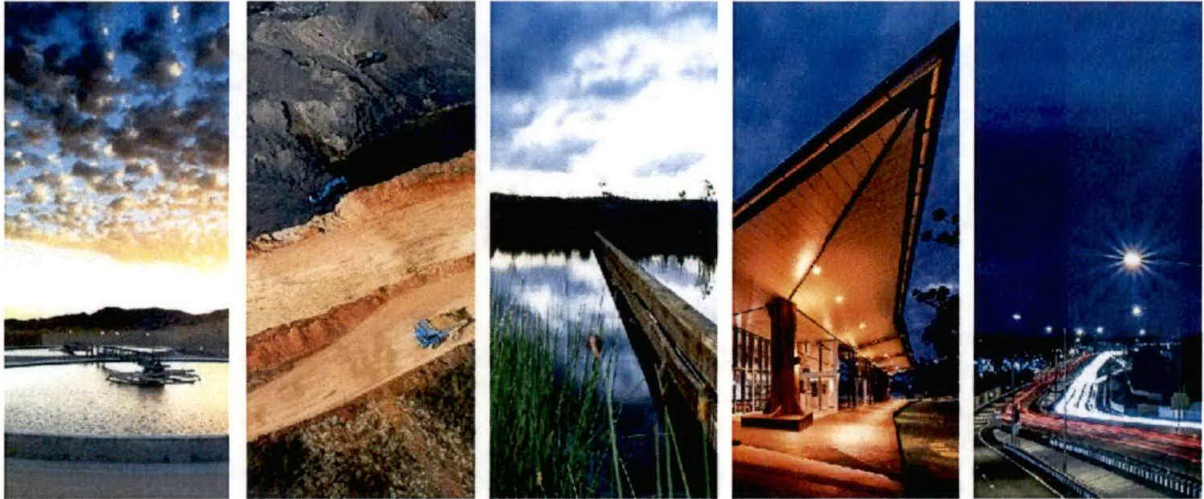




NW2843

9/5/2017



Cleanup Action Work Plan

Protective Coatings Facility

1215 Second Avenue North and 1208 Fourth Avenue North

Kent, Washington

GHD | 20818 44th Avenue West Suite 190 Lynnwood Washington

062175 | 04A | 03 | Report No 9 | August 2017



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1. Introduction

GHD Services Inc. (GHD), on behalf of PCC Aerostructures, Inc. (PCC) prepared this *Cleanup Action Work Plan (CA WP)* for the Protective Coatings Facility at 1215 2nd Avenue North and 1208 4th Avenue North, Kent, King County, Washington (Property). This CA WP was prepared to document the scope of work for addressing impacted soil at the Property.

1.1 Site Description

The Property is located in the north central portion of Kent, Washington, northwest of Highway 167 (Figure 1). The Property covers an area of approximately 4.3 acres of level land and is used for industrial purposes. Currently, the Property is used as a metals plating facility. Land use and zoning in the vicinity of the Property is industrial.

The layout of the Property is shown on Figure 2. Facilities consist of two large production floors, one packaging/shipping warehouse, one general use warehouse, and an outdoor wastewater treatment and chemical storage area.

The Property is located within the Green River Valley at approximately 40 feet above mean sea level. The local topography is relatively flat within the vicinity of the Property with hills located toward the east and west. The nearest surface water bodies are a group of small lakes and ponds located approximately 1.2 miles southwest followed by Green River located approximately 1.4 miles southwest. The Property is located approximately 4.2 miles east of Puget Sound.

The Model Toxics Control Act (MTCA) Site (Site) is defined as all areas that are currently or were historically impacted by the release at the Property. The Site boundary is presented on Figure 2.

1.2 Site Background

Based on investigation data, volatile organic compounds (VOCs) were released to the subsurface sometime prior to 2004. It is not certain when or how the release occurred but based on environmental investigations, there was likely a release of trichloroethylene (TCE) in the chemical bunker area. According to the current site operator, a prior operator historically poured waste TCE onto the concrete surface in Bunker 2 to allow the TCE to evaporate. This is consistent with data collected in this area. The TCE likely naturally degraded over time resulting in the presence of daughter products (cis) 1,2-Dichloroethylene ((cis) 1,2-DCE) and vinyl chloride at the Site.

A chemical release impacting soil and groundwater was reported to Ecology on March 28, 2014, and the site was listed with Washington State Department of Ecology's (Ecology) Toxics Cleanup Program (Cleanup Site ID #12337). The Property was entered into Ecology's Voluntary Cleanup Program (VCP) on March 28, 2014 and issued site number NW2843. The current status of the site with Ecology is "Cleanup Started" as of March 2014.

As presented in GHD's *Feasibility Study (FS)* dated July 25, 2016, MTCA Method C cleanup levels were selected for the Site. In a letter dated July 6, 2017, Ecology concurred with the selected cleanup action and MTCA Method C cleanup levels for soil; however, Ecology disapproved the use of MTCA Method C cleanup levels for groundwater and requested a combination of MTCA Method



B cleanup levels and federal Maximum Contaminant Levels (MCL) be utilized. Further cleanup level discussion is provided in Section 2. TCE is the only constituent of concern (COC) in soil which exceeds the MTCA Method C cleanup level. The MTCA Method C soil cleanup level for TCE is equivalent to the MTCA Method B soil cleanup level and is designated to protect potable groundwater from impacts caused by soil leaching. Groundwater impacted with VOCs is present in the vicinity of Bunker 1 and Bunker 2 in well MW-3 only. No metals have been detected above MTCA Method C cleanup levels in groundwater, with the exception of arsenic. Arsenic is considered a regional contaminant and likely not a Site-specific COC.

Soil vapor impacts are present in the vicinity of the southernmost chemical bunkers. Based on the current occupational use of the Property, soil vapor does not pose a risk to human health; however, if future land use changes, vapor intrusion may present a potential exposure pathway. GHD anticipates that remediation of the soil and groundwater in the vicinity of Bunker 1 and 2 will remediate soil vapor as well. Confirmation sampling will be conducted prior to requesting a No Further Action (NFA) determination.

A chronological summary of the environmental work completed at the Property is included as Appendix A. Historical soil, groundwater, and soil gas sampling locations are provided on Figures 3 and 4.

1.3 2017 Soil Investigation

On May 31, 2017, GHD advanced four soil borings (SB-14 through SB-17) to the east of the proposed excavation area to define the lateral extent of soil contamination. Soil samples were collected at 5 feet below ground surface (bgs) and 10 feet bgs from each boring. Samples were submitted to Pace Analytical Laboratory under chain of custody protocol and analyzed for VOCs by EPA Method 8260 and metals by EPA Method 6010. The sample collected from SB-17 at 5 feet bgs contained TCE at a concentration of 11.4 milligrams per kilogram (mg/kg) which exceeds the MTCA Method C cleanup level. The sample collected at 10 feet bgs in SB-17 did not contain any concentrations exceeding the MTCA Method C cleanup level. No other soil samples contained any concentrations exceeding MTCA Method C cleanup levels. A summary of soil analytical data is provided in Table 1; soil boring logs are provided in Appendix B; the laboratory report is provided in Appendix C.

2. Cleanup Levels

In GHD's *Remedial Investigation Report* (RI) dated August 20, 2015, MTCA Method C cleanup levels for industrial land use were selected. In an opinion letter dated October 5, 2015, Ecology concurred with the selection of MTCA Method C cleanup levels for all media. However, in a subsequent opinion letter dated July 6, 2017, Ecology rejected the use of MTCA Method C cleanup levels for groundwater and proposed a combination of MTCA Method B cleanup levels and the federal MCL. The Ecology letter did not provide a selected cleanup level for 1,1-DCA or vinyl chloride. Based on a comparison of groundwater data against the MTCA Method C cleanup levels, the groundwater COCs for the Site are 1,1-DCA, (cis) 1,2-DCE, vinyl chloride, and arsenic. Based on a comparison of groundwater data against the MTCA Method B cleanup levels, the groundwater



COCs for the Site are 1,1-DCE, 1,1-DCA, (cis) 1,2-DCE, (trans) 1,2-DCE, vinyl chloride and arsenic. Groundwater analytical data is provided on Tables 2 and 3. Provided below is a comparison of the cleanup levels for each groundwater COC at the Site.

COC	Method A (µg/L)	Method B (µg/L)	Method C (µg/L)	MCL (µg/L)
1,1-DCE	N/A	400 (non-cancer)	875 (non-cancer)	7*
1,1-DCA	N/A	1,600 (non-cancer) 7.68 (cancer)	3,500 (cancer) 76.8 (cancer)	N/A
(cis) 1,2-DCE	N/A	16 (non-cancer)*	35 (non-cancer)	70
(trans) 1,2-DCE	N/A	160 (non-cancer)	350 (non-cancer)	100*
Vinyl Chloride	0.20	0.029 (cancer)	0.29 (cancer)	2
Arsenic	5	4.8 (non-cancer) 0.0538 (cancer)	10.5 (non-cancer) 0.538 (cancer)	10*

*Ecology selection for Site cleanup level

1,1-DCE: The MCL is nearly two orders of magnitude lower than the MTCA Method B cleanup level, and more than two orders of magnitude lower than the MTCA Method C cleanup level. The MTCA cleanup levels account for the anticipated receptor and background conditions for the State of Washington. During the last quarterly groundwater monitoring event, the 1,1-DCE concentration in well MW-3 was 25 µg/L. GHD concludes that both the MTCA Method B and Method C cleanup levels are sufficiently protective of potential receptors.

1,1-DCA: Since an MCL does not exist for this constituent, and the MTCA Method C (cancer) cleanup level is protective of drinking water, GHD proposes the use of the MTCA Method C (cancer) cleanup level for the Site.

(cis) 1,2-DCE: The MTCA Method C cleanup level is lower than the MCL and is sufficiently protective of potential receptors. Therefore, GHD concludes that the MTCA Method C cleanup level should be used.

(trans) 1,2-DCE: The (trans) 1,2-DCE groundwater concentration has been below the MCL in all groundwater monitoring wells at the Property during all of the previous monitoring events. Therefore, (trans) 1,2-DCE should not be considered a groundwater COC for the Site. No cleanup level needs to be established for this constituent.

Vinyl Chloride: Vinyl chloride has been detected in groundwater from well MW-3 between 1.8 µg/L and 5.8 µg/L. According to the Cleanup Level and Risk Calculation (CLARC) guidance on vinyl chloride, the standard MTCA Method C cleanup level of 0.29 µg/L assumes that children may be exposed. This Property is used for industrial purposes in an area surrounded by industrial use properties. There are no wells on the Property and the plume does not extend beyond the Property boundaries. Therefore, there is no reasonable scenario in which a child will be exposed to groundwater from the Site. Therefore, GHD concludes that the MCL is appropriate for the groundwater cleanup level for vinyl chloride.



Arsenic: GHD concurs with using the MCL as the appropriate cleanup level for arsenic.

Following completion of the remedial excavation, GHD will re-evaluate groundwater conditions. Further discussion with Ecology regarding the appropriate groundwater cleanup levels is warranted.

3. Rationale for Scope of Work

In order to achieve the objective of a NFA opinion from Ecology, and in accordance with the FS, the following rationale has been used in the development of the scope of work detailed in this work plan.

Cleanup Level Exceedances. TCE in soil beneath the Site currently exceeds the MTCA Method C cleanup level. In addition, groundwater exceedances are present in the vicinity of MW-3/Bunker 2 for several COCs. Therefore, it appears that residual contaminant mass is present in soil within the vicinity of Bunker 2.

Soil excavation. To aid in achieving an NFA opinion from Ecology, impacted soil within the vicinity MW-3/Bunker 2 will be excavated to a depth of approximately 5 feet below the groundwater table, to a maximum depth of 15 feet bgs (the point of compliance for protection of human direct contact pathway). The actual excavation depth will be determined by confirmation soil sampling results. The proposed excavation extents are shown on Figure 3.

4. Excavation Plan

4.1 Scope of Work

All work will be conducted according to the details provided below. The scope of work may be amended based on observations during field work. If impacts are observed using field screening techniques at the final extents of the excavation, field staff will contact the Project Manager to coordinate additional actions.

The proposed scope of work outlined in the following sections of this work plan has been developed using the rationale discussed in Section 3.

4.2 Task 1 – Monitoring Well Decommissioning

Monitoring well MW-3 is within the excavation footprint. The total well depth is 16 feet bgs which is below the total excavation depth. Therefore, this well will be decommissioned prior to the excavation. GHD will place bentonite chips within the well casing from the base of the well to the ground surface. The surface will be patched with cold patch asphalt. Approximately 10-15 feet of the well will be removed during the excavation.

4.3 Task 2 – Utilities

Prior to initiating groundbreaking, GHD will conduct a public and private utility locate. During previous site visits, GHD has not identified any utilities that are in conflict with the proposed



excavation area, with the exception of the floor drain within the bunker. The floor drain and sump will be disconnected and removed prior to the excavation and replaced following the excavation. If additional utilities are identified during the public or private utility locate that are located within the excavation footprint, these utilities will also be addressed as part of the excavation.

4.4 Task 3 – Remedial Excavation

Based on soil sampling during previous investigations, there appears to be impacted soil in the vicinity of MW-3, on either side of the sump in the center of the floor drain, and extending approximately 5 to 7 feet east of the floor drain. GHD anticipates the total depth will be 10 feet bgs in the vicinity of MW-3, 15 feet bgs beneath and adjacent to the sump, and 10 feet bgs in the area east of the floor drain near SB-10 and SB-17. The vertical and lateral limits of the excavation may be extended or reduced in the field based on evidence of contamination, or lack of contamination as determined by visual observation and photoionization detector (PID) measurements. GHD estimates the total volume of soil removed will be approximately 185 cubic yards (approximately 231 tons). The proposed excavation extent is shown on Figure 3. Shoring will be utilized along the northern and western excavation boundaries. The remainder of the excavation will be sloped. Confirmation soil samples will be collected once the anticipated excavation vertical and lateral extents are achieved. A minimum of four confirmation soil samples will be collected from the bottom of the excavation at a depth of no greater than 15 feet bgs and up to six confirmation soil samples will be collected from the sidewalls at a depth of approximately 5 feet bgs, except in the vicinity of SB-10 where a sidewall sample will be collected at 10 feet bgs. The actual locations of the confirmation soil samples will be dependent upon field screening.

Confirmation soil samples will be analyzed for the following analytes:

- Full scan of VOCs using EPA Method 8260

The samples will be collected following EPA Method 5035. Samples will be preserved on ice, and transported under chain of custody protocol to Pace Analytical Laboratories.

4.5 Task 4 – Excavation Dewatering

Groundwater is present between approximately 6.5 and 10 feet bgs; therefore, dewatering will be required to reach the final excavation depth. Groundwater will be removed from the excavation via a perforated casing placed near the base of the excavation and a down-well pump. Groundwater will be pumped into a temporary holding tank which provides filtration and/or settling, prior to being pumped into the on-Property wastewater treatment system. Alternatively, a vacuum excavation truck could be utilized to pump groundwater from the excavation for disposal off-Property at a permitted facility. GHD will consult with the selected excavation contractor and the Property owner to determine the best course of action for excavation dewatering prior to beginning work.

4.6 Task 5 – In Situ Treatment

After collecting confirmation soil samples but prior to backfilling the excavation area, GHD will apply 800 pounds (lbs) of 3-D Microemulsion (3DMe) to the base of the excavation. The 3DMe will be delivered to the Property in 55-gallon drums; a total of approximately 15 drums will be required. The



3DMe needs to be dispersed within the groundwater table, which is encountered between 6.5 and 10 feet bgs. If the total excavation depth is 15 feet bgs, the 3DME product can be evenly distributed to the excavation base. However, if the total excavation depth is 10 feet bgs, the 3DMe product should be mixed into the upper 3 to 4 feet using the excavator bucket. The average lifespan of 3DMe is 2 to 4 years. A specification sheet is included as Appendix D.

4.7 Task 6 – Backfill

Upon completion of the 3MDe application, the excavation will be backfilled with clean fill material and compacted to surface grade. The sump and floor drain will be reinstalled in its current location and the surface will be completed with concrete within Bunker 2 and with hot asphalt outside of Bunker 2.

4.8 Task 7 – Monitoring Well Reinstallation

Following completion of the excavation, monitoring well MW-3 will be reinstalled adjacent to the excavation extent, in the vicinity of its former location. An appropriate location will be selected following the excavation based on the final excavation extent and Property constraints. The well will be installed using a hollow stem auger drilling rig. The well will be screened from 5 to 15 feet bgs with 2-inch Schedule 40 polyvinyl chloride (PVC) screen with 0.01-inch slots flush threaded with 2-inch PVC blank well casing from 5 feet to ground surface. The well annulus will be backfilled with a 10-20 size washed sand pack to 1 foot above the top of the screen and sealed with bentonite chips and concrete to the surface. The surface of the well will be completed with a lockable steel housing embedded in concrete and installed flush with ground surface with a traffic-rated monument. The monitoring well will be developed following installation and then incorporated in the the post-remedial groundwater monitoring program. Additional details are provided in Section 5.

4.9 Standard Operating Procedures

A detailed standard operating procedure specific for excavation and confirmatory sampling is attached as Appendix E. Additional standard procedures are presented below.

4.9.1 Health and Safety Plan

GHD will prepare a comprehensive Site-Specific Health and Safety Plan to protect site workers. The plan will be reviewed and signed by each site worker and kept on the site during field activities.

4.9.2 Utility Clearance

The proposed excavation area will be cleared through Washington Utilities Coordinating Council (WUCC) prior to beginning work. A private utility locating service will also be used to verify clearance from subsurface utilities or other obstructions. If utilities are identified within the proposed excavation area, they will be temporarily decommissioned as part of this scope of work. Following completion of the excavation activities, all utilities will be replaced in their original locations. The surface of the Property will be sealed with asphalt and/or concrete as it was prior to excavation.



4.9.3 Investigation-Derived Waste and Soil Disposal

IDW will include personal protective equipment, decontamination fluids, pumped groundwater (from dewatering) and excavated soil. A soil profile will be prepared in advance and excavated soil will be loaded directly into trucks and transported to an approved disposal facility. Due to the limited space on the Property for soil stockpiling purposes, it is assumed that the majority of excavated soils would be direct loaded into semi-end dump trucks for direct off-Property haul and disposal at a permitted facility. Soil may be temporarily stockpiled on the Property to facilitate loading. The IDW will be disposed of according to applicable regulatory requirements.

4.9.4 Certification

The scope of work described in this cleanup action plan will be performed under the supervision of a Washington state licensed geologist.

5. Post-Remedial Groundwater Monitoring Plan

Following the excavation and reinstallation of MW-3, GHD will sample monitoring wells MW-1, MW-3, MW-6, MW-7, and MW-9 on a semi-annual basis. Once groundwater concentrations are below cleanup levels in all wells for at least one quarter, the sampling frequency will be increased to quarterly until groundwater concentrations are below cleanup levels for at least four consecutive quarters. We anticipate approximately 2 to 3 years of groundwater monitoring. Groundwater will be analyzed for VOCs by EPA Method 8260 and arsenic by EPA Method 6010.



All of Which is Respectfully Submitted,
GHD

A handwritten signature in blue ink, appearing to read "Christina McClelland".

Christina McClelland, LG



CHRISTINA MCCLELLAND

A handwritten signature in black ink, appearing to read "Brian Peters".

Brian Peters, LG

Figures

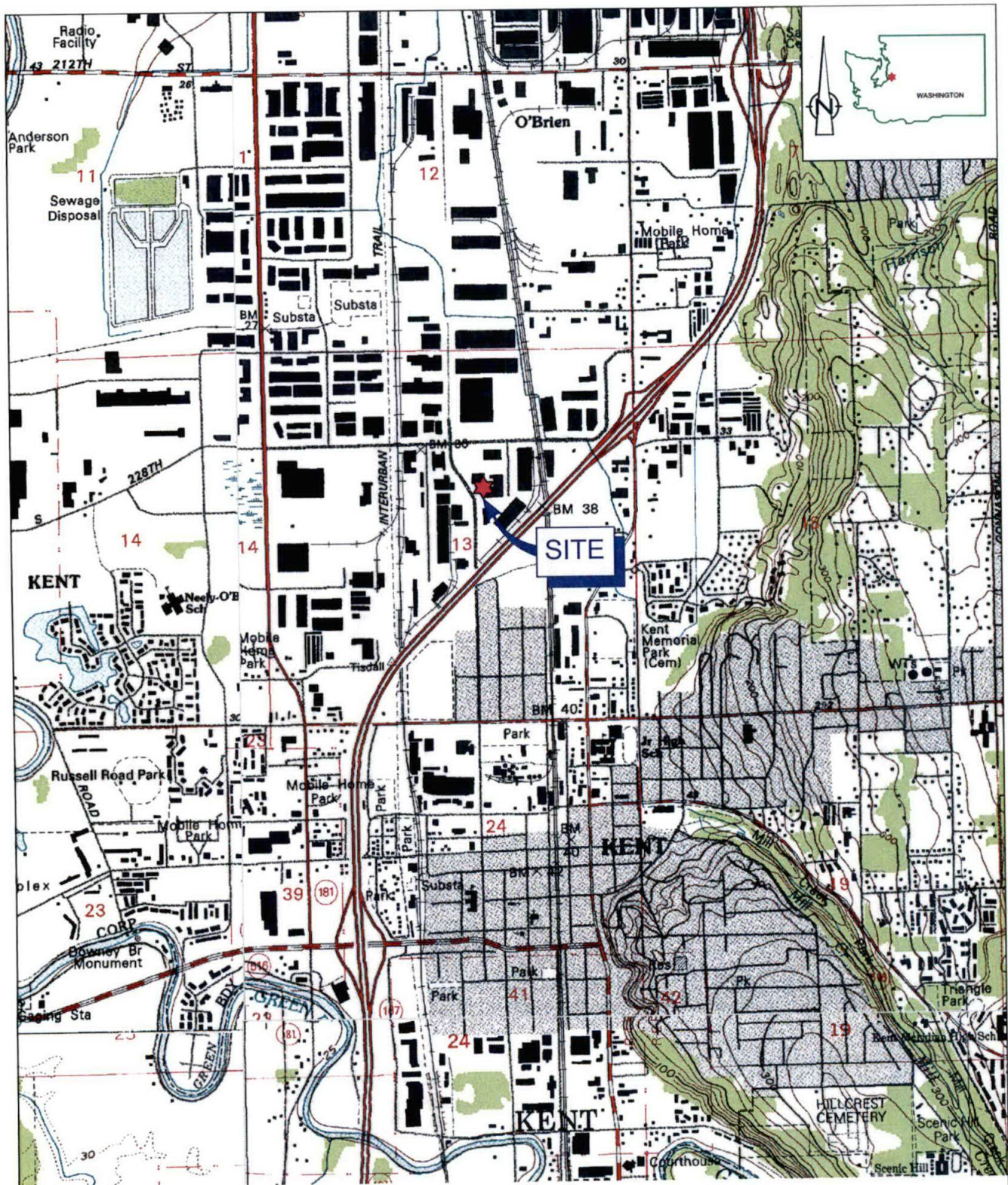
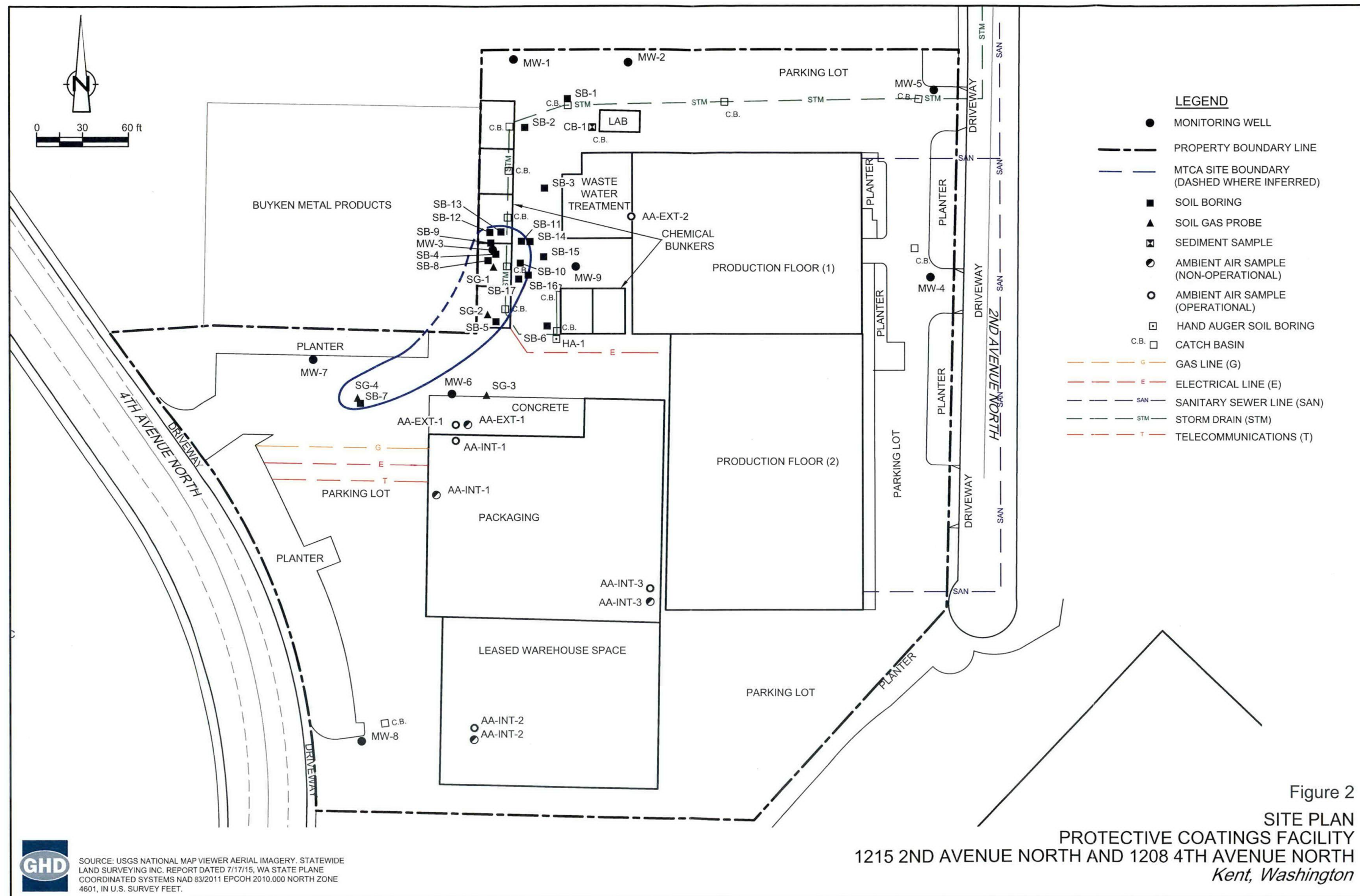


Figure 1

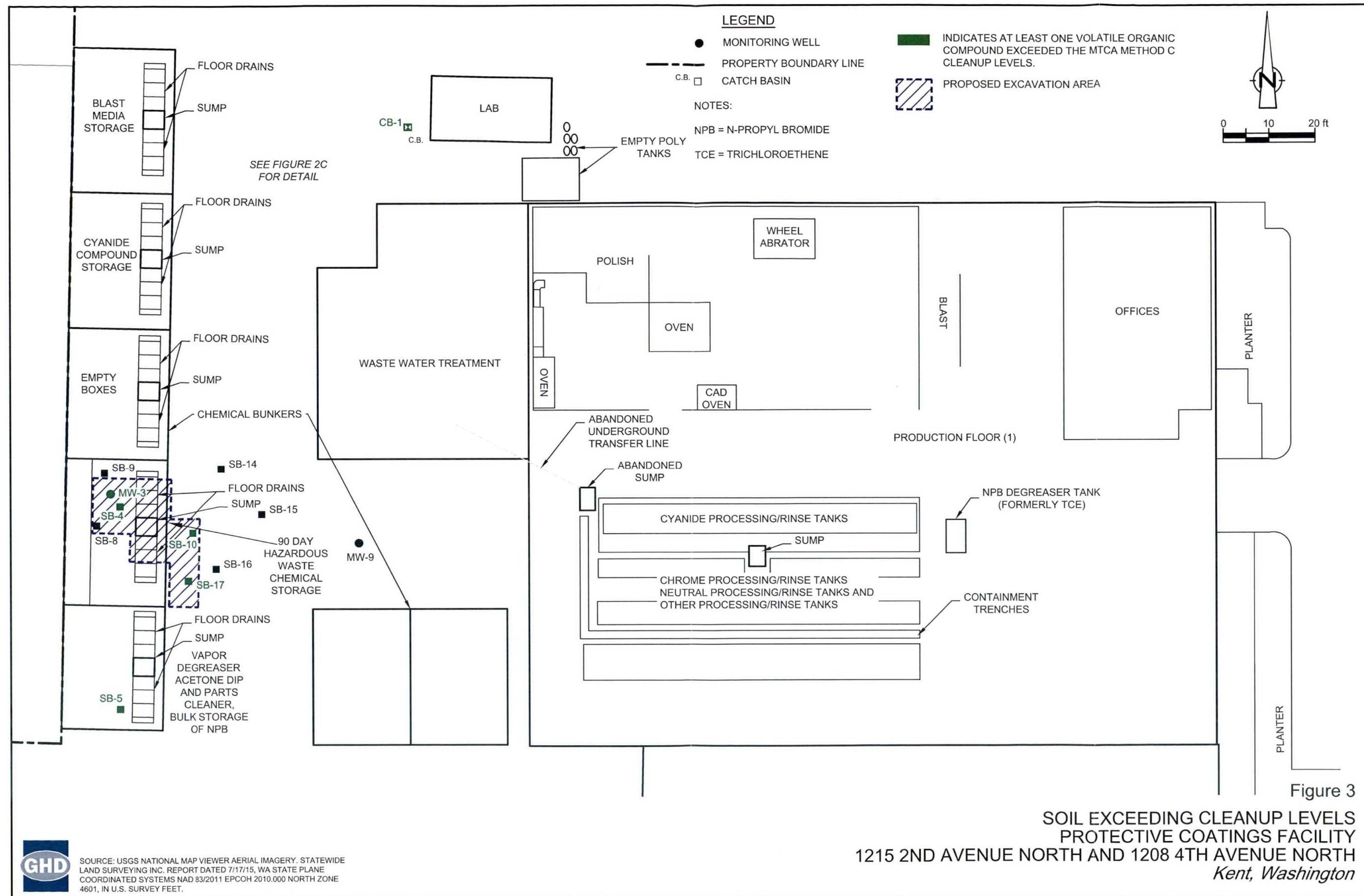
VICINITY MAP
 PROTECTIVE COATINGS FACILITY
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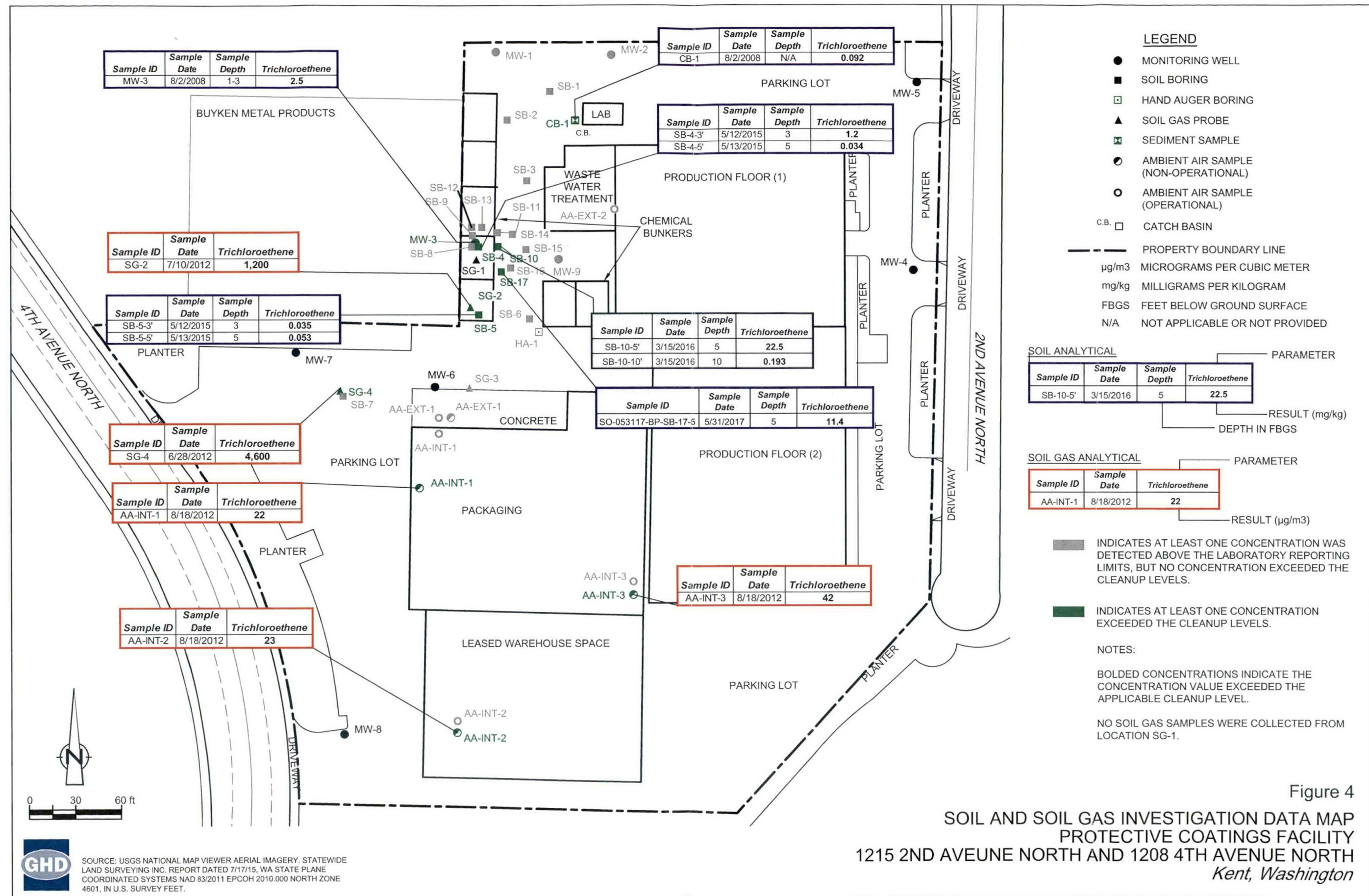
SOURCE: USGS TOPOGRAPHIC MAPFINDER.



SOURCE: USGS NATIONAL MAP VIEWER AERIAL IMAGERY. STATEWIDE LAND SURVEYING INC. REPORT DATED 7/17/15, WA STATE PLANE COORDINATED SYSTEMS NAD 83/2011 EPCOH 2010.000 NORTH ZONE 4601, IN U.S. SURVEY FEET.



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Tables

Report Referenced	Sample ID	Sample Date	Sample Depth	Acetone 3,15E+06 (mg/kg)	VOCs										Metals										Total Cyanide 2100 (mg/kg)
					1,1- Dichloroethene 175000 (mg/kg)	1,1- Dichloroethane 700000 (mg/kg)	(cis) 1,2- Dichloroethane 7000 (mg/kg)	2-Butanone NE (mg/kg)	1,1,1- Trichloroethene 7,00E+06 (mg/kg)	1,1,2- Trichloroethene 0.03* (mg/kg)	1,1,2- Trichloroethene 2300 (mg/kg)	Vinyl Chloride 0.67 (mg/kg)	Arsenic 87.5 (mg/kg)	Barium 7,00E+05 (mg/kg)	Beryllium 7000 (mg/kg)	Cadmium 3500 (mg/kg)	Chromium 1,05E+04 (mg/kg)	Copper 1,40E+05 (mg/kg)	Lead NE (mg/kg)	Selenium 1,75E+04 (mg/kg)	Silver 1,75E+04 (mg/kg)	Mercury NE (mg/kg)	Nickel NE (mg/kg)	Zinc 1,05E+06 (mg/kg)	
MTCA Method C (Industrial) Cleanup Levels																									
Goldier 2012	MM1-2-080208	8/22/2008	2-4	0.028	<-0.0011	<-0.0011	<-0.0011	<-0.0054	<-0.0011	<-0.0011	<-0.0038	<-0.0038	<-0.0038	<-0.0038	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
Goldier 2012	MM2-2-080208	8/22/2008	1.5-3	0.016	<-0.0010	<-0.0010	<-0.0010	<-0.0047	<-0.0010	<-0.0010	<-0.0046	<-0.0046	<-0.0046	<-0.0046	<-0.0010	0.18 B	2.5 B	0.0024	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
Goldier 2012	MM3-1-080208	8/22/2008	1-3	0.037	0.01	0.0026	0.001	<-0.0010	<-0.0010	<-0.0010	0.002	0.0034	0.0034	0.0034	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
Goldier 2012	HA1-0.5-080208	8/22/2008	0.5	0.15	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
Goldier 2012	CB-1-080208 A	8/22/2008	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CRA 2015	SO-062175-051415-JS-SB-1-5	5/14/2015	5	<-0.019	0.025	0.0062	<-0.0038	<-0.019	<-0.0038	<-0.0038	<-0.0038	<-0.0038	<-0.0038	<-0.0038	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051415-JS-SB-1-10	5/14/2015	10	<-0.020	<-0.009	0.0049	<-0.0049	<-0.024	<-0.0049	<-0.0049	<-0.0049	<-0.0049	<-0.0049	<-0.0049	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051415-JS-SB-1-20	5/14/2015	20	0.030	<-0.006	<-0.0046	<-0.0046	<-0.23	<-0.006	<-0.006	<-0.006	<-0.006	<-0.006	<-0.006	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-2-5	5/13/2015	5	<-0.022	<-0.0045	<-0.0044	<-0.0044	<-0.022	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-2-10	5/13/2015	10	0.023	<-0.0044	<-0.0044	<-0.0044	<-0.022	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-2-14	5/13/2015	14	0.061	<-0.0056	<-0.0056	<-0.0056	<-0.028	<-0.0056	<-0.0056	<-0.0056	<-0.0056	<-0.0056	<-0.0056	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-3-3	5/12/2015	3	<-0.018	<-0.0036	<-0.0036	<-0.0036	<-0.018	<-0.0036	<-0.0036	<-0.0036	<-0.0036	<-0.0036	<-0.0036	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-3-5	5/13/2015	5	0.054	<-0.0043	<-0.0043	<-0.0043	<-0.021	<-0.0043	<-0.0043	<-0.0043	<-0.0043	<-0.0043	<-0.0043	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-3-10	5/13/2015	10	0.054	<-0.0048	<-0.0048	<-0.0048	<-0.024	<-0.0048	<-0.0048	<-0.0048	<-0.0048	<-0.0048	<-0.0048	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-3-14	5/13/2015	14	0.064	<-0.0054	<-0.0054	<-0.0054	<-0.027	<-0.0054	<-0.0054	<-0.0054	<-0.0054	<-0.0054	<-0.0054	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-4-3	5/12/2015	3	0.064	0.036	0.011	0.070	<-0.026	0.23	1.2	0.070	0.098	0.098	0.098	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-4-5	5/13/2015	5	<-0.018	0.038	0.11	0.52	<-0.023	<-0.006	<-0.006	<-0.006	<-0.006	<-0.006	<-0.006	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-4-10	5/13/2015	10	0.039	<-0.0050	<-0.0050	0.063	<-0.030	<-0.0050	<-0.0050	<-0.0050	<-0.0050	<-0.0050	<-0.0050	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-4-15	5/12/2015	15	0.054	0.0047	0.017	0.012	<-0.021	0.063	0.053	0.035	0.060	0.060	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-5-3	5/13/2015	3	0.8	0.038	0.017	0.012	<-0.022	0.063	0.053	0.035	0.060	0.060	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-5-10	5/13/2015	10	0.041	<-0.0050	<-0.0050	<-0.0050	<-0.022	<-0.0050	<-0.0050	<-0.0050	<-0.0050	<-0.0050	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-5-15	5/13/2015	15	0.037	<-0.0057	<-0.0057	0.0071	<-0.022	<-0.0057	<-0.0057	<-0.0057	<-0.0057	<-0.0057	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-6-4.5	5/12/2015	4.5	0.026	<-0.0044	<-0.0044	<-0.0044	<-0.022	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0044	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-6-5	5/13/2015	5	0.042	<-0.0040	<-0.0040	<-0.0040	<-0.020	<-0.0040	<-0.0040	<-0.0040	<-0.0040	<-0.0040	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051315-JS-SB-6-10	5/13/2015	10	0.068	<-0.0058	<-0.0058	0.011	<-0.029	<-0.0058	<-0.0058	<-0.0058	<-0.0058	<-0.0058	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-6-13	5/12/2015	13	0.037	<-0.0039	<-0.0039	<-0.0039	<-0.018	<-0.0039	<-0.0039	<-0.0039	<-0.0039	<-0.0039	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051215-JS-SB-7-2	5/12/2015	2	0.11	<-0.0060	<-0.0060	0.055	<-0.019	<-0.0060	<-0.0060	<-0.0060	<-0.0060	<-0.0060	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051415-JS-SB-7-3	5/14/2015	3	0.019	<-0.0036	<-0.0036	<-0.0036	<-0.018	<-0.0036	<-0.0036	<-0.0036	<-0.0036	<-0.0036	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051415-JS-SB-7-13	5/14/2015	13	0.044	<-0.0053	<-0.0053	<-0.0053	<-0.026	<-0.0053	<-0.0053	<-0.0053	<-0.0053	<-0.0053	<-0.0011	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	<-0.0010	
CRA 2015	SO-062175-051415-JS-SB-7-20	5/14/2015	20	0.023	<-0.0040	<																			

Summary of Groundwater Analytical Data
Hydrocarbons and Volatile Organic Compounds
Protective Coatings Facility
1215 2nd Avenue North and 1208 4th Avenue North
Kent, Washington

Abbreviations and Notes:

DTW = Depth to Water in feet
GWE = Groundwater Elevation
TOC = Top of Casing
TPHg = Total petroleum hydrocarbons as gasoline range organics analyzed by HCID Method
TPHd = Total petroleum hydrocarbons as diesel range organics analyzed by HCID Method
TPHo = Total petroleum hydrocarbons as heavy oil range organics analyzed by HCID Method
VOC = Volatile Organic Compounds analyzed by EPA Method 8260 (See analytical laboratory reports for a complete list of VOCs)
EDC=1,2-Dichloroethane
ug/L = Micrograms per liter
NE = Not established
NA = Not applicable
— = Not analyzed

<n = Below laboratory detection limit of n ug/L
MTCA = Model Toxics Control Act Cleanup Regulations [WAC 173-340-720(2)(a)(1), as amended February 2001]
¹ The MTCA Method C cleanup level is based on direct contact with groundwater and includes potential exposure to children via pregnant women. This scenario is highly unlikely given the current Property use and zoning. Therefore, the cleanup level shown is the Federal maximum contaminant level (MCL) established by the Environmental Protection Agency.
*The DTW data from 2008 and 2012 was calculated by subtracting the given GWE from the calculated TOC data. DTW was not provided in the previous consultant's report.
All data prior to 2014 collected by Golder Associates, Inc. (Golder) and provided in Golder's *Phase II Environmental Site Assessment* report dated October 1, 2012.
Data values in **bold** indicate that the concentration exceeds the MTCA Method C cleanup level

a = Surrogate recovery is outside control limits
b = Detection based on dilution of initial sample
J = Estimated

Table 3

Summary of Groundwater Analytical Data
 Metals and General Chemistry
 Protective Coatings Facility
 1215 2nd Avenue North and 1208 4th Avenue North
 Kent, Washington

Sample ID	Date	TOC	DTW*	GWE	Metals							General Chemistry			
					Arsenic (total)	Arsenic (dissolved)	Cadmium (total)	Cadmium (dissolved)	Chromium III (total)	Chromium III (dissolved)	Chromium VI (hexavalent)	Cyanide	N-Nitrate	N-Nitrite	
MTCA Method C Cleanup Levels ¹					10	10	17.5	17.5	52,500	52,500	105	NA	NA	NA	
Units	ft	ft	ft	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug-N/L	ug-N/L	ug-N/L
MW-1	8/12/2008	38.94	9.41	29.53	121	---	---	---	5	---	<11	<5	<100	---	
MW-1	7/2/2012	38.94	8.48	30.46	---	---	---	---	---	---	---	---	---	---	
MW-1	7/17/2014	38.94	8.75	30.19	159	46.9	0.34	<0.080	8.1	5.1	<5,000	---	---	---	
MW-1	10/7/2014	38.94	9.04	29.90	137	90.8	0.092	<0.080	7.1	6.4	<0.10	---	---	---	
MW-1	1/13/2015	38.94	8.26	30.68	37.3	17.6	<0.080	<0.080	2.9	3.5	<50	---	---	---	
MW-1	6/1/2015	38.59	8.62	29.97	---	83.9	---	<0.080	---	5.6	---	---	---	---	
MW-2	8/12/2008	38.71	8.82	29.89	149	---	---	---	5	---	<11	<5	<100	---	
MW-2 DUP	8/12/2008	38.71	8.82	29.89	154	---	---	---	5	---	<11	<5	<100	---	
MW-2	7/2/2012	38.71	8.00	30.71	--	---	---	---	---	---	---	---	---	---	
MW-2	7/17/2014	38.71	8.20	30.51	116	22.7	<0.080	<0.080	3.4	1.6	<1,000	---	---	---	
MW-2	10/7/2014	38.71	8.53	30.18	143	67.9	<0.080	<0.080	3.2	2.6	<0.10	---	---	---	
MW-2	1/13/2015	38.71	7.71	31.00	118	20.3	0.11	<0.080	3.4	1.6	<50	---	---	---	
MW-2 DUP	1/13/2015	38.71	7.71	31.00	121	19.0	0.091	<0.080	3.6	1.6	<50	---	---	---	
MW-2	6/1/2015	38.27	7.11	31.16	---	34.9	---	<0.080	---	1.7	---	---	---	---	
MW-3	8/12/2008	38.68	9.41	29.27	138	---	---	---	---	---	<11	<5	<100	---	
MW-3	7/2/2012	38.68	8.48	30.20	115	120	---	<0.1	5.2	---	14	<5	<50	<50	
MW-3	7/17/2014	38.68	8.94	29.74	168	42.4	0.086	<0.080	6.8	3.9	<500	---	---	---	
MW-3	10/7/2014	38.68	9.31	29.37	163	85.8	0.091	<0.080	7.5	4.8	<0.10	---	---	---	
MW-3	1/13/2015	38.68	8.37	30.31	151	29.0	0.23	<0.080	10.2	3.8	<50	---	---	---	
MW-3	6/1/2015	38.61	8.89	29.72	---	69.9	---	<0.080	---	4.4	---	---	---	---	
MW-4	6/29/2012	36.63	6.41	30.22	33.7	31	---	<0.1	1.0	---	<10	<5	<50	<50	
MW-4	7/17/2014	36.63	6.80	29.83	74.7	8.9	<0.080	<0.080	1.2	<0.50	<500	---	---	---	
MW-4 DUP	7/17/2014	36.63	6.80	29.83	78.5	23.6	<0.080	<0.080	1.2	0.59	<100	---	---	---	
MW-4	10/7/2014	36.63	7.07	29.56	156	67.1	<0.080	<0.080	1.8	0.69	<0.10	---	---	---	
MW-4	1/13/2015	36.63	5.76	30.87	103	20.2	<0.080	<0.080	1.5	0.67	<50	---	---	---	
MW-4	6/1/2015	36.56	6.51	30.05	---	28.9	---	<0.080	---	0.79	---	---	---	---	
MW-5	6/29/2012	37.07	6.89	30.18	27.5	28.9	---	<0.1	1.6	---	<10	<5	52	<50	
MW-5	7/17/2014	37.07	7.12	29.95	32.8	3.1	<0.080	<0.080	2.1	1.1	<500	---	---	---	
MW-5	10/7/2014	37.07	7.39	29.68	68.7	29.4	<0.080	<0.080	2.1	1.5	<0.10	---	---	---	
MW-5	1/13/2015	37.07	6.35	30.72	59.1	11.7	<0.080	<0.080	2.5	1.1	<50	---	---	---	
MW-5	6/1/2015	37.00	6.99	30.01	---	11.8	---	<0.080	---	1.5	---	---	---	---	
MW-6	6/29/2012	39.44	9.40	30.04	179	178	---	<0.1	4.3	---	<10	<5	<50	<50	
MW-6	7/17/2014	39.44	9.71	29.73	190	29.5	<0.080	<0.080	5.4	2.9	<500	---	---	---	
MW-6	10/7/2014	39.44	9.95	29.49	189	136	<0.080	<0.080	4.4	3.9	<0.10	---	---	---	
MW-6	1/13/2015	39.44	8.99	30.45	177	31.1	<0.080	<0.080	5.8	3.3	<50	---	---	---	
MW-6	6/1/2015	39.38	9.80	29.58	---	89.6	---	<0.080	---	4.0	---	---	---	---	

Table 3

Summary of Groundwater Analytical Data
 Metals and General Chemistry
 Protective Coatings Facility
 1215 2nd Avenue North and 1208 4th Avenue North
 Kent, Washington

					Metals							General Chemistry		
Sample ID	Date	TOC	DTW*	GWE	Arsenic (total)	Arsenic (dissolved)	Cadmium (total)	Cadmium (dissolved)	Chromium III (total)	Chromium III (dissolved)	Chromium VI (hexavalent)	Cyanide	N-Nitrate	N-Nitrite
MTCA Method C Cleanup Levels ¹					10	10	17.5	17.5	52,500	52,500	105	NA	NA	NA
	Units	ft	ft	ft	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug-N/L	ug-N/L
MW-7	6/29/2012	38.28	8.98	29.30	92.7	92	---	<0.1	1.6	---	<10	<5	<50	<50
MW-7	7/17/2014	38.28	9.14	29.14	134	13.5	<0.080	<0.080	2.8	3.3	<500	---	---	---
MW-7	10/7/2014	38.28	9.15	29.13	136	109	<0.080	<0.080	2.1	1.8	<0.10	---	---	---
MW-7	1/13/2015	38.28	8.35	29.93	121	31.2	<0.080	<0.080	2.1	1.2	<50	---	---	---
MW-7	6/1/2015	38.21	8.99	29.22	---	41.9	---	<0.080	---	1.5	---	---	---	---
MW-8	6/29/2012	39.06	9.80	29.26	115	145	---	<0.1	4.1	---	19	<5	<50	<50
MW-8	7/17/2014	39.06	10.04	29.02	173	10.8	<0.080	<0.080	5.9	2.5	<500	---	---	---
MW-8	10/7/2014	39.06	10.10	28.96	212	185	<0.080	<0.080	5.4	4.9	<0.10	---	---	---
MW-8 DUP	10/7/2014	39.06	10.10	28.96	221	161	<0.080	<0.080	5.6	4.9	<0.10	---	---	---
MW-8	1/13/2015	39.06	8.87	30.19	182	23.3	<0.080	<0.080	5.8	3.1	<50	---	---	---
MW-8	6/1/2015	38.98	9.81	29.17	---	47.8	---	<0.080	---	3.6	---	---	---	---
MW-9	5/28/2015	37.70	7.75	29.95	---	---	---	---	---	---	---	---	---	---
MW-9	6/1/2015	37.70	8.11	29.59	---	59.2	---	<0.080	---	3.4	---	---	---	---
MW-9 DUP	6/1/2015	37.70	8.11	29.59	---	51.6	---	<0.080	---	3.1	---	---	---	---

Abbreviations and Notes:

DTW = Depth to Water in feet

GWE = Groundwater Elevation

TOC = Top of Casing

ug/L = Micrograms per liter

ug-N/L = Micrograms of atomic Nitrogen per liter

NE = Not established

--- = Not analyzed

<n = Below laboratory detection limit of n ug/L

Arsenic, Cadmium, and chromium (total and dissolved) analyzed by method 200.8 prior to 2014 and by EPA Method 6020A after 2014; hexavalent chromium analyzed by method SM 3500-CR D Modified

Cyanide analyzed by method SM4500CN-I; N-Nitrate and N-Nitrite analyzed by EPA Method 353.2.

MTCA = Model Toxics Control Act Cleanup Regulations [WAC 173-340-720(2)(a)(1), as amended February 2001]

¹ The cleanup levels in the table are from the following standards: Federal Maximum Contaminant Levels (MCLs) from US Environmental Protection Agency, and MTCA Method C cleanup levels from Cle

*The DTW data from 2008 and 2012 was calculated by subtracting the given GWE from the calculated TOC data. DTW was not provided in the previous consultant's report.

All data prior to 2014 collected by Golder Associates, Inc. (Golder) and provided in Golder's *Phase II Environmental Site Assessment* report dated October 1, 2012.

Data values in **bold** indicate that the concentration exceeded the MTCA Method C cleanup level

a = Surrogate recovery is outside control limits

Appendices

Appendix A

Summary of Previous Investigations

Appendix A

Summary of Previous Investigations

2004 Investigation

In 2004, Krazan & Associates (Krazan) completed a subsurface investigation on the Property. The scope of work completed was unavailable to GHD. However, the results of the investigation, as reported by Golder and Associates (Golder) in 2012, indicate that cadmium exceeded the Model Toxics Control Act (MTCA) unrestricted land use cleanup levels in a soil sample collected northwest of the wastewater treatment plant. Arsenic was detected in all groundwater samples at concentrations ranging from 0.035 to 0.17 milligram per liter (mg/L), which exceeded the MTCA unrestricted land use cleanup level of 0.005 mg/L. Chromium was also detected above the MTCA unrestricted land use cleanup level in one groundwater sample.

2008 Investigation

In 2008, Golder conducted an initial Phase II Environmental Site Assessment (ESA). Three groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed at the northwest corner of the Property. Soil samples were collected from each boring and submitted for laboratory analysis. Soil samples collected from boring MW-3 at depths ranging from approximately 1 to 3 feet below ground surface (bgs) exceeded the MTCA unrestricted land use cleanup level for trichloroethene (TCE). A hand auger boring (HA-1) was advanced in an area where a TCE solvent tank was formerly located. Laboratory analysis of a soil sample collected from 0.5 foot bgs exceeded the MTCA unrestricted land use cleanup level for cadmium. A sediment sample from a storm catch basin sump (CB-1) located near the northwest corner of the Property was also collected for analysis. The sample exceeded the MTCA unrestricted land use cleanup levels for TCE and cadmium. Groundwater samples were collected from each of the three monitoring wells. Concentrations of vinyl chloride and (cis) 1,2-dichloroethene ((cis) 1,2-DCE) exceeded the MTCA unrestricted land use cleanup levels in well MW-3.

In addition, Golder performed field infiltration testing within the plating area. In the plating area, multiple gravity-fed trenches discharge process wastewater generated from operations into a central sump. The process wastewater is routed from the trenches into the sump and eventually to the wastewater treatment facility. The objective of the testing was to determine if potential releases within the sump had the potential to impact groundwater. The results of the test indicated that there is a potential leakage of less than 4 gallons per day (Golder, *Phase II Environmental Site Assessment*, October 1, 2012).

2012 Investigation

In August 2012, Golder performed a facility audit and learned that the original gravity-fed trench system in the production area (tested in 2008) had been replaced with an active pump system. This system upgrade reportedly included re-sealing all of the collection /drainage trenches. The pumps were designed to remove fluids from the trenches when a pre-set volume is reached. Fluids within the trench are pumped to the on-Property wastewater treatment system for processing before being discharged into the King County sanitary sewer system under permit.

In 2012, Golder conducted a Phase II ESA. Five groundwater monitoring wells (MW-4 through MW-8) were installed at the northeast corner of the Property and in the western portion of the Property. Soil samples were not collected for laboratory analyses. In addition, Golder attempted to collect subsurface soil gas samples from four locations (SG-1 through SG-4) during three field events. Three successful samples were collected for analyses (SG-2, SG-3, and SG-4). TCE was identified as the highest of all compounds detected in subsurface samples at locations SG-2 and SG-4. The TCE concentrations exceeded the applicable soil gas screening levels indicating a potential for an elevated risk of vapor

intrusion into the 1208 4th Avenue North building. Following the results of the subsurface soil gas sampling, Golder collected indoor and exterior ambient air samples within the 1208 4th Avenue North buildings during facility operations and after hours over an 8-hour period. TCE was detected in all ambient air samples; however, Golder concluded that the contaminant detections in ambient air samples were likely not derived from soil gas, but were resulting from facility operations. Further discussion of soil gas and indoor air is included in Section 4.6.

2015 Investigation

In May 2015, GHD conducted a soil and groundwater investigation to delineate the vertical and lateral extent of volatile organic compounds (VOCs) and metal (cadmium) contamination in soil in the vicinity of HA-1, MW-3, CB-1, SG-2, SG-3, and SG-4, and to delineate the lateral extent of groundwater impacts beyond well MW-3. GHD advanced eight soil borings (SB-1 through SB-7 and MW-9) using a combination of air knife/ vacuum, direct push, and hollow-stem auger drilling to depths between 16.5 and 30 feet bgs. No soil concentrations exceeded MTCA Method C cleanup levels. The boring logs and well construction details are presented in Appendix A. Soil boring locations are presented on Figure 4.

2017 Investigation

In May 2017, GHD conducted a soil investigation to delineate the lateral extent of VOC contamination in soil within the proposed soil excavation area. GHD advanced four soil borings (SB-14 through SB-17) using a combination of air knife/ vacuum and direct push drilling to a depth of 10 feet bgs. TCE was detected in SB-17 at 5 feet bgs. The sample collected at 10 feet bgs from SB-17 did not contain any concentrations exceeding MTCA Method C cleanup levels. The boring logs and well construction details are presented in Appendix B. Soil boring locations are presented on Figure 3.

Appendix B

2017 Soil Boring Logs



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PROTECTIVE COATINGS FACILITY
PROJECT NUMBER: 062175
CLIENT: PCC AEROSTRUCTURES
LOCATION: 1215 2ND AVENUE NORTH, KENT, WASHINGTON

HOLE DESIGNATION: SB-14
DATE COMPLETED: May 31, 2017
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: B. PAULEY

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N' VALUE	PID (ppm)
	ASPHALT	0.50	ASPHALT					
2	SM-SILTY SAND, with gravel, loose, dark grayish brown (4/2 10YR), moist to dry, no odor			1DP				0.0
4								
	- wet, very dark gray (3/1 10YR) at 5.0ft BGS		BACKFILLED WITH BENTONITE CHIPS	SB-14-5				0.0
6								
	- very dark grayish brown (3/2 10YR) at 7.0ft BGS			2DP				0.0
8	- some vegetative debris, medium grained, saturated at 8.0ft BGS							
10	END OF BOREHOLE @ 10.0ft BGS	10.00		SB-14-10				0.0
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 8
CHEMICAL ANALYSIS

OVERBURDEN LOG 062175-WI.GPJ CRA CORP.GDT 8/9/17



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PROTECTIVE COATINGS FACILITY
PROJECT NUMBER: 062175
CLIENT: PCC AEROSTRUCTURES
LOCATION: 1215 2ND AVENUE NORTH, KENT, WASHINGTON

HOLE DESIGNATION: SB-15
DATE COMPLETED: May 31, 2017
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: B. PAULEY

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
2	ASPHALT	0.50	ASPHALT	10P				0.0
4	SM-SILTY SAND, with gravel, loose, brown (4/3 10YR), moist, no odor			SB-15-5				0.0
6	- light olive brown (5/4 2.5YR) to dark gray (4/1 2.5YR) at 4.5ft BGS		BACKFILLED WITH BENTONITE CHIPS	20P				0.0
8	- firm, dark gray (4/1 2.5YR) at 7.0ft BGS			SB-15-10				0.0
10	- no gravel, very dark gray (3/1 2.5YR), saturated at 9.0ft BGS	10.00						
10	- with gravel, very dark gray (3/1 2.5YR) at 10.0ft BGS							
12	END OF BOREHOLE @ 10.0ft BGS							
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 8
CHEMICAL ANALYSIS

OVERBURDEN LOG 062175-WI.GPJ CRA CORP.GDT 8/9/17



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PROTECTIVE COATINGS FACILITY
PROJECT NUMBER: 062175
CLIENT: PCC AEROSTRUCTURES
LOCATION: 1215 2ND AVENUE NORTH, KENT, WASHINGTON

HOLE DESIGNATION: SB-16
DATE COMPLETED: May 31, 2017
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: B. PAULEY

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
2	ASPHALT	0.50	ASPHALT	10P				7.4
4	SM-SILTY SAND, with gravel, loose, brown (4/4 10YR), moist, no odor			SB-16-5				0.0
6	- firm, light olive brown (5/4 2.5Y) to dark gray (4/1 2.5Y) at 5.0ft BGS - no gravel, dark gray (4/1 2.5Y) at 6.0ft BGS		BACKFILLED WITH BENTONITE CHIPS	20P				
8	- very dark gray (3/1 2.5Y), wet at 8.5ft BGS			SB-16-10				0.0
10	- medium grained, saturated at 10.0ft BGS END OF BOREHOLE @ 10.0ft BGS	10.00						
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇
CHEMICAL ANALYSIS

OVERBURDEN LOG 062175-WI.GPJ CRA CORP.GDT 8/9/17



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PROTECTIVE COATINGS FACILITY
PROJECT NUMBER: 062175
CLIENT: PCC AEROSTRUCTURES
LOCATION: 1215 2ND AVENUE NORTH, KENT, WASHINGTON

HOLE DESIGNATION: SB-17
DATE COMPLETED: May 31, 2017
DRILLING METHOD: DIRECT PUSH
FIELD PERSONNEL: B. PAULEY

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N' VALUE	PID (ppm)
2	ASPHALT NO RECOVERY, rock	0.50	ASPHALT	10P				
4		5.00	BACKFILLED WITH BENTONITE CHIPS	SB-17-5				0.0
6	SM-SILTY SAND, with gravel, loose, grayish brown (5/2 2.5Y), no odor			20P				
8	- poor recovery at 7.5ft BGS			SB-17-10				0.0
10	- very dark gray (3/1 2.5YR), saturated at 10.0ft BGS END OF BOREHOLE @ 10.0ft BGS	10.00						
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

OVERBURDEN LOG 062175-WI.GPJ CRA_CORP.GDT 8/9/17

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 8
CHEMICAL ANALYSIS

Appendix C

2017 Analytical Laboratory Report

June 12, 2017

Christina McClelland
GHD Services, Inc.
20818 44th Ave W
Suite 190
Lynnwood, WA 98036

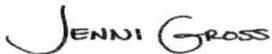
RE: Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Dear Christina McClelland:

Enclosed are the analytical results for sample(s) received by the laboratory on June 01, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Jeffrey Cloud, GHD Services Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: UST-078
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: MN00064
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Michigan Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #: 74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia WW Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10390780001	SO-053117-BP-SB-14-5	Solid	05/31/17 09:20	06/01/17 09:45
10390780002	SO-053117-BP-SB-14-10	Solid	05/31/17 09:35	06/01/17 09:45
10390780003	SO-053117-BP-SB-15-5	Solid	05/31/17 09:55	06/01/17 09:45
10390780004	SO-053117-BP-SB-15-10	Solid	05/31/17 10:10	06/01/17 09:45
10390780005	SO-053117-BP-SB-16-5	Solid	05/31/17 10:35	06/01/17 09:45
10390780006	SO-053117-BP-SB-16-10	Solid	05/31/17 10:45	06/01/17 09:45
10390780007	SO-053117-BP-SB-17-5	Solid	05/31/17 10:10	06/01/17 09:45
10390780008	SO-053117-BP-SB-17-10	Solid	05/31/17 11:20	06/01/17 09:45
10390780009	SO-053117-BP-D1	Solid	05/31/17 11:30	06/01/17 09:45
10390780010	Trip Blank	Solid	05/31/17 00:00	06/01/17 09:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10390780001	SO-053117-BP-SB-14-5	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780002	SO-053117-BP-SB-14-10	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780003	SO-053117-BP-SB-15-5	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780004	SO-053117-BP-SB-15-10	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780005	SO-053117-BP-SB-16-5	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780006	SO-053117-BP-SB-16-10	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M
10390780007	SO-053117-BP-SB-17-5	EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	69	PASI-M
10390780008	SO-053117-BP-SB-17-10	EPA 8260B	CD2	4	PASI-M
		EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10390780009	SO-053117-BP-D1	EPA 8260B	MRB	70	PASI-M
		EPA 6010C	DM	7	PASI-M
		EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	MRB	70	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10390780010	Trip Blank	EPA 8260B	MRB	70	PASI-M

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Method: EPA 6010C
Description: 6010C MET ICP
Client: GHD Services Inc
Date: June 12, 2017

General Information:

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

Hold Time:

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

Sample Preparation:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 478230

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10390780001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2605327)
 - Selenium
- MSD (Lab ID: 2605328)
 - Selenium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Method: EPA 7471B
Description: 7471B Mercury
Client: GHD Services Inc
Date: June 12, 2017

General Information:

9 samples were analyzed for EPA 7471B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Method: EPA 8260B
Description: 8260B MSV 5035 Low Level
Client: GHD Services Inc
Date: June 12, 2017

General Information:

10 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

L2: Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

- SO-053117-BP-D1 (Lab ID: 10390780009)

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 5035 Low with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

QC Batch: 478734

CL: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.

- BLANK (Lab ID: 2608134)
 - Tetrahydrofuran
- LCS (Lab ID: 2608135)
 - Tetrahydrofuran
- LCSD (Lab ID: 2608136)
 - Tetrahydrofuran
- SO-053117-BP-D1 (Lab ID: 10390780009)
 - Tetrahydrofuran

Internal Standards:

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

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

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

Laboratory Control Spike:

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

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Method: EPA 8260B
Description: 8260B MSV 5035 Low Level
Client: GHD Services Inc
Date: June 12, 2017

QC Batch: 478373

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2606033)
- Acetone

R1: RPD value was outside control limits.

- LCSD (Lab ID: 2606034)
- Acetone

QC Batch: 478734

L3: Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

- LCSD (Lab ID: 2608136)
- Chloromethane

R1: RPD value was outside control limits.

- LCSD (Lab ID: 2608136)
- 1,2-Dichloropropane
- 2-Butanone (MEK)
- Bromodichloromethane
- Tetrahydrofuran
- cis-1,3-Dichloropropene

Matrix Spikes:

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

QC Batch: 478373

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 478734

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 478734

1M: Sample preserved in lab; results are from sample aliquot taken from a glass jar with headspace, furthermore the container did not meet EPA or method requirements, and was not frozen within 48 hours of collection.

- SO-053117-BP-D1 (Lab ID: 10390780009)
- 1,2-Dichloroethane-d4 (S)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Method: EPA 8260B
Description: 8260B MSV 5030 Med Level
Client: GHD Services Inc
Date: June 12, 2017

General Information:

1 sample was analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 5035/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 478653

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10391374002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2607647)
- Trichloroethene

Duplicate Sample:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-14-5 Lab ID: 10390780001 Collected: 05/31/17 09:20 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	3.5	mg/kg	1.1	1	06/07/17 09:30	06/07/17 14:32	7440-38-2	
Barium	76.2	mg/kg	0.57	1	06/07/17 09:30	06/07/17 14:32	7440-39-3	
Cadmium	ND	mg/kg	0.17	1	06/07/17 09:30	06/07/17 14:32	7440-43-9	
Chromium	37.3	mg/kg	0.57	1	06/07/17 09:30	06/07/17 14:32	7440-47-3	
Lead	3.8	mg/kg	0.57	1	06/07/17 09:30	06/07/17 14:32	7439-92-1	
Selenium	ND	mg/kg	1.1	1	06/07/17 09:30	06/07/17 14:32	7782-49-2	M1
Silver	ND	mg/kg	0.57	1	06/07/17 09:30	06/07/17 14:32	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.042	mg/kg	0.024	1	06/07/17 13:45	06/11/17 18:04	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	18.9	%	0.10	1		06/07/17 12:09		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	106-46-7	
2,2-Dichloropropane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	594-20-7	
2-Butanone (MEK)	ND	ug/kg	22.3	1	06/07/17 09:12	06/07/17 14:52	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	22.3	1	06/07/17 09:12	06/07/17 14:52	108-10-1	
Acetone	ND	ug/kg	55.8	1	06/07/17 09:12	06/07/17 14:52	67-64-1	L1
Allyl chloride	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	107-05-1	
Benzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-14-5 Lab ID: 10390780001 Collected: 05/31/17 09:20 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
Bromoform	ND	ug/kg	22.3	1	06/07/17 09:12	06/07/17 14:52	75-25-2	
Bromomethane	ND	ug/kg	22.3	1	06/07/17 09:12	06/07/17 14:52	74-83-9	
Carbon disulfide	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-15-0	
Chlorobenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	108-90-7	
Chloroethane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	75-00-3	
Chloroform	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	67-66-3	
Chloromethane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	74-87-3	
Dibromochloromethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	124-48-1	
Dibromomethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	60-29-7	
Ethylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	1634-04-4	
Methylene Chloride	ND	ug/kg	22.3	1	06/07/17 09:12	06/07/17 14:52	75-09-2	
Naphthalene	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	91-20-3	
Styrene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	100-42-5	
Tetrachloroethene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	127-18-4	
Tetrahydrofuran	ND	ug/kg	44.6	1	06/07/17 09:12	06/07/17 14:52	109-99-9	
Toluene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	108-88-3	
Trichloroethene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	79-01-6	
Trichlorofluoromethane	ND	ug/kg	11.2	1	06/07/17 09:12	06/07/17 14:52	75-69-4	
Vinyl chloride	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	75-01-4	
Xylene (Total)	ND	ug/kg	13.4	1	06/07/17 09:12	06/07/17 14:52	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	10061-01-5	
m&p-Xylene	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 14:52	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	104-51-8	
n-Propylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	103-65-1	
o-Xylene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1	06/07/17 09:12	06/07/17 14:52	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%	72-146	1	06/07/17 09:12	06/07/17 14:52	17060-07-0	
Toluene-d8 (S)	104	%	75-125	1	06/07/17 09:12	06/07/17 14:52	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-132	1	06/07/17 09:12	06/07/17 14:52	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-14-10 Lab ID: 10390780002 Collected: 05/31/17 09:35 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	2.9	mg/kg	1.3	1	06/07/17 09:30	06/07/17 14:46	7440-38-2	
Barium	31.7	mg/kg	0.64	1	06/07/17 09:30	06/07/17 14:46	7440-39-3	
Cadmium	ND	mg/kg	0.19	1	06/07/17 09:30	06/07/17 14:46	7440-43-9	
Chromium	12.0	mg/kg	0.64	1	06/07/17 09:30	06/07/17 14:46	7440-47-3	
Lead	1.8	mg/kg	0.64	1	06/07/17 09:30	06/07/17 14:46	7439-92-1	
Selenium	ND	mg/kg	1.3	1	06/07/17 09:30	06/07/17 14:46	7782-49-2	
Silver	ND	mg/kg	0.64	1	06/07/17 09:30	06/07/17 14:46	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.025	mg/kg	0.024	1	06/07/17 13:45	06/11/17 18:10	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	24.6	%	0.10	1		06/07/17 12:09		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	76-13-1	
1,1-Dichloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-34-3	
1,1-Dichloroethene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-35-4	
1,1-Dichloropropene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	95-50-1	
1,2-Dichloroethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	107-06-2	
1,2-Dichloropropane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	541-73-1	
1,3-Dichloropropane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	106-46-7	
2,2-Dichloropropane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	594-20-7	
2-Butanone (MEK)	ND	ug/kg	25.1	1	06/07/17 09:12	06/07/17 15:11	78-93-3	
2-Chlorotoluene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	25.1	1	06/07/17 09:12	06/07/17 15:11	108-10-1	
Acetone	ND	ug/kg	62.7	1	06/07/17 09:12	06/07/17 15:11	67-64-1	L1
Allyl chloride	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	107-05-1	
Benzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	71-43-2	
Bromobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	108-86-1	
Bromochloromethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	74-97-5	
Bromodichloromethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-14-10 Lab ID: 10390780002 Collected: 05/31/17 09:35 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	25.1	1	06/07/17 09:12	06/07/17 15:11	75-25-2	
Bromomethane	ND	ug/kg	25.1	1	06/07/17 09:12	06/07/17 15:11	74-83-9	
Carbon disulfide	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-15-0	
Chlorobenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	108-90-7	
Chloroethane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	75-00-3	
Chloroform	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	67-66-3	
Chloromethane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	74-87-3	
Dibromochloromethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	124-48-1	
Dibromomethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	75-71-8	
Dichlorofluoromethane	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	60-29-7	
Ethylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	1634-04-4	
Methylene Chloride	ND	ug/kg	25.1	1	06/07/17 09:12	06/07/17 15:11	75-09-2	
Naphthalene	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	91-20-3	
Styrene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	100-42-5	
Tetrachloroethene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	127-18-4	
Tetrahydrofuran	ND	ug/kg	50.1	1	06/07/17 09:12	06/07/17 15:11	109-99-9	
Toluene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	108-88-3	
Trichloroethene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	79-01-6	
Trichlorofluoromethane	ND	ug/kg	12.5	1	06/07/17 09:12	06/07/17 15:11	75-69-4	
Vinyl chloride	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	75-01-4	
Xylene (Total)	ND	ug/kg	15.0	1	06/07/17 09:12	06/07/17 15:11	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	10061-01-5	
m&p-Xylene	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 15:11	179601-23-1	
n-Butylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	104-51-8	
n-Propylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	103-65-1	
o-Xylene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	95-47-6	
p-Isopropyltoluene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	99-87-6	
sec-Butylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.0	1	06/07/17 09:12	06/07/17 15:11	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	72-146	1	06/07/17 09:12	06/07/17 15:11	17060-07-0	
Toluene-d8 (S)	106	%	75-125	1	06/07/17 09:12	06/07/17 15:11	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-132	1	06/07/17 09:12	06/07/17 15:11	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-15-5 Lab ID: 10390780003 Collected: 05/31/17 09:55 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP								
			Analytical Method: EPA 6010C Preparation Method: EPA 3050					
Arsenic	3.6	mg/kg	1.0	1	06/07/17 09:30	06/07/17 14:49	7440-38-2	
Barium	62.1	mg/kg	0.51	1	06/07/17 09:30	06/07/17 14:49	7440-39-3	
Cadmium	ND	mg/kg	0.15	1	06/07/17 09:30	06/07/17 14:49	7440-43-9	
Chromium	29.6	mg/kg	0.51	1	06/07/17 09:30	06/07/17 14:49	7440-47-3	
Lead	3.5	mg/kg	0.51	1	06/07/17 09:30	06/07/17 14:49	7439-92-1	
Selenium	ND	mg/kg	1.0	1	06/07/17 09:30	06/07/17 14:49	7782-49-2	
Silver	ND	mg/kg	0.51	1	06/07/17 09:30	06/07/17 14:49	7440-22-4	
7471B Mercury								
			Analytical Method: EPA 7471B Preparation Method: EPA 7471B					
Mercury	0.039	mg/kg	0.020	1	06/07/17 13:45	06/11/17 18:12	7439-97-6	
Dry Weight								
			Analytical Method: ASTM D2974					
Percent Moisture	11.4	%	0.10	1		06/07/17 12:09		
8260B MSV 5035 Low Level								
			Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low					
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	106-46-7	
2,2-Dichloropropane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	594-20-7	
2-Butanone (MEK)	ND	ug/kg	22.1	1	06/07/17 09:12	06/07/17 15:30	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	22.1	1	06/07/17 09:12	06/07/17 15:30	108-10-1	
Acetone	ND	ug/kg	55.3	1	06/07/17 09:12	06/07/17 15:30	67-64-1	L1
Allyl chloride	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	107-05-1	
Benzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	71-43-2	
Bromobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	108-86-1	
Bromochloromethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	74-97-5	
Bromodichloromethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-15-5 Lab ID: 10390780003 Collected: 05/31/17 09:55 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
Bromoform	ND	ug/kg	22.1	1	06/07/17 09:12	06/07/17 15:30	75-25-2	
Bromomethane	ND	ug/kg	22.1	1	06/07/17 09:12	06/07/17 15:30	74-83-9	
Carbon disulfide	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-15-0	
Chlorobenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	108-90-7	
Chloroethane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	75-00-3	
Chloroform	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	67-66-3	
Chloromethane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	74-87-3	
Dibromochloromethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	124-48-1	
Dibromomethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	60-29-7	
Ethylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	1634-04-4	
Methylene Chloride	ND	ug/kg	22.1	1	06/07/17 09:12	06/07/17 15:30	75-09-2	
Naphthalene	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	91-20-3	
Styrene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	100-42-5	
Tetrachloroethene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	127-18-4	
Tetrahydrofuran	ND	ug/kg	44.2	1	06/07/17 09:12	06/07/17 15:30	109-99-9	
Toluene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	108-88-3	
Trichloroethene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	79-01-6	
Trichlorofluoromethane	ND	ug/kg	11.1	1	06/07/17 09:12	06/07/17 15:30	75-69-4	
Vinyl chloride	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	75-01-4	
Xylene (Total)	ND	ug/kg	13.3	1	06/07/17 09:12	06/07/17 15:30	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	10061-01-5	
m&p-Xylene	ND	ug/kg	8.8	1	06/07/17 09:12	06/07/17 15:30	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	104-51-8	
n-Propylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	103-65-1	
o-Xylene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.4	1	06/07/17 09:12	06/07/17 15:30	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%	72-146	1	06/07/17 09:12	06/07/17 15:30	17060-07-0	
Toluene-d8 (S)	106	%	75-125	1	06/07/17 09:12	06/07/17 15:30	2037-26-5	
4-Bromofluorobenzene (S)	105	%	75-132	1	06/07/17 09:12	06/07/17 15:30	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-15-10 Lab ID: 10390780004 Collected: 05/31/17 10:10 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	4.3	mg/kg	1.4	1	06/07/17 09:30	06/07/17 14:52	7440-38-2	
Barium	57.8	mg/kg	0.69	1	06/07/17 09:30	06/07/17 14:52	7440-39-3	
Cadmium	ND	mg/kg	0.21	1	06/07/17 09:30	06/07/17 14:52	7440-43-9	
Chromium	14.0	mg/kg	0.69	1	06/07/17 09:30	06/07/17 14:52	7440-47-3	
Lead	3.2	mg/kg	0.69	1	06/07/17 09:30	06/07/17 14:52	7439-92-1	
Selenium	ND	mg/kg	1.4	1	06/07/17 09:30	06/07/17 14:52	7782-49-2	
Silver	ND	mg/kg	0.69	1	06/07/17 09:30	06/07/17 14:52	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.048	mg/kg	0.026	1	06/07/17 13:45	06/11/17 18:14	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	30.1	%	0.10	1		06/07/17 12:09		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	106-46-7	
2,2-Dichloropropane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	594-20-7	
2-Butanone (MEK)	ND	ug/kg	21.1	1	06/07/17 09:12	06/07/17 15:49	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	21.1	1	06/07/17 09:12	06/07/17 15:49	108-10-1	
Acetone	ND	ug/kg	52.7	1	06/07/17 09:12	06/07/17 15:49	67-64-1	L1
Allyl chloride	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	107-05-1	
Benzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	71-43-2	
Bromobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	108-86-1	
Bromochloromethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	74-97-5	
Bromodichloromethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-15-10 Lab ID: 10390780004 Collected: 05/31/17 10:10 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	21.1	1	06/07/17 09:12	06/07/17 15:49	75-25-2	
Bromomethane	ND	ug/kg	21.1	1	06/07/17 09:12	06/07/17 15:49	74-83-9	
Carbon disulfide	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-15-0	
Chlorobenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	108-90-7	
Chloroethane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	75-00-3	
Chloroform	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	67-66-3	
Chloromethane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	74-87-3	
Dibromochloromethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	124-48-1	
Dibromomethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	60-29-7	
Ethylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	1634-04-4	
Methylene Chloride	ND	ug/kg	21.1	1	06/07/17 09:12	06/07/17 15:49	75-09-2	
Naphthalene	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	91-20-3	
Styrene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	100-42-5	
Tetrachloroethene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	127-18-4	
Tetrahydrofuran	ND	ug/kg	42.1	1	06/07/17 09:12	06/07/17 15:49	109-99-9	
Toluene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	108-88-3	
Trichloroethene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	79-01-6	
Trichlorofluoromethane	ND	ug/kg	10.5	1	06/07/17 09:12	06/07/17 15:49	75-69-4	
Vinyl chloride	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	75-01-4	
Xylene (Total)	ND	ug/kg	12.6	1	06/07/17 09:12	06/07/17 15:49	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	10061-01-5	
m&p-Xylene	ND	ug/kg	8.4	1	06/07/17 09:12	06/07/17 15:49	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	104-51-8	
n-Propylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	103-65-1	
o-Xylene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.2	1	06/07/17 09:12	06/07/17 15:49	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%.	72-146	1	06/07/17 09:12	06/07/17 15:49	17060-07-0	
Toluene-d8 (S)	105	%.	75-125	1	06/07/17 09:12	06/07/17 15:49	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-132	1	06/07/17 09:12	06/07/17 15:49	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-16-5 Lab ID: 10390780005 Collected: 05/31/17 10:35 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP								
			Analytical Method: EPA 6010C Preparation Method: EPA 3050					
Arsenic	2.8	mg/kg	1.1	1	06/07/17 09:30	06/07/17 15:02	7440-38-2	
Barium	50.5	mg/kg	0.54	1	06/07/17 09:30	06/07/17 15:02	7440-39-3	
Cadmium	ND	mg/kg	0.16	1	06/07/17 09:30	06/07/17 15:02	7440-43-9	
Chromium	22.6	mg/kg	0.54	1	06/07/17 09:30	06/07/17 15:02	7440-47-3	
Lead	2.7	mg/kg	0.54	1	06/07/17 09:30	06/07/17 15:02	7439-92-1	
Selenium	ND	mg/kg	1.1	1	06/07/17 09:30	06/07/17 15:02	7782-49-2	
Silver	ND	mg/kg	0.54	1	06/07/17 09:30	06/07/17 15:02	7440-22-4	
7471B Mercury								
			Analytical Method: EPA 7471B Preparation Method: EPA 7471B					
Mercury	0.040	mg/kg	0.023	1	06/07/17 13:45	06/11/17 18:20	7439-97-6	
Dry Weight								
			Analytical Method: ASTM D2974					
Percent Moisture	12.3	%	0.10	1		06/08/17 08:49		
8260B MSV 5035 Low Level								
			Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low					
1,1,1,2-Tetrachloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	76-13-1	
1,1-Dichloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-34-3	
1,1-Dichloroethene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-35-4	
1,1-Dichloropropene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	95-50-1	
1,2-Dichloroethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	107-06-2	
1,2-Dichloropropane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	541-73-1	
1,3-Dichloropropane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	106-46-7	
2,2-Dichloropropane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	594-20-7	
2-Butanone (MEK)	ND	ug/kg	17.8	1	06/07/17 09:12	06/07/17 16:08	78-93-3	
2-Chlorotoluene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	17.8	1	06/07/17 09:12	06/07/17 16:08	108-10-1	
Acetone	ND	ug/kg	44.6	1	06/07/17 09:12	06/07/17 16:08	67-64-1	L1
Allyl chloride	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	107-05-1	
Benzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	71-43-2	
Bromobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	108-86-1	
Bromochloromethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	74-97-5	
Bromodichloromethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-16-5 Lab ID: 10390780005 Collected: 05/31/17 10:35 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	17.8	1	06/07/17 09:12	06/07/17 16:08	75-25-2	
Bromomethane	ND	ug/kg	17.8	1	06/07/17 09:12	06/07/17 16:08	74-83-9	
Carbon disulfide	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-15-0	
Chlorobenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	108-90-7	
Chloroethane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	75-00-3	
Chloroform	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	67-66-3	
Chloromethane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	74-87-3	
Dibromochloromethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	124-48-1	
Dibromomethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	75-71-8	
Dichlorofluoromethane	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	60-29-7	
Ethylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	1634-04-4	
Methylene Chloride	ND	ug/kg	17.8	1	06/07/17 09:12	06/07/17 16:08	75-09-2	
Naphthalene	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	91-20-3	
Styrene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	100-42-5	
Tetrachloroethene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	127-18-4	
Tetrahydrofuran	ND	ug/kg	35.7	1	06/07/17 09:12	06/07/17 16:08	109-99-9	
Toluene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	108-88-3	
Trichloroethene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	79-01-6	
Trichlorofluoromethane	ND	ug/kg	8.9	1	06/07/17 09:12	06/07/17 16:08	75-69-4	
Vinyl chloride	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	75-01-4	
Xylene (Total)	ND	ug/kg	10.7	1	06/07/17 09:12	06/07/17 16:08	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	10061-01-5	
m&p-Xylene	ND	ug/kg	7.1	1	06/07/17 09:12	06/07/17 16:08	179601-23-1	
n-Butylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	104-51-8	
n-Propylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	103-65-1	
o-Xylene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	95-47-6	
p-Isopropyltoluene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	99-87-6	
sec-Butylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	135-98-8	
tert-Butylbenzene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	3.6	1	06/07/17 09:12	06/07/17 16:08	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%	72-146	1	06/07/17 09:12	06/07/17 16:08	17060-07-0	
Toluene-d8 (S)	105	%	75-125	1	06/07/17 09:12	06/07/17 16:08	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-132	1	06/07/17 09:12	06/07/17 16:08	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-16-10 Lab ID: 10390780006 Collected: 05/31/17 10:45 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	3.7	mg/kg	1.3	1	06/07/17 09:30	06/07/17 15:05	7440-38-2	
Barium	47.7	mg/kg	0.64	1	06/07/17 09:30	06/07/17 15:05	7440-39-3	
Cadmium	ND	mg/kg	0.19	1	06/07/17 09:30	06/07/17 15:05	7440-43-9	
Chromium	13.5	mg/kg	0.64	1	06/07/17 09:30	06/07/17 15:05	7440-47-3	
Lead	2.1	mg/kg	0.64	1	06/07/17 09:30	06/07/17 15:05	7439-92-1	
Selenium	ND	mg/kg	1.3	1	06/07/17 09:30	06/07/17 15:05	7782-49-2	
Silver	ND	mg/kg	0.64	1	06/07/17 09:30	06/07/17 15:05	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	ND	mg/kg	0.028	1	06/07/17 13:45	06/11/17 18:22	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	28.8	%	0.10	1		06/08/17 08:49		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	106-46-7	
2,2-Dichloropropane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	594-20-7	
2-Butanone (MEK)	ND	ug/kg	24.2	1	06/07/17 09:12	06/07/17 16:27	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	24.2	1	06/07/17 09:12	06/07/17 16:27	108-10-1	
Acetone	ND	ug/kg	60.4	1	06/07/17 09:12	06/07/17 16:27	67-64-1	L1
Allyl chloride	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	107-05-1	
Benzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	71-43-2	
Bromobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	108-86-1	
Bromochloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	74-97-5	
Bromodichloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-27-4	

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-16-10 Lab ID: 10390780006 Collected: 05/31/17 10:45 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	24.2	1	06/07/17 09:12	06/07/17 16:27	75-25-2	
Bromomethane	ND	ug/kg	24.2	1	06/07/17 09:12	06/07/17 16:27	74-83-9	
Carbon disulfide	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-15-0	
Chlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	108-90-7	
Chloroethane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	75-00-3	
Chloroform	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	67-66-3	
Chloromethane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	74-87-3	
Dibromochloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	124-48-1	
Dibromomethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	60-29-7	
Ethylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	1634-04-4	
Methylene Chloride	ND	ug/kg	24.2	1	06/07/17 09:12	06/07/17 16:27	75-09-2	
Naphthalene	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	91-20-3	
Styrene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	100-42-5	
Tetrachloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	127-18-4	
Tetrahydrofuran	ND	ug/kg	48.3	1	06/07/17 09:12	06/07/17 16:27	109-99-9	
Toluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	108-88-3	
Trichloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	79-01-6	
Trichlorofluoromethane	ND	ug/kg	12.1	1	06/07/17 09:12	06/07/17 16:27	75-69-4	
Vinyl chloride	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	75-01-4	
Xylene (Total)	ND	ug/kg	14.5	1	06/07/17 09:12	06/07/17 16:27	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	10061-01-5	
m&p-Xylene	ND	ug/kg	9.7	1	06/07/17 09:12	06/07/17 16:27	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	104-51-8	
n-Propylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	103-65-1	
o-Xylene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:27	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%.	72-146	1	06/07/17 09:12	06/07/17 16:27	17060-07-0	
Toluene-d8 (S)	108	%.	75-125	1	06/07/17 09:12	06/07/17 16:27	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-132	1	06/07/17 09:12	06/07/17 16:27	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-17-5 Lab ID: 10390780007 Collected: 05/31/17 10:10 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	3.2	mg/kg	1.1	1	06/07/17 09:30	06/07/17 15:08	7440-38-2	
Barium	72.4	mg/kg	0.53	1	06/07/17 09:30	06/07/17 15:08	7440-39-3	
Cadmium	ND	mg/kg	0.16	1	06/07/17 09:30	06/07/17 15:08	7440-43-9	
Chromium	24.6	mg/kg	0.53	1	06/07/17 09:30	06/07/17 15:08	7440-47-3	
Lead	3.3	mg/kg	0.53	1	06/07/17 09:30	06/07/17 15:08	7439-92-1	
Selenium	ND	mg/kg	1.1	1	06/07/17 09:30	06/07/17 15:08	7782-49-2	
Silver	ND	mg/kg	0.53	1	06/07/17 09:30	06/07/17 15:08	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.034	mg/kg	0.022	1	06/07/17 13:45	06/11/17 18:25	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	12.7	%	0.10	1		06/08/17 08:49		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	76-13-1	
1,1-Dichloroethane	19.2	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-34-3	
1,1-Dichloroethene	58.2	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	106-46-7	
2,2-Dichloropropane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	594-20-7	
2-Butanone (MEK)	ND	ug/kg	23.8	1	06/07/17 09:12	06/07/17 16:46	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	23.8	1	06/07/17 09:12	06/07/17 16:46	108-10-1	
Acetone	ND	ug/kg	59.4	1	06/07/17 09:12	06/07/17 16:46	67-64-1	L1
Allyl chloride	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	107-05-1	
Benzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	71-43-2	
Bromobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	108-86-1	
Bromochloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	74-97-5	
Bromodichloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-17-5 Lab ID: 10390780007 Collected: 05/31/17 10:10 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
Bromoform	ND	ug/kg	23.8	1	06/07/17 09:12	06/07/17 16:46	75-25-2	
Bromomethane	ND	ug/kg	23.8	1	06/07/17 09:12	06/07/17 16:46	74-83-9	
Carbon disulfide	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-15-0	
Chlorobenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	108-90-7	
Chloroethane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	75-00-3	
Chloroform	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	67-66-3	
Chloromethane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	74-87-3	
Dibromochloromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	124-48-1	
Dibromomethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	60-29-7	
Ethylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	1634-04-4	
Methylene Chloride	ND	ug/kg	23.8	1	06/07/17 09:12	06/07/17 16:46	75-09-2	
Naphthalene	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	91-20-3	
Styrene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	100-42-5	
Tetrachloroethene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	127-18-4	
Tetrahydrofuran	ND	ug/kg	47.5	1	06/07/17 09:12	06/07/17 16:46	109-99-9	
Toluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	108-88-3	
Trichlorofluoromethane	ND	ug/kg	11.9	1	06/07/17 09:12	06/07/17 16:46	75-69-4	
Vinyl chloride	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	75-01-4	
Xylene (Total)	ND	ug/kg	14.3	1	06/07/17 09:12	06/07/17 16:46	1330-20-7	
cis-1,2-Dichloroethene	147	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	10061-01-5	
m&p-Xylene	ND	ug/kg	9.5	1	06/07/17 09:12	06/07/17 16:46	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	104-51-8	
n-Propylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	103-65-1	
o-Xylene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	98-06-6	
trans-1,2-Dichloroethene	15.1	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.8	1	06/07/17 09:12	06/07/17 16:46	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%	72-146	1	06/07/17 09:12	06/07/17 16:46	17060-07-0	
Toluene-d8 (S)	107	%	75-125	1	06/07/17 09:12	06/07/17 16:46	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-132	1	06/07/17 09:12	06/07/17 16:46	460-00-4	

8260B MSV 5030 Med Level

Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B

Trichloroethene	11400	ug/kg	54.3	1	06/08/17 14:10	06/09/17 04:53	79-01-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	86	%	75-125	1	06/08/17 14:10	06/09/17 04:53	17060-07-0	
Toluene-d8 (S)	94	%	75-125	1	06/08/17 14:10	06/09/17 04:53	2037-26-5	

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-17-5 Lab ID: 10390780007 Collected: 05/31/17 10:10 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B		Preparation Method: EPA 5035/5030B					
Surrogates								
4-Bromofluorobenzene (S)	94	%.	75-125	1	06/08/17 14:10	06/09/17 04:53	460-00-4	

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-17-10 Lab ID: 10390780008 Collected: 05/31/17 11:20 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	3.3	mg/kg	1.3	1	06/07/17 09:30	06/07/17 15:10	7440-38-2	
Barium	50.5	mg/kg	0.63	1	06/07/17 09:30	06/07/17 15:10	7440-39-3	
Cadmium	ND	mg/kg	0.19	1	06/07/17 09:30	06/07/17 15:10	7440-43-9	
Chromium	17.0	mg/kg	0.63	1	06/07/17 09:30	06/07/17 15:10	7440-47-3	
Lead	2.7	mg/kg	0.63	1	06/07/17 09:30	06/07/17 15:10	7439-92-1	
Selenium	ND	mg/kg	1.3	1	06/07/17 09:30	06/07/17 15:10	7782-49-2	
Silver	ND	mg/kg	0.63	1	06/07/17 09:30	06/07/17 15:10	7440-22-4	
7471B Mercury								
Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.043	mg/kg	0.027	1	06/07/17 13:45	06/11/17 18:27	7439-97-6	
Dry Weight								
Analytical Method: ASTM D2974								
Percent Moisture	25.9	%	0.10	1		06/08/17 08:50		
8260B MSV 5035 Low Level								
Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	76-13-1	
1,1-Dichloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-34-3	
1,1-Dichloroethene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-35-4	
1,1-Dichloropropene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	95-50-1	
1,2-Dichloroethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	107-06-2	
1,2-Dichloropropane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	541-73-1	
1,3-Dichloropropane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	106-46-7	
2,2-Dichloropropane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	594-20-7	
2-Butanone (MEK)	ND	ug/kg	25.4	1	06/07/17 09:12	06/07/17 17:05	78-93-3	
2-Chlorotoluene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	25.4	1	06/07/17 09:12	06/07/17 17:05	108-10-1	
Acetone	ND	ug/kg	63.5	1	06/07/17 09:12	06/07/17 17:05	67-64-1	L1
Allyl chloride	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	107-05-1	
Benzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	71-43-2	
Bromobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	108-86-1	
Bromochloromethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	74-97-5	
Bromodichloromethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-27-4	

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-SB-17-10 Lab ID: 10390780008 Collected: 05/31/17 11:20 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	25.4	1	06/07/17 09:12	06/07/17 17:05	75-25-2	
Bromomethane	ND	ug/kg	25.4	1	06/07/17 09:12	06/07/17 17:05	74-83-9	
Carbon disulfide	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-15-0	
Chlorobenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	108-90-7	
Chloroethane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	75-00-3	
Chloroform	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	67-66-3	
Chloromethane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	74-87-3	
Dibromochloromethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	124-48-1	
Dibromomethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	75-71-8	
Dichlorofluoromethane	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	60-29-7	
Ethylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	1634-04-4	
Methylene Chloride	ND	ug/kg	25.4	1	06/07/17 09:12	06/07/17 17:05	75-09-2	
Naphthalene	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	91-20-3	
Styrene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	100-42-5	
Tetrachloroethene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	127-18-4	
Tetrahydrofuran	ND	ug/kg	50.8	1	06/07/17 09:12	06/07/17 17:05	109-99-9	
Toluene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	108-88-3	
Trichloroethene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	79-01-6	
Trichlorofluoromethane	ND	ug/kg	12.7	1	06/07/17 09:12	06/07/17 17:05	75-69-4	
Vinyl chloride	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	75-01-4	
Xylene (Total)	ND	ug/kg	15.2	1	06/07/17 09:12	06/07/17 17:05	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	10061-01-5	
m&p-Xylene	ND	ug/kg	10.2	1	06/07/17 09:12	06/07/17 17:05	179601-23-1	
n-Butylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	104-51-8	
n-Propylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	103-65-1	
o-Xylene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	95-47-6	
p-Isopropyltoluene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	99-87-6	
sec-Butylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.1	1	06/07/17 09:12	06/07/17 17:05	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%.	72-146	1	06/07/17 09:12	06/07/17 17:05	17060-07-0	
Toluene-d8 (S)	105	%.	75-125	1	06/07/17 09:12	06/07/17 17:05	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-132	1	06/07/17 09:12	06/07/17 17:05	460-00-4	

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-D1 Lab ID: 10390780009 Collected: 05/31/17 11:30 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3050								
Arsenic	1.9	mg/kg	1.2	1	06/07/17 09:30	06/07/17 15:13	7440-38-2	
Barium	40.3	mg/kg	0.58	1	06/07/17 09:30	06/07/17 15:13	7440-39-3	
Cadmium	1.1	mg/kg	0.17	1	06/07/17 09:30	06/07/17 15:13	7440-43-9	
Chromium	21.6	mg/kg	0.58	1	06/07/17 09:30	06/07/17 15:13	7440-47-3	
Lead	2.9	mg/kg	0.58	1	06/07/17 09:30	06/07/17 15:13	7439-92-1	
Selenium	ND	mg/kg	1.2	1	06/07/17 09:30	06/07/17 15:13	7782-49-2	
Silver	ND	mg/kg	0.58	1	06/07/17 09:30	06/07/17 15:13	7440-22-4	
7471B Mercury Analytical Method: EPA 7471B Preparation Method: EPA 7471B								
Mercury	0.029	mg/kg	0.024	1	06/07/17 13:45	06/11/17 18:29	7439-97-6	
Dry Weight Analytical Method: ASTM D2974								
Percent Moisture	17.3	%	0.10	1		06/08/17 08:50		
8260B MSV 5035 Low Level Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low								
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	106-46-7	
2,2-Dichloropropane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	594-20-7	
2-Butanone (MEK)	52.7	ug/kg	22.1	1	06/08/17 08:38	06/08/17 18:58	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	22.1	1	06/08/17 08:38	06/08/17 18:58	108-10-1	
Acetone	163	ug/kg	55.1	1	06/08/17 08:38	06/08/17 18:58	67-64-1	
Allyl chloride	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	107-05-1	
Benzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	71-43-2	L2
Bromobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	108-86-1	
Bromochloromethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	74-97-5	
Bromodichloromethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-27-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: SO-053117-BP-D1 Lab ID: 10390780009 Collected: 05/31/17 11:30 Received: 06/01/17 09:45 Matrix: Solid

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

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Bromoform	ND	ug/kg	22.1	1	06/08/17 08:38	06/08/17 18:58	75-25-2	
Bromomethane	ND	ug/kg	22.1	1	06/08/17 08:38	06/08/17 18:58	74-83-9	
Carbon disulfide	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-15-0	
Chlorobenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	108-90-7	
Chloroethane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	75-00-3	
Chloroform	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	67-66-3	
Chloromethane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	74-87-3	
Dibromochloromethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	124-48-1	
Dibromomethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	60-29-7	
Ethylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	1634-04-4	
Methylene Chloride	ND	ug/kg	22.1	1	06/08/17 08:38	06/08/17 18:58	75-09-2	
Naphthalene	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	91-20-3	
Styrene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	100-42-5	
Tetrachloroethene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	127-18-4	
Tetrahydrofuran	ND	ug/kg	44.1	1	06/08/17 08:38	06/08/17 18:58	109-99-9	CL,L2
Toluene	13.5	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	108-88-3	
Trichloroethene	120	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	79-01-6	
Trichlorofluoromethane	ND	ug/kg	11.0	1	06/08/17 08:38	06/08/17 18:58	75-69-4	
Vinyl chloride	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	75-01-4	
Xylene (Total)	ND	ug/kg	13.2	1	06/08/17 08:38	06/08/17 18:58	1330-20-7	
cis-1,2-Dichloroethene	6.2	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	10061-01-5	
m&p-Xylene	ND	ug/kg	8.8	1	06/08/17 08:38	06/08/17 18:58	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	104-51-8	
n-Propylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	103-65-1	
o-Xylene	4.8	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.4	1	06/08/17 08:38	06/08/17 18:58	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	72-146	1	06/08/17 08:38	06/08/17 18:58	17060-07-0	1M
Toluene-d8 (S)	107	%.	75-125	1	06/08/17 08:38	06/08/17 18:58	2037-26-5	
4-Bromofluorobenzene (S)	110	%.	75-132	1	06/08/17 08:38	06/08/17 18:58	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: Trip Blank Lab ID: 10390780010 Collected: 05/31/17 00:00 Received: 06/01/17 09:45 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	630-20-6	
1,1,1-Trichloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	71-55-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	79-34-5	
1,1,2-Trichloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	79-00-5	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	76-13-1	
1,1-Dichloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-34-3	
1,1-Dichloroethene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-35-4	
1,1-Dichloropropene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	563-58-6	
1,2,3-Trichlorobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	87-61-6	
1,2,3-Trichloropropane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	96-18-4	
1,2,4-Trichlorobenzene	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	120-82-1	
1,2,4-Trimethylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	95-63-6	
1,2-Dibromo-3-chloropropane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	96-12-8	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	106-93-4	
1,2-Dichlorobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	95-50-1	
1,2-Dichloroethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	107-06-2	
1,2-Dichloropropane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	78-87-5	
1,3-Dichlorobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	541-73-1	
1,3-Dichloropropane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	142-28-9	
1,4-Dichlorobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	106-46-7	
2,2-Dichloropropane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	594-20-7	
2-Butanone (MEK)	ND	ug/kg	20.0	1	06/07/17 09:12	06/07/17 14:33	78-93-3	
2-Chlorotoluene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	95-49-8	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	20.0	1	06/07/17 09:12	06/07/17 14:33	108-10-1	
Acetone	ND	ug/kg	50.0	1	06/07/17 09:12	06/07/17 14:33	67-64-1	L1
Allyl chloride	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	107-05-1	
Benzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	71-43-2	
Bromobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	108-86-1	
Bromochloromethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	74-97-5	
Bromodichloromethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-27-4	
Bromoform	ND	ug/kg	20.0	1	06/07/17 09:12	06/07/17 14:33	75-25-2	
Bromomethane	ND	ug/kg	20.0	1	06/07/17 09:12	06/07/17 14:33	74-83-9	
Carbon disulfide	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-15-0	
Chlorobenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	108-90-7	
Chloroethane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	75-00-3	
Chloroform	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	67-66-3	
Chloromethane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	74-87-3	
Dibromochloromethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	124-48-1	
Dibromomethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	74-95-3	
Dichlorodifluoromethane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	75-71-8	
Dichlorofluoromethane	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-43-4	
Diethyl ether (Ethyl ether)	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	60-29-7	
Ethylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	98-82-8	
Methyl-tert-butyl ether	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Sample: Trip Blank Lab ID: 10390780010 Collected: 05/31/17 00:00 Received: 06/01/17 09:45 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5035 Low Level		Analytical Method: EPA 8260B Preparation Method: EPA 5035 Low						
Methylene Chloride	ND	ug/kg	20.0	1	06/07/17 09:12	06/07/17 14:33	75-09-2	
Naphthalene	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	91-20-3	
Styrene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	100-42-5	
Tetrachloroethene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	127-18-4	
Tetrahydrofuran	ND	ug/kg	40.0	1	06/07/17 09:12	06/07/17 14:33	109-99-9	
Toluene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	108-88-3	
Trichloroethene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	79-01-6	
Trichlorofluoromethane	ND	ug/kg	10.0	1	06/07/17 09:12	06/07/17 14:33	75-69-4	
Vinyl chloride	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	75-01-4	
Xylene (Total)	ND	ug/kg	12.0	1	06/07/17 09:12	06/07/17 14:33	1330-20-7	
cis-1,2-Dichloroethene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	156-59-2	
cis-1,3-Dichloropropene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	10061-01-5	
m&p-Xylene	ND	ug/kg	8.0	1	06/07/17 09:12	06/07/17 14:33	179601-23-1	
n-Butylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	104-51-8	
n-Propylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	103-65-1	
o-Xylene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	95-47-6	
p-Isopropyltoluene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	99-87-6	
sec-Butylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	98-06-6	
trans-1,2-Dichloroethene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	156-60-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.0	1	06/07/17 09:12	06/07/17 14:33	10061-02-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	72-146	1	06/07/17 09:12	06/07/17 14:33	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1	06/07/17 09:12	06/07/17 14:33	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-132	1	06/07/17 09:12	06/07/17 14:33	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch:	478237	Analysis Method:	EPA 7471B
QC Batch Method:	EPA 7471B	Analysis Description:	7471B Mercury Solids
Associated Lab Samples:	10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780009		

METHOD BLANK:	2605366	Matrix:	Solid
Associated Lab Samples:	10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.019	06/11/17 18:00	

LABORATORY CONTROL SAMPLE: 2605367

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.48	0.45	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2605368 2605369

Parameter	Units	10390780001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Mercury	mg/kg	0.042	.62	.58	0.64	0.60	97	97	75-125	6	20

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478230 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780009

METHOD BLANK: 2605325 Matrix: Solid
Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.92	06/07/17 14:27	
Barium	mg/kg	ND	0.46	06/07/17 14:27	
Cadmium	mg/kg	ND	0.14	06/07/17 14:27	
Chromium	mg/kg	ND	0.46	06/07/17 14:27	
Lead	mg/kg	ND	0.46	06/07/17 14:27	
Selenium	mg/kg	ND	0.92	06/07/17 14:27	
Silver	mg/kg	ND	0.46	06/07/17 14:27	

LABORATORY CONTROL SAMPLE: 2605326

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	49	44.9	92	80-120	
Barium	mg/kg	49	48.3	99	80-120	
Cadmium	mg/kg	49	45.3	92	80-120	
Chromium	mg/kg	49	48.4	99	80-120	
Lead	mg/kg	49	47.2	96	80-120	
Selenium	mg/kg	49	41.3	84	80-120	
Silver	mg/kg	24.5	22.6	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2605327 2605328

Parameter	Units	10390780001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Arsenic	mg/kg	3.5	60.4	59.8	50.2	52.4	77	82	75-125	4	20
Barium	mg/kg	76.2	60.4	59.8	130	125	88	81	75-125	4	20
Cadmium	mg/kg	ND	60.4	59.8	47.3	48.8	78	81	75-125	3	20
Chromium	mg/kg	37.3	60.4	59.8	92.8	85.9	92	81	75-125	8	20
Lead	mg/kg	3.8	60.4	59.8	49.3	50.6	75	78	75-125	3	20
Selenium	mg/kg	ND	60.4	59.8	42.4	43.8	70	73	75-125	3	20 M1
Silver	mg/kg	ND	30.2	30	25.0	25.8	82	86	75-125	3	20

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478277 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004

SAMPLE DUPLICATE: 2605687

Parameter	Units	10391217001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.0	14.9	0	30	

SAMPLE DUPLICATE: 2605688

Parameter	Units	10390780004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	30.1	29.5	2	30	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478472 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10390780005, 10390780006, 10390780007, 10390780008, 10390780009

SAMPLE DUPLICATE: 2606580

Parameter	Units	10390780005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.3	12.7	3	30	

SAMPLE DUPLICATE: 2606581

Parameter	Units	10390692003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.2	12.3	7	30	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478373 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035 Low Analysis Description: 8260B MSV 5035 Low Level
Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780010

METHOD BLANK: 2606032 Matrix: Solid
Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1,1-Trichloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1,2,2-Tetrachloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1,2-Trichloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1-Dichloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,1-Dichloroethene	ug/kg	ND	4.0	06/07/17 10:53	
1,1-Dichloropropene	ug/kg	ND	4.0	06/07/17 10:53	
1,2,3-Trichlorobenzene	ug/kg	ND	4.0	06/07/17 10:53	
1,2,3-Trichloropropane	ug/kg	ND	4.0	06/07/17 10:53	
1,2,4-Trichlorobenzene	ug/kg	ND	10.0	06/07/17 10:53	MN
1,2,4-Trimethylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
1,2-Dibromo-3-chloropropane	ug/kg	ND	10.0	06/07/17 10:53	
1,2-Dibromoethane (EDB)	ug/kg	ND	4.0	06/07/17 10:53	
1,2-Dichlorobenzene	ug/kg	ND	4.0	06/07/17 10:53	
1,2-Dichloroethane	ug/kg	ND	4.0	06/07/17 10:53	
1,2-Dichloropropane	ug/kg	ND	4.0	06/07/17 10:53	
1,3-Dichlorobenzene	ug/kg	ND	4.0	06/07/17 10:53	
1,3-Dichloropropane	ug/kg	ND	4.0	06/07/17 10:53	
1,4-Dichlorobenzene	ug/kg	ND	4.0	06/07/17 10:53	
2,2-Dichloropropane	ug/kg	ND	10.0	06/07/17 10:53	
2-Butanone (MEK)	ug/kg	ND	20.0	06/07/17 10:53	
2-Chlorotoluene	ug/kg	ND	4.0	06/07/17 10:53	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	20.0	06/07/17 10:53	
Acetone	ug/kg	ND	50.0	06/07/17 10:53	MN
Allyl chloride	ug/kg	ND	10.0	06/07/17 10:53	
Benzene	ug/kg	ND	4.0	06/07/17 10:53	
Bromobenzene	ug/kg	ND	4.0	06/07/17 10:53	
Bromochloromethane	ug/kg	ND	4.0	06/07/17 10:53	
Bromodichloromethane	ug/kg	ND	4.0	06/07/17 10:53	
Bromoform	ug/kg	ND	20.0	06/07/17 10:53	
Bromomethane	ug/kg	ND	20.0	06/07/17 10:53	
Carbon disulfide	ug/kg	ND	4.0	06/07/17 10:53	
Chlorobenzene	ug/kg	ND	4.0	06/07/17 10:53	
Chloroethane	ug/kg	ND	10.0	06/07/17 10:53	
Chloroform	ug/kg	ND	4.0	06/07/17 10:53	
Chloromethane	ug/kg	ND	10.0	06/07/17 10:53	
cis-1,2-Dichloroethene	ug/kg	ND	4.0	06/07/17 10:53	
cis-1,3-Dichloropropene	ug/kg	ND	4.0	06/07/17 10:53	
Dibromochloromethane	ug/kg	ND	4.0	06/07/17 10:53	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

METHOD BLANK: 2606032

Matrix: Solid

Associated Lab Samples: 10390780001, 10390780002, 10390780003, 10390780004, 10390780005, 10390780006, 10390780007, 10390780008, 10390780010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/kg	ND	4.0	06/07/17 10:53	
Dichlorodifluoromethane	ug/kg	ND	10.0	06/07/17 10:53	
Dichlorofluoromethane	ug/kg	ND	4.0	06/07/17 10:53	
Diethyl ether (Ethyl ether)	ug/kg	ND	10.0	06/07/17 10:53	
Ethylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
Hexachloro-1,3-butadiene	ug/kg	ND	10.0	06/07/17 10:53	
Isopropylbenzene (Cumene)	ug/kg	ND	4.0	06/07/17 10:53	
m&p-Xylene	ug/kg	ND	8.0	06/07/17 10:53	
Methyl-tert-butyl ether	ug/kg	ND	4.0	06/07/17 10:53	
Methylene Chloride	ug/kg	ND	20.0	06/07/17 10:53	
n-Butylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
n-Propylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
Naphthalene	ug/kg	ND	10.0	06/07/17 10:53	
o-Xylene	ug/kg	ND	4.0	06/07/17 10:53	
p-Isopropyltoluene	ug/kg	ND	4.0	06/07/17 10:53	
sec-Butylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
Styrene	ug/kg	ND	4.0	06/07/17 10:53	
tert-Butylbenzene	ug/kg	ND	4.0	06/07/17 10:53	
Tetrachloroethene	ug/kg	ND	4.0	06/07/17 10:53	
Tetrahydrofuran	ug/kg	ND	40.0	06/07/17 10:53	
Toluene	ug/kg	ND	4.0	06/07/17 10:53	
trans-1,2-Dichloroethene	ug/kg	ND	4.0	06/07/17 10:53	
trans-1,3-Dichloropropene	ug/kg	ND	4.0	06/07/17 10:53	
Trichloroethene	ug/kg	ND	4.0	06/07/17 10:53	
Trichlorofluoromethane	ug/kg	ND	10.0	06/07/17 10:53	
Vinyl chloride	ug/kg	ND	4.0	06/07/17 10:53	
Xylene (Total)	ug/kg	ND	12.0	06/07/17 10:53	
1,2-Dichloroethane-d4 (S)	%.	100	72-146	06/07/17 10:53	
4-Bromofluorobenzene (S)	%.	101	75-132	06/07/17 10:53	
Toluene-d8 (S)	%.	105	75-125	06/07/17 10:53	

LABORATORY CONTROL SAMPLE & LCSD: 2606033

2606034

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	20	20.4	20.6	102	103	75-125	1	20	
1,1,1-Trichloroethane	ug/kg	20	19.3	18.9	97	95	68-128	2	20	
1,1,2,2-Tetrachloroethane	ug/kg	20	20.8	21.2	104	106	74-125	2	20	
1,1,2-Trichloroethane	ug/kg	20	21.2	20.8	106	104	74-127	2	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	20	18.9	18.7	94	93	64-134	1	20	
1,1-Dichloroethane	ug/kg	20	19.9	19.5	100	98	73-125	2	20	
1,1-Dichloroethene	ug/kg	20	18.5	17.7	93	88	69-126	5	20	
1,1-Dichloropropene	ug/kg	20	18.1	17.5	91	87	66-128	4	20	
1,2,3-Trichlorobenzene	ug/kg	20	18.6	19.1	93	96	74-125	3	20	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

LABORATORY CONTROL SAMPLE & LCSD:		2606033	2606034							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,3-Trichloropropane	ug/kg	20	20.8	20.6	104	103	75-125	1	20	
1,2,4-Trichlorobenzene	ug/kg	20	20.4	20.2	102	101	66-125	1	20	
1,2,4-Trimethylbenzene	ug/kg	20	19.8	20.0	99	100	75-125	1	20	
1,2-Dibromo-3-chloropropane	ug/kg	50	45.0	45.8	90	92	74-125	2	20	
1,2-Dibromoethane (EDB)	ug/kg	20	20.7	21.0	104	105	75-125	1	20	
1,2-Dichlorobenzene	ug/kg	20	20.0	20.6	100	103	75-125	3	20	
1,2-Dichloroethane	ug/kg	20	19.0	19.1	95	95	74-125	0	20	
1,2-Dichloropropane	ug/kg	20	18.9	19.2	94	96	71-132	2	20	
1,3-Dichlorobenzene	ug/kg	20	20.7	20.8	103	104	75-125	0	20	
1,3-Dichloropropane	ug/kg	20	20.3	20.5	102	102	73-125	1	20	
1,4-Dichlorobenzene	ug/kg	20	20.3	20.5	102	103	75-125	1	20	
2,2-Dichloropropane	ug/kg	20	19.4	18.8	97	94	67-132	3	20	
2-Butanone (MEK)	ug/kg	100	107	89.4	107	89	66-126	18	20	
2-Chlorotoluene	ug/kg	20	20.9	21.0	105	105	74-125	0	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	96.0	94.6	96	95	74-125	1	20	
Acetone	ug/kg	100	136	96.9	136	97	59-135	33	20	L1,R1
Allyl chloride	ug/kg	20	17.6	17.2	88	86	71-125	2	20	
Benzene	ug/kg	20	18.9	18.6	94	93	75-125	1	20	
Bromobenzene	ug/kg	20	20.4	20.7	102	103	75-125	1	20	
Bromochloromethane	ug/kg	20	19.6	18.9	98	95	71-135	4	20	
Bromodichloromethane	ug/kg	20	20.0	19.9	100	99	72-131	0	20	
Bromoform	ug/kg	20	19.7J	19.7J	99	98	66-125		20	
Bromomethane	ug/kg	20	21.8	20.5	109	103	67-144	6	20	
Carbon disulfide	ug/kg	20	18.5	18.1	93	91	62-134	2	20	
Chlorobenzene	ug/kg	20	20.5	20.2	103	101	75-125	2	20	
Chloroethane	ug/kg	20	19.1	18.9	96	95	73-133	1	20	
Chloroform	ug/kg	20	19.2	18.9	96	94	74-125	2	20	
Chloromethane	ug/kg	20	21.8	21.4	109	107	71-125	2	20	
cis-1,2-Dichloroethene	ug/kg	20	18.7	18.6	94	93	71-126	1	20	
cis-1,3-Dichloropropene	ug/kg	20	18.4	18.1	92	91	67-125	2	20	
Dibromochloromethane	ug/kg	20	19.8	19.4	99	97	72-125	2	20	
Dibromomethane	ug/kg	20	20.5	20.0	103	100	73-125	2	20	
Dichlorodifluoromethane	ug/kg	20	15.6	18.2	78	91	55-136	16	20	
Dichlorofluoromethane	ug/kg	20	19.8	18.6	99	93	75-127	6	20	
Diethyl ether (Ethyl ether)	ug/kg	20	18.2	18.2	91	91	71-125	0	20	
Ethylbenzene	ug/kg	20	20.1	19.6	101	98	76-125	3	20	
Hexachloro-1,3-butadiene	ug/kg	20	19.4	19.1	97	96	72-125	1	20	
Isopropylbenzene (Cumene)	ug/kg	20	18.2	18.1	91	91	75-125	0	20	
m&p-Xylene	ug/kg	40	39.8	39.7	99	99	78-125	0	20	
Methyl-tert-butyl ether	ug/kg	20	17.9	17.9	90	89	73-125	0	20	
Methylene Chloride	ug/kg	20	23.1	22.5	116	113	64-135	3	20	
n-Butylbenzene	ug/kg	20	19.5	19.8	97	99	71-125	2	20	
n-Propylbenzene	ug/kg	20	20.6	20.6	103	103	75-125	0	20	
Naphthalene	ug/kg	20	18.9	19.3	94	97	60-125	2	20	
o-Xylene	ug/kg	20	18.2	18.7	91	93	70-125	3	20	
p-Isopropyltoluene	ug/kg	20	20.8	20.2	104	101	73-129	3	20	
sec-Butylbenzene	ug/kg	20	19.8	19.9	99	100	73-125	1	20	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

LABORATORY CONTROL SAMPLE & LCSD:		2606033	2606034							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Styrene	ug/kg	20	18.8	18.7	94	93	75-125	1	20	
tert-Butylbenzene	ug/kg	20	18.8	18.6	94	93	71-125	1	20	
Tetrachloroethene	ug/kg	20	20.2	20.5	101	102	75-125	1	20	
Tetrahydrofuran	ug/kg	200	178	195	89	97	68-129	9	20	
Toluene	ug/kg	20	20.6	20.4	103	102	75-125	1	20	
trans-1,2-Dichloroethene	ug/kg	20	18.7	18.3	94	91	70-128	2	20	
trans-1,3-Dichloropropene	ug/kg	20	20.0	20.0	100	100	74-127	0	20	
Trichloroethene	ug/kg	20	19.9	19.6	100	98	75-125	2	20	
Trichlorofluoromethane	ug/kg	20	18.5	18.5	93	92	70-129	0	20	
Vinyl chloride	ug/kg	20	19.7	19.0	99	95	69-125	4	20	
Xylene (Total)	ug/kg	60	58.0	58.4	97	97	77-125	1	20	
1,2-Dichloroethane-d4 (S)	%				96	96	72-146			
4-Bromofluorobenzene (S)	%				95	97	75-132			
Toluene-d8 (S)	%				99	98	75-125			

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478734 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035 Low Analysis Description: 8260B MSV 5035 Low Level
Associated Lab Samples: 10390780009

METHOD BLANK: 2608134 Matrix: Solid
Associated Lab Samples: 10390780009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1,1-Trichloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1,2,2-Tetrachloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1,2-Trichloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1-Dichloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,1-Dichloroethene	ug/kg	ND	4.0	06/08/17 10:13	
1,1-Dichloropropene	ug/kg	ND	4.0	06/08/17 10:13	
1,2,3-Trichlorobenzene	ug/kg	ND	4.0	06/08/17 10:13	
1,2,3-Trichloropropane	ug/kg	ND	4.0	06/08/17 10:13	
1,2,4-Trichlorobenzene	ug/kg	ND	10.0	06/08/17 10:13	MN
1,2,4-Trimethylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
1,2-Dibromo-3-chloropropane	ug/kg	ND	10.0	06/08/17 10:13	
1,2-Dibromoethane (EDB)	ug/kg	ND	4.0	06/08/17 10:13	
1,2-Dichlorobenzene	ug/kg	ND	4.0	06/08/17 10:13	
1,2-Dichloroethane	ug/kg	ND	4.0	06/08/17 10:13	
1,2-Dichloropropane	ug/kg	ND	4.0	06/08/17 10:13	
1,3-Dichlorobenzene	ug/kg	ND	4.0	06/08/17 10:13	
1,3-Dichloropropane	ug/kg	ND	4.0	06/08/17 10:13	
1,4-Dichlorobenzene	ug/kg	ND	4.0	06/08/17 10:13	
2,2-Dichloropropane	ug/kg	ND	10.0	06/08/17 10:13	
2-Butanone (MEK)	ug/kg	ND	20.0	06/08/17 10:13	
2-Chlorotoluene	ug/kg	ND	4.0	06/08/17 10:13	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	20.0	06/08/17 10:13	
Acetone	ug/kg	ND	50.0	06/08/17 10:13	MN
Allyl chloride	ug/kg	ND	10.0	06/08/17 10:13	
Benzene	ug/kg	ND	4.0	06/08/17 10:13	
Bromobenzene	ug/kg	ND	4.0	06/08/17 10:13	
Bromochloromethane	ug/kg	ND	4.0	06/08/17 10:13	
Bromodichloromethane	ug/kg	ND	4.0	06/08/17 10:13	
Bromoform	ug/kg	ND	20.0	06/08/17 10:13	
Bromomethane	ug/kg	ND	20.0	06/08/17 10:13	
Carbon disulfide	ug/kg	ND	4.0	06/08/17 10:13	
Chlorobenzene	ug/kg	ND	4.0	06/08/17 10:13	
Chloroethane	ug/kg	ND	10.0	06/08/17 10:13	
Chloroform	ug/kg	ND	4.0	06/08/17 10:13	
Chloromethane	ug/kg	ND	10.0	06/08/17 10:13	
cis-1,2-Dichloroethene	ug/kg	ND	4.0	06/08/17 10:13	
cis-1,3-Dichloropropene	ug/kg	ND	4.0	06/08/17 10:13	
Dibromochloromethane	ug/kg	ND	4.0	06/08/17 10:13	
Dibromomethane	ug/kg	ND	4.0	06/08/17 10:13	

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

METHOD BLANK: 2608134

Matrix: Solid

Associated Lab Samples: 10390780009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/kg	ND	10.0	06/08/17 10:13	
Dichlorofluoromethane	ug/kg	ND	4.0	06/08/17 10:13	
Diethyl ether (Ethyl ether)	ug/kg	ND	10.0	06/08/17 10:13	
Ethylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
Hexachloro-1,3-butadiene	ug/kg	ND	10.0	06/08/17 10:13	
Isopropylbenzene (Cumene)	ug/kg	ND	4.0	06/08/17 10:13	
m&p-Xylene	ug/kg	ND	8.0	06/08/17 10:13	
Methyl-tert-butyl ether	ug/kg	ND	4.0	06/08/17 10:13	
Methylene Chloride	ug/kg	ND	20.0	06/08/17 10:13	
n-Butylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
n-Propylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
Naphthalene	ug/kg	ND	10.0	06/08/17 10:13	
o-Xylene	ug/kg	ND	4.0	06/08/17 10:13	
p-Isopropyltoluene	ug/kg	ND	4.0	06/08/17 10:13	
sec-Butylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
Styrene	ug/kg	ND	4.0	06/08/17 10:13	
tert-Butylbenzene	ug/kg	ND	4.0	06/08/17 10:13	
Tetrachloroethene	ug/kg	ND	4.0	06/08/17 10:13	
Tetrahydrofuran	ug/kg	ND	40.0	06/08/17 10:13	CL
Toluene	ug/kg	ND	4.0	06/08/17 10:13	
trans-1,2-Dichloroethene	ug/kg	ND	4.0	06/08/17 10:13	
trans-1,3-Dichloropropene	ug/kg	ND	4.0	06/08/17 10:13	
Trichloroethene	ug/kg	ND	4.0	06/08/17 10:13	
Trichlorofluoromethane	ug/kg	ND	10.0	06/08/17 10:13	
Vinyl chloride	ug/kg	ND	4.0	06/08/17 10:13	
Xylene (Total)	ug/kg	ND	12.0	06/08/17 10:13	
1,2-Dichloroethane-d4 (S)	%	103	72-146	06/08/17 10:13	
4-Bromofluorobenzene (S)	%	102	75-132	06/08/17 10:13	
Toluene-d8 (S)	%	105	75-125	06/08/17 10:13	

LABORATORY CONTROL SAMPLE & LCSD: 2608135

2608136

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	20	19.2	20.1	96	101	75-125	5	20	
1,1,1-Trichloroethane	ug/kg	20	17.1	20.8	86	104	68-128	19	20	
1,1,2,2-Tetrachloroethane	ug/kg	20	19.9	20.7	99	104	74-125	4	20	
1,1,2-Trichloroethane	ug/kg	20	19.4	20.9	97	105	74-127	8	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	20	20.8	22.3	104	111	64-134	7	20	
1,1-Dichloroethane	ug/kg	20	21.8	23.6	109	118	73-125	8	20	
1,1-Dichloroethene	ug/kg	20	20.4	22.4	102	112	69-126	10	20	
1,1-Dichloropropene	ug/kg	20	14.0	16.6	70	83	66-128	17	20	
1,2,3-Trichlorobenzene	ug/kg	20	17.5	18.4	87	92	74-125	5	20	
1,2,3-Trichloropropane	ug/kg	20	19.0	19.7	95	99	75-125	4	20	
1,2,4-Trichlorobenzene	ug/kg	20	19.2	20.1	96	101	66-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

LABORATORY CONTROL SAMPLE & LCSD:		2608135	2608136							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	18.1	19.1	91	95	75-125	5	20	
1,2-Dibromo-3-chloropropane	ug/kg	50	43.0	45.1	86	90	74-125	5	20	
1,2-Dibromoethane (EDB)	ug/kg	20	19.4	20.7	97	103	75-125	7	20	
1,2-Dichlorobenzene	ug/kg	20	18.2	19.4	91	97	75-125	6	20	
1,2-Dichloroethane	ug/kg	20	18.1	18.7	91	94	74-125	3	20	
1,2-Dichloropropane	ug/kg	20	17.9	23.2	90	116	71-132	26	20	R1
1,3-Dichlorobenzene	ug/kg	20	18.7	19.4	94	97	75-125	3	20	
1,3-Dichloropropane	ug/kg	20	19.4	19.8	97	99	73-125	2	20	
1,4-Dichlorobenzene	ug/kg	20	18.9	19.9	95	99	75-125	5	20	
2,2-Dichloropropane	ug/kg	20	19.3	18.0	97	90	67-132	7	20	
2-Butanone (MEK)	ug/kg	100	67.8	83.4	68	83	66-126	21	20	R1
2-Chlorotoluene	ug/kg	20	19.8	20.4	99	102	74-125	3	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	89.0	95.8	89	96	74-125	7	20	
Acetone	ug/kg	100	115	103	115	103	59-135	11	20	
Allyl chloride	ug/kg	20	19.3	20.9	96	104	71-125	8	20	
Benzene	ug/kg	20	14.5	15.5	72	78	75-125	7	20	L2
Bromobenzene	ug/kg	20	19.2	20.3	96	101	75-125	6	20	
Bromochloromethane	ug/kg	20	19.4	17.5	97	88	71-135	10	20	
Bromodichloromethane	ug/kg	20	18.4	25.8	92	129	72-131	34	20	R1
Bromoform	ug/kg	20	18.3J	19.7J	92	98	66-125		20	
Bromomethane	ug/kg	20	22.5	21.8	113	109	67-144	3	20	
Carbon disulfide	ug/kg	20	20.2	21.2	101	106	62-134	5	20	
Chlorobenzene	ug/kg	20	19.0	20.1	95	100	75-125	5	20	
Chloroethane	ug/kg	20	21.5	22.5	107	113	73-133	5	20	
Chloroform	ug/kg	20	19.4	19.6	97	98	74-125	1	20	
Chloromethane	ug/kg	20	21.9	26.2	110	131	71-125	18	20	L3
cis-1,2-Dichloroethene	ug/kg	20	17.7	15.8	88	79	71-126	11	20	
cis-1,3-Dichloropropene	ug/kg	20	16.8	24.1	84	121	67-125	36	20	R1
Dibromochloromethane	ug/kg	20	18.8	19.3	94	96	72-125	3	20	
Dibromomethane	ug/kg	20	18.9	21.6	94	108	73-125	14	20	
Dichlorodifluoromethane	ug/kg	20	18.1	19.5	91	97	55-136	7	20	
Dichlorofluoromethane	ug/kg	20	20.8	21.5	104	108	75-127	3	20	
Diethyl ether (Ethyl ether)	ug/kg	20	19.6	21.9	98	110	71-125	11	20	
Ethylbenzene	ug/kg	20	18.6	19.1	93	96	76-125	3	20	
Hexachloro-1,3-butadiene	ug/kg	20	18.5	19.2	93	96	72-125	3	20	
Isopropylbenzene (Cumene)	ug/kg	20	17.1	18.0	85	90	75-125	5	20	
m&p-Xylene	ug/kg	40	37.4	38.7	94	97	78-125	3	20	
Methyl-tert-butyl ether	ug/kg	20	19.2	21.4	96	107	73-125	11	20	
Methylene Chloride	ug/kg	20	24.5	25.8	123	129	64-135	5	20	
n-Butylbenzene	ug/kg	20	18.2	19.0	91	95	71-125	4	20	
n-Propylbenzene	ug/kg	20	19.2	19.8	96	99	75-125	3	20	
Naphthalene	ug/kg	20	18.2	18.9	91	94	60-125	4	20	
o-Xylene	ug/kg	20	16.5	18.1	82	90	70-125	9	20	
p-Isopropyltoluene	ug/kg	20	18.8	19.8	94	99	73-129	5	20	
sec-Butylbenzene	ug/kg	20	18.4	19.1	92	95	73-125	4	20	
Styrene	ug/kg	20	17.3	18.6	86	93	75-125	7	20	
tert-Butylbenzene	ug/kg	20	17.1	18.0	86	90	71-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

LABORATORY CONTROL SAMPLE & LCSD: 2608135			2608136							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	20	19.6	20.3	98	101	75-125	4	20	
Tetrahydrofuran	ug/kg	200	116	163	58	81	68-129	34	20	CL,L2,R1
Toluene	ug/kg	20	18.8	19.4	94	97	75-125	3	20	
trans-1,2-Dichloroethene	ug/kg	20	20.1	21.5	100	107	70-128	7	20	
trans-1,3-Dichloropropene	ug/kg	20	18.7	19.5	94	98	74-127	4	20	
Trichloroethene	ug/kg	20	17.3	19.8	86	99	75-125	14	20	
Trichlorofluoromethane	ug/kg	20	20.0	21.3	100	107	70-129	7	20	
Vinyl chloride	ug/kg	20	19.8	21.4	99	107	69-125	8	20	
Xylene (Total)	ug/kg	60	53.9	56.8	90	95	77-125	5	20	
1,2-Dichloroethane-d4 (S)	%				98	95	72-146			
4-Bromofluorobenzene (S)	%				95	96	75-132			
Toluene-d8 (S)	%				101	99	75-125			

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QUALITY CONTROL DATA

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

QC Batch: 478653 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10390780007

METHOD BLANK: 2607644 Matrix: Solid
Associated Lab Samples: 10390780007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Trichloroethene	ug/kg	ND	50.0	06/09/17 04:18	
1,2-Dichloroethane-d4 (S)	%	87	75-125	06/09/17 04:18	
4-Bromofluorobenzene (S)	%	90	75-125	06/09/17 04:18	
Toluene-d8 (S)	%	93	75-125	06/09/17 04:18	

LABORATORY CONTROL SAMPLE & LCSD: 2607645		2607646								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Trichloroethene	ug/kg	1000	1000	1060	100	106	63-125	5	20	
1,2-Dichloroethane-d4 (S)	%				88	87	75-125			
4-Bromofluorobenzene (S)	%				91	92	75-125			
Toluene-d8 (S)	%				94	95	75-125			

MATRIX SPIKE SAMPLE: 2607647		10391374002	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units	Result					
Trichloroethene	ug/kg	ND	1090	1730	158	59-150	M1
1,2-Dichloroethane-d4 (S)	%				87	75-125	
4-Bromofluorobenzene (S)	%				90	75-125	
Toluene-d8 (S)	%				93	75-125	

SAMPLE DUPLICATE: 2607648		10391374004	Dup Result	RPD	Max RPD	Qualifiers
Parameter	Units	Result				
Trichloroethene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	88	86	7		
4-Bromofluorobenzene (S)	%	91	92	5		
Toluene-d8 (S)	%	95	93	7		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: 478605
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
Batch: 479002
[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	Sample preserved in lab; results are from sample aliquot taken from a glass jar with headspace, furthermore the container did not meet EPA or method requirements, and was not frozen within 48 hours of collection.
CL	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
R1	RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

METHOD CROSS REFERENCE TABLE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Parameter	Matrix	Analytical Method	Preparation Method
8260B MSV 5030 Med Level	Solid	SW-846 8260B	SW-846 5030B
8260B MSV 5035 Low Level	Solid	SW-846 8260B	SW-846 5035A/5030B

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 062175 PCC Aerostructure
Pace Project No.: 10390780

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10390780001	SO-053117-BP-SB-14-5	EPA 3050	478230	EPA 6010C	478418
10390780002	SO-053117-BP-SB-14-10	EPA 3050	478230	EPA 6010C	478418
10390780003	SO-053117-BP-SB-15-5	EPA 3050	478230	EPA 6010C	478418
10390780004	SO-053117-BP-SB-15-10	EPA 3050	478230	EPA 6010C	478418
10390780005	SO-053117-BP-SB-16-5	EPA 3050	478230	EPA 6010C	478418
10390780006	SO-053117-BP-SB-16-10	EPA 3050	478230	EPA 6010C	478418
10390780007	SO-053117-BP-SB-17-5	EPA 3050	478230	EPA 6010C	478418
10390780008	SO-053117-BP-SB-17-10	EPA 3050	478230	EPA 6010C	478418
10390780009	SO-053117-BP-D1	EPA 3050	478230	EPA 6010C	478418
10390780001	SO-053117-BP-SB-14-5	EPA 7471B	478237	EPA 7471B	478449
10390780002	SO-053117-BP-SB-14-10	EPA 7471B	478237	EPA 7471B	478449
10390780003	SO-053117-BP-SB-15-5	EPA 7471B	478237	EPA 7471B	478449
10390780004	SO-053117-BP-SB-15-10	EPA 7471B	478237	EPA 7471B	478449
10390780005	SO-053117-BP-SB-16-5	EPA 7471B	478237	EPA 7471B	478449
10390780006	SO-053117-BP-SB-16-10	EPA 7471B	478237	EPA 7471B	478449
10390780007	SO-053117-BP-SB-17-5	EPA 7471B	478237	EPA 7471B	478449
10390780008	SO-053117-BP-SB-17-10	EPA 7471B	478237	EPA 7471B	478449
10390780009	SO-053117-BP-D1	EPA 7471B	478237	EPA 7471B	478449
10390780001	SO-053117-BP-SB-14-5	ASTM D2974	478277		
10390780002	SO-053117-BP-SB-14-10	ASTM D2974	478277		
10390780003	SO-053117-BP-SB-15-5	ASTM D2974	478277		
10390780004	SO-053117-BP-SB-15-10	ASTM D2974	478277		
10390780005	SO-053117-BP-SB-16-5	ASTM D2974	478472		
10390780006	SO-053117-BP-SB-16-10	ASTM D2974	478472		
10390780007	SO-053117-BP-SB-17-5	ASTM D2974	478472		
10390780008	SO-053117-BP-SB-17-10	ASTM D2974	478472		
10390780009	SO-053117-BP-D1	ASTM D2974	478472		
10390780001	SO-053117-BP-SB-14-5	EPA 5035 Low	478373	EPA 8260B	478605
10390780002	SO-053117-BP-SB-14-10	EPA 5035 Low	478373	EPA 8260B	478605
10390780003	SO-053117-BP-SB-15-5	EPA 5035 Low	478373	EPA 8260B	478605
10390780004	SO-053117-BP-SB-15-10	EPA 5035 Low	478373	EPA 8260B	478605
10390780005	SO-053117-BP-SB-16-5	EPA 5035 Low	478373	EPA 8260B	478605
10390780006	SO-053117-BP-SB-16-10	EPA 5035 Low	478373	EPA 8260B	478605
10390780007	SO-053117-BP-SB-17-5	EPA 5035 Low	478373	EPA 8260B	478605
10390780008	SO-053117-BP-SB-17-10	EPA 5035 Low	478373	EPA 8260B	478605
10390780009	SO-053117-BP-D1	EPA 5035 Low	478734	EPA 8260B	479002
10390780010	Trip Blank	EPA 5035 Low	478373	EPA 8260B	478605
10390780007	SO-053117-BP-SB-17-5	EPA 5035/5030B	478653	EPA 8260B	478942

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10390780

1038-350
6-1-17

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Page: of	
Company: GTID		Report To: Christie Mellelland		Attention:		2134840	
Address: 20910 44th Ave NW Lynnwood WA		Copy To: Send report to Christie Mellelland@GTID.com		Company Name:		REGULATORY AGENCY	
Email To: cmellelland@GTID.com		Purchase Order No.:		Address:		☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER	
Phone: 425-519-0305 Fax:		Project Name: PC Aerostrut		Pace Quote Reference:		Site Location	
Requested Due Date/TAT:		Project Number: 062175		Pace Project Manager: Jenny Gross		STATE: WA	
				Pace Profile #: 37760/1			

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↓ Y/N	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					COMPOSITE START		COMPOSITE END/GRAB				Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	<i>[Signature]</i>	5/31/17	12:45	<i>[Signature]</i> Pace	5/31/17	12:45	10.7	Y	N	Y
	Jenny Gross / Pace	5/31/17	13:00	<i>[Signature]</i>	6-1-17	945	4.3	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: Brian Parker					
SIGNATURE of SAMPLER: <i>[Signature]</i> DATE Signed (MM/DD/YY): 5/31/17					

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 19Dec2016 Page 1 of 2
	Document No.: F-MN-L-213-rev.20	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Speedee ☐ Other: _____ Tracking Number: <u>7222-2740-1843</u>	Client Name: <u>GHD</u> Project #: <u>WO#: 10390780</u> 
--	--

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: <u>Foam holders</u> Thermometer ☒ 151401163 ☐ 151401164 Used: _____ Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun Cooler Temp Read (°C): <u>4.2</u> Cooler Temp Corrected (°C): <u>4.3</u> Temp should be above freezing to 5°C Correction Factor: <u>+0.1</u> Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A Date and Initials of Person Examining Contents: <u>6-1-17 JDD</u> USDA Regulated Soil (☐ N/A, water sample) Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.	Optional: Proj. Due Date: _____ Proj. Name: _____
---	---

	COMMENTS:
Chain of Custody Present? ☒ Yes ☐ No	1.
Chain of Custody Filled Out? ☒ Yes ☐ No	2.
Chain of Custody Relinquished? ☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC? ☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time? ☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)? ☐ Yes ☒ No	6.
Rush Turn Around Time Requested? ☐ Yes ☒ No	7.
Sufficient Volume? ☒ Yes ☐ No	8.
Correct Containers Used? ☒ Yes ☐ No	9.
-Pace Containers Used? ☒ Yes ☐ No	
Containers Intact? ☒ Yes ☐ No	10.
Filtered Volume Received for Dissolved Tests? ☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? ☐ Yes ☒ No	12. <u>Sample packed with "17-5" labeled "17-10" / no OWC w/ sample "D1" or Vials</u>
-Includes Date/Time/ID/Analysis Matrix: <u>SL</u>	
All containers needing acid/base preservation have been checked? ☐ Yes ☐ No ☒ N/A	13. ☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? ☐ Yes ☐ No ☒ N/A	Sample #
(HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Collform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin. ☐ Yes ☐ No ☒ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? ☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present? ☒ Yes ☐ No ☐ N/A	15.
Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (If purchased): _____	

CLIENT NOTIFICATION/RESOLUTION Person Contacted: <u>Christina McClelland</u> Comments/Resolution: <u>Analyze RCRA8 by 6010. For sample SO-053117-BP-D1 pull volume from jar received for 8260 analysis.</u>	Field Data Required? ☐ Yes ☐ No Date/Time: <u>06/02/17</u>
--	---

Project Manager Review: <u>JENNI GROSS</u> Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).	Date: <u>06/01/17</u>
---	-----------------------

	Document Name: Cooler Transfer Check List	Revised Date: 23Apr2013 Page 1 of 1
	Document Number: F-MN-C-120-rev.01	Issuing Authority: Pace Minnesota Quality Office

Cooler Transfer Check List

Client: GHD

Project Manager: Jenni Gross

Profile/Line #: _____

Received with Custody Seal: Yes ☐ No ☒

Custody Seal Intact: Yes ☐ No ☒ NA

	Temp Read	Corrected Temp	Correction Factor
Temperature <u>C</u>	<u>10.7</u>	<u>10.7</u>	<u>0</u>
IR Gun # <u>(R1 - Q281)</u>	IR2 - 122065284		

☒ Samples on Ice, cooling process has begun

Rush/Short Hold: NO

Containers Intact: ☒ Yes ☐ No

Re-packed and Re-iced: ✓

Temp Blank Included: ☒ Yes ☐ No

Shipped By/Date: OG 5/31/17

Notes:

Ship to: Pace MN Pace Davis

Appendix D

3-D Microemulsion Specification Sheet



MICROEMULSION
Factory Emulsified

3-D Microemulsion® Factory Emulsified Technical Description

3-D Microemulsion (3DME®) is comprised of a patented molecular structure containing oleic acids (i.e., oil component) and lactates/polylactates, which are molecularly bound to one another (figure 1). The 3DME molecule contains both a soluble (hydrophilic) and in-soluble (lipophilic) region. These two regions of the molecule are designed to be balanced in size and relative strength. The balanced hydrophilic/lipophilic regions of 3DME result in an electron donor with physical properties allowing it to initially adsorb to the aquifer material in the area of application, then slowly redistribute via very small 3DME "bundles" called micelles. These 3DME micelles spontaneously form within sections of the aquifer where concentrations of 3DME reach several hundred parts per million. The micelles' small size and mobility allow it to move with groundwater flow through the aquifer matrix, passing easily through the pore throats in between soil grains resulting in the further redistribution of 3DME within the aquifer. This allows for advective distribution of the oleic acids which are otherwise insoluble and unable to distribute in this manner, allowing for increased persistence of the lactate/polylactates component due to their initial attachment to the oleic acids.

Due to its patented molecular structure, 3DME offers far greater transport when compared to blended emulsified vegetable oil (EVO) products, which fail to distribute beyond the limits of pumping. 3DME also provides greater persistence when compared to soluble substrates such as lactates or simple sugars. The 3DME molecular structures capitalize on the best features of the two electron-donor types while at the same time, minimize their limitations. 3DME is delivered to the site as a ready-to-apply emulsion that is simply diluted with water to generate a large volume of a 3DME colloidal suspension.

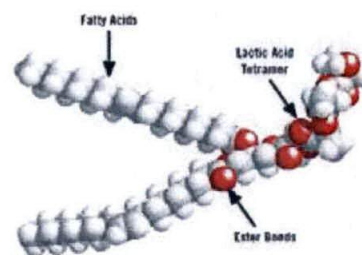
Suspension of 3DME generated by this mixing range from micelles on the order of .02 microns to .05 microns in diameter, to "swollen" micelles, (termed "microemulsions") which are on the order of .05 to 5 microns in diameter. Once injected into the subsurface in high volumes, the colloidal suspension mixes and dilutes in existing pore waters. The micelles/microemulsions on the injection front will then begin to sorb onto the surfaces of soils as a result of zeta potential attraction and organic matter within the soils themselves. As the sorption continues, the 3DME will "coat" pore surfaces developing a layer of molecules and in some cases a bilayer. This sorption process continues as the micelles/microemulsion moves outward and disassociates into their hydrophilic/hydrophobic components. The specialized chemistry of 3DME results in a staged release of electron donors: free lactate (immediate); polylactate esters (mid-range) and free fatty acids & fatty acid esters (long-term). Material longevity of three years or greater has been seen at most sites as determined from biogeochemical analyses.

For a list of treatable contaminants with the use of 3DME, view the [Range of Treatable Contaminants Guide](#)



Example of 3-D Microemulsion

FIGURE 1. THE 3-D MICROEMULSION MOLECULAR STRUCTURE



Chemical Composition

- Hydrogen Release Compound Partitioning Electron Donor – CAS #823190-10-9
- Sodium Lactate – CAS# 72-17-3
- Water – CAS# – 7732-18-5



MICROEMULSION
Factory Emulsified

3-D Microemulsion® Factory Emulsified Technical Description

Properties

- Density – Approximately 1.0 grams per cubic centimeter (relative to water)
- pH – Neutral (approximately 6.5 to 7.5 standard units)
- Solubility – Soluble in Water
- Appearance – White emulsion
- Odor – Not detectable
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage

Store in original tightly closed container

Store in a cool, dry, well-ventilated place

Store away from incompatible materials

Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Handling

Avoid contact with eyes, skin, and clothing

Provide adequate ventilation

Wear appropriate personal protective equipment

Observe good industrial hygiene practices

Applications

- 3DME is diluted with water prior to application. Resulting emulsion has viscosity similar to water.
- Easily injects into formation through direct push injection points, injection wells or other injection delivery systems.

Application instructions for this product are contained here [3DME FE Application Instructions](#).

Health and Safety

Material is food grade and relatively safe to handle. We recommend avoiding contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including vinyl or rubber gloves, and eye protection are recommended when handling this product. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: [SDS-3DME FE](#).



REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

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Appendix E

Standard Operating Procedures



GHD Field Training Manual

Section 18.0

Soil Excavation and Confirmatory Sampling
Standard Operating Procedures

(T107)

200010 | Report No 2 | Revision 0 | July 1 2015



Please adhere to the following Quality System training requirements:

- Employees who are required to conduct a specific field activity must be properly certified to do the work.
- This involves reviewing the SOP and completing the online training course and exam.
- Employees must also conduct this field work under supervised conditions on at least three occasions, and must be certified by a qualified mentor. Only then can an employee conduct a specific field activity on their own. This is documented on a Field Method Training Record (QSF-021).
- Complete the QSF-021 and forward it to trainingrecords-northamerica@ghd.com.



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Table Index

Table 2.1 International Color Code System for Utility Marking

Quality System Forms Index

QSF-012	Vendor Evaluation Form
QSF-014	Field Equipment Requisition Form
QSF-019	Property Access/Utility Clearance Data Sheet
QSF-021	Field Method Training Record
QSF-030	Safety and Health Schedule (Canada)
QSF-031	Safety and Health Schedule (U.S.)



18. Soil Excavation and Confirmatory Sampling Standard Operating Procedures

18.1 Introduction

The excavation of drums and contaminated soil is a specialized remedial activity which requires a qualified contractor working under a GHD specification (and contract). The contract will require the contractor to not only direct/conduct the actual field work but may also stipulate the direction/performance of remedial activities. Requirements may include; field analytical/ screening and completion of required documentation. The primary function of the GHD representative in such a contract will be to observe the activities of the contractor to insure the requirements of the specification are upheld.

The remainder of this section is organized as follows:

- Section 18.2 Background
- Section 18.3 Planning and Preparation
- Section 18.4 Safety and Health
- Section 18.5 Quality Assurance/Quality Control
- Section 18.6 Equipment Decontamination
- Section 18.7 Regulatory Framework
- Section 18.8 Excavation Activities
- Section 18.9 Confirmatory Soil Sampling
- Section 18.10 Backfilling
- Section 18.11 Waste Removal
- Section 18.12 Follow-up Activities

18.2 Background

Excavation activities are governed by the following:

1. OSHA Standard (29 CFR 1926.650-652) specifies safety requirements for excavations.
2. For Canadian operations, specific requirements are covered in provincial construction codes. OSHA 29 CFR 1926.650-652 meets and/or exceeds these requirements and therefore shall be utilized as "best practice". For further information regarding provincial requirements, see:
 - a. Ontario Regulation 213, Sections 222 to 239.
 - b. Alberta OHS Code, Sections 441 to 464.
 - c. Nova Scotia OS General Regulations, Sections 166-173.
 - d. British Columbia OHS Regulations, Part 20, Sections 20.2-20.3 and Guideline G20.



- e. Quebec RSQ, Chapter S-2.1, Regulation 6, Section 3.15.
 - f. Newfoundland CNLR 1165/96, Sections 139-143.
 - g. Prince Edward Island OH&SA, Section 12.
 - h. New Brunswick OHSA, Sections 180-188.
 - i. Manitoba Workplace Safety & Health Regulation 217-2006, Part 26.
3. Complete GHD's ASETS - "Excavation Safety for Competent Persons" training course before overseeing any excavation work.

It is important to highlight that GHD does not prescribe its own guidance for remedial excavation or confirmatory soil sampling. Each project should be carried out by regulatory guidance for a state or province.

18.3 Planning and Preparation

Prior to undertaking any soil excavation and confirmatory soil sampling:

1. Review the Work Plan.
2. Conduct preliminary site visit if practical to assess logistics for excavation, equipment staging, truck loading, exclusion/econ/support zones, overhead utilities and underground utilities, buildings, etc.
3. Review and sign the Health and Safety Plan (HASP).
4. Review and modify the Job Safety Analysis specific for the site work.
5. Complete a Vendor Evaluation Form (QSF-012) and file in the Project file for any vendors that do not have full approval status or are not listed on the Approved Vendor List (QSL-004). Completion of a Safety and Health Schedule (QSF-030 for Canadian work, QSF-031 for U.S. work) is necessary for all vendors who complete field services. Prior to mobilization on site, the vendor must submit the form to the Regional Safety and Health Manager for review and approval (if not already posted on QSL-004).
6. Review GHD's Safety & Manual for the specific county for Applied Safety and Environmental Training Solutions (ASETS) guidelines for excavation work.
7. Review quality assurance/quality control (QA/QC) requirements.
8. Review the investigation report for contamination depths, stratigraphy, and groundwater level.
9. Ensure characterization of contamination as best as possible, if applicable.
10. Ensure all permits and licenses have been received and reviewed.
11. Confirm all plans and permits/approvals for transportation and disposal of excavated waste.
12. Contact GHD's Waste Services Group.
13. Review provincial or state screening and sampling requirements, if applicable.
14. Coordinate removal of contaminated soil with the contractor (licensed waste hauler).



15. Contact regulatory agency - some require 14 days prior notification.
16. Contact the excavation contractor to verify that equipment meets GHD and OSHA standards, such as backhoe - hydraulic hoses in good condition, chains and cables contain rating tags, trench boxes contain rating specs, ladders are in good condition, etc.
17. Complete a Field Requisition Form (QSF-014) and assemble all equipment and personal protective equipment (PPE) (e.g., photoionization detector [PID], oxygen and lower explosive limit [LEL] meter, tape measure, first aid kit, fire extinguishers, cascade air system or self-contained breathing apparatus [SCBA]) if Level B work, spill response equipment, etc.
18. Contact GHD chemistry group to arrange:
 - SSOW (Simplified Scope of Work);
 - Accredited laboratory
 - Sample containers
 - Coolers
 - Shipping details
 - Sampling start date
 - Expected duration of sampling program

Note: In Canada, laboratories must be accredited as per the Quality Control (QC) protocols and methods set out under Part XV.1 of the Environmental Protection Agency EPA.

19. U.S. laboratories typically need state accreditation.
20. Arrange access to the site and confirm site contact(s).
21. Arrange for confined space entry, if applicable.
22. Initiate a Property Access/Utility Clearance Data Sheet (Form QSF-019).
23. Obtain client sign-off(s).
24. Verify backfilling (compaction testing), confirmatory sampling, and site restoration requirements.

18.4 Safety and Health

GHD is committed to conducting field activities in accordance with sound safety and health practices. GHD adheres to high safety standards to protect the safety and health of all employees, subcontractors, customers, and communities in which they work. The safety and health of our employees takes precedence over cost and schedule implications.

Field personnel are required to implement the Safety Means Awareness Responsibility Teamwork (SMART) program as follows:

- Assure the Health and Safety Plan (HASP) is specific to the job and approved by a Regional Safety & Health Manager.



- Confirm that all HASP elements have been implemented for the job.
- A Job Safety Analysis (JSA) for each task has been reviewed, modified for the specific site conditions and communicated to all appropriate site personnel. The JSAs are a component of the HASP.
- Incorporate Stop Work Authority; Stop, Think, Act, Review (STAR) process; Safe Task Evaluation Process (STEP); Observations process; Near Loss and Incident Management process in the day-to-day operations of the job.
- Review and implement applicable sections of the GHD Safety & Health Policy Manual.
- Confirm that all site personnel have the required training and medical surveillance, as defined in the HASP.
- Be prepared for emergency situations, locating safety showers, fire protection equipment, evacuation route, rally point, and first aid equipment before you begin working, and make sure that the equipment is in good working order.
- Maintain all required Personal Protective Equipment (PPE), safety equipment, and instrumentation necessary to perform the work effectively, efficiently and safely.
- Be prepared to call the GHD Incident Hotline at 1-866-529-4886 for all incidents involving injury/illness, property damage, and vehicle incident and/or significant Near Loss.

It is the responsibility of the Project Manager to:

- Ensure that all GHD field personnel have received the appropriate health and safety and field training and are qualified to complete the work.
- Provide subcontractors with a Job Hazard Analysis to enable them to develop their own HASP.
- Ensure that all subcontractors meet GHD's (and the Client's) safety requirements.

18.5 Quality Assurance/Quality Control

A well-designed QA/QC program will:

- Ensure that data of sufficient quality are obtained in order to facilitate good site management.
- Allow for monitoring of staff and contractor performance.
- Verify the quality of the data for the regulatory agency.

The QA/QC program is developed on a site-specific basis. QA/QC requirements are discussed in detail in Section 3.9.

18.6 Equipment Decontamination

Prior to use and between excavation locations at an environmental site, the excavation and sampling equipment must be decontaminated in accordance with the Work Plan, the Quality Assurance Project Plan (QAPP), or the methods presented in this section.



The minimum was procedures for decontamination of excavating equipment are:

1. High pressure, hot water detergent wash (brushing as necessary to remove particulate matter).
2. Potable, hot water, high pressure rinse.

On environmental sites, the soil sampling equipment (trowels, spoons, shovels, and bowls) are typically cleaned as follows:

1. Wash with potable water and laboratory detergent, using a brush as necessary to remove particulates.
2. Rinse with potable water.
3. Rinse with deionized water.
4. Air dry for as long as possible.

In addition, the following steps may be added when sampling for volatile organic compounds (VOCs) and metals:

1. Rinse with 10 percent nitric acid (only if samples to be analyzed for metals).
2. Rinse with deionized water.
3. Rinse with appropriate solvent (pesticide grade isopropanol, methanol, acetone, hexane, if required).
4. Rinse again with deionized water.
5. Air dry for as long as possible.
6. Wrap sampling equipment in aluminum foil to prevent contamination.

Caution: Check the QAPP to confirm the cleaning protocol. Use of incorrect cleaning protocol could invalidate chemical data.

18.7 Regulatory Framework

Excavation and sampling associated to Underground Storage Tanks (USTs) is regulated separately as compared to drum removal, landfill excavation or other remedial excavation. Consequently, all remedial excavations must first be determined to be UST or non-UST related prior to locating the applicable authority.

Note: The clean-up standard for a remedial excavation, whether state, federal or provincial needs to be determined in the early stages of the scope of work.



18.7.1 UST Regulatory Framework

In Ontario:

The UST regulatory requirements are governed by province. For Ontario, guidance is provided in the Fuel Oil Code (O. Reg. 213/01) and the Liquids Fuels Handling Code (O. Reg. 217/01) enacted under the Technical Standards and Safety Act, 2000.

In the U.S.:

The UST regulatory requirements in the United States are governed on a state-by-state basis. There are a few states that may defer to the USEPA in their region, for a complete directory and link to the requirements for each state, including five US territories use the following web site:

<http://www.epa.gov/OUST/states/statcon1.htm>

18.7.2 Non-UST Regulatory Framework

In Ontario:

1. Part IV.1 of the EPA and Ontario Regulation 153/04, Guidance Documents:
 - Records of Site Condition, A Guide on Site Assessment, the Clean-up of Brownfield Sites and the Filing of Records of Site Condition (October 2004).
 - Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the EPA (March 9, 2004).

Note: Criteria set out in these standards replace the former GUCSO criteria.

- Guideline for Phase II ESAs in Ontario (Draft March 22, 2006).
- Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (December 1996).

Note: Part 4 of this document outlines confirmatory/verification soil sampling protocols.

- Under regulation, a Phase II Environmental Site Assessment (ESA) involving soil excavation and confirmatory sampling may be required to file Record of Site Condition (RSC) on the ESR.
- Phase II sampling involves soil sampling at a minimum. Also groundwater and sediment sampling.
- Confirmatory/verification soil sampling usually undertaken during and following remedial works.

In the U.S.:

Remedial excavation work in the United States that is not related to UST remediation generally falls under state jurisdiction (e.g., Minnesota - MPCA VIC, Illinois - IEPA SRP and Michigan - DEQ). As such, guidelines are typically provided by that state. Refer to your state prior to the development of a scope of work or work plan.



Federal projects under the USEPA are on a site-by-site basis. These projects involve the submittal and approval of work plans based on specific site characteristics. For this reason, USEPA guidelines for excavation and sampling tends to be general.

18.8 Excavation Activities

1. Confirm that utility clearance process has been completed.
2. Confirm that an Excavation Competent person is on-site at all times during work activities to assure regulatory compliance.
3. No one is allowed to enter an excavation deeper than 4 feet without the specific permission and safety systems confirmed by the Excavation Competent person.
4. Locate, isolate, and lock out of all known utility systems such as electrical, water, phone, etc.
5. Excavate and stockpile "clean" soil upwind of the excavation at least 2 feet from the edge of the excavation, it can be used for backfill material.
6. Excavate contaminated soil and either stockpile for characterization and eventual disposal or for direct load and haul.
7. Remove and store contaminated groundwater (Vac truck, lined roll-off box, temporary treatment system).
8. Confirmatory soil sampling (including groundwater and/or sediment sampling, if required).
9. Characterize for disposal of all waste liquids.
10. Site restoration.
11. Removal of contaminated soil cannot occur until the appropriate waste classification and disposal facility has been determined.
12. Potential asbestos must not be removed unless an abatement container licensed for asbestos removal conducts the work.
13. The client is considered the generator of all materials disposed of and will sign all manifests prior to removal of contaminated materials from the site.
14. In no case should GHD personnel sign manifest forms on behalf of the client as a generator, unless written authorization is given by a Principal.

For reporting purposes, the following must be documented:

1. Chronology of events.
2. Summary of tank and piping condition findings.
3. Soil and groundwater conditions.
4. Waste materials generated (soil, groundwater, wash/rinse fluids, tank bottoms).
5. Soil sample locations.
6. Record waste disposal activities and locations.



7. Label photographs.
8. Retain all manifests, weigh scale receipts, and other releases.
9. Retain all chain-of-custody records.
10. Return field equipment and any other supplies, rented or owned.

18.8.1 Drum Excavation

The following describes the elements and responsibilities associated with drum excavation:

1. Involves the removal, handling, and staging of buried drums/drum fragments, drum contents, and select soils associated with the drums.
2. Specialized activity requiring a qualified contractor working under GHD specification and contract.
3. GHD's primary function is usually to observe the activities of the contractor and ensure that the requirements of the specification are upheld.
4. On projects where relatively few drums are to be removed, GHD personnel may be required to directly supervise the work of the contractor as well.
5. Team specifically trained in the handling of drummed waste is located in the Exclusion Zone (EZ).
6. Team is comprised of at least two members plus supervisor.
7. It is important that the appropriate PPE be worn or used at all times.

Note: Drum contents must never be randomly mixed in drum repack containers unless the liquid contents of each opened/damaged drum are known or appropriate compatibility testing has been completed.

8. Removed drums that have been overpacked/repacked are transferred to the drum staging pad at the end of each day.
9. Each drum must be clearly labeled and labeling must be durable to withstand weathering effects.

18.9 Soil Screening and Confirmatory Sampling

Confirmatory sampling procedures will vary from project to project due to the different parameters of concern and/or the different regulatory requirements as provided by the state/province/federal jurisdiction, where the site is located. The primary goal of confirmatory sampling is to collect the required number of representative samples for chemical analysis that will be used to document post-excavation conditions relevant to regulatory standards.



18.9.1 Soil screening

Soil screening is required for any remedial excavation. It is used as a general form of quantitative field determination for contaminated soil. It is also used as a preliminary assessment for clean soil, which must be verified through confirmatory sampling.

Common devices used for screening include photoionization detector, flameionization detector, multi-gas meter, organic vapor analyzer, explosimeter, single or dual gas tube analyzer, or radiological survey instrument. In addition, soil may be monitored visually for discoloration or other signs that could indicate contamination. Backup instruments are recommended, such that they should be available at the site at all times, if approved by the Project Manager.

More advanced screening of the soil may be required to include, but not limited to; hydrogen cyanide gas, mercury vapor, and polychlorinated biphenyl (PCB) screening. These tests may be used for initial segregation of clean soils from contaminated soils as well as to determine the compatibility of mixed soils.

18.9.2 Confirmatory Sampling

Confirmatory samples are generally collected from the sides and bottom of an excavation to substantiate the screening process as discussed above and to show that contaminated soil has either been removed or if left in-place, to what extent contaminated soil remains. Confirmatory samples may also include "clean soil" that had been removed from an excavation and stockpiled to access underlying contaminated material. Based on the analytical results, confirmation of "clean soil" may be placed back into the excavation upon completion of the work.

The Work Plan will likely require sampling of both contaminated soil and clean soil associated with and excavation. Analytical results from the contaminated soil will be used for waste characterization/compatibility testing in preparation for treatment or disposal of contaminated soil.

As with drum removal procedures, prior consideration must be given to how a sample will be removed from the base or sidewalls of the excavation. Extended reach sampling equipment or use of the excavating equipment (if properly decontaminated) may be required. See Section 4.13 - Surficial Soil Sampling, for more detailed sampling information.

Random, Biased, and Grid-Based Sampling

Unless there is a strong indication of contaminant presence, such as staining, then soil sample locations should be selected randomly from within the excavation.

If any areas show evidence of contamination, such as staining, biased samples will be collected from those areas to characterize the contamination present or left in place. Background and/or control samples are considered biased, since they are collected in locations that are intended to represent non-site-impacted conditions.

When sampling involves large excavation areas, a grid-based soil sampling program is usually used. There is no single grid size that is appropriate for all excavations. Refer to your state/province/federal guidance for the requirements.



It is also important to consider the presence of structures and preferred pathways that might promote contaminant migration. Stratigraphic contact zones are good sample locations where contaminate accumulation is likely such as sand/clay, sand/silt contacts or fill material/natural material contacts. These areas represent a worst-case scenario when screening and visual determinations indicate no impact.

Grab Versus Composite Samples

A grab sample is collected to identify and quantify compounds at a specific location or interval. The sample is comprised of no more than the minimum amount of soil necessary to fill the sample container. Composite samples are a mixture of a given number of subsamples and are collected to characterize the average composition in a given surface area.

Composite samples with the exception of VOC analyses should be placed in a stainless steel bowl to be homogenized prior to filling sample containers. This step can be bypassed if only one sample container is required to be filled and the laboratory is instructed to homogenize the sample upon receipt.

It is important that soil samples be mixed thoroughly to ensure that the sample interval or area is adequately represented. Round stainless bowls work best for sample mixing, whereby, mixing involves stirring in a circular motion while occasionally turning the material over. The sample container should be filled completely; no space should remain in the sample containers.

Note that soil collected for VOCs shall not be mixed.

18.9.3 Sample Collection Procedure

Sampling techniques are dependent upon the sample interval of interest, the type of soil material to be sampled, and the requirements for handling the sample after retrieval. The most common method for collection of excavation soil samples involves the use of the backhoe bucket. Soil samples may also be collected with spoons and push tubes. Remember, no one may enter an excavation greater than 4 feet without the specific permission and safety systems confirmed by the Excavation Competent person on site. In each case, the sampling device must be constructed of an inert material with smooth surfaces which can be readily cleaned. The cleaning protocol involves the use of a sequence of cleaning agents and water designed to remove surface contaminants. The sampling equipment is cleaned between sample locations. A typical soil sampling protocol is outlined below:

1. Soil samples will be collected using a precleaned stainless steel trowel or other appropriate tool. Each sample will consist of soil from the surface to the depth specified within the Work Plan. Sampling in ditches will be done only when there is no water present.
2. A new pair of disposable gloves will be used at each sample location.
3. Prior to use, at each sample location, all sampling tools will be decontaminated in accordance with the Work Plan.
4. A precleaned sampling tool will be used to remove the sample from the layer of exposed soil. The collected soil will be placed directly in a clean, prelabeled sample jar and sealed with a



Teflon-lined cap. Samples to be split for duplicate analyses will first be homogenized in a precleaned stainless steel bowl.

5. Samples will be placed in ice or cooler packs in laboratory supplied coolers after collection.

In the event that the soil conditions are not as the sampler was led to believe by the Work Plan or if there are unexpected distinct layers of soil present (e.g., a layer of high organic carbon content overlying a layer of fine grained soil), then the sampling personnel should report the conditions to the Project Coordinator immediately for resolution.

Also, the sampling team members should immediately report any conditions to the Project Coordinator that they believe may have a negative effect on the quality of the results.

Generally it is not advisable to collect samples containing excessive amounts of large particles such as gravel. Gravel presents difficulties for the laboratory in terms of sample preparation and may not be truly representative of contaminant concentrations in nearby soil.

All conditions at the time of sample collection should be properly documented in the field log book. This should include a thorough description of the sample characteristics, including grain size, color, and general appearance, as well as date/time of sampling and labeling information. The location of the sampling point should be described in words and three measurements should be taken to adjacent permanent structures so that the sample location can be readily identified in the field at a future date if necessary. It is often advisable to have a licensed land surveyor accurately survey the locations.

VOC Sampling

In general, most regions or states require soil sampled for VOCs (in the U.S.) to be preserved using US EPA method 5035 (verify with your region or state). This method consists of three preservation types (depending on site conditions one of these will be used): the Encore sampler, the vial/sodium bisulfate, and the vial/methanol. Each method is specific to site conditions and therefore the sampler and the laboratory needs to discuss the method best suited for the project.

During the sampling program, the sampling team leader should stay in contact with the GHD chemist assigned to the project such that the GHD chemist can properly inform the contract laboratory with the progress of the work. This includes submitting sample summaries and/or copies of completed chain-of-custody forms to the GHD chemist.

Finally, some GHD QAPPs require a designation of a QA/QC officer for field activities. The sampling team leader may be required to conduct certain field audit activities and at minimum, should be familiar with and responsible for completion of all QA/QC sample activities.

18.10 Backfilling

The excavation may only be backfilled after approval by the site engineer (GHD site representative or responsible contractor). Excavations should be backfilled with approved clean imported fill or native soils previously stockpiled which have been deemed suitable based on screening/testing protocols specified in the Work Plan. Backfilling of the excavation should proceed in lifts of no more than 12 inches, placing material in the opposite order of removal with each lift being compacted to



the density specified. The GHD on-site representative should document the volume/weight of material brought on site for backfill as this information will likely be required for payment or other regulatory records.

Note: In deep excavations not meeting entry criteria, equipment used for compacting backfill material will have to be approved in advance. Particular attention to compacting standards must be paid in areas where future settlement could cause damage to surface structures/pavements.

If immediate backfilling is specified and the potential exists for re-excavation in order to remove additional soils, the excavation should be lined with filter fabric or polyethylene sheeting prior to backfilling. This will allow re-excavation to proceed quickly to the limits of the original excavation.

18.11 Waste Removal

Waste Manifests

The transportation of contaminated materials to off-site disposal facilities requires documentation on appropriate federal and/or state/provincial manifests, as required. Manifest forms must be consistent with applicable federal and/or state/provincial regulations. Usually, the site contractor will prepare and provide GHD with copies of manifests and/or other records for each shipment of material from the site (or as otherwise required by the project specifications). The site contractor is responsible for maintaining manifests from the time the manifested material leaves the site to the time of ultimate disposal, unless other specified responsibilities have been established.

For the purpose of transportation and off-site disposal, the Client will be considered the generator of all materials disposed of and will sign all manifests prior to removal of contaminated materials from the site. In no case shall GHD on-site personnel sign manifest forms on behalf of the Client as a generator unless written authorization is given by the Client and a GHD Principal.

Waste Removal

The waste removal activity will be coordinated by the Project Manager such that all disposal facilities are designated and approved prior to commencing any field activities. The contractor is required to load waste into licensed hauling vehicles. The type of vehicle may vary according to the waste classification. Also, more than one disposal facility may be specified for various waste depending on the results of the waste compatibility and characterization results.

Depending upon site conditions, the contractor will be required to decontaminate the tires and axles of haulage vehicles upon leaving the site.

The GHD on-site representative is required to collect various documents from the contractor during the waste removal operation. These include:

- Manifests, as discussed in the previous section.



- Weigh scale receipts - copies of weigh scale receipts must be submitted to GHD on approved forms and must be signed by the weigh scale operator or his designated agent and must include the following:
 - Location, date and time of weighing
 - Measured weights
 - Vehicle and container identification
 - Shipment identification number
 - Manifest number
- Certificates of disposal issued by the disposal facility for each shipment delivered to the disposal facility.

18.12 Follow-up Activities

Once the excavation and site restoration activities have been substantially completed, the following tasks should be completed:

- All field data and field notes will be submitted to the Project Coordinator and project file.
- The location of the excavations, including the location of all confirmatory soil sample locations will be plotted on a site plan.
- A summary write-up on field activities including such items as: number of excavations, field procedures, waste handling, and confirmation soil sampling procedures, and any problems encountered.
- A photographic log of site activities should be completed (pictures labeled in sequential order) and given to the Project Manager.
- Field book should be kept at the appropriate GHD office.

Obtain all post excavation submittals required of the subcontractor.