

RESPONSE AND DEVELOPMENT COMPLETION REPORT

AREA B: PARCEL B22, PHASE 1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:



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A handwritten signature in black ink that reads "Melissa Replogle".

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Revision 0 – July 15, 2020

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1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared this Response and Development Completion Report for the portion of the Tradepoint Atlantic (TPA) property that has been designated as Area B: Parcel B22, Phase 1 (the Site). All documents related to the investigation and development of the sub-parcel are listed in the Reference List in **Appendix A**. Copies of relevant email communication are provided in **Appendix B**.

A Phase II Investigation specific to soil conditions was performed for Parcel B22 in accordance with the requirements outlined in the ACO as further described in the Phase II Investigation Work Plan – Area B: Parcel B22 (Revision 1) dated June 2, 2016. This Work Plan was approved by the agencies on June 16, 2016. Findings from the Phase II Investigation are presented in the Phase II Investigation Preliminary Report – Area B: Parcel B22 (Revision 0) dated July 15, 2016. The Parcel B22, Phase 1 Response and Development Work Plan (RADWP) Revision 2 was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on August 30, 2016. Approval to proceed with development work was received via email from the MDE on September 7, 2016. A subsequent revision of the Parcel B22, Phase 1 RADWP (Revision 5) dated March 28, 2017 (updated March 30, 2017 and April 11, 2017) was approved by the USEPA via email on March 29, 2017 and April 7, 2017. Polychlorinated biphenyl (PCBs) and Diesel Range Organics (DRO) impacts at 7 locations within the Parcel B22, Phase 1 development area were delineated and excavated between August 2016 and August 2017, as documented in Delineation and Excavation of PCB and DRO Impacted Soil for Parcel B22 (Revision 0) dated December 22, 2016 and approved by the MDE via email on March 30, 2017. Details are provided in Section 2.2 below.

The development of Parcel B22, Phase 1 generally included grading, placement of subbase, construction of floor slabs, paving, installation of underground utility and foundation structures, construction of a warehouse building, lighting improvements, and landscaping improvements.

Supplementary work associated with the Parcel B22, Phase 1 development was performed along a roadway known as Tradepoint Avenue following the completion of the Parcel B22 Road and Utility Investigation, the results of which were presented in the Road and Utility Investigation Report (B22): Developed in Support of Construction Activities for Area B: Parcel B22, Phase 1 (Revision 1) dated January 10, 2017. The Utility Excavation NAPL Contingency Plan, Revision 4, dated June 19, 2017, was approved by the MDE via email on October 31, 2017. Some utility work was performed under a previous version of the document. Both sets of supplemental work are included in this completion report.

A letter was submitted to the MDE and the USEPA on September 13, 2017 requesting approval regarding a proposed utility and transformer addition in support of the development of Parcel B22,

Phase 1. The proposed development work was approved by the agencies by email on September 19, 2017.

1.1. REPORT PURPOSE

The purpose of this Response and Development Completion Report is to document response actions 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 actions performed are described in Section 2, and conclusions are provided in Section 3.

1.2. PROJECT BACKGROUND

1.2.1. 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. From 2013 to the present day, a demolition contractor has been demolishing the majority of the above-grade structures on the site-wide property.

Parcel B22 comprises approximately 130.8 acres of an approximately 3,100-acre former steel mill (**Figure 1**) that operated for over one hundred years. Parcel B22 is zoned Manufacturing Heavy-Industrial Major (MH-IM), and was not occupied prior to the start of development activities. Prior to the start of development activities, all former buildings were demolished, and the parcel was cleared of all significant vegetation. Several pits and basements across the Site were filled in during the demolition process (see **Appendix C**). The concrete slabs remained on grade.

The Phase 1 Development Area (the Site) consists of approximately 71.6 acres in the southern portion of Parcel B22 (**Figure 2**). Following approval of the RADWP, the responsibility for the

final completion of the detention pond shown in the southeastern portion of the Site (**Figure 2**) has been transferred to Clayco, the General Contractor for Sub-Parcel B6-1 development, and the completion of this basin will be addressed in the Sub-Parcel B6-1 Development Completion Report. Revised development boundaries for Parcel B22, Phase 1 and Sub-Parcel B6-1 were submitted to EAG on August 27, 2018.

In addition, some utility work associated with this Phase 1 development was performed outside the Parcel B22 boundary, as shown in **Figure 3** and **Figure 4**.

1.2.2. Historical Environmental Activities

Prior to demolition, the Phase 1 Development Area was almost entirely occupied by steel finishing buildings and associated processing equipment and operations. Several iron and steel work processes were completed within the Phase 1 Development Area formerly known as the Continuous Cold Tin Mill, Hot Strip Mill Area, and the Finishing Mills Areas. The former facilities and processes generally included steel finishing operations including hot and cold milling and various plating operations including chrome, tin and zinc alloys. More information regarding previous steel finishing activities can be found in the Phase II Investigation Work Plan – Area B: Parcel B22 (dated June 2, 2016).

A Phase I 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 Response and Development Work Plan (RADWP) for Parcel B22, Phase 1, Revision 5 (dated March 28, 2017, updated April 11, 2017).

The Phase I ESA identified the following RECs within the Parcel B22 Phase 1 boundaries.

- Coating Lines Blind Sumps (REC 1I, Finding 19, also listed as SWMU 54)
- Cold Sheet Mill Piping (REC 1J, Finding 23, also listed as SWMU 58)
- Acid Tanks (REC 1V, Finding 53, also listed as AOC J)
- Tin Mill Sump (Acid Monitoring Area) (REC 1S, Finding 41, also listed as SWMU 86)

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 SWMUs within Parcel B22 are cross-listed as RECs and have been previously discussed. Several additional AOCs were identified within the Phase 1 Development Area as follows:

- Former PCB Spill Area (Sheet Mill) (AOC D)
- Former Chromic Acid Spill Area (AOC S)
- Former Diesel Fuel UST (Cold Sheet Mill) (AOC T)

1.2.3. Phase II Investigation

A Phase II Investigation was conducted for all of Parcel B22 in accordance with the Parcel B22 Phase II Investigation Work Plan (Revision 1 dated June 2, 2016). The results of the Phase II Investigation are presented in the Phase II Investigation Preliminary Report Area B: Parcel B22. (Revision 0) dated July 15, 2017.

1.3. SITE DEVELOPMENT AND RESPONSE ACTIONS

The Site has been developed for use as a warehouse facility with development activities generally including grading, asphalt paving, construction of a slab on grade warehouse building totaling 1,225,600 square feet with an attached slab on grade 62,100 square foot office building, stormwater management and lighting and security improvements. Subsequent Site use would involve indoor workers in the warehouse and associated offices, and truck drivers entering and leaving the Site with goods.

The response and development actions approved for protection of human health and the environment at the Site included proper abandonment of wells and piezometers, delineation and removal of two areas with PCB-contaminated media in excess of 50 mg/kg, delineation and removal of petroleum-contaminated soil in four areas, and environmental capping of 100% of the Phase 1 Development Area.

2.0 RESPONSE ACTIVITIES

2.1. WELL ABANDONMENT

A total of 11 temporary groundwater sampling points (piezometers) were installed on Parcel B22 during the Finishing Mills Groundwater Investigation. All 11 piezometers (FM-001-PZS, FM-001-PZI, FM-002-PZS, FM-002-PZI, FM-013-PZS, FM-013-PZI, FM-014-PZS, FM-014-PZI, FM-016-PZS, FM-016-PZI, and FM-017-PZS) were properly abandoned as indicated in the Parcel B22, Phase 1 RADWP in accordance with COMAR 26.04.04.34 through 36 on October 10 and 11, 2016, prior to the start of development activities. In addition, two temporary NAPL screening piezometers (B22-057-PZ, B22-161-PZ) were properly abandoned. Piezometer B22-163-PZ could not be located; however, an excavation was subsequently performed at this location. Piezometer abandonment records are provided in **Appendix D**.

One additional pair of monitoring wells (FM05-PZM004 and FM05-PZM024) that was slated for abandonment was inadvertently destroyed during grading activities.

2.2. EXCAVATION ACTIVITIES

Two locations with exceedances of relevant screening criteria in soil for PCBs (B22-028-SB and B22-065-SB) were excavated following the Parcel B22 Phase II Investigation at the Tradepoint Atlantic property. Impacted soils containing greater than 500 mg/kg PCBs were excavated, and confirmation samples were collected following excavation. A total of 12.9 cubic yards of PCB-impacted soil were shipped off-site for disposal at Wayne Disposal, Inc. on November 1, 2016. Five additional locations with exceedances of relevant screening criteria in soil for DRO (B22-162-SB, B22-163-SB, B22-070-SB, B22-148-SB and B22-152-SB) were delineated and excavated. Confirmation samples were collected to verify removal of all soil containing DRO concentrations in excess of 6,200 mg/kg. The DRO-impacted soil was taken to the on-site industrial landfill (Greys Landfill).

The removal and disposal of the PCB-impacted and DRO-impacted soil is documented in the report titled Delineation and Excavation of PCB and DRO Impacted Soil for Parcel B22 (dated December 22, 2016) and two associated comment response letters included in **Appendix E**. The removal of the impacted soil was approved by the MDE in an email dated March 30, 2017 (included in **Appendix B**). Approval to backfill the excavations was confirmed by the MDE in an email dated March 7, 2017 (see **Appendix B**). The excavations were backfilled by the contractor responsible for site preparation in order to facilitate development work on Parcel B22, Phase 1.

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 B22, Phase 1 to adequately mitigate potential risks for future uses of the property.

Development activities began on November 16, 2016 with FCL Builders as the General Contractor. Full-time oversight was performed by an Environmental Professional (EP) provided by Hillis Carnes Engineering Associates (HCEA) during intrusive development activities to ensure compliance with environmental regulations and the development plans, including performing dust monitoring and soil screening services. The Notice of Completion of Remedial Actions letter provided by HCEA (**Appendix F**) states that development activities were completed in general accordance with the Parcel B22, Phase 1 RADWP.

From January 19 to April 17, 2017, a second HCEA EP provided oversight for the utility installation along Tradepoint Avenue. After April 17, 2017, the primary HCEA EP provided oversight for the Parcel B22, Phase 1 development, the associated utility installation along Tradepoint Avenue, and the Utility and Transformer Additions work until completion. Select Daily Field Reports prepared by the EP are included in **Appendix G**. One notable occurrence occurred during development on May 17, 2017 and is discussed in further detail in Section 3.9. Only those field reports from notable occurrences have been included. Select photos from general development activities and notable occurrences are included in **Appendix H**.

Two sediment basins were constructed during development. The western basin has been converted to a sediment pond as specified in the development plans. The eastern basin is located adjacent to on-going development on Sub-Parcel B6-1 and is in use to control construction area runoff. Therefore, the responsibility for the final completion of this basin has been transferred to Clayco, the General Contractor for Sub-Parcel B6-1 development, and the completion of this basin will be addressed in the Sub-Parcel B6-1 Development Completion Report. Revised development boundaries for Parcel B22, Phase 1 and Sub-Parcel B6-1 were submitted to EAG on August 27, 2018.

A small area inside the building footprint has not been capped due to planned appliance installations. The open area has been covered with plywood and plastic to prevent access to surface and subsurface soils as shown in **Appendix H**. The MDE has approved this interim remedy.

Site development activities are discussed in the Quarterly Development Status Updates for the third and fourth quarters of 2017 and in the Responses to Agency Comments dated January 29, 2018 (**Appendix I**). Details regarding soil management, stockpiling, sampling, and disposal are provided in the Development Status Updates and in the associated comment response letter. The MDE was notified of additional development work performed in the sediment basin in the western portion of the site in an email dated July 30, 2018. The following sections provide information

not covered in the Quarterly Development Status Updates or in the associated comment response letter.

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

Slag fill from elsewhere on the Tradepoint Atlantic property was placed across the entire site as sub-base beneath capped and landscaped areas. Materials that did not exhibit evidence of impacts that were removed during grading activities and during the excavation of the western sediment basin were placed beneath capped areas. Material with evidence of impacts was stockpiled and managed as discussed in Section 3.5. No materials left the 3,100 acre property.

3.3. UTILITY AND FOUNDATION INSTALLATION

Excavated material that did not exhibit evidence of impacts was placed on-site under capped areas. Materials excavated from utility trenches were replaced inside the trenches as backfill. Slag was also used as utility trench backfill. The MDE gave permission to use slag or previously approved soil as trench backfill beneath capped areas in an email dated March 3, 2017 (**Appendix B**).

Additional development work was performed in the southern portion of Parcel B22, Phase 1 and in the area directly adjacent to the south prior to the fourth quarter of 2017 (along a roadway known as Tradepoint Avenue). The work is described in the Road and Utility Investigation Report, Developed in Support of Construction Activities for Area B: Parcel B22, Phase 1, Revision 1, dated January 10, 2017. Work was conducted from January 19, 2017 to September 2017. Details are provided in the Third and Fourth Quarter Development Status Updates as well as the associated comment response letter. Laboratory results for soil stockpiled during this additional work are provided in **Appendix J**. Certification documentation for the clean fill used to backfill the utility trenches is provided in **Appendix K**.

Additional work was performed in support of the development of Parcel B22, Phase 1, directly to the west of the Tradepoint Atlantic office building (primarily within Parcel B3). This work included the construction of an underground utility line described in the Proposed Utility and Transformer Additions letter dated September 13, 2017. The work was performed from September 2017 to November 2017. Details are provided in the Third and Fourth Quarter Development Status Updates as well as the associated comment response letter.

3.4. PLACEMENT OF SUB-BASE

Slag fill from elsewhere on the Tradepoint Atlantic property was placed as sub-base beneath capped areas across the entire site. Voluntary Cleanup Program (VCP) approved fill was placed as fill beneath landscaped areas. Additional details are provided in the Third and Fourth Quarter Development Status Reports and in the associated comment response letter. Soil complying with the MDE VCP definition of clean fill was used to backfill the utility trenches associated with the Road and Utility development along Tradepoint Avenue. Clean fill certification and approval documentation is provided in **Appendix K**. The fill materials were approved by the MDE via email on January 17, 2017; February 2, 2017; March 20, 2017; April 10, 2017; October 25, 2017; February 26, 2018; and April 27, 2018.

3.5. SOIL SAMPLING AND DISPOSAL

Details regarding the sampling and disposal of materials excavated during the third and fourth quarters of 2017 are presented in the respective Quarterly Status Updates as well as the associated comment response letter (**Appendix I**). In addition, approximately 9,590 cy of soil generated during the excavation of the sediment basin in the western portion of the site and approximately 2,400 cy of soil generated during the construction of Tradepoint Avenue were sampled during June 2018. The laboratory results were sent to the MDE on July 25, 2018. The MDE approved the soil for use under a future VCP cap in an email dated September 17, 2018. The soil sampled in June 2018 has not yet been reused and is currently stockpiled outside of the Parcel B22, Phase 1 development area on Parcel B2. Because the soil has been approved for reuse under a future VCP cap, the development of Parcel B22, Phase 1 is considered complete. MDE email approvals of the results of stockpile sample laboratory testing for all excavated materials tested during the duration of the Parcel B22, Phase 1 development are included in **Appendix J**.

3.6. DUST CONTROL

General construction operations, including removal of existing foundations or utilities, soil excavation and transport, soil grading, trenching for utilities, and cap construction activities were performed at the Site. To limit worker exposure to contaminants borne on dust and windblown particulates, dust control measures were to be implemented, if warranted when the above activities were performed. The action level used for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) and/or continuous monitoring during the response and development activities on Site was 3.0 mg/m³.

Dust monitoring was performed with a ThermoElectron Corporation Personal Data RAM 1000AN Dust Monitor from October 2016 to May 2017. Three MetOne E-sampler dust monitors were used from May 2017 to the conclusion of intrusive activities. Three dust monitors were placed daily upwind of, downwind of, and inside the active work zone. Dust readings were recorded at each monitor at a rate of once per minute. Daily summaries of 15-minute average dust readings are

provided as an electronic attachment. Dust control measures were to be implemented if a sustained level above 3.0 mg/m³ was observed. Some exceedances of the 3.0 mg/m³ action level were observed during construction activities. However, the exceedances appeared to be associated with trucks passing near the monitor and were not sustained. After electronic dust monitoring was terminated, the EP continued to monitor for visible dust. The Contractor utilized a water truck to mitigate dust generation during the development work operations.

3.7. WATER MANAGEMENT

During the initial development of Parcel B22, Phase 1, all dewatering discharges were pumped to a storm drain leading to the on-site water treatment facility at the direction of Tradepoint Atlantic personnel. After the sedimentation basins had been installed during development, Tradepoint Atlantic personnel confirmed that the sedimentation basins drained to the on-site water treatment facility, and all further dewatering discharges during the development phase were directed to the sedimentation basins.

Three samples of accumulated water were collected from excavations during dewatering. Due to the source area of the water, the sample collected on November 18, 2016 was visually inspected by the on-site wastewater treatment plant operator to ensure that there was no heavy oil or high levels of suspended solids. Tradepoint Atlantic personnel approved the discharge of the sampled groundwater to the on-site water treatment facility. The laboratory reports for the samples collected on May 31 and June 7, 2017 are provided in **Appendix L**. Following the receipt of laboratory results, Tradepoint Atlantic personnel approved the discharge of accumulated water to the on-site water treatment facility.

3.8. HEALTH AND SAFETY

A site-specific Health and Safety Plan (HASP) was developed by the on-site contractor to present the minimum requirements for worker health and safety protection for the project (cover sheet provided in **Appendix M**). All site work was performed under the site-specific HASP. The contractor was responsible for following safety procedures, including schedule limitations, to control contact with potentially contaminated soil or groundwater.

3.9. NOTABLE OCCURRENCES

On May 17, 2017 a buried utility line containing a large quantity of an oily substance exhibiting strong petroleum odors was damaged. Additional details are provided in the Third and Fourth Quarter Development Status Updates and in the associated comment response letter. Relevant Daily Field Reports for May 17 – 20, 2017 and photos of this event are provided in **Appendix G** and **Appendix H**, respectively.

A sample of the oily water was submitted to Phase Separation Science, as discussed in the Third and Fourth Quarter Status Update Response to Agency Comments. The laboratory report is

included in **Appendix L**. Following the receipt of laboratory results, Tradepoint Atlantic personnel approved the discharge of the oily water to the on-site water treatment facility.

3.10. PAVING

As stated in the Notice of Completion of Remedial Actions prepared by HCEA (**Appendix F**), the environmental cap installed during the Parcel B22, Phase 1 development meets the required thicknesses specified in the RADWP.

3.11. LANDSCAPED AREAS

As stated in the Notice of Completion of Remedial Actions (**Appendix F**), capping in landscaped areas was installed to meet the specifications established in the Parcel B22, Phase 1 RADWP. VCP approved clean fill and topsoil were brought to the site from the Back River Wastewater Treatment Plant. The materials were approved by the MDE as documented in emails dated April 12, 2017, and August 31, 2017 (**Appendix B**). The installed marker fabric (see **Appendix N**) meets the specifications given in the RADWP.

3.12. 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.
- Requirement for 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**. The entire Site will be subject to the industrial use groundwater use restrictions.

3.13. 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 pond liners and landscape and hardscape 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 B22, Phase 1, 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 degradation. 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 October 2016 and July 2018, response and development actions were conducted as part of the redevelopment of the Site identified as Parcel B22, Phase 1. The remedial actions specified in the RADWP included: delineation and excavations of contaminated soil; abandonment of temporary groundwater collection points and wells; capping of building and parking areas with paving; capping of landscaped areas and utility corridors within the cap with clean fill and implementation of institutional controls.

A Notice of Completion of Remedial Actions, prepared by the EP, a Professional Engineer registered in Maryland, is enclosed in **Appendix F** to certify that the response actions have been completed in accordance with the requirements described in the RADWP and the Site is suitable for occupancy and use. As discussed, the boundary of the Site was revised to exclude the eastern detention pond, which will be addressed in the B6-1 RADWP. One stockpile of soil originating from Parcel B22, Phase 1 development activities remains on Parcel B2, but it has been approved for reuse under a future VCP cap. In addition, the MDE approved the installation of plywood and plastic as a temporary barrier in a small section of the building that will be paved after completion of equipment installation.

As a result of the information contained herein, it has been demonstrated that the remedial actions have been completed in accordance with the approved RADWP. With construction of the containment remedy (caps) in conjunction with redevelopment of the Site, the applicable requirements for obtaining a NFA Letter and COC for this Site have been fulfilled. It is ARM's understanding that Tradepoint Atlantic will record the NFA Letter and the deed restrictions identified in the RADWP, including the Institutional Controls and Operations & Maintenance Plan discussed in Section 3.12, within 30 days after receipt of the final NFA Letter. Proof of recordation will be submitted to the MDE upon receipt from Baltimore County.

FIGURES



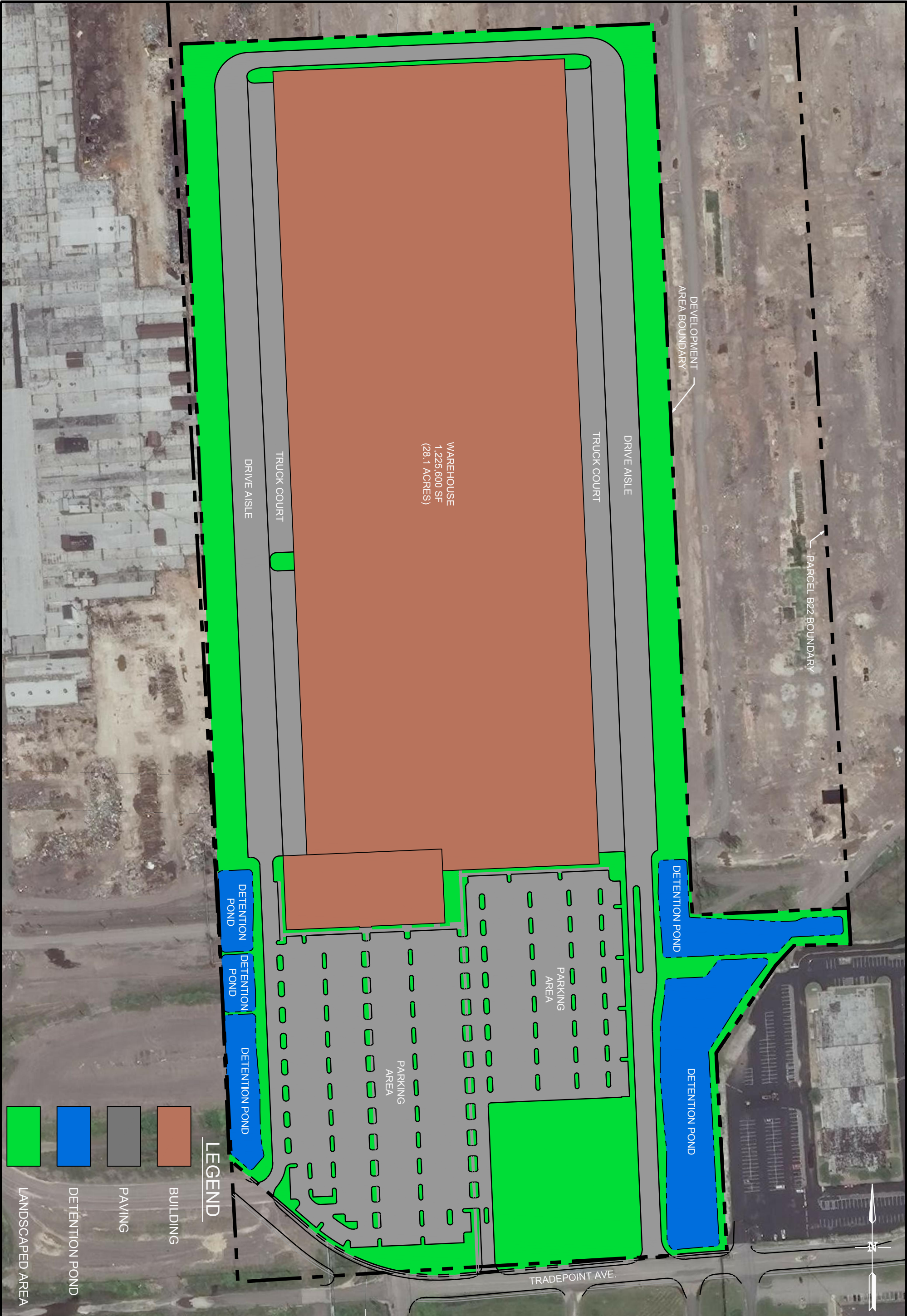


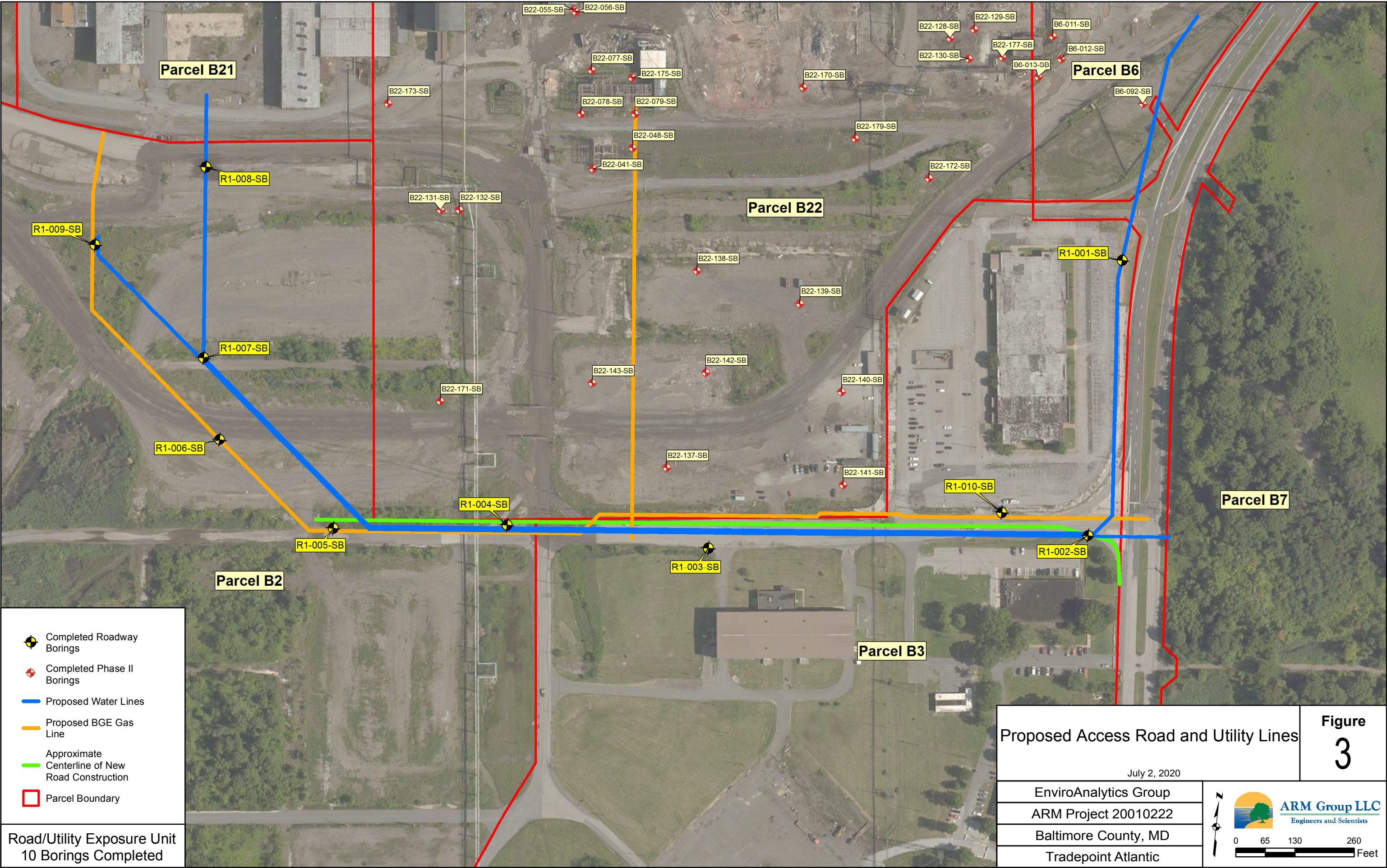
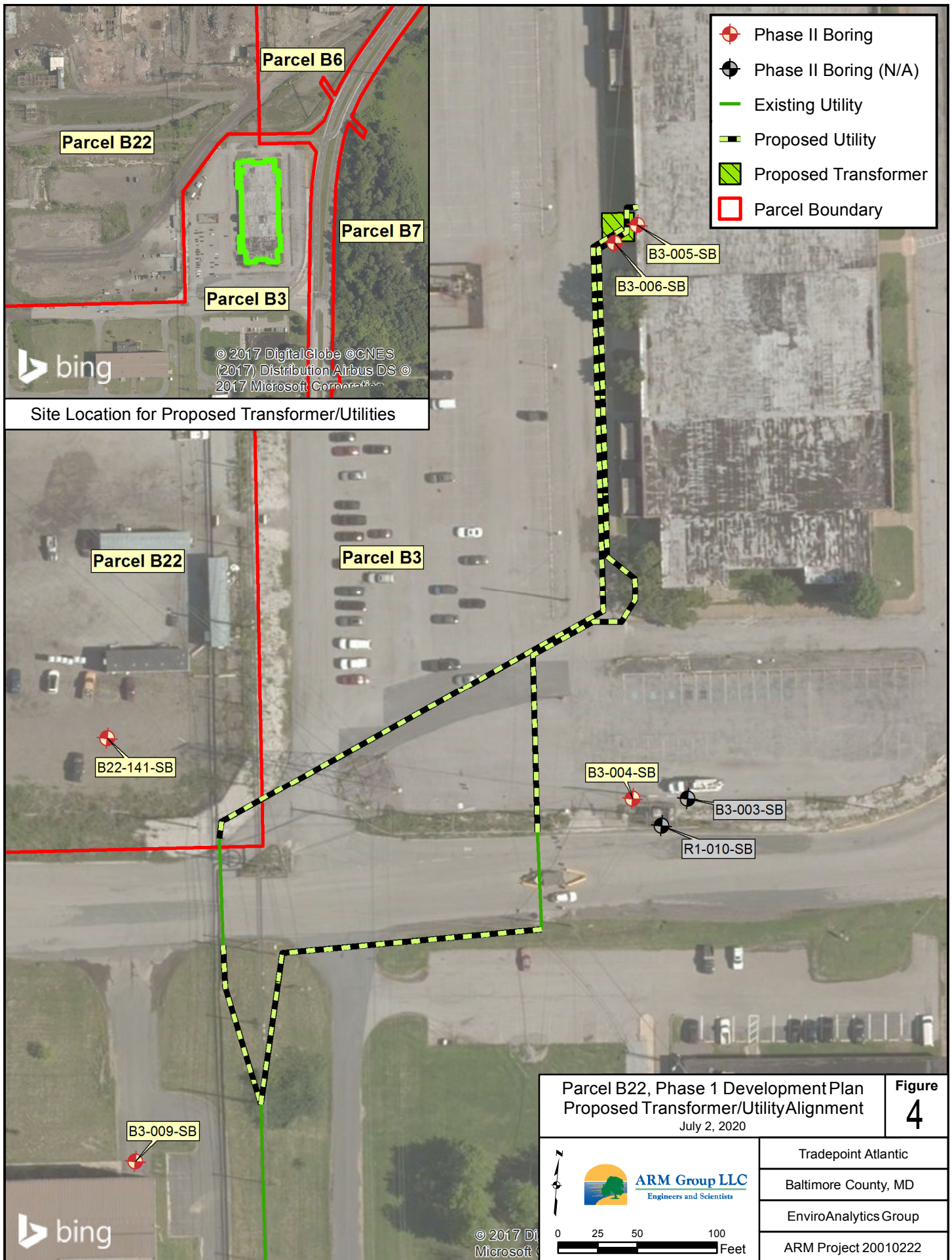


Figure 	drawing title		designed	JMA	scale	1" = 200'
	ENVIRONMENTAL CAPPING PLAN		checked	TNP	date	8/23/2016
			drawn	JMA	project no.	20010222
	project title		0 200 400 SCALE IN FEET			
PARCEL B22, PHASE 1 ENVIROANALYTICS GROUP		SPARROWS POINT BALTIMORE COUNTY, MARYLAND		 ARM Group LLC Engineers and Scientists		





APPENDIX A

Reference List

Parcel B22, Phase 1

Weaver Boos Consultants (2014). *Phase I Environmental Site Assessment: Former RG Steel Facility*. Final Draft. May 19, 2014.

ARM Group, Inc. (2016). *Phase II Investigation Work Plan, Area B: Parcel B22*. Revision 1. June 2, 2016.

ARM Group, Inc. (2016). *Delineation and Excavation of PCB and DRO Impacted Soil for Parcel B22*. Revision 0. December 22, 2016.

ARM Group, Inc. (2017). *Phase II Investigation Preliminary Report Area B: Parcel B22*. Revision 0. July 15, 2017.

(The Phase II Investigation Preliminary Report was attached to the Response and Development Work Plan (RADWP) listed below.)

ARM Group, Inc. (2016). *Response and Development Work Plan Area B: Parcel B22, Phase 1*. Revision 2. August 30, 2016

ARM Group, Inc. (2017). *Response and Development Work Plan Area B: Parcel B22, Phase 1*. Revision 5. March 28, 2017, updated March 30, 2017 and April 11, 2017.

(Approval to proceed with development was given following review of Revision 2, and final approval of the RADWP was given following review of Revision 5.)

ARM Group, Inc. (2017). *Road and Utility Investigation Report (B22): Developed in Support of Construction Activities for Area B: Parcel B22, Phase 1*. Revision 1. January 10, 2017.

ARM Group, Inc. (2017). *Utility Excavation NAPL Contingency Plan*. Revision 4. June 19, 2017.

EnviroAnalytics Group (2017). *Proposed Utility and Transformer Additions, Parcel B22: Phase 1 Development*. September 13, 2017.

ARM Group, Inc. (2017). *Quarterly Development Status Update: Third Quarter 2017, Area B: Parcel B22, Phase 1*. October 27, 2017.

ARM Group, Inc. (2018). *Responses to Agency Comments: Quarterly Development Status Update: Third and Fourth Quarter 2017, Area A: Sub-Parcel A3-1; Area B: Sub-Parcel B5-1; Sub-Parcel B6-1; Parcel B22, Phase 1*. January 29, 2018.

ARM Group, Inc. (2018). *Quarterly Development Status Update: Fourth Quarter 2017, Area B: Parcel B22, Phase 1*. January 29, 2018.

APPENDIX B

From: Barbara Brown -MDE- [<mailto:barbara.brown1@maryland.gov>]

Sent: Wednesday, September 07, 2016 7:15 AM

To: James Calenda <jcalenda@enviroanalyticsgroup.com>

Cc: Russ Becker <rbecker@enviroanalyticsgroup.com>; Dorgan, Doug <ddorgan@wcgrp.com>; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>; RLUTZ@SAUL.COM; Justin Dunn <jdunn@tradepointatlantic.com>; fan.andrew@epa.gov; Craven, Laura <lcraven@wcgrp.com>; pizarro.luis@epa.gov; Erich Weissbart <weissbart.erich@epa.gov>; Mark Mank -MDE- <mark.mank@maryland.gov>; Prince.Ruth@epa.gov; Hilary Miller -MDE- <hilary.miller@maryland.gov>; James Carroll -MDE- <james.carroll@maryland.gov>; Brian Dietz -MDE- <bdietz@maryland.gov>

Subject: B-22 Response and Development Plan

Hello James

The Agencies have reviewed the revised B-22 Response and Development work plan dated August 30, 2016. Based on the review, there will be additional comments on the plan requiring a final revision, however; TPA may proceed with the remedial and site development work in accordance with the plan.

If you have any questions please contact either Andrew Fan, EPA project coordinator or myself.

Barbara Brown
MDE Project Coordinator

--

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

From: Prince, Ruth [<mailto:Prince.Ruth@epa.gov>]
Sent: Wednesday, March 29, 2017 9:39 AM
To: James Calenda; Neil Peters
Cc: Pete Haid; Russ Becker; Dorgan, Doug; pizarro, luis; Weissbart, Erich; barbara.brown1@maryland.gov; Mark Mank -MDE-; Jennifer Sohns -MDE-
Subject: RE: Parcel B-22 Response and Development Work Plan Rev5

Neil and James – this is very helpful – after all these iterations, a tracking narrative of COPC alterations is a must! Our discussion yesterday, Neil, was very helpful and for future SLRA reviews, I will take advantage of that again when questions arise, please send me your ph number(s).

Neil: one point on the COPC tracking: For future SLRAs, if Aroclor 1254 screens in as a COPC, it should be included just for the non-cancer endpoint, since it may contribute to non-cancer hazard. Use total PCBs for the cancer endpoint.

I should be able to provide EPA approval of the B22 R&D WP Rev 5 later today.

Ruth Prince, PhD Toxicologist
3LC10, Office of Remediation
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, March 28, 2017 6:35 PM
To: Prince, Ruth <Prince.Ruth@epa.gov>; Russ Becker <rbecker@enviroanalyticsgroup.com>; Pete Haid <phaid@tradepointatlantic.com>; Dorgan, Doug <ddorgan@wcgrp.com>; Lutz, Randall M. <RLutz@saul.com>; Craven, Laura <lcraven@wcgrp.com>; Neil Peters <npeters@armgroup.net>
Cc: pizarro, luis <pizarro.luis@epa.gov>; Weissbart, Erich <Weissbart.Erich@epa.gov>; barbara.brown1@maryland.gov; Mark Mank -MDE- <mark.mank@maryland.gov>; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>
Subject: RE: Parcel B-22 Response and Development Work Plan Rev5

Ruth,

Attached please find a comment and response letter that addresses your comments from earlier today. The letter includes the following:

- List of comments with responses
- Revised Text for B-22 RDWP

- Revised Table 13
- Revised Appendix B Spreadsheet

The RDWP has also been revised to include these changes and you can download it through the link below. Also, hard copies are being sent out tonight for delivery tomorrow morning.

<https://app.box.com/s/n7w48k8yewlss97aiefskixm5vuolwtw>

If you need anything else or have further questions, please let me know.

Thanks
James

From: Prince, Ruth [<mailto:Prince.Ruth@epa.gov>]

Sent: Tuesday, March 28, 2017 12:04 PM

To: James Calenda <jcalenda@enviroanalyticsgroup.com>; Russ Becker <rbecker@enviroanalyticsgroup.com>; Pete Haid <phaid@tradepointatlantic.com>; Dorgan, Doug <ddorgan@wcgrp.com>; Lutz, Randall M. <RLutz@saoul.com>; Craven, Laura <lcraven@wcgrp.com>

Cc: pizarro, luis <pizarro.luis@epa.gov>; Weissbart, Erich <Weissbart.Erich@epa.gov>; barbara.brown1@maryland.gov; Mark Mank -MDE- <mark.mank@maryland.gov>; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>

Subject: RE: Parcel B-22 Response and Development Work Plan Rev5

James – well I was hoping to send you approval of the B22 R & D Work Plan, but I found a really disconcerting error that makes it impossible to approve Revision 5. The requested COPC screening table is set at a hazard quotient of 1, not 0.1, although the Agencies made this requirement so clear that p. 12 of this B22 Plan states that COPCs are identified with an HQ of 0.1!! It might have been noticed that then your EPC tables all changed with less COPCs. Anyway, this must be corrected with all associated tables, and please include the minor revisions below in what will now be Revision 6.

Appendix B Spreadsheet

Remove “Overall duration of construction (hr)”.

Retitle Column heading “RfD/RfC Source” to Toxicity Criteria Source.

Under toxicity criteria: add A to hexavalent chromium, add C to naphthalene.

Ruth Prince, PhD Toxicologist
3LC10, Office of Remediation
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: Thursday, March 23, 2017 3:40 PM

To: barbara.brown1@maryland.gov; Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>; Mark Mank -MDE- <mark.mank@maryland.gov>; Weissbart, Erich <Weissbart.Erich@epa.gov>; Prince, Ruth <Prince.Ruth@epa.gov>

Cc: Russ Becker <rbecker@enviroanalyticsgroup.com>; Lutz, Randall M. <RLutz@saui.com>; Dorgan, Doug <ddorgan@wcgrp.com>; Craven, Laura <lcraven@wcgrp.com>; Pete Haid <phaid@tradepointatlantic.com>

Subject: Parcel B-22 Response and Development Work Plan Rev5

All,

Please use the links below to download copies of the comment and response letter and the revised RDWP for Parcel B-22. The work plan has been revised to address comments received from EPA pertaining to the SLRA. Hard copies were sent out yesterday and should have been delivered today. If anyone has any questions regarding this submittal, please feel free to contact me directly.

Comment and Response Letter

<https://app.box.com/s/y7vdhgeuf0n8tu26170am4olrra74dm7>

RDWP

<https://app.box.com/s/xxdhm6wy6w7kkg19hgj0kclbt2mh4lw5>

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: "Prince, Ruth" <Prince.Ruth@epa.gov>

Date: April 7, 2017 at 8:01:59 AM EDT

To: James Calenda <jcalenda@enviroanalyticsgroup.com>, Russ Becker <rbecker@enviroanalyticsgroup.com>, Pete Haid <phaid@tradepointatlantic.com>, Neil Peters <npeters@armgroup.net>

Cc: Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>, "barbara.brown1@maryland.gov" <barbara.brown1@maryland.gov>, "Weissbart, Erich" <Weissbart.Erich@epa.gov>

Subject: B22 SLRA was approved by EPA on 3/29

Hi All – there appears to be some confusion about this. EPA approved the B22 RDWP on 3/29, only pending submission of corrected pages which we immediately received. SLRAs following all procedures approved for B22 may now be submitted, beginning with A3.

Ruth Prince, PhD Toxicologist
3LC10, Office of Remediation
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, October 31, 2017 11:35 AM
To: Neil Peters; Eric Magdar; Taylor Smith
Subject: FW: Utility Excavation NAPL Contingency Plan Rev. 4

FYI

From: Jennifer Sohns -MDE- [<mailto:jennifer.sohns@maryland.gov>]
Sent: Tuesday, October 31, 2017 11:28 AM
To: Barbara Brown -MDE- <barbara.brown1@maryland.gov>; Craven, Laura <lcraven@wcgrp.com>; James Calenda <jcalenda@enviroanalyticsgroup.com>
Subject: Utility Excavation NAPL Contingency Plan Rev. 4

James,
I'm following up regarding the Utility Excavation NAPL Contingency Plan, Rev. 4 Response to Agency Comment, dated June 19, 2017. The document is acceptable and MDE has no further comment. Let me know if you have any questions.
Thank you,
--
Jennifer Sohns

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

From: James Calenda [<mailto:jcalenda@enviroanalyticsgroup.com>]
Sent: Thursday, March 30, 2017 12:06 PM
To: Neil Peters; Taylor Smith; Eric Magdar
Subject: FW: Parcel B-22 PCB and DRO Excavation Completion Report

FYI

From: Jennifer Sohns -MDE- [<mailto:jennifer.sohns@maryland.gov>]
Sent: Thursday, March 30, 2017 11:08 AM
To: James Calenda <jcalenda@enviroanalyticsgroup.com>
Cc: Barbara Brown -MDE- <barbara.brown1@maryland.gov>; Pete Haid <phaid@tradepointatlantic.com>; jdunn@tradepointdevelopment.com; Michael Cirri <mcirri@jeinc.org>
Subject: Re: Parcel B-22 PCB and DRO Excavation Completion Report

James,
I've reviewed the March 15, 2017 Comment Response to the MDE's comments on the Delineation and Excavation of PCB and DRO Impacted Soil. The Department is satisfied that all comments were addressed. There is some concern re: the relocation of the storm drain on the north west corner of the parcel. The new line runs through Parcel B-21 which has yet to be investigated for potential contamination. In addition, a cursory look through a 2015 Phase II Investigation Work Plan for the former Parcel B6, dated 12/23/15, (which encompassed the now identified Parcels B6, B21, and B22) depicts a possible PCB containing area either very close or in line with this new location.

Also, I got in touch with Justin to find out the status of this line and it seems they have again relocated it to avoid Pit No. 68. I believe this is the pit that needs sampling for potential chromium contamination. I've cc.'d Mike Cirri to get a status update on that concrete sampling.

Barbara and I would like to schedule a site visit to see the new location of this storm drain. Would it be possible to have the line marked out prior to our visit and maps depicting any potential areas of concern nearby that have not been investigated? We can also mark out soil gas locations for Parcels B2 and B3 during our site visit if that fits into your schedule. How does next Thursday, April 6th work?

Also, please send me the updated figure depicting the new storm drain location.

Thank you,
Jennifer Sohns

On Thu, Mar 16, 2017 at 5:37 PM, James Calenda <jcalenda@enviroanalyticsgroup.com> wrote:

Jennifer,

Attached are responses to your comments, which include the requested figure. If you have any further questions, please let me know.

Thanks

James

From: Jennifer Sohns -MDE- [mailto:jennifer.sohns@maryland.gov]
Sent: Tuesday, March 07, 2017 1:22 PM
To: James Calenda <jcalenda@enviroanalyticsgroup.com>
Subject: Re: Parcel B-22 PCB and DRO Excavation Completion Report

James,

Here are comments regarding the 2/21/17 Delineation and Excavation of PCB and DRO Impacted Soils:

Comment No. 6 - Attempts should have been made to remove NAPL from pooled water in DRO excavations. Statements regarding observations of NAPL in an excavation on one day and absence of NAPL another day is not sufficient. Sorbent boom/pad should have been used to remove the remaining NAPL prior to backfilling. This comment applies to similar work conducted in the future as approval to backfill these excavations has already been granted.

Please provide the figure referenced in Comment No. 3 to better clarify this point.

Let me know if you have any questions or comments.

Thanks,

Jennifer Sohns

On Tue, Mar 7, 2017 at 12:06 PM, Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov> wrote:

James,

Did I send you comments on this?

Thanks,

Jennifer

----- Forwarded message -----

From: **James Calenda** <jcalenda@enviroanalyticsgroup.com>

Date: Tue, Feb 21, 2017 at 6:10 PM

Subject: Parcel B-22 PCB and DRO Excavation Completion Report

To: Barbara Brown -MDE- <barbara.brown1@maryland.gov>, Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>, Mark Mank -MDE- <mark.mank@maryland.gov>, Erich Weissbart <weissbart.erich@epa.gov>, "Prince.Ruth@epa.gov" <prince.ruth@epa.gov>

Cc: Russ Becker <rbecker@enviroanalyticsgroup.com>, "Dorgan, Doug" <ddorgan@wcgrp.com>, "Craven, Laura" <lcraven@wcgrp.com>, Pete Haid <phaid@tradepointatlantic.com>

All,

Attached please find a comment a response letter for the Parcel B-22 PCB and DRO Excavation Completion Report. This letter addresses comments received from EPA and MDE on January 17, 2017. Hard copies were sent out via Fed Ex for delivery tomorrow. If anyone has questions regarding this letter, please feel free to contact me directly.

Thanks

James

James Calenda

Project Manager

EnviroAnalytics Group, LLC

1650 Des Peres Road, Suite 303

St. Louis, Missouri 63131

Cell: [314-620-3056](tel:314-620-3056)

jcalenda@enviroanalyticsgroup.com

www.enviroanalyticsgroup.com

From: [James Calenda](#)
To: [Neil Peters](#); [Eric Magdar](#); [Taylor Smith](#)
Subject: FW: Trenching and Utility Work Plan
Date: Tuesday, September 19, 2017 12:19:37 PM

FYI

From: Barbara Brown -MDE- [mailto:barbara.brown1@maryland.gov]
Sent: Tuesday, September 19, 2017 10:53 AM
To: Pete Haid <phaid@tradepointatlantic.com>
Cc: Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>; Prince.Ruth@epa.gov; Craven, Laura <lcraven@wcgrp.com>; Erich Weissbart <weissbart.erich@epa.gov>; Dorgan, Doug <ddorgan@wcgrp.com>; pizarro.luis@epa.gov; James Calenda <jcalenda@enviroanalyticsgroup.com>
Subject: Trenching and Utility Work Plan

Hello Pete

The Agencies have reviewed the Proposed Utility and Transformer Additions Parcel B22, Phase 1 Development sent by email on September 14, 2017. Tradepoint Atlantic may proceed with the utility work. Work related to implementation of the Utility Plan and B22 Development plan must be properly documented in the completion report.

If you have any questions related to this approval please contact me.

Barbara Brown
MDE Project Coordinator

--

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.

Keith Progin

From: Barbara Brown -MDE- <barbara.brown1@maryland.gov>
Sent: Friday, March 3, 2017 11:33 AM
To: Gina L. Galimberti
Cc: Barbara Brown (BBrown@mde.state.md.us); Jennifer Sohns -MDE-; Chris Hillis; Gardner, Mike; Fantz, Jeff; Keith Progin; Justin Dunn; browan@fclbuilders.com
Subject: Re: Sparrows - Clarification on backfill material for private utilities trenches on Parcel B22

Hello Gina

You may use the solid waste definition of clean fill for utilities below the cap-including slag, or previously approved soil etc. Utilities installed within the cap proper must be backfilled with VCP industrial use clean fill.

If you have any questions please contact me.

Barbara Brown
MDE Project Coordinator

On Wed, Mar 1, 2017 at 2:06 PM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Barbara – Per my inquiry in our conversation a moment ago, can you please clarify the MDE’s definition of clean fill as it relates to the backfilling of the utility trenches within Parcel B22 (not public utilities under roadways)? I guess I am trying to determine if the intent is to have the material meet the MDE’s definition of clean fill as it relates to the Solid Waste Program versus that of the Voluntary Cleanup Program.

Assuming that we don’t see elevated PID readings, staining, free liquids or other indicators of concern during the environmental monitoring, we would prefer to place the material that is excavated from the utility trench directly back into the trench. And/or we would like to use the stockpiled material you approved for re-use under the cap (referencing your email of 2/21/17; 7:44 am). Thirdly, the use of slag for this backfilling is also a possibility.

I would also like to understand if the acceptable backfill material is different for shallow versus deeper utility trenches. For example, the storm drain trench may around 6-8 feet deep versus a water line which may be around 2 feet deep.

I would appreciate your insight tomorrow morning, if possible, as you mentioned that you might be able to discuss with Mark M. at that time.

Thank you !

Gina

Gina Galimberti | Environmental Services Manager

HILLIS-CARNES ENGINEERING ASSOCIATES

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ENGINEERING ASSOCIATES

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--

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

Cold Mill Complex – Parcels 4B & 4C

Sub Grade Structure Closure Checklist Reports

Prepared for:

*MCM Management Corporation
1430 Sparrows Point Blvd
Sparrows Point, MD 21219*

Prepared by:

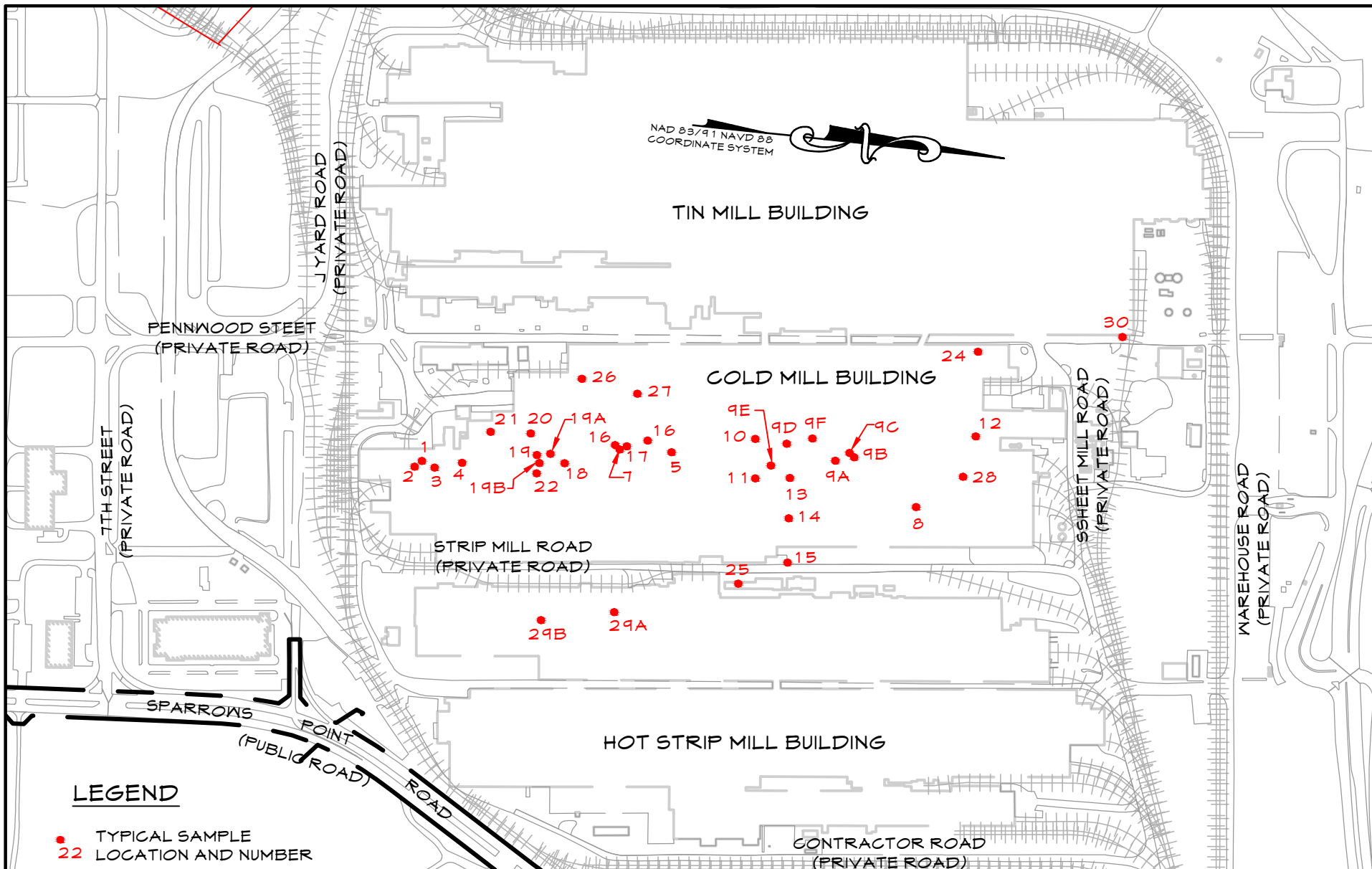
*Jenkins Environmental, Inc.
8600 LaSalle Rd Suite 509
Towson, MD 21286*

March 11, 2016

JEI No.: 016-028



8600 LaSalle Road • Suite 509 • Towson, MD • 410-828-9888



SPARROWS POINT FACILITY

COLD MILL BUILDING - SUB-GRADE STRUCTURE PRE-BACKFILL

FIELD INVESTIGATION SAMPLE LOCATION EXHIBIT



Point Table					
Point Number	Northing	Easting	Latitude	Longitude	
1	568631.6036	1461757.5866	N039° 13' 36.60"	W076° 28' 21.12"	
2	568607.4587	1461781.3339	N039° 13' 36.36"	W076° 28' 20.82"	
3	568680.2754	1461776.1916	N039° 13' 37.08"	W076° 28' 20.88"	
4	568777.2370	1461747.3021	N039° 13' 38.04"	W076° 28' 21.24"	
5	569529.2770	1461624.9224	N039° 13' 45.48"	W076° 28' 22.74"	
6	569322.8582	1461621.3927	N039° 13' 43.44"	W076° 28' 22.80"	
7	569365.3506	1461621.1474	N039° 13' 43.86"	W076° 28' 22.80"	
8	570434.3574	1461723.5641	N039° 13' 54.42"	W076° 28' 21.42"	
9a	570123.9794	1461588.4402	N039° 13' 51.36"	W076° 28' 23.16"	
9b	570190.6441	1461569.1703	N039° 13' 52.02"	W076° 28' 23.40"	
9c	570172.3514	1461555.1121	N039° 13' 51.84"	W076° 28' 23.58"	
9d	569941.6240	1461547.0009	N039° 13' 49.56"	W076° 28' 23.70"	
9e	569893.5518	1461632.2620	N039° 13' 49.08"	W076° 28' 22.62"	
9f	570032.5156	1461518.1487	N039° 13' 50.46"	W076° 28' 24.06"	
10	569826.2603	1461542.9453	N039° 13' 48.42"	W076° 28' 23.76"	
11	569845.2617	1461679.7541	N039° 13' 48.60"	W076° 28' 22.02"	
12	570620.9303	1461443.9363	N039° 13' 56.28"	W076° 28' 24.96"	
13	569966.6139	1461669.6106	N039° 13' 49.80"	W076° 28' 22.14"	
14	569979.6002	1461815.8960	N039° 13' 49.92"	W076° 28' 20.28"	
15	569992.6693	1461976.3447	N039° 13' 50.04"	W076° 28' 18.24"	
16	569438.0311	1461592.3994	N039° 13' 44.58"	W076° 28' 23.16"	
17	569341.1510	1461635.4513	N039° 13' 43.62"	W076° 28' 22.62"	
18	569147.3093	1461707.3923	N039° 13' 41.70"	W076° 28' 21.72"	
19	569044.0045	1461689.1031	N039° 13' 40.68"	W076° 28' 21.96"	
19a	569092.5126	1461679.3800	N039° 13' 41.16"	W076° 28' 22.08"	
19b	569056.3088	1461717.3609	N039° 13' 40.80"	W076° 28' 21.60"	
20	569013.2166	1461613.7373	N039° 13' 40.38"	W076° 28' 22.92"	
21	568867.5831	1461624.0210	N039° 13' 38.94"	W076° 28' 22.80"	
22	569050.4566	1461755.1665	N039° 13' 40.74"	W076° 28' 21.12"	
24	570594.8812	1461137.2092	N039° 13' 56.04"	W076° 28' 28.86"	
25	569823.2464	1462071.7518	N039° 13' 48.36"	W076° 28' 17.04"	
26	569175.8629	1461395.6117	N039° 13' 42.00"	W076° 28' 25.68"	
27	569382.4449	1461427.4708	N039° 13' 44.04"	W076° 28' 25.26"	
28	570591.4502	1461595.1844	N039° 13' 55.98"	W076° 28' 23.04"	
29a	569387.0574	1462225.3627	N039° 13' 44.04"	W076° 28' 15.12"	
29b	569126.3614	1462283.5313	N039° 13' 41.46"	W076° 28' 14.40"	
30	571110.2359	1461025.6584	N039° 14' 01.14"	W076° 28' 30.24"	

SPARROWS POINT FACILITY

COLD MILL BUILDING - SUB-GRADE STRUCTURE PRE-BACKFILL

FIELD INVESTIGATION SAMPLE LOCATION EXHIBIT

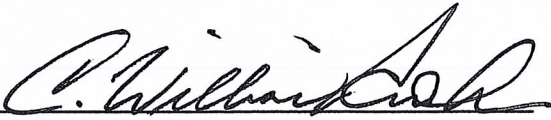


Sparrow Point Facilities Pit Locations



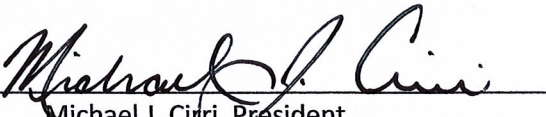
Certification Statement

I hereby affirm that I am familiar with the Sparrows Point Terminal Property and that I or my agents, (M.J. Cirri/J.C. Cirri) have visited and examined Sub-grade Structures (SGS) closure sites at the Sparrows Point Terminal facility located in Baltimore County, Maryland. I affirm this Closure Report has been prepared in accordance with good practices, including consideration of applicable standards and that information provided by MCM Management Corporation in relation to matters of waste disposal is reliable. Furthermore, I affirm that procedures for required inspections and testing have been established by MCM and that the Sub grade Structure Backfill Closure Report observations indicate general conformance with the terms of the Enhanced Scope of Work (9/09/14) and work was done in a sound professional manner.

By: 
C. William Ruth, P.E.

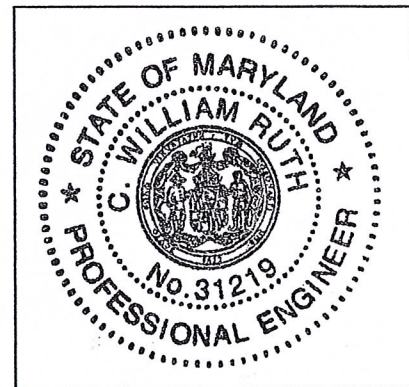
Jenkins Environmental, Inc.

Date: 2/27/15

By: 
Michael J. Cirri, President

Jenkins Environmental, Inc.

Date: 2/27/15





SPARROWS POINT TERMINAL SUB GRADE STRUCTURE (SGS) CLOSURE REPORT

SGS ID#: #1- Cold Mill Complex
LOCATION: N39°13.610' W076°28.352'
DIMENSIONS: 2092 sf by \approx 4-6' deep
VOLUME: 465 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

SGS ID#: #2- Cold Mill Complex
LOCATION: N39°13.606' W076°28.347'
DIMENSIONS: 3107 sf by \approx 4-6' deep
VOLUME: 690 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

BACKGROUND: SGS #1 and SGS#2 are located at the south end of the former Cold Mill Complex in close proximity to each other. These structures were below the former Cold Mill Coating Lines. The equipment located in the building was removed for salvage. The condition of the SGS was the result of the steel mill operation and not cause by the MCM demolition of the building.

OBSERVATIONS: (1) Prior to demolition and backfilling the concrete SGS structures were observed to be intact and devoid of major cracks or fissures. There were no sumps visible or observed. No openings and/or channels to contiguous structures were able to be observed. (2) SGS #1 was observed to contain a small amount (< 55 gals) of rainwater mixed with oil. Other bulk and residual material present included, scrap metal, and electrical conduit; (3) SGS#2 was dry; (4) Water from SGS#1 was collected into drums and placed in MCM's on-site storage for disposal; (5) Following removal of the water from SGS#1 and debris from both structures, heavy equipment was used to scourer concrete surfaces in order to remove additional layers of oil and grease to the extent practical.

BACKFILL MATERIAL: MCM utilized concrete and brick generated from the demolition of the Cold Mill Complex as backfill material. The concrete/brick was inspected prior to use as backfill material. The concrete/brick was free of any visible staining the material was also free of any deleterious materials such as trash, organics, plastics, and rebar.

BACKFILLING: In November 2014 MCM begin backfilling with processed concrete/brick was to be placed in successive 1 foot lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. The non-metallic slag was to be placed in lifts not exceeding 8 inches in thickness. The slag was compacted using a vibrating roller. Structural backfilling and compaction began and was completed during the month of November 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHIC DOCUMENTATION



SGS#1 – South End of Cold Mill Complex



SGS#1 – Sample 014-028-182 (Rainwater)



SGS#1 – Sample 014-028-188 (Concrete)



SGS#1 – Structural Backfill Complete

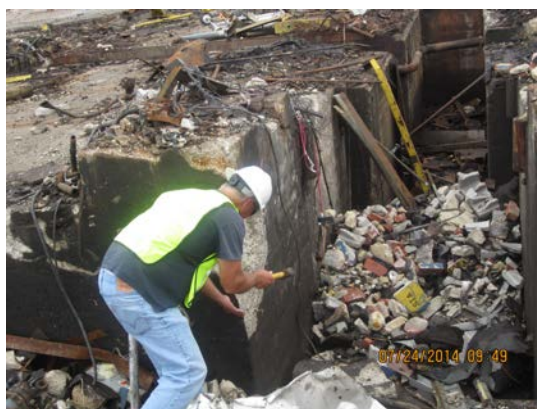
PHOTOGRAPHIC DOCUMENTATION



SGS#2 – South End of Cold Mill Complex



SGS#2 – Dry Pit with Residue and Debris



SGS#2– Sample 014-028-189 (Concrete)



SGS#2 – Structural Backfill Complete



SPARROWS POINT TERMINAL SUB GRADE STRUCTURE (SGS) CLOSURE REPORT

SGS ID#: #3- Cold Mill Complex
LOCATION: N39°13.618' W076°28.348'
DIMENSIONS: 28077 sf by \approx 15' deep
VOLUME: 15598 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

SGS ID#: #4- Cold Mill Complex
LOCATION: N39°13.634' W076°28.354'
DIMENSIONS: 38888 sf by \approx 15' deep
VOLUME: 20,933 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

BACKGROUND: SGS #3 and SGS#4 were subgrade structures below the former Cold Mill Coating lines located at the south end of the former Cold Mill Complex in close proximity to each other. The open structures were in the former Cold Sheet Mill Bldg.99 (Galvanizing Lines 1; 3 & 4). The equipment located in the building was removed for salvage. The condition of the SGS was the result of the steel mill operation and not caused by the MCM demolition of the building.

OBSERVATIONS: (1) Prior to demolition and backfilling the concrete SGS structures were observed to be intact and devoid of major cracks or fissures. There were no sumps visible or observed. No openings and/or channels to contiguous structures were observed. Concrete surface staining was minimal to non-existent. The integrity of the structures was evidenced by their ability to retain considerable quantities of rainwater; (2) Bulk materials (wood, trash, etc.) and other miscellaneous debris was present in the both structures; (3) Structural backfilling began after the removal of the water and miscellaneous debris from SGS#3 and SGS#4 .

BACKFILL MATERIAL: MCM utilized concrete and brick generated from the demolition of the Cold Mill Complex as backfill material. The concrete/brick was inspected prior to use as backfill material. The concrete/brick was free of any visible staining the material was also free of any deleterious materials such as trash, organics, plastics, and rebar.

BACKFILLING: On 9/29/14 MCM begin backfilling with processed concrete/brick was placed in successive 1 foot lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. The non-metallic slag was placed in lifts not exceeding 8 inches in thickness. The slag was compacted using a vibrating roller. Structural backfilling and compaction began and was completed during the month of October 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHIC DOCUMENTATION



SGS#3 – South End of Cold Mill Complex



SGS#4 – South End of Cold Mill Complex



SGS#3 – Sample 014-028-183 (Water)



SGS#4 – Sample 014-028-184(Water)

PHOTOGRAPHIC DOCUMENTATION



SGS#4–Miscellaneous Debris



SGS#4 – Backfilling



SGS#3– Backfilling



SGS#3 & #4 – Structural Backfill Complete



SPARROWS POINT TERMINAL SUBGRADE STRUCTURE CLOSURE REPORT

SGS ID#: #5- Cold Mill Complex
LOCATION: N39°13.758' W076°28.379'
DIMENSIONS: 7644 sf by \approx 16' deep
VOLUME: 4530 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

OBSERVATIONS: (1) The sub grade structure was located centrally located within the Cold Mill Complex and beneath the #3 Skin Pass Building; (2) There were industrial processes and buildings associated with this structure; (3) The structure contained an undetermined amount of amount storm water; there was no detectable odor, water clarity was generally good, with a light oil sheen observed (i.e. rainbow effect) and there was some floating and settled solids in the form of scrap metal and debris within the structure; (4) concrete walls were not visibly stained; (5) the structure appeared intact and devoid of any major cracks or fissures. There were no sumps or channels to adjacent structures visible or observed.

BACKFILLING: Following the removal of structural steel, scrap metal and water from SGS#5 in November 2014 MCM began backfilling with processed concrete/brick was placed in successive 1 foot lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. The non-metallic slag was placed in lifts not exceeding 8 inches in thickness. The slag was compacted using a vibrating roller. Structural backfilling and compaction began and was completed during late October early and November 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

BACKFILL MATERIAL: Backfill material was concrete/brick and non-metallic processed slag. The backfill material came from Cold Mill Complex demolition and was inspected by MCM prior to use and was free of deleterious materials such as trash, organics, plastics, and rebar.

PHOTOGRAPHIC DOCUMENTATION:



SGS#5 – Post Demolition Structural Steel and Debris



SGS#5 – Post Demolition Structural Steel and Debris



SGS#5 – Sample 014-028-185 (Rainwater)



SGS#5 – Structural Backfill Complete



SPARROWS POINT TERMINAL SUB GRADE STRUCTURE (SGS) CLOSURE REPORT

LOCATION: N39°13.724 W076°28.380'
DIMENSIONS: 5165 sf by ~ 20' deep
VSGS ID#: #6- Cold Mill Complex
LOLUME: 3,826 cubic yards (#6 & #7 Combined)
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

SGS ID#: #7- Cold Mill Complex
LOCATION: N39°13.634' W076°28.354'
DIMENSIONS: 5165 sf by ~ 20' deep
VOLUME: 3,826 cubic yards (#6 & #7 Combined)
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

BACKGROUND: SGS #6 and SGS#7 are subgrade structures located in the middle to southern portion of the former Cold Mill Complex. The structures are in close proximity to each other and appear to be associated with the former Hot Dip Coating Lines and Temper Mill Chromate areas. The equipment located in the building was removed salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building.

OBSERVATIONS: (1) Prior to demolition and backfilling the concrete SGS structures were observed to be intact and devoid of any major cracks or fissures. There were no sumps visible or observed. There were openings and/or channels observed between the contiguous structures. The concrete wall surfaces were oil stained. (2) Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the both structures; (3) MCM contracted Ace Environmental to conduct surface oil-skimming of the water in SGS#7; (4) Structural backfilling began after the structures were emptied of metal and debris, dewatered, and the concrete wall surface scoured to remove to the extent possible, oil stains.

BACKFILL MATERIAL: MCM utilized concrete and brick generated from the demolition of the Cold Mill Complex as backfill material. The concrete/brick was inspected prior to use as backfill material. The concrete/brick was free of any visible staining the material was also free of any deleterious materials such as trash, organics, plastics, and rebar.

BACKFILLING: MCM then began breaking concrete in order to widen the SGS #6 and #7 to the end points of the openings/channels. MCM removed any conduit, metal, and equipment discovered when widening the SGS. the sub grade structure went to scrap recycling and any non-recyclable debris and wall scrapings went to Greys Landfill in accordance with Greys Landfill Operations Manual. In November 2014 MCM began backfilling with processed concrete/brick was placed in successive 1 foot lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. The non-metallic slag was placed in lifts not exceeding 8 inches in thickness. The slag was compacted using a vibrating roller. Structural backfilling and compaction began and was completed during the month of November 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHIC DOCUMENTATION



SGS#6 – Middle of Cold Mill Complex



SGS#7 – Middle of Cold Mill Complex



SGS#6 – Sample 014-028-186 (Water)



SGS#7 – Sample 014-028-187(Water)

PHOTOGRAPHIC DOCUMENTATION





SGS#6 & 7– Concrete Scouring



SGS#6 & #7 – Structural Backfill Complete



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#8** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **North of 3 & 4 Galvanizing Line**

GPS Coordinates: **N 39° 13.907 W 076° 28.357**

Sub-Grade Structure Dimensions: _____ ft x _____ ft Sub-Grade Structure Area: **588** ft²

Sub-Grade Structure Depth: **≈2 to 6** ft Estimated Volume: **131** cy

Pumping Dates: **NA**

Date Sub-Grade Structure Cleared for Inspection: **8/4/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/4/14; 9/29/14; 10/27/14**

Condition of Groundwater in SGS: **No GW intrusion observed at time of initial inspection (8/4/14). A small amount of clear surface rainwater was observed (< 1.0").**

Visual Inspection Observations (attach photos): **Prior backfilling the concrete SGS structure was observed to be a shallow intact depression (possibly a stairwell), devoid of major cracks or fissures. No openings and/or channels to contiguous structures were observed. Bulk materials (metal and concrete) and other miscellaneous debris were present in the structure.**

Sub-Grade Structure Sampling

Date Sampled: **NA**

Chain of Custody #: **NA** TAT: **NA**

No. of Samples: **NA** (attach sample location description, sample location figure, and photos)

Media Sampled: **NA**

Date Results Received: **NA**

Result Evaluated and QC checked by: **NA**

Approval for Submission to MDE by (MCM or JEI): **NA**

Disposal NA



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **9/24/14 (Reported to JEI by MCM)**

Date Sub-Grade Structure Backfill Completed: 9/29/14

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the removal of the miscellaneous debris from SGS#8. Metal removed from the sub grade structure went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual. The SGS was dry at the time of backfilling, likely due to evaporation. Miscellaneous backfill material as specified in the 6/9/14 Backfill Plan was not used, presumably due to shallow SGS depth. The backfill material used was 100% non-metallic slag compacted with an excavator.**





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#9A – 9F** _____ Checklist Completed By: **M. Cirri (JEI)** _____

Building Location: **Cold Mill Complex - 4 High Motor Room; 4 High Tandem Hill Motor Rm; 4 High Tandem Mill & Oil Cellar; Accumulators/Aux Hydraulic Systems. SGS #9A –F represent a series of interconnected structures located in the middle section of the former Cold Mill Complex.**

GPS Coordinates: **9A N39°13.856' W076°28.386'; 9B N39°13.867' W076°28.390'; 9C N39°13.864'; W076°28.393'; 9D N39°13.826' W076°28.395'; 9E N39°13.818' W076°28.377'; 9F N39°13.841' W076°28.401'**

Sub-Grade Structure Dimensions: **9A (65x15x21); 9B,C,E (466x15x36); 9F (220x18x33)**

Estimated Combined Total Volume: **18789** _____cy

Pumping Dates: **11/20/14 – 11/21/14 (Reported to JEI by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **8/5/14** _____

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/4/14; 10/27/14; 11/24/14, 12/5/14; 12/30/15**

Condition of Groundwater in SGS: **Water in the SGS was observed to be a heterogeneous quiescent oil- water mixture. Oil was present as a combination of surface film, emulsion and solution.**

Visual Inspection Observations (attach photos): **The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There were openings and/or channels observed between the contiguous structures. The concrete wall surfaces were oil stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures. MCM contracted Ace Environmental to conduct surface oil-skimming of the water in SGS# 9A-F.**

Disposal

Water from the SGS#9 A – F was pumped to the existing waste water sewer system which discharges into the Tin Mill Canal and continues to the HCWWTP. Metal and wood block removed from the sub grade structure went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual.



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **11/24/14 (Reported to JEI by MCM)**

Date Sub-Grade Structure Backfill Completed: **30% complete on 12/27/15 and 100% complete by 1/30/15**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris, dewatered, and the concrete wall surfaces scoured-red to remove oil stains. In November 2014 MCM begin structural backfilling with processed concrete/brick after the structures were emptied of metal/debris, dewatered , and concrete walls surfaces scoured to remove visible oil stains to the extent possible. Structural backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted by a vibrating roller. Structural backfilling and compaction began in November 2014 and was completed in early December 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#10** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – 4 High Skin Pass Mill & Air Passage**

GPS Coordinates: **N39°13.807' W076°28.396'**

Sub-Grade Structure Dimensions: **112 ft x 35 ft** Sub-Grade Structure Area: **3920 ft²**

Sub-Grade Structure Depth: **15 ft** Estimated Volume: **323** cy

Sub-Grade Structure Dimensions: **45 ft x 7 ft** Sub-Grade Structure Area: **315 ft²**

Sub-Grade Structure Depth: **9 ft** Estimated Volume: **105** cy

Pumping Dates: **11/25/14 (Reported to JEI by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **8/5/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/4/14; 10/27/14; 11/24/14, 12/5/14; 12/30/14**

Condition of Groundwater in SGS: **Water in the SGS was observed to be a heterogeneous quiescent oil- water mixture. Oil was present as a combination of surface film, emulsion and solution.**

Visual Inspection Observations (attach photos): **The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There were openings and/or channels observed between the contiguous structures (4 High Skin Pass Mill and the Air Passageway). Sub grade foundation walls were hammered out making SGS#10 and SGS#9 A-F somewhat contiguous. The concrete wall surfaces were oil stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **12/05/14**

Date Sub-Grade Structure Backfill Completed: **100% complete by 12/30/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris, dewatered, and the concrete wall surfaces scoured to remove oil stains. In November 2014 MCM begin structural backfilling with processed concrete/brick after the structures were emptied of metal/debris, dewatered , and concrete walls surfaces scoured to remove visible oil stains to the extent possible. Structural backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a Volvo vibrating roller. Structural backfilling and compaction began in December 2014 and was completed in by December 30th 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#11** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex - Dbl Scale Platform**

GPS Coordinates: **N 39° 13.810 W 076° 28.367**

Sub-Grade Structure Dimensions: **Varies** ft x **Varies** ft Sub-Grade Structure Area: **555** ft²

Sub-Grade Structure Depth: **≈5** ft Estimated Volume: **113** cy

Pumping Dates: **NA**

Date Sub-Grade Structure Cleared for Inspection: **10/27/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **10/27/14**

Condition of Groundwater in SGS: **No GW intrusion observed at time of initial inspection (10/27/14). A small amount of pooled rain water was observed (1.0" to 2"). Analysis not required for pumping to HCWWTP (per M. Vogler).**

Visual Inspection Observations (attach photos): **Prior backfilling the concrete SGS structure was observed to be a shallow depression (identified as scale platform), devoid of major cracks or fissures. No openings and/or channels to contiguous structures were observed. Bulk materials (metal and concrete) and other miscellaneous debris were present in the structure.**

Sub-Grade Structure Sampling

Date Sampled: **NA**

Chain of Custody #: **NA**

TAT: **NA**

No. of Samples: **NA** (attach sample location description, sample location figure, and photos)

Media Sampled: **NA**

Date Results Received: **NA**

Result Evaluated and QC checked by: **NA**

Approval for Submission to MDE by (MCM or JEI): **NA**

Disposal NA



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **12/01/14**

Date Sub-Grade Structure Backfill Completed: **12/05/14** _____

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the removal of the miscellaneous debris from SGS#11. Metal removed from the sub grade structure went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual. The SGS was dry. Miscellaneous backfill material as specified in the 6/9/14 Backfill Plan was not used, presumably due to shallow SGS depth. The backfill material used was 100% non-metallic slag compacted with an excavator.**





SPARROWS POINT TERMINAL SUB GRADE STRUCTURE (SGS) CLOSURE REPORT

SGS ID#: #12 - Cold Mill Complex
LOCATION: N39°13.938' W076°28.416'
DIMENSIONS: 23557 sf by \approx 15' to 20' deep
VOLUME: 17449 cubic yards
SAMPLERS: M.CIRRI (SAMPLER CERTIFICATION #1608-00-867)
J.CIRRI (SAMPLER CERTIFICATION #1608-00-866)

BACKGROUND: SGS #12 is located in the former Cold Mill Complex and inside the 66" Tandem Cold Mill portion of the complex. SGS #12 was below the former 66" Tandem Mill in the 4 Stand Cold Mill/Motor Room areas. The 66" Tandem Mill equipment was removed by a former owner of the steel mill for either resale or salvage. The condition of the SGS was the result of the equipment removal and not cause by the MCM demolition of the building. This equipment removal probably occurred in 2000-2001 after the start-up of the New Cold Mill.

OBSERVATIONS: (1) Prior to demolition and backfilling the concrete SGS structure was observed to be intact and devoid of cracks or fissures. There were no sumps visible or observed. Openings and channels of unknown origin or destination were observed in the SGS walls. The integrity of the structure was evidenced by its ability to retain rainwater; (2) the SGS was observed to contained a heterogeneous mixture of oil and water. Other bulk and residual material present included wood blocks, scrap metal, electrical conduit, and an oily sludge; (3) In June of 2014, C&W Construction was contracted by MCM for the cleaning of the SGS. C&W commenced pumping SGS water to an on-site oil/water separator located at the former on-site oil recycling facility then treated at the HCWWTP. Following dewatering workers proceeded to clean/remove oil/grease residue and sludge from surface walls and the SGS bottom. Oil sludge and debris removed from the SGS was placed in roll off containers for off-site disposal. Once manual labor achieved a reasonable level of cleanliness heavy equipment was used to scourer concrete surfaces in order to remove additional layers of oil and grease.

BACKFILL MATERIAL: MCM utilized concrete and brick generated from the demolition of the Cold Mill Complex as backfill material. The concrete/brick was inspected prior to use as backfill material. The concrete/brick was free of any visible staining the material was also free of any deleterious materials such as trash, organics, plastics, and rebar.

BACKFILLING: In August/ September 2014 MCM begin tracing the opening and channel leading from the main SGS. MCM identified the end points of each opening/channel. MCM then began breaking concrete in order to widen the SGS to the end points of the openings/channels. MCM removed any conduit, metal, and equipment discovered when widening the SGS.

The processed concrete/brick was to be placed in successive 1 foot lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. The non-metallic slag was to be placed in lifts not exceeding 8 inches in thickness. The slag was compacted using a vibrating roller. Structural backfilling and compaction began and was completed during the month of October 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements. Compaction testing and/or any other geotechnical certifications were the responsibility of others.

KCI performed density testing using the Nuclear Method (ASTM D6938) on October 28, 2014. Compaction test results exceeded the recommended minimum compaction requirement of 95%. The results showed compaction of 96.7% and 99.0%.

PHOTOGRAPHIC DOCUMENTATION



SGS #12 Pre-Decon /Sampling Phase



SGS #12 C&W Construction Pit Decon



SGS #12 Machine Based Pads



SGS #12 Structural Backfill

PHOTOGRAPHIC DOCUMENTATION



SGS #12 Backfill Complete



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#13** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – West of Winding Wheel**

GPS Coordinates: **N 39° 13.830 W 076° 28.369**

Sub-Grade Structure Dimensions: **8 ft x 8 ft** Sub-Grade Structure Area: **64** ft²

Sub-Grade Structure Depth: **UNKNOWN** ft Estimated Volume: **NA** cy

Pumping Dates: **NA**

Date Sub-Grade Structure Cleared for Inspection: **10/27/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **10/27/14**

Condition of Groundwater in SGS: **No GW intrusion was able to be observed at time of initial inspection (10/27/14). Opening was covered with metal plate. Depression appeared to be shallow, possibly a small stairwell.**

Visual Inspection Observations (attach photos): **See Attached**

Sub-Grade Structure Sampling

Date Sampled: **NA**

Chain of Custody #: **NA** TAT: **NA**

No. of Samples: **NA** (attach sample location description, sample location figure, and photos)

Media Sampled: **NA**

Date Results Received: **NA**

Result Evaluated and QC checked by: **NA**

Approval for Submission to MDE by (MCM or JEI): **NA**

Disposal NA

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **UNKNOWN**

Date Sub-Grade Structure Backfill Completed: **UNKNOWN**

Stockpile ID(s) for Material Used for Backfilling: **UNKNOWN – COVERED WITH PLATE**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHIC DOCUMENTATION





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS# 14 & 15** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – Coil Conveyor**

GPS Coordinates: **SGS#14- N39°13.832' W076°28.338'; SGS#15- N39°13.834' W076°28.304'**

Sub-Grade Structure Dimensions: **1338 ft x 16 ft** Sub-Grade Structure Area: **21408 ft²**

Sub-Grade Structure Depth: **12ft** Estimated Volume: **9515** cy

Pumping Dates: **11/25/14 (Reported to JEI by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **8/5/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/5/14; 10/27/14; 12/5/14; 12/30/15**

Condition of Groundwater in SGS: **Water in the SGS was observed to be relatively clear with a light sheen present as a combination of surface film, emulsion and solution.**

Visual Inspection Observations (attach photos): **The equipment located in the building was removed for either resale or salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible, however channels/tunnel open in the SGSs were observed. SGS#14 & #15 comprise an open trench some of which was outside the building envelope in the direction of the 56" Hot Strip Mill. A portion of the coil conveyance trench system is beneath the roadway. Mild staining at or below the water line was observed. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **12/05/14**

Date Sub-Grade Structure Backfill Completed: **100% complete by 12/30/14**

Stockpile ID(s) for Material Used for Backfilling: **Backfilling began after the structures were emptied of metal and debris, dewatered, and the concrete wall surfaces scoured to remove oil stains. In November 2014 MCM begin miscellaneous backfilling with processed concrete/brick after the structures were emptied of metal/debris, dewatered, and concrete walls surfaces scoured to remove visible oil stains to the extent possible. Miscellaneous backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Structural Backfilling with non-metallic Blast Furnace slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The structural backfill was compacted with a Volvo**



Sub-Grade Structure Clearance Checklist Sparrows Point Facility – Demolition and Backfill

vibrating roller. Structural backfilling and compaction began in December 2014 and was completed in by December 30th 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#16** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – North of Hot Dip Coating Line (SGS-17) in the Pallet Conveyor Area**

GPS Coordinates: **N 39° 13.743 W 076° 28.386**

Sub-Grade Structure Dimensions: **UNKNOWN** Sub-Grade Structure Area: **UNKNOWN**

Sub-Grade Structure Depth: **UNKNOWN**_ft Estimated Volume: **NA**_cy

Pumping Dates: **NA**

Date Sub-Grade Structure Cleared for Inspection: **10/27/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **10/27/14**

Condition of Groundwater in SGS: **Some depression surface water was observed at time of initial inspection (10/27/14). Depression was shallow, possibly had been previously filled.**

Visual Inspection Observations (attach photos): **See Attached**

Sub-Grade Structure Sampling

Date Sampled: **NA**

Chain of Custody #: **NA** TAT: **NA**

No. of Samples: **NA** (attach sample location description, sample location figure, and photos)

Media Sampled: **NA**

Date Results Received: **NA**

Result Evaluated and QC checked by: **NA**

Approval for Submission to MDE by (MCM or JEI): **NA**

Disposal NA

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **UNKNOWN**

Date Sub-Grade Structure Backfill Completed: **UNKNOWN**

Stockpile ID(s) for Material Used for Backfilling: **UNKNOWN**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHIC DOCUMENTATION





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#17** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – Hot Dip Coating Line**

GPS Coordinates: **N39°13.727' W076°28.377'**

Sub-Grade Structure Dimensions: **420 ft x 19 ft** Sub-Grade Structure Area: **3920 ft²**

Sub-Grade Structure Depth: **10.5 ft** Estimated Volume: **3130** cy

Pumping Dates: **No pumping associated with SGS#17**

Date Sub-Grade Structure Cleared for Inspection: **7/7/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **7/07/14, 7/24/14, 10/03/14, 10/27/14, 11/07/14, 3/23/15**

Condition of Groundwater in SGS: **At the time of the initial inspection the SGS was dry. On 7/24/14 approximately 2" – 3" of rainwater accumulated in one section of the SGS. Water was clear, no sheen or odors were observed or sensed.**

Visual Inspection Observations (attach photos): **The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There were openings and/or utility tunnels observed between the SGS foundation sidewalls. Interior sub grade foundation walls were hammered out to facilitate backfilling SGS#17. The concrete foundation wall surfaces were clean. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Disposal

There was no water or solid material disposal associated with SGS#17

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/03/14**

Date Sub-Grade Structure Backfill Completed: **80% complete by 10/27/14 and 100% filled by 11/07/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris. In October 2014 MCM begin structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to be placed in successive 1 foot plus lifts and**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a roller. Structural backfilling and compaction began in October 2014 and was completed in by November 7th. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#18** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – Galvanizing Control Basement**

GPS Coordinates: **N39°13.695' W076°28.362'**

Sub-Grade Structure Dimensions: **46 ft x 46 ft** Sub-Grade Structure Area: **2116 ft²**

Sub-Grade Structure Depth: **15 ft** Estimated Volume: **1176** cy

Pumping Dates: **10/15/14 (Reported by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **8/5/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/05/14, 9/15/14, 10/03/14, 10/27/14, 11/24/14, 3/23/15**

Condition of Groundwater in SGS: **Water beneath slight oil sheen, no odor was sensed. Oil was present as a combination of surface film, emulsion and solution.**

Visual Inspection Observations (attach photos): **SGS #18 appears to be a vault within the 3 & 4 Galvanizing Line. The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There were openings and/or utility tunnels observed within the SGS foundation sidewalls. The concrete foundation wall surfaces were generally clean. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Disposal

Water from the SGS#18 was pumped to the existing waste water sewer system which discharges into the Tin Mill Canal and continues to the HCWWTP. Metal removed from the sub grade structure went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual.

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/27/14**

Date Sub-Grade Structure Backfill Completed: **Metal removed and partially filled by 10/27/14 and 100% filled by 11/24/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris. In late October 2014 MCM began structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to be placed in successive lifts not exceeding 24" and**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a vibrating roller. Structural backfilling and compaction began in October 2014 and was completed in by November 24th. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and general conformance with backfill requirements.

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#19A & B – SGS#22** Checklist Completed By: **___M. Cirri (JEI)**

Building Location: **Cold Mill Complex – (A) SGS#19 Extension of SGS-4 Galvanizing Line 3 & 4; (B) SGS#22 Extension of SGS-3 Galvanizing Line 1 – includes a probable looper pit**

GPS Coordinates: **19A N39°13.678' W076°28.366'**
19B N39°13.680' W076°28.360'
22 N39°13.679' W076°28.352'

Sub-Grade Structure Dimensions: **(GPS Perimeter Measurement)** Sub-Grade Structure Area:
SGS#19 A & B - 9802 ft²; SGS#22 – 10,671 ft² (main structure); SGS#22 - 36 ft²

Sub-Grade Structure Depth: **SGS#19 A – B 15 ft** Estimated Volume: **___5446___**cy

Sub-Grade Structure Depth: **SGS#22 10 ft** Estimated Volume: **___3952___**cy

Sub-Grade Structure Depth: **SGS#22 Looper 75 ft** Estimated Volume: **___100___**cy

Pumping Dates: **10/16 - 10/17/14 (Reported by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **___8/06/14___**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **___8/06/14, 9/29/14, 10/03/14, 10/27/14**

Condition of Groundwater in SGS: **At the time of the initial inspection the SGS the water clarity was milky/cloudy. Floating oil globules were observed over 10 – 20% of the water surface.**

Visual Inspection Observations (attach photos): **The equipment located in these buildings were removed for either resale or salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There appears to be openings and/or utility tunnels observed between the SGS foundation sidewalls. Interior sub grade foundation walls were hammered out to facilitate backfilling SGS -19 and SGS-22 which is contiguous with SGS-4 and SGS-3, respectively. The concrete foundation wall surfaces were mildly stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/20/14**

Date Sub-Grade Structure Backfill Completed: **100% completed by 10/27/14**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling of SGS-19 & 22 began after the structures were emptied of metal and debris. In October 2014 MCM begin structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a vibrating roller. Structural backfilling and compaction began in October 2014 and was completed by October 27, 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS



***Area of structural backfill depicted above encompasses SGS-19 and SGS-22.**



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#20 – SGS#21** Checklist Completed By: ___M. Cirri (JEI)

Building Location: **Cold Mill Complex – SGS#20 and SGS#21 appear to have been part of the No. 4 Coating Line process.**

GPS Coordinates: **20 N39°13.673' W076°28.382'**
21 N39°13.649' W076°28.380'

Sub-Grade Structure Dimensions: **SGS-20 50'x36'** Sub-Grade Structure Area: **SGS#20 1800 ft²**

Sub-Grade Structure Dimensions: **SGS-21 50'x30'** Sub-Grade Structure Area: **SGS#21 1500 ft²**

Sub-Grade Structure Depth: **SGS#20 10 ft** Estimated Volume: ___667___cy

Sub-Grade Structure Depth: **SGS#21 25 ft** Estimated Volume: ___1389___cy

Pumping Dates: **10/22 - 10/23/14 (Reported by MCM)**

Date Sub-Grade Structure Cleared for Inspection: ___8/06/14___

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): ___8/06/14, 9/29/14, 10/03/14, 10/27/14; 11/07/14; 11/30; 12/5

Condition of Groundwater in SGS: **At the time of the initial inspection SGS#20 water clarity was murky with slight rainbow sheen. SGS#21 was milky/cloudy with moderate oil sheen.**

Visual Inspection Observations (attach photos): **The equipment located in these buildings was removed for either resale or salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There appears to be openings and/or utility tunnels observed between the SGS foundation sidewalls. Interior sub grade foundation walls were hammered out to facilitate backfilling SGS -20 and SGS-21 simultaneously. The concrete foundation wall surfaces were lightly to mildly stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **11/05/14**

Date Sub-Grade Structure Backfill Completed: **100% completed by 11/30/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling of SGS-19 & 22 began after the structures were emptied of metal and debris. In November 2014 MCM began structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a vibrating roller. Structural backfilling and compaction began in November 2014 and was completed on or before November 30, 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS



***Area of structural backfill depicted above encompasses SGS-20 and SGS-21.**



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#24** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – Open Coil Annealing Pit**

GPS Coordinates: **N39°13.934' W076°28.481'**

Sub-Grade Structure Dimensions:

Sub-Grade Structure Dimensions: **38ft x 26 ft** Sub-Grade Structure Area: **988 ft²**

Sub-Grade Structure Depth: **10 ft** Estimated Volume: **366** cy

Pumping Dates: **9/15/16 (to Vac Truck)**

Date Sub-Grade Structure Cleared for Inspection: **8/22/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **8/22/14, 9/15/14, 10/27/14, 11/07/14**

Condition of Groundwater in SGS: **At the time of the initial inspection the SGS partially of water. There was a discernible sulfur-like odor sensed.**

Visual Inspection Observations (attach photos): **The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There were openings and/or utility tunnels observed between the SGS foundation sidewalls likely connecting to additional Annealing Furnaces located in the area. On 9/15 and 9/16/14 the concrete foundation and wall surfaces were cleaned. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Disposal

Solid material was remove and disposed of at Grey's Landfill. Residual water and clean-up rinsate was collected into a Vac Truck.

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/03/14**

Date Sub-Grade Structure Backfill Completed: **100% complete by 10/27/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris. In October 2014 MCM begin structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a vibrating roller. Structural backfilling began in mid-September and was completed in by 10/27/14. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHS:





Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#26 – SGS#27** Checklist Completed By: ___M. Cirri (JEI)

Building Location: **Cold Mill Complex – SGS#26 (Trench) and SGS#27 (Pit) appear to be series of interconnected pits and shallow trenches located at the South end of the Annealing Furnaces in the Cold Mill Train area.**

GPS Coordinates: **26 N39°13.700' W076°28.428'**
27 N39°13.734' W076°28.421'

Sub-Grade Structure Dimensions: **GPS Perimeter** Sub-Grade Structure Area: **SGS#26 7056 ft²**

Sub-Grade Structure Dimensions: **GPS Perimeter** Sub-Grade Structure Area: **SGS#27 347 ft²**

Sub-Grade Structure Depth: **SGS#26 8 ft** Estimated Volume: 2091 cy

Sub-Grade Structure Depth: **SGS#27 8 ft** Estimated Volume: 103 cy

Pumping Dates: **10/22 - 10/23/14 (Reported by MCM)**

Date Sub-Grade Structure Cleared for Inspection: 9/15/14

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): 9/15/14, 9/29/14, 10/03/14, 10/27/14; 11/07/14; 11/30;

Condition of Groundwater in SGS: **At the time of the initial inspection SGS#26 water clarity was murky with rainbow oil sheen and floating globules. SGS#27 was clear with no oil sheen.**

Visual Inspection Observations (attach photos): **The equipment located in these buildings was removed for either resale or salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There appears to be openings and/or utility tunnels observed between the SGS foundation sidewalls. Interior sub grade foundation walls were hammered out to some extent in order to facilitate backfilling SGS -26 and SGS-27 simultaneously. The concrete foundation wall surfaces of SGS-26 were lightly to mildly stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Disposal

Water from the SGS#26 and SGS#27 was pumped to the existing waste water sewer system which discharges into the Tin Mill Canal and continues to the HCWWTP. Metal removed from the sub grade structure went to scrap recycling and any non-recyclable debris reportedly went to Greys Landfill in accordance with Greys Landfill Operations Manual



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/21/14**

Date Sub-Grade Structure Backfill Completed: **100% completed by 11/30/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling of SGS-26 & 27 began after the structures were emptied of metal and debris. In October 2014 MCM began structural backfilling with processed concrete/brick after the structures were emptied of metal/debris. Structural backfill material was to be placed in successive 1 foot plus lifts and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted by excavation equipment and/or a vibrating roller. Structural backfilling and compaction began in October 2014 and was completed on or before November 30, 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS





Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

PHOTOGRAPHS



***Area of structural backfill depicted above encompasses SGS-26 and SGS-27.**



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: **SGS#28** Checklist Completed By: **M. Cirri (JEI)**

Building Location: **Cold Mill Complex – Shallow trench system North end of former Cold Sheet Mill Bldg between pickling equipment and Motor Stand Rm.**

GPS Coordinates: **N39°13.933' W076°28.384'**

Sub-Grade Structure Dimensions: **GPS Perimeter** Sub-Grade Structure Area: **156 ft²**

Sub-Grade Structure Depth: **6 ft (est.)** Estimated Volume: **35** cy

Pumping Dates: **10/17/14 (Reported by MCM)**

Date Sub-Grade Structure Cleared for Inspection: **9/19/14**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **9/19/14, 10/03/14, 10/27/14, 11/24/14, 3/23/15**

Condition of Groundwater in SGS: **Water had slight oil sheen. Oil was present as a combination of surface film, emulsion and solution.**

Visual Inspection Observations (attach photos): **SGS #28 is a shallow trench system within the former Cold Sheet Mill Building. The equipment located in the building was removed for either resale or salvage. The condition of the SGS was the result of the equipment removal and not caused by the MCM demolition of the building. There were no sumps visible or observed. There are presumed openings within the SGS foundation sidewalls to other structures/trenches. The trench wall surfaces were moderately stained. Bulk materials in the form of scrap metal, electrical conduit and other miscellaneous debris items were present in the structures.**

Disposal

Water from the SGS#28 was pumped to the existing waste water sewer system which discharges into the Tin Mill Canal and continues to the HCWWTP. Metal removed from the sub grade structure went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual.

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **10/22/14**

Date Sub-Grade Structure Backfill Completed: **Metal removed and partially filled by 10/27/14 and 100% filled by 11/24/14**

Stockpile ID(s) for Material Used for Backfilling: **Structural backfilling began after the structures were emptied of metal and debris. In late October 2014 MCM began structural backfilling with processed concrete/brick after the structures were emptied of metal/debris.**



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Structural backfill material was to be placed in successive lifts not exceeding 24" and crushed/tamped in-place using the equipment bucket loader or by driving over the material with the bulldozer. Non-metallic slag was to be placed in lifts not exceeding roughly 8 inches in thickness. The slag was compacted excavation equipment and/or a vibrating roller. Structural backfilling and compaction began in October 2014 and was completed by November 24, 2014. JEI conducted periodic site visits during cleaning/backfilling and observed the process to be sound and in general conformance with backfill requirements.

PHOTOGRAPHS:



Clearance Checklist-Closure Report

Oil Water Separator & Unloading Pits

SGS 57 –SGS 60

Prepared for:

*MCM Management Corporation
1430 Sparrows Point Blvd
Sparrows Point, MD 21219*

Prepared by:

*Jenkins Environmental, Inc.
8600 LaSalle Rd Suite 509
Towson, MD 21286*

April 28, 2016

JEI No.: 016-028



8600 LaSalle Road • Suite 509 • Towson, MD • 410-828-9888

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Section 1.0

Clearance Checklist & Certification



Sub-Grade Structure Clearance Checklist

Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: SGS-57

Checklist Completed By **M. Cirri**

Building Location: **Oil Water Separator & Water Meter Vault**

GPS Coordinates: **N 39° 14.013; W 076° 28.428**

Sub-Grade Structure Dimensions: **See Attached Century Engineering Closure**

Sub-Grade Structure Depth: **See Attached Century Engineering Closure**

Pumping Dates: **NA**

Date Sub-Grade Structure Cleared for Inspection: **3/03/16**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **3/03/16; 3/07/16, 4/6/16, 4/8/16, 4/12**

Condition of Groundwater in SGS: **NA – No water observed in structure**

Visual Inspection Observations (attach photos): **Slag finds were used to absorb oily sludge from structure and taken to Grey's Landfill. No material testing was required as it was determined to be consistent with material previously characterized by the steel mill operations and approved for disposal at Greys Landfill.**

Sub-Grade Structure Sampling

Date Sampled: **NA**

Chain of Custody #: **NA** Sample #: **NA**

TAT: **NA**

No. of Samples: **NA** (attach sample location description, sample location figure, and photos)

Media Sampled: **NA**

Date Results Received: **NA**

Result Evaluated and QC checked by: **NA**

Approval for Submission to MDE by (MCM or JEI): **NA**

MDE Review for Sub-Grade Structure Clearance

Date Analytical Results submitted to MDE: **NA**

MDE Review by: _____ Response date: _____

MDE Approval Date: **4/7/16**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **4/4/16**

Date Sub-Grade Structure Backfill Completed: **4/12/16**

Stockpile ID(s) for Material Used for Backfilling: **See Century Engineering Backfill Specifications**



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure ID#: SGS 58-60

Checklist Completed By **M. Cirri**

Building Location: **See attached Century Engineering Closure Report for location drawings**

GPS Coordinates:

SGS-58 : N 39° 14.037; W076° 28.402

SGS-59 : N 39° 14.045; W076° 28.404

SGS-60 : N 39° 14.053; W076° 28.405

Sub-Grade Structure Dimensions:

SGS #	Description	Approximate Dimensions
SGS-58	Truck Unloading Pit & Pit Sump	22'L x 13'W x 7'D
SGS-59	Truck Unloading	10'L x 11.5'W x 9'D
SGS-60	Truck Unloading	10'L x 11.5'W x 9'D

Pumping Dates: 3/31/16

Date Sub-Grade Structure Cleared for Inspection: **3/14/16**

Sub-Grade Structure Inspection by JEI

Sub-Grade Structure Inspection Date(s): **2/29; 3/3; 3/7; 3/15; 3/30; 3/31; 4/12**

Condition of Groundwater in SGS: **Generally murky and opaque; no surface sheen observed in SGS 58 or 60. Oil layer observed in SGS-59.**

Visual Inspection Observations (attach photos): **The equipment located in these buildings was removed for either resale or salvage. The condition of the SGS's was the result of the equipment removal and not caused by the MCM demolition of the building. Miscellaneous metal and debris were observed in the SGSs. A small amount of metal, debris and a 55 gal drum were removed from the sub grade structure and went to scrap recycling and any non-recyclable debris went to Greys Landfill in accordance with Greys Landfill Operations Manual. Concrete walls in SGS 58, 59 and 60 were observed to be generally in good condition and required no additional cleaning prior to backfill. After receiving approval for TPA (M. Vogler) Water from the SGS 58 - 60 was pumped to existing waste water sewer system which discharges into the Tin Mill Canal and continues to the HCWWTP.**

Backfilling of the SGS 58 -60 began on 3/21/16 and was completed on 4/1/16.



Sub-Grade Structure Clearance Checklist
Sparrows Point Facility – Demolition and Backfill

Sub-Grade Structure Sampling

Date Sampled: **3/07/16**

Chain of Custody #: **16021902** Sample #: **0165-028-341 to 343** Turnaround: **Standard**

No. of Samples: **Three (3)**

Media Sampled: **Combination of rainwater and groundwater infiltrating structure**

Date Results Received: **3/14/16**

Result Evaluated and QC checked by: **M. Cirri** _____

Approval for Submission to MDE by (MCM or JEI): **B. Bonnano/M. Cirri**

Sample Collection: **Grab water samples from several locations within the SGSs were collected and composited for analysis. Water in the SGS was observed to be a heterogeneous quiescent oil- water mixture. Oil was present as a combination of surface film, emulsion and solution. Disposable Teflon bailers and/or 40 oz. wide mouth Amber Packer bottles were used to collect samples.**

Samples to be analyzed for volatile organic compounds (VOCs) were placed in 40-ml septum vials with screw caps with a Teflon-lined silicone disk (septum) in the cap to prevent contamination of the sample by the cap. Samples were preserved with HCL. Triplicate samples were prepared from the SGS. 40 ml vials are placed on ice for transport to the laboratory. Oil & Grease and Semi-Volatiles samples were contained each in separate one (1) Liter Amber bottles and placed on ice for transport to the laboratory. PCBs and metals samples were placed in separate unpreserved 250 ml Nalgene HDPE bottles.

MDE Review for Sub-Grade Structure Clearance

Date Analytical Results submitted to MDE: **3/17/16 (SGS 58 -60)**

MDE Review by: **_Barbara Brown, MDE-LRP-VCP Section Head_** Response date: **3/7 & 4/12/16 (SGS -57 and SGS 58 -60, respectively).**

MDE Approval Date: **____3/7/16 for SGS-57 and 4/12/15 for SGS 58 - 60 (See Attached Approvals)**

Sub-Grade Structure Backfilling

Date Sub-Grade Structure Backfill Started: **4/13/16** _____

Date Sub-Grade Structure Backfill Completed: **4/14/16** _____

Stockpile ID(s) for Material Used for Backfilling: **See Century Engineering Closure Reports - Attached.**

Certification Statement

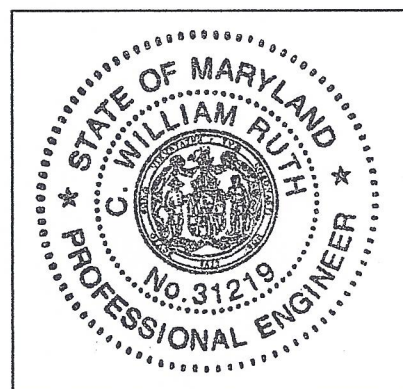
I hereby affirm that I am familiar with the Sparrows Point Terminal Property and that I or my agents, (M.J. Cirri/J.C. Cirri) have visited and examined Sub-grade Structures (SGS) closure sites at the Sparrows Point Terminal facility located in Baltimore County, Maryland. I affirm this Closure Report has been prepared in accordance with good practices, including consideration of applicable standards and that information provided by MCM Management Corporation in relation to matters of waste disposal is reliable. Furthermore, I affirm that procedures for required inspections and testing have been established by MCM and that the Sub grade Structure Backfill Closure Report observations indicate general conformance with the terms of the Enhanced Scope of Work (9/09/14) and work was done in a sound professional manner.

By: C. William Ruth
C. William Ruth, P.E.

Jenkins Environmental, Inc.
Date: 4/14/16

By: Michael J. Cirri
Michael J. Cirri, President
Jenkins Environmental, Inc.

Date: 4/14/16



Section 2.0

Pumping & Backfilling Authorizations

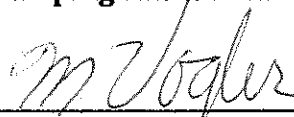
**Authorization Certificate
for
Sub Grade Structure (SGS) Pumping**

On 3/14 2016, Mike Vogler, Sr. VP Operations, an authorized
(Month/Day) (Name/Print)

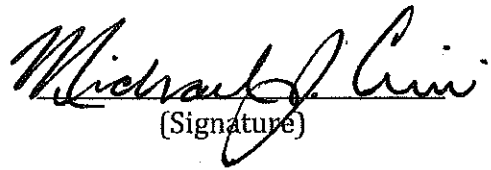
representative of TPA reviewed laboratory Certificates of Analysis for
(Company Name)

Samples 016-028-341 thru 343 collected from SGS(s) No.(s) 58-60 and
conducted a visual inspection of the referenced structures. The laboratory test results and
associated inspection find the water acceptable for pumping to the Humphrey's Creek
Waste Water Treatment Plant.

Pumping Authorization Granted by:

 SVP TPA Site Mgr 3/15/16
(Signature) (Title) (Date)

Witnessed by:

 Jenkins Env. Inc. 3/14/16
(Signature) (Company) (Date)



8600 LaSalle Road • Suite 509 • Towson, MD 21286

Michael Cirri

From: Barbara Brown -MDE- [barbara.brown1@maryland.gov]
Sent: Thursday, April 07, 2016 12:39 PM
To: Michael Cirri
Cc: Jennifer Sohns -MDE-; Brandon Bonanno; George Perdikakis
Subject: Re: SGS-57

Hello All

Based on a review of the documentation provided you may proceed with backfilling pit 57.

Barbara Brown

On Mon, Mar 21, 2016 at 10:54 AM, Michael Cirri <mcirri@jeinc.org> wrote:

Barbara:

See attached request to backfill SGS-57.

MC

Michael J. Cirri

President/Chief Financial Officer

Jenkins Environmental, Inc.

8600 LaSalle Road

York Building, Suite 509

Towson, MD 21286

410.828.9888 - Phone

410.828.9899 - Fax

1.888.473.8200 - Toll Free

mcirri@jeinc.org - Email

--

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

4/12/16

Site Visit Sparrows Point

On This day 4/12/16, Barbara Brown & Jennifer Sohns MDE visited site & visually observed the condition of pits 58, 59, & 60. All pits have been cleaned sufficiently & are approved for back fill.

Mike Cirri will provide final documentation in the near future

Barbara Brown
MDE - Project Coordinator

Jennifer Sohns
MDE.

Michael Cirri

From: Michael Cirri
Sent: Friday, April 15, 2016 9:08 AM
To: 'Barbara Brown -MDE-'
Cc: Jennifer Sohns -MDE-; 'Brandon Bonanno'; 'George Perdikakis'
Subject: SGS 58 - 60 Oil Recovery

Barbara:

On 4/12/13 the Department provided approval on-site to proceed with backfilling of SGS-58, 59 & 60. In accordance with MMP specifications JEI tested standing water in the SGS's. On 3/15/16 authorization from M. Vogler/TPA to pump to HCWWTP was received. Routine inspections were performed throughout the pumping and cleanout process. The structures were pumped on 3/31/16. There was minimal debris removal and cleaning of structure side walls and foundations necessary. Inspection dates: 2/19, 2/29, 3/3, 3/7, 3/15, 3/30 and 4/12.

The structures are and/or have being backfilled with a combination of slag aggregate and slag tailings in accordance with the Century Engineering Backfill Plan. No recycled and/or crushed material will be used as backfill. During backfill operations Century Engineering had a Geotech inspector on-site to test, approve and certify the work. Upon completion of backfilling JEI will prepare and submit a the Sub Grade Structure Clearance Checklist and Closure Report.

Regards,

Mike

Michael J. Cirri
President/Chief Financial Officer
Jenkins Environmental, Inc.
8600 LaSalle Road
York Building, Suite 509
Towson, MD 21286
410.828.9888 - Phone
410.828.9899 - Fax
1.888.473.8200 - Toll Free
mcirri@jeinc.org - Email

Section 3.0

Site Map Exhibits

Section 4.0

Photographs

SGS – 57

OIL RECOVERY

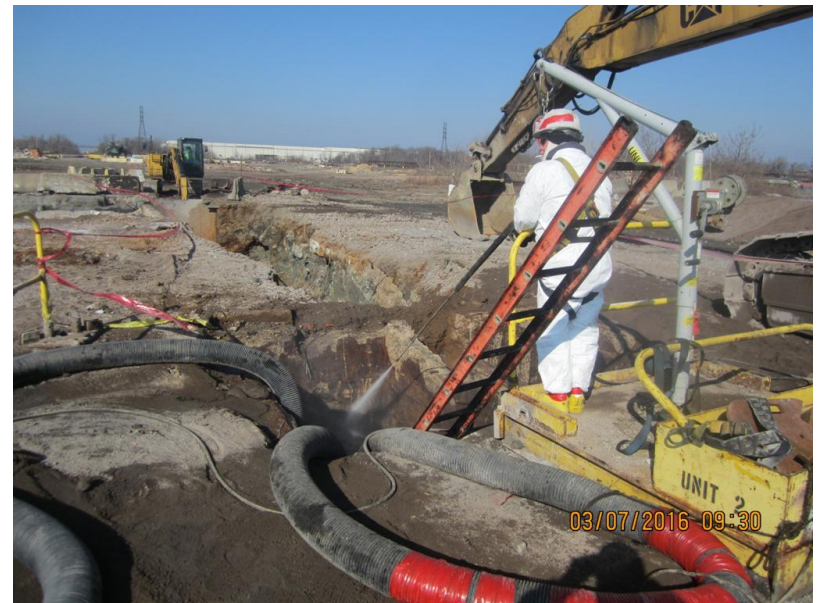
GPS COORDINATES:

N 39° 14.013

W 076° 28.428















SGS 58 – 60

OIL RECOVERY

GPS COORDINATES:

**SGS-58: N 39° 14.037
W076° 28.402**

**SGS-59: N 39° 14.045
W076° 28.404**

**SGS-60: N 39° 14.053
W076° 28.405**













Section 5.0

Laboratory Certificates of Analysis



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-341			Date Sampled: 03/07/16 8:30		Lab ID: 16030701-01		
Oil & Grease, total recoverable (HEM)							
Oil & Grease	ND	mg/L	5	EPA 1664	03/10/16	03/10/16 9:26	LMJ
Polychlorinated Biphenyls							
Aroclor 1016	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1221	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1232	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1242	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1248	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1254	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Aroclor 1260	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 10:07	AC
Target Compound List - SEMIVOLATILES							
Phenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Bis (2-chloroethyl) ether	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Chlorophenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Methylphenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Bis (2-chloroisopropyl) ether	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Acetophenone	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
4-Methylphenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
N-Nitroso-di-n-propylamine	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Hexachloroethane	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Nitrobenzene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Isophorone	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Nitrophenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2,4-Dimethylphenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Bis (2-chloroethoxy) methane	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2,4-Dichlorophenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Naphthalene`	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
4-Chloroaniline	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Hexachlorobutadiene`	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Caprolactam	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
4-Chloro-3-methylphenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Methylnaphthalene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Hexachlorocyclopentadiene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2,4,6-Trichlorophenol	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2,4,5-Trichlorophenol	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC
1,1-Biphenyl	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Chloronaphthalene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
2-Nitroaniline	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC
Dimethyl phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

			Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-341					Date Sampled: 03/07/16 8:30		Lab ID: 16030701-01		
Target Compound List - SEMIVOLATILES									
2,6-Dinitrotoluene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Acenaphthylene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
3-Nitroaniline	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Acenaphthene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
2,4-Dinitrophenol	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC		
4-Nitrophenol	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Dibenzofuran	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
2,4-Dinitrotoluene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Diethyl phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Fluorene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
4-Chlorophenyl phenyl ether	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
4-Nitroaniline	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
4,6-Dinitro-2-methylphenol	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC		
N-Nitrosodiphenylamine	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
4-Bromophenyl phenyl ether	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Hexachlorobenzene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Atrazine	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Pentachlorophenol	ND	ug/L	25	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Phenanthrene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Anthracene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Carbazole	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Di-n-butyl phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Fluoranthene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Pyrene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Butyl benzyl phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
3,3-Dichlorobenzidine	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Benzo[a]anthracene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Chrysene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Bis (2-ethylhexyl) phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Di-n-octyl phthalate	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Benzo[b]fluoranthene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Benzo[k]fluoranthene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Benzo[a]pyrene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Indeno[1,2,3-cd]pyrene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Dibenz[a,h]anthracene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		
Benzo[g,h,i]perylene	ND	ug/L	10	EPA 8270C	03/08/16	03/10/16 20:49	AC		



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-341			Date Sampled: 03/07/16 8:30		Lab ID: 16030701-01		
Target Compound List - VOLATILES							
Chloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Vinyl chloride	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Bromomethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Chloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Trichlorofluoromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Acetone	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Carbon disulfide	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Methyl acetate	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Methylene chloride	ND	ug/L	10	EPA 8260B	03/10/16	03/10/16 21:06	MBC
trans-1,2-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Methyl t-butyl ether (MTBE)	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1-Dichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
cis-1,2-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
2-Butanone (MEK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Chloroform	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1,1-Trichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Cyclohexane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Carbon tetrachloride	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Benzene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2-Dichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Trichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Methylcyclohexane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2-Dichloropropane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Bromodichloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
cis-1,3-Dichloropropene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
4-Methyl-2-pentanone (MIBK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Toluene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 21:06	MBC
trans-1,3-Dichloropropene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1,2-Trichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Tetrachloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
2-Hexanone (MBK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Dibromochloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2-Dibromoethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Chlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Ethylbenzene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 21:06	MBC
m&p-Xylene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
o-Xylene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

	Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-341			Date Sampled: 03/07/16 8:30		Lab ID: 16030701-01		
Target Compound List - VOLATILES							
Styrene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Bromoform	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Isopropylbenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,1,2,2-Tetrachloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,3-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,4-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2-Dibromo-3-chloropropane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
1,2,4-Trichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Naphthalene	ND	ug/L	10	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Ethyl t-butyl ether (ETBE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
tert-Butanol (TBA)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Diisopropyl ether (DIPE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
tert-Amyl methyl ether (TAME)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
tert-Amyl alcohol (TAA)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
tert-Amyl ethyl ether (TAEF)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:06	MBC
Total Metals							
Aluminum	ND	ug/L	50	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Antimony	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Arsenic	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Barium	32	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Beryllium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Cadmium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Calcium	25,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Chromium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Cobalt	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Copper	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Iron	240	ug/L	100	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Lead	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Magnesium	47,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Manganese	40	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Mercury	ND	ug/L	1	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Nickel	8.4	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Potassium	8,800	ug/L	100	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Selenium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Silver	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Sodium	15,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 12:24	MEL
Thallium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

Result			Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-341			Date Sampled: 03/07/16 8:30			Lab ID: 16030701-01		
Total Metals								
Vanadium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL	
Zinc	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 12:24	MEL	
Total Petroleum Hydrocarbons - (C10-C28) DRO								
Diesel Range Organics	0.87	mg/L	0.57	EPA 8015C	03/08/16	03/10/16 13:12	AC	
Field Sample ID: 016-028-342			Date Sampled: 03/07/16 8:58			Lab ID: 16030701-02		
Oil & Grease, total recoverable (HEM)								
Oil & Grease	~20	%	1	Visual	03/10/16	03/10/16 13:52	MBC	
Polychlorinated Biphenyls								
Aroclor 1016	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1221	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1232	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1242	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1248	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1254	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Aroclor 1260	ND	mg/kg	2.5	EPA 8082	03/08/16	03/11/16 10:36	AC	
Product Identification								
Product ID	Motor Oil			EPA 8015C	03/08/16	03/10/16 13:52	AC	
Target Compound List - SEMIVOLATILES								
Phenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Bis (2-chloroethyl) ether	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
2-Chlorophenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
2-Methylphenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Bis (2-chloroisopropyl) ether	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Acetophenone	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
4-Methylphenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
N-Nitroso-di-n-propylamine	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Hexachloroethane	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Nitrobenzene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Isophorone	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
2-Nitrophenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
2,4-Dimethylphenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Bis (2-chloroethoxy) methane	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
2,4-Dichlorophenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Naphthalene`	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
4-Chloroaniline	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Hexachlorobutadiene`	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Caprolactam	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

			Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-342					Date Sampled: 03/07/16 8:58		Lab ID: 16030701-02		
Target Compound List - SEMIVOLATILES									
4-Chloro-3-methylphenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2-Methylnaphthalene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Hexachlorocyclopentadiene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2,4,6-Trichlorophenol	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2,4,5-Trichlorophenol	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
1,1-Biphenyl	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2-Chloronaphthalene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2-Nitroaniline	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Dimethyl phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2,6-Dinitrotoluene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Acenaphthylene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
3-Nitroaniline	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Acenaphthene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2,4-Dinitrophenol	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
4-Nitrophenol	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Dibenzofuran	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
2,4-Dinitrotoluene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Diethyl phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Fluorene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
4-Chlorophenyl phenyl ether	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
4-Nitroaniline	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
4,6-Dinitro-2-methylphenol	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
N-Nitrosodiphenylamine	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
4-Bromophenyl phenyl ether	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Hexachlorobenzene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Atrazine	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Pentachlorophenol	ND	ug/L	250	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Phenanthrene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Anthracene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Carbazole	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Di-n-butyl phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Fluoranthene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Pyrene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Butyl benzyl phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
3,3-Dichlorobenzidine	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Benzo[a]anthracene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Chrysene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Bis (2-ethylhexyl) phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		
Di-n-octyl phthalate	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC		



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

Result			Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-342				Date Sampled: 03/07/16 8:58		Lab ID: 16030701-02		
Target Compound List - SEMIVOLATILES								
Benzo[b]fluoranthene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Benzo[k]fluoranthene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Benzo[a]pyrene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Indeno[1,2,3-cd]pyrene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Dibenz[a,h]anthracene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Benzo[g,h,i]perylene	ND	ug/L	100	EPA 8270C	03/08/16	03/10/16 21:32	AC	
Target Compound List - VOLATILES								
Dichlorodifluoromethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Chloromethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Vinyl chloride	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Bromomethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Chloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Trichlorofluoromethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,1-Dichloroethene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Acetone	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Carbon disulfide	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Methyl acetate	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Methylene chloride	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
trans-1,2-Dichloroethene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Methyl t-butyl ether (MTBE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,1-Dichloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
cis-1,2-Dichloroethene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
2-Butanone (MEK)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Chloroform	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,1,1-Trichloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Cyclohexane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Carbon tetrachloride	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Benzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,2-Dichloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Trichloroethene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Methylcyclohexane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
1,2-Dichloropropane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Bromodichloromethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
cis-1,3-Dichloropropene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
Toluene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:35	MBC	
trans-1,3-Dichloropropene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

			Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-342					Date Sampled: 03/07/16 8:58		Lab ID: 16030701-02		
Target Compound List - VOLATILES									
1,1,2-Trichloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Tetrachloroethene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
2-Hexanone (MBK)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Dibromochloromethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,2-Dibromoethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Chlorobenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Ethylbenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
m&p-Xylene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
o-Xylene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Styrene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Bromoform	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Isopropylbenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,1,2,2-Tetrachloroethane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,3-Dichlorobenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,4-Dichlorobenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,2-Dichlorobenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,2-Dibromo-3-chloropropane	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
1,2,4-Trichlorobenzene	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Naphthalene	ND	ug/L	50	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Ethyl t-butyl ether (ETBE)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
tert-Butanol (TBA)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Diisopropyl ether (DIPE)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
tert-Amyl methyl ether (TAME)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
tert-Amyl alcohol (TAA)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
tert-Amyl ethyl ether (TAE)	ND	ug/L	130	EPA 8260B	03/10/16	03/10/16 21:35	MBC		
Total Metals									
Aluminum	ND	ug/L	50	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Antimony	17	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Arsenic	13	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Barium	89	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Beryllium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Cadmium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Calcium	150,000	ug/L	500	EPA 6020A	03/08/16	03/08/16 12:54	MEL		
Chromium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Cobalt	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Copper	5.9	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		
Iron	37,000	ug/L	500	EPA 6020A	03/08/16	03/08/16 12:54	MEL		
Lead	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL		



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

		Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID:	016-028-342				Date Sampled:	03/07/16 8:58	Lab ID: 16030701-02	
Total Metals								
Magnesium	59,000	ug/L	500	EPA 6020A	03/08/16	03/08/16 12:54	MEL	
Manganese	290	ug/L	25	EPA 6020A	03/08/16	03/08/16 12:54	MEL	
Mercury	ND	ug/L	1	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Nickel	65	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Potassium	140,000	ug/L	500	EPA 6020A	03/08/16	03/08/16 12:54	MEL	
Selenium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Silver	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Sodium	89,000	ug/L	500	EPA 6020A	03/08/16	03/08/16 12:54	MEL	
Thallium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Vanadium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Zinc	8.5	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:06	MEL	
Field Sample ID:		016-028-343	Date Sampled:			03/07/16 9:31	Lab ID: 16030701-03	
Oil & Grease, total recoverable (HEM)								
Oil & Grease	12	mg/L	5	EPA 1664	03/10/16	03/10/16 9:26	LMJ	
Polychlorinated Biphenyls								
Aroclor 1016	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1221	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1232	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1242	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1248	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1254	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Aroclor 1260	ND	ug/L	2	EPA 8082	03/08/16	03/11/16 11:04	AC	
Target Compound List - SEMIVOLATILES								
Phenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Bis (2-chloroethyl) ether	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
2-Chlorophenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
2-Methylphenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Bis (2-chloroisopropyl) ether	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Acetophenone	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
4-Methylphenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
N-Nitroso-di-n-propylamine	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Hexachloroethane	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Nitrobenzene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Isophorone	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
2-Nitrophenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
2,4-Dimethylphenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Bis (2-chloroethoxy) methane	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
2,4-Dichlorophenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

			Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-343					Date Sampled: 03/07/16 9:31		Lab ID: 16030701-03		
Target Compound List - SEMIVOLATILES									
Naphthalene`	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Chloroaniline	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Hexachlorobutadiene`	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Caprolactam	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Chloro-3-methylphenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2-Methylnaphthalene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Hexachlorocyclopentadiene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2,4,6-Trichlorophenol	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2,4,5-Trichlorophenol	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
1,1-Biphenyl	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2-Chloronaphthalene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2-Nitroaniline	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Dimethyl phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2,6-Dinitrotoluene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Acenaphthylene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
3-Nitroaniline	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Acenaphthene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2,4-Dinitrophenol	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Nitrophenol	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Dibenzofuran	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
2,4-Dinitrotoluene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Diethyl phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Fluorene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Chlorophenyl phenyl ether	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Nitroaniline	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4,6-Dinitro-2-methylphenol	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
N-Nitrosodiphenylamine	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
4-Bromophenyl phenyl ether	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Hexachlorobenzene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Atrazine	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Pentachlorophenol	ND	ug/L	28	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Phenanthrene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Anthracene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Carbazole	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Di-n-butyl phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Fluoranthene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Pyrene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
Butyl benzyl phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		
3,3-Dichlorobenzidine	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC		



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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8600 LaSalle Road
York Building, Suite 509
Towson, MD 21286

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

Result			Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-343				Date Sampled: 03/07/16 9:31		Lab ID: 16030701-03		
Target Compound List - SEMIVOLATILES								
Benzo[a]anthracene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Chrysene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Bis (2-ethylhexyl) phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Di-n-octyl phthalate	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Benzo[b]fluoranthene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Benzo[k]fluoranthene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Benzo[a]pyrene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Indeno[1,2,3-cd]pyrene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Dibenz[a,h]anthracene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Benzo[g,h,i]perylene	ND	ug/L	11	EPA 8270C	03/08/16	03/10/16 22:14	AC	
Target Compound List - VOLATILES								
Dichlorodifluoromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Chloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Vinyl chloride	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Bromomethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Chloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Trichlorofluoromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,1-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Acetone	ND	ug/L	100	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Carbon disulfide	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Methyl acetate	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Methylene chloride	ND	ug/L	10	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
trans-1,2-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Methyl t-butyl ether (MTBE)	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,1-Dichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
cis-1,2-Dichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
2-Butanone (MEK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Chloroform	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,1,1-Trichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Cyclohexane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Carbon tetrachloride	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Benzene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,2-Dichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Trichloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Methylcyclohexane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
1,2-Dichloropropane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	
Bromodichloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC	



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

			Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID: 016-028-343					Date Sampled: 03/07/16 9:31		Lab ID: 16030701-03		
Target Compound List - VOLATILES									
cis-1,3-Dichloropropene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
4-Methyl-2-pentanone (MIBK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Toluene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
trans-1,3-Dichloropropene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,1,2-Trichloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Tetrachloroethene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
2-Hexanone (MBK)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Dibromochloromethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,2-Dibromoethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Chlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Ethylbenzene	ND	ug/L	1	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
m&p-Xylene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
o-Xylene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Styrene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Bromoform	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Isopropylbenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,1,2,2-Tetrachloroethane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,3-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,4-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,2-Dichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,2-Dibromo-3-chloropropane	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
1,2,4-Trichlorobenzene	ND	ug/L	5	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Naphthalene	ND	ug/L	10	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Ethyl t-butyl ether (ETBE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
tert-Butanol (TBA)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Diisopropyl ether (DIPE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
tert-Amyl methyl ether (TAME)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
tert-Amyl alcohol (TAA)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
tert-Amyl ethyl ether (TAAE)	ND	ug/L	25	EPA 8260B	03/10/16	03/10/16 22:05	MBC		
Total Metals									
Aluminum	ND	ug/L	50	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Antimony	66	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Arsenic	11	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Barium	13	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Beryllium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Cadmium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Calcium	66,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 13:00	MEL		
Chromium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL		



CALIBER ANALYTICAL SERVICES

Certificate of Analysis

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

Date Received: 03/07/16 12:35

Date Issued: 03/14/16 13:28

Matrix: Water

Project: SGS - Oil Recovery

Site Location: Sparrows PT, MD

Project Number: 2016-028

SDG Number: 16030701

		Result	Unit	LLQ	Method	Prepared	Analyzed	Init.
Field Sample ID:	016-028-343			Date Sampled:	03/07/16 9:31		Lab ID: 16030701-03	
Total Metals								
Cobalt	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Copper	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Iron	2,300	ug/L	100	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Lead	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Magnesium	44,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Manganese	450	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Mercury	ND	ug/L	1	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Nickel	61	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Potassium	74,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Selenium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Silver	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Sodium	44,000	ug/L	100	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Thallium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Vanadium	ND	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Zinc	7.0	ug/L	5	EPA 6020A	03/08/16	03/08/16 13:00	MEL	
Total Petroleum Hydrocarbons - (C10-C28) DRO								
Diesel Range Organics	5.3	mg/L	0.48	EPA 8015C	03/08/16	03/10/16 13:52	AC	

Notes/Qualifiers:

LLQ- Lowest Level of Quantitation

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

Approved by:

QC Chemist



Chain of Custody Record

Customer:	JENKINS ENVIRONMENTAL
Contact/Report to:	M. CIRRI
Phone:	410-828-9888
Fax:	410-828-9899

E-mail address:	MCIRRI@JEINC.ORG
Project Name:	SGS - OIL RECOVERY
Project Number:	2016-028
Location:	SPARROWS PT. MD

SDG Number:	16030701
-------------	----------

Sampled by:	MJC
PO Number:	

Lab Number	Field Sample ID	Date Sampled	Time Sampled	No. of Bottles	Matrix	Analysis Requested										Sampling Remarks/ Comments
						Preservative			HCL							
							TAL METALS 6020A	PCB's 8082	VOC's 8260B	SVOC's 8270C	TPH-DRO 8015B	Oil: GREASE 9071B				
	016-028-341	3/7/16	0830	7	WATER		✓	✓	✓	✓	✓	✓				SGS-58
	016-028-342	3/7/16	0858	7	WATER		✓	✓	✓	✓	✓	✓				SGS-59
	016-028-343	3/7/16	0931	7	WATER		✓	✓	✓	✓	✓	✓				SGS-60

Relinquished by:	M. Cirri	Date/Time:	3/7/16 1235	Deliverables:	Receipt Temperature:	Turnaround Time:
Received by:	M. Collee	Date/Time:	3/7/16 1235	I II III CLP EDD	Temp: <u>SAME DAY</u> On Ice	<u>STD</u> Next Day 2-Day Other
Relinquished by:		Date/Time:		Custody Seals:	Comments/Special Instructions:	
Received by:		Date/Time:		Sample Cooler		
Relinquished by:		Date/Time:		Delivered by client		
Received by:		Date/Time:				

Section 6.0

Backfill Specifications, Inspection & Closure Reports (Century Engineering)

April 22, 2016

MCM Management Corp.
1430 Sparrows Point Blvd.
Truck Dock 341A
Sparrows Point, Maryland 21219

Attn: Mr. Brandon Bonanno
Vice President Operations

Re: Sparrows Point Facility
Backfill Certification for SGS-57 (Oil-Water Separator)
and SGS-58, 59 and 60 (Misc. Pits)
Sparrows Point, Maryland
CEI Project No. 151117.00

Dear Mr. Bonanno:

Century Engineering, Inc. has performed inspections and testing for the backfilling of several of the subgrade structures that are located just north of the Cold Sheet Mill. The inspections and testing were performed to verify that the backfilling was accomplished in accordance with the "Backfill Plan" described in Addendum No. 2 of the Sparrow Point Enhanced Scope of Work Document dated September 9, 2014.

All of the Subgrade Structures consisted of open pits or vaults and were defined as follows:

SGS-57	Oil- Water Separator Pits and Water Main Vault
SGS-58	Truck Unloading Pit and Sump Pit
SGS-59	Truck Unloading Pit
SGS-60	Truck Unloading Pit

The inspections and testing were performed during April 4, 2016 to April 14, 2016 and consisted of the following:

- Performing laboratory testing on the Structural Backfill materials to verify compliance with the Backfill Plan.
- Visual inspection of placement of the Miscellaneous Backfill to verify that such materials were of the proper type and were placed below the minimum depth.
- Visually inspecting the preparation and any required demolition (holes in bottom slabs) of the subgrade structures and placement of open-graded filter courses prior to the placement of the dense graded and compacted Structural Backfill.
- Inspecting the placement of the Structural Backfill and performing compaction testing using a nuclear moisture-density gauge.

Based on our inspections and testing, we certify that the backfilling of the above referenced Subgrade Structures was accomplished in a sound and professional manner and in general accordance with the requirements of the Backfill Plan.

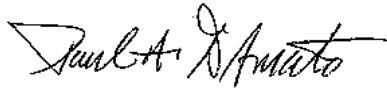
Re: Backfill Certification
SGS-57, 58, 59 and 60
CEI Project No. 151117.00

April 22, 2016 Page 2

Our field inspection and lab testing reports are attached. Please contact us if you have any questions or need additional information.

Very truly yours,

CENTURY ENGINEERING, INC.



Paul A. D'Amato, P.E.
Sr. Geotechnical Engineer



Personal 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. 12018, Expiration 6/21/16.



DAILY REPORT

REPORT NO: 1

PROJECT: Sparrows Point Terminals—Oil/Water Separator (SGS-57) DATE: 4/4/2016

WORK SHIFT: FROM: 8:15 am TO: 4:45 pm WEATHER: Mostly Cloudy

FROM: TO: TEMP. 8 A.M. 56° 12 P.M. 60° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- MCM completed the clean-out of the oil-water separator pits located at the north side of the Cold Sheet Mill (see attached plan).
- The opening of the 48" RCP effluent pipe at the northwest corner of the structure was covered with a steel plate. Groundwater is present at -10.2' depth in the two 11.5' deep pits at the northwest corner. Groundwater will be able to flow through the #3 slag backfill to the effluent pipe through the plate.
- Two 4' x 4' holes were made in the larger 4.5' deep pit. And 1 hole each in the adjacent 6' deep pits. The holes were backfilled with #57 Blast Furnace Slag and topped with 1' of BF #8 slag as a filter course between the open graded #57 and compacted slag tailing backfill.
- An existing pipe at the west side of the structure had been previously removed leaving a 11.5' to 10' deep x 12' wide trench. The soft wet soils were removed from the trench and #3 slag was placed to -7.0' depth. The #3 slag was covered with 1' of #57 and 1' of #8 filter course aggregates.
- No compacted backfill placed today.
- Sketch of Oil-Water Separator Pits attached.

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00



DAILY REPORT

PROJECT: Sparrows Point Terminals—Oil/Water Separator (SGS-57) **REPORT NO:** 2
DATE: 4/5/2016
WORK SHIFT: FROM: 8:30 am TO: 4:00 pm **WEATHER:** Mostly Cloudy
FROM: _____ TO: _____ **TEMP.** 8 A.M. 56° 12 P.M. 60° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- MCM completed the placement of the open graded slags in the various vaults of the oil/water separator.
- Used BOF Steel Slag tailings for the compacted backfill in top 5 feet. Started filling the trench on the back side.
- Dimensions, specific placement of the open graded slag, and compaction test locations with nuclear M-D gauge are shown on attached sketch.
- Placement and compaction of the tailings was also started on the larger 4.5' deep pit to a depth of -2.3 feet.
- Backfill was placed and compacted in approximately 8" thick lifts. Compaction met the minimum 95% requirement.
- No other work performed today.

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/5/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

TEST NO	1-A	1-B	1-C	1-D	2-A	2-B	2-C	2-D	
LOCATION OR STATION	SGS-57 (see sketch)							→	
OFFSET									
ELEVATION	-3.3	-2.5	-1.8	-1.0	-4.3	-3.5	-2.8	-1.3	
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	
DENSITY COUNT	685	748	686	793	709	699	718	686	
WET DENSITY PCF	162.5	158.7	162.5	156.0	160.9	161.6	160.5	162.4	
MOISTURE COUNT	148	133	138	150	150	140	126	150	
MOISTURE CONTENT %	8.7	7.8	8.0	9.3	9.0	8.2	7.2	8.9	
DRY DENSITY PCF	149.5	147.2	150.4	142.8	147.7	149.4	149.7	149.2	
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	
% COMPACTION OBTAINED	99.6 Pass	98.1 Pass	100.3 Pass	95.2 Pass	98.5 Pass	99.6 Pass	99.8 Pass	99.5 Pass	

REMARKS:

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/5/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

TEST NO	3-A	3-B	3-C	3-D	4-A	4-B	4-C	4-D	
LOCATION OR STATION	SGS-57 (see sketch)							→	
OFFSET									
ELEVATION	-2.3	-1.5	-0.8	Grade	-2.3	-1.5	-0.8	Grade	
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	
DENSITY COUNT	772	723	705	635	697	772	664	754	
WET DENSITY PCF	157.2	160.1	161.3	165.7	161.7	157.2	163.8	157.8	
MOISTURE COUNT	149	137	136	179	145	139	165	154	
MOISTURE CONTENT %	9.1	8.0	7.9	10.8	8.5	8.3	9.9	9.6	
DRY DENSITY PCF	144.1	148.2	149.5	149.5	149.0	145.1	149.0	1443.4	
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	
% COMPACTION OBTAINED	96.0 Pass	98.8 Pass	99.6 Pass	99.7 Pass	99.3 Pass	96.7 Pass	99.4 Pass	95.2 Pass	

REMARKS:

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

DAILY REPORT

REPORT NO: 3

PROJECT: Sparrows Point Terminals—Oil/Water Separator (SGS-57)

DATE: 4/6/2016

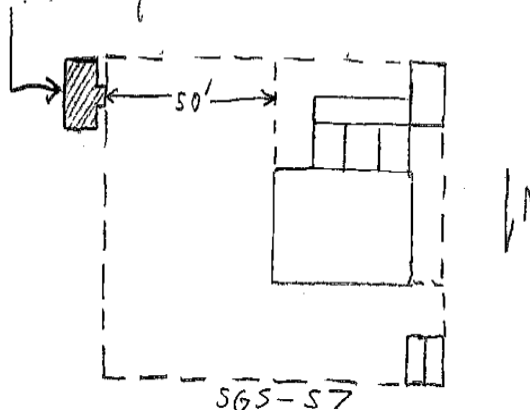
WORK SHIFT: FROM: 8:15 am TO: 3:15 pm **WEATHER:** partly Cloudy

FROM: TO: **TEMP.** 8 A.M. 56° 12 P.M. 60° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- MCM continued backfill of SGS-57 with the steel slag tailings.
- Lifts were placed, compacted and tested at 10 locations as shown on the attached sketch.
- See attached test sheets for compaction tests performed with nuclear M-D gauge.
- At the end of the day, MCM discovered another pit while they were doing the final grade and compaction of the oil water separator. This pit is located at the east end of the oil-water separator and appears to be a former water line vault or pump vault to the former separator building. The dimensions are 8'x10'x9' deep.
- Mike Cerri gave approval to fill the pit. The pit contains some rubble and gravel with a 8" or 10" DIP in the north wall.
- No other work performed today.

• Dimensions are 8' x 10' x 9' deep.



COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/6/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

TEST NO	5-A	5-B	5-C	6-A	6-B	6-C	7-A	7-B	7-C
LOCATION OR STATION	SGS-57 (see sketch)								→
OFFSET									
ELEVATION	-4.5	-3.0	-1.5	-4.5	-3.0	-1.5	-4.5	-3.0	-1.5
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	6"
DENSITY COUNT	744	748	713	771	674	827	738	739	719
WET DENSITY PCF	158.9	158.7	160.8	157.2	163.2	154.3	159.2	159.2	160.4
MOISTURE COUNT	134	131	129	153	147	127	154	131	136
MOISTURE CONTENT %	7.9	7.7	7.4	9.4	8.6	7.6	9.4	7.6	8.0
DRY DENSITY PCF	147.3	147.4	149.7	143.7	150.3	143.3	145.5	147.9	148.6
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	95
% COMPACTION OBTAINED	98.2 Pass	98.2 Pass	99.8 Pass	95.8 Pass	100.2 Pass	95.6 Pass	97 Pass	98.6 Pass	99.1 Pass

REMARKS: Fill was placed in 8" lifts and each lift compacted.

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/6/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

TEST NO	8-A	8-B	8-C	8-D	8-E	8-F	1-E	1-E (retest)	2-E
LOCATION OR STATION	SGS-57 (see sketch)								→
OFFSET									
ELEVATION	-6.0	-5.3	-4.5	-3.0	-1.5	Grade	Grade	Grade	Grade
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	6"
DENSITY COUNT	770	781	725	720	718	638	982	714	677
WET DENSITY PCF	157.5	156.8	160.0	160.2	160.4	165.5	146.6	160.6	163.0
MOISTURE COUNT	106	131	139	154	150	167	130	164	152
MOISTURE CONTENT %	5.9	7.8	8.2	9.3	8.9	9.9	8.3	10.0	9.0
DRY DENSITY PCF	148.7	145.5	147.9	146.6	147.3	150.6	135.4	145.9	149.6
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	95
% COMPACTION OBTAINED	99.2 Pass	97 Pass	98.6 Pass	97.7 Pass	98.2 Pass	100.4 Pass	90.3 Fail	97.3 Pass	99.7 Pass

REMARKS:

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/6/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

TEST NO	9-A	9-B	9-C	9-D	10-A	10-B	10-C	10-D	
LOCATION OR STATION	SGS-57 (see sketch)								→
OFFSET									
ELEVATION	-5.0	-3.5	-1.0	Grade	-5.0	-3.5	-1.0	Grade	
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	
DENSITY COUNT	670	667	830	801	680	670	820	803	
WET DENSITY PCF	162.4	163.7	154.1	155.5	162.7	163.4	154.6	155.6	
MOISTURE COUNT	157	143	130	136	159	151	137	141	
MOISTURE CONTENT %	9.3	8.3	7.8	8.0	9.5	8.9	8.4	8.2	
DRY DENSITY PCF	149.5	151.2	142.9	144.0	148.6	151.1	142.7	143.8	
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	
% COMPACTION OBTAINED	99.7 Pass	100.8 Pass	95.2 Pass	96 Pass	99.1 Pass	100.1 Pass	95.1 Pass	95.9 Pass	

REMARKS:

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:



DAILY REPORT

PROJECT: Sparrows Point Terminals—Oil/Water Separator (SGS-57) **REPORT NO:** 4
And Truck Unloading Pits (SGS-58, 59, 60) **DATE:** 4/7/2016

WORK SHIFT: FROM: 12:00 pm TO: 4:30 pm **WEATHER:** Rain AM, cloudy, windy PM

FROM: TO: **TEMP.** 8 A.M. ° 12 P.M. 50° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- Completed at grade testing of the backfill in the oil-water separator.
- MCM has done a final 8" lift over the area. See at grade tests on 4/5 and 4/6 data sheets for these test results.
- MCM cleaned out the pit found yesterday and the adjacent Truck Unloading pits of SGS-58, 59 and 60.
- No other backfill placed today.

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

DAILY REPORT

REPORT NO: 5

PROJECT: Sparrows Point Terminals—Truck Unloading Pits
(SGS-58, 59, 60)

DATE: 4/8/2016

WORK SHIFT: FROM: 8:00 am TO: 4:30 pm **WEATHER:** Partly Cloudy, Windy

FROM: TO: **TEMP.** 8 A.M. ° 12 P.M. 50° 4 P.M. °

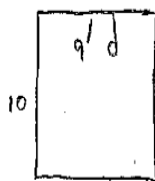
WORK IN PROGRESS: (Location and Description, Equipment in Use)

- MCM completed the clean-up of the Truck Unloading Pits SGS-58, 59, and 60.
- A 4' x 4' hole was made in the bottom of each pit.
- MCM is waiting for MDE approval to backfill these pits.
- No backfill placed today.



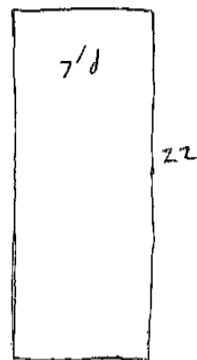
SGS-61

25'



SGS-59

25'



SGS-58

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00



DAILY REPORT

PROJECT: Sparrows Point Terminals–Truck Unloading Pits (SGS-58, 59, 60)
REPORT NO: 6
DATE: 4/12/2016
WORK SHIFT: FROM: 8:15 am TO: 9:45 am **WEATHER:** Partly Cloudy
FROM: TO: **TEMP.** 8 A.M. 60° 12 P.M. ° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- Arrived at site at 8:30 as requested. MCM however does not yet have approval to backfill the truck unloading pits SGS-58, 59 and 60.
- Checked last week's compaction reports and did some additional compaction testing at SGS-57.
- See attached test sheet.
- No backfill placed today.

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

DAILY REPORT

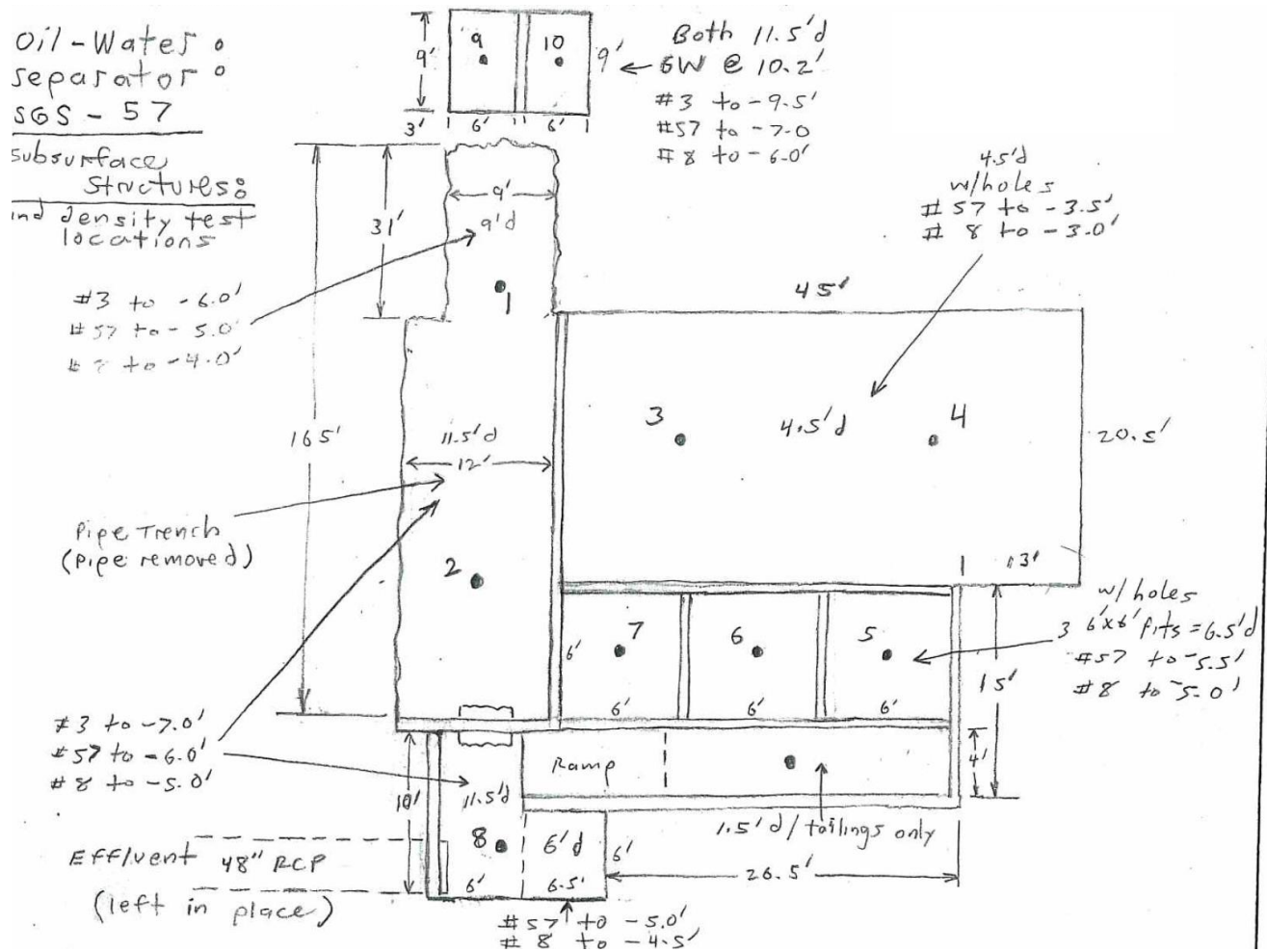
REPORT NO: 6

PROJECT: Sparrows Point Terminals—Oil/Water Separator (SGS-57) **DATE:** 4/12/2016

WORK SHIFT: FROM: 8:15 am TO: 9:45 am **WEATHER:** Partly Cloudy

FROM: TO: **TEMP.** 8 A.M. 60 12 P.M. ° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)



COMMENTS:

NORTH ←

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - Oil/Water Separator (SGS-57) DATE: 4/12/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1909
MOISTURE: 606

TEST NO	5-A	5-B	5-C						
LOCATION OR STATION	SGS-57 (see sketch)								→
OFFSET									
ELEVATION	Grade	Grade	Grade						
SOURCE DEPTH	6"	6"	6"						
DENSITY COUNT	749	751	788						
WET DENSITY PCF	158.3	158.2	156.2						
MOISTURE COUNT	130	136	139						
MOISTURE CONTENT %	7.6	7.9	8.2						
DRY DENSITY PCF	147.1	146.6	144.4						
MAX DRY DENSITY PCF	150.0	150.0	150.0						
OPT MOISTURE CONT. %	9.5	9.5	9.5						
% COMPACTION REQ'D	95	95	95						
% COMPACTION OBTAINED	98.1 Pass	97.7 Pass	96.3 Pass						

REMARKS:

TECHNICIAN: C.Jacobs

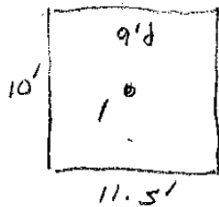
CLIENT'S REPRESENTATIVE:

DAILY REPORT

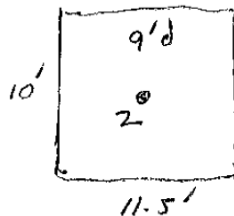
PROJECT: Sparrows Point Terminals—Truck Unloading Pits (SGS-58, 59, 60)
 REPORT NO: 7
DATE: 4/13/2016
WORK SHIFT: FROM: 8:00 am TO: 4:30 pm **WEATHER:** Mostly sunny
 FROM: TO: **TEMP.** 8 A.M. 50° 12 P.M. 67° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

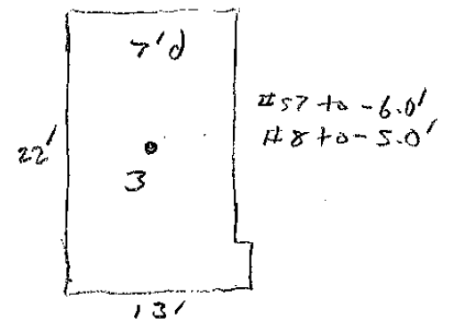
- MCM placed open graded slag aggregate as noted on the sketch below and backfilled with the steel slag tailings in the afternoon.
- A small circular 3.0' diameter sump pit was found with standing water adjacent to SGS-58. It was partially filled with rubble and about 2' deep. The plan is to backfill it with the tailings.
- Hole was made in bottom and open graded slag was also placed in water line vault found on 4/6.
- See attached test sheets for compaction test results.



#57 to -7.0'
 #8 to -6.0'
 SGS-60



#57 to -7.0'
 #8 to -6.0'
 SGS-59



#57 to -6.0'
 #8 to -5.0'
 shallow sump
 3' diam.
 2' deep
 SGS-58

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

Sparrows Point Terminals - Truck Unloading Pits (SGS-58, 59,
and 60)

PROJECT:

DATE: 4/13/2016

CLIENT:

MCM

CEI PROJECT NO.:

151117.00

GAUGE SERIAL NO.:

24148

DENSITY: 1924

MOISTURE: 606

TEST NO	1-A	1-B	1-C	1-D	1-E	2-A	2-B	2-C	2-D
LOCATION OR STATION	SGS-60 (see sketch)				→	SGS-59 (see sketch)			→
OFFSET									
ELEVATION	-5.0	-4.3	-3.5	-2.0	Grade	-5.0	-4.3	-3.5	-2.0
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	6"	6"
DENSITY COUNT	652	669	707	693	696	688	702	680	726
WET DENSITY PCF	164.4	163.0	160.6	161.5	161.3	161.8	160.9	162.3	159.4
MOISTURE COUNT	150	149	146	144	134	140	144	144	141
MOISTURE CONTENT %	8.9	8.8	8.7	8.5	7.8	8.2	8.5	8.4	8.4
DRY DENSITY PCF	150.9	149.9	147.7	148.8	149.7	149.6	148.3	149.7	147.1
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	95
% COMPACTION OBTAINED	100.7 Pass	99.9 Pass	98.5 Pass	99.2 Pass	99.8 Pass	99.7 Pass	98.8 Pass	99.8 Pass	98.1 Pass

REMARKS: Fill was placed in 8" lifts and each lift compacted.

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

Sparrows Point Terminals - Truck Unloading Pits (SGS-58, 59,
and 60)

PROJECT:

DATE: 4/13/2016

CLIENT:

MCM

CEI PROJECT NO.:

151117.00

GAUGE SERIAL NO.:

24148

DENSITY: 1924

MOISTURE: 606

TEST NO	2-E	3-A	3-B	3-C	3-D	3-E			
LOCATION OR STATION	SGS-59 (see sketch)	SGS-58 (see sketch)							
OFFSET									
ELEVATION	Grade	-4.3	-2.8	-2.5	-1.3	Grade			
SOURCE DEPTH	6"	6"	6"	6"	6"	6"			
DENSITY COUNT	708	749	811	675	757	707			
WET DENSITY PCF	160.5	158.0	154.5	162.5	157.5	160.6			
MOISTURE COUNT	141	141	137	162	151	148			
MOISTURE CONTENT %	8.3	8.5	8.4	9.7	9.2	9.0			
DRY DENSITY PCF	148.2	145.7	142.6	148.1	144.2	147.3			
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0			
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5			
% COMPACTION REQ'D	95	95	95	95	95	95			
% COMPACTION OBTAINED	98.8 Pass	97.1 Pass	95.1 Pass	98.7 Pass	97.8 Pass	98.2 Pass			

REMARKS: Fill was placed in 8" lifts and each lift compacted.

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:



DAILY REPORT

PROJECT: Sparrows Point Terminals–SGS-57 (Water Vault) **REPORT NO:** 8
DATE: 4/14/2016
WORK SHIFT: FROM: 8:30 am TO: 12:30 pm **WEATHER:** Sunny
FROM: _____ TO: _____ **TEMP.** 8 A.M. 50° 12 P.M. 65° 4 P.M. °

WORK IN PROGRESS: (Location and Description, Equipment in Use)

- MCM backfilled the water line vault at SGS-57 and the small sump at SGS-58 with the steel slag tailings.
- See attached test sheet for compaction test results.
- See Daily reports of 4/6/16 for sketch of water main vault and Daily Report of 4/13/16 for small sump pit.
- No other backfill placed today.

COMMENTS:

INSPECTOR: Chris Jacobs

CENTURY CONTRACT NO: 151117.00

CENTURY ENGINEERING, INC.

NUCLEAR DENSITY TEST DATA SHEET

PROJECT: Sparrows Point Terminals - SGS-57 and 58 (small vaults) DATE: 4/14/2016
CLIENT: MCM
CEI PROJECT NO.: 151117.00
GAUGE SERIAL NO.: 24148 DENSITY: 1924
MOISTURE: 606

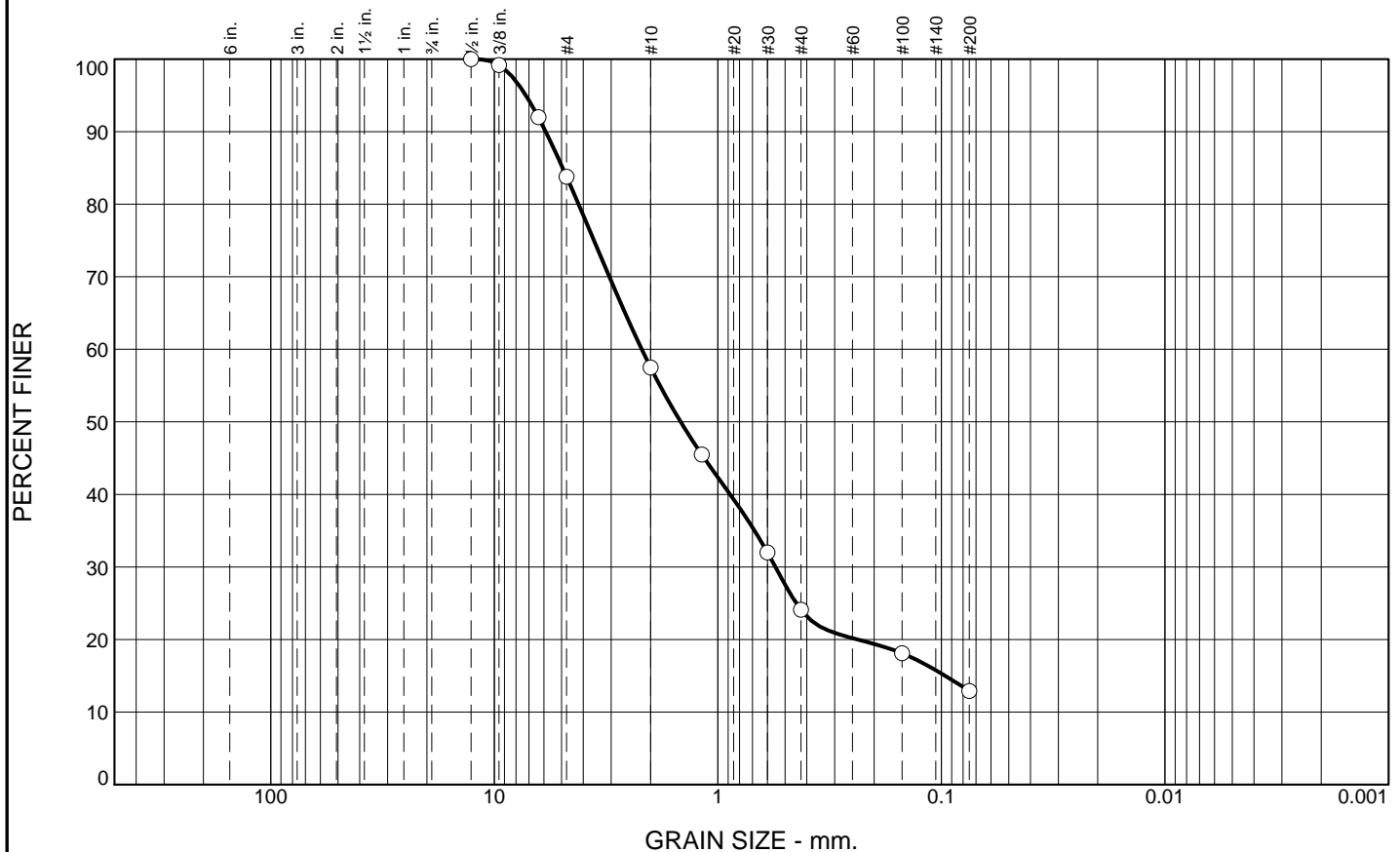
TEST NO	1-A	1-B	1-C	1-D	1-E	1-F	Grade	2-A	
LOCATION OR STATION	SGS-57 Water vault						→	SGS-58 3' Dia Sump	
OFFSET									
ELEVATION	-6.0	-5.3	-4.5	-3.0	-2.3	-1.5	Grade	Grade	
SOURCE DEPTH	6"	6"	6"	6"	6"	6"	6"	10"	
DENSITY COUNT	744	773	729	767	642	684	673	255	
WET DENSITY PCF	158.3	156.6	159.2	156.9	164.7	162.0	162.8	156.9	
MOISTURE COUNT	142	149	149	160	174	151	141	144	
MOISTURE CONTENT %	8.5	9.1	8.0	10.0	10.5	9.0	8.2	8.7	
DRY DENSITY PCF	145.9	143.5	146.1	142.7	149.0	148.7	150.4	144.3	
MAX DRY DENSITY PCF	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
OPT MOISTURE CONT. %	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	
% COMPACTION REQ'D	95	95	95	95	95	95	95	95	
% COMPACTION OBTAINED	97.3 Pass	95.7 Pass	97.4 Pass	95.1 Pass	99.4 Pass	99.1 Pass	100.3 Pass	96.2 Pass	

REMARKS: Fill was placed in 8" lifts and each lift compacted.

TECHNICIAN: C.Jacobs

CLIENT'S REPRESENTATIVE:

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	16.2	26.3	33.4	11.2	12.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
.375	99.2		
.25	92.0		
#4	83.8		
#10	57.5		
#16	45.5		
#30	32.0		
#40	24.1		
#100	18.1		
#200	12.9		

* (no specification provided)

Soil Description

Gray Steel Slag #10 Tailings (Sampled 3/23/16)

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 5.8832 D₈₅= 4.9425 D₆₀= 2.1911
D₅₀= 1.4666 D₃₀= 0.5531 D₁₅= 0.0963
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

Natural Moisture =8.8%

Source of Sample: Steel Slag Tailings (SGS-52 Backfill)
Sample Number: Bag

Date: 4/5/16

Century Engineering, Inc.

Client: MCM Management Corp.

Project: Sparrows Point Terminals-Subgrade Structures

Hunt Valley, MD

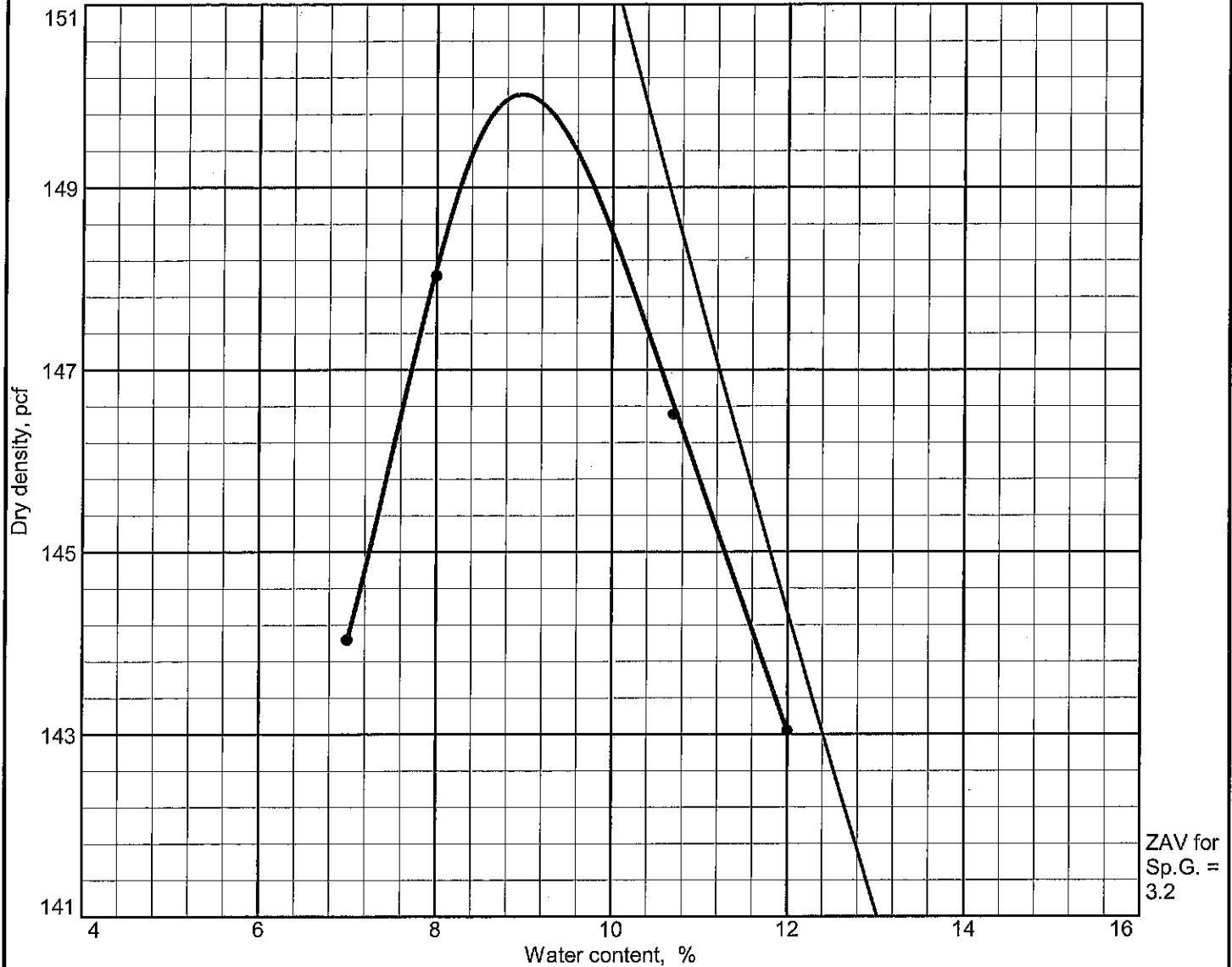
Project No: 151117.00

Figure

Tested By: United

Checked By: PAD

COMPACTION TEST REPORT



Test specification: AASHTO T 180 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SM	A-1-b			NV	NP	16.2	12.9

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 150.0 pcf Optimum moisture = 9.0 %	Gray Steel Slag #10 Tailings (Sampled 3/23/16)
Project No. 151117.00 Client: MCM Management Corp. Project: Sparrows Point Terminals-Subgrade Structures Source: Steel Slag Tailings (SGS-52) Sample No.: Bag	Remarks:
Century Engineering, Inc. Hunt Valley, MD	

Figure

APPENDIX D

Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-001-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 67.0 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.



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Engineers and Scientists
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Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-001-PZS

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 15.0 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-002-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 58.0 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-002-PZS

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 15.0 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):

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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-013-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/11/16

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): 58.2 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-013-PZS

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/11/16

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): 27.5	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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-014-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 50.2 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-014-PZS

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 26.5 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-016-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 58.2 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-016-PZS

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 17.1 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM-017-PZI

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): 24.5 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.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: B22-057-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): Brad Gehman

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 12.2 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): B22-057-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 abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: B22-161-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): Brad Gehman

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 12.0 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): B22-161-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 abandoned prior to the MDE directive to gauge piezometers a final time prior to abandonment.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: B22-163-PZ

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 10/10/16

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): Brad Gehman

Well Diameter: 1 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 23.5 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): B22-163-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. An excavation was subsequently performed at this location.



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Well/Piezometer Abandonment Form

Well/Piezometer ID: FM05-PZM004

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 3/7/18

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: 2 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 16.5 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.



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9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: FM05-PZM024

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B22

Abandonment Date: 3/7/18

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: 2 inch

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): 37.2 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

APPENDIX E



ARM Group Inc.

Earth Resource Engineers and Consultants

December 22, 2016

Mr. James Calenda
Project Manager
EnviroAnalytics Group (EAG)
1600 Sparrows Point Blvd.
Sparrows Point, Maryland

Re: Delineation and Excavation of PCB and
DRO Impacted Soil
Parcel B22 - Tradepoint Atlantic
Sparrows Point, Maryland
ARM Project 160443M-5

Dear Mr. Calenda:

Several locations were identified with exceedances of relevant screening criteria in soil for polychlorinated biphenyls (PCBs) and Diesel Range Organics (DRO) following the Parcel B22 Phase II Investigation at the Tradepoint Atlantic property. The locations of the soil screening criteria exceedances are indicated on **Figure 1**, which also shows the proposed development and environmental capping plan for Parcel B22 (Phase 1). The soil samples from the Phase II Investigation with PCB exceedances included B22-028-SB-1 (74.4 mg/kg) and B22-065-SB-1 (61 mg/kg). The soil samples with elevated DRO detections included B22-162-SB-1 (39,100 mg/kg), B22-163-SB-5 (8,400 mg/kg), B22-070-SB-1 (6,620 mg/kg), B22-148-SB-6 (6,670 mg/kg), and B22-152-SB-6 (6,610 mg/kg). Due to these exceedances, additional delineation and remedial excavation and off-site disposal of impacted material are required prior to the start of redevelopment activities. Per the *Response and Development Work Plan – Revision 3* dated October 7, 2016, soil samples were collected subsequent to excavation activities from each side wall (unless limited by concrete), as well as from the bottom of the excavation, at a minimum of one sample for every 2,000 square feet to confirm when all soils exceeding the soil screening criteria had been removed. If the excavation was limited, laterally or vertically, by concrete, the concrete was cleared of soil and visually inspected for evidence of oil staining.

This document provides a summary of delineation, excavation, and confirmation soil sampling for the required remedial actions. Associated information regarding the disposition of excavated

materials, and the required air monitoring during remedial actions, is also included. Contractors for delineation and excavation included Enterprise Network Resolutions Contracting, LLC (ENR), MCM Management Corp. (MCM), and GSI Mid-Atlantic Inc. (GSI). A photograph log for all of the excavation activities for PCB and DRO impacted soils in Parcel B22 is provided as **Attachment 1**.

Confirmation soil samples were submitted to Pace Analytical Services, Inc. (PACE) and analyzed for PCBs using USEPA Method 8082 or DRO using USEPA Method 8015B, as applicable. Sample containers, preservatives, and holding times for the sample analyses are listed in the Quality Assurance Project Plan (QAPP) Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times. Laboratory reports for confirmation samples are included as electronic attachments.

PCB Remedial Excavations

Delineation Procedure

Delineation activities associated with previously identified elevated PCB impacts were conducted between August 3 and August 29, 2016 for locations B22-028-SB and B22-065-SB. Following the identification of all utilities in the study area, continuous core soil samples were collected at designated distances (see below) from the location of each soil boring with a track-mounted Geoprobe® direct push rig. At each location, soil samples were collected at 1-foot intervals from 0-5 feet below ground surface (bgs). The samples from 0-1 foot bgs and 4-5 feet bgs were analyzed initially. The remaining intervals (1-2, 2-3, and 3-4 feet bgs) were analyzed if the shallow (0-1 feet bgs) and/or intermediate (4-5 feet bgs) soil samples had PCB concentrations greater than 50 mg/kg. After sampling had been concluded at a location, each hole was backfilled with bentonite chips and all down-hole soil sampling equipment was decontaminated in accordance with the procedures and methods referenced in Field SOP Number 016 provided in Appendix A of the QAPP.

B22-028-SB Delineation

The first round of delineation borings was completed on August 5, 2016 and was based on a grid with 25-foot spacing centered on the elevated PCB detection associated with B22-028-SB (**Figure 2**). During the field investigation, expansive sections of thick, reinforced concrete were encountered in several areas. Multiple attempts were made to collect soil samples from 0-5 feet bgs in the concrete covered locations; however, equipment refusal prevented these samples from being collected. Only samples located on the western side of the B22-028-SB delineation area were able to be collected, and therefore, only eight of the 16 proposed PCB delineation borings were completed within the delineation area. The successful delineation borings were completed to a total depth of 5 feet bgs. **Table 1** presents the results of the total PCB concentrations reported by the laboratory. Three new exceedances of the screening criteria were reported in the shallow soil samples collected from an historic courtyard to the west of B22-028-SB (B22-028C-SB-1, B22-028E-SB-1, and B22-028H-SB-1). Based on the additional detections at the edge of the delineation grid in excess of the screening criteria of 50 mg/kg, further assessment for PCBs was necessary in the vicinity of B22-028-SB.

On August 29, 2016, nine additional delineation borings were completed with a spacing of approximately 20 feet in areas with exposed soil present north and south of the courtyard to confirm the horizontal extent of elevated PCB impacts. Identical sampling procedures were used with this supplemental round of delineation sampling. Only B22-028O-SB-1, which was collected from in an isolated location bounded by concrete, had PCB concentrations above 50 mg/kg. This additional analytical data is presented in **Table 1**.

B22-065-SB Delineation

The first round of delineation borings was completed on August 3 and August 4, 2016. The delineation was based on a grid with 25-foot spacing around boring B22-065-SB (**Figure 3**). Analytical data from B22-064-SB, which is directly to the north of B22-065-SB, indicated that PCB concentrations were below the screening criteria of 50 mg/kg, and therefore, the grid was shifted to provide more extensive coverage to the south. Delineation borings were completed to a total depth of 5 feet bgs in accordance with the approved delineation procedure. **Table 2** presents the results of the total PCB concentrations reported by the laboratory for the delineation borings associated with B22-065-SB. No exceedances of the screening criteria at any depth (with the exception of the initial Phase II Investigation sample B22-065-SB-1) were observed in the first round of delineation borings; therefore, a second round of delineation borings was completed to define the horizontal extent of the potential PCB impacts around B22-065-SB.

On August 29, 2016, four additional delineation borings were completed with 10-foot spacing centered on B22-065-SB (**Figure 3**). Identical sampling procedures were used with this supplemental round of delineation sampling. This additional analytical data is also included in **Table 2**. Again, no exceedances of the screening criteria were observed at any depth in the second round of delineation borings; therefore, the lateral extents of possible PCB impacts were established for excavation.

B22-028-SB Excavation

The proposed excavation was designed to encompass the removal of all accessible impacted soil with PCB concentrations in excess of 50 mg/kg identified in the 0-1 foot bgs interval. The following excavations were completed: B22-028 Main, B22-028 South, and B22-028 East. These excavation areas, along with the locations of the PCB delineation soil borings, are included in **Figure 2**.

On September 15, 2016, the B22-028 Main excavation was completed to a depth of two feet bgs in order to ensure all PCB impacted material was removed from the historic open courtyard. During excavation activities, a concrete trench drain that ran along the east wall of the excavation was uncovered. The trench drain extended from the north and south walls of the excavation to a drop inlet located in the middle of the excavation. The drop inlet was approximately 12 feet deep with a discharge pipe located at the bottom that appeared to run to the north toward a Tin Mill Canal outfall. Also during excavation activities, heavily stained and black-colored material was encountered adjacent to the drop inlet that extended to the western excavation wall. Material was excavated from a 10 x 11 foot impacted area (located within the original excavation area) until all of the heavily stained material was removed and non-impacted material was encountered. The observed soil impacts resulted in the removal of an additional 3

feet of material from within the 10 x 11 foot area. In total, approximately 162 cubic yards of impacted soil and concrete were excavated from B22-028 Main and stockpiled in a designated area located southeast of the excavation.

Upon completion of the excavation, a total of three confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. Of the three confirmation samples, a grab sample was collected from the north sidewall while one composite sample was collected from the bottom of the excavation, and one composite sample was collected from the east sidewall. All sidewall samples were collected from approximately 1 foot below grade. No confirmation samples were collected along the south and west walls because these walls were entirely comprised of concrete. In lieu of collecting a concrete sample, a visual inspection of each concrete wall was completed, which indicated no potential PCB impacts and/or staining. PCB concentrations in excess of 50 mg/kg were not identified in any of the confirmation soil samples.

The B22-028 South and B22-028 East excavations, the extents of which were bounded by concrete, were completed on September 15, 2016. The B22-028 East excavation was centered on B22-028-SB, and the B22-028 South excavation was centered on B22-028O-SB (**Figure 2**). The vertical extent of each excavation was limited to two feet bgs as the PCB concentrations in excess of 50 mg/kg were limited to previously collected 0-1 foot bgs samples. Approximately 2.5 cubic yards of impacted material was removed from each excavation, yielding a total of 5 cubic yards for the B22-028 South and B22-028 East excavations. Once the excavations were completed, the sidewalls were identified as concrete; therefore, the walls were visually inspected, and no evidence of PCB impacts and/or staining was observed. A bottom confirmation sample was collected from each of these excavations.

The concentration of PCBs identified in the bottom soil confirmation sample from the B22-028 East excavation did not exceed 50 mg/kg, while the bottom soil confirmation sample from the B22-028 South excavation had a concentration PCBs of 54.9 mg/kg. Due to this exceedance, approximately 0.5 cubic yards of additional soil was removed on October 4, 2016 to an approximate depth of three feet bgs where potential PCB stained concrete was encountered. A jackhammer attachment was used to break up the concrete in order to collect a sample of the concrete for laboratory analysis. The concrete sample had a PCB concentration of 1 mg/kg (J-flagged). The analytical results from the confirmation soil samples are presented in **Table 3**.

B22-065-SB Excavation

On September 15, 2016, the B22-065 excavation was completed to 2 feet bgs in order to ensure all PCB impacted material was removed. An excavator equipped with a jackhammer attachment was required to break up the concrete slab at grade. Once the concrete was broken up, concrete

and soil potentially impacted by PCBs were removed from the excavation. No PCB impacts and/or staining were observed during the excavation activities. Approximately 7.4 cubic yards of impacted material were removed from this excavation.

Upon completion of the excavation, a total of five confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. A grab sample was collected from the bottom and each of the four sidewalls. All sidewall samples were collected from approximately 1 foot below grade. None of the confirmation soil samples contained PCB concentrations in excess of 50 mg/kg. The excavation boundary and locations of confirmation samples, along with the locations of the PCB delineation soil borings, are included on **Figure 3**. The analytical results from the confirmation soil samples are presented in **Table 3**.

Excavated Material Handling and Disposal

The designated staging area for PCB impacted materials consisted of two stockpile locations, one for soil and one for concrete. Both of the stockpiles were underlain with a polyethylene layer on the ground surface, with multiple straw-bales used as berms, and covered with a polyethylene layer and weighted down. Two composite samples (one soil and one concrete) were collected using materials from multiple locations throughout each stockpile and submitted for TCLP analysis to facilitate proper disposal. The laboratory reports have been included as electronic attachments. The excavated PCB impacted soil was loaded into dump trucks for disposal at Wayne Disposal Inc. Site #2 Landfill, Belleville, Michigan. The waste manifests are included as **Attachment 2**.

Air Monitoring

In accordance with the Parcel B22 Response and Development Work Plan dated August 30, 2016 (the governing document at the time of fieldwork), to limit worker exposure to contaminants borne on dust and windblown particulates, dust control measures were to be implemented if dust concentrations exceeded 3.0 mg/m³. To ensure that this threshold was not exceeded during the PCB excavation activities, a real-time dust meter (ThermoElectron Corporation Personal Data RAM 1000AN) was used to monitor the concentration of dust generated while excavating impacted material. Daily calibration of the real-time dust meter was conducted in accordance with the QAPP to ensure the accuracy of the equipment. Dust concentrations were recorded in the field book by field personnel every 15 minutes during intrusive activities. No dust concentration in exceedance of 3.0 mg/m³ was noted during the PCB excavation activities.

DRO Excavations

Delineation Procedure

Delineation activities were not conducted prior to the initiation of excavation activities for locations identified with elevated concentrations of DRO. Field personnel directed the excavations based on field indicators of contamination including visual observations of staining, olfactory screening (odors), and elevated Photoionization Detector (PID) readings. Soil removal continued until the boundaries and the bottom of the excavation showed no evidence of contamination (unless otherwise noted). Once the excavation boundaries were established, analytical confirmation samples were collected to determine the need for further action.

B22-162-SB and B22-163-SB Excavation

From September 27 through October 10, 2016, each excavation was completed to a depth of nine feet bgs to remove all DRO impacted material associated with soil borings B22-162-SB and B22-163-SB. An excavator equipped with a jackhammer attachment was required to break up the concrete slab at grade. Once the concrete was broken up, the concrete and potential DRO impacted soil was removed from the subsurface. Concrete not visually impacted by DRO was stockpiled adjacent to the excavation. Approximately 675 cubic yards of DRO impacted material were removed during the excavation activities. The excavated DRO impacted soil was loaded into dump trucks for direct hauling to the on-site industrial landfill (Greys Landfill).

During excavation activities, a total of 10 confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. Nine grab samples were collected from the sidewalls at various depths (ranging from 3-8 feet bgs), and one grab sample was collected from the bottom of the excavation. Samples from various depths ranging from 3-8 feet bgs were collected due to field observations and the varying levels (0-1 bgs and 4-5 bgs) of the DRO concentrations exceeding the soil criteria in the Phase II soil borings. None of the confirmation soil samples contained DRO concentrations in excess of 6,200 mg/kg. The extents of the excavation, and the location of each confirmation sample, are included on **Figure 4**. The analytical results from the confirmation soil samples are presented in **Table 4**.

B22-070-SB Excavation

DRO impacted material was excavated from various depths to remove all impacted material from the B22-070-SB location on October 3, October 4, and October 6, 2016. The deepest section of the excavation was nine feet bgs, and a bench was created to approximately three feet bgs adjacent to the northern boundary of the Main Excavation due to a concrete pad encountered near the surface. Minimal impacts were observed along this concrete pad; therefore, there was

no justification to break up the pad and extend the excavation horizontally to the north (beyond the pad) or vertically to ten feet bgs. A Western Excavation was completed beyond an existing concrete pad (the western boundary of the Main Excavation) to confirm the horizontal extent of DRO impacted soil due its presence along the western wall of the Main Excavation to a depth of five feet bgs. This excavation was completed to six feet bgs around the northern and western walls of the existing concrete pad, and no DRO impacted soil was observed. Also, due to the presence of a utility pipe that was encountered along the eastern wall of the Main Excavation area, a confirmation sample could not be collected. A small Eastern Excavation was subsequently completed to facilitate the collection of a confirmation sample to the east. This additional soil removal extended the excavation approximately nine feet beyond the pipe. No physical impacts were observed within the Eastern Excavation. In total, approximately 405 cubic yards of DRO impacted material was removed from the excavations associated with B22-070-SB. The excavated DRO impacted soil was loaded into dump trucks for direct hauling to the on-site industrial landfill (Greys Landfill).

Upon completion of the excavation, a total of five confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. Two grab samples were collected from the bottom and a single grab sample was collected from each sidewall (north, east, and west). Due to the complexity of the former building slab, a south sidewall confirmation sample was not able to be collected; all other sidewall samples were collected from between 4 and 6 feet bgs. None of the confirmation soil samples contained DRO concentrations in excess of 6,200 mg/kg. The extents of the excavation and the locations of confirmation samples are included on **Figure 5**. The analytical results from the confirmation soil samples are presented in **Table 4**.

B22-148-SB Excavation

DRO impacted material was excavated from 9.5 feet bgs to remove all impacted material from the B22-148 location on October 4, 2016. An excavator equipped with a jackhammer attachment was required to break up slag and a trench drain located at the northwest corner of the excavation. Impacted material was removed once the slag and concrete were broken up. Approximately 282 cubic yards of DRO impacted material were removed from this excavation. Note that this excavation was completed in a “U” shape around a concrete pad in the vicinity of soil boring B22-148-SB.

Upon completion of the excavation, a total of six confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. Three grab samples were collected from the bottom, and a single grab sample was collected from each exterior sidewall (north, east, and west). All sidewall samples were collected from a depth of approximately 6 feet bgs. None of the confirmation soil samples contained DRO concentrations

in excess of 6,200 mg/kg. The extents of the excavation and the locations of confirmation samples are included on **Figure 6**. The analytical results from the confirmation soil samples are presented in **Table 4**.

B22-152-SB Excavation

DRO impacted material was excavated from nine feet bgs to remove all impacted material from the B22-152 location on September 4 to 12, 2016. An excavator equipped with a jackhammer attachment was required to break up a reinforced concrete pad and slag throughout the entire excavation. A soil berm located around the perimeter of the excavation was removed, and since no impacts were observed within this material, it was stockpiled adjacent to the excavation. DRO impacts were observed in soil during the excavation. Once the slag and concrete were broken up, the slag and concrete not visually impacted by DRO was stockpiled adjacent to the excavation, and the impacted soil was removed. Based on field observations, the excavation was extended as necessary to ensure the removal of all impacted soil. Approximately 1,720 cubic yards of DRO impacted soil were removed from this excavation and loaded into dump trucks for direct hauling and disposal at the on-site industrial landfill (Greys Landfill).

Upon completion of the excavation, a total of seven confirmation soil samples were collected throughout the excavation from both the bottom and sidewalls of the excavation. Two grab samples were collected from the bottom, and a grab sample was collected from each sidewall (north, south, east, west and the northeast extension). All sidewall samples were collected from 6 feet bgs. None of the confirmation soil samples contained DRO concentrations in excess of 6,200 mg/kg. The extents of the excavation and the locations of confirmation samples are included on **Figure 7**. The analytical results from the confirmation soil samples are presented in **Table 4**.

Excavated Material Handling and Disposal

The excavated DRO impacted soil was loaded into dump trucks for direct hauling to the on-site industrial landfill (Greys Landfill).

Air Monitoring

In accordance with the Parcel B22 Response and Development Work Plan dated August 30, 2016 (the governing document at the time of fieldwork), air monitoring was completed during the DRO excavation activities. A hand-held PID (MiniRae 3000), was utilized to monitor the air for volatile organic compound (VOC) vapors. If sustained vapor concentrations were measured at or above 10 parts per million (ppm) for 15 minutes in the breathing zone, work would have immediately ceased until such time as appropriate action was established. No sustained readings

for VOCs were observed during the DRO excavation activities. Daily calibration of the PID with 100 ppm Isobutylene was completed per the QAPP to ensure accurate readings by the equipment. A field judgment call was made that dust monitoring was not required during the DRO excavation activities because no visual indications of dust were observed by field personnel and most of the soil being excavated was slag or clay material.

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

Respectfully Submitted,
ARM Group Inc.



Eric S. Magdar
Senior Geologist

Attachments:

Table 1 – B22-028-SB PCB Analytical Results

Table 2 – B22-065-SB PCB Analytical Results

Table 3 – PCB Confirmation Sample Results

Table 4 – DRO Confirmation Sample Results

Figure 1 – Parcel B22 PCB & DRO Excavation Locations

Figure 2 – B22-028-SB Excavation

Figure 3 – B22-065-SB Excavation

Figure 4 – B22-162-SB & B22-163-SB Excavation

Figure 5 – B22-070-SB Excavation

Figure 6 – B22-148-SB Excavation

Figure 7 – B22-152-SB Excavation

Attachment 1 – Excavation Photograph Log

Attachment 2 – PCB Waste Manifests

Electronic Attachment – PCB Soil Confirmation Sample Laboratory Reports

Electronic Attachment – DRO Soil Confirmation Sample Laboratory Reports

Electronic Attachment – TCLP Sample Laboratory Reports

TABLES

Table 1 - B22-028-SB PCB Analytical Results										
Depth (ft) Boring ID	1	2	3	4	5					
B22-028A-SB-1	20.8									
B22-028A-SB-5								0.0723		
B22-028B-SB-1	28									
B22-028B-SB-5								0.277		
B22-028C-SB-1	61.9									
B22-028C-SB-2		0.526								
B22-028C-SB-3			0.058	J						
B22-028C-SB-4					0.0562	U				
B22-028D-SB-1	1.7									
B22-028D-SB-5								0.0622	U	
B22-028E-SB-1	203									
B22-028E-SB-2		2.01								
B22-028E-SB-3			0.062	U						
B22-028E-SB-4					0.059	U				
B22-028E-SB-5								0.0492	J	
B22-028F-SB-1	7.27									
B22-028F-SB-5								0.0603	U	
B22-028G-SB-1	38									
B22-028G-SB-5								0.0668	U	
B22-028H-SB-1	159									
B22-028H-SB-2		33.2								
B22-028H-SB-3			0.117							
B22-028H-SB-4					0.058	U				
B22-028H-SB-5								0.0558	U	
B22-028I-SB-1	0.758									
B22-028I-SB-5								0.0532	U	
B22-028J-SB-1	0.53									
B22-028J-SB-5								0.055	U	
B22-028K-SB-1	37.6									
B22-028K-SB-5								0.0622	U	
B22-028L-SB-1	0.0553	U								
B22-028L-SB-5								0.0632	U	
B22-028M-SB-1	4.48									
B22-028N-SB-1	0.0686									
B22-028O-SB-1	311									
B22-028O-SB-2		0.5726								
B22-028O-SB-3			0.46							
B22-028O-SB-4					0.116					
B22-028O-SB-5								0.121		
B22-028P-SB-1	31.9									
B22-028P-SB-5								0.0917		
B22-028Q-SB-1	3.787									
B22-028Q-SB-5								0.0668	U	
B22-028R-SB-1	9.94									
B22-028R-SB-5								0.0623	U	
B22-028S-SB-1	1.0048									
B22-028S-SB-5								0.0572	U	
B22-028T-SB-1	4.887									
B22-028T-SB-5								0.0576	U	

Notes:

All reported values are in units of mg/kg.

Red cells indicate PCB exceedance of excavation criteria (50 mg/kg)

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

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

Table 2 - B22-065-SB
PCBs Analytical Results

Depth (ft) Boring ID	0.5		1		2		3		4		5	
B22-065D-SB-1			0.4036									
B22-065D-SB-4									0.285			
B22-065E-SB-1			2.4182									
B22-065E-SB-4									0.154			
B22-065F-SB-0.5	0.2094											
B22-065F-SB-1			0.0609	U								
B22-065F-SB-2					0.0582	U						
B22-065G-SB-1			0.3055									
B22-065G-SB-5												
B22-065H-SB-1			0.713									
B22-065H-SB-3							0.0712	U				
B22-065I-SB-1			0.0557	U								
B22-065I-SB-5											0.4142	
B22-065J-SB-1			0.0604	U								
B22-065J-SB-5											0.0629	U
B22-065K-SB-1			0.619									
B22-065K-SB-5											0.0608	U
B22-065L-SB-1			0.0603	U								
B22-065L-SB-5											0.0655	U
B22-065M-SB-1			0.0667									
B22-065M-SB-5											0.0578	U
B22-065N-SB-1			0.0565	U								
B22-065N-SB-5											0.062	U
B22-065O-SB-1			0.0588	U								
B22-065O-SB-5											0.0586	U
B22-065P-SB-1			0.0613	U								
B22-065Q-SB-1			0.0615	U								
B22-065Q-SB-5											0.0593	U
B22-065R-SB-1			0.0606	U								
B22-065R-SB-5											0.0642	U

Notes:

All reported values are in units of mg/kg.

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

Table 3 - PCB Confirmation Sample Results				
Confirmation Sample ID	Sample Date	Analyte	Result (mg/kg)	Flag
B22-028 MAIN BOTTOM	09/15/2016	Total PCBs	1.34	
B22-028 MAIN NORTH SIDEWALL	09/15/2016	Total PCBs	32.4	
B22-028 MAIN EAST SIDEWALL	09/15/2016	Total PCBs	47.9	
B22-028 SOUTH EXCAVATION BOTTOM	09/15/2016	Total PCBs	54.9	
B22-028 SOUTH BOTTOM	10/6/2016	Total PCBs	1.0	J
B22-028 EAST EXCAVATION BOTTOM	09/15/2016	Total PCBs	2.73	
B22-065 BOTTOM	09/15/2016	Total PCBs	0.532	
B22-065 SOUTH SIDEWALL	09/15/2016	Total PCBs	0.0603	U
B22-065 NORTH SIDEWALL	09/15/2016	Total PCBs	0.0596	U
B22-065 EAST SIDEWALL	09/15/2016	Total PCBs	0.0708	U
B22-065 WEST SIDEWALL	09/15/2016	Total PCBs	0.0605	U

Notes:

Red cells indicate PCB exceedance of excavation criteria (50 mg/kg).

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

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

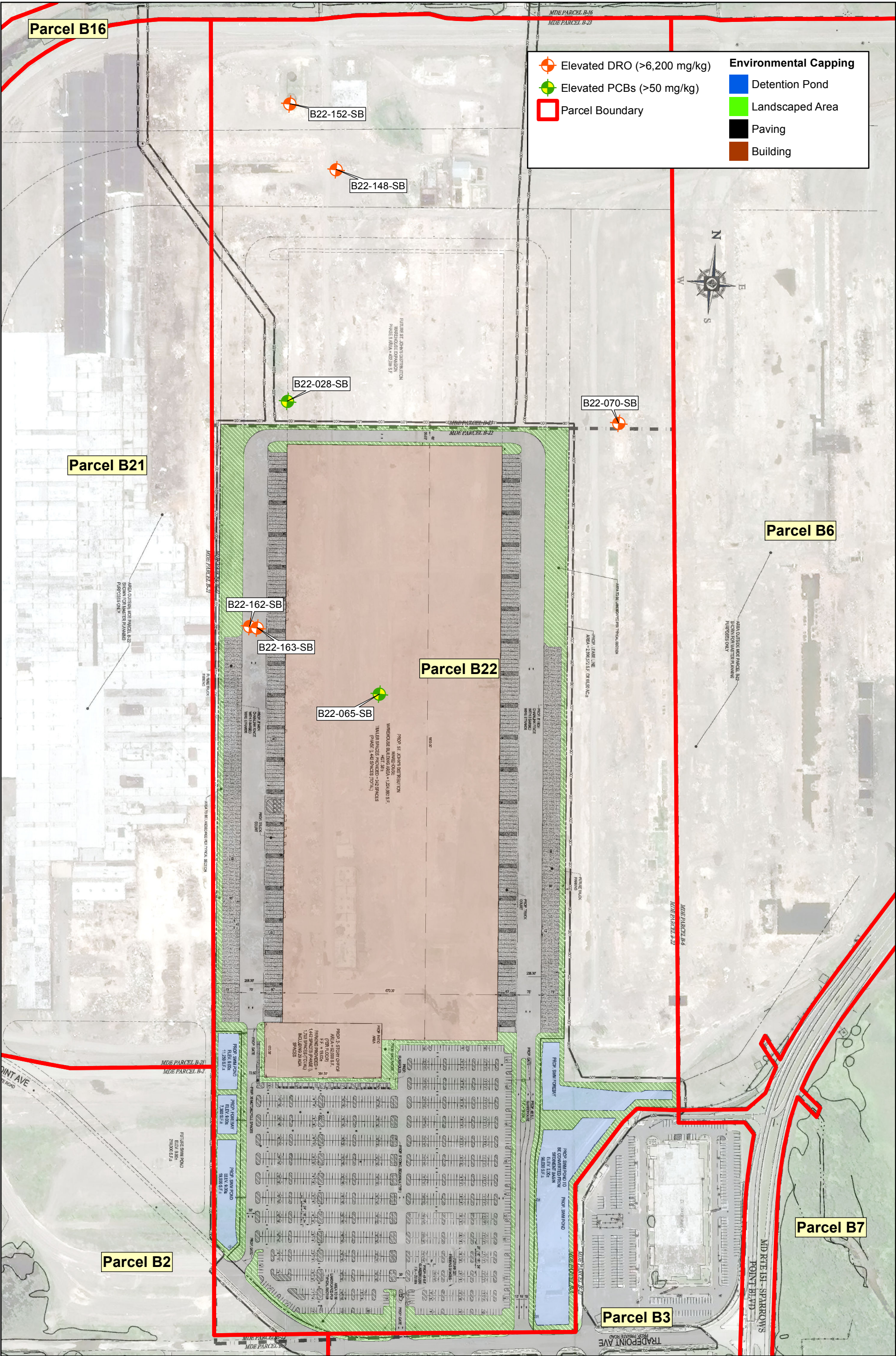
Table 4 - DRO Confirmation Sample Results				
Confirmation Sample ID	Sample Date	Analyte	Result (mg/kg)	Flag
B22-070A-SB-10	10/03/2016	Diesel Range Organics	21.8	
B22-070-North Side	10/04/2016	Diesel Range Organics	2	
B22-070-East Side	10/06/2016	Diesel Range Organics	4	J
B22-070-West Bottom	10/06/2016	Diesel Range Organics	5.7	J
B22-070-West Side	10/06/2016	Diesel Range Organics	6.3	J
B22-148 East Bottom	10/04/2016	Diesel Range Organics	519	
B22-148 East Side	10/04/2016	Diesel Range Organics	59.2	
B22-148 North Bottom	10/04/2016	Diesel Range Organics	698	
B22-148 North Wall	10/04/2016	Diesel Range Organics	279	
B22-148 West Bottom	10/04/2016	Diesel Range Organics	526	
B22-148 West Side	10/04/2016	Diesel Range Organics	493	
B22-152-6 E Wall	10/12/2016	Diesel Range Organics	1,700	
B22-152-6 N Wall	10/12/2016	Diesel Range Organics	1,720	
B22-152-6 NE Wall	10/12/2016	Diesel Range Organics	2,060	
B22-152-6 South Wall	10/07/2016	Diesel Range Organics	223	
B22-152-6 West Wall	10/07/2016	Diesel Range Organics	2,690	
B22-152-9 NW Bottom	10/12/2016	Diesel Range Organics	2,690	
B22-152-9 SE Bottom	10/12/2016	Diesel Range Organics	3,150	
B22-162A-SB-6	10/03/2016	Diesel Range Organics	12	
B22-162B-4	09/28/2016	Diesel Range Organics	96.6	
B22-162C-4	09/28/2016	Diesel Range Organics	12.1	
B22-162D-6	09/28/2016	Diesel Range Organics	290	
B22-162E-8	09/28/2016	Diesel Range Organics	4.6	J
B22-162F-5	09/28/2016	Diesel Range Organics	14	
B22-162G-SB-4	10/03/2016	Diesel Range Organics	4.7	J
B22-162H-SB-5	10/03/2016	Diesel Range Organics	13.2	
B22-162I-SB-3	10/03/2016	Diesel Range Organics	3.6	J
B22-163-8.5 Bottom	10/10/2016	Diesel Range Organics	6	J

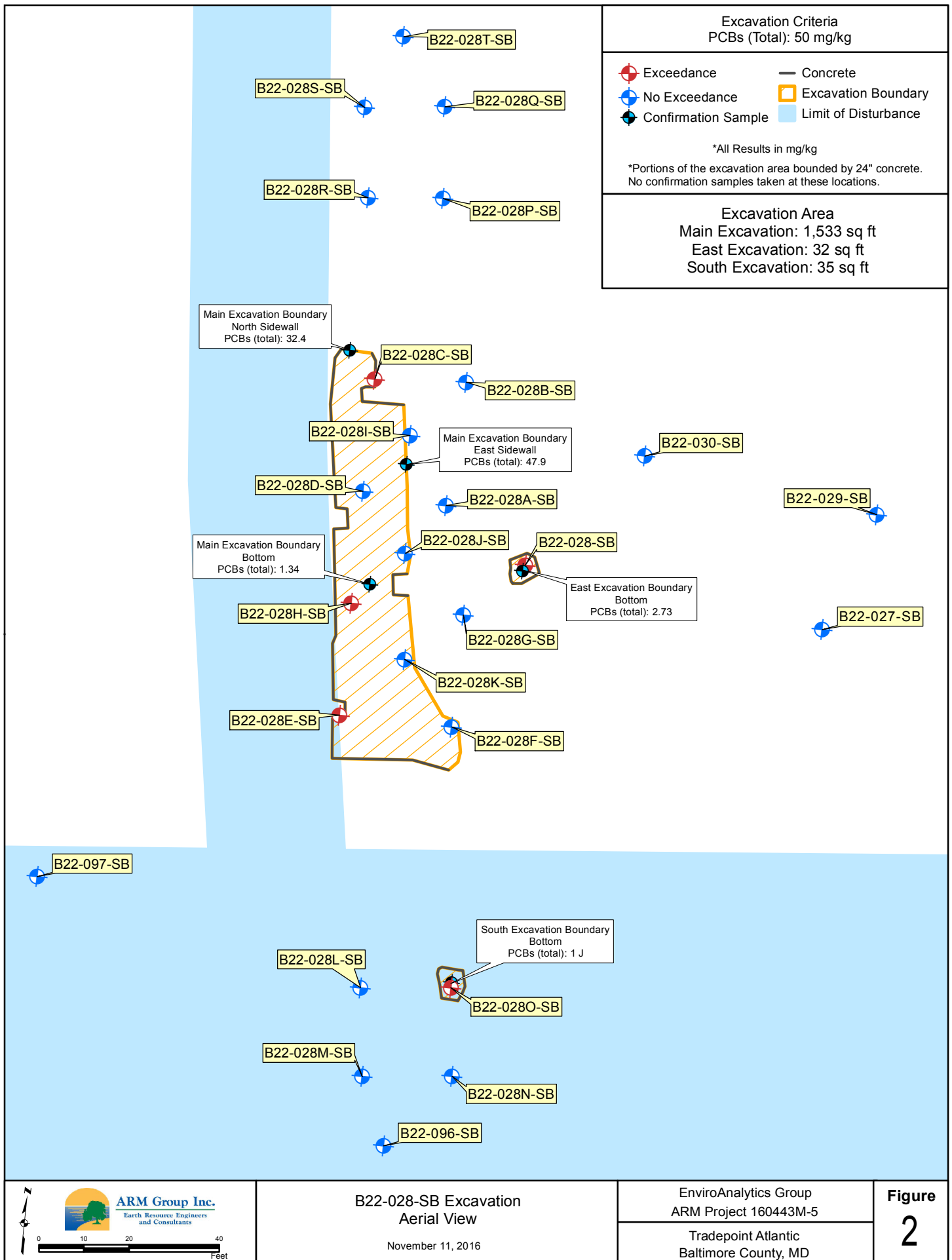
Notes:

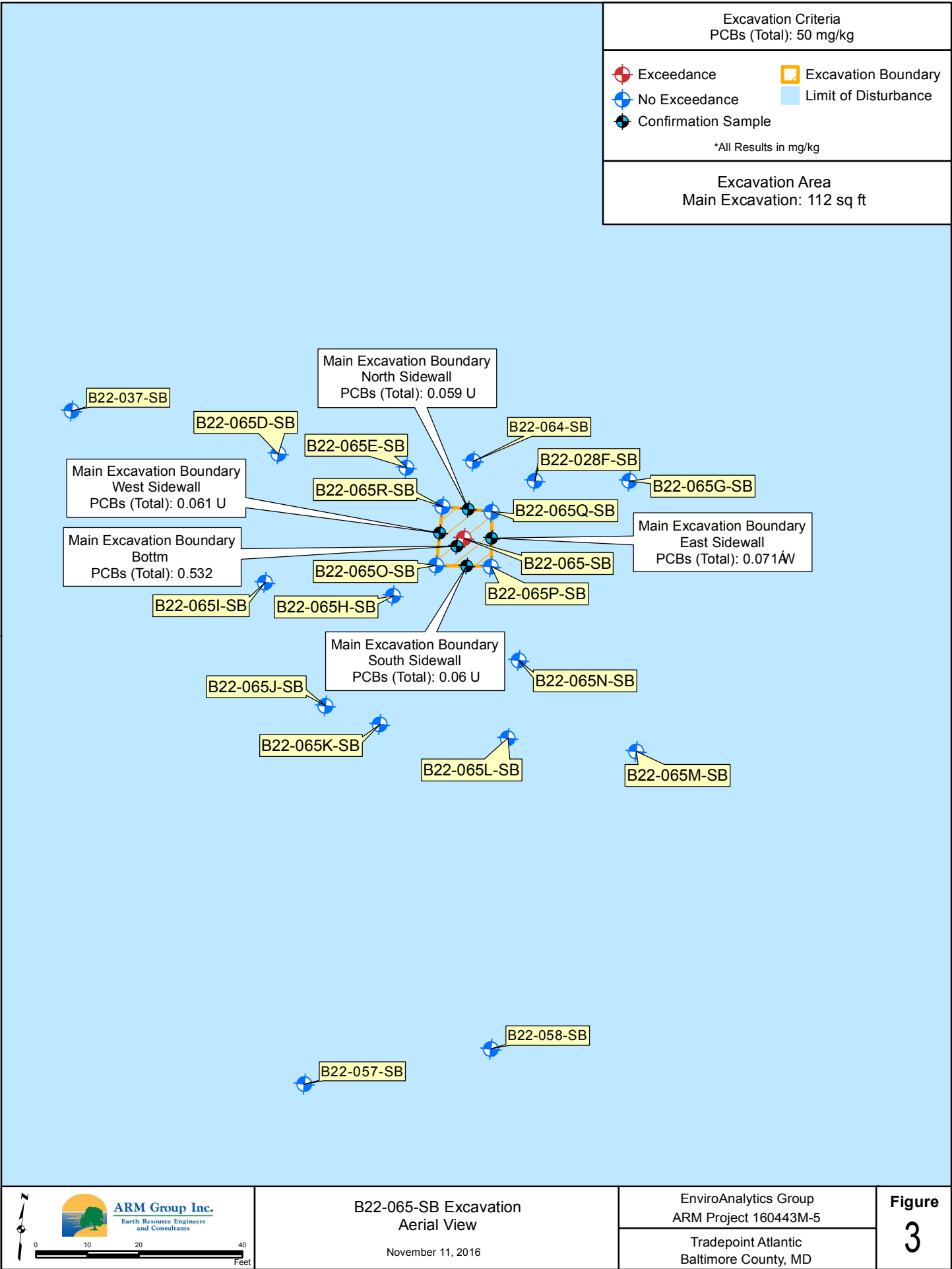
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

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

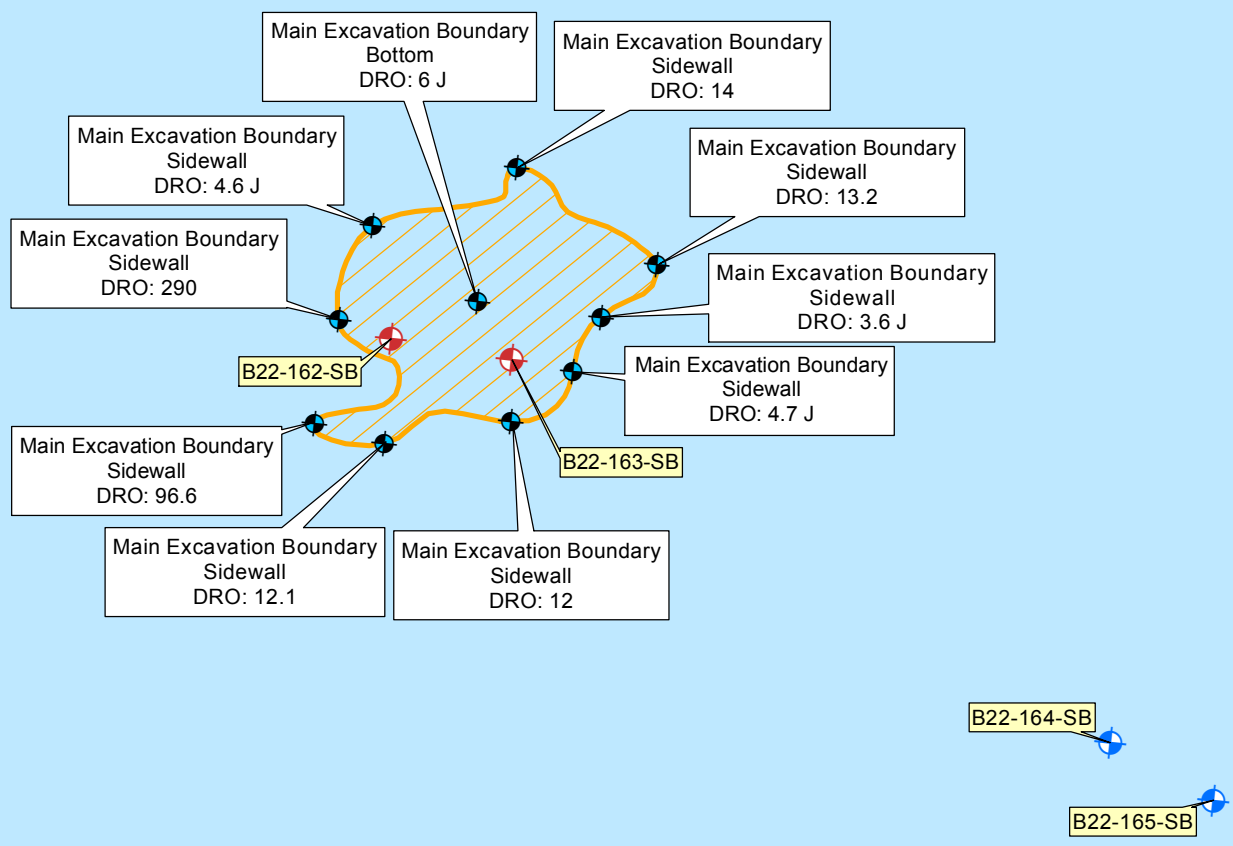
FIGURES



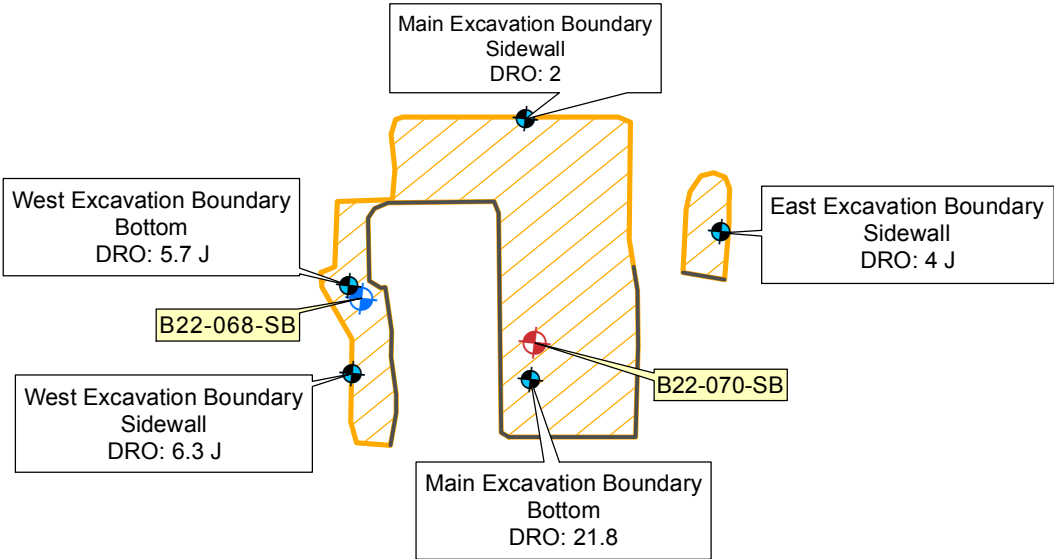




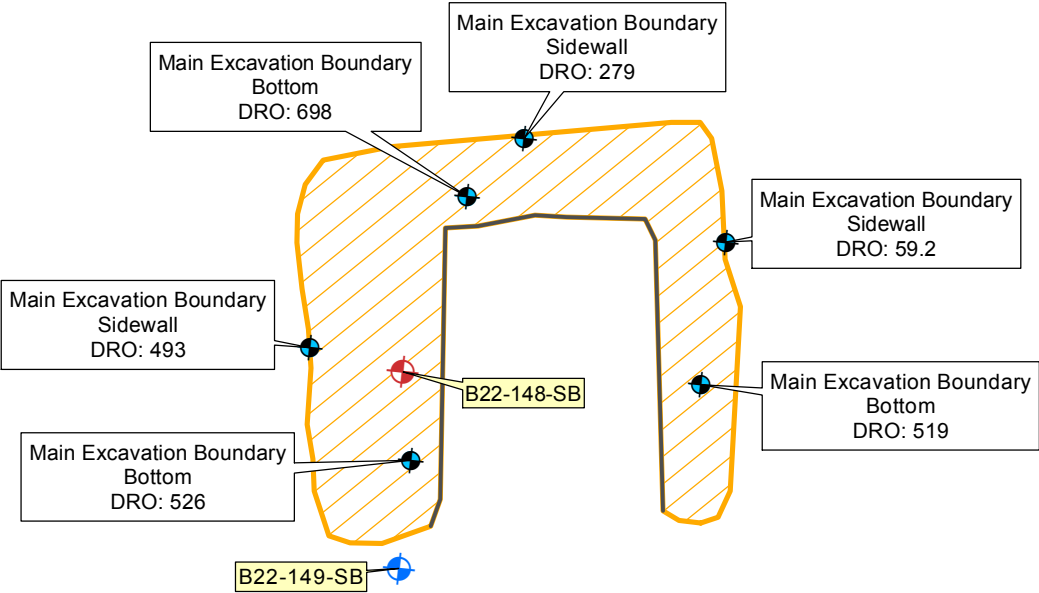
Excavation Criteria DRO: 6,200 mg/kg	
<div> <div></div> Exceedance </div> <div> <div></div> No Exceedance </div> <div> <div></div> Confirmation Sample </div>	<div> <div></div> Excavation Boundary </div> <div> <div></div> Limit of Disturbance </div>
*All Results in mg/kg	
Excavation Area Main Excavation: 2,025 sq ft	

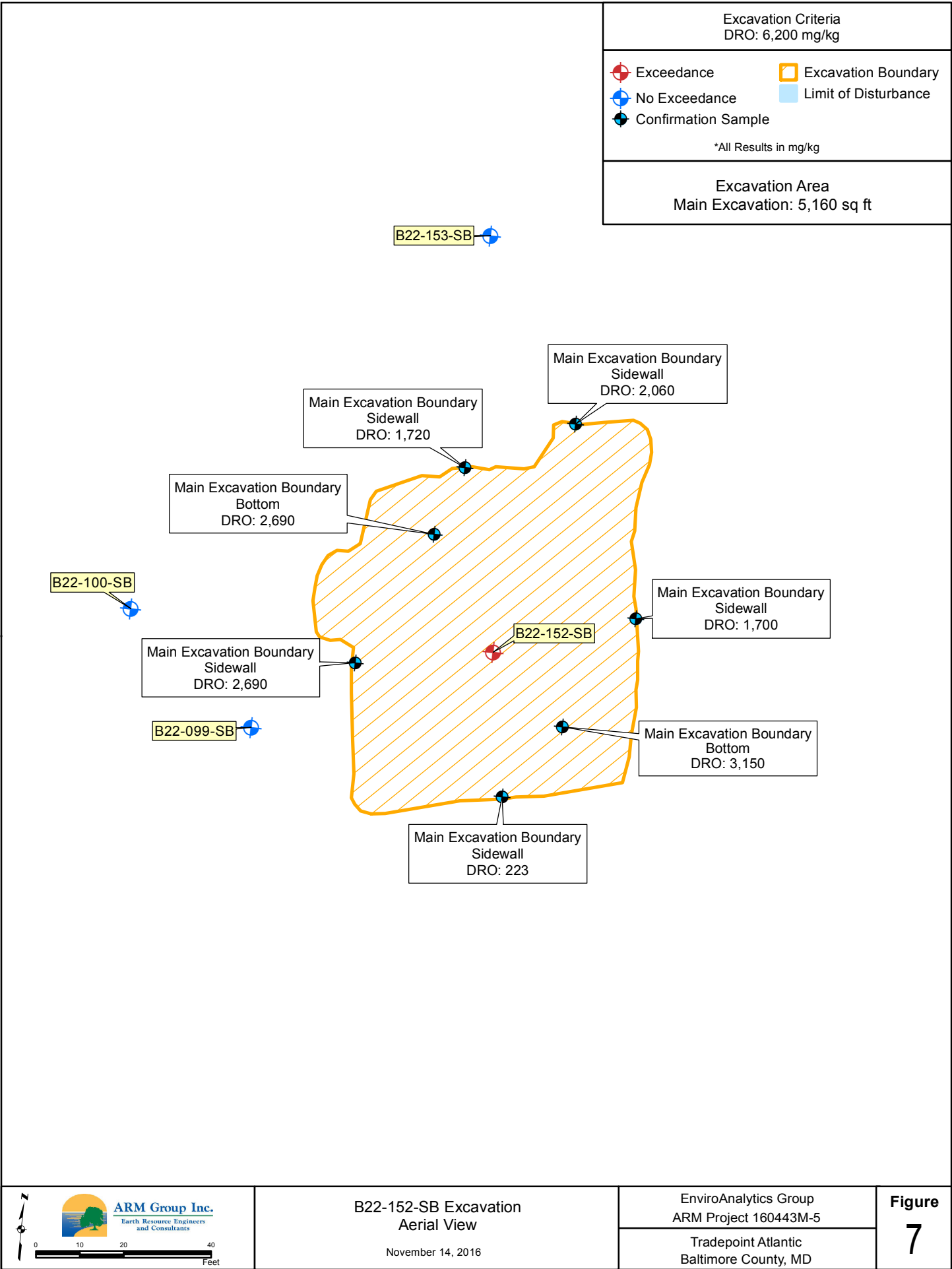


Excavation Criteria DRO: 6,200 mg/kg	
<div> <div> <div> <div></div> <div>Exceedance</div> </div> <div> <div></div> <div>No Exceedance</div> </div> <div> <div></div> <div>Confirmation Sample</div> </div> </div> <div> <div> <div></div> <div>Concrete</div> </div> <div> <div></div> <div>Excavation Boundary</div> </div> <div> <div></div> <div>Limit of Disturbance</div> </div> </div> </div>	
<p>*All Results in mg/kg</p> <p>*Portions of the excavation area bounded by 24" concrete. No confirmation samples taken at these locations.</p>	
<p>Excavation Area</p> <p>Main Excavation: 1,228 sq ft</p> <p>East Excavation: 98 sq ft</p> <p>West Excavation: 245 sq ft</p>	



Excavation Criteria DRO: 6,200 mg/kg	
<div> <div> <div></div> <div>Exceedance</div> </div> <div> <div></div> <div>No Exceedance</div> </div> <div> <div></div> <div>Confirmation Sample</div> </div> </div> <div> <div>—</div> <div>Concrete</div> </div> <div> <div></div> <div>Excavation Boundary</div> </div> <div> <div></div> <div>Limit of Disturbance</div> </div>	
<p>*All Results in mg/kg</p> <p>*Portions of the excavation area bounded by 24" concrete. No confirmation samples taken at these locations.</p>	
<p>Excavation Area</p> <p>Main Excavation: 802 sq ft</p>	





Attachment 1

Parcel B22: B22-065 Excavation
Photograph Log
Sparrows Point, Maryland



B22-065 excavation limits and use of hammer attachment to break up the first 8-10" of the reinforced concrete pad and removal of impacted material.



B22-065 excavation completed to a depth of 2 feet below ground surface. Four sidewall confirmation samples and one bottom confirmation sample was collected.

Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland



B22-028 East excavation limits prior to break up of the first 8-10" of the reinforced concrete pad and removal of impacted material.



B22-028 East excavation completed to a depth of 2 feet below ground surface. All four sidewalls composed of either concrete, with no visible staining, and/or large gravel therefore only a bottom confirmation sample was taken.

**Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland**



B22-028 South excavation limits prior to removal of impacted material.



B22-028 South excavation completed to a depth of 2 feet below ground surface. Three of the four sidewalls composed of concrete, with no visible staining, and the northern portion of this excavation had no sidewall therefore only a bottom confirmation sample was taken.

**Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland**



B22-028 Main excavation limits prior to removal of impacted material.



Excavation activities along the northern section of the B22-028 Main excavation.

Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland



Impacted material observed in the middle of the Main excavation adjacent to the trench manhole. An additional three feet of impacted material was removed.



A view of the north wall of the additional impacted material observed in the middle of the Main excavation adjacent to the trench manhole.

Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland



View of the french drain observed within the Main excavation. The french drain extends from the north wall to the south wall within the excavated area.



View of the french drain connected to the manhole facing north.

Parcel B22: B22-028 Excavation
Photograph Log
Sparrows Point, Maryland



View of the east wall of the completed Main Excavation facing northwest.



View of the south and east wall of the completed Main Excavation facing southeast.

Parcel B22: PCB IDW
Photograph Log
Sparrows Point, Maryland



View of the PCB stockpiled material area setup prior to placement of impacted material. Poly is setup along the ground surface with hail-bails used as berms.



View of the covered PCB stockpiles at the conclusion of the PCB excavations. Soil and concrete materials were segregated and stockpiled separately.

Parcel B22: B22-070 Excavation
Photograph Log
Sparrows Point, Maryland



View of the B22-070 excavation, facing south, prior excavation activities.



View of impacted material observed along the east wall of the main excavation area.

Parcel B22: B22-070 Excavation
Photograph Log
Sparrows Point, Maryland



View of impacted material observed along the south wall of the main excavation area.



View of impacted material and the utility pipe observed along the east wall of the main excavation area. Highly impacted material was observed between the utility pipe and the bottom of the slab above it.

Parcel B22: B22-070 Excavation
Photograph Log
Sparrows Point, Maryland



View of impacted material observed along the west wall of the main excavation area.



View of concrete box located in the northwest corner of the main excavated area. The benched area, approximately three feet below grade, is seen beyond the end of the concrete box.

**Parcel B22: B22-070 Excavation
Photograph Log
Sparrows Point, Maryland**



View of impacted material observed along the concrete box. The non-impacted benched area is located in front of the concrete box.



View of the location of the east excavation area facing south.

Parcel B22: B22-070 Excavation
Photograph Log
Sparrows Point, Maryland



View of the west excavation, facing south, to confirm the horizontal extent of impacts.



View of the west excavation, facing north, to confirm the horizontal extent of impacts.

Parcel B22: B22-162 & B22-163 Excavation
Photograph Log
Sparrows Point, Maryland



View of the completed B22-162 & B22-163 excavation facing east.



View of the east impacted material along the bottom in the northeast corner.

Parcel B22: B22-162 & B22-163 Excavation
Photograph Log
Sparrows Point, Maryland



View of product observed on the bottom of the excavation.



View of the impacted excavated material.

Parcel B22: B22-162 & B22-163 Excavation
Photograph Log
Sparrows Point, Maryland



View of the west wall of the completed excavation.



View of the north wall of the completed excavation.

Parcel B22: B22-162 & B22-163 Excavation
Photograph Log
Sparrows Point, Maryland



View of the west wall of the completed excavation.



View of the east wall of the completed excavation.

Parcel B22: B22-162 & B22-163 Excavation
Photograph Log
Sparrows Point, Maryland



View of the south wall of the completed excavation.

Parcel B22: B22-148 Excavation
Photograph Log
Sparrows Point, Maryland



View of the excavation activities at B22-148 excavation.



View of the french drain observed in the northwest corner of the excavation.

Parcel B22: B22-148 Excavation
Photograph Log
Sparrows Point, Maryland



View of the MCM excavator with the jack hammer attachment used to break-up the french drain and slag.



View of the western side interior wall.

Parcel B22: B22-148 Excavation
Photograph Log
Sparrows Point, Maryland



View of the eastern side of the excavation and interior east wall.



View of the northern side of the excavation and north interior wall.

**Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland**



View of the proposed B22-152 excavation area encompassing the former tank's pad.



View of significantly impacted material, facing north, located adjacent to a potential fill pipe for the former tank.
This area is located along the western wall of the excavation.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the MCM excavator with the jackhammer attachment used to break-up the slag throughout the excavation.



View of the material under the tank pad slag. Minor impacts were observed in this area. No impacts were observed on the tank's concrete pad and support ring.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the MCM and ENR equipment completing excavation activities.



View of the northeast corner extension, due to significant impacts, and product observed on the bottom of the excavation.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the west wall extension due to significant impacts observed. The product pipe was routed through this area.



View of the south wall of the completed excavation.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the north wall of the completed excavation facing north.



View of the east wall of the completed excavation facing east.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the west wall of the completed excavation facing northwest.



View of the completed excavation facing southeast.

Parcel B22: B22-152 Excavation
Photograph Log
Sparrows Point, Maryland



View of the completed excavation facing north.

Attachment 2

SPARROWS POINT
TSCA SOILS - US ECOLOGY
Load Log

Load	Date	Ticket	Ton	Total
1	10/31/2016	1270535	21.67	
2	10/31/2016	1270538	22.87	
3	10/31/2016	1270554	26.14	
4	11/1/2016	1270607	22.69	
5	11/2/2016	1270658	24.11	
6	11/2/2016	1270674	25.27	
7	11/2/2016	1270675	23.79	
8	11/3/2016	1270716	22.51	
Total				189.05

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270535
EQ Account #: 11931
Manifest / BOL: 016675154JJK
Transporter: HORWITH
Date: 10/31/2016
Time In: 9:00 AM
Time Out: 10:19 AM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	21.670 TONS
	Hazardous Surcharge Ton	21.670 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 74,220 Tare: 30,880 Net: 43,340	
2	Wayne Disposal Host Community Agreement Royalty Fee	21.670 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 74,220 Tare: 30,880 Net: 43,340	

NO SALVAGING ON PREMISES

#2

Form Approved OMB No. 2050-0039

Please print or type. (Form designed for use on 8 1/2 (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016675154 JJK		
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131			Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219				
Generator's Phone:			U.S. EPA ID Number				
6. Transporter 1 Company Name Horwith Trucks Inc			U.S. EPA ID Number PAD 146714B78				
7. Transporter 2 Company Name			U.S. EPA ID Number				
8. Designated Facility Name and Site Address WAYNE DISPOSAL INC. SITE #2 LANDFI 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633				
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt/Vol	13. Waste Codes
	X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	001	DT	EST 23.00	kg	PCB1
14. Special Handling Instructions and Additional Information J165130W01 / PCB Soil DSP Label							
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/Officer's Printed/Typed Name James Calenda			Signature 		Month Day Year 11 01 28 16		
TRANSPORTER	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit:		Date leaving U.S.:		
	Transporter signature (for exports only):						
DESIGNATED FACILITY	17. Transporter Acknowledgment of Receipt of Materials		Signature 		Month Day Year 11 01 28 16		
	Transporter 1 Printed/Typed Name Clayton Wheland		Signature		Month Day Year		
DESIGNATED FACILITY	18. Discrepancy						
	18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	Actual weight + 1970DK roller Patrick Whithurst and ENR2cm. 11/12/16						
	18b. Alternate Facility (or Generator)						
	Facility's Phone:						
18c. Signature of Alternate Facility (or Generator)							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. PCB		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 Chris Gissom			Signature 		Month Day Year 11 01 27 16		

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as Feb Special
and specified on Manifest # 0111175154111, Line Item 1 has been landfilled on
Oct 31, Zellin accordance with all local, state and federal regulations by:

Wayne Disposal, Inc
(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111
Telephone: 1-800-KWALITY (592-5489)
Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature:

Paula Bostman

CERTIFICATE OF DISPOSAL

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

Form #REC-FM-030-BEL

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5/1/15

Invoice: 2633354

Receipt 03-00 1270535

Cod COD #3

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270538
EQ Account #: 11931
Manifest / BOL: 016674000JJK
Transporter: HORWITH
Date: 10/31/2016
Time In: 9:09 AM
Time Out: 10:22 AM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	22.870 TONS
	Hazardous Surcharge Ton	22.870 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 76,100 Tare: 30,360 Net: 45,740	
2	Wayne Disposal Host Community Agreement Royalty Fee	22.870 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 76,100 Tare: 30,360 Net: 45,740	

NO SALVAGING ON PREMISES

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved, OMB No. 2050-0839

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016674000 JJK
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1050 DE PERES RD SUITE 203 ST LOUIS, MO 63131 Generator's Phone:			Generator's Site Address (if different than mailing address) 1800 SPARROWS POINT BLVD SPARROWS POINT, MD 21219		
6. Transporter 1 Company Name Horwith Trucks Inc.			U.S. EPA ID Number PA0146714878		
7. Transporter 2 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFI 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633		
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt/Vol
X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	001 DT		Est 3300	KPCB1
14. Special Handling Instructions and Additional Information J185130WDI / PCB Sol					
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/Offeror's Printed/Typed Name James Calenda		Signature <i>[Signature]</i>		Month Day Year 11/0 28/16	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Michael NEFF Signature <i>[Signature]</i> Month Day Year 11/0 28/16 Transporter 2 Printed/Typed Name Signature Month Day Year					
18. Discrepancy					
18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection actual weight 20791 kgs per Patrick Whitworth at ENR Com. 11/12/16					
18b. Alternate Facility (or Generator) 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. PCB	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 Chris Corissam Signature <i>[Signature]</i> Month Day Year 11/0 31/16					

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as Petroleum
and specified on Manifest # 014674000 HA, Line Item 1 has been landfilled on
08/01, Take in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc
(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111
Telephone: 1-800-KWALITY (592-5489)
Fax: 1-800-KWALFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature:

Wayne Disposal, Inc

CERTIFICATE OF DISPOSAL

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From #REC-FM-030-BEL The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270554
EQ Account #: 11931
Manifest / BOL: 016675153JJK
Transporter: HORWITH
Date: 10/31/2016
Time In: 10:31 AM
Time Out: 12:11 PM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	26.140 TONS
	Hazardous Surcharge Ton	26.140 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 83,000 Tare: 30,720 Net: 52,280	
2	Wayne Disposal Host Community Agreement Royalty Fee	26.140 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 83,000 Tare: 30,720 Net: 52,280	

NO SALVAGING ON PREMISES

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016675153 JJK	
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131			Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219			
6. Transporter 1 Company Name HARWITH TRUCKS INC			U.S. EPA ID Number PA-D-146714878			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFI 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633			
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	1 DT	22,000	K	PCB1
14. Special Handling Instructions and Additional Information J165130WDI / PCB Soil SSD: 10-20-16						
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/Officer's Printed/Typed Name James Calenda		Signature 		Month Day Year 10/28/16		
16. International Shipments	<input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____					
17. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name MICHAEL KABACINSKI		Signature 		Month Day Year 10/28/16		
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. PCB		2.		3.		
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 Chris Gonsen		Signature 		Month Day Year 10/31/16		

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as PCB Solid
and specified on Manifest # 0164553111, Line Item 9 has been landfilled on
Oct 31, 2014 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc
(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111
Telephone: 1-800-KWALITY (592-5489)
Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: _____



US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From #REC-FM-030-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270607
EQ Account #: 11931
Manifest / BOL: 016675151JJK
Transporter: HORWITH
Date: 11/01/2016
Time In: 8:36 AM
Time Out: 9:17 AM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	22.690 TONS
	Hazardous Surcharge Ton	22.690 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 77,060 Tare: 31,680 Net: 45,380	
2	Wayne Disposal Host Community Agreement Royalty Fee	22.690 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 77,060 Tare: 31,680 Net: 45,380	

428

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3646	4. Manifest Tracking Number 016675151 JJK
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131			Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219		
6. Generator's Phone:			U.S. EPA ID Number PAJ 146 714 878		
7. Transporter 1 Company Name Hornwith Trucks Inc.			U.S. EPA ID Number		
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFI 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633		
9a. HMA	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	1 DT	EST 220	PCB1	
14. Special Handling Instructions and Additional Information J165130WDI / PCB Soil 050 6-28-16					
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/Officer's Printed/Typed Name James Calenda			Signature 		Month Day Year 10/28/16
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
17. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Glenn Hawk			Signature 		Month Day Year 10/31/16
Transporter 2 Printed/Typed Name			Signature		Month Day Year
18. Discrepancy					
18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection actual weight 26627 kg Super Patrick Whitworth - ENR Com BB11/3114 date correct 26627 kg Super Patrick Whitworth - ENR Com BB11/3114					
18b. Alternate Facility (or Generator)			U.S. EPA ID Number		
Facility's Phone:			Month Day Year		
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. PCB	2.	3.	4.		
20. Designated Facility Owner or Operator. Certification of receipt of hazardous materials covered by the manifest except as noted in item 19a.					
Printed/Typed Name Chris Grissom			Signature 		Month Day Year 11/1/16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as Perpetual
and specified on Manifest # 0602555111, Line Item 1 has been landfilled on
Nov 1, 2011 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc
(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111

Telephone: 1-800-KWALITY (592-5489)

Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: _____

Shirley B. Burtner



CERTIFICATE OF DISPOSAL

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From #REC-FM-03D-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270658
EQ Account #: 11931
Manifest / BOL: 016675150JJK
Transporter: HORWITH
Date: 11/02/2016
Time In: 8:02 AM
Time Out: 8:38 AM

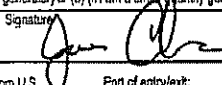
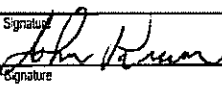

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	24.110 TONS
	Hazardous Surcharge Ton	24.110 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 79,380 Tare: 31,160 Net: 48,220	
2	Wayne Disposal Host Community Agreement Royalty Fee	24.110 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 79,380 Tare: 31,160 Net: 48,220	

NO SALVAGING ON PREMISES

4/21

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved: OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016675150 JJK
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131		Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219			
6. Generator's Phone:					
6. Transporter 1 Company Name HORWATH TRUCKS INC		U.S. EPA ID Number P90146714878			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFI 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111		U.S. EPA ID Number MID 048 090 633			
Facility's Phone: (800) 592-5489					
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity
	X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	01 DT		E5 20000
	2				
	3				
	4				
13. Waste Codes PCB1					
14. Special Handling Instructions and Additional Information J165130WDT / PCB Soil					
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/Officer's Printed/Typed Name James Calenda		Signature 		Month Day Year 11 10 28 16	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
17. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name John Kraum		Signature 		Month Day Year 11 11 16	
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:					
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)					
1. PCB		2.		3.	
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 Mike Sorel		Signature 		Month Day Year 11 12 16	

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as PCB waste
and specified on Manifest # 0166757504116, Line Item 1 has been landfilled on
April 2, 2011 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc

(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111

Telephone: 1-800-KWALITY (592-5489)

Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: _____



US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From WREC-FM-030-BEL

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5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270674
EQ Account #: 11931
Manifest / BOL: 016675152JJK
Transporter: HORWITH
Date: 11/02/2016
Time In: 11:45 AM
Time Out: 12:49 PM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	25.270 TONS
	Hazardous Surcharge Ton	25.270 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 83,240 Tare: 32,700 Net: 50,540	
2	Wayne Disposal Host Community Agreement Royalty Fee	25.270 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 83,240 Tare: 32,700 Net: 50,540	

TK 25

Please print or type. (Form designed for use on 8 1/2 (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016675152 JJK
5. Generator's Name and Mailing Address ENVIRO ANALYTICS GROUP 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131			Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219		
6. Generator's Phone:			U.S. EPA ID Number PAD146714878		
7. Transporter 1 Company Name Horwith TRUCKS Inc			U.S. EPA ID Number		
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFILL 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633		
GENERATOR	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
			No.	Type	12. Unit Wt/Vol
	X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	201	DT	2800K
					13. Waste Codes PCB1
14. Special Handling Instructions and Additional Information J185130WDT/PCB Soil SSD: 11-1-16					
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/Officer's Printed/Typed Name James Calenda			Signature 		Month Day Year 11/01/16
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
17. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Clayton Wheland			Signature 		Month Day Year 11/01/16
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					
18b. Alternate Facility (or Generator) Manifest Reference Number: 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. PCB		2.		3.	
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 Chris Gibson			Signature 		Month Day Year 11/12/16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as PCB waste
and specified on Manifest # 016675524-ULC, Line Item 1 has been landfilled on
April 2, 2010 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc

(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111

Telephone: 1-800-KWALITY (592-5489)

Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: _____

**CERTIFICATE OF DISPOSAL**

From #REC-FM-030-BEL

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270675
EQ Account #: 11931
Manifest / BOL: 016673980JJK
Transporter: HORWITH
Date: 11/02/2016
Time In: 11:48 AM
Time Out: 12:53 PM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	23.790 TONS
	Hazardous Surcharge Ton	23.790 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 79,640 Tare: 32,060 Net: 47,580	
2	Wayne Disposal Host Community Agreement Royalty Fee	23.790 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 79,640 Tare: 32,060 Net: 47,580	

NO SALVAGING ON PREMISES

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016673980 JJK
5. Generator's Name and Mailing Address 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131			Generator's Site Address (if different than mailing address) 1800 SPARROWS POINT BLVD SPARROWS POINT, MD 21219		
6. Generator's Phone: Horwith Trucks Inc			U.S. EPA ID Number PA0146714878		
7. Transporter 1 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address WAYNE DISPOSAL, INC. SITE #2 LANDFILL 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489			U.S. EPA ID Number MID 048 090 633		
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.
X	1. RQ, UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	001	DT	23,000	kg
	2.				
	3.				
	4.				
13. Waste Codes PCB1					
14. Special Handling Instructions and Additional Information J105130WDI / PCB Soil Unique container id _____ Storage start date 10/31/16					
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 252.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.					
Generator's/Offeror's Printed/Typed Name James Calender		Signature 		Month Day Year 11 11 16	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____					
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Chris Grinnell Signature 					
Transporter 2 Printed/Typed Name Michael Neri		Signature 		Month Day Year 11 11 16	
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: _____ U.S. EPA ID Number _____					
18b. Alternate Facility (or Generator) Facility's Phone: _____					
18c. Signature of Alternate Facility (or Generator) Month Day Year 11 11 16					
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. PCB 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 Jonathan Evans Signature 					
Month Day Year 11 11 16					

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as LeBeda
and specified on Manifest # 016173450116, Line Item 1 has been landfilled on
Nov 2, 2014 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc

(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111

Telephone: 1-800-KWALIFY (592-5489)

Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: David Bartholmew

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From #REC-FM430-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENTERPRISE NETWORK RESOLUTIONS
874 PINEY HOLLOW ROAD
P O BOX 70
WINSLOW, NJ 08095

Receipt ID: 1270716
EQ Account #: 11931
Manifest / BOL: 016675149JJK
Transporter: HORWITH
Date: 11/03/2016
Time In: 7:45 AM
Time Out: 8:21 AM

Line	Description Generator	Qty. Unit
1 - 1	J165130WDI - PCB Soil	22.510 TONS
	Hazardous Surcharge Ton	22.510 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 76,060 Tare: 31,040 Net: 45,020	
2	Wayne Disposal Host Community Agreement Royalty Fee	22.510 TONS
	MDD053945432 ENVIRO ANALYTICS GROUP	
	Gross: 76,060 Tare: 31,040 Net: 45,020	

NO SALVAGING ON PREMISES

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MDD 053 945 432	2. Page 1 of 1	3. Emergency Response Phone 314-620-3056	4. Manifest Tracking Number 016675149 JJK
5. Generator's Name and Mailing Address 1650 DE PERES RD SUITE 203 ST LOUIS, MO 63131		Generator's Site Address (if different than mailing address) 1600 SPARROWS POINT BLVD SPARROWS POINT, MD 21219			
6. Generator's Phone:		6. Transporter 1 Company Name Horwith Trucks Inc			
7. Transporter 2 Company Name		U.S. EPA ID Number PA0146714878			
8. Designated Facility Name and Site Address 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111 Facility's Phone: (800) 592-5489		U.S. EPA ID Number MID 048 090 633			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type	11. Total Quantity	12. Unit Wt/Vol	13. Waste Codes
X	UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGII, ERG #171	001 DT 25,000		K	PCB1
14. Special Handling Instructions and Additional Information J185130WDI / PCB Soil					
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/Officer's Printed/Typed Name James Calender		Signature		Month Day Year 11 2 16	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit:		Date leaving U.S.:	
17. Transporter Acknowledgment of Receipt of Materials		Signature		Month Day Year 11 2 16	
Transporter 1 Printed/Typed Name Chris Grinnell		Signature		Month Day Year 11 2 16	
Transporter 2 Printed/Typed Name		Signature		Month Day Year	
18. Discrepancy					
18a. Discrepancy Indication Space <input checked="" type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
18b. Alternate Facility (or Generator) Return weight to 20464 Kish per Patrick Whitworth at ENRCOR. 11/13/16					
Facility's Phone:		U.S. EPA ID Number			
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)					
PCB	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 Tanya Mowatt		Signature		Month Day Year 11 03 16	

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as Asbestos
and specified on Manifest # 010020749111, Line Item 1 has been landfilled on
Nov 3, 2010 in accordance with all local, state and federal regulations by:

Wayne Disposal, Inc
(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111
Telephone: 1-800-KWALITY (592-5489)
Fax: 1-800-KWALIFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: *Paulo Roberto*

CERTIFICATE OF DISPOSAL

US ECOLOGY 49350 N. I-94 SERVICE DRIVE BELLEVILLE, MICHIGAN 48111

From #REC-FM-030-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

5/1/15



ARM Group Inc.

Earth Resource Engineers and Consultants

February 21, 2017

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

Re: Delineation and Excavation of PCB and DRO
Impacted Soil – Parcel B22
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

On behalf of EnviroAnalytics Group, LLC (EAG), ARM Group Inc. (ARM) is pleased to provide responses to comments received from the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) in emails dated January 17, 2017. This letter documents the updates provided for the previous submission (Revision 0 dated December 22, 2016). All major revisions to the Delineation and Excavation of PCB and DRO Impacted Soil document and attachments are identified herein.

Comments:

1. *Sample B22-028C-SB-5 is not included in the table. All other delineation borings with elevated PCB concentrations were analyzed for 1' and 5' samples. Was this sample left off the table or was a 5' depth sample not collected?*

A soil sample was collected from a sample interval of 4-5' on August 5, 2016. This sample appears to have been damaged or lost in transit by the laboratory. As noted in Laboratory Analysis Report 30192338, sample B22-028C-SB-5 was received on August 5, 2016 by Pace Analytical Services Inc. (Pace-Greensburg). As noted on page 11, there were no additional comments reported for sample B22-028C-SB-5. The samples collected on August 5, 2016 were then sent by Pace-Greensburg to Pace Analytical Services Inc. (Pace-Schenectady) via FedEx; samples were received by Pace-Schenectady on August 10, 2016. As noted on page 113 and 115 (Receipt Report 16080229) of the Laboratory Analysis Report, "no volume for sample B22-028C-SB-5" was received by Pace-Schenectady. It is important to note that sample B22-028C-SB-4, collected from sample interval of 3-4' from the same boring, was received and analyzed with no detections of PCBs reported from this depth.

2. *Laboratory Analytical Data: After reviewing the electronic attachments it has been determined that lab data from delineation sampling and TCLP testing are missing. Please provide these lab data sheets for review.*

Laboratory reports have been included on the CD provided with this letter report.

3. *A utility line is depicted directly west of the Main PCB Excavation area. The highest concentrations of PCB's were detected near the western boundary of this excavation. Sidewall sampling of the western wall could not be collected because of a concrete slab. In addition, delineation borings did not extend west of the delineation locations B22-028E-SB and B22-028H-SB. Although the reason for not extending delineation locations west of those two elevated PCB locations, it is assumed that the concrete deterred additional delineation. Please confirm that this is the case. Excavation in this area could potentially uncover PCB contamination. Please provide specific details for the planned utility line, including depths and a description of the concrete in this area, if known.*

Correct, PCB delineation did not extend further west due to concrete.

The Limit of Disturbance for the Parcel B22 Development Area and the location of the associated utility lines have been updated in the Site Development Plans: 90% Submission. In the 90% submission, the easement and stormwater line have been shifted further west of the PCB delineation and excavation area. Relevant figures from the 90% Submission have been included as electronic attachments. In the 90% Submission, a 12-inch Fire Line is located in the northern portion of the Development Area, and a 30-inch Stormwater Line is located along the new boundary of the northwest easement. The 031 – Final Grading Plan figure displays an overview of the Development Area with markers indicating cross section profiles of the proposed utility lines. EX-6 to J-1 is the segment that corresponds to the 30"-inch Stormwater Line, and J-1 to J-2 is the segment that corresponds to the 12-inch Fire Line. Figure 113 – Stormdrain Profiles displays the detailed profiles of segments EX-6 to J-1 and J-1 to J-2.

Two delineation borings (B22-028L-SB and B22-028O-SB) overlap with the proposed 12-inch Fire Line. Two samples were collected from soil boring B22-028L-SB (0-1' bgs and 4-5' bgs), and PCBs were not detected in either sample; indicating PCBs are not present at this location. Total PCBs were detected at 311 mg/kg at B22-028O-SB-1; therefore, excavation was completed at sample location B22-028O-SB to 2 feet bgs. It was determined that the PCB impact at B22-028O-SB was inside of a concrete stairwell/ramp. All impacted material was removed at this location. A bottom confirmation sample was collected and PCBs (total) was detected at 1 mg/kg. The proposed utility line is proposed at a depth of 2 ft +/- and all delineation borings completed confirm that PCBs (if present) are at concentrations of 1 mg/kg or less in the vicinity of the utility line.



4. *Table 3: Depths of bottom and sidewall samples should be included in this table.*

The sample collection depths for the bottom and sidewall samples at B22-028-SB and B22-065-SB have been included in Table 3.

5. *Composite sampling is not appropriate when conducting confirmatory sampling of contaminated soil excavations. Additional grab sampling is not required at this time, since the excavation extended to delineation borings that were sampled at 1' and 5' soil depths. However, please note that grab samples are useful in determining if the extend of excavation is sufficient. Composite samples are not acceptable for this purpose.*

Future confirmation sampling will consist of grab samples only.

6. *TPH/DRO excavations: Was any petroleum-contaminated water pumped out of excavations where was pooled and product was observed (noted in several site photos)? If so, provide all details related to this activity. If not, explain.*

A slight sheen, indicating possible product, was observed at excavation B22-162/163 immediately after excavation activities concluded. Petroleum contaminated water was not pumped out of this location prior to backfilling due to the insignificant amount of product observed. Location B22-152 had a small amount of product floating on top of the pooled water at the bottom of the extended excavation area immediately after excavation activities concluded. On February 2, 2017, ARM revisited this excavation area and no visible product was observed. Removal activities for pooled product in excavation B22-152 are not necessary.

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

Respectfully submitted,
ARM Group Inc.



Eric S. Magdar
Senior Geologist



T. Neil Peters, P.E.
Vice President



TABLES

Table 3 - PCB Confirmation Sample Results

Confirmation Sample ID	Sample Depth (ft)	Sample Date	Analyte	Result (mg/kg)	Flag
B22-028 MAIN BOTTOM	5	09/15/2016	Total PCBs	1.34	
B22-028 MAIN NORTH SIDEWALL	2.5	09/15/2016	Total PCBs	32.4	
B22-028 MAIN EAST SIDEWALL	2.5	09/15/2016	Total PCBs	47.9	
B22-028 SOUTH EXCAVATION BOTTOM	2	09/15/2016	Total PCBs	54.9	
B22-028 SOUTH BOTTOM	1	10/6/2016	Total PCBs	1.0	J
B22-028 EAST EXCAVATION BOTTOM	1	09/15/2016	Total PCBs	2.73	
B22-065 BOTTOM	2	09/15/2016	Total PCBs	0.532	
B22-065 SOUTH SIDEWALL	1	09/15/2016	Total PCBs	0.0603	U
B22-065 NORTH SIDEWALL	1	09/15/2016	Total PCBs	0.0596	U
B22-065 EAST SIDEWALL	1	09/15/2016	Total PCBs	0.0708	U
B22-065 WEST SIDEWALL	1	09/15/2016	Total PCBs	0.0605	U

Notes:

Red cells indicate PCB exceedance of excavation criteria (50 mg/kg).

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

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

APPENDIX F

November 21, 2018

Mr. Pete Haid
Tradepoint Atlantic
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

10975 Guilford Road, Suite A
Annapolis Junction, MD 20701
Phone (410) 880-4788
Fax (410) 880-4098
www.hcea.com

RE: Notice of Completion of Remedial Actions
Sparrows Point – Parcel B22 - 1 (Under Armour Parcel)
Baltimore County, Maryland
HCEA Project Number 16325B

Dear Mr. Haid:

Hillis-Carnes Engineering Associates, Inc. (HCEA) is pleased to provide this Notice of Completion of Remedial Actions (Notice) for Parcel B22 – 1 (Under Armour) in the Sparrows Point area of Baltimore County, Maryland (Site).

In conjunction with HCEA's environmental services at the Site, HCEA was provided with the Response and Development Work Plan for Area B: Parcel 22 - 1 (Revision 5 – March 28, 2017; updated March 30, 2017), hereafter referred to as the RDWP. Based on observations made during HCEA's environmental monitoring at the Site, to the best of our knowledge, understanding, and belief, the environmental cap installed at the Site (e.g., pavement thickness, use of geotextile fabric, VCP-approved clean fill thickness) was installed in general accordance with the RDWP, with the following exceptions. The area occupied by the retention basin that is southeast of the on-site building is no longer part of the Site as defined in this Notice, as this area is now considered to be part of Area B, Sub-Parcel B6-1. In addition, a portion of the concrete floor slab in the kitchen area of the on-site building has been temporarily capped with a plastic liner and plywood anchored to the concrete floor.

This Notice has been prepared for the exclusive use of the Client pursuant to the agreement between the Client and HCEA, dated October 25, 2016, in accordance with generally accepted industry 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 Notice by any other person is unauthorized.

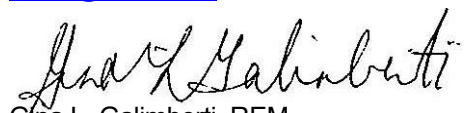
HCEA appreciates the opportunity to have been of assistance on this project. If you have any questions regarding this Notice, please feel free to contact us at 410-880-4788.

Sincerely,

HILLIS-CARNES ENGINEERING ASSOCIATES, INC.



Christopher J. Hillis, P.E.
Project Engineer
chillis@hcea.com



Gina L. Galimberti, REM
Assistant Vice President, Environmental Services Manager
ggalimberti@hcea.com

CRRGP F KZ'I

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FIELD REPORT

Project No.: 16325B **Report No.:** **Date:** May 17, 2017
Project Name: Parcel B22 - Phase 1 (St. John's Project) **Weather/Temp:** Clear 90°
Client: Tradepoint Atlantic **Travel Time:** hr **Lunch Time:** hr
Contractor: FCL Builders **On Site Time:** hr **Total Time:** 10.50 hr

A. Description of Work:

Hillis-Carnes Engineering Associates (HCEA) on-site to provide environmental and dust monitoring services.

On this date, prevailing wind direction was generally from the South to the North. One perimeter dust monitor was placed on the upwind side of the parcel (South) and one dust monitor was placed on the downwind side of the parcel (North). The upwind monitor did not exceed the action limit of 3 milligrams per cubic meter (mg/m³). The downwind monitor did not record data due to equipment failure. The maximum Short Term Exposure Limit (STEL) concentration for the upwind monitor was 0.062 mg/m³.

HCEA placed a work zone dust monitor in the area being excavated for storm drain. The work zone monitor did not exceed the action limit of 3 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the work zone monitor was 0.109 mg/m³.

Dixie used a water truck in order to suppress the dust generated from within the boundaries of parcel B22.

Dixie continues installing water line on the East side of the building heading North. Contractor is installing HDPE pipe. Pipe is bedded in #57 stone. Contractor encountered many concrete obstructions which needed to be removed before continuing to install water line. Tech was screening excavated soils for odors or elevated PID readings. Tech did not detect odors or elevated PID readings coming from the excavated material. Material is stockpiled to be used as backfill in parking lot areas.

Dixie continues installation of storm drain at F-4, heading North. At ~10' North of manhole F-4, contractor disturbed an ~24" diameter preexisting utility line which contained a large amount of an oily substance with strong smells of petroleum and other potential contaminants which spilled into the excavation containing F-4 and mixed with storm water collecting within the excavation. Tech verified presence of oil using oil test strips. MCM uses a pump truck to remove ~4000 gallons of impacted water from the excavation. Impacted water is discharged into a containment area on concrete slab on the North side of the site.

During de-watering of excavation for F-4 some impacted water was pumped into North side of sediment basin on East side of site. Due to minimal water present in sediment basin the impacted area was limited to the North side. MCM uses vac truck to remove an additional ~500 gallons of impacted water from basin, this water was also discharged into the containment area. Tech observed all discolored water was removed from the impacted area. Contractor also removed and segregated 1-2" of material from surface of basin bottom. Tech did not detect odors, staining, or elevated PID readings from material remaining in sediment basin.

HCEA representative collected 1 water sample from containment area to be analyzed for VOCs and PCBs.

Dixie continues to backfill for parking lot on South side of the building using impacted soils that have previously been stockpiled and approved as backfill by MDE. This material is placed ~3' below sub-grade. Both of these stockpiles have now been used as backfill.

A. Description of Work (continued):

(intentionally blank)

B. Tests Performed/Testing Equipment Used

Met One E-Samplers and MultiRAE Photoionization Detector

C: Problems

Non-Compliance ☐

None

D. Referenced Plans/Drawings

Verification _____ **Reviewed By:** _____ **Technician:** Nick Stella _____

FIELD REPORT

Project No.: 16325B **Report No.:** **Date:** May 18, 2017
Project Name: Parcel B22 - Phase 1 (St. John's Project) **Weather/Temp:** Clear 90°
Client: Tradepoint Atlantic **Travel Time:** hr **Lunch Time:** hr
Contractor: FCL Builders **On Site Time:** hr **Total Time:** 9.00 hr

A. Description of Work:

Hillis-Carnes Engineering Associates (HCEA) on-site to provide environmental and dust monitoring services.

On this date, prevailing wind direction was generally from the South to the North. One perimeter dust monitor was placed on the upwind side of the parcel (South) and one dust monitor was placed on the downwind side of the parcel (North). The upwind monitor did not exceed the action limit of 3 milligrams per cubic meter (mg/m³). The downwind monitor did not record data due to equipment failure. The maximum Short Term Exposure Limit (STEL) concentration for the upwind monitor was 0.062 mg/m³.

HCEA placed a work zone dust monitor in the area being excavated for water line. The work zone monitor did not exceed the action limit of 3 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the work zone monitor was 0.207 mg/m³.

Dixie used a water truck in order to suppress the dust generated from within the boundaries of parcel B22.

Dixie continues installing water line on the East side of the building heading North. Contractor is installing HDPE pipe. Pipe is bedded in #57 stone. Contractor encountered many concrete obstructions which needed to be removed before continuing to install water line.

Glenelg continues installing conduit at various locations around the building.

Tech was screening excavated soils for odors or elevated PID readings. Tech did not detect odors or elevated PID readings coming from the excavated material. Material is stockpiled to be used as backfill in parking lot areas.

FCL had a frac tank delivered around 1:30pm in order to store impacted water that is currently in the containment area. After arrival of the tank, FCL informed HCEA representative that they did not have access to a vac truck that could discharge into the tank. Impacted water remains in the containment area overnight.

Small puddles with no visible sheen are present in the bottom of sediment basin where impacted soils were removed. Area has been cleared of impacted materials.

B. Tests Performed/Testing Equipment Used

Met One E-Samplers and MultiRAE Photoionization Detector

C: Problems **Non-Compliance** ☐
None

D. Referenced Plans/Drawings

Verification: _____ **Reviewed By:** _____ **Technician:** Nick Stella _____

FIELD REPORT

Project No.: 16325B **Report No.:** **Date:** May 19, 2017
Project Name: Parcel B22 - Phase 1 (St. John's Project) **Weather/Temp:** Clear 90°
Client: Tradepoint Atlantic **Travel Time:** hr **Lunch Time:** hr
Contractor: FCL Builders **On Site Time:** hr **Total Time:** 8.50 hr

A. Description of Work:

Hillis-Carnes Engineering Associates (HCEA) on-site to provide environmental and dust monitoring services.

On this date, prevailing wind direction was generally from the West to the East. One perimeter dust monitor was placed on the upwind side of the parcel (West) and one dust monitor was placed on the downwind side of the parcel (East). The downwind and upwind monitors did not exceed the action limit of 3 milligrams per cubic meter (mg/m³). The maximum Short Term Exposure Limit (STEL) concentration for the downwind monitor was 0.097 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the upwind monitor was 0.020 mg/m³.

HCEA placed a work zone dust monitor in the area being excavated for storm drain. The work zone monitor did not exceed the action limit of 3 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the work zone monitor was 0.122 mg/m³.

Dixie used a water truck in order to suppress the dust generated from within the boundaries of parcel B22.

Dixie continues installing water line on the East side of the building heading North. Contractor is installing HDPE pipe. Pipe is bedded in #57 stone. Contractor encountered many concrete obstructions which needed to be removed before continuing to install water line.

Glenelg continues installing conduit at various locations around the building.

Tech was screening excavated soils for odors or elevated PID readings. Tech did not detect odors or elevated PID readings coming from the excavated material. Material is stockpiled to be used as backfill in parking lot areas. PSC is on site in the morning with a vac truck to remove impacted water from excavation for storm drain at F-4. Throughout the day a total of ~4000 gallons is removed from excavation and discharged into frac tank on North side of site.

Dixie cleaned up containment area by blending remaining impacted water with soils then segregating this material. This material as well as the impacted soil removed from sediment basin is placed on plastic on the North side of the site and covered with additional plastic. Tech observed concrete slab under the containment area to contain no obvious cracks or holes.

B. Tests Performed/Testing Equipment Used

Met One E-Samplers and MultiRAE Photoionization Detector

C: Problems **Non-Compliance** ☐
None

D. Referenced Plans/Drawings

Verification: _____ **Reviewed By:** _____ **Technician:** Nick Stella _____

FIELD REPORT

Project No.: 16325B **Report No.:** **Date:** May 20, 2017
Project Name: Parcel B22 - Phase 1 (St. John's Project) **Weather/Temp:** Cloudy 70°
Client: Tradepoint Atlantic **Travel Time:** hr **Lunch Time:** hr
Contractor: FCL Builders **On Site Time:** hr **Total Time:** 8.00 hr

A. Description of Work:

Hillis-Carnes Engineering Associates (HCEA) on-site to provide environmental and dust monitoring services.

On this date, prevailing wind direction was generally from the Northeast to the Southwest. One perimeter dust monitor was placed on the upwind side of the parcel (Northeast) and one dust monitor was placed on the downwind side of the parcel (Southwest). The downwind and upwind monitors did not exceed the action limit of 3 milligrams per cubic meter (mg/m³). The maximum Short Term Exposure Limit (STEL) concentration for the downwind monitor was 0.042 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the upwind monitor was 0.010 mg/m³.

HCEA placed a work zone dust monitor in the area being excavated for storm drain. The work zone monitor did not exceed the action limit of 3 mg/m³. The maximum Short Term Exposure Limit (STEL) concentration for the work zone monitor was 0.032 mg/m³.

Dixie continues installing water line and sanitary sewer on the East side of the building heading North. Contractor is installing HDPE pipe. Pipe is bedded in #57 stone. Contractor encountered many concrete obstructions which needed to be removed before continuing to install water line.

CCS continues installation of electrical duct bank and water line in Tradepoint Ave. Contractor installs water line crossing Sparrows Point Rd. Pipe is bedded in #57 stone and backfilled with approved fill.

Tech was screening excavated soils for odors or elevated PID readings. Tech did not detect odors or elevated PID readings coming from the excavated material. Material is stockpiled to be used as backfill in parking lot areas.

Dixie places a concrete plug into both sides of the existing utility line that had once contained the impacted water. Remaining pipe passing through the excavation is demolished and blended with soil.

B. Tests Performed/Testing Equipment Used

MetOne E-Samplers and MultiRAE Photoionization Detector

C: Problems

Non-Compliance ☐

None

D. Referenced Plans/Drawings

Verification: _____ **Reviewed By:** _____ **Technician:** Nick Stella _____

APPENDIX H

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 1: Typical utility excavation



Photo 2: Typical utility installation

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 3: Soil exhibiting evidence of impacts to be stockpiled



Photo 4: Stockpiled soil that exhibited evidence of environmental impacts

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 5: Stockpiled soil exhibiting evidence of environmental impacts

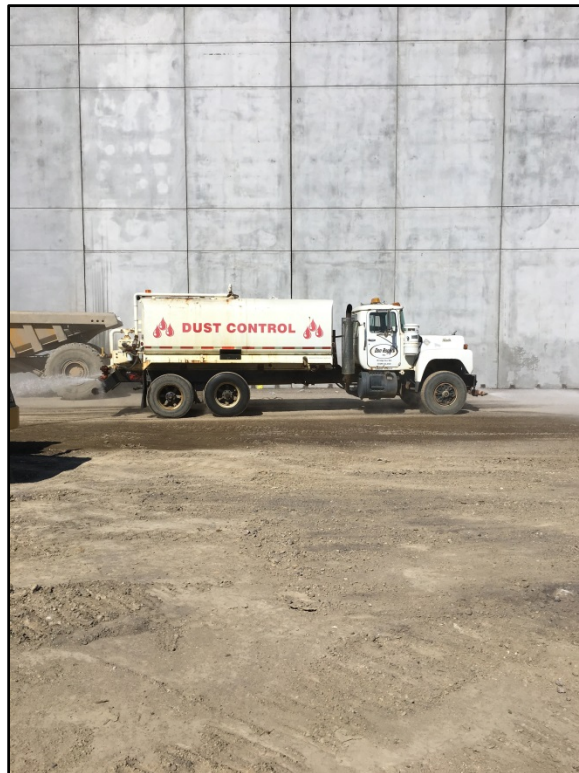


Photo 6: Routine dust control

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 7: Water that was sampled prior to dewatering



Photo 8: Dewatering that conveyed water to treatment facility

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 9: Typical utility installation along Tradepoint Avenue (Road and Utility work)



Photo 10: Pumping water from excavation during 5/16/17 event

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 11: Soils excavated and stockpiled during 5/16/17 event



Photo 12: Placing marker fabric and clean fill in landscaped areas

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 13: Cap thickness measurement



Photo 14: Sediment basin construction in progress

Development Photograph Log
Parcel B22, Phase 1
Sparrows Point, Maryland



Photo 15: Sediment basin construction in progress



Photo 16: Implementation of agency approved interim remedy in kitchen area inside constructed building. Plastic and plywood were placed to cover the exposed surface soils. Railings prevent access to workers.

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APPENDIX I

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ARM Group Inc.

Earth Resource Engineers and Consultants

October 27, 2017

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

Re: Quarterly Development Status Update
Third Quarter 2017
Area B: Parcel B22, Phase 1
Tradepoint Atlantic
Sparrows Point, Maryland

Dear Ms. Brown,

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared this Quarterly Development Status Update to document ongoing and completed development activities performed on Parcel B22, Phase 1 during the third quarter of 2017. The Parcel B22, Phase 1 Response and Development Work Plan (RADWP) Revision 2 was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on August 30, 2016. Approval to proceed with development work was received via email from the MDE on September 7, 2016. A subsequent revision of the Parcel B22, Phase 1 RADWP (Revision 5) dated March 28, 2017 (updated March 30, 2017 and April 11, 2017) was approved by the USEPA via email on March 29, 2017. The development of Parcel B22, Phase 1 generally includes grading, placement of subbase, construction of floor slabs, paving, installation of underground utility and foundation structures, construction of a warehouse building, lighting improvements, and landscaping improvements.

Environmental Oversight

Full-time oversight was performed by an Environmental Professional (EP) provided by Hillis Carnes Engineering Associates (HCEA) during pre-development (demolition phase) and development activities. In addition to general oversight to ensure compliance with environmental regulations and the development plans, the EP was responsible for performing dust monitoring and soil screening services.

Development Progress

HCEA's EP began oversight during pre-development on October 31, 2016. Development activities began on November 16, 2016 with FCL Builders as the General Contractor. Prior to

and during the third quarter of 2017, a slab on grade warehouse was constructed. Construction of associated stormwater management features, underground utilities, lighting improvements, parking areas, and landscaped areas was also conducted. To date, the majority of planned development has been completed. Some landscaping and paving work is still outstanding.

Dust Monitoring

Dust monitoring was performed with a ThermoElectron Corporation Personal Data RAM 1000AN Dust Monitor. Dust control measures would be implemented if a sustained level above 3.0 mg/m³ was observed. During the third quarter of 2017, some exceedances of the 3.0 mg/m³ action level were observed. However, the exceedances appeared to be associated with trucks passing near the monitor and did not last more than five minutes. When dust generation was anticipated due to site conditions and planned development work, the Contractor utilized a water truck to suppress dust.

Soil Management

All slag, stone, and soil materials brought to the site for use as fill were approved for their intended use by the MDE.

The EP screened excavated material with a MultiRAE Photoionization Detector (PID). Any excavated material that exhibited visual or olfactory evidence of impacts or a PID reading above 10 ppm would be segregated and covered with plastic sheeting. During the third quarter of 2017, some soils were segregated and stockpiled on site and covered with plastic sheeting. All soil stockpiled during the pre-development phase was sampled and tested for Diesel Range Organics, Gasoline Range Organics, Oil & Grease, and Polychlorinated Biphenyls. Following receipt of the sampling results, the MDE approved the stockpiled soil for reuse on site. Another small segregated stockpile was approved for reuse by MDE personnel during a field visit. The soil from both stockpiles was placed as fill under paved areas. HCEA personnel have sampled one additional remaining stockpile and await laboratory results (sampled during the fourth quarter).

Water Management

The EP advised the Contractor that all dewatering discharges must be directed to the on-site water treatment facility. During the initial development of Parcel B22, Phase 1, all dewatering discharges were pumped to a storm drain leading to the on-site water treatment facility. After the sedimentation basins had been installed during development, Tradepoint Atlantic personnel confirmed that the sedimentation basins drained to the on-site water treatment facility, and all further dewatering discharges during the development phase were directed to the sedimentation basins.



Notable Occurrences

On May 17, 2017 a buried utility line containing a large quantity of an oily substance exhibiting strong petroleum odors was damaged. The oily substance mixed with storm water and spilled into an active excavation area. The MDE was notified of this occurrence, and appropriate response actions were coordinated with agency input. The oily water was pumped into a sedimentation basin by an on-site contractor. A vacuum truck was used to pump approximately 4,000 gallons of oily water from the sedimentation basin into a frac tank. The soils that came in contact with the oily water were excavated and segregated on plastic and covered with plastic sheeting. Concrete plugs were installed at both ends of the utility line in question.

Road and Utility Development Work

Additional development work was performed in the southern portion of Parcel B22, Phase 1 and in the area directly adjacent to the south. The work, which included the installation of gas and water lines and the construction of an access road, is described in the Road and Utility Investigation Report, Developed in Support of Construction Activities for Area B: Parcel B22, Phase 1, Revision 1, dated January 10, 2017. All work was conducted under the environmental and health and safety protocols established in the Parcel B22, Phase 1 RADWP, Revision 2, dated August 30, 2016. An EP provided by HCEA performed environmental oversight and soil screening with a PID during intrusive activities. Excavated soils were also tested for the presence of potential oily substances with the Oil Sticks® test kit. All segregated soil was stockpiled and covered with plastic sheeting. The stockpiled soil has been sampled, and HCEA awaits laboratory results (sampled during the fourth quarter).

If you have questions regarding any information covered in this document please feel free to contact the undersigned at (410) 290-7775.

Respectfully Submitted,
ARM Group Inc.



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



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





ARM Group Inc.

Earth Resource Engineers and Consultants

January 29, 2018

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

Re: Quarterly Development Status Update
Fourth Quarter 2017
Area B: Parcel B22, Phase 1
Tradepoint Atlantic
Sparrows Point, Maryland

Dear Ms. Brown,

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared this Quarterly Development Status Update to document ongoing and completed development activities performed on Parcel B22, Phase 1 (the Site) during the fourth quarter of 2017. The Parcel B22, Phase 1 Response and Development Work Plan (RADWP) Revision 2 was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) on August 30, 2016. Approval to proceed with development work was received via email from the MDE on September 7, 2016. A subsequent revision of the Parcel B22, Phase 1 RADWP (Revision 5) dated March 28, 2017 (updated March 30, 2017 and April 11, 2017) was approved by the USEPA via email on March 29, 2017. The development of Parcel B22, Phase 1 generally includes grading, placement of subbase, construction of floor slabs, paving, installation of underground utility and foundation structures, construction of a warehouse building, lighting improvements, and landscaping improvements. Development work completed on Parcel B22, Phase 1 prior to October 1, 2017 is discussed in the Quarterly Development Status Update for the third quarter of 2017 (dated October 27, 2017).

Environmental Oversight

Full-time oversight was performed by an Environmental Professional (EP) provided by Hillis Carnes Engineering Associates (HCEA) during pre-development (demolition phase) and development activities. In addition to general oversight to ensure compliance with environmental regulations and the development plans, the EP was responsible for performing dust monitoring and soil screening services during intrusive activities.

Development Progress

HCEA's EP began oversight during pre-development on October 31, 2016. Development activities began on November 16, 2016 with FCL Builders as the General Contractor. Prior to the fourth quarter of 2017, a slab on-grade warehouse with associated stormwater management features, underground utilities, lighting improvements, parking areas, and landscaped areas were constructed. During the fourth quarter of 2017, the parking areas and landscaped areas were completed. Development activities associated with the Parcel B22, Phase 1 building construction terminated on November 6, 2017. Additional work was performed in support of the development of Parcel B22, Phase 1 and is described in the **Road and Utility Development Work** and **Utility and Transformer Additions Development Work** sections below.

Dust Monitoring

Dust monitoring was not performed during the fourth quarter of 2017 because no significant intrusive activities were performed.

Water Management

No dewatering was required during the fourth quarter of 2017.

Soil Management

Approved slag materials were brought to the Site and used as fill beneath capped areas. VCP approved fill was placed as fill beneath landscaped areas. During the fourth quarter of 2017, no materials were excavated from the Parcel B22, Phase 1 development area. Thus, no soil screening was performed during development activities for Parcel B22, Phase 1 during the fourth quarter of 2017.

When minor intrusive activities were performed during the Utility and Transformer Additions work (during the fourth quarter of 2017), the EP screened excavated material with a MultiRAE photoionization detector (PID). Any excavated material that exhibited visual or olfactory evidence of impacts or a PID reading above 10 parts per million (ppm) would be segregated and covered with plastic sheeting. During the fourth quarter of 2017, no soils were segregated and stockpiled due to elevated PID readings or other observations. Sampling and disposal of soils stockpiled prior to the fourth quarter of 2017 are discussed below.

Notable Occurrences

On May 17, 2017 a buried utility line containing a large quantity of an oily substance exhibiting strong petroleum odors was damaged. The oily substance mixed with stormwater and spilled into an active excavation area. Additional details regarding this event are provided in accompanying comment response letter. The soils that came in contact with the oily water were



excavated and segregated on plastic and covered with plastic sheeting. The stockpiled soil was sampled during the fourth quarter of 2017, described in further detail below.

Road and Utility Development Work

Additional development work was performed in the southern portion of Parcel B22, Phase 1 and in the area directly adjacent to the south prior to the fourth quarter of 2017. The work is described in the Road and Utility Investigation Report, Developed in Support of Construction Activities for Area B: Parcel B22, Phase 1, Revision 1, dated January 10, 2017. Additional details are provided in the Third Quarter Development Status Update. All soil segregated during this work was stockpiled and covered with plastic sheeting. The stockpiled soil was sampled during the fourth quarter of 2017, described in further detail below.

Utility and Transformer Additions Development Work

Additional work was performed in support of the development of Parcel B22, Phase 1, directly to the west of the Tradepoint Atlantic office building (primarily within Parcel B3). This work included the construction of an underground utility line described in the Proposed Utility and Transformer Additions letter dated September 13, 2017. All work was conducted under the environmental and health and safety protocols established in the Parcel B22, Phase 1 RADWP. The development work associated with the transformer addition began during the third quarter of 2017 and was completed on November 10, 2017. An EP provided by HCEA performed environmental oversight and soil screening with a PID during intrusive activities. No elevated PID readings or olfactory indications of impacted soils were detected, and no excavated materials were segregated during the fourth quarter of 2017.

Soil Sampling and Disposal

Two soil stockpiles, segregated during Road and Utility development work and during the May 2017 notable occurrence discussed in the Third Quarter Development Status Report, were sampled on October 27, 2017 following sampling approval by the MDE on October 25, 2017. Each stockpile contained approximately 100 cubic yards of soil segregated due to elevated PID readings, staining, or odors. A 10-point composite sample was collected from each stockpile and submitted to Phase Separation Science, Inc. and tested for diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, PCBs, total metals, and hexavalent chromium. Following receipt of the sampling results, the MDE provided approval in an email dated November 7, 2017 to spread the soil from both stockpiles in an area north of the Parcel B22, Phase 1 Development Area.

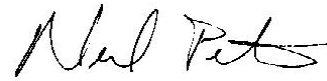


If you have questions regarding any information covered in this document please feel free to contact the undersigned at (410) 290-7775.

Respectfully Submitted,
ARM Group Inc.



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



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





ARM Group Inc.

Earth Resource Engineers and Consultants

January 29, 2018

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

Re: Quarterly Development Status Updates
Third and Fourth Quarter 2017
Area A: Sub-Parcel A3-1; Area B: Sub-Parcel B5-1;
Sub-Parcel B6-1; Parcel B22, Phase 1
Responses to Agency Comments
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

On behalf of EnviroAnalytics Group, LLC (EAG), ARM Group Inc. (ARM) is pleased to provide the following responses to comments received from the Maryland Department of the Environment (MDE) in an email dated December 7, 2017. The MDE provided comments on the Third Quarter Development Status Updates for Sub-Parcels A3-1, B5-1, B6-1, and Parcel B22, Phase 1 dated October 27 to November 1, 2017. No comments were received from the United States Environmental Protection Agency (USEPA). The updates discussed in this letter have been applied, as applicable, to the Quarterly Development Status Updates for the fourth quarter of 2017 that accompany this letter. Responses to specific comments are provided below; original comments are included in italics with responses following.

- 1. General: Soil Management – This section should include an estimate for how much soil has been segregated and stockpiled on-site. In addition, include estimates for the amount of soil disposed of at Grey's Landfill during each quarter. Please note that soil disposed of at Grey's Landfill must be tracked and details from the disposal tracking must be submitted in Completion Reports.*

Sub-Parcel B5-1:

During the third and fourth quarters of 2017, no soils were segregated due to elevated PID readings, odors, or staining on Sub-Parcel B5-1. No soils were removed from the site for disposal at Greys Landfill or elsewhere.

Sub-Parcel B6-1:

During the third quarter of 2017, no soils were segregated due to elevated PID readings, odors, or staining on Sub-Parcel B6-1. No soils were removed from the site for disposal at Greys Landfill or elsewhere.

Information regarding soils stockpiled during the fourth quarter of 2017 is provided in the Fourth Quarter Sub-Parcel B6-1 Quarterly Development Status Update.

Parcel B22, Phase 1:

During the pre-development (demolition) phase on Parcel B22, Phase 1 approximately 8,500 cubic yards (cy) of soil exhibiting evidence of impacts (elevated PID readings, odors, or staining) were stockpiled on site prior to the third quarter of 2017. The MDE was notified of this stockpiled soil via email from Hillis-Carnes Engineering Associates (HCEA) on January 12, 2017. A sampling plan to test for diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, and polychlorinated biphenyls (PCBs) was submitted by HCEA and approved by the MDE. Following the receipt of laboratory data, the MDE approved the use of the stockpiled soil as fill material under the cap in Parcel B22, Phase 1 in an email dated February 21, 2017.

During storm drain development work on Parcel B22, Phase 1, approximately 200 cy of soil were segregated and placed in two stockpiles. This soil was visually inspected by the MDE on April 13, 2017 and approved for placement beneath paved areas via email on April 19, 2017.

Two additional stockpiles, each containing approximately 100 cy of soil, were segregated during the Road and Utility development associated with Parcel B22, Phase 1. The management of these two stockpiles is discussed in the Parcel B22, Phase 1 Quarterly Development Status Update for the fourth quarter of 2017.

No soils were removed from the site for disposal at Greys Landfill or elsewhere.

Sub-Parcel A3-1:

Three approximately 100 cy stockpiles were segregated due to evidence of impacts (elevated PID readings, odors, or staining) during the pre-development (demolition) phase on Sub-Parcel A3-1. The soil was sampled on July 19, 2017 and tested for Oil & Grease, DRO, PCBs, and TCLP metals. The soil was approved for re-use under aggregate base in paved areas outside the building footprint by the MDE in an email dated August 7, 2017 and was placed under a parking area.



Approximately 100 cy of soil were segregated during storm drain work on Sub-Parcel A3-1. The soil was sampled on July 20, 2017 and tested for Oil & Grease, DRO, PCBs, and TCLP metals. The sampled soil was approved for re-use under the cap in paved areas by the MDE in an email dated September 19, 2017.

Two areas of stockpiled soil containing approximately 500 cy (1 stockpile) and 1,500 cy (3 stockpiles) were generated during excavation inside the exclusion zones in Sub-Parcel A3-1. The soils were sampled during two sampling events on September 28, 2017 (one sample from 500 cy stockpile) and October 18, 2017 (one sample from each of three 500 cy stockpiles). A sample was collected from each stockpile and submitted to Phase Separation Science, Inc. and tested for DRO, GRO, Oil & Grease, PCBs, total metals, and hexavalent chromium. The soils from the two stockpile areas (500 cy and 1,500 cy) were approved for re-use under capped areas on-site by the MDE in emails dated October 5, 2017 and October 25, 2017, respectively. However, because the contractor determined that the soils were not suitable for compaction, the soils were disposed of at Greys Landfill. The soils were approved for disposal by the MDE in emails dated October 12, 2017 and October 25, 2017 for the first and second rounds of sampling, respectively. Disposal manifests will be included with the Sub-Parcel A3-1 Development Completion Report.

2. *Soil and Water Management – Parcel B6-1: “All slag materials brought to the site for use as structural fill were approved for their intended use by the MDE.” Could you please clarify this statement? Is “structural fill” referring to the building foundation pad on this parcel? Also, define “intended use” and provide a reference for the MDE approval referred to in this statement.*

Slag brought to the site was placed under capped areas, i.e. under the building pad foundation, for use as structural fill, and as utility trench backfill. The placement of slag as fill under capped areas has been approved by the MDE in various documents, e.g. the B5-1 Response and Development Work Plan (RADWP) dated September 27, 2017. The use of slag under capped areas was also approved in an email from the MDE regarding the Parcel A4 RADWP dated August 22, 2017. Slag has been approved by the MDE for use as utility trench backfill in areas requiring capping in an email dated November 28, 2017. If slag is used to backfill utility trenches in uncapped areas, capping of the utility trench would be necessary.

3. *Soil Management – Parcel B5-1: “All slag materials brought to the site for use as fill were approved for their intended use by the MDE.” Please make this statement more specific to the site. Slag materials were approved for use as fill on this area of Parcel B5-1 due to its location underneath a VCP cap. This level of detail is necessary since there are portions of this parcel that do not require a VCP cap and there are requirements for approval of slag on those areas that have not yet been completed.*



Slag brought to the site was placed under capped areas, i.e. under the building pad foundation, for use as structural fill, and as utility trench backfill. If slag is used to backfill utility trenches in uncapped areas (or if the trench will function as part of the cap including the section to be installed through the B5 Building exposure unit) capping of the utility trench would be necessary.

4. Notable Occurrences – Parcel B22 - Phase 1: Provide more detail regarding this event, including: date and method (i.e., email, phone call) for notifying the MDE. Also, it is assumed that the excavated soils were sampled for disposal or reuse on the site but this detail is not provided. Please provide additional details regarding the handling of these stockpiled soils.

On May 17, 2017 a buried utility line containing a large quantity of an oily substance exhibiting strong petroleum odors was damaged. A sample of the oily water was collected the same day and submitted to Phase Separation Science, Inc. and analyzed for volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs). The oily water was pumped into a sedimentation basin by an on-site contractor. A vacuum truck was used to pump approximately 4,000 gallons of oily water from the sedimentation basin into a frac tank. The on-site contractor received approval from Tradepoint Atlantic personnel to pump the material to a storm drain leading to the on-site water treatment plant.

All materials excavated from the impacted area were segregated and placed on plastic and covered with additional plastic sheeting. The concrete slab under the containment area was inspected and observed to contain no obvious cracks or holes. An email requesting permission to sample the soil was sent to the MDE on October 24, 2017. The MDE provided approval to sample in an email dated October 25, 2017. The segregated materials were sampled during the fourth quarter of 2017 (on October 27, 2017), and samples were sent to Phase Separation Science, Inc. for analysis of DRO, GRO, Oil & Grease, PCBs, total metals, and hexavalent chromium. Following receipt of the sampling results, the MDE provided approval in an email dated November 7, 2017 to spread the soil from both stockpiles in an area north of the Parcel B22, Phase 1 Development Area.

A sample of the oily water was collected on May 17, 2017 and submitted to Phase Separation Science, Inc. and analyzed for volatile organic compounds (VOCs) and PCBs. The on-site Contractor received approval from Tradepoint Atlantic personnel to pump the material to a storm drain leading to the on-site water treatment plant.



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

Respectfully submitted,
ARM Group Inc.



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



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



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APPENDIX J

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From: [Barbara Brown -MDE-](#)
To: [Gina L. Galimberti](#)
Cc: [Gardner, Mike](#); [Keith Progin](#); [Chris Hillis](#); [Jennifer Sohns -MDE-](#)
Subject: Re: Stockpiled Soils - Parcel B-22, Phase 1 - Characterization Sampling
Date: Tuesday, February 21, 2017 7:43:53 AM
Attachments: [image002.jpg](#)
[image003.png](#)
[image001.jpg](#)

Hello Gina

The material sampled from the stockpiles from the utility excavations as described in the report transmitted on Feb 20, 2017, may be used as fill material under the cap at Parcel B-22.

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

Barbara Brown
MDE Project Coordinator

On Mon, Feb 20, 2017 at 1:05 PM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Mike – Please find attached the letter report for the sampling conducted on 2/10/17.

Barbara – I have also attached the laboratory report in the Electronic Data Deliverable format for your use in reviewing the results to determine if the material is acceptable for re-use on Parcel B-22 under the cap.

Feel free to contact me with any questions.

Gina

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Barbara Brown -MDE- [mailto:barbara.brown1@maryland.gov]
Sent: Monday, January 16, 2017 10:11 AM
To: Gina L. Galimberti
Subject: Re: Sampling Plan - Stockpiled Soils - Parcel B-22, Phase 1

Hi Gina

Do not need to know when you sample-whenever it works for you.

Barbara Brown

On Mon, Jan 16, 2017 at 8:44 AM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Barbara – For your records, I have attached the final sampling plan (with PCBs added) per your comment.

I do not yet have a date scheduled for this sampling. Do you want to be notified of the date when we get it scheduled?

Gina

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Gina L. Galimberti
Sent: Friday, January 13, 2017 10:24 AM
To: Barbara Brown -MDE-
Cc: Jennifer Sohns -MDE-; Keith Progin
Subject: RE: Sampling Plan - Stockpiled Soils - Parcel B-22, Phase 1

Thank you Barbara.

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Barbara Brown -MDE- [<mailto:barbara.brown1@maryland.gov>]
Sent: Thursday, January 12, 2017 3:28 PM
To: Gina L. Galimberti
Cc: Jennifer Sohns -MDE-; Keith Progin
Subject: Re: Sampling Plan - Stockpiled Soils - Parcel B-22, Phase 1

Hello Gina

Looks good, but I would add PCB's and we would look at soil results.

I think our acceptable TPH level is higher than 620..

On Thu, Jan 12, 2017 at 3:18 PM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Hi Barbara –

You and I had a verbal conversation in early December about using the 8,500 cubic yards of stockpiled soil (excavated during demo of underground obstructions and old utilities) under the caps. We discussed 5 comps for DRO, GRO and Oil and Grease with an approval threshold of 620 ppm. I did not submit a Sampling Plan to you at that time because shortly after you and I spoke, the Contactor switched gears and wanted a sampling plan for using the material as Clean Fill (a sampling plan that you did approve).

No sampling of the stockpile soil has occurred to date. The Contactor is now potentially switching back to the original plan of re-use under the caps. Not sure if a formal sampling plan submittal/review/approval is necessary for this scenario, but I am being pro-active and submitting one to you today (attachment).

Please review at your earliest convenience. Thank you, as always, in advance for your ongoing cooperation.

Gina

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Barbara Brown -MDE- [mailto:barbara.brown1@maryland.gov]
Sent: Tuesday, December 20, 2016 9:02 AM
To: Gina L. Galimberti

Subject: Re: Sampling Plan - Stockpiled Soils - Parcel B-22, Phase 1

Hi Gina

Depending on how clean the break between piles is (are) we can fail once section and use others...

On Mon, Dec 19, 2016 at 5:41 PM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Thanks Barbara – Quick question, if one stockpile section “fails” is the whole pile deemed unsuitable as clean fill or is it just the failing section (s) that is (are) unsuitable.?

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Barbara Brown -MDE- [mailto:barbara.brown1@maryland.gov]

Sent: Monday, December 19, 2016 12:25 PM

To: Gina L. Galimberti

Cc: Barbara Brown (BBrown@mde.state.md.us); Gardner, Mike; Kahmer, Rob; Fantz, Jeff; Keith Progin; Chris Hillis; Jennifer Sohns -MDE-

Subject: Re: Sampling Plan - Stockpiled Soils - Parcel B-22, Phase 1

Hello Gina

The sampling plan as attached for the soil pile is approved. You may proceed with field work. I would inform the lab that the detection limits for SVOCs should be below the non-residential standards, especially for the cPAHs.

If you have any questions please contact me

Barbara Brown

On Wed, Dec 14, 2016 at 4:27 PM, Gina L. Galimberti <ggalimberti@hcea.com> wrote:

Barbara – On behalf of FCL Builders, HCEA is submitting the attached Clean Fill Sampling Plan for stockpiled soils previously excavated from Parcel B-22, Phase 1 of the Sparrows Point Terminal (a.k.a., UA Parcel/St. John's Project).

Please review the plan and let me know if you have any questions or need additional information.

Thank you in advance for your cooperation.

Gina

Gina Galimberti | Environmental Services Manager

HILLIS-CARNES ENGINEERING ASSOCIATES

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From: [Barbara Brown -MDE-](#)
To: [Gina L. Galimberti](#)
Cc: [Pete Haid](#); [Jennifer Sohns -MDE-](#)
Subject: B-22 Soil Stockpile
Date: Wednesday, April 19, 2017 1:49:54 PM

Hello All

On April 13, 2017, MDE project manager, Barbara Brown conducted a visual inspection of two soil stockpiles that resulted from screening of potentially petroleum contaminated material from the utility excavations performed as part of the approved development plan on parcel B-22. Both piles were covered with plastic as required, and the cover material was observed to be in good condition. Portions of the covers were removed for the inspection. Gina Galimberti, Hillis-Carnes Engineering Associates performed screening with a PID on several samples from the stockpile with readings less than 10 ppm. One "clump" of tar-like petroleum was observed on the onside of the larger pile.

The material in the large and small soil stockpiles may be used under the paved areas on B-22, but not under the proposed building slab. If petroleum saturated (heavy or light) soils are encountered in the stockpile, they should be segregated and covered until the disposal location is determined and appropriate notifications and sampling completed.

If the stockpiled material is intended for use at any site other than B-22, please contact the Department prior to transport.

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

Barbara Brown
MDE Project Coordinator

--

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.

From: [Barbara Brown -MDE-](#)
To: [Keith Progin](#)
Cc: [Jennifer Sohns -MDE-](#)
Subject: Re: B-22 Stockpile Sample Plan
Date: Tuesday, November 7, 2017 7:46:00 AM

Hello Keith

The material sampled in the B-22 stockpile may be spread on B-22 in the area indicated.

On Mon, Nov 6, 2017 at 2:29 PM, Keith Progin <kprogin@hcea.com> wrote:

Per the emails below, please see the attached laboratory results for stockpile sample for Tradepoint Avenue and the stockpile sample at B-22. I had the laboratory speciate chromium for both samples (second attachment).

Based on the results, would the contractor be able to spread both stockpiles on the undeveloped area north of the Under Armor building (part of the B-22 parcel)?

Thanks!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

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From: Keith Progin
Sent: Wednesday, October 25, 2017 4:13 PM
To: 'Barbara Brown -MDE-'
Cc: Jennifer Sohns -MDE-
Subject: RE: B-22 Stockpile Sample Plan

Thank you!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

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Fax [+1 \(410\) 880-4098](tel:+1(410)880-4098)

From: Barbara Brown -MDE- [<mailto:barbara.brown1@maryland.gov>]
Sent: Wednesday, October 25, 2017 4:09 PM
To: Keith Progin
Cc: Jennifer Sohns -MDE-
Subject: Re: B-22 Stockpile Sample Plan

Hi Keith

Add total metals and proceed.

On Tue, Oct 24, 2017 at 12:09 PM, Keith Progin <kprogin@hcea.com> wrote:

Several months ago, there was some soil that exhibited odors and elevated PID readings (all readings below 100) during the utility installation at B-22. This material is approximately 100 cubic yards and was stockpiled on plastic and covered with plastic on the northern portion of B-22. In addition, some soil excavated during the excavation for utilities along Tradepoint Avenue exhibited minor odors and elevated PID readings. This material is approximately 100 cubic yards and was stockpiled on plastic and covered with plastic on the southwestern side of B-22. Due to their relatively small size, neither stockpile was sampled and the plan was to continue adding soil if additional impact was encountered.

HCEA is proposing using a stainless steel hand auger to collect 10 grab samples from each of the two stockpiles. The 10 grab samples will be mixed in a stainless steel mixing bowl to generate one composite sample for each stockpile (total of 2 composite samples). The two composite samples will be submitted for laboratory analyses for TPH-DRO, TPH-GRO, Oil & Grease, and PCBs,

Upon your approval of the work plan, HCEA will collect the stockpile sample.

Thanks!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

Cell [\(443\) 250-9467](tel:(443)250-9467)
Phone [+1 \(410\) 880-4788](tel:+1(410)880-4788) X1145
Fax [+1 \(410\) 880-4098](tel:+1(410)880-4098)

--

Barbara Brown

MDE-LRP-VCP Section Head

direct [410 537 3212](tel:4105373212)

general [410 537 3493](tel:4105373493)

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

--

Barbara Brown

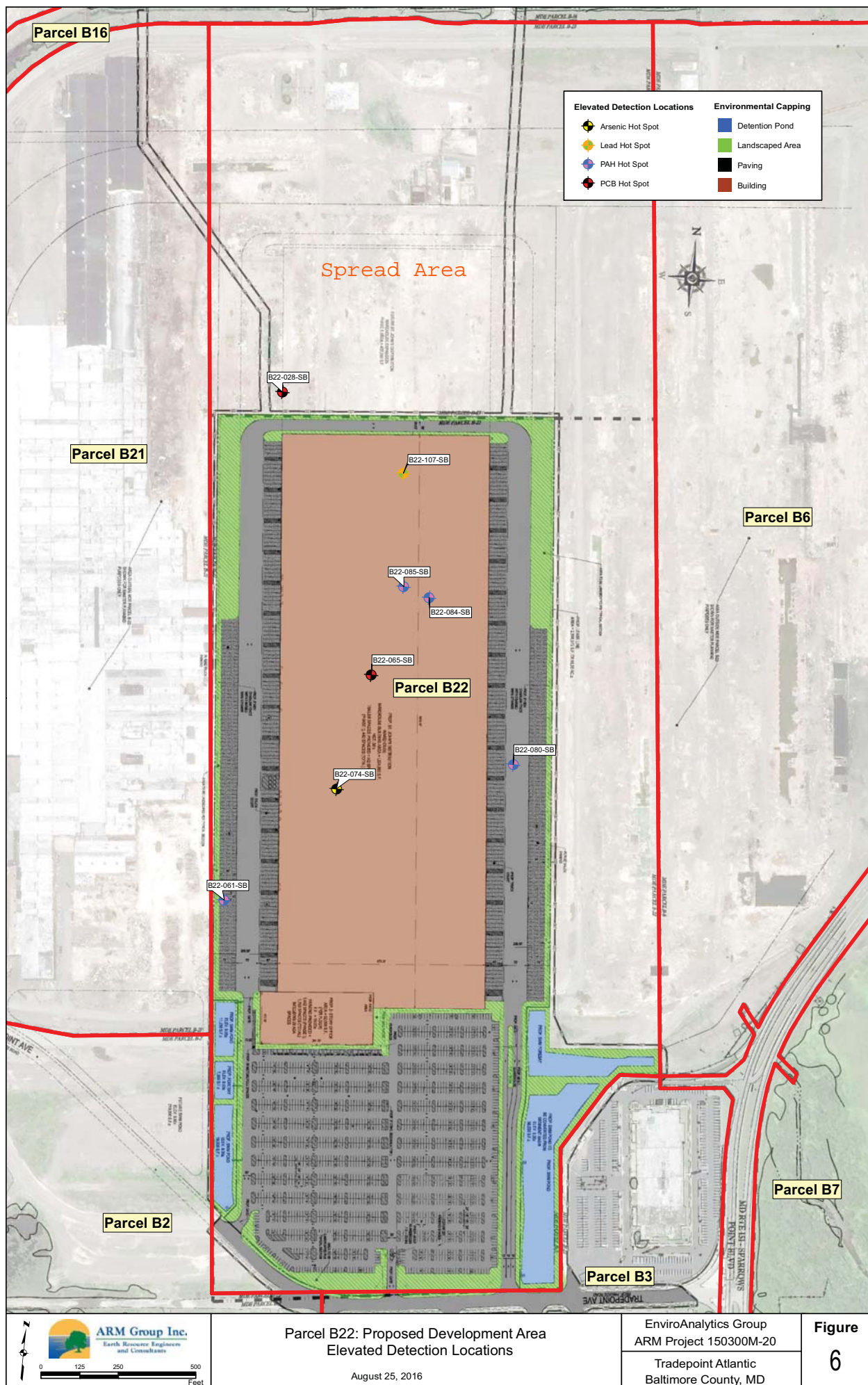
MDE-LRP-VCP Section Head

direct 410 537 3212

general 410 537 3493

[Click](#)

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



Keith Progin

From: Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>
Sent: Monday, September 17, 2018 1:02 PM
To: Keith Progin
Cc: Barbara Brown -MDE-
Subject: Re: SPT Stockpile Sampling Results

Okay, I couldn't find one either. These soils are approved for use under a VCP cap. Let me know if you need anything else.

Thanks,
Jennifer Sohns

On Mon, Sep 17, 2018 at 12:52 PM Keith Progin <kprogin@hcea.com> wrote:

I've looked through my records and I do not see an approval. My apologies if I've missed it.

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

Cell (443) 250-9467
Phone +1 (410) 880-4788 X1145
Fax +1 (410) 880-4098

From: Jennifer Sohns -MDE- [mailto:jennifer.sohns@maryland.gov]
Sent: Monday, September 17, 2018 8:44 AM
To: Keith Progin
Cc: Barbara Brown -MDE-
Subject: Re: SPT Stockpile Sampling Results

Hey Keith,

Is this approval still hanging out there or did you hear from us on this and I missed it?

Thanks,

Jennifer

On Tue, Aug 28, 2018 at 10:55 AM Keith Progin <kprogin@hcea.com> wrote:

The last correspondence that I have on record are the emails below. I don't believe I received an email determining whether or not the tested stockpiles were acceptable for use under a VCP cap. Not an urgent request so please advise at your convenience.

Thank you!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

Cell (443) 250-9467
Phone +1 (410) 880-4788 X1145
Fax +1 (410) 880-4098

From: Keith Progin
Sent: Monday, July 30, 2018 10:31 AM
To: Jennifer Sohns -MDE-; Barbara Brown -MDE-
Cc: phaid@tradepointatlantic.com
Subject: RE: SPT Stockpile Sampling Results

They started the conversion of the basin and the placement of the liner on the basin bottom in April 2018. The work included cutting back the slopes as well as cleaning out the bottom of the basin. This material was screened by our on-site technician (EP) and was stockpiled adjacent to the basin. The excavations and placement of liner and approved fill was completed in June. The contractor is currently finishing the landscaping.

-Keith

From: Jennifer Sohns -MDE- [<mailto:jennifer.sohns@maryland.gov>]
Sent: Monday, July 30, 2018 10:14 AM
To: Barbara Brown -MDE-
Cc: Keith Progin; phaid@tradepointatlantic.com
Subject: Re: SPT Stockpile Sampling Results

Hey Keith,

I had thought the western basin on Parcel B22 was constructed months ago. How recent was this work done?

thanks,

Jennifer

On Thu, Jul 26, 2018 at 8:30 AM, Barbara Brown -MDE- <barbara.brown1@maryland.gov> wrote:

Hi Keith

This isn't the material from B5? Do you have the total metals and SVOC sampling from this material?

On Wed, Jul 25, 2018 at 3:44 PM, Keith Progin <kprogin@hcea.com> wrote:

Barbara,

Please see the attached laboratory report for the stockpiles currently located on B-21. Samples B1 through B10 were composite samples collected from an approximate 9,590 yard stockpile that was generated during the excavation of the western basin on B-22 (Under Armor). Samples TA-1 through TA-3 were composite sampled collected from approximately 2,400 yards of soil generated during the construction of Tradepoint Avenue.

HCEA's technician was present during the exaction of the basin and Tradepoint Avenue and the soils were screened for environmental impact. None of the stockpiled soils (from either the basin or Tradepoint Avenue) exhibited evidence of elevated PID readings, odors, or staining.

Tradepoint Atlantic is proposing using this material beneath a VCP cap at SPT. Please advise if placing the stockpiled soils is acceptable beneath a VCP cap. Although the exact location has not yet been determined, the MDE will be notified of the location prior to any placement and the soils will be tracked accordingly.

Thanks!

Keith Progin | Project Manager, Environmental Division

HILLIS-CARNES ENGINEERING ASSOCIATES

Corporate Headquarters
[10975 Guilford Road, Suite A](#)
Annapolis Junction, MD 20701
Cell (443) 250-9467
Phone +1 (410) 880-4788 X1145
Fax +1 (410) 880-4098
Email kprogin@hcea.com

Website www.hcea.com

LinkedIn

MD * DC * DE * PA * VA * Caribbean



CRRGP F KZ 'M'



Maryland Market Area
Quality Control Laboratory

December 21, 2016

Churchville Quarry
1219 Calvary Road
Bel Air, Maryland 21015

Attn: Jason
Company: Ligon & Ligon

RE: BGE Sparrows Point

Sir or Ma'am,

This is to certify that the MD SHA CR-6 gneiss Crusher Run, Pennsylvania 2A, as produced at our Churchville, Maryland Quarry meets the specifications of the 2008 Maryland State Highway Administration, Section 901A, ASTM D2940 (subbase) and City of Baltimore specifications under Article 20.02.

The material being supplied for transport is from a virgin source and that the material is not contaminated with controlled hazardous substances or petroleum products as a result of a spill, leak, discharge or release into the environment. No controlled hazardous substances or oil are used in the extraction, production, or loading processes.

Sieve Analysis of Aggregates according to ASTM C136 – Dry Grading

Sieve Size	% Passing Cumulative	MD SHA Specs	Penn. 2A Specs
2"	100.0	100	100
1 ½"	100.0	90-100	
1"	93.8		
¾"	82.5	60-90	52-100
½"	67.9		
3/8"	58.9		
#4 Mesh	45.1	30-60	24-50
#8 Mesh	36.5		16-38
#16 Mesh	31.0		
#30 Mesh	27.3		10-30
#50 Mesh	23.6		
#100 Mesh	18.0		
#200 Mesh	11.0	0-15	0-10

Dry Loose Unit Weight 112.0 #/CF
Dry Rodded Unit Weight 118 #/CF



Maryland Market Area
Quality Control Laboratory

Assuring you of our best attention at all times,
Sincerely,

A handwritten signature in black ink, reading 'Lynn McGarity', written in a cursive style.

Lynn McGarity (Parry)
Quality Control Manager – Aggregates
Maryland Market Area



Moisture Density Curve



Date: 1/5/2015

Material Source: Churchville

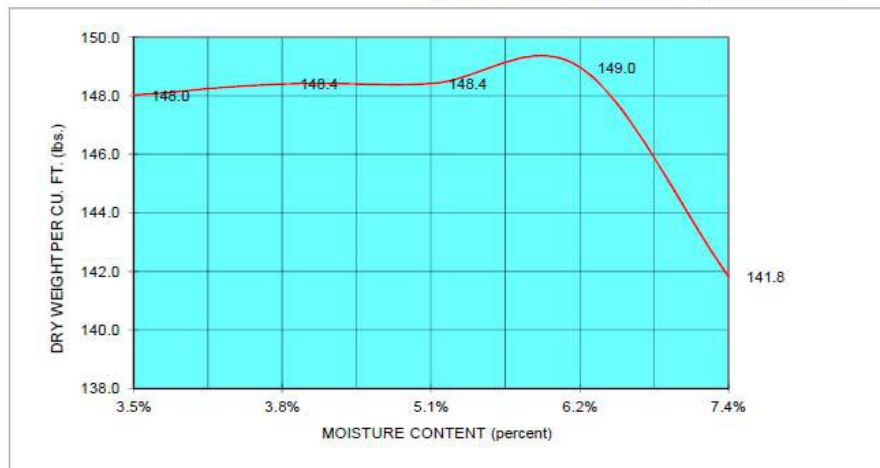
Material Type: CR-6

Moisture-Density Relationship of Soils (T180 Method D) with oversize correction

Trail No.	Wet Sample & Mold grams	Wet Sample grams	Wet Weight per Cu. Ft. lbs.	Moisture Determination				Dry Weight per Cu. Ft. lbs.
				Wet Sample grams	Dry Sample grams	Moisture loss grams	Moisture Content percent	
1	11932.3	5215.6	153.3	5215.6	5036.9	178.7	3.5%	148.0
2	11959.3	5242.6	154.1	5242.6	5050.1	192.5	3.8%	148.4
3	12026.4	5309.7	156.0	5309.7	5050.4	259.3	5.1%	148.4
4	12102.3	5385.6	158.3	5385.6	5069.6	316	6.2%	149.0
5	11899.4	5182.7	152.3	5182.7	4826.1	356.6	7.4%	141.8

Weight of Mold 6716.7 grams Maximum Dry Density 149.1 lbs./ cu. ft.

Optimum Moisture Content 6.1 %





Maryland Market Area
Quality Control Laboratory

January 16, 2017

Ligon & Ligon
Attn: Jason

Subject: "Clean" Soil Certification
Project: BGE Sparrows Point

Dear Jason

This letter serves to certify that the material from the Bluegrass Materials Churchville Quarry for the BGE Sparrows Point project to be sold to Ligon & Ligon is to my knowledge not contaminated with controlled hazardous substances or petroleum products as results of a spill, leak, discharge or release into the environment. The materials produced at this location are all virgin stone or sand products. The material supplied for this project is BGE Sand. .

Quarry Location: Churchville Quarry 1219 Calvary Road, BelAir MD 21015

Sincerely,

A handwritten signature in black ink, reading "Lynn McGarity".

Lynn McGarity (Parry)
Quality Control Manager - Aggregates
Maryland Market Area



Maryland Market Area
Quality Control Laboratory

February 2, 2017

Ligon & Ligon
Attn: Jason

Subject: "Clean" Soil Certification
Project: Sparrows Point

Dear Jason

This letter serves to certify that the material from the Bluegrass Materials Churchville Quarry for the Sparrows Point project to be sold to Ligon & Ligon is to my knowledge not contaminated with controlled hazardous substances or petroleum products as results of a spill, leak, discharge or release into the environment. The materials produced at this location are all virgin stone or sand products. The material supplied for this project is ASTM #57 stone.

Quarry Location: Churchville Quarry 1219 Calvary Road, BelAir MD 21015

Sincerely,

A handwritten signature in black ink, appearing to read 'Lynn McGarity', is written over a horizontal line.

Lynn McGarity (Parry)
Quality Control Manager - Aggregates
Maryland Market Area



Maryland Market Area
Quality Control Laboratory

March 8, 2017

Customer: CCS
Attn: Mark Niemann

Subject: "Clean" Soil Certification
Project: Tradepoint Atlantic
Sparrows Point

Dear Mark

This letter serves to certify that the virgin material from the Bluegrass Materials Churchville Quarry to be sold to CCS is to my knowledge is not contaminated with controlled hazardous substances or petroleum products as a results of a spill, leak, discharge or release into the environment.

Quarry Location: Churchville Quarry, 1219 Calvary Road, Bel Air, MD 21015

Sincerely,

A handwritten signature in cursive script, appearing to read "Lynn McGarity", is written over a horizontal line.

Lynn McGarity (Parry)
Quality Control Manager - Aggregates
Maryland Market Area



Maryland Market Area
Quality Control Laboratory

March 28, 2017

Company: CCS
Attn: Mark Niewman

Subject: "Clean" Soil Certification
Project: Tradepoint Atlantic
Sparrows Point

Dear Mark

This letter serves to certify that the # 10 stone dust virgin material from the Bluegrass Materials Texas Quarry to be sold to CCS is to my knowledge is not contaminated with controlled hazardous substances or petroleum products as a results of a spill, leak, discharge or release into the environment.

Quarry Location: Texas 10000 Beaver Dam Road, Cockeysville, MD 21030
Churchville 1219 Calvary Road, Bel Air, MD 21015

Sincerely,

A handwritten signature in black ink, reading "Lynn McGarity".

Lynn McGarity (Parry)
Quality Control Manager - Aggregates
Maryland Market Area



Maryland Market Area
Quality Control Laboratory

August 1, 2017

Texas Quarry
10,000 Beaver Dam Road
Cockeysville, Maryland 21030

Company: Gray and Son
Attn: Kevin

RE: Trade Point Atlantic

Sir or Ma'am

We submit the following mix design covering Non Pugged GA Base Material as produced at our Texas, Maryland Quarry in accordance with the Maryland State Highway Administration 2008 specifications under Section 901 and ASTM D-2940.

**Due to the variable geologic material in the deposit Bluegrass Materials does not guarantee meeting any specifications of the 0.02mm specifications in the use of dense graded bases.

Samples of these materials have been prepared and previously submitted to the Maryland State Highway Administration's Laboratory Hanover Maryland for approval and will be tested on a two year basis.

No controlled hazardous substances or oil used in the extraction, production, or loading processes. Therefore, to the best of my knowledge, the material from the Texas, Maryland facility has not been contaminated by controlled hazardous substance or petroleum products.

Mix Design No. N-P-GA-47-1-15

Sieve Size	% Passing Cumulative	Design Range	Tolerances
2"	100.0	100	-2
1 1/2"	98.0	95-100	+/-5
1"	92.9		
3/4"	81.0	70-92	+/-8
1/2"	66.4		
3/8"	58.0	50-70	+/-8
#4 Mesh	43.0	35-55	+/-8
#8 Mesh	37.3		
#16 Mesh	32.0		
#30 Mesh	25.0	12-25	+/-5
#50 Mesh	17.1		
#100 Mesh	9.4		
#200 Mesh	4..0	0-8	+/-2



Maryland Market Area
Quality Control Laboratory

Test Performed	Result	Specification Range	Specification
Bulk Specific Gravity (GSB)	2.836		ASTM C 127
Bulk Specific Gravity (SSD)	2.847		ASTM C 127
Apparent Specific Gravity GSA)	2.868		ASTM C 127
Los Angeles Abrasion	42.0%		ASTM C131
Sodium Sulfate Soundness Loss	2.6 %		AASHTO T104
PH	8		
Unit Weight Loose	124.0 #CF		ASTM C29
Unit Weight Rodded	135.0 #CF		ASTM C29
Tons Cubic Yard	1.75		
Plasticity Index	NP		
Liquid Limit	NV		

Assuring you of our best attention at all times,
Sincerely,

A handwritten signature in black ink, reading "Lynn McGarity". The signature is written in a cursive, flowing style.

Lynn McGarity (Parry)
Quality Control Manager
Maryland Market Area

Keith Progin

From: Barbara Brown -MDE- <barbara.brown1@maryland.gov>
Sent: Thursday, April 27, 2017 4:30 PM
To: Keith Progin
Cc: Jennifer Sohns -MDE- (jennifer.sohns@maryland.gov); Pete Haid
Subject: Re: Sparrows Point - Tradepoint Avenue-Clean Fill Cert Request

Hello Keith

The native soil as shown within the shaded area on Figure 1 of the Urban Green Clean fill sampling memorandum dated April 18, 2017 may be used as clean fill material for industrial land use at the Tradepoint Atlantic Facility. This approval only applies to native soil. Soil from the fill/native soil interface should not be used. If during the course of the soil removal, any staining, odors or fill is encountered this material should not be transported and may require additional testing or other disposal options in accordance with applicable State and local requirements.

All volumes of soil transported to Tradepoint should be documented for inclusion in the Development plan completion report.

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

Barbara Brown
MDE Project Coordinator

On Tue, Apr 25, 2017 at 10:54 AM, Keith Progin <kprogin@hcea.com> wrote:

Barbara,

On behalf of Tradepoint Atlantic, please see the attached memo for soils that were sampled at 5300 Holabird Avenue and are requested for use as backfill for utility lines along Tradepoint Avenue at Sparrows Point. The attached memo also includes Hexavalent Chromium results as requested by the MDE.

Please let me know if you approve or need anything else.

Thanks!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

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Keith Progin

From: Barbara Brown -MDE- <barbara.brown1@maryland.gov>
Sent: Monday, February 26, 2018 3:55 PM
To: Keith Progin
Cc: Jennifer Sohns -MDE-
Subject: Re: Towson University - Proctor & Clean Fill Certification

Hello Keith

The material sampled from the source in Towson as described in the 2/26 e-mail is acceptable as clean fill suitable for capping material for the B-22 sediment pond.

If you have any questions please contact me.

On Mon, Feb 26, 2018 at 3:41 PM, Keith Progin <kprogin@hcea.com> wrote:

I just received the attached laboratory report for the proposed soil for use in the sediment basin at B-22. According to the attached proctor, the soil is a light brown silty sand. They are proposing transporting between 2,000-3,000 yards of material for use in the sediment basin at B-22. The material is part of an approximate 60,000 yard excavation in a mostly green area with a small parking lot in Towson, Maryland (see attached aerial).

The testing was performed by GTA and we have had no input into the testing but are working on behalf of the general contractor. Please let me know if the material is approved for use.

Thank you!

Keith Progin | Project Manager, Environmental Division
HILLIS-CARNES ENGINEERING ASSOCIATES

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Phone [+1 \(410\) 880-4788](tel:+14108804788) X1145
Fax [+1 \(410\) 880-4098](tel:+14108804098)

From: Barbara Brown -MDE- [<mailto:barbara.brown1@maryland.gov>]
Sent: Tuesday, February 20, 2018 11:30 AM
To: Keith Progin
Cc: Jennifer Sohns -MDE-; Pete Haid; Gina L. Galimberti
Subject: Fwd: Towson University - Proctor & Clean Fill Certification

----- Forwarded message -----

From: **Barbara Brown -MDE-** <barbara.brown1@maryland.gov>

Date: Tue, Feb 20, 2018 at 11:24 AM
Subject: Fwd: Towson University - Proctor & Clean Fill Certification
To: Jennifer Sohns -MDE- <jennifer.sohns@maryland.gov>

----- Forwarded message -----

From: **Barbara Brown -MDE-** <barbara.brown1@maryland.gov>
Date: Mon, Feb 12, 2018 at 1:46 PM
Subject: Re: Towson University - Proctor & Clean Fill Certification
To: Brandon Bonanno <bbonanno@mcmdemo.com>
Cc: Michael Cirri <mcirri@jeinc.org>

Hi Brandon

Testing is for TCLP-so its not a hazardous waste. For VCP to approve use as clean fill or under cap material we need total metals, PCB's SVOCs etc. Also need a map and description of where soil is originating-lawn, under a building, storm water pond etc. and a description of the soil-sand/clay-fill?- and volume of pile.

On Mon, Feb 12, 2018 at 1:17 PM, Brandon Bonanno <bbonanno@mcmdemo.com> wrote:

Barbara – We have the ability to bring in soil removed as part of a project at Towson University. Attached is the testing that has been provided.

Please review for approval to use as clean fill and backfill material at Sparrows Point.

Thank you,

Brandon J. Bonanno

Vice President, Operations

MCM Management Corporation

bbonanno@mcmdemo.com

Cell Phone: [410-292-6356](tel:410-292-6356)

From: [Gina L. Galimberti](#)
To: [Pete Haid](#)
Subject: RE: Back River Soil

Pete – I spoke with Barbara and she confirmed that the soil from the Back River WWTP is approved for use under areas to be paved and also for use as VCP-approved clean fill for capping. She is getting back to me on what analyses might be required for the stockpile of soils that has been created due to PID readings. I will hear from her by next Monday at the latest.
Gina

Gina Galimberti | Environmental Services Manager
HILLIS-CARNES ENGINEERING ASSOCIATES

Cell (410) 991-2867
Phone +1 (410) 880-4788 X1146
Fax +1 (410) 880-4098

From: Pete Haid [mailto:phaid@tradepointatlantic.com]
Sent: Wednesday, April 12, 2017 12:18 PM
To: Gina L. Galimberti
Subject: Back River Soil

Gina:

Any luck on getting through to Barbara on the Back River Soil question?

Thanks.

Pete

From: [Fantz, Jeff](#)
To: [Keith Progin](#)
Cc: [Gardner, Mike](#); [O'Brien, Caitlin](#)
Subject: Fwd: Back River Soil
Date: Thursday, August 31, 2017 9:53:42 AM
Attachments: [winmail.dat](#)
[ATT00001.htm](#)

Kieth

See email chain below on the Top Soils staged at the north end of my site. Within the body of the email there is MDE approval. This material is screened "Back River Material ".

Respectfully,

Jeff Fantz
Sr On-Site Project Manager



CHICAGO | DALLAS | ATLANTA

Cell: 630-795-9015

Email: jfantz@fclbuilders.com

****Chicago (Itasca, Illinois)**

[1150 Spring Lake Drive | Itasca, IL | 60143](#) | [630.773.0050](tel:630.773.0050)

Begin forwarded message:

From: DJ Cox <DJ@dixieconst.com>
Date: August 31, 2017 at 9:50:42 AM EDT
To: Jeff Fantz <jfantz@fclbuilders.com>
Subject: Fwd: Back River Soil

Email chain from MDE. This is topsoil from the back river site. It was stockpiled the processed (screened) for use.

Sent from my iPhone

Begin forwarded message:

From: Tom Gray <graytrucking@verizon.net>
Date: August 30, 2017 at 3:23:23 PM EDT
To: Dixie Dj Cox <dj@dixieconst.com>
Subject: Fwd: Back River Soil

Sent from my iPhone

Begin forwarded message:

From: Brandon Bonanno <bbonanno@mcmdemo.com>
Date: August 30, 2017 at 2:48:27 PM EDT
To: "graytrucking@verizon.net" <graytrucking@verizon.net>
Subject: Back River Soil

Attached and below is the approval from MDE to bring in the Back River Soil to Sparrows Point. This material was testing prior to excavation and approved by MDE (over 100,000 cy of material was brought to the site).

When brought to the site, the topsoil material was separated and stockpiled as that could not be utilized for backfill material.

Thank you,

Brandon J. Bonanno
Vice President of Operations
MCM Management Corporation
bbonanno@mcmdemo.com<<mailto:bbonanno@mcmdemo.com>>

410-292-6356

From: Barbara Brown -MDE-
[<mailto:barbara.brown1@maryland.gov>]
Sent: Friday, July 08, 2016 9:12 AM
To: Brandon Bonanno
Subject: Fwd: Sampling Report

----- Forwarded message -----

From: Barbara Brown -MDE-
<barbara.brown1@maryland.gov<<mailto:barbara.brown1@maryland.gov>>>

Date: Tue, Apr 21, 2015 at 9:58 AM
Subject: Re: Sampling Report
To: "McMillan, Stephen"
<smcmillan@walshgroup.com<<mailto:smcmillan@walshgroup.com>>>, Mike Robertson <MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>>, Brandon Bonanno <bbonanno@mcmdemo.com<<mailto:bbonanno@mcmdemo.com>>>, "Bhatia, Kapil" <kbhatia@walshgroup.com<<mailto:kbhatia@walshgroup.com>>>

Hello All

As noted previously the soil sample from B-46 14-16' exceeds the allowable level of Arsenic for industrial use. Therefore, soil around B-46 will not be allowed to be transported to Sparrows Point. An investigation should be performed to define the area of elevated Arsenic that must be disposed of properly.

Sparrows Point may use the remaining in-situ soil within the area defined on the attached map at their discretion. This approval is only for Sparrows Point. Transport of soil from the defined area to any other location other than a permitted disposal facility will require separate approvals.

If soil that exhibits odors or staining is encountered during the removal operations it is not approved and should be segregated and properly staged for further testing.

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

Barbara Brown
MDE Project Coordinator

On Tue, Apr 21, 2015 at 9:00 AM, Mike Robertson
<MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>> wrote:
Barbara,

Can you comment yet on the in-situ soils? Archer Western is looking to move this soil soon.

Let me know if there is anything else you need.

Michael J. Robertson
Principal
[cid:image001.jpg@01CD0E4E.F04DF050]Advantage
Environmental Consultants, LLC
8610 Washington Boulevard | Suite 217 | Jessup, MD 20794
Office: 301-776-0500<<tel:301-776-0500>> | Cell: 410-320-8746<<tel:410-320-8746>>
Fax: 301-776-1123<<tel:301-776-1123>>

From: Barbara Brown -MDE-
[<mailto:barbara.brown1@maryland.gov><<mailto:barbara.brown1@maryland.gov>>]

Sent: Wednesday, April 01, 2015 4:43 PM
To: Mike Robertson
Cc: McMillan, Stephen; Bhatia, Kapil
Subject: Re: Sampling Report

Hi Mike

I just received the additional boring log information I requested-I would like to see if there is any indication why the one sample was so much more elevated than the rest of the sample results...

If Archer Westin wants to move the in-situ soil anywhere other than Sparrows Point-they need to be aware that this soil has not been reviewed for anything other than industrial land use and only by LRP.

Barbara Brown

On Wed, Apr 1, 2015 at 4:38 PM, Mike Robertson
<MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>> wrote:
Barbara,

Have you made a determination regarding the in-situ soils at Back River? I think you said that arsenic in one area may be a problem and that you might want some additional sampling there. Does that mean that Archer Western can move the in-situ soils except for that one area while we look into it further?

Let us know.

Thanks,

Michael J. Robertson
Principal
[cid:image001.jpg@01CD0E4E.F04DF050]Advantage
Environmental Consultants, LLC
8610 Washington Boulevard | Suite 217 | Jessup, MD 20794
Office: 301-776-0500<<tel:301-776-0500>> | Cell: 410-320-
8746<<tel:410-320-8746>>
Fax: 301-776-1123<<tel:301-776-1123>>

From: Barbara Brown -MDE-
[<mailto:barbara.brown1@maryland.gov><<mailto:barbara.brown1@maryland.gov>>]

Sent: Thursday, March 12, 2015 4:33 PM
To: Mike Robertson
Cc: McMillan, Stephen; Bhatia, Kapil
Subject: Re: Sampling Report

Stockpile confusion!!!

Ok we are good and will look at the soil data for the proposed in-situ fill source in the trickling area.

Barbara Brown

On Thu, Mar 12, 2015 at 4:19 PM, Mike Robertson
<MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>> wrote:
Barbara,

I confirmed with Kapil that the "museum" stockpile is not being hauled from the site. Please disregard this data for this exercise. This information should be in KCIs final report.

Steve - can you confirm that this material is not being hauled from the site.

Thanks,

Michael J. Robertson
Principal
[cid:image001.jpg@01CD0E4E.F04DF050]Advantage
Environmental Consultants, LLC
8610 Washington Boulevard | Suite 217 | Jessup, MD 20794
Office: 301-776-0500<<tel:301-776-0500>> | Cell: 410-320-8746<<tel:410-320-8746>>
Fax: 301-776-1123<<tel:301-776-1123>>

From: McMillan, Stephen
[<mailto:smcmillan@walshgroup.com><<mailto:smcmillan@walshgroup.com>>]

Sent: Thursday, March 12, 2015 4:16 PM
To: Barbara Brown -MDE-; Mike Robertson
Cc: Bhatia, Kapil
Subject: RE: Sampling Report

That is not the same stockpile. This is the stock pile we're using for back fill on the site. Essentially, it's a drying bed when you come in the site on the right.

Thanks,

Stephen McMillan
Assistant Project Manager
The Walsh Group | Archer Western
Back River Wastewater Treatment Plant SC 877 & 882,
Baltimore, MD
An Equal Opportunity Employer
8201 Eastern Avenue
Baltimore, MD 21224
smcmillan@walshgroup.com<<mailto:smcmillan@walshgroup.com>>

Ph: 443.563.1190<<tel:443.563.1190>>

From: Barbara Brown -MDE-
[<mailto:barbara.brown1@maryland.gov>]
Sent: Thursday, March 12, 2015 3:56 PM

To: Mike Robertson
Cc: Bhatia, Kapil; McMillan, Stephen
Subject: Re: Sampling Report

Hi All

Where is the Museum Stockpile? Its not the same stockpile that was just sampled by AEC is it?

Barbara Brown

On Thu, Mar 12, 2015 at 3:43 PM, Mike Robertson
<MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>> wrote:
Barbara,

Thank you. Attached is a report that I just received from The Walsh Group which they just received from the owner that KCI did. I suppose that this information should be included in your review regarding the in-situ soils. Did you know this was being done?

Is this why you are delaying your decision about the in-situ soils?

Michael J. Robertson
Principal
[cid:image001.jpg@01CD0E4E.F04DF050]Advantage
Environmental Consultants, LLC
8610 Washington Boulevard | Suite 217 | Jessup, MD 20794
Office: 301-776-0500<<tel:301-776-0500>> | Cell: 410-320-8746<<tel:410-320-8746>>
Fax: 301-776-1123<<tel:301-776-1123>>

From: Barbara Brown -MDE-
[<mailto:barbara.brown1@maryland.gov><<mailto:barbara.brown1@maryland.gov>>]

Sent: Thursday, March 12, 2015 3:13 PM
To: Mike Robertson
Cc: McMillan, Stephen; Bhatia, Kapil; Russ Becker; Brandon Bonanno; Dorgan, Doug;
RLUTZ@SAUL.COM<<mailto:RLUTZ@SAUL.COM>>
Subject: Re: Sampling Report

MDE VCP has reviewed the sampling results from the soil stockpile as submitted in the report. The soil stockpile is suitable for use for fill material at Sparrows Point. This approval is for industrial land use only and limited only to the stockpile material to be transported to Sparrows Point. MDE VCP will continue to review the results of the in-situ soil sampling.

If you have any questions regarding this approval please

contact me

On Wednesday, March 11, 2015, Mike Robertson
<MRobertson@aec-env.com<<mailto:MRobertson@aec-env.com>>> wrote:
Barbara,

Attached is our sampling report completed in accordance with the work plan and MDE comments. We did not need to run any contingent samples as outlined in the work plan.

Let me know if you have any questions or comments.

Thank you,

Michael J. Robertson
Principal
[cid:image001.jpg@01CD0E4E.F04DF050]Advantage
Environmental Consultants, LLC
8610 Washington Boulevard | Suite 217 | Jessup, MD 20794
Office: 301-776-0500<<tel:301-776-0500>> | Cell: 410-320-
8746<<tel:410-320-8746>>
Fax: 301-776-1123<<tel:301-776-1123>>

--

Barbara Brown
MDE-LRP-VCP Section Head
direct 410 537 3212<<tel:410%20537%203212>>
general 410 537 3493<<tel:410%20537%203493>>

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Barbara Brown
MDE-LRP-VCP Section Head
direct 410 537 3212<<tel:410%20537%203212>>
general 410 537 3493<<tel:410%20537%203493>>

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APPENDIX L

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Analytical Report for
Hillis Carnes Engineering Associates
Certificate of Analysis No.: 17051801

Project Manager: Gina Galimberti

Project Name : SPT B-22

Project Location: Dundalk, MD

Project ID : 16325B



May 19, 2017
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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ROUTE 40 WEST
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800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



May 19, 2017

Gina Galimberti
Hillis Carnes Engineering Associates
10975 Guilford Road, Ste. A
Annapolis Junction, MD 20701

Reference: PSS Work Order(s) No: **17051801**
Project Name: SPT B-22
Project Location: Dundalk, MD
Project ID.: 16325B

Dear Gina Galimberti :

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 **17051801**.

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 June 22, 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: Hillis Carnes Engineering Associates
Project Name: SPT B-22

Work Order Number(s): 17051801

Project ID: 16325B

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/18/2017 at 08:00 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17051801-001	SD-F4	WASTE WATER	05/17/17 17:00

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

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17051801

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 19, 2017

Project Name: SPT B-22
Project Location: Dundalk, MD
Project ID: 16325B

Sample ID: SD-F4 **Date/Time Sampled: 05/17/2017 17:00** **PSS Sample ID: 17051801-001**

Matrix: WASTE WATER **Date/Time Received: 05/18/2017 08:00**

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: 3510C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1221	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1232	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1242	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1248	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1254	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029
PCB-1260	ND	ug/L	5.0		10	05/18/17	05/18/17 19:19	1029

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17051801

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 19, 2017

Project Name: SPT B-22
Project Location: Dundalk, MD
Project ID: 16325B

Sample ID: SD-F4	Date/Time Sampled: 05/17/2017 17:00	PSS Sample ID: 17051801-001
Matrix: WASTE WATER	Date/Time Received: 05/18/2017 08:00	

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
Benzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Bromochloromethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Bromodichloromethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Bromoform	ND	ug/L	500		100	05/18/17	05/18/17 16:05	1011
Bromomethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
2-Butanone (MEK)	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
Carbon Disulfide	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
Carbon Tetrachloride	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Chlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Chloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Chloroform	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Chloromethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Cyclohexane	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	500		100	05/18/17	05/18/17 16:05	1011
Dibromochloromethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2-Dibromoethane (EDB)	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2-Dichlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,3-Dichlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Dichlorodifluoromethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,4-Dichlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,1-Dichloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2-Dichloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
cis-1,2-Dichloroethene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,1-Dichloroethene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2-Dichloropropane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
cis-1,3-Dichloropropene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
trans-1,3-Dichloropropene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
trans-1,2-Dichloroethene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Ethylbenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17051801

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 19, 2017

Project Name: SPT B-22
Project Location: Dundalk, MD
Project ID: 16325B

Sample ID: SD-F4	Date/Time Sampled: 05/17/2017 17:00	PSS Sample ID: 17051801-001
Matrix: WASTE WATER	Date/Time Received: 05/18/2017 08:00	

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	500		100	05/18/17	05/18/17 16:05	1011
Isopropylbenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Methyl Acetate	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
Methylcyclohexane	ND	ug/L	1,000		100	05/18/17	05/18/17 16:05	1011
Methylene Chloride	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
4-Methyl-2-Pentanone	ND	ug/L	500		100	05/18/17	05/18/17 16:05	1011
Methyl-t-butyl ether	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Naphthalene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Styrene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Tetrachloroethene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Toluene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2,3-Trichlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,2,4-Trichlorobenzene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,1,1-Trichloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
1,1,2-Trichloroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Trichloroethene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Trichlorofluoromethane	ND	ug/L	500		100	05/18/17	05/18/17 16:05	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
Vinyl Chloride	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011
m,p-Xylenes	ND	ug/L	200		100	05/18/17	05/18/17 16:05	1011
o-Xylene	ND	ug/L	100		100	05/18/17	05/18/17 16:05	1011



Case Narrative Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: SPT B-22

Work Order Number(s): 17051801

Project ID: 16325B

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:

Voa vials received at a temperature greater than 6 degrees C and ice was present.

Analytical:

Polychlorinated Biphenyls

Batch: 142756

Surrogate recoveries affected by sample matrix.

TCL Volatile Organic Compounds

Batch: 142762

17051801-001. 100X dilution performed to prevent sample foam over during purge.

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): 17051801

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: SPT B-22

Project Manager: Gina Galimberti

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8082 A	SD-F4	Initial	17051801-001	1029	W	66195	142756	05/17/2017	05/18/2017 10:42	05/18/2017 19:19
	66195-1-BKS	BKS	66195-1-BKS	1029	W	66195	142756	-----	05/18/2017 10:42	05/18/2017 14:37
	66195-1-BLK	BLK	66195-1-BLK	1029	W	66195	142756	-----	05/18/2017 10:42	05/18/2017 14:10
	66195-1-BSD	BSD	66195-1-BSD	1029	W	66195	142756	-----	05/18/2017 10:42	05/18/2017 15:06
SW-846 8260 B	SD-F4	Initial	17051801-001	1011	W	66212	142762	05/17/2017	05/18/2017 09:30	05/18/2017 16:05
	66212-1-BKS	BKS	66212-1-BKS	1011	W	66212	142762	-----	05/18/2017 09:30	05/18/2017 10:36
	66212-1-BLK	BLK	66212-1-BLK	1011	W	66212	142762	-----	05/18/2017 09:30	05/18/2017 11:28
	B1 water S	MS	17051714-001 S	1011	W	66212	142762	05/16/2017	05/18/2017 09:30	05/18/2017 17:10
	B1 water SD	MSD	17051714-001 SD	1011	W	66212	142762	05/16/2017	05/18/2017 09:30	05/18/2017 17:35

PHASE SEPARATION SCIENCE, INC.

QC Summary 17051801

Hillis Carnes Engineering Associates SPT B-22

Analytical Method: SW-846 8082 A

Seq Number: 142756

Matrix: Waste Water

Prep Method: SW3510C

Date Prep: 05/18/2017

PSS Sample ID: 17051801-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	42		39-154	%	05/18/17 19:19
Tetrachloro-m-xylene	0	*	35-131	%	05/18/17 19:19

Analytical Method: SW-846 8260 B

Seq Number: 142762

Matrix: Waste Water

Prep Method: SW5030B

Date Prep: 05/18/2017

PSS Sample ID: 17051801-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	05/18/17 16:05
Dibromofluoromethane	102		91-119	%	05/18/17 16:05
Toluene-D8	101		90-117	%	05/18/17 16:05

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 17051801

Hillis Carnes Engineering Associates
SPT B-22

Analytical Method: SW-846 8082 A

Seq Number: 142756

MB Sample Id: 66195-1-BLK

Matrix: Water

LCS Sample Id: 66195-1-BKS

Prep Method: SW3510C

Date Prep: 05/18/17

LCSD Sample Id: 66195-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
PCB-1016	<0.5000	5.000	4.017	80	4.041	81	56-124	1	20	ug/L	05/18/17 14:37	
PCB-1260	<0.5000	5.000	3.391	68	3.464	69	61-103	2	20	ug/L	05/18/17 14:37	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	76		91		88		39-154	%	05/18/17 14:37
Tetrachloro-m-xylene	66		84		81		35-131	%	05/18/17 14:37

PHASE SEPARATION SCIENCE, INC.

QC Summary 17051801

Hillis Carnes Engineering Associates
SPT B-22

Analytical Method: SW-846 8260 B

Seq Number: 142762

MB Sample Id: 66212-1-BLK

Matrix: Water

LCS Sample Id: 66212-1-BKS

Prep Method: SW5030B

Date Prep: 05/18/17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.40	95	29-149	ug/L	05/18/17 10:36	
Benzene	<1.000	50.00	51.38	103	85-123	ug/L	05/18/17 10:36	
Bromochloromethane	<1.000	50.00	52.66	105	82-136	ug/L	05/18/17 10:36	
Bromodichloromethane	<1.000	50.00	53.78	108	88-133	ug/L	05/18/17 10:36	
Bromoform	<5.000	50.00	51.37	103	80-126	ug/L	05/18/17 10:36	
Bromomethane	<1.000	50.00	51.84	104	64-139	ug/L	05/18/17 10:36	
2-Butanone (MEK)	<10.00	50.00	48.51	97	39-135	ug/L	05/18/17 10:36	
Carbon Disulfide	<10.00	50.00	48.33	97	85-124	ug/L	05/18/17 10:36	
Carbon Tetrachloride	<1.000	50.00	56.30	113	81-138	ug/L	05/18/17 10:36	
Chlorobenzene	<1.000	50.00	50.43	101	85-120	ug/L	05/18/17 10:36	
Chloroethane	<1.000	50.00	55.27	111	75-129	ug/L	05/18/17 10:36	
Chloroform	<1.000	50.00	52.05	104	85-128	ug/L	05/18/17 10:36	
Chloromethane	<1.000	50.00	53.31	107	60-139	ug/L	05/18/17 10:36	
Cyclohexane	<10.00	50.00	50.39	101	55-131	ug/L	05/18/17 10:36	
1,2-Dibromo-3-Chloropropane	<5.000	50.00	51.13	102	69-127	ug/L	05/18/17 10:36	
Dibromochloromethane	<1.000	50.00	53.86	108	82-127	ug/L	05/18/17 10:36	
1,2-Dibromoethane (EDB)	<1.000	50.00	51.30	103	82-121	ug/L	05/18/17 10:36	
1,2-Dichlorobenzene	<1.000	50.00	50.59	101	82-123	ug/L	05/18/17 10:36	
1,3-Dichlorobenzene	<1.000	50.00	49.91	100	81-123	ug/L	05/18/17 10:36	
1,4-Dichlorobenzene	<1.000	50.00	48.87	98	81-121	ug/L	05/18/17 10:36	
Dichlorodifluoromethane	<1.000	50.00	58.41	117	69-147	ug/L	05/18/17 10:36	
1,1-Dichloroethane	<1.000	50.00	53.60	107	83-123	ug/L	05/18/17 10:36	
1,2-Dichloroethane	<1.000	50.00	52.91	106	86-138	ug/L	05/18/17 10:36	
1,1-Dichloroethene	<1.000	50.00	52.79	106	85-127	ug/L	05/18/17 10:36	
cis-1,2-Dichloroethene	<1.000	50.00	51.16	102	87-127	ug/L	05/18/17 10:36	
1,2-Dichloropropane	<1.000	50.00	52.29	105	79-125	ug/L	05/18/17 10:36	
cis-1,3-Dichloropropene	<1.000	50.00	55.55	111	79-131	ug/L	05/18/17 10:36	
trans-1,3-Dichloropropene	<1.000	50.00	56.39	113	82-133	ug/L	05/18/17 10:36	
trans-1,2-Dichloroethene	<1.000	50.00	51.47	103	85-125	ug/L	05/18/17 10:36	
Ethylbenzene	<1.000	50.00	53.47	107	83-123	ug/L	05/18/17 10:36	
2-Hexanone	<5.000	50.00	44.82	90	37-137	ug/L	05/18/17 10:36	
Isopropylbenzene	<1.000	50.00	51.42	103	70-131	ug/L	05/18/17 10:36	
Methyl Acetate	<10.00	50.00	47.19	94	69-127	ug/L	05/18/17 10:36	
Methylcyclohexane	<10.00	50.00	53.07	106	75-129	ug/L	05/18/17 10:36	
Methylene Chloride	<1.000	50.00	51.33	103	86-124	ug/L	05/18/17 10:36	
4-Methyl-2-Pentanone	<5.000	50.00	45.59	91	39-143	ug/L	05/18/17 10:36	
Methyl-t-butyl ether	<1.000	50.00	56.08	112	75-134	ug/L	05/18/17 10:36	
Naphthalene	<1.000	50.00	46.89	94	61-118	ug/L	05/18/17 10:36	
Styrene	<1.000	50.00	56.43	113	80-120	ug/L	05/18/17 10:36	
1,1,2,2-Tetrachloroethane	<1.000	50.00	49.31	99	64-125	ug/L	05/18/17 10:36	
Tetrachloroethene	<1.000	50.00	49.62	99	83-138	ug/L	05/18/17 10:36	
Toluene	<1.000	50.00	53.21	106	88-126	ug/L	05/18/17 10:36	
1,2,3-Trichlorobenzene	<1.000	50.00	51.27	103	75-124	ug/L	05/18/17 10:36	
1,2,4-Trichlorobenzene	<1.000	50.00	49.15	98	77-131	ug/L	05/18/17 10:36	
1,1,1-Trichloroethane	<1.000	50.00	53.75	108	68-146	ug/L	05/18/17 10:36	
1,1,2-Trichloroethane	<1.000	50.00	52.38	105	85-124	ug/L	05/18/17 10:36	
Trichloroethene	<1.000	50.00	51.99	104	87-127	ug/L	05/18/17 10:36	
Trichlorofluoromethane	<5.000	50.00	53.55	107	77-147	ug/L	05/18/17 10:36	
1,1,2-Trichloro-1,2,2-Trifluoroethane	<1.000	50.00	51.41	103	68-135	ug/L	05/18/17 10:36	
Vinyl Chloride	<1.000	50.00	54.42	109	74-138	ug/L	05/18/17 10:36	
m,p-Xylenes	<2.000	100	106.9	107	84-124	ug/L	05/18/17 10:36	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17051801

Hillis Carnes Engineering Associates
SPT B-22

Analytical Method: SW-846 8260 B

Seq Number: 142762

Matrix: Water

Prep Method: SW5030B

Date Prep: 05/18/17

MB Sample Id: 66212-1-BLK

LCS Sample Id: 66212-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	54.37	109	79-126	ug/L	05/18/17 10:36	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		98		86-111	%	05/18/17 10:36
Dibromofluoromethane	100		102		91-119	%	05/18/17 10:36
Toluene-D8	100		101		90-117	%	05/18/17 10:36

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

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

www.phaseonline.com
email: info@phaseonline.com

PHASE SEPARATION SCIENCE, INC.

[illegible]

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary.



Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	17051801	Received By	Amber Confer
Client Name	Hillis Carnes Engineering Associates	Date Received	05/18/2017 08:00:00 AM
Project Name	SPT B-22	Delivered By	Client
Project Number	16325B	Tracking No	Not Applicable
Disposal Date	06/22/2017	Logged In By	Barb Weber
Shipping Container(s)			
No. of Coolers	1	Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	7
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No
Documentation			
COC agrees with sample labels?	Yes	Sampler Name	G. Galimberti/K. Pro
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	1	Total No. of Containers Received	4
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)		Yes
Do VOA vials have zero headspace?			Yes
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.

Voa vials received at a temperature greater than 6 degrees C and ice was present.

Samples Inspected/Checklist Completed By:

Barb Weber

Barb Weber

Date: 05/18/2017

PM Review and Approval:

Amber Confer

Amber Confer

Date: 05/18/2017

Analytical Report for
Hillis Carnes Engineering Associates
Certificate of Analysis No.: 17053119

Project Manager: Keith Progin
Project Name : SPT B-22
Project Location: Sparrows Point
Project ID : 16325B



June 1, 2017
Phase Separation Science, Inc.
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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.



June 1, 2017

Keith Progin
Hillis Carnes Engineering Associates
10975 Guilford Road, Ste. A
Annapolis Junction, MD 20701

Reference: PSS Work Order(s) No: **17053119**
Project Name: SPT B-22
Project Location: Sparrows Point
Project ID.: 16325B

Dear Keith Progin :

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 **17053119**.

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 July 5, 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,

Cathy Thompson
QA Officer



Sample Summary

Client Name: Hillis Carnes Engineering Associates
Project Name: SPT B-22

Work Order Number(s): 17053119

Project ID: 16325B

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/31/2017 at 04:10 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17053119-001	W-1	GROUND WATER	05/31/17 13:15

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

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17053119

Hillis Carnes Engineering Associates, Annapolis Junction, MD

June 1, 2017

Project Name: SPT B-22

Project Location: Sparrows Point

Project ID: 16325B

Sample ID: W-1 **Date/Time Sampled: 05/31/2017 13:15** **PSS Sample ID: 17053119-001**

Matrix: GROUND WATER **Date/Time Received: 05/31/2017 16:10**

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: 3510C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1221	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1232	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1242	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1248	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1254	4.6	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029
PCB-1260	ND	ug/L	0.50		1	05/31/17	06/01/17 10:01	1029

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17053119

Hillis Carnes Engineering Associates, Annapolis Junction, MD

June 1, 2017

Project Name: SPT B-22

Project Location: Sparrows Point

Project ID: 16325B

Sample ID: W-1 **Date/Time Sampled: 05/31/2017 13:15** **PSS Sample ID: 17053119-001**

Matrix: GROUND WATER **Date/Time Received: 05/31/2017 16:10**

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030B

pH=8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	150	ug/L	10		1	06/01/17	06/01/17 15:07	1011
Benzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Bromochloromethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Bromodichloromethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Bromoform	ND	ug/L	5.0		1	06/01/17	06/01/17 15:07	1011
Bromomethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
2-Butanone (MEK)	14	ug/L	10		1	06/01/17	06/01/17 15:07	1011
Carbon Disulfide	ND	ug/L	10		1	06/01/17	06/01/17 15:07	1011
Carbon Tetrachloride	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Chlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Chloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Chloroform	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Chloromethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Cyclohexane	ND	ug/L	10		1	06/01/17	06/01/17 15:07	1011
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	06/01/17	06/01/17 15:07	1011
Dibromochloromethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2-Dibromoethane (EDB)	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Ethylbenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011

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PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17053119

Hillis Carnes Engineering Associates, Annapolis Junction, MD

June 1, 2017

Project Name: SPT B-22

Project Location: Sparrows Point

Project ID: 16325B

Sample ID: W-1	Date/Time Sampled: 05/31/2017 13:15	PSS Sample ID: 17053119-001
Matrix: GROUND WATER	Date/Time Received: 05/31/2017 16:10	

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030B

pH=8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone	ND	ug/L	5.0		1	06/01/17	06/01/17 15:07	1011
Isopropylbenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Methyl Acetate	ND	ug/L	10		1	06/01/17	06/01/17 15:07	1011
Methylcyclohexane	ND	ug/L	10		1	06/01/17	06/01/17 15:07	1011
Methylene Chloride	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
4-Methyl-2-Pentanone	ND	ug/L	5.0		1	06/01/17	06/01/17 15:07	1011
Methyl-t-butyl ether	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Naphthalene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Styrene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Tetrachloroethene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Toluene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Trichloroethene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	06/01/17	06/01/17 15:07	1011
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
Vinyl Chloride	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011
m,p-Xylenes	ND	ug/L	2.0		1	06/01/17	06/01/17 15:07	1011
o-Xylene	ND	ug/L	1.0		1	06/01/17	06/01/17 15:07	1011



Case Narrative Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: SPT B-22

Work Order Number(s): 17053119

Project ID: 16325B

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:

Sample(s) received at 0 degrees but no samples were frozen.

Analytical:

Polychlorinated Biphenyls

Batch: 143135

Surrogate recoveries affected by sample matrix.

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): 17053119

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: SPT B-22

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8082 A	W-1	Initial	17053119-001	1029	W	66381	143135	05/31/2017	05/31/2017 14:46	06/01/2017 10:01
	66381-1-BKS	BKS	66381-1-BKS	1029	W	66381	143135	-----	05/31/2017 14:46	05/31/2017 17:06
	66381-1-BLK	BLK	66381-1-BLK	1029	W	66381	143135	-----	05/31/2017 14:46	05/31/2017 16:38
	66381-1-BSD	BSD	66381-1-BSD	1029	W	66381	143135	-----	05/31/2017 14:46	05/31/2017 17:34
SW-846 8260 B	W-1	Initial	17053119-001	1011	W	66407	143168	05/31/2017	06/01/2017 12:19	06/01/2017 15:07
	66407-1-BKS	BKS	66407-1-BKS	1011	W	66407	143168	-----	06/01/2017 12:19	06/01/2017 13:46
	66407-1-BLK	BLK	66407-1-BLK	1011	W	66407	143168	-----	06/01/2017 12:19	06/01/2017 14:37

PHASE SEPARATION SCIENCE, INC.

QC Summary 17053119

Hillis Carnes Engineering Associates SPT B-22

Analytical Method: SW-846 8082 A

Seq Number: 143135

PSS Sample ID: 17053119-001

Matrix: Ground Water

Prep Method: SW3510C

Date Prep: 05/31/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	33	*	39-154	%	06/01/17 10:01
Tetrachloro-m-xylene	56		35-131	%	06/01/17 10:01

Analytical Method: SW-846 8260 B

Seq Number: 143168

PSS Sample ID: 17053119-001

Matrix: Ground Water

Prep Method: SW5030B

Date Prep: 06/01/2017

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		86-111	%	06/01/17 15:07
Dibromofluoromethane	105		91-119	%	06/01/17 15:07
Toluene-D8	103		90-117	%	06/01/17 15:07

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 17053119

Hillis Carnes Engineering Associates
SPT B-22

Analytical Method: SW-846 8082 A

Seq Number: 143135

MB Sample Id: 66381-1-BLK

Matrix: Water

LCS Sample Id: 66381-1-BKS

Prep Method: SW3510C

Date Prep: 05/31/17

LCSD Sample Id: 66381-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
PCB-1016	<0.5000	5.000	3.842	77	3.859	77	56-124	0	20	ug/L	05/31/17 17:06	
PCB-1260	<0.5000	5.000	3.384	68	3.387	68	61-103	0	20	ug/L	05/31/17 17:06	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	89		86		83		39-154	%	05/31/17 17:06
Tetrachloro-m-xylene	83		80		78		35-131	%	05/31/17 17:06

PHASE SEPARATION SCIENCE, INC.

QC Summary 17053119

Hillis Carnes Engineering Associates

SPT B-22

Analytical Method: SW-846 8260 B

Seq Number: 143168

MB Sample Id: 66407-1-BLK

Matrix: Water

LCS Sample Id: 66407-1-BKS

Prep Method: SW5030B

Date Prep: 06/01/17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.98	96	29-149	ug/L	06/01/17 13:46	
Benzene	<1.000	50.00	52.72	105	85-123	ug/L	06/01/17 13:46	
Bromochloromethane	<1.000	50.00	53.94	108	82-136	ug/L	06/01/17 13:46	
Bromodichloromethane	<1.000	50.00	53.41	107	88-133	ug/L	06/01/17 13:46	
Bromoform	<5.000	50.00	50.04	100	80-126	ug/L	06/01/17 13:46	
Bromomethane	<1.000	50.00	52.47	105	64-139	ug/L	06/01/17 13:46	
2-Butanone (MEK)	<10.00	50.00	46.88	94	39-135	ug/L	06/01/17 13:46	
Carbon Disulfide	<10.00	50.00	48.56	97	85-124	ug/L	06/01/17 13:46	
Carbon Tetrachloride	<1.000	50.00	55.36	111	81-138	ug/L	06/01/17 13:46	
Chlorobenzene	<1.000	50.00	52.00	104	85-120	ug/L	06/01/17 13:46	
Chloroethane	<1.000	50.00	54.61	109	75-129	ug/L	06/01/17 13:46	
Chloroform	<1.000	50.00	51.99	104	85-128	ug/L	06/01/17 13:46	
Chloromethane	<1.000	50.00	51.91	104	60-139	ug/L	06/01/17 13:46	
Cyclohexane	<10.00	50.00	52.12	104	55-131	ug/L	06/01/17 13:46	
1,2-Dibromo-3-Chloropropane	<5.000	50.00	50.00	100	69-127	ug/L	06/01/17 13:46	
Dibromochloromethane	<1.000	50.00	54.77	110	82-127	ug/L	06/01/17 13:46	
1,2-Dibromoethane (EDB)	<1.000	50.00	52.29	105	82-121	ug/L	06/01/17 13:46	
1,2-Dichlorobenzene	<1.000	50.00	51.30	103	82-123	ug/L	06/01/17 13:46	
1,3-Dichlorobenzene	<1.000	50.00	51.54	103	81-123	ug/L	06/01/17 13:46	
1,4-Dichlorobenzene	<1.000	50.00	50.48	101	81-121	ug/L	06/01/17 13:46	
Dichlorodifluoromethane	<1.000	50.00	50.85	102	69-147	ug/L	06/01/17 13:46	
1,1-Dichloroethane	<1.000	50.00	52.14	104	83-123	ug/L	06/01/17 13:46	
1,2-Dichloroethane	<1.000	50.00	50.82	102	86-138	ug/L	06/01/17 13:46	
1,1-Dichloroethene	<1.000	50.00	53.58	107	85-127	ug/L	06/01/17 13:46	
cis-1,2-Dichloroethene	<1.000	50.00	53.11	106	87-127	ug/L	06/01/17 13:46	
1,2-Dichloropropane	<1.000	50.00	51.79	104	79-125	ug/L	06/01/17 13:46	
cis-1,3-Dichloropropene	<1.000	50.00	52.82	106	79-131	ug/L	06/01/17 13:46	
trans-1,3-Dichloropropene	<1.000	50.00	54.95	110	82-133	ug/L	06/01/17 13:46	
trans-1,2-Dichloroethene	<1.000	50.00	52.82	106	85-125	ug/L	06/01/17 13:46	
Ethylbenzene	<1.000	50.00	53.96	108	83-123	ug/L	06/01/17 13:46	
2-Hexanone	<5.000	50.00	43.66	87	37-137	ug/L	06/01/17 13:46	
Isopropylbenzene	<1.000	50.00	53.38	107	70-131	ug/L	06/01/17 13:46	
Methyl Acetate	<10.00	50.00	62.75	126	69-127	ug/L	06/01/17 13:46	
Methylcyclohexane	<10.00	50.00	53.57	107	75-129	ug/L	06/01/17 13:46	
Methylene Chloride	<1.000	50.00	52.69	105	86-124	ug/L	06/01/17 13:46	
4-Methyl-2-Pentanone	<5.000	50.00	43.71	87	39-143	ug/L	06/01/17 13:46	
Methyl-t-butyl ether	<1.000	50.00	50.95	102	75-134	ug/L	06/01/17 13:46	
Naphthalene	<1.000	50.00	46.80	94	61-118	ug/L	06/01/17 13:46	
Styrene	<1.000	50.00	56.58	113	80-120	ug/L	06/01/17 13:46	
1,1,2,2-Tetrachloroethane	<1.000	50.00	50.77	102	64-125	ug/L	06/01/17 13:46	
Tetrachloroethene	<1.000	50.00	48.99	98	83-138	ug/L	06/01/17 13:46	
Toluene	<1.000	50.00	53.15	106	88-126	ug/L	06/01/17 13:46	
1,2,3-Trichlorobenzene	<1.000	50.00	51.80	104	75-124	ug/L	06/01/17 13:46	
1,2,4-Trichlorobenzene	<1.000	50.00	49.84	100	77-131	ug/L	06/01/17 13:46	
1,1,1-Trichloroethane	<1.000	50.00	51.92	104	68-146	ug/L	06/01/17 13:46	
1,1,2-Trichloroethane	<1.000	50.00	52.36	105	85-124	ug/L	06/01/17 13:46	
Trichloroethene	<1.000	50.00	52.33	105	87-127	ug/L	06/01/17 13:46	
Trichlorofluoromethane	<5.000	50.00	51.39	103	77-147	ug/L	06/01/17 13:46	
1,1,2-Trichloro-1,2,2-Trifluoroethane	<1.000	50.00	52.46	105	68-135	ug/L	06/01/17 13:46	
Vinyl Chloride	<1.000	50.00	48.24	96	74-138	ug/L	06/01/17 13:46	
m,p-Xylenes	<2.000	100	111.4	111	84-124	ug/L	06/01/17 13:46	

PHASE SEPARATION SCIENCE, INC.

QC Summary 17053119

Hillis Carnes Engineering Associates
SPT B-22

Analytical Method: SW-846 8260 B

Seq Number: 143168

Matrix: Water

Prep Method: SW5030B

Date Prep: 06/01/17

MB Sample Id: 66407-1-BLK

LCS Sample Id: 66407-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	56.98	114	79-126	ug/L	06/01/17 13:46	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		96		86-111	%	06/01/17 13:46
Dibromofluoromethane	104		101		91-119	%	06/01/17 13:46
Toluene-D8	101		100		90-117	%	06/01/17 13:46

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



SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

www.phaseonline.com
email: info@phaseonline.com

PHASE SEPARATION SCIENCE, INC.

1 CLIENT: <u>Hillis-Carnes</u> OFFICE LOC. <u>AJ</u>		PSS Work Order #: <u>17053119</u> PAGE <u>1</u> OF <u>1</u>				
PROJECT MGR: <u>Kathy Progid</u> PHONE NO.: <u>(410) 880-4788</u>		Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W=Wipe				
EMAIL: <u>Kprogid@phase.com</u> FAX NO.: <u>()</u>		No. <u>3</u> Preservatives Used <u>None</u>				
PROJECT NAME: <u>SPT B-22</u> PROJECT NO.: <u>16325B</u>		SAMPLE TYPE <u>PCBs (including nonhalogenated)</u>				
SITE LOCATION: <u>Star Sparrows Point</u> P.O. NO.: <u></u>		C = COMP G = GRAB				
SAMPLERS: <u>K. Progid</u>		CONTAINERS <u>4</u>				
2	LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX (See Codes)	REMARKS
		<u>W-1</u>	<u>5/31/17</u>	<u>1:15pm</u>	<u>GW</u>	<u>GW infiltration excavation for duct bank on west side of building</u>
5 Relinquished By: (1) <u>K. Progid</u> Date <u>5/31/17</u> Time <u>3:25pm</u> Received By: <u>[Signature]</u>						
Relinquished By: (2) <u>[Signature]</u> Date <u>5/31/17</u> Time <u>1610</u> Received By: <u>The Waco</u>						
Relinquished By: (3) <u>[Signature]</u> Date <u></u> Time <u></u> Received By: <u></u>						
Relinquished By: (4) <u></u> Date <u></u> Time <u></u> Received By: <u></u>						
4 Requested Turnaround Time <input type="checkbox"/> 5-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input checked="" type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other Data Deliverables Required: <u></u>						
# of Coolers: <u>1</u> Custody Seal: <u>ABS</u> 0-2°C Ice Present: <u>PREST</u> Shipping Carrier: <u>Client</u>						
Special Instructions: <u></u>						

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary.



Phase Separation Science, Inc

Sample Receipt Checklist

Work Order # 17053119 **Received By** Thomas Wingate
Client Name Hillis Carnes Engineering Associates **Date Received** 05/31/2017 04:10:00 PM
Project Name SPT B-22 **Delivered By** Client
Project Number 16325B **Tracking No** Not Applicable
Disposal Date 07/05/2017 **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) 2
Temp Blank Present No

Documentation

COC agrees with sample labels? Yes Sampler Name K. Progin
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 1

Total No. of Containers Received 4

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) Yes
Do VOA vials have zero headspace? Yes
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.

Sample(s) received at 0 degrees but no samples were frozen.

Samples Inspected/Checklist Completed By:

Thomas Wingate

Date: 05/31/2017

PM Review and Approval:

Amber Confer

Date: 06/01/2017

Analytical Report for
Hillis Carnes Engineering Associates
Certificate of Analysis No.: 17060727

Project Manager: Keith Progin
Project Name : SPT-B-22
Project Location: Sparrows Point
Project ID : 16325B



June 9, 2017
Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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PHASE SEPARATION SCIENCE, INC.



June 9, 2017

Keith Progin
Hillis Carnes Engineering Associates
10975 Guilford Road, Ste. A
Annapolis Junction, MD 20701

Reference: PSS Work Order(s) No: **17060727**
Project Name: SPT-B-22
Project Location: Sparrows Point
Project ID.: 16325B

Dear Keith Progin :

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 **17060727**.

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 July 12, 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: Hillis Carnes Engineering Associates
Project Name: SPT-B-22

Work Order Number(s): 17060727

Project ID: 16325B

The following samples were received under chain of custody by Phase Separation Science (PSS) on 06/07/2017 at 04:10 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
17060727-001	W-1	GROUND WATER	06/07/17 11:55

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

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BALTIMORE, MD 21228
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800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.



CERTIFICATE OF ANALYSIS

No: 17060727

Hillis Carnes Engineering Associates, Annapolis Junction, MD

June 9, 2017

Project Name: SPT-B-22

Project Location: Sparrows Point

Project ID: 16325B

Sample ID: W-1	Date/Time Sampled: 06/07/2017 11:55	PSS Sample ID: 17060727-001
Matrix: GROUND WATER	Date/Time Received: 06/07/2017 16:10	

Metals Analytical Method: EPA 200.8 Preparation Method: 200.8

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chromium	ND	ug/L	100		10	06/09/17	06/09/17 16:03	1051

Polychlorinated Biphenyls Analytical Method: SW-846 8082 A Preparation Method: 3510C
Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1221	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1232	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1242	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1248	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1254	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029
PCB-1260	ND	ug/L	0.50		1	06/07/17	06/08/17 10:26	1029



Case Narrative Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: SPT-B-22

Work Order Number(s): 17060727

Project ID: 16325B

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:

Sample(s) received at 0 degrees but no samples were frozen.

Analytical:

Metals

Batch: 143407

Internal Standard recovery outside limits for 200.8 at 130% over the limit of 125%. Sample was non-detect for chromium.

Polychlorinated Biphenyls

Batch: 143344

Surrogate recoveries affected by sample matrix.

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): 17060727

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: SPT-B-22

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
EPA 200.8	W-1	Initial	17060727-001	1051	W	66508	143407	06/07/2017	06/09/2017 09:23	06/09/2017 16:03
	66508-1-BKS	BKS	66508-1-BKS	1051	W	66508	143407	-----	06/09/2017 09:23	06/09/2017 15:56
	66508-1-BLK	BLK	66508-1-BLK	1051	W	66508	143407	-----	06/09/2017 09:23	06/09/2017 15:50
SW-846 8082 A	W-1	Initial	17060727-001	1029	W	66479	143344	06/07/2017	06/07/2017 16:27	06/08/2017 10:26
	66479-1-BKS	BKS	66479-1-BKS	1029	W	66479	143344	-----	06/07/2017 16:27	06/08/2017 09:30
	66479-1-BLK	BLK	66479-1-BLK	1029	W	66479	143344	-----	06/07/2017 16:27	06/08/2017 09:02
	66479-1-BSD	BSD	66479-1-BSD	1029	W	66479	143344	-----	06/07/2017 16:27	06/08/2017 09:58

PHASE SEPARATION SCIENCE, INC.

QC Summary 17060727

Hillis Carnes Engineering Associates
SPT-B-22

Analytical Method: SW-846 8082 A

Seq Number: 143344

Matrix: Ground Water

Prep Method: SW3510C

Date Prep: 06/07/2017

PSS Sample ID: 17060727-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	33	*	39-154	%	06/08/17 10:26
Tetrachloro-m-xylene	0	*	35-131	%	06/08/17 10:26

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 17060727

Hillis Carnes Engineering Associates

SPT-B-22

Analytical Method: EPA 200.8

Seq Number: 143407

MB Sample Id: 66508-1-BLK

Matrix: Water

LCS Sample Id: 66508-1-BKS

Prep Method: E200.8_PREP

Date Prep: 06/09/17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Chromium	<1.000	40.00	42.11	105	85-115	ug/L	06/09/17 15:56	

Analytical Method: SW-846 8082 A

Seq Number: 143344

MB Sample Id: 66479-1-BLK

Matrix: Water

LCS Sample Id: 66479-1-BKS

Prep Method: SW3510C

Date Prep: 06/07/17

LCSD Sample Id: 66479-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
PCB-1016	<0.5000	5.000	3.925	79	3.686	74	56-124	6	20	ug/L	06/08/17 09:30	
PCB-1260	<0.5000	5.000	3.554	71	3.344	67	61-103	6	20	ug/L	06/08/17 09:30	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
Decachlorobiphenyl	87		93		89		39-154	%	06/08/17 09:30
Tetrachloro-m-xylene	74		81		77		35-131	%	06/08/17 09:30

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



www.phaseonline.com
email: info@phaseonline.com

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED



Phase Separation Science, Inc

Sample Receipt Checklist

Work Order # 17060727 **Received By** Barb Weber
Client Name Hillis Carnes Engineering Associates **Date Received** 06/07/2017 04:10:00 PM
Project Name SPT-B-22 **Delivered By** Client
Project Number 16325B **Tracking No** Not Applicable
Disposal Date 07/12/2017 **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) 2
Temp Blank Present No

Documentation

COC agrees with sample labels? Yes Sampler Name K. Progin
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 1

Total No. of Containers Received 2

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.

Sample(s) received at 0 degrees but no samples were frozen.

Samples Inspected/Checklist Completed By:

Thomas Wingate

Date: 06/07/2017

PM Review and Approval:

Amber Confer

Date: 06/08/2017

APPENDIX M

FCL Builders, LLC Health and Safety Plan

Project St. Johns
Baltimore County, Maryland

November 3rd, 2016

Prepared by:

FCL Builders, LLC
1150 Spring Lake Drive,
Itasca, Illinois 60143
(630) 773-0050
fclbuilders.com

APPENDIX N

GEOTEX[®] 801 is a polypropylene, staple fiber, needle-punched nonwoven geotextile produced by Propex, and will meet the following Minimum Average Roll Values (MARV) when tested in accordance with the methods listed below. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.

GEOTEX[®] 801 conforms to the property values listed below¹. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). This product is NTPEP approved for AASHTO standards.

MARV ²			
PROPERTY	TEST METHOD	ENGLISH	METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured		100%	100%
MECHANICAL			
Grab Tensile Strength	ASTM D-4632	205 lbs	912 N
Grab Elongation	ASTM D-4632	50%	50%
CBR Puncture	ASTM D-6241	535 lbs	2380 N
Trapezoidal Tear	ASTM D-4533	80 lbs	356 N
ENDURANCE			
UV Resistance at 500 hrs	ASTM D-4355	70%	70%
HYDRAULIC			
Apparent Opening Size (AOS) ³	ASTM D-4751	80 US Std. Sieve	0.180 mm
Permittivity	ASTM D-4491	1.4 sec ⁻¹	1.4 sec ⁻¹
Water Flow Rate	ASTM D-4491	100 gpm/ft ²	4074 l/min/m ²
ROLL SIZES⁴			
		12.5 ft x 360 ft 15 ft x 300 ft	3.81 m x 109.8 m 4.57 m x 91.5 m

NOTES:

- The property values listed above are effective 04/03/2017 and are subject to change without notice.
- Values shown are in weaker principal direction. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
- Maximum average roll value.
- Contact your local Territory Business Manager (TBM) for custom widths and colors. Lead times may vary depending on customer requirements and volume requested.