40CFR, Part 261.24, Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic

Results reported on a dry weight basis.

Approved by:

QC Chemist



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

EnviroAnalytics Group, LLC
 1650 Des Peres Rd.
 Suite 303
 St. Louis, MO 63131

Date Sampled: 10/03/19 10:10
 Date Received: 10/04/19 10:28
 Date Issued: 10/11/19

Project: A4 Cadmium Excavation
 Site Location: Sparrows Point, MD

SDG Number: 19100404

Field Sample ID:	A4 South		Matrix:	Soil		Lab ID:	19100404-02		
	Result	Unit	LLQ	REGL	Method	Prepared	Analyzed	Init.	
Percent Solids									Batch: 22774
Percent Solids	83	%			SM2540G	10/04/19	10/08/19 11:09	DBS	
Polychlorinated Biphenyls									Batch: 22780
Aroclor 1016	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1221	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1232	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1242	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1248	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1254	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
Aroclor 1260	ND	mg/kg	0.065	50	EPA 8082	10/07/19	10/08/19 19:24	DBS	
TCLP Metals									Batch: 22784
Arsenic	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Barium	ND	mg/L	10	100	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Cadmium	* 10	mg/L	0.1	1	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Chromium	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Lead	0.73	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Mercury	ND	mg/L	0.02	0.2	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Selenium	ND	mg/L	0.1	1	1311/6020A	10/08/19	10/08/19 16:18	MBC	
Silver	ND	mg/L	0.5	5	1311/6020A	10/08/19	10/08/19 16:18	MBC	
TCLP Semi-Volatiles									Batch: 22792
2-Methylphenol	ND	ug/L	100	200000	1311/8270	10/10/19	10/10/19 20:52	GFH	
3+4-Methylphenol	ND	ug/L	200	200000	1311/8270	10/10/19	10/10/19 20:52	GFH	
2,4-Dinitrotoluene	ND	ug/L	100	130	1311/8270	10/10/19	10/10/19 20:52	GFH	
Hexachloroethane	ND	ug/L	100	3000	1311/8270	10/10/19	10/10/19 20:52	GFH	
Hexachlorobenzene	ND	ug/L	100	130	1311/8270	10/10/19	10/10/19 20:52	GFH	
Nitrobenzene	ND	ug/L	100	2000	1311/8270	10/10/19	10/10/19 20:52	GFH	
Pentachlorophenol	ND	ug/L	500	100000	1311/8270	10/10/19	10/10/19 20:52	GFH	
Pyridine	ND	ug/L	100	5000	1311/8270	10/10/19	10/10/19 20:52	GFH	
2,4,5-Trichlorophenol	ND	ug/L	100	400000	1311/8270	10/10/19	10/10/19 20:52	GFH	
2,4,6-Trichlorophenol	ND	ug/L	100	2000	1311/8270	10/10/19	10/10/19 20:52	GFH	
Hexachlorobutadiene`	ND	ug/L	100	500	1311/8270	10/10/19	10/10/19 20:52	GFH	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

EnviroAnalytics Group, LLC
1650 Des Peres Rd.
Suite 303
St. Louis, MO 63131

Date Sampled: 10/03/19 10:10
Date Received: 10/04/19 10:28
Date Issued: 10/11/19

Project: A4 Cadmium Excavation
Site Location: Sparrows Point, MD

SDG Number: 19100404

Field Sample ID:	A4 South	Matrix:	Soil	Lab ID:	19100404-02			
	Result	Unit	LLQ	REGL	Method	Prepared	Analyzed	Init.
TCLP Volatiles								
								Batch: 22788
Benzene	ND	ug/L	14	500	1311/8260	10/09/19	10/09/19 14:48	GFH
Carbon Tetrachloride	ND	ug/L	14	500	1311/8260	10/09/19	10/09/19 14:48	GFH
Chloroform	ND	ug/L	14	6000	1311/8260	10/09/19	10/09/19 14:48	GFH
1,2-Dichloroethane (EDC)	ND	ug/L	14	500	1311/8260	10/09/19	10/09/19 14:48	GFH
Tetrachloroethene	ND	ug/L	14	700	1311/8260	10/09/19	10/09/19 14:48	GFH
Vinyl Chloride	ND	ug/L	14	200	1311/8260	10/09/19	10/09/19 14:48	GFH
2-Butanone (MEK)	ND	ug/L	27	200000	1311/8260	10/09/19	10/09/19 14:48	GFH
Chlorobenzene	ND	ug/L	14	100000	1311/8260	10/09/19	10/09/19 14:48	GFH
1,4-Dichlorobenzene	ND	ug/L	14	7500	1311/8260	10/09/19	10/09/19 14:48	GFH
1,1-Dichloroethene	ND	ug/L	14	700	1311/8260	10/09/19	10/09/19 14:48	GFH
Trichloroethene	ND	ug/L	14	500	1311/8260	10/09/19	10/09/19 14:48	GFH

Notes/Qualifiers:

LLQ- Lowest Level of Quantitation

ND - Not Detected at a concentration greater than or equal to the LLQ.

REGL - RCRA Regulatory Limit. For TCLP reference 40CFR, Part 261.24, Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic

* - Result exceeds TCLP limit.

Results reported on a dry weight basis.

Approved by:

QC Chemist

Chain of Custody Record

Customer:	EAG
Contact/Report to:	James Calenda
Phone:	314-686-5623
Fax:	

E-mail address:	icalenda@enviroanalyticsgroup.com
Project Name:	A4 Cadmium Excavation
Project Number:	
Site Location:	Sparrows Point

SDG Number:	19100404
Sampled by:	GW
PO Number:	

 Page 1 of 1

Lab Number	Field Sample ID	Date Sampled	Time Sampled	No. of Bottles	Matrix *	Analysis Requested					Sampling Remarks/ Comments
						Preservative	PCBs	TCLP Metals	TCLP VOCs	TCLP SVOCs	
	A4 North	10/03/19	1000	1	Sed	X	X	X	X		
	A4 South	10/03/19	1010	1	Sed	X	X	X	X		

Relinquished by:	Gerald Walsh <i>[Signature]</i>	Date/Time:	10/3/19 1030	Deliverables:	I II III CLP EDD	Receipt Temperature:	Temp: <u>On Ice</u>	Turnaround Time:	<u>STD</u> Next Day 2-Day Other
Received by:	<i>[Signature]</i>	Date/Time:	10/4/19 1028	Custody Seals:	Sample Cooler	Comments/Special Instructions:			
Relinquished by:		Date/Time:		Delivered by client					
Received by:		Date/Time:		<i>CAS</i>					
Relinquished by:		Date/Time:							
Received by:		Date/Time:							

* W = Water; WW = Wastewater; GW = Groundwater; S = Soil; SL = Sludge

ATTACHMENT 3

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 845 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3036	4. Manifest Tracking Number 020574683 JJK			
5. Generator's Name and Mailing Address Enviro Analytics Group, LLC 1600 Sparrows Point Blvd. Suite B2, Baltimore, MD 21219 314-620-3056 Attn: James Calenda				Generator's Site Address (if different than mailing address) Enviro Analytics Group, LLC Same				
6. Transporter 1 Company Name Enviro of Pennsylvania, Inc.					U.S. EPA ID Number PAD 010 164 045			
7. Transporter 2 Company Name					U.S. EPA ID Number			
8. Designated Facility Name and Site Address Enviro of PA dba US Ecology York 730 Vogelsong Rd., York, PA 17404 (717) 849-1900					U.S. EPA ID Number PAD 010 154 045			
Facility's Phone:								
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		No.	Type					
X	1. NA3077, Hazardous Waste Solid N.O.S., 9, PG III (cadmium)	1	DT	22	P BPS	0008		
	2.							
	3.							
	4.							
14. Special Handling Instructions and Additional Information 1: App# B203524EPA ERG 171 (cadmium contaminated soil) 4077 Emergency response# Job# ROAN-SSCH								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offoror's Printed/Typed Name Ryan Clancy				Signature 		Month 7	Day 30	Year 20
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____								
17. Transporter Acknowledgment of Receipt of Materials								
Transporter 1 Printed/Typed Name Donald Thompson				Signature 		Month 12	Day 25	Year 20
Transporter 2 Printed/Typed Name				Signature		Month	Day	Year
18. Discrepancy								
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
Manifest Reference Number:								
18b. Alternate Facility (or Generator)					U.S. EPA ID Number			
Facility's Phone:								
18c. Signature of Alternate Facility (or Generator)						Month	Day	Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1.	2.	3.	4.					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a								
Printed/Typed Name				Signature		Month	Day	Year

ATTACHMENT 4

October 14, 2019

Mr. James Calenda
EnviroAnalytics Group, LLC
1600 Sparrows Point Blvd
Suite B2
Sparrows Point, MD 21219

RE: Project: A4 Cadmium Excavation
Pace Project No.: 30328194

Dear Mr. Calenda:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This project follows the April 5, 2016 revision 3 Quality Assurance Project Plan for Sparrows Point Terminal Site, Sparrows Point, MD prepared for EnviroAnalytics Group and is not for PA DEP compliance reporting.

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

Sincerely,



Samantha Bayura
samantha.bayura@pacelabs.com
(724)850-5622
Project Manager

Enclosures

cc: Ms. Penny Gardner, Environmental Data Quality, Inc.
Ms. Shawne M. Rodgers, Environmental Data Quality, Inc.



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30328194001	A4-N-1	Solid	10/03/19 11:00	10/04/19 23:20
30328194002	A4-N-2	Solid	10/03/19 11:05	10/04/19 23:20
30328194003	A4-N-3	Solid	10/03/19 11:10	10/04/19 23:20
30328194004	A4-N-4	Solid	10/03/19 11:15	10/04/19 23:20
30328194005	A4-N-5	Solid	10/03/19 11:20	10/04/19 23:20
30328194006	A4-S-6	Solid	10/03/19 11:25	10/04/19 23:20
30328194007	A4-S-7	Solid	10/03/19 11:30	10/04/19 23:20
30328194008	A4-S-8	Solid	10/03/19 11:35	10/04/19 23:20
30328194009	A4-S-9	Solid	10/03/19 11:40	10/04/19 23:20
30328194010	A4-S-10	Solid	10/03/19 11:45	10/04/19 23:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30328194001	A4-N-1	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194002	A4-N-2	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194003	A4-N-3	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194004	A4-N-4	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194005	A4-N-5	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194006	A4-S-6	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194007	A4-S-7	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194008	A4-S-8	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194009	A4-S-9	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA
30328194010	A4-S-10	EPA 6010C	KAS	1	PASI-PA
		ASTM D2974-87	SHD	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Method: EPA 6010C

Description: 6010C MET ICP

Client: EnviroAnalytics Group, LLC

Date: October 14, 2019

General Information:

10 samples were analyzed for EPA 6010C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-N-1 **Lab ID: 30328194001** Collected: 10/03/19 11:00 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	29.1	mg/kg	1.5	0.30	5	10/08/19 08:09	10/11/19 20:12	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	20.3	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-N-2 **Lab ID: 30328194002** Collected: 10/03/19 11:05 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	1.8	mg/kg	1.2	0.25	5	10/08/19 08:09	10/11/19 20:24	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	7.6	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation
Pace Project No.: 30328194

Sample: A4-N-3 **Lab ID: 30328194003** Collected: 10/03/19 11:10 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	12.6	mg/kg	1.3	0.26	5	10/08/19 08:09	10/11/19 20:26	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	8.4	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-N-4 **Lab ID: 30328194004** Collected: 10/03/19 11:15 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	1.2 U	mg/kg	1.2	0.25	5	10/08/19 08:09	10/11/19 20:29	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	6.5	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-N-5 **Lab ID: 30328194005** Collected: 10/03/19 11:20 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Cadmium	33.9	mg/kg	1.3	0.26	5	10/08/19 08:09	10/11/19 20:38	7440-43-9	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	11.8	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-S-6 **Lab ID: 30328194006** Collected: 10/03/19 11:25 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	48.1	mg/kg	1.3	0.26	5	10/08/19 08:09	10/11/19 20:40	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	9.0	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-S-7 **Lab ID: 30328194007** Collected: 10/03/19 11:30 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	484	mg/kg	1.3	0.26	5	10/08/19 08:09	10/11/19 20:42	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	10.8	%	0.10	0.10	1		10/08/19 15:04		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-S-8 **Lab ID: 30328194008** Collected: 10/03/19 11:35 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	19.2	mg/kg	1.4	0.29	5	10/08/19 08:09	10/11/19 20:45	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	21.5	%	0.10	0.10	1		10/08/19 15:05		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-S-9 **Lab ID: 30328194009** Collected: 10/03/19 11:40 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	17.1	mg/kg	1.3	0.27	5	10/08/19 08:09	10/11/19 20:47	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	12.1	%	0.10	0.10	1		10/08/19 15:05		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

Sample: A4-S-10 **Lab ID: 30328194010** Collected: 10/03/19 11:45 Received: 10/04/19 23:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP									
Analytical Method: EPA 6010C Preparation Method: EPA 3050B									
Cadmium	74.6	mg/kg	1.4	0.28	5	10/08/19 08:09	10/11/19 20:49	7440-43-9	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	16.4	%	0.10	0.10	1		10/08/19 15:05		D6

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: A4 Cadmium Excavation
Pace Project No.: 30328194

QC Batch: 365071 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050B Analysis Description: 6010C MET
Associated Lab Samples: 30328194001, 30328194002, 30328194003, 30328194004, 30328194005, 30328194006, 30328194007, 30328194008, 30328194009, 30328194010

METHOD BLANK: 1770811 Matrix: Solid
Associated Lab Samples: 30328194001, 30328194002, 30328194003, 30328194004, 30328194005, 30328194006, 30328194007, 30328194008, 30328194009, 30328194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cadmium	mg/kg	0.30 U	0.30	0.061	10/11/19 20:07	

LABORATORY CONTROL SAMPLE: 1770812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	mg/kg	49	48.4	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1770813 1770814

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		30328194001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Cadmium	mg/kg	29.1	49	49	70.6	74.0	85	92	75-125	5	20	

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

QC Batch: 365191

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30328194001, 30328194002, 30328194003, 30328194004, 30328194005, 30328194006, 30328194007, 30328194008, 30328194009

SAMPLE DUPLICATE: 1771265

Parameter	Units	30327295001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	43.2	37.8	13	20	

SAMPLE DUPLICATE: 1771266

Parameter	Units	30328130001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.6	21.1	3	20	

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

QC Batch: 365194

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30328194010

SAMPLE DUPLICATE: 1771267

Parameter	Units	30328194010 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.4	4.4	116	20	D6

SAMPLE DUPLICATE: 1771268

Parameter	Units	30328226001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	19.2	19.8	3	20	

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: A4 Cadmium Excavation

Pace Project No.: 30328194

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: A4 Cadmium Excavation
Pace Project No.: 30328194

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30328194001	A4-N-1	EPA 3050B	365071	EPA 6010C	365172
30328194002	A4-N-2	EPA 3050B	365071	EPA 6010C	365172
30328194003	A4-N-3	EPA 3050B	365071	EPA 6010C	365172
30328194004	A4-N-4	EPA 3050B	365071	EPA 6010C	365172
30328194005	A4-N-5	EPA 3050B	365071	EPA 6010C	365172
30328194006	A4-S-6	EPA 3050B	365071	EPA 6010C	365172
30328194007	A4-S-7	EPA 3050B	365071	EPA 6010C	365172
30328194008	A4-S-8	EPA 3050B	365071	EPA 6010C	365172
30328194009	A4-S-9	EPA 3050B	365071	EPA 6010C	365172
30328194010	A4-S-10	EPA 3050B	365071	EPA 6010C	365172
30328194001	A4-N-1	ASTM D2974-87	365191		
30328194002	A4-N-2	ASTM D2974-87	365191		
30328194003	A4-N-3	ASTM D2974-87	365191		
30328194004	A4-N-4	ASTM D2974-87	365191		
30328194005	A4-N-5	ASTM D2974-87	365191		
30328194006	A4-S-6	ASTM D2974-87	365191		
30328194007	A4-S-7	ASTM D2974-87	365191		
30328194008	A4-S-8	ASTM D2974-87	365191		
30328194009	A4-S-9	ASTM D2974-87	365191		
30328194010	A4-S-10	ASTM D2974-87	365194		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Section A
Required Client Information:
Company: EnviroAnalytics Group
Address: 1430 Sparrows Point Blvd
Sparrows Point, MD 21219
Email To: jcalenda@enviroanalyticsgroup.com
Phone: 314-620-3056
Requested Due Date: TAT Standard

Section B
Required Project Information:
Report To: James Calenda
Copy To:
PO Number: EAG-SPT-4046
Project Name: A/Cadmium Excavation
Project Number:

Section C
Invoice Information:
Attention: Laura Sargent
Company Name: EnviroAnalytics Group
Address: 1660 Des Peres Road, Suite 303 St. Louis, MO 63131
Pick Quote Reference: Samantha Bayura
Pick Project Manager:
Pick Profile #:

NPDES GROUND WATER DRINKING WATER
UST RORA OTHER
MD

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIFE WF AR AR OTHER OT TISSUE TS	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		# OF CONTAINERS	PRESERVATIVES		ANALYSIS TEST	DATE	TIME	ACCEPTED BY/AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			COMPOSITE START	COMPOSITE END/GRAB		DI Water	Methanol							
1	A4-N-1	SL C	10/18/1105	-	1	X								
2	A4-N-2	SL C	10/18/1105	-	1	X								
3	A4-N-3	SL C	10/18/1110	-	1	X								
4	A4-N-4	SL C	10/18/1115	-	1	X								
5	A4-N-5	SL C	10/18/1120	-	1	X								
6	A4-S-6	SL C	10/18/1125	-	1	X								
7	A4-S-7	SL C	10/18/1130	-	1	X								
8	A4-S-8	SL C	10/18/1135	-	1	X								
9	A4-S-9	SL C	10/18/1140	-	1	X								
10	A4-S-10	SL C	10/18/1145	-	1	X								

ADDITIONAL COMMENTS:
Data Package Required? (Y/N):
Data Validation Required? (Y/N):
If data package is required, attach data package checklist.

TEMPERATURE:
Temp in °C: 4.3
Received on Ice (Y/N):
Custody Sealed (Y/N):
Samples Intact (Y/N):

SIGNATURES:
DATE SIGNED (MM/DD/YYYY): 10/2/2019
DATE SIGNED (MM/DD/YYYY): 10/2/2019
DATE SIGNED (MM/DD/YYYY): 10/2/2019

WO# : 30328194



30328194

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: EnviroAnalytics

Project # 30328194

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Label	<u>SP</u>
LIMS Login	<u>SP</u>

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used 10 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 4.3 °C Correction Factor: 0 °C Final Temp: 4.3 °C

Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and Initials of person examining contents: <u>SP 10/5/19</u>
	Yes	No	N/A	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>SL</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.
Short Hold Time Analysis (<72hr remaining):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.
Correct Containers Used: -Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>SP</u> Date/time of preservation:
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lot # of added preservative:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Initial when completed: Date:
Rad Samples Screened < 0.5 mrem/hr	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

APPENDIX E

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-001-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 20.03 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-002-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 2/7/18

Abandonment Contractor: Allied Drilling Co.

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 32.53 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): A4-002-PZ Screening Piezometer

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was missing or destroyed and thus could not be abandoned.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-002a-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 2/7/18

Abandonment Contractor: Allied Drilling Co.

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 23.09 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): A4-002-PZ Screening Piezometer

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was missing or destroyed and thus could not be abandoned.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-005-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 27.41 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was missing or destroyed and thus could not be abandoned.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-007-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 29.99 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was missing or destroyed and thus could not be abandoned.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-010-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → **Pulled** / Split / Perforated / Left-In-Place
2. Abandoned → **Grout** / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 29.84 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-012-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 27.64 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was missing or destroyed and thus could not be abandoned.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-013-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/6/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

- 1. PVC → Pulled / Split / Perforated / Left-In-Place
- 2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 15.01 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-014-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 28.16 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: A4-019-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: A4

Abandonment Date: 1/5/17

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Oil-Water Probe

ARM Representative(s): Lisa Perrin

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 27.41 ft	Depth to Water (TOC): Not recorded
Measured: Not recorded	Depth to NAPL (TOC): Not recorded

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Transcribed from ARM field book records. Piezometer was abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



ARM Group Inc.
Engineers and Scientists
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

APPENDIX F

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing Geoprofessional Business Association Member Firm



July 19, 2017

Tradepoint Atlantic
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

Attn: Mr. John M. Martin, III, P.E.

Re: ***Cold Mill/Access World***
Pavement/Cap Summary, Revised
Baltimore County, Maryland

Dear Mr. Martin:

Pursuant to your request, Geo-Technology Associates, Inc. (GTA) has prepared a summary of the pavement sections, or Cap, for the referenced project. The scope of our services during construction of the pavement sections consisted of observing and testing the prepared subgrades, in-place density testing of the asphalt pavements, and sampling of the concrete for rigid pavements. Our services were provided during the period of January 20 through May 31, 2017. Plans referenced during the work consisted of civil and structural drawings prepared by Morris & Ritchie Associates, Inc. (MRA). Civil plans prepared by KCI for the SHA work were also referenced.

GTA observed proof roll tests of the prepared aggregate base course with a fully loaded tandem axel dump truck prior to placement of the asphalt base course and concrete paving. The prepared subgrades were observed to be stable. The aggregate base course measured a minimum of 3 inches for the on-site asphalt pavement, 6 inches for the on-site rigid pavement, and 12-inches for the access road to Bethlehem Boulevard.

In-place density test results for the asphalt base and surface courses indicated adequate compaction was achieved. The individual in-place density test results were summarized in our field reports that were previously transmitted to representatives of Tradepoint Atlantic and the ARM Group. Compressive strength test results for the concrete paving generally met or exceeded the specified compressive strength indicated on the structural plans prepared by MRA. The individual compressive strength test results were forwarded under separate cover.

Based on our measurements of the cores cut by the contractor, the completed bituminous concrete cap for the on-site areas measured a minimum of 6 inches. The paving section constructed for the access road to Bethlehem Boulevard measured a minimum of 10 inches. Based on our measurements of the form work for the concrete paving, the areas capped with concrete have a minimum thickness of 9 inches.

3445-A Box Hill Corporate Center Drive, Abingdon, MD 21009 (410) 515-9446 Fax: (410) 515-4895

◆ Abingdon, MD ◆ Baltimore, MD ◆ Laurel, MD ◆ Frederick, MD ◆ Waldorf, MD ◆ Sterling, VA ◆ Fredericksburg, VA ◆ Malvern, OH
◆ Somerset, NJ ◆ NYC Metro ◆ New Castle, DE ◆ Georgetown, DE ◆ York, PA ◆ Quakertown, PA ◆ Charlotte, NC ◆ Raleigh, NC

Visit us on the web at www.gtaeng.com

Tradepoint Atlantic

Re: *Cold Mill/Access World, Pavement/Cap Summary*

July 19, 2017

Page 2

Based on our observations and testing, it is GTA's professional opinion that the referenced pavement sections, or Cap, were constructed in general accordance with the referenced plans.

This Report has been prepared for the exclusive use of Tradepoint Atlantic, pursuant to the agreement between GTA and Tradepoint Atlantic, dated October 11, 2016, and in accordance with generally accepted engineering practices. All terms and conditions set forth in the agreement are incorporated herein. No warranty, express or implied, is made herein. Use and reproduction of this Report by any other person is unauthorized.

GTA appreciates the opportunity to have been of assistance to you on this project. Should you have any questions or require any additional information, please contact our office at (410) 515-9446.

Sincerely,

GEO-TECHNOLOGY ASSOCIATES, INC.




Christopher M. Standish
Senior Project Manager


Thomas M. Wirth, P.E.
Vice President

Professional Certification. I 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.: 33973, Expiration Date: 06/14/2019. TMW

CMS/TMW/cds

31162082

\\PSMC-DATA\gta\Shared\Geo\2016 Projects\31162082 Cold Mill Bldg Rehabilitation\Docs\31162082 Cold Mill-Access World Pave Summ Revised.doc

CRRGP F KZ'I

''

APPENDIX H

New Cold Mill Redevelopment
Area A: Parcel A4
Sparrows Point, Maryland



010417-1: View to the south of minor utility trenching on the western side of the parcel.



010617-1: Completed pavement on western side of NCMC building..

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A3)
Sparrows Point, Maryland



010617-2: Trenching to tie into existing utility lines on western side of existing NCMC building.



010617-3: Trenching to tie into existing utility lines on western side of existing NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A3)
Sparrows Point, Maryland



011317-1: Backfilled utility trenches on western side of NCMC building.



011317-2: Truck well construction on south side of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A3)
Sparrows Point, Maryland



011317-3: Truck well construction on south side of NCMC building.



011317-4: Truck well construction on south side of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A4)
Sparrows Point, Maryland



011317-5: Foundation work for truck well construction on south side of NCMC building.



011917-1: Concrete foundation for truck well construction on south side of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A4)
Sparrows Point, Maryland



030817-1: Truck well construction on south side of NCMC building.



041317-1: Truck well construction on east side of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A4)
Sparrows Point, Maryland



041317-2: Truck well construction on east side of NCMC building.



042017-1: Truck well construction on north side of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A4)
Sparrows Point, Maryland



042017-3: Utility work and backfilling for truck well construction on east side of NCMC building.



042717-2: Silt fence and parking area subgrade preparation north of NCMC building.

Excavation of Lead-Contaminated Media at RW-052-SB
Former Rod and Wire Mill (Area A: Parcel A4)
Sparrows Point, Maryland



042717-3: Truck well construction on north side of NCMC building.



042717-4: Foundation work to avoid existing utility pipe for truck well on north side of NCMC building.

"

"

"

"

"

"

"

"

"

APPENDIX I

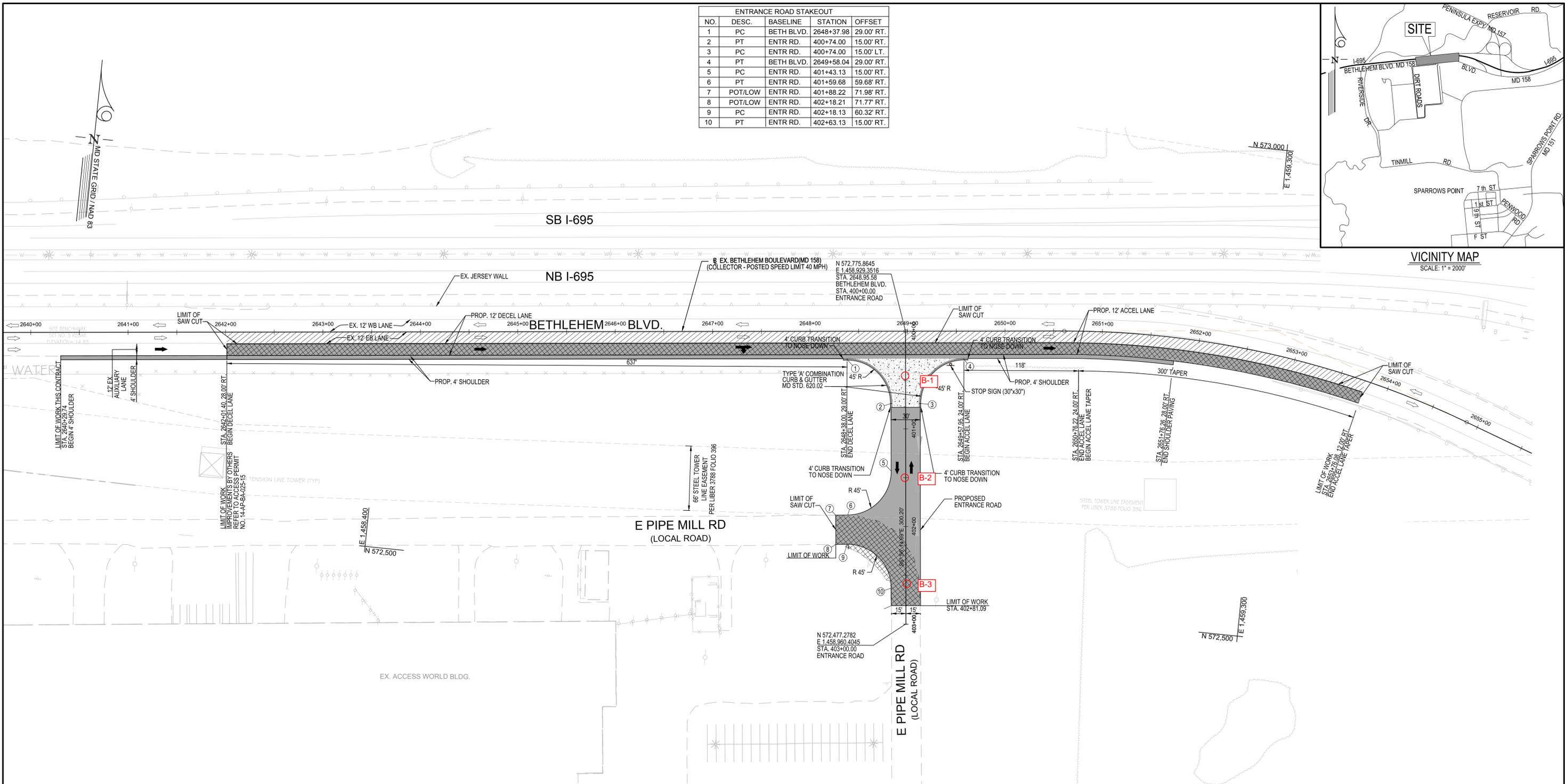
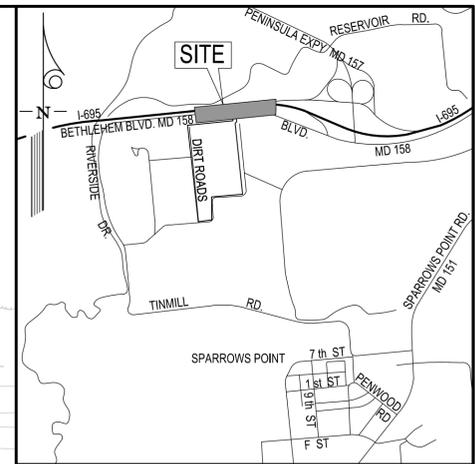
"

"

"

"

ENTRANCE ROAD STAKEOUT				
NO.	DESC.	BASELINE	STATION	OFFSET
1	PC	BETH BLVD.	2648+37.98	29.00' RT.
2	PT	ENTR RD.	400+74.00	15.00' RT.
3	PC	ENTR RD.	400+74.00	15.00' LT.
4	PT	BETH BLVD.	2649+58.04	29.00' RT.
5	PC	ENTR RD.	401+43.13	15.00' RT.
6	PT	ENTR RD.	401+59.68	59.68' RT.
7	POT/LOW	ENTR RD.	401+88.22	71.98' RT.
8	POT/LOW	ENTR RD.	402+18.21	71.77' RT.
9	PC	ENTR RD.	402+18.13	60.32' RT.
10	PT	ENTR RD.	402+63.13	15.00' RT.



SITE PLAN
SCALE: 1" = 50'

- NOTES:**
- FOR PROPOSED STORM DRAINAGE, SEE DRAWING C10.3.
 - ALL WORK ALONG BETHLEHEM BOULEVARD (MD 158) SHALL BE DONE IN ACCORDANCE WITH MARYLAND STATE HIGHWAY ADMINISTRATION STANDARDS.
 - FOR DATA FOR BETHLEHEM BLVD. REFER TO "CONSTRUCTION OF NORTH APPROACH TO FRANCIS SCOTT KEY BRIDGE, I-695, FROM BEAR CREEK TO NORTH OF MD. RTE. 151", MDTA CONTRACT NO. KB 421-000-006, DWG. NO. GL-1.
 - THE PROPOSED IMPROVEMENTS AT THE WEST LIMIT OF WORK TIE INTO THE IMPROVEMENTS BY OTHERS UNDER ACCESS PERMIT NO. 14-AP-BA-025-15.

LEGEND

	EX. PAVEMENT TO BE REMOVED
	PROP. FULL DEPTH BITUMINOUS PAVEMENT
	PROP. 2" MILL AND OVERLAY
	PROP. CONC. PAVING

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

PROFESSIONAL CERTIFICATION. I 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. 23381 EXPIRATION DATE: 8/19/18.

NEW ACCESS WORLD ENTRANCE
SHA ACCESS PERMIT DRAWINGS

SCALE: 1"=30' DATE: 10-24-2016

DESIGNED BY: CMC/AGM
DRAWN BY: KGD
CHECKED BY: SRP

C10.2

SITE PLAN

DRAWING NO. 3 OF 13

"

"

"

"

"

"

"

"

"

APPENDIX J

"

"

"

"



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

Jenkins Environmental, Inc.
 8600 LaSalle Road
 York Building, Suite 509
 Towson, MD 21286

Date Sampled: 04/05/17 10:08
 Date Received: 04/06/17 9:49
 Date Issued: 04/13/17

Project: Stockpiles - MCM
 Site Location: Sparrows Point, MD
 Project Number: 2017-028

SDG Number: 17040601

Field Sample ID:	Matrix: Solid			Lab ID: 17040601-01			
	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Percent Solids							
Percent Solids	93	%		SM2540G	04/06/17	04/07/17 14:58	MEL
Polychlorinated Biphenyls							
Aroclor 1016	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1221	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1232	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1242	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1248	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1254	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Aroclor 1260	ND	mg/kg	0.054	EPA 8082	04/12/17	04/12/17 15:38	AC
Target Compound List - SEMIVOLATILES							
Phenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Bis (2-chloroethyl) ether	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Chlorophenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Methylphenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Bis (2-chloroisopropyl) ether	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Acetophenone	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Methylphenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
N-Nitroso-di-n-propylamine	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Hexachloroethane	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Nitrobenzene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Isophorone	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Nitrophenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4-Dimethylphenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Bis (2-chloroethoxy) methane	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4-Dichlorophenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Naphthalene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Chloroaniline	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Hexachlorobutadiene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Caprolactam	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Chloro-3-methylphenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Methylnaphthalene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Hexachlorocyclopentadiene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4,6-Trichlorophenol	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4,5-Trichlorophenol	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
1,1-Biphenyl	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Chloronaphthalene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2-Nitroaniline	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Dimethyl phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,6-Dinitrotoluene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

Jenkins Environmental, Inc.
8600 LaSalle Road
York Building, Suite 509
Towson, MD 21286

Date Sampled: 04/05/17 10:08
Date Received: 04/06/17 9:49
Date Issued: 04/13/17

Project: Stockpiles - MCM
Site Location: Sparrows Point, MD
Project Number: 2017-028

SDG Number: 17040601

Field Sample ID: 017-028-381 Matrix: Solid Lab ID: 17040601-01

Result Unit LLQ Method Prepared Analyzed Init.

Target Compound List - SEMIVOLATILES

Target Compound List - SEMIVOLATILES	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Acenaphthylene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
3-Nitroaniline	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Acenaphthene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4-Dinitrophenol	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Nitrophenol	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Dibenzofuran	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
2,4-Dinitrotoluene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Diethyl phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Fluorene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Chlorophenyl phenyl ether	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Nitroaniline	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4,6-Dinitro-2-methylphenol	ND	ug/kg	230	EPA 8270C	04/05/17	04/08/17 2:06	GFH
N-Nitrosodiphenylamine	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
4-Bromophenyl phenyl ether	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Hexachlorobenzene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Atrazine	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Pentachlorophenol	ND	ug/kg	260	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Phenanthrene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Anthracene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Carbazole	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Di-n-butyl phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Fluoranthene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Pyrene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Butyl benzyl phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
3,3-Dichlorobenzidine	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Benzo[a]anthracene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Chrysene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Bis (2-ethylhexyl) phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Di-n-octyl phthalate	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Benzo[b]fluoranthene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Benzo[k]fluoranthene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Benzo[a]pyrene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Indeno[1,2,3-cd]pyrene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Dibenz[a,h]anthracene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH
Benzo[g,h,i]perylene	ND	ug/kg	100	EPA 8270C	04/05/17	04/08/17 2:06	GFH

Target Compound List - VOLATILES

Dichlorodifluoromethane	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH
Chloromethane	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH
Vinyl chloride	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

Jenkins Environmental, Inc.
 8600 LaSalle Road
 York Building, Suite 509
 Towson, MD 21286

Date Sampled: 04/05/17 10:08
 Date Received: 04/06/17 9:49
 Date Issued: 04/13/17

Project: Stockpiles - MCM
 Site Location: Sparrows Point, MD
 Project Number: 2017-028

SDG Number: 17040601

Field Sample ID:	017-028-381		Matrix:	Solid		Lab ID:	17040601-01	
	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.	
Target Compound List - VOLATILES								
Isopropylbenzene	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,3-Dichlorobenzene	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,4-Dichlorobenzene	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,2-Dichlorobenzene	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
1,2,4-Trichlorobenzene	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
Naphthalene	ND	ug/kg	11	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
Ethyl t-butyl ether (ETBE)	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
tert-Butanol (TBA)	ND	ug/kg	26	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
Diisopropyl ether (DIPE)	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
tert-Amyl methyl ether (TAME)	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
tert-Amyl alcohol (TAA)	ND	ug/kg	26	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
tert-Amyl ethyl ether (TAEE)	ND	ug/kg	5	EPA 8260B	04/07/17	04/07/17 16:18	GFH	
Total Metals								
Aluminum	6,500	mg/kg	19	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Antimony	ND	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Arsenic	2.2	mg/kg	0.38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Barium	76	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Beryllium	ND	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Cadmium	ND	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Calcium	83,000	mg/kg	38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Chromium	36	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Cobalt	2.4	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Copper	23	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Iron	12,000	mg/kg	38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Lead	12	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Magnesium	11,000	mg/kg	38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Manganese	440	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Mercury	ND	mg/kg	0.077	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Nickel	15	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Potassium	1,500	mg/kg	38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Selenium	ND	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Silver	ND	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Sodium	470	mg/kg	38	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Thallium	ND	mg/kg	1.5	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Vanadium	15	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	
Zinc	64	mg/kg	1.9	EPA 6020A	04/06/17	04/10/17 11:07	MEL	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

Jenkins Environmental, Inc.
8600 LaSalle Road
York Building, Suite 509
Towson, MD 21286

Date Sampled: 04/05/17 10:08
Date Received: 04/06/17 9:49
Date Issued: 04/13/17

Project: Stockpiles - MCM
Site Location: Sparrows Point, MD
Project Number: 2017-028

SDG Number: 17040601

Field Sample ID:	017-028-381	Matrix:	Solid	Lab ID:	17040601-01		
	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Total Petroleum Hydrocarbons - (C10-C28) DRO							
Diesel Range Organics	950	mg/kg	11	EPA 8015C	04/10/17	04/12/17 14:52	AC
TPH & Oil and Grease - HEM							
TPH & Oil & Grease	1,700	mg/kg	27	EPA 9071B	04/12/17	04/13/17 14:16	AC

Notes/Qualifiers:

LLQ- Lowest Level of Quantitation
ND - Not Detected at a concentration greater than or equal to the LLQ.
Results reported on a dry weight basis.

Approved by:

QC Chemist



Access World - interior demolition debris stockpiled in rear of building

Analytical Report for

GTA - Abingdon

Certificate of Analysis No.: 17041412

Project Manager: Ben Myers

Project Name : 37162082

Project Location: Sparrows Point

Project ID : 31162082



April 21, 2017

Phase Separation Science, Inc.

6630 Baltimore National Pike

Baltimore, MD 21228

Phone: (410) 747-8770

Fax: (410) 788-8723

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



April 21, 2017

Ben Myers
GTA - Abingdon

3445-A Box Hill Corporate Ctr. Dr.
Abingdon, MD 21009

Reference: PSS Work Order(s) No: **17041412**
Project Name: 37162082
Project Location: Sparrows Point
Project ID.: 31162082

Dear Ben Myers :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **17041412**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 19, 2017, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal

Laboratory Manager



Sample Summary

Client Name: GTA - Abingdon
Project Name: 37162082

Work Order Number(s): 17041412

Project ID: 31162082

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/14/2017 at 12:50 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17041412-001	GTA-SE	SOIL	04/14/17 11:00
17041412-002	GTA-SW	SOIL	04/14/17 11:30
17041412-003	GTA-N+W	SOIL	04/14/17 12:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SE	Date/Time Sampled: 04/14/2017 11:00	PSS Sample ID: 17041412-001
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 86

PP Metals

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Arsenic	3.6	mg/kg	0.42		1	04/18/17	04/18/17 19:52	1033
Beryllium	ND	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Cadmium	ND	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Chromium	300	mg/kg	21		10	04/18/17	04/19/17 18:19	1033
Copper	23	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Lead	97	mg/kg	21		10	04/18/17	04/19/17 18:19	1033
Mercury	ND	mg/kg	0.084		1	04/18/17	04/18/17 19:52	1033
Nickel	12	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Selenium	ND	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Silver	ND	mg/kg	2.1		1	04/18/17	04/18/17 19:52	1033
Thallium	ND	mg/kg	1.7		1	04/18/17	04/18/17 19:52	1033
Zinc	230	mg/kg	8.4		1	04/18/17	04/18/17 19:52	1033

Chromium, Hexavalent

Analytical Method: SW-846 7196 A

Preparation Method: SW3060A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chromium, Hexavalent	ND	mg/kg	1.2		1	04/18/17	04/19/17 13:40	1053

Total Petroleum Hydrocarbons - DRO

Analytical Method: SW-846 8015 C

Preparation Method: SW3550C

DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	66	mg/kg	12	DF	1	04/19/17	04/20/17 18:17	1059

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SE	Date/Time Sampled: 04/14/2017 11:00	PSS Sample ID: 17041412-001
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 86

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1221	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1232	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1242	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1248	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1254	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029
PCB-1260	ND	mg/kg	0.059		1	04/17/17	04/18/17 17:48	1029

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SE	Date/Time Sampled: 04/14/2017 11:00	PSS Sample ID: 17041412-001
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 86

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Acenaphthylene	66	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Acetophenone	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Anthracene	48	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Atrazine	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Benzo(a)anthracene	230	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Benzo(a)pyrene	240	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Benzo(b)fluoranthene	250	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Benzo(g,h,i)perylene	150	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Benzo(k)fluoranthene	200	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Biphenyl (Diphenyl)	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Butyl benzyl phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
bis(2-chloroethoxy) methane	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
bis(2-chloroethyl) ether	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
bis(2-chloroisopropyl) ether	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
bis(2-ethylhexyl) phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Bromophenylphenyl ether	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Di-n-butyl phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Carbazole	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Caprolactam	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Chloro-3-methyl phenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Chloroaniline	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2-Chloronaphthalene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2-Chlorophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Chlorophenyl Phenyl ether	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Chrysene	220	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Dibenz(a,h)Anthracene	51	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Dibenzofuran	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
3,3-Dichlorobenzidine	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,4-Dichlorophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SE	Date/Time Sampled: 04/14/2017 11:00	PSS Sample ID: 17041412-001
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 86

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Diethyl phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Dimethyl phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,4-Dimethylphenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4,6-Dinitro-2-methyl phenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,4-Dinitrophenol	ND	ug/kg	390		1	04/18/17	04/19/17 15:40	1055
2,4-Dinitrotoluene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,6-Dinitrotoluene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Fluoranthene	300	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Fluorene	ND	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Hexachlorobenzene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Hexachlorobutadiene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Hexachlorocyclopentadiene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Hexachloroethane	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Indeno(1,2,3-c,d)Pyrene	200	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Isophorone	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2-Methylnaphthalene	ND	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
2-Methyl phenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
3&4-Methylphenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Naphthalene	54	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
2-Nitroaniline	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
3-Nitroaniline	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Nitroaniline	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Nitrobenzene	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2-Nitrophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
4-Nitrophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
N-Nitrosodi-n-propyl amine	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
N-Nitrosodiphenylamine	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Di-n-octyl phthalate	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Pentachlorophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Phenanthrene	100	ug/kg	19		1	04/18/17	04/19/17 15:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SE	Date/Time Sampled: 04/14/2017 11:00	PSS Sample ID: 17041412-001
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 86

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Phenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
Pyrene	280	ug/kg	19		1	04/18/17	04/19/17 15:40	1055
Pyridine	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,4,5-Trichlorophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055
2,4,6-Trichlorophenol	ND	ug/kg	190		1	04/18/17	04/19/17 15:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SW	Date/Time Sampled: 04/14/2017 11:30	PSS Sample ID: 17041412-002
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 91

PP Metals

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Arsenic	6.2	mg/kg	0.51		1	04/18/17	04/18/17 19:59	1033
Beryllium	ND	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Cadmium	ND	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Chromium	170	mg/kg	25		10	04/18/17	04/19/17 18:25	1033
Copper	26	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Lead	110	mg/kg	25		10	04/18/17	04/19/17 18:25	1033
Mercury	ND	mg/kg	0.10		1	04/18/17	04/18/17 19:59	1033
Nickel	20	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Selenium	ND	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Silver	ND	mg/kg	2.5		1	04/18/17	04/18/17 19:59	1033
Thallium	ND	mg/kg	2.0		1	04/18/17	04/18/17 19:59	1033
Zinc	230	mg/kg	10		1	04/18/17	04/18/17 19:59	1033

Chromium, Hexavalent

Analytical Method: SW-846 7196 A

Preparation Method: SW3060A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chromium, Hexavalent	ND	mg/kg	1.1		1	04/18/17	04/19/17 13:43	1053

Total Petroleum Hydrocarbons - DRO

Analytical Method: SW-846 8015 C

Preparation Method: SW3550C

DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	47	mg/kg	11	DF	1	04/19/17	04/21/17 10:23	1059

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SW	Date/Time Sampled: 04/14/2017 11:30	PSS Sample ID: 17041412-002
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 91

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1221	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1232	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1242	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1248	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1254	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029
PCB-1260	ND	mg/kg	0.053		1	04/17/17	04/18/17 18:16	1029

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SW	Date/Time Sampled: 04/14/2017 11:30	PSS Sample ID: 17041412-002
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 91

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	34	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Acenaphthylene	330	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Acetophenone	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Anthracene	380	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Atrazine	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Benzo(a)anthracene	1,300	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Benzo(a)pyrene	1,000	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Benzo(b)fluoranthene	1,100	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Benzo(g,h,i)perylene	580	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Benzo(k)fluoranthene	1,000	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Biphenyl (Diphenyl)	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Butyl benzyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
bis(2-chloroethoxy) methane	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
bis(2-chloroethyl) ether	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
bis(2-chloroisopropyl) ether	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
bis(2-ethylhexyl) phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Bromophenylphenyl ether	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Di-n-butyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Carbazole	200	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Caprolactam	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Chloro-3-methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Chloroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2-Chloronaphthalene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2-Chlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Chlorophenyl Phenyl ether	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Chrysene	1,100	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Dibenz(a,h)Anthracene	190	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Dibenzofuran	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
3,3-Dichlorobenzidine	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,4-Dichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SW	Date/Time Sampled: 04/14/2017 11:30	PSS Sample ID: 17041412-002
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 91

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Diethyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Dimethyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,4-Dimethylphenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4,6-Dinitro-2-methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,4-Dinitrophenol	ND	ug/kg	370		1	04/18/17	04/19/17 16:40	1055
2,4-Dinitrotoluene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,6-Dinitrotoluene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Fluoranthene	2,300	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Fluorene	120	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Hexachlorobenzene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Hexachlorobutadiene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Hexachlorocyclopentadiene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Hexachloroethane	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Indeno(1,2,3-c,d)Pyrene	770	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Isophorone	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2-Methylnaphthalene	39	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
2-Methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
3&4-Methylphenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Naphthalene	170	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
2-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
3-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Nitrobenzene	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2-Nitrophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
4-Nitrophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
N-Nitrosodi-n-propyl amine	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
N-Nitrosodiphenylamine	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Di-n-octyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Pentachlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Phenanthrene	1,500	ug/kg	18		1	04/18/17	04/19/17 16:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-SW	Date/Time Sampled: 04/14/2017 11:30	PSS Sample ID: 17041412-002
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 91

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Phenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
Pyrene	1,900	ug/kg	18		1	04/18/17	04/19/17 16:40	1055
Pyridine	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,4,5-Trichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055
2,4,6-Trichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 16:40	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-N+W	Date/Time Sampled: 04/14/2017 12:00	PSS Sample ID: 17041412-003
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 90

PP Metals

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Arsenic	3.9	mg/kg	0.44		1	04/18/17	04/18/17 20:31	1033
Beryllium	ND	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Cadmium	ND	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Chromium	140	mg/kg	22		10	04/18/17	04/19/17 18:58	1033
Copper	21	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Lead	70	mg/kg	22		10	04/18/17	04/19/17 18:58	1033
Mercury	0.092	mg/kg	0.088		1	04/18/17	04/18/17 20:31	1033
Nickel	13	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Selenium	ND	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Silver	ND	mg/kg	2.2		1	04/18/17	04/18/17 20:31	1033
Thallium	ND	mg/kg	1.8		1	04/18/17	04/18/17 20:31	1033
Zinc	170	mg/kg	8.8		1	04/18/17	04/18/17 20:31	1033

Chromium, Hexavalent

Analytical Method: SW-846 7196 A

Preparation Method: SW3060A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chromium, Hexavalent	ND	mg/kg	1.1		1	04/18/17	04/19/17 13:46	1053

Total Petroleum Hydrocarbons - DRO

Analytical Method: SW-846 8015 C

Preparation Method: SW3550C

DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	34	mg/kg	11	DF	1	04/19/17	04/20/17 18:42	1059

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-N+W	Date/Time Sampled: 04/14/2017 12:00	PSS Sample ID: 17041412-003
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 90

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1221	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1232	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1242	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1248	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1254	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029
PCB-1260	ND	mg/kg	0.056		1	04/17/17	04/18/17 18:44	1029

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-N+W	Date/Time Sampled: 04/14/2017 12:00	PSS Sample ID: 17041412-003
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 90

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	37	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Acenaphthylene	110	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Acetophenone	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Anthracene	95	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Atrazine	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Benzo(a)anthracene	460	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Benzo(a)pyrene	460	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Benzo(b)fluoranthene	490	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Benzo(g,h,i)perylene	270	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Benzo(k)fluoranthene	430	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Biphenyl (Diphenyl)	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Butyl benzyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
bis(2-chloroethoxy) methane	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
bis(2-chloroethyl) ether	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
bis(2-chloroisopropyl) ether	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
bis(2-ethylhexyl) phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Bromophenylphenyl ether	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Di-n-butyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Carbazole	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Caprolactam	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Chloro-3-methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Chloroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2-Chloronaphthalene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2-Chlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Chlorophenyl Phenyl ether	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Chrysene	410	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Dibenz(a,h)Anthracene	79	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Dibenzofuran	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
3,3-Dichlorobenzidine	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,4-Dichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-N+W	Date/Time Sampled: 04/14/2017 12:00	PSS Sample ID: 17041412-003
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 90

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Diethyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Dimethyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,4-Dimethylphenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4,6-Dinitro-2-methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,4-Dinitrophenol	ND	ug/kg	370		1	04/18/17	04/19/17 17:39	1055
2,4-Dinitrotoluene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,6-Dinitrotoluene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Fluoranthene	680	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Fluorene	22	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Hexachlorobenzene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Hexachlorobutadiene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Hexachlorocyclopentadiene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Hexachloroethane	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Indeno(1,2,3-c,d)Pyrene	350	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Isophorone	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2-Methylnaphthalene	29	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
2-Methyl phenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
3&4-Methylphenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Naphthalene	85	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
2-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
3-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Nitroaniline	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Nitrobenzene	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2-Nitrophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
4-Nitrophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
N-Nitrosodi-n-propyl amine	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
N-Nitrosodiphenylamine	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Di-n-octyl phthalate	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Pentachlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Phenanthrene	270	ug/kg	18		1	04/18/17	04/19/17 17:39	1055

OFFICES:
 6630 BALTIMORE NATIONAL PIKE
 ROUTE 40 WEST
 BALTIMORE, MD 21228
 410-747-8770
 800-932-9047
 FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17041412

GTA - Abingdon, Abingdon, MD

April 21, 2017

Project Name: 37162082

Project Location: Sparrows Point

Project ID: 31162082

Sample ID: GTA-N+W	Date/Time Sampled: 04/14/2017 12:00	PSS Sample ID: 17041412-003
Matrix: SOIL	Date/Time Received: 04/14/2017 12:50	% Solids: 90

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Phenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
Pyrene	580	ug/kg	18		1	04/18/17	04/19/17 17:39	1055
Pyridine	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,4,5-Trichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055
2,4,6-Trichlorophenol	ND	ug/kg	180		1	04/18/17	04/19/17 17:39	1055



Case Narrative Summary

Client Name: GTA - Abingdon

Project Name: 37162082

Work Order Number(s): 17041412

Project ID: 31162082

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.



Analytical Data Package Information Summary

Work Order(s): 17041412

Report Prepared For: GTA - Abingdon, Abingdon, MD

Project Name: 37162082

Project Manager: Ben Myers

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM2540G	GTA-SE	Initial	17041412-001	1061	S	141741	141741	04/14/2017	04/18/2017 12:25	04/18/2017 12:25
	GTA-SW	Initial	17041412-002	1061	S	141741	141741	04/14/2017	04/18/2017 12:25	04/18/2017 12:25
	GTA-N+W	Initial	17041412-003	1061	S	141741	141741	04/14/2017	04/18/2017 12:25	04/18/2017 12:25
SW-846 6020 A	GTA-SE	Initial	17041412-001	1033	S	65724	141786	04/14/2017	04/18/2017 10:34	04/18/2017 19:52
	GTA-SW	Initial	17041412-002	1033	S	65724	141786	04/14/2017	04/18/2017 10:34	04/18/2017 19:59
	GTA-N+W	Initial	17041412-003	1033	S	65724	141786	04/14/2017	04/18/2017 10:34	04/18/2017 20:31
	65724-1-BKS	BKS	65724-1-BKS	1033	S	65724	141786	-----	04/18/2017 10:34	04/18/2017 17:48
	65724-1-BLK	BLK	65724-1-BLK	1033	S	65724	141786	-----	04/18/2017 10:34	04/18/2017 17:42
	F-1 (S-1&S-2) S	MS	17041230-001 S	1033	S	65724	141786	04/11/2017	04/18/2017 10:34	04/18/2017 18:01
	F-1 (S-1&S-2) SD	MSD	17041230-001 SD	1033	S	65724	141786	04/11/2017	04/18/2017 10:34	04/18/2017 18:08
	GTA-SE	Reanalysis	17041412-001	1033	S	65724	141816	04/14/2017	04/18/2017 10:34	04/19/2017 18:19
	GTA-SW	Reanalysis	17041412-002	1033	S	65724	141816	04/14/2017	04/18/2017 10:34	04/19/2017 18:25
	GTA-N+W	Reanalysis	17041412-003	1033	S	65724	141816	04/14/2017	04/18/2017 10:34	04/19/2017 18:58
SW-846 7196 A	GTA-SE	Initial	17041412-001	1053	S	65734	141795	04/14/2017	04/18/2017 14:18	04/19/2017 13:40
	GTA-SW	Initial	17041412-002	1053	S	65734	141795	04/14/2017	04/18/2017 14:18	04/19/2017 13:43
	GTA-N+W	Initial	17041412-003	1053	S	65734	141795	04/14/2017	04/18/2017 14:18	04/19/2017 13:46
	65734-1-BKS	BKS	65734-1-BKS	1053	S	65734	141795	-----	04/18/2017 14:18	04/19/2017 13:19
	65734-1-BLK	BLK	65734-1-BLK	1053	S	65734	141795	-----	04/18/2017 14:18	04/19/2017 13:17
	65734-1-BSD	BSD	65734-1-BSD	1053	S	65734	141795	-----	04/18/2017 14:18	04/19/2017 13:21
	C-1 D	MD	17041314-001 D	1053	S	65734	141795	04/01/2017	04/18/2017 14:18	04/19/2017 13:29
	C-1 S	MS	17041314-001 S	1053	S	65734	141795	04/01/2017	04/18/2017 14:18	04/19/2017 13:32
SW-846 8015 C	GTA-N+W	Initial	17041412-003	1059	S	65752	141851	04/14/2017	04/19/2017 14:09	04/20/2017 18:42
	GTA-SE	Initial	17041412-001	1059	S	65752	141852	04/14/2017	04/19/2017 14:09	04/20/2017 18:17
	65752-1-BKS	BKS	65752-1-BKS	1059	S	65752	141852	-----	04/19/2017 14:09	04/20/2017 16:38
	65752-1-BLK	BLK	65752-1-BLK	1059	S	65752	141852	-----	04/19/2017 14:09	04/20/2017 16:14
	65752-1-BSD	BSD	65752-1-BSD	1059	S	65752	141852	-----	04/19/2017 14:09	04/20/2017 17:03
	12631-DISP-9-4/13/17 S	MS	17041418-002 S	1059	S	65752	141876	04/13/2017	04/19/2017 14:09	04/21/2017 09:58



Analytical Data Package Information Summary

Work Order(s): 17041412

Report Prepared For: GTA - Abingdon, Abingdon, MD

Project Name: 37162082

Project Manager: Ben Myers

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8015 C	12631-DISP-9-4/13/17 SD	MSD	17041418-002 SD	1059	S	65752	141876	04/13/2017	04/19/2017 14:09	04/21/2017 10:23
	GTA-SW	Initial	17041412-002	1059	S	65752	141877	04/14/2017	04/19/2017 14:09	04/21/2017 10:23
SW-846 8082 A	GTA-SE	Initial	17041412-001	1029	S	65700	141780	04/14/2017	04/17/2017 10:25	04/18/2017 17:48
	GTA-SW	Initial	17041412-002	1029	S	65700	141780	04/14/2017	04/17/2017 10:25	04/18/2017 18:16
	GTA-N+W	Initial	17041412-003	1029	S	65700	141780	04/14/2017	04/17/2017 10:25	04/18/2017 18:44
	65700-1-BKS	BKS	65700-1-BKS	1029	S	65700	141780	-----	04/17/2017 10:25	04/18/2017 12:10
	65700-1-BLK	BLK	65700-1-BLK	1029	S	65700	141780	-----	04/17/2017 10:25	04/18/2017 11:42
	65700-1-BSD	BSD	65700-1-BSD	1029	S	65700	141780	-----	04/17/2017 10:25	04/18/2017 12:37
	GTA-SE S	MS	17041412-001 S	1029	S	65700	141780	04/14/2017	04/17/2017 10:25	04/18/2017 13:06
	GTA-SE SD	MSD	17041412-001 SD	1029	S	65700	141780	04/14/2017	04/17/2017 10:25	04/18/2017 13:34
SW-846 8270 C	65716-1-BKS	BKS	65716-1-BKS	1055	S	65716	141815	-----	04/18/2017 08:22	04/19/2017 01:11
	65716-1-BLK	BLK	65716-1-BLK	1055	S	65716	141815	-----	04/18/2017 08:22	04/19/2017 00:41
	65716-1-BSD	BSD	65716-1-BSD	1055	S	65716	141815	-----	04/18/2017 08:22	04/19/2017 01:41
	Post Ex3 Stairs S	MS	17041401-003 S	1055	S	65716	141815	04/13/2017	04/18/2017 08:22	04/19/2017 02:11
	Post Ex3 Stairs SD	MSD	17041401-003 SD	1055	S	65716	141815	04/13/2017	04/18/2017 08:22	04/19/2017 02:41
	GTA-SE	Initial	17041412-001	1055	S	65716	141856	04/14/2017	04/18/2017 08:22	04/19/2017 15:40
	GTA-SW	Initial	17041412-002	1055	S	65716	141856	04/14/2017	04/18/2017 08:22	04/19/2017 16:40
	GTA-N+W	Initial	17041412-003	1055	S	65716	141856	04/14/2017	04/18/2017 08:22	04/19/2017 17:39

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon
37162082

Analytical Method: SW-846 8082 A

Seq Number: 141780
PSS Sample ID: 17041412-001

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/17/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	85		61-150	%	04/18/17 17:48
Tetrachloro-m-xylene	69		42-142	%	04/18/17 17:48

Analytical Method: SW-846 8015 C

Seq Number: 141852
PSS Sample ID: 17041412-001

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/19/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	88		34-133	%	04/20/17 18:17

Analytical Method: SW-846 8270 C

Seq Number: 141856
PSS Sample ID: 17041412-001

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/18/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	88		32-107	%	04/19/17 15:40
2-Fluorophenol	75		34-113	%	04/19/17 15:40
Nitrobenzene-d5	78		35-123	%	04/19/17 15:40
Phenol-d6	78		34-120	%	04/19/17 15:40
Terphenyl-D14	98		46-154	%	04/19/17 15:40
2,4,6-Tribromophenol	98		31-113	%	04/19/17 15:40

Analytical Method: SW-846 8082 A

Seq Number: 141780
PSS Sample ID: 17041412-002

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/17/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	92		61-150	%	04/18/17 18:16
Tetrachloro-m-xylene	69		42-142	%	04/18/17 18:16

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon
37162082

Analytical Method: SW-846 8270 C

Seq Number: 141856
PSS Sample ID: 17041412-002

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/18/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	90		32-107	%	04/19/17 16:40
2-Fluorophenol	75		34-113	%	04/19/17 16:40
Nitrobenzene-d5	79		35-123	%	04/19/17 16:40
Phenol-d6	78		34-120	%	04/19/17 16:40
Terphenyl-D14	107		46-154	%	04/19/17 16:40
2,4,6-Tribromophenol	101		31-113	%	04/19/17 16:40

Analytical Method: SW-846 8015 C

Seq Number: 141877
PSS Sample ID: 17041412-002

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/19/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	91		34-133	%	04/21/17 10:23

Analytical Method: SW-846 8082 A

Seq Number: 141780
PSS Sample ID: 17041412-003

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/17/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	96		61-150	%	04/18/17 18:44
Tetrachloro-m-xylene	64		42-142	%	04/18/17 18:44

Analytical Method: SW-846 8015 C

Seq Number: 141851
PSS Sample ID: 17041412-003

Matrix: Soil

Prep Method: SW3550C
Date Prep: 04/19/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
o-Terphenyl	111		34-133	%	04/20/17 18:42

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon

37162082

Analytical Method: SW-846 8270 C

Seq Number: 141856

PSS Sample ID: 17041412-003

Matrix: Soil

Prep Method: SW3550C

Date Prep: 04/18/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	95		32-107	%	04/19/17 17:39
2-Fluorophenol	80		34-113	%	04/19/17 17:39
Nitrobenzene-d5	83		35-123	%	04/19/17 17:39
Phenol-d6	83		34-120	%	04/19/17 17:39
Terphenyl-D14	114		46-154	%	04/19/17 17:39
2,4,6-Tribromophenol	109		31-113	%	04/19/17 17:39

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon

37162082

Analytical Method: SW-846 6020 A

Seq Number: 141786

MB Sample Id: 65724-1-BLK

Matrix: Solid

LCS Sample Id: 65724-1-BKS

Prep Method: SW3050B

Date Prep: 04/18/17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Antimony	<1.767	14.14	15.35	109	80-120	mg/kg	04/18/17 17:48	
Arsenic	<0.3534	14.14	14.01	99	80-120	mg/kg	04/18/17 17:48	
Beryllium	<1.767	14.14	12.58	89	80-120	mg/kg	04/18/17 17:48	
Cadmium	<1.767	14.14	14.03	99	80-120	mg/kg	04/18/17 17:48	
Chromium	<1.767	14.14	13.85	98	80-120	mg/kg	04/18/17 17:48	
Copper	<1.767	14.14	13.53	96	80-120	mg/kg	04/18/17 17:48	
Lead	<1.767	14.14	15.19	107	80-120	mg/kg	04/18/17 17:48	
Mercury	<0.07069	0.3534	0.3640	103	80-120	mg/kg	04/18/17 17:48	
Nickel	<1.767	14.14	13.91	98	80-120	mg/kg	04/18/17 17:48	
Selenium	<1.767	14.14	16.00	113	80-120	mg/kg	04/18/17 17:48	
Silver	<1.767	14.14	14.22	101	80-120	mg/kg	04/18/17 17:48	
Thallium	<1.414	14.14	13.08	93	80-120	mg/kg	04/18/17 17:48	
Zinc	<7.069	70.69	66.34	94	80-120	mg/kg	04/18/17 17:48	

Analytical Method: SW-846 6020 A

Seq Number: 141816

REBLK Sample Id: 65724-1-BLK

Matrix: Solid

LCS Sample Id: 65724-1-BKS

Prep Method: SW3050B

Date Prep: 04/18/17

Parameter	REBLK Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Antimony	<1.767	14.14	15.36	109	75-125	mg/kg	04/19/17 16:47	
Arsenic	<0.3534	14.14	14.48	102	75-125	mg/kg	04/19/17 16:47	
Beryllium	<1.767	14.14	13.14	93	75-125	mg/kg	04/19/17 16:47	
Cadmium	<1.767	14.14	13.88	98	75-125	mg/kg	04/19/17 16:47	
Chromium	<1.767	14.14	13.97	99	75-125	mg/kg	04/19/17 16:47	
Copper	<1.767	14.14	13.60	96	75-125	mg/kg	04/19/17 16:47	
Lead	<1.767	14.14	14.89	105	75-125	mg/kg	04/19/17 16:47	
Mercury	<0.07069	0.3534	0.3393	96	75-125	mg/kg	04/19/17 16:47	
Nickel	<1.767	14.14	15.52	110	75-125	mg/kg	04/19/17 16:47	
Selenium	<1.767	14.14	11.92	84	75-125	mg/kg	04/19/17 16:47	
Silver	<1.767	14.14	13.44	95	75-125	mg/kg	04/19/17 16:47	
Thallium	<1.414	14.14	12.97	92	75-125	mg/kg	04/19/17 16:47	
Zinc	<7.069	14.14	60.72	429	75-125	mg/kg	04/19/17 16:47	H

Analytical Method: SW-846 7196 A

Seq Number: 141795

MB Sample Id: 65734-1-BLK

Matrix: Solid

LCS Sample Id: 65734-1-BKS

Prep Method: SW3060A

Date Prep: 04/18/17

LCSD Sample Id: 65734-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chromium, Hexavalent	<1.011	5.055	4.713	93	4.493	91	80-120	5	20	mg/kg	04/19/17 13:19	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon

37162082

Analytical Method: SW-846 8082 A

Seq Number: 141780

MB Sample Id: 65700-1-BLK

Matrix: Solid

LCS Sample Id: 65700-1-BKS

Prep Method: SW3550C

Date Prep: 04/17/17

LCSD Sample Id: 65700-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
PCB-1016	<0.05076	0.5076	0.4031	79	0.4189	85	60-110	4	25	mg/kg	04/18/17 12:10	
PCB-1260	<0.05076	0.5076	0.3568	70	0.3753	76	60-98	5	25	mg/kg	04/18/17 12:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	103		100		105		61-150	%	04/18/17 12:10
Tetrachloro-m-xylene	84		84		87		42-142	%	04/18/17 12:10

Analytical Method: SW-846 8082 A

Seq Number: 141780

Parent Sample Id: 17041412-001

Matrix: Soil

MS Sample Id: 17041412-001 S

Prep Method: SW3550C

Date Prep: 04/17/17

MSD Sample Id: 17041412-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
PCB-1016	<0.05612	0.5612	0.4064	72	0.4093	72	45-130	1	30	mg/kg	04/18/17 13:06	
PCB-1260	<0.05612	0.5612	0.3335	59	0.3544	62	30-125	6	30	mg/kg	04/18/17 13:06	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	86		82		61-150	%	04/18/17 13:06
Tetrachloro-m-xylene	81		80		42-142	%	04/18/17 13:06

Analytical Method: SW-846 8015 C

Seq Number: 141852

MB Sample Id: 65752-1-BLK

Matrix: Solid

LCS Sample Id: 65752-1-BKS

Prep Method: SW3550C

Date Prep: 04/19/17

LCSD Sample Id: 65752-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
TPH-DRO (Diesel Range Organics)	<9.843	32.81	26.60	81	30.88	92	54-123	15	25	mg/kg	04/20/17 16:38	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
o-Terphenyl	74		83		98		34-133	%	04/20/17 16:38

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon

37162082

Analytical Method: SW-846 8270 C

Seq Number: 141815

MB Sample Id: 65716-1-BLK

Matrix: Solid

LCS Sample Id: 65716-1-BKS

Prep Method: SW3550C

Date Prep: 04/18/17

LCSD Sample Id: 65716-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<16.61	1329	1278	96	1276	96	60-116	0	25	ug/kg	04/19/17 01:11	
Acenaphthylene	<16.61	1329	1275	96	1291	97	61-112	1	25	ug/kg	04/19/17 01:11	
Acetophenone	<166.1	1329	1108	83	1119	84	57-114	1	25	ug/kg	04/19/17 01:11	
Anthracene	<16.61	1329	1243	94	1255	94	66-115	1	25	ug/kg	04/19/17 01:11	
Atrazine	<166.1	1329	1305	98	1312	99	7-109	1	25	ug/kg	04/19/17 01:11	
Benzo(a)anthracene	<16.61	1329	1294	97	1345	101	71-113	4	25	ug/kg	04/19/17 01:11	
Benzo(a)pyrene	<16.61	1329	1229	92	1259	95	69-118	2	25	ug/kg	04/19/17 01:11	
Benzo(b)fluoranthene	<16.61	1329	1143	86	1275	96	65-126	11	25	ug/kg	04/19/17 01:11	
Benzo(g,h,i)perylene	<16.61	1329	1225	92	1249	94	69-112	2	25	ug/kg	04/19/17 01:11	
Benzo(k)fluoranthene	<16.61	1329	1219	92	1347	101	57-129	10	25	ug/kg	04/19/17 01:11	
Biphenyl (Diphenyl)	<166.1	1329	1188	89	1161	87	62-117	2	25	ug/kg	04/19/17 01:11	
Butyl benzyl phthalate	<166.1	1329	1262	95	1304	98	81-111	3	25	ug/kg	04/19/17 01:11	
bis(2-chloroethoxy) methane	<166.1	1329	1123	84	1133	85	56-119	1	25	ug/kg	04/19/17 01:11	
bis(2-chloroethyl) ether	<166.1	1329	1079	81	1094	82	55-107	1	25	ug/kg	04/19/17 01:11	
bis(2-chloroisopropyl) ether	<166.1	1329	1053	79	1054	79	44-103	0	25	ug/kg	04/19/17 01:11	
bis(2-ethylhexyl) phthalate	<166.1	1329	1277	96	1318	99	84-109	3	25	ug/kg	04/19/17 01:11	
4-Bromophenylphenyl ether	<166.1	1329	1182	89	1212	91	63-125	3	25	ug/kg	04/19/17 01:11	
Di-n-butyl phthalate	<166.1	1329	1253	94	1255	94	76-110	0	25	ug/kg	04/19/17 01:11	
Carbazole	<166.1	1329	1727	130	1780	134	58-133	3	25	ug/kg	04/19/17 01:11	H
Caprolactam	<166.1	1329	1272	96	1264	95	51-122	1	25	ug/kg	04/19/17 01:11	
4-Chloro-3-methyl phenol	<166.1	1329	1209	91	1236	93	74-119	2	25	ug/kg	04/19/17 01:11	
4-Chloroaniline	<166.1	1329	1154	87	1196	90	45-107	4	25	ug/kg	04/19/17 01:11	
2-Chloronaphthalene	<166.1	1329	1248	94	1256	94	56-113	1	25	ug/kg	04/19/17 01:11	
2-Chlorophenol	<166.1	1329	1087	82	1099	83	59-113	1	25	ug/kg	04/19/17 01:11	
4-Chlorophenyl Phenyl ether	<166.1	1329	1251	94	1275	96	62-111	2	25	ug/kg	04/19/17 01:11	
Chrysene	<16.61	1329	1215	91	1254	94	72-114	3	25	ug/kg	04/19/17 01:11	
Dibenz(a,h)Anthracene	<16.61	1329	1261	95	1291	97	72-110	2	25	ug/kg	04/19/17 01:11	
Dibenzofuran	<166.1	1329	1263	95	1280	96	62-118	1	25	ug/kg	04/19/17 01:11	
3,3-Dichlorobenzidine	<166.1	1329	1674	126	1765	133	66-141	5	25	ug/kg	04/19/17 01:11	
2,4-Dichlorophenol	<166.1	1329	1088	82	1111	83	68-118	2	25	ug/kg	04/19/17 01:11	
Diethyl phthalate	<166.1	1329	1293	97	1333	100	61-113	3	25	ug/kg	04/19/17 01:11	
Dimethyl phthalate	<166.1	1329	1308	98	1350	101	69-109	3	25	ug/kg	04/19/17 01:11	
2,4-Dimethylphenol	<166.1	1329	1130	85	1172	88	57-122	4	25	ug/kg	04/19/17 01:11	
4,6-Dinitro-2-methyl phenol	<166.1	1329	1114	84	1190	89	50-134	7	25	ug/kg	04/19/17 01:11	
2,4-Dinitrophenol	<332.2	1329	969.8	73	1109	83	24-144	13	25	ug/kg	04/19/17 01:11	
2,4-Dinitrotoluene	<166.1	1329	1369	103	1423	107	61-124	4	25	ug/kg	04/19/17 01:11	
2,6-Dinitrotoluene	<166.1	1329	1357	102	1396	105	59-124	3	25	ug/kg	04/19/17 01:11	
Fluoranthene	<16.61	1329	1230	93	1239	93	69-119	1	25	ug/kg	04/19/17 01:11	
Fluorene	<16.61	1329	1259	95	1285	97	65-115	2	25	ug/kg	04/19/17 01:11	
Hexachlorobenzene	<166.1	1329	1220	92	1264	95	63-118	4	25	ug/kg	04/19/17 01:11	
Hexachlorobutadiene	<166.1	1329	1171	88	1167	88	55-120	0	25	ug/kg	04/19/17 01:11	
Hexachlorocyclopentadiene	<166.1	1329	1446	109	1537	115	29-138	6	25	ug/kg	04/19/17 01:11	
Hexachloroethane	<166.1	1329	1140	86	1139	86	54-110	0	25	ug/kg	04/19/17 01:11	
Indeno(1,2,3-c,d)Pyrene	<16.61	1329	1246	94	1294	97	60-127	4	25	ug/kg	04/19/17 01:11	
Isophorone	<166.1	1329	1154	87	1165	88	57-116	1	25	ug/kg	04/19/17 01:11	
2-Methylnaphthalene	<16.61	1329	1145	86	1133	85	70-109	1	25	ug/kg	04/19/17 01:11	
2-Methyl phenol	<166.1	1329	1097	83	1119	84	59-118	2	25	ug/kg	04/19/17 01:11	
3&4-Methylphenol	<166.1	1329	1094	82	1108	83	59-113	1	25	ug/kg	04/19/17 01:11	
Naphthalene	<16.61	1329	1125	85	1126	85	59-108	0	25	ug/kg	04/19/17 01:11	
2-Nitroaniline	<166.1	1329	1310	99	1377	103	51-116	5	25	ug/kg	04/19/17 01:11	
3-Nitroaniline	<166.1	1329	1392	105	1473	111	57-111	6	25	ug/kg	04/19/17 01:11	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17041412

GTA - Abingdon

37162082

Analytical Method: SW-846 8270 C

Seq Number: 141815

MB Sample Id: 65716-1-BLK

Matrix: Solid

LCS Sample Id: 65716-1-BKS

Prep Method: SW3550C

Date Prep: 04/18/17

LCSD Sample Id: 65716-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Nitroaniline	<166.1	1329	1630	123	1721	129	55-125	5	25	ug/kg	04/19/17 01:11	H
Nitrobenzene	<166.1	1329	1136	85	1140	86	53-110	0	25	ug/kg	04/19/17 01:11	
2-Nitrophenol	<166.1	1329	1126	85	1150	86	58-124	2	25	ug/kg	04/19/17 01:11	
4-Nitrophenol	<166.1	1329	1150	87	1207	91	51-116	5	25	ug/kg	04/19/17 01:11	
N-Nitrosodi-n-propyl amine	<166.1	1329	1161	87	1161	87	60-98	0	25	ug/kg	04/19/17 01:11	
N-Nitrosodiphenylamine	<166.1	1329	1199	90	1233	93	65-111	3	25	ug/kg	04/19/17 01:11	
Di-n-octyl phthalate	<166.1	1329	1233	93	1280	96	69-120	4	25	ug/kg	04/19/17 01:11	
Pentachlorophenol	<166.1	1329	1076	81	1101	83	56-124	2	25	ug/kg	04/19/17 01:11	
Phenanthrene	<16.61	1329	1176	88	1192	90	67-117	1	25	ug/kg	04/19/17 01:11	
Phenol	<166.1	1329	1044	79	1073	81	58-114	3	25	ug/kg	04/19/17 01:11	
Pyrene	<16.61	1329	1187	89	1228	92	77-111	3	25	ug/kg	04/19/17 01:11	
Pyridine	<166.1	1329	1010	76	1033	78	37-110	2	25	ug/kg	04/19/17 01:11	
2,4,5-Trichlorophenol	<166.1	1329	1282	96	1331	100	64-114	4	25	ug/kg	04/19/17 01:11	
2,4,6-Trichlorophenol	<166.1	1329	1214	91	1265	95	60-125	4	25	ug/kg	04/19/17 01:11	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
2-Fluorobiphenyl	98		97		98		32-107	%	04/19/17 01:11
2-Fluorophenol	96		84		85		34-113	%	04/19/17 01:11
Nitrobenzene-d5	95		89		89		35-123	%	04/19/17 01:11
Phenol-d6	86		83		86		34-120	%	04/19/17 01:11
Terphenyl-D14	100		106		107		46-154	%	04/19/17 01:11
2,4,6-Tribromophenol	102		109		112		31-113	%	04/19/17 01:11

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits



Phase Separation Science, Inc

Sample Receipt Checklist

Work Order # 17041412 **Received By** Thomas Wingate
Client Name GTA - Abingdon **Date Received** 04/14/2017 12:50:00 PM
Project Name 37162082 **Delivered By** Client
Project Number 31162082 **Tracking No** Not Applicable
Disposal Date 05/19/2017 **Logged In By** Thomas Wingate
Shipping Container(s)
No. of Coolers 1

Custody Seal(s) Intact? N/A Ice Present
Seal(s) Signed / Dated? N/A Temp (deg C) 19
Temp Blank Present No

Documentation

COC agrees with sample labels? Yes Sampler Name Justin Valkos
Chain of Custody Yes MD DW Cert. No. N/A

Sample Container

Appropriate for Specified Analysis? Yes Custody Seal(s) Intact? Not Applicable
Intact? Yes Seal(s) Signed / Dated Not Applicable
Labeled and Labels Legible? Yes

Total No. of Samples Received 3

Total No. of Containers Received 6

Preservation

Total Metals (pH<2) N/A
Dissolved Metals, filtered within 15 minutes of collection (pH<2) N/A
Orthophosphorus, filtered within 15 minutes of collection N/A
Cyanides (pH>12) N/A
Sulfide (pH>9) N/A
TOC, DOC (field filtered), COD, Phenols (pH<2) N/A
TOX, TKN, NH3, Total Phos (pH<2) N/A
VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2) N/A
Do VOA vials have zero headspace? N/A
624 VOC (Rcvd at least one unpreserved VOA vial) N/A
524 VOC (Rcvd with trip blanks) (pH<2) N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

Thomas Wingate

Date: 04/14/2017

PM Review and Approval:

Lynn Jackson

Date: 04/14/2017