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January 10, 2019

Wisconsin Department of Natural Resources

Mr. Chris Saari: Christopher.Saari@wisconsin.gov
and
Ms. Jill Schoen: Jill.Schoen@wisconsin.gov

Transmitted Via E-mail

Subject: **Koppers Inc., Superior, Wisconsin Facility**
EPA ID # WID006179493

Dear Mr. Saari and Ms. Schoen:

On behalf of Koppers Inc., KU Resources, Inc. is submitting the attached *RCRA Subpart W Drip Pad Closure Demonstration Report* for the subject facility. This Report is being submitted to you as directed by Mr. Ed Lynch, who had reviewed and commented on the Work Plan for this project just prior to the time he left the Wisconsin Department of Natural Resources.

We will contact you in the near future to discuss this submittal. In the meantime, if you should have any questions regarding the attached Report, please do not hesitate to contact Ms. Linda Paul, Koppers Inc., at (412) 227-2434 or PaulLS@koppers.com, or me at 412-469-9331 rsmith@kuresources.com.

Sincerely,

Robert T. Smith, LRS
Vice President
Senior Environmental Scientist

Attachment

RCRA SUBPART W DRIP PAD CLOSURE DEMONSTRATION REPORT
KOPPERS INC.
SUPERIOR, WISCONSIN FACILITY

Prepared for:
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JANUARY 2019

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EXECUTIVE SUMMARY

This Report provides the results of Koppers Inc.'s (Koppers) implementation of the RCRA Subpart W Drip Pad Closure Demonstration Plan (Work Plan), dated October 21, 2016. The Work Plan was revised and implemented in accordance with comments received from the Wisconsin Department of Natural Resources (WDNR) on July 14, 2017.

The Work Plan provided for the collection of soil samples from beneath the drip pad for visual inspection and logging, and for chemical analysis of samples from the depth of 0- to 1-foot depth beneath the drip pad concrete/underlying ballast. Visual assessment of the drip pad concrete was also completed by observation of the concrete cores removed to access the concrete drip pad subsoil. Additional investigation was conducted voluntarily by Koppers in association with implementing the WDNR-reviewed Work Plan. Select concrete core samples were submitted for analytical testing.

Through implementation of the Work Plan, Koppers' goal is to provide the basis for a determination that the drip pad closure demonstration meets the requirements for a final RCRA Subpart W closure. That determination would be issued at such time as WDNR provides final approval of Beazer's on-property site-wide RCRA Corrective Action remedy. Until that time, Koppers goal is to reach concurrence that the drip pad no longer needs to be maintained as a barrier cap or structural impediment for the underlying subsoils.

As demonstrated by the data collected through implementation of the Work Plan:

1. The mean soil results for samples collected beneath the drip pad (SWMU 7, a part of Area F of the site-wide RCRA Corrective Action Program) fall well below the maximum values in this area that the site-wide RCRA Corrective Action Program post-remediation risk assessment determined could remain un-covered/un-remediated (see Table 2).
2. No additional soil quality impacts are evident in, nor is future risk-based cleanup required for, the subsoils directly beneath the drip pad, based on comparison to risk-based cleanup values established for Area F in the site-wide RCRA Corrective Action Program.
3. The concrete core information shows no significant penetration of wood treating solution into or through the drip pad concrete; consequently, the concrete drip pad had acted as an effective barrier to the subsurface.
4. Prior studies of groundwater monitoring wells sampled by Koppers adjacent to either side of the drip pad showed results consistent with and reflective of site-wide groundwater quality impacts identified in the RCRA Corrective Action Program conducted by Beazer East, Inc. (Beazer). These site-wide groundwater quality impacts are already being addressed within the approved on-property monitored natural attenuation groundwater remedy approved by WDNR under the RCRA Corrective Action Program.
5. As a result of this report information, Koppers requests WDNR approval at this time to stop maintaining the drip pad as a surface cover, barrier cap, or structural impediment for soil that underlies the concrete drip pad, and requests full and formal drip pad closure as part of the final approval of the on-property site-wide RCRA Corrective Action Program remedy.

1.0 INTRODUCTION

This RCRA Subpart W Drip Pad Demonstration Report (Report) is being submitted to provide the results of the RCRA Subpart W Drip Pad Closure Demonstration Plan (Work Plan) (KU Resources, October 2016) (Appendix 1). Implementation of the Work Plan included the Wisconsin Department of Natural Resources (WDNR)-requested considerations provided following the WDNR review of the Work Plan (Appendix 2).

Koppers Inc. (Koppers) is submitting this Report to satisfy its obligations for closure of the RCRA Subpart W drip pad at the former wood treating facility located in Superior, Wisconsin. By implementing the Work Plan, the presence and concentration of, or absence of, former wood treating operations-related constituents beneath the drip pad was assessed to address the remaining concern expressed by the WDNR (Appendix 1, Attachment 1):

- *"The drip pad is considered by the Department as both a barrier cap that needs to be maintained and as a structural impediment to previous investigation and remediation actions."*
- *"...we do not know the degree and extent of contamination under the drip pad..."*
- *"Continuing obligations will continue to apply to the site unless the structural impediment and groundwater barrier of the drip track is removed and investigated."*

This Report also supports evaluation as to whether the drip pad solid waste management unit (SWMU 7 portion of Area F) has been adequately assessed; and if conditions at SWMU 7 are protective of human health and the environment, consistent with conditions at the other SWMUs identified and studied as part of the site-wide RCRA Corrective Action Program.

1.1 Drip Pad History

The history of the drip pad had previously been researched and shared with WDNR (Appendix 1, Attachment 2, beginning at the bottom of page 1 and continuing onto page 2). As an overview, the drip pad area was lined with concrete in the late 1970s/early 1980s (Decommissioning Report, Koppers Inc. Superior WI Facility, May 1, 2007). Prior to the installation of concrete, there was no physical barrier for drippage in this area. As a part of this concrete drip pad installation, an unknown amount and depth of soil was removed. A concrete drip pad expansion was installed in late 1991 to comply with the then-new drip pad regulations, and to lengthen the original concrete drip pad. A 125-foot extension was installed to the existing concrete drip track - extending the length by about 20%. Soil was excavated based on visible evidence of site-related constituents. The drip pad became subject to federal regulation under 40 Code of Federal Regulations (CFR) 265, Subpart W, in the early 1990s and, subsequently, in the mid-1990s under Chapter NR 656 in Wisconsin (NR 656 was updated to NR 665 during 2006).

As a requirement for RCRA-regulated drip pads, in January 1992, the facility obtained P.E. certification for the, then, newly regulated drip pad. Thereafter, Koppers surface sealed and maintained the drip pad, obtained annual P.E. certifications, and also conducted weekly inspections and conducted maintenance, as needed.

When the U.S. Environmental Protection Agency (U.S. EPA) developed and promulgated the 40 CFR 265, Subpart W drip pad regulations (analogous Wisconsin NR 665 Subchapter W), the U.S. EPA recognized that upon transitioning to a specifically designed and operated regulated RCRA unit, some past contamination could be present beneath the, then, newly regulated drip pads. In the preamble to the December 6, 1990 Final Rule (Federal Register Vol. 55, No. 235, Thursday December 6, 1990, page 50453), the U.S. EPA specifically discussed that past releases may have caused contamination beneath drip pads and that potential cleanup mechanisms under RCRA could be used to address this contamination.

The drip pad at the subject facility was identified as SWMU 7 (a portion of Area F) (June 1988 RCRA Facility Assessment) as a part of the facility assessment under the RCRA Corrective Action Program. Since that time, soils and groundwater have been investigated under the RCRA Corrective Action Program at the subject facility by Beazer East, Inc. (Beazer), a former site owner and operator. An on-property site-wide remedy has been approved by WDNR and implemented by Beazer at the site. As part of Koppers decommissioning and demolition of the facility operations in 2006, Koppers cleaned and sampled rinseate from the surface of the drip pad. Based on those results, WDNR approved closure of the drip pad surface (see Appendix 3). Also, at the time of closure, Koppers sampled soils and groundwater adjacent to the concrete drip pad. The data from groundwater monitoring wells sampled adjacent to either side of the drip pad showed results consistent with the site-wide groundwater quality impacts documented through the RCRA Corrective Action Program. These site-wide groundwater quality impacts are already being addressed within the context of the RCRA Corrective Action Program and the approved on-property monitored natural attenuation groundwater remedy. Subsequent to the collection of the soil samples adjacent to the drip pad, WDNR requested the drip pad continue to be managed as a coated barrier/surface until such time as soil samples from beneath the drip pad concrete are collected, analyzed, and evaluated (see Appendix 1, Attachment 1). The results of that work are addressed herein.

1.2 Drip Pad Construction Information

A schematic depicting the drip pad construction is included in Appendix 1, Attachment 3. As depicted, the drip pad is underlain by compacted clay subgrade, approximately 6 inches of ballast with embedded railroad ties, and anywhere from 13 inches (center of pad) to 15 inches (pad edge curb) of concrete.

1.3 Drip Pad Closure Demonstration Work Plan

The Work Plan provided for the collection of soil samples from beneath the drip pad for visual inspection and logging, and for chemical analysis of samples from the 0- to 1-foot depth beneath the drip pad concrete/underlying ballast. Visual assessment of the drip pad concrete was also completed on the concrete cores removed to access the concrete drip pad subsoil. Additional investigation was conducted voluntarily by Koppers in association with implementing the WDNR-reviewed Work Plan. Select concrete core samples were submitted for analytical testing.

By e-mail (Appendix 2), WDNR provided an acknowledgment of having received and reviewed the Work Plan, and also provided additional considerations for implementing the Work Plan. All of the WDNR Work Plan considerations were implemented as listed for consideration.

- Biased concrete coring targeted any observable surface cracks.
- Direct-push Geoprobe® equipment was utilized for subsoil sample collection.
- Dioxins/furans were added to the analytical suite of parameters for the drip pad subsoil samples.
- The concrete coring/patching and sealing were emphasized following coring and sample collection.

2.0 SAMPLING SUMMARY

Sampling and sample handling activities adhered to the Work Plan and the WDNR considerations provided following WDNR review of the Work Plan. The following subsections provide a description of the investigation, sampling, and analysis performed for the drip pad concrete (Sections 2.1 and 2.3) and subsoils (Section 2.2).

The Work Plan was implemented on September 26 and 27, 2017. KU Resources' Field Geologist directed the concrete coring and subsoil sampling conducted by its subcontractor, Twin Ports Testing II, Inc., based in Superior, Wisconsin. All laboratory analytical testing was conducted at a PACE Wisconsin-certified laboratory.

Due to the relatively small area of the drip pad, 10 individual locations were studied by: coring the drip pad concrete and collecting direct-push samples of the underlying soils; observing the concrete cores and subsoil samples; and collection and laboratory analysis of concrete and subsoil samples. The sampling locations are depicted on Figure 1.

At each of the 10 sampling locations, electric-powered concrete coring equipment was used to advance a 4-inch diameter concrete coring bit. Subsequently, Geoprobe® Systems 6625CPT track-mounted direct-push equipment was used to advance the boring to the final depth within the subsoil of the drip pad at each location.

Field methods included decontamination of sampling equipment between each location and/or sample depth interval to preclude potential cross-contamination. Decontamination consisted of scrubbing with a non-phosphate detergent and potable water rinse. Investigation derived waste was containerized and managed as a hazardous waste.

Creosote and pentachlorophenol with a number 6 fuel oil carrier are the wood treating constituents that were associated with the drip pad (SWMU F) (June 14, 1991 Phase II Facility Investigation Report of Findings). In addition, because the site has been studied for decades, the site-related constituents of interest are well documented. During the Koppers period of operations, (December 1988 to 2006) creosote was used as the wood treating solution. Consequently, the analytical suite consisted of polynuclear aromatic hydrocarbon and phenolic compounds listed on Table 1. These constituents were analyzed using U.S. EPA Method 8270.

At the request of WDNR (Appendix 2), dioxin and furan analyses were added to the subsoil analytical program. These compounds and their toxicity equivalency factors (TEFs - for data assessment purposes) are also listed on Table 1. These compounds were analyzed using U.S. EPA Method 8290. As indicated in Section 1.1, because pentachlorophenol use at the facility ended prior to, or near the time of, installation of the drip pad, the concrete core samples were not analyzed for the dioxins/furans.

2.1 Concrete Visual Assessment

The following objectives, methods, and procedures were used for the drip pad concrete study.

Objectives

- Facilitate access to the subsoils beneath the drip pad.
- Assess the effectiveness of the drip pad as a physical barrier to the migration of residual wood treating solutions through visual inspection of the drip pad concrete.

For purposes of this investigation, the concrete was visually assessed throughout its thickness to obtain additional information for evaluating its effectiveness as a barrier and for evaluating the concrete as an ongoing cover or cap, or remaining property feature. The investigation procedures as listed in the Work Plan (Appendix 1) were implemented.

In addition, as requested by the WDNR (Appendix 2), an emphasis was placed on repairing the concrete core holes. At the completion of subsoil sampling, the concrete core holes were repaired with hydraulic cement, and the appropriate surface sealant/coating was applied to the core hole locations after the cement had cured.

2.2 Subsoil Sampling

The following objectives, methods, and procedures were used for the drip pad subsoil study.

Objectives

- Assess whether wood treating-related constituents were present in subsoils directly beneath the drip pad.
- Determine whether the concrete drip pad structure was needed to act as an effective cover to preclude direct exposure to soil.

A maximum depth of ~4 feet below the adjacent ground surface was selected for the subsoil investigation because past investigations indicated that groundwater in the area of the drip pad is present at ~3 to 4 feet below ground surface and is already known through the RCRA Corrective Action Program to contain site-related constituents. As a consequence, only unsaturated/vadose zone soils were targeted to be collected for this investigation so as not to reflect the known saturated soil/groundwater area-wide impacts. It was noted in the Work Plan that assessment of this data may be complicated by site-related constituents contributed by the seasonal rising and falling of the extremely shallow water table and capillary fringe effect.

The following investigation procedures, as listed in the Work Plan, were implemented:

- At each of the 10 concrete core locations, Geoprobe®-driven sampling equipment was used to collect soil samples at the 0- to 1-foot interval below the drip pad and any gravel/construction base fill. These subsoil samples were submitted for analysis as described in Section 2.0 and Table 1.
- The soil boring was extended to saturated soil or a maximum of 4 feet, photo-documentation collected, and the soil was visually characterized and documented.

- Underlying drip pad ballast was displaced by the Geoprobe® equipment, or moved or removed from the core hole, as needed, to allow access for subsoil sampling.
- At the completion of subsoil sampling, the concrete core holes were repaired with hydraulic cement, and the appropriate surface sealant/coating was applied to the core hole locations after the cement had cured.

2.3 Concrete Analytical Sampling

Although not included in the WDNR-reviewed Work Plan, Koppers voluntarily collected samples from the top and bottom 6 inches (total drip pad concrete thickness was ~12 inches) at five of the 10 concrete core locations. These samples were submitted for the same 8270 analyses as the subsoil samples (see Table 1). These samples were not analyzed for pentachlorophenol-related dioxin/furans because pentachlorophenol use was discontinued prior to or near the time of the concrete drip pad installation. However, the individual compound pentachlorophenol is included within the 8270 analytical suite.

3.0 RESULTS

The full laboratory analytical data packages are included as Appendix 4.

3.1 Concrete Visual Assessment

Photo-documentation of the concrete cores is included as Appendix 5. There was no visual evidence of the creosote wood treating solution penetration in any of the 10 concrete cores. This is evident from the photos, as well as in the observations listed on each of the 10 sample location boring logs (Appendix 6). The concrete and underlying ballast thicknesses are presented on the boring logs (Appendix 6).

The drip pad surface had been sufficiently cleaned and rinseate samples collected as a part of the facility decommissioning, as documented in the January 2007 Drip Pad Closure Investigation Report. As discussed in Appendix 1 (Attachment 1 of the Appendix), the drip pad surface was determined by WDNR to have achieved the partial closure requirement of decontamination. The concrete observations, in conjunction with the prior WDNR approval of the drip pad surface again indicate that the drip pad concrete has been clean closed.

3.2 Subsoil Sampling

Photo-documentation of the soil borings is included as Appendix 7. In addition, the boring logs are included in Appendix 6. As illustrated and described, the subsoils beneath the concrete and ballast are generally a sandy clay, and are variously wet, damp, or moist.

As noted in the Work Plan, the assessment of the drip pad subsoil data may be complicated by site-related constituents contributed by the seasonal rising and falling of the extremely shallow water table and capillary fringe effect. It was hoped to avoid the influence of site-wide groundwater quality impacts already identified and being addressed by the RCRA Corrective Action Program by collecting only unsaturated soils. Based on the soil boring information, avoiding these possible effects was not possible even at the 0- to 1-foot depth interval beneath the concrete and ballast.

Analytical Results

For data comparison purposes, Koppers utilized the Beazer *Revised Addendum to the Post-Remediation Human Health Risk Assessment* (AMEC, October 2009) (HHRA). As indicated in the HHRA, the risk-based corrective action drivers identified for the 0- to 1-foot soil depth were benzo(a)pyrene-toxic equivalency (BAP-TE), pentachlorophenol, 2,3,7,8-tetrachlorodibenzo-p-dioxin-toxic equivalency (TCDD-TEQ), and non-carcinogenic PAHs. Potential risk drivers of interest for Koppers in this investigation are the PAHs, because pentachlorophenol was reported to have been last used in 1979, prior to or near the time of construction of the concrete drip pad.

The drip pad Work Plan provided for subsoil sampling of the 0- to 1-foot depth beneath the concrete/ underlying ballast. The 0- to 1-foot depth subsoil assessment was developed to be consistent with Beazer's HHRA approach because institutional controls will be utilized to control potential access to soil deeper than 1 foot; risk-based corrective actions were not developed for soil deeper than 1 foot.

The subsoil data collected during the drip pad investigation were compared to the data collected from RCRA Corrective Action Program Area F that encompasses the area of the concrete drip pad, to be consistent with the RCRA Corrective Action Program. The analytical results for the 0- to 1-foot subsoil samples from the drip pad investigation in comparison to RCRA Corrective Action Area F data are presented on Table 2 for the U.S. EPA method 8270 analyses (PAHs and phenolic compounds), and on Table 3 for the U.S. EPA method 8290 analyses (dioxin/furan compounds).

Subsoil Method 8270 (PAHs and Phenolic Compound) Sample Results 0- to 1-Foot Depth

As illustrated on Table 2, the drip pad subsoil sample results and constituent specific mean values are listed in comparison to the RCRA Corrective Action Area F maximum values. Comparison to the mean values was performed because the RCRA Corrective Action risk-based exposure approach is not specific to any single location, but is assessed over a broader area, and also because the area covered by the concrete drip pad is relatively small.

As shown in Table 2, all mean values for the drip pad subsoil 0- to 1-foot samples are far below maximum values found in the RCRA Corrective Action Area F data. Consequently, no cover material would be needed in the drip pad area to satisfy the site-wide risk-based corrective action criteria for these compounds.

Subsoil Method 8290 (Dioxin/Furan) Sample Results 0- to 1-Foot Depth

As stated previously, the presence of dioxin/furan-related compounds would be a potential indicator of historical, pre-RCRA impacts. As illustrated on Table 3, all constituent specific TCDD-TEQ mean values for the drip pad subsoil 0- to 1-foot samples are below the corresponding constituent specific maximum values found in RCRA Corrective Action Area F data. Consequently, no cover material would be needed in the drip pad area to satisfy the site-wide risk-based corrective action criteria for these compounds.

3.3 Concrete Analytical Sampling

Although not included in the WDNR-reviewed Work Plan, Koppers voluntarily elected to analyze samples from the top and bottom 6 inches (total drip pad concrete thickness was observed to be ~12 inches) at five of the 10 concrete core locations for the same 8270 analyses as the subsoil samples (see Table 1). These samples were not analyzed for pentachlorophenol-related dioxin/furans because pentachlorophenol use was discontinued prior to or coincident with the concrete drip pad being installed. However, the individual compound pentachlorophenol is included within the 8270 analytical suite.

Unlike a concrete wipe sample, these concrete core samples were prepared for analysis by laboratory grinding methods designed for the analysis of concrete samples; thereby, very conservatively exposing as much concrete media surface area to analysis as possible. Table 4 presents the analytical results for each constituent for the top and bottom 6-inch samples. The individual values show that migration of some potentially creosote-related constituents into the concrete may have occurred at trace concentrations.

The exception is location SB-6, top 6 inches, where certain of the lower molecular weight PAH constituents were detected at concentrations anomalously higher than in the other samples. It is believed that activities in the area (storage of treated railroad ties directly beside and on the drip pad by the current

owner) and precipitation on the drip pad at the time of the sampling event contributed to these anomalous data for location SB-6, top 6 inches. The combination of the anomalous data in the top 6-inch sample at location SB-6 in comparison to the other concrete data, the clean closure demonstrated by Koppers and approved by WDNR previously for the drip pad surface, and the conditions observed during sampling indicate this one surface concrete sample location was affected by the conditions at the time of sampling and is not representative of past wood treating use.

In conjunction with no visual evidence of wood-treating related constituents in the concrete cores, the presence of only certain PAHs within the drip pad concrete samples at trace levels show no significant penetration of wood treating solution into the concrete of the drip pad has occurred. Consequently, the concrete drip pad acted as an effective barrier to the subsurface.

4.0 CONCLUSIONS

Based on the implementation of the Work Plan and past information from studies of the drip pad and site-wide issues already identified by the RCRA Corrective Action Program, the following conclusions are evident.

- The site-wide RCRA Corrective Action Program identified the drip pad as a Solid Waste Management Unit (SWMU 7).
- WDNR has previously provided closure approval for the surface of the drip pad.
- Prior agreement between Koppers and WDNR allowed the drip pad to be managed consistent with the site-wide RCRA Corrective Action Program.
- No significant indication of wood treating-related constituents was found to be present within the concrete visually or through analysis, again indicating that the drip pad concrete has been closed.
- No soil quality impacts are evident in, nor is future risk-based cleanup required for, the subsoils directly beneath the drip pad in comparison to soil data collected during the RCRA Corrective Action Program and risk-based cleanup values established therein.
- Prior studies of groundwater monitoring wells sampled adjacent to either side of the drip pad showed results consistent with the site-wide groundwater quality impacts documented through the RCRA Corrective Action Program. These site-wide groundwater quality impacts are already being addressed within the context of the RCRA Corrective Action Program and the approved on-property monitored natural attenuation groundwater remedy.
- Prior and recently collected information and data indicate that Koppers should no longer be obligated to maintain the drip pad as a surface cover, barrier cap, or structural impediment for soil that underlies the concrete drip pad, and requests full and formal drip pad closure as part of the final approval of the on-property site-wide RCRA Corrective Action Program remedy.

CERTIFICATION

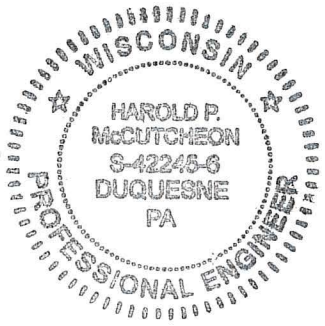
"I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance the Rules of Professional Conduct in ch. A-E, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

HAROLD P. McCUTCHEON, PE
Name

Signature

CHIEF ENGINEER, S-42245-6
Title and P.E. Number

P.E. Stamp



TABLES

Table 1
Analytical Suite of Compounds

Method 8270 Compounds

Polycyclic Aromatic Hydrocarbons	Phenolics
Acenaphthene	4-Chloro-3-methylphenol
Acenaphthylene	2-Chlorophenol
Anthracene	2,4-Dichlorophenol
Benzo(a)anthracene	2,4-Dimethylphenol
Benzo(a)pyrene	4,6-Dinitro-2-methylphenol
Benzo(b)fluoranthene	2,4-Dinitrophenol
Benzo(g,h,i)perylene	2-Nitrophenol
Benzo(k)fluoranthene	4-Nitrophenol
Chrysene	Pentachlorophenol
Dibenz(a,h)anthracene	Phenol
Fluoranthene	2,3,4,6-Tetrachlorophenol
Fluorene	2,3,5,6-Tetrachlorophenol
Indeno(1,2,3-cd)pyrene	2,4,6-Trichlorphenol
Naphthalene	
Phenanthrene	
Pyrene	

Method 8290 Compounds

Compound	TEF
2,3,7,8-TCDF	0.1
Total TCDF	--
2,3,7,8-TCDD	1.0
Total TCDD	--
1,2,3,7,8-PeCDF	0.03
2,3,4,7,8-PeCDF	0.3
Total PeCDF	--
1,2,3,7,8-PeCDD	1
Total PeCDD	--
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
Total HxCDF	--
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
Total HxCDD	--
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
Total HpCDF	--
1,2,3,4,6,7,8-HpCDD	0.01
Total HpCDD	--
OCDF	0.0003
OCDD	0.0003

TEF = Toxicity Equivalency Factor.

Table 2
Drip Pad Subsoil Analytical Results Comparison to HHRA Table 1e, Area F[1]
U.S. EPA Method 8270
Koppers Inc. Superior, Wisconsin Facility
September 26 and 27, 2017

Parameters*	Units	Max.[1] HHRA	Mean[2] Drip Pad	SB-1 (0-1')	SB-2 (0-1')	SB-3 (0-1')	SB-4 (0-1')	SB-5 (0-1')	SB-6 (0-1')	SB-7 (0-1')	SB-8 (0-1')	SB-9 (0-1')	SB-10 (0-1')
Acenaphthene	mg/kg	**100**	**5.70**	0.40	~0.013	3.4	10.6	0.25	0.67	9.3	30.8	1.6	~0.012
Acenaphthylene	mg/kg	**100**	**0.11**	~0.0125	~0.013	~0.14	~0.14	~0.011	~0.012	0.22	0.56	~0.012	~0.012
Anthracene	mg/kg	**55.0**	**5.81**	0.13	~0.013	1.6	4.3	0.10	0.43	2.5	48.2	0.83	~0.012
BaP-TE	mg/kg	**14.0**	**1.07**	0.16	0.04	1.65	1.67	0.06	0.19	1.14	4.83	0.89	0.06
Benzo(a)anthracene* 0.1	mg/kg	**7.0**	**1.83**	0.23	~0.013	1.8	2.9	0.048	0.31	2.1	9.6	1.3	0.037
Benzo(a)pyrene* 1	mg/kg	**7.8**	**0.66**	0.10	~0.013	1.0	0.97	0.027	0.12	0.73	3.2	0.43	0.031
Benzo(b)fluoranthene* 0.1	mg/kg	**13.0**	**0.83**	0.14	~0.013	1.6	1.4	~0.011	0.14	0.81	3.5	0.68	0.032
Benzo(g,h,i)perylene	mg/kg	**9.4**	**0.16**	~0.0245	~0.026	~0.27	~0.23	~0.022	~0.024	0.11	0.64	~0.23	~0.023
Benzo(k)fluoranthene* 0.01	mg/kg	**6.1**	**0.72**	0.12	~0.013	1.2	1.2	~0.011	0.11	0.80	3.2	0.50	0.028
Chrysene* 0.001	mg/kg	**16.0**	**2.06**	0.27	~0.013	2.7	2.9	0.047	0.34	2.2	10.6	1.5	0.056
Dibenz(a,h)anthracene* 1	mg/kg	**9.8**	**0.12**	~0.0245	~0.026	~0.27	~0.23	~0.022	~0.024	0.097	~0.22	~0.23	~0.023
Fluoranthene	mg/kg	**36**	**10.33**	0.95	~0.013	9.5	17.8	0.37	1.3	13.3	52.0	7.9	0.14
Fluorene	mg/kg	**10.0**	**5.19**	0.18	~0.026	2.8	9.7	0.25	0.52	7.0	29.5	1.9	~0.023
Indeno(1,2,3-cd)pyrene* 0.1	mg/kg	**9.7**	**0.16**	~0.0245	~0.026	~0.27	~0.23	~0.022	~0.024	0.13	0.63	~0.23	~0.023
Naphthalene	mg/kg	**100**	**1.84**	~0.0125	~0.013	~0.14	6.4	~0.011	~0.012	7.4	4.4	~0.012	~0.012
Phenanthrene	mg/kg	**18.0**	**16.38**	0.21	~0.013	8.9	33.0	0.72	1.6	22.9	92.3	4.2	~0.012
Pyrene	mg/kg	**37.0**	**7.18**	0.98	~0.013	7.2	11.7	0.27	1.1	9.0	35.3	6.1	0.15

[1] Max(imum) from *Revised Addendum to the Post-Remediation Human Health Risk Assessment* (HHRA) (AMEC, October 2009); Table 1e
[2] Mean value of listed drip pad subsoil data collected by KU Resources in September 2017 (Drip Pad). Values beginning with a ~ are constituents reported by the laboratory as not detected in the sample, conservatively assumed to be present and listed in the Table as one-half the laboratory reporting limit.
*Parameters listed with a value are included in the BaP-TE calculation using toxic equivalent factors from U.S. EPA (1993).
Note: The following phenolic compounds were all not detected at the reporting limit (see the analytical data package for reporting limits in the Appendices): 4-Chloro-3-methylphenol, 2-Chlorophenol, 2,4-Dinitrophenol, Phenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 4,6-Dinitro-2-methylphenol, 2-Nitrophenol, 4-Nitrophenol, Pentachlorophenol, 2,3,4,6-Tetrachlorophenol, 2,3,5,6-Tetrachlorophenol, 2,4,6-Trichlorophenol

Table 3
Drip Pad Subsoil Analytical Results Comparison to HHRA Table 1e, Area F[1]
U.S. EPA Method 8290
Koppers Inc. Superior, Wisconsin Facility
September 26 and 27, 2017

Parameters *	Units	Max. [1] HHRA	Mean[2] Drip Pad	SB-1 (0-1')	SB-2 (0-1')	SB-3 (0-1')	SB-4 (0-1')	SB-5 (0-1')	SB-6 (0-1')	SB-7 (0-1')	SB-8 (0-1')	SB-9 (0-1')	SB-10 (0-1')
1,2,3,4,6,7,8-HpCDD 0.01	mg/kg	2.00E-02	4.40E-04	7.9E-05	3.8E-04	2.6E-04	2.7E-04	5.8E-05	2.9E-04	2.6E-04	6.3E-04	2.0E-03	1.7E-04
1,2,3,4,6,7,8-HpCDF 0.01	mg/kg	3.60E-03	6.48E-05	1.4E-05	6.8E-05	5.3E-05	4.0E-05	7.8E-06	4.1E-05	2.1E-05	9.6E-05	2.8E-04	2.7E-05
1,2,3,4,7,8,9-HpCDF 0.01	mg/kg	2.20E-04	4.96E-06	~2.5E-06	6.0E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	8.1E-06	1.8E-05	~2.5E-06
1,2,3,4,7,8-HxCDD 0.1	mg/kg	2.50E-04	2.87E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	6.2E-06	~2.5E-06
1,2,3,4,7,8-HxCDF 0.1	mg/kg	1.80E-04	4.96E-06	~2.5E-06	6.2E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	7.9E-06	1.8E-05	~2.5E-06
1,2,3,6,7,8-HxCDD 0.1	mg/kg	7.40E-04	1.02E-05	~2.5E-06	9.6E-06	9.3E-06	9.3E-06	~2.5E-06	7.1E-06	~2.5E-06	1.7E-05	4.0E-05	~2.5E-06
1,2,3,6,7,8-HxCDF 0.1	mg/kg	7.50E-05	2.50E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06
1,2,3,7,8,9-HxCDD 0.1	mg/kg	3.80E-04	3.24E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	9.9E-06	~2.5E-06
1,2,3,7,8,9-HxCDF 0.1	mg/kg	4.40E-05	3.01E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	7.6E-06	~2.5E-06
1,2,3,7,8-PeCDD 1	mg/kg	7.00E-05	2.50E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06
1,2,3,7,8-PeCDF 0.03	mg/kg	2.20E-05	2.50E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06
2,3,4,6,7,8-HxCDF 0.1	mg/kg	1.40E-04	2.50E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06
2,3,4,7,8-PeCDF 0.3	mg/kg	3.30E-05	2.50E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06	~2.5E-06
2,3,7,8-TCDD 1	mg/kg	6.60E-06	5.60E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	1.1E-06	~5.0E-07	~5.0E-07	~5.0E-07
2,3,7,8-TCDF 0.1	mg/kg	4.10E-06	6.10E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	~5.0E-07	1.6E-06	~5.0E-07	~5.0E-07	~5.0E-07
OCDD 0.0003	mg/kg	1.70E-01	5.67E-03	9.4E-04	5.3E-03	2.8E-03	3.2E-03	8.6E-04	4.3E-03	2.2E-03	7.9E-03	2.7E-02	2.2E-03
OCDF 0.0003	mg/kg	1.40E-02	3.27E-04	5.4E-05	2.9E-04	2.0E-04	2.1E-04	3.2E-05	2.0E-04	1.0E-04	4.8E-04	1.6E-03	1.0E-04
TCDD-TEQ	mg/kg	5.20E-04	3.00E-05	9.56E-06	2.80E-05	1.85E-05	1.97E-05	8.98E-06	2.29E-05	1.61E-05	4.01E-05	1.21E-04	1.45E-05

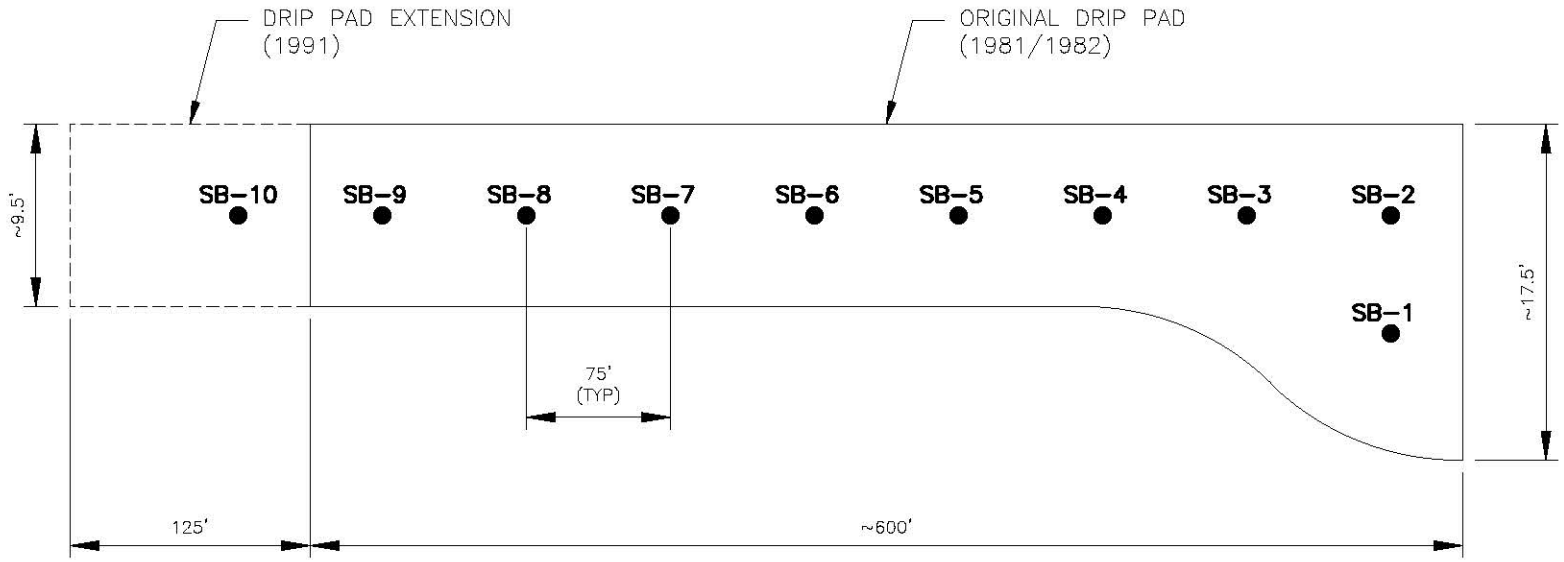
[1] Max(imum) from *Revised Addendum to the Post-Remediation Human Health Risk Assessment* (HHRA) (AMEC, October 2009); Table 1e
[2] Mean value of listed drip pad subsoil data collected by KU Resources in September 2017 (Drip Pad). Values beginning with a ~ are constituents reported as not detected in a sample, conservatively assumed to be present and listed in the table as one-half the reporting limit. See the analytical data package for reporting limits in Appendix 4.
*Parameters listed with a value are included in the TCDD-TEQ calculation using toxic equivalent factors from Van den Berg, et al. (2006).

Table 4
Concrete Testing Analytical Results
U.S. EPA Method 8270
Koppers Inc. Superior, Wisconsin Facility
September 26 and 27, 2017

Parameters	Units	SB-2 (TOP6")	SB-2 (BOTT6")	SB-5 (TOP6")	SB-5 (BOTT6")	SB-6 (TOP6")	SB-6 (BOTT6")	SB-8 (TOP6")	SB-8 (BOTT6")	SB-10 (TOP6")	SB-10 (BOTT6")
Acenaphthene	mg/kg			1.2	10.7	536	9.4	7.4	1.6	0.26	
Acenaphthylene	mg/kg			0.046		8.9			0.030		
Anthracene	mg/kg		0.042	1.0	1.7	195	4.3	5.4	0.91	0.089	
Benzo(a)anthracene	mg/kg		0.071	1.8	3.4	133	2.8	4.2	0.69	0.10	
Benzo(a)pyrene	mg/kg		0.033		0.51	45.9	0.87	1.3	0.21		
Benzo(b)fluoranthene	mg/kg		0.057	1.6	0.89	43.2	1.2	1.7	0.31		
Benzo(g,h,i)perylene	mg/kg				0.11				0.048		
Benzo(k)fluoranthene	mg/kg		0.045	1.0	0.75	52.7	1.1	1.6	0.27		
4-Chloro-3-methylphenol	mg/kg										
2-Chlorophenol	mg/kg										
Chrysene	mg/kg		0.11	3.2	3.3	143	3.0	5.2	0.72	0.086	
Dibenz(a,h)anthracene	mg/kg										
2,4-Dichlorophenol	mg/kg										
2,4-Dimethylphenol	mg/kg										
4,6-Dinitro-2-methylphenol	mg/kg										
2,4-Dinitrophenol	mg/kg										
Fluoranthene	mg/kg	0.035	0.54	15.6	21.3	863	15.4	25.6	3.7	0.42	0.064
Fluorene	mg/kg			0.49	6.9	415	7.8	5.6	1.4	0.20	
Indeno(1,2,3-cd)pyrene	mg/kg				0.14	8.9			0.058		
Naphthalene	mg/kg	0.12	0.14	1.9	6.1	330	2.5	1.7	0.29		
2-Nitrophenol	mg/kg										
4-Nitrophenol	mg/kg										
Pentachlorophenol	mg/kg										
Phenanthrene	mg/kg	0.14	0.83	26.0	30.7	1590	27.5	47.1	6.5	1.0	0.16
Phenol	mg/kg	1.1	0.92	13.0	4.6			9.6	5.2		
Pyrene	mg/kg	0.031	0.38	11.7	15.2	612	11.2	19.5	2.6	0.50	0.054
2,3,4,6-Tetrachlorophenol	mg/kg										
2,3,5,6-Tetrachlorophenol	mg/kg										
2,4,6-Trichlorphenol	mg/kg										

Blank spaces indicate not detected at the method's detection limit. See the analytical data package for detection limits in Appendix 4.

FIGURE



LEGEND

● **APPROXIMATE CORING/SAMPLING LOCATIONS**

HORIZONTAL SCALE
0 100 FEET

VERTICAL SCALE
0 10 FEET

APPROVED	RTS 11/06/2017
CHECKED	RTS 11/06/2017
DRAWN	RAM 11/06/2017
CAD FILE NO.	16261A002
PROJECT NO.	KI.16261.SDPC

KU Resources, Inc.
22 South Linden Street
Duquesne, PA 15110
412.469.9331
412.469.9336 fax
www.kuresources.com

FIGURE 1

DRIP PAD CORE LOCATIONS
SUPERIOR FACILITY

TOWN OF SUPERIOR
DOUGLAS COUNTY, WISCONSIN

PREPARED FOR
KOPPERS INC
SUPERIOR, WISCONSIN

APPENDICES

Appendix 1
RCRA Subpart W Drip Pad Closure Demonstration Plan

October 21, 2016

Mr. Steven Ashenbrucker
Wisconsin Department of Natural Resources
875 South 4th Avenue
Park Falls, Wisconsin 54552

Subject: Koppers Inc. Superior, Wisconsin Facility
EPA ID # WID006179493

Dear Mr. Ashenbrucker:

On behalf of Koppers Inc, KU Resources, Inc. is submitting the attached RCRA Subpart W Drip Pad Closure Demonstration Plan (CDP) for your consideration. The attached CDP is being submitted consequent to your July 2, 2013 letter to Ms. Leslie Hyde – Koppers, regarding closure of their drip pad at the subject facility.

Koppers is soliciting your review and approval of the attached CDP, as the next step for Koppers to meet their final obligation at this property, within the context of the site-wide RCRA corrective action being conducted by Beazer. Note that the schedule to implement the CDP may be dependent on the timing of receipt of your approval and the weather, which could delay the work until next spring based on the drip pad coring method proposed.

I will give you a call to discuss any questions you may have within the next week or two. In the meantime, if you should have any questions or comments regarding the attached CDP, please do not hesitate to contact Ms. Linda Paul, Koppers, at 412-227-2434.

Sincerely,

Robert T. Smith, LRS
Senior Environmental Scientist

Attachment

cc: Linda Paul – Koppers
Jane Patarcity - Beazer

RCRA SUBPART W DRIP PAD CLOSURE DEMONSTRATION PLAN
KOPPERS INC.
SUPERIOR, WISCONSIN
U.S. EPA ID NO. WID 006 179 493

Prepared for:
KOPPERS INC.
436 SEVENTH AVENUE
PITTSBURGH, PENNSYLVANIA 15219

Prepared by:
KU RESOURCES, INC.
22 SOUTH LINDEN STREET
DUQUESNE, PENNSYLVANIA 15110

OCTOBER 2016

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ATTACHMENTS

1.0 OBJECTIVE

Koppers Inc. (Koppers) is submitting this Closure Demonstration Plan (CDP) to satisfy its obligations for closure of the RCRA Subpart W drip pad at its former wood treating facility located in Superior, Wisconsin. By implementing this CDP, the presence and concentration, or absence, of former wood treating operations-related constituents beneath the drip pad will be assessed to satisfy the remaining concern expressed by the Wisconsin Department of Natural Resources (WDNR) (letter dated July 2, 2013 to Koppers). This approach would also support evaluation as to whether the drip pad solid waste management unit (SWMU 7) has been adequately assessed and if conditions at SWMU 7 are protective of human health and the environment, consistent with the other SWMUs identified and studied as part of the site-wide RCRA Corrective Action program.

The drip pad area was lined with concrete in the late 1970s/early 1980s (Decommissioning Report, Koppers Inc. Superior WI Facility, May 1, 2007). Prior to the installation of concrete, there was no physical barrier for drippage in this area. The drip pad became subject to federal regulation under 40 CFR 265, Subpart W, in the early 1990s and subsequently in the mid-1990s under Chapter NR 656 in Wisconsin (NR 656 was updated to NR 665 during 2006). The CDP is designed to determine: if the concrete drip pad served as an effective barrier to migration of wood treating chemicals to the underlying soils; and if constituents of interest are present in soils beneath the drip pad and at what concentration. Following collection and review of the data, any long-term maintenance requirements or functional uses (ex. cover to prevent direct contact with underlying soils) will be determined.

It should be noted that, as a requirement for RCRA-regulated drip pads, in January 1992 the facility obtained P.E. certification for the, then, newly regulated drip pad; thereafter surface sealed and maintained the drip pad; obtained annual P.E. certifications; and also conducted weekly inspections and made repairs, as needed, beginning in the early 1990s. Contemporaneously, the original drip pad was extended in late 1991.

As an outcome of this CDP, it is anticipated that the drip pad concrete will remain in place to serve one of the following purposes:

- As a cover to preclude potential direct contact exposure, consistent with the site-wide corrective action approach for soil should constituents of concern be present above the risk-based corrective action levels.
- As a remaining feature for future use should constituents of concern be absent, or present below risk-based corrective action levels.

2.0 INTRODUCTION

This CDP has been developed in response to the WDNR correspondence to Koppers: *Subject: Request for Final Closure Approval of Drip Pad*, July 2, 2013 (Attachment 1). Specifically, the CDP addresses the

WDNR's concern regarding the potential presence and concentration of former wood treating operations-related constituents beneath the drip pad.

When the U.S. Environmental Protection Agency (U.S. EPA) developed and promulgated their 40 CFR 265, Subpart W drip pad regulations (analogous Wisconsin NR 665 Subchapter W), they recognized that upon transitioning to a specifically designed and operated regulated RCRA unit, some past contamination could be present beneath the, then, newly regulated drip pads. In the preamble to the December 6, 1990 Final Rule (Federal Register Vol. 55, No. 235, Thursday December 6, 1990, page 50453) the U.S. EPA specifically discussed that past releases may have caused contamination beneath drip pads and that potential cleanup mechanisms under RCRA could be used to address this contamination. The drip pad at the subject facility was identified as a SWMU (a portion of Area F) (June 1988 RCRA Facility Assessment) as a part of the beginning facility assessment under the RCRA corrective action program.

3.0 SUBPART W DRIP PAD INFORMATION

The following drip pad information was used to develop the methods and materials needed to implement an investigation of conditions beneath the drip pad.

3.1 Historical Information

The history of the drip pad had previously been researched and shared with the WDNR in a July 17, 2012 e-mail correspondence from Koppers to the WDNR (Attachment 2, beginning at the bottom of page 1 and continuing onto page 2). In summary:

- Initial operations at the site included the use of an unlined (no concrete) drippage area dating back to the late 1920s (Phase II RFI Report, June 1991).

- An original concrete drip pad was installed adjacent to the treating cylinders in the late 1970s or early 1980s. As a part of this concrete drip pad installation, an unknown amount and depth of soil was removed.

- A concrete drip pad expansion was installed in late 1991 to comply with the, then, new drip pad regulations, and to lengthen the original concrete drip pad. A 125-foot extension was installed to the existing concrete drip track - extending the length by about 20%.
    - Soil was excavated based on visible evidence of site-related constituents. Historical information references memos that indicate approximately 700 cubic yards of soil were removed; but these memos were not located.
    - Beazer collected soil samples in the excavation area from the 0.0- to 1.0-foot depth to provide data on the soils remaining beneath the newly constructed drip track extension.

- The drip pad became subject to federal regulation under 40 CFR 265, Subpart W, in the early 1990s and subsequently in the mid-1990s under Chapter NR 656 in Wisconsin (NR 656 was updated to NR 665 during 2006); noting compliance with regulatory requirements, operation as a

surface sealed drip pad was then required. The drip pad certification report was dated January 1992.

- In 2006 - 2007, Koppers Inc. ceased treating operations at the facility and decommissioned the facility. As part of the facility decommissioning, Koppers cleaned and sampled the drip pad surface, and collected soil and groundwater samples adjacent to the drip pad. These sampling results were previously reported to WDNR and the drip pad surface was determined by the WDNR to be decontaminated.

3.2 Construction Information

A schematic depicting the drip pad construction that is believed to have been developed for the drip pad expansion in 1991 (see Section 3.1) is included as Attachment 3. As depicted, the drip pad expansion appears to be underlain by compacted clay subgrade, approximately 6" of ballast with embedded railroad ties, and anywhere from 13" (center of pad) to 15" (pad edge curb) of concrete.

4.0 CLOSURE DEMONSTRATION PLAN

The following subsections provide a description of the investigation, sampling, and analysis proposed for the drip pad concrete (Section 4.1) and subsoils (Section 4.2). This approach is based on the current understanding of the drip pad construction, as described in Sections 3.1 and 3.2.

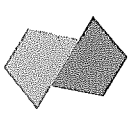
Due to the relatively small area of the drip pad, 10 individual locations will be studied by coring the drip pad concrete and underlying soils, observing the concrete and subsoil cores, and collecting subsoil samples for analytical testing. A generalized schematic of the drip pad configuration and the target locations of the cores are shown on Figure 1.

Creosote, and pentachlorophenol and its number 6 fuel oil carrier, are the wood treating constituents that were identified to be associated with the drip pad (SWMU F) (June 14, 1991 Phase II Facility Investigation Report of Findings). In addition, because the site has been studied for decades, the site-related constituents of interest are well documented. Consequently, the subsoil analytical suite will consist of the polynuclear aromatic hydrocarbon (PAHs) and phenolic compounds listed on Table 1. These constituents will be tested by use of U.S. EPA Method 8270, by a Wisconsin state-certified laboratory.

Field methods will include decontamination of sampling equipment between each location and/or sample depth interval to preclude potential cross-contamination. Decontamination will consist of scrubbing with a non-phosphate detergent and potable water rinse. Investigation derived waste will be containerized and managed per applicable regulations.

4.1 Concrete

The following methods and procedures will be used for the drip pad concrete study.



Objectives

- Facilitate access to the subsoils beneath the drip pad.
- Assess the effectiveness of the drip pad as a physical barrier to the migration of residual wood treating solutions through visual inspection of the drip pad concrete.

As discussed in Section 3.1 and referenced in Attachment 2, the drip pad surface had been sufficiently cleaned and rinseate samples collected as a part of the facility decommissioning, as documented in the January 2007 Drip Pad Closure Investigation Report. The drip pad surface was deemed by the WDNR to have achieved the partial closure requirement of decontamination. For purposes of this investigation, the concrete will be visually assessed throughout its thickness to obtain additional information for evaluating its effectiveness as a barrier and for evaluating the concrete as an ongoing cover or cap, or remaining property feature. The following investigation procedures will be implemented.

- The concrete will be cored through its full thickness at 10 representative locations spaced across the drip pad (see Figure 1). If a railroad tie or other obstruction is encountered in the concrete, the core hole will be off-set in order to avoid the obstruction.
- For each concrete core, observations will be recorded and photo-documentation will be collected. The "oil"-based wood treating solutions that were used at the facility should be visually evident if present within the concrete core.
- Underlying drip pad ballast will be moved or removed from the core hole, as needed, to allow access for subsoil sampling.
- At the completion of subsoil sampling (described within the following Section 4.2), the concrete core holes will be repaired with hydraulic cement, and surface coating applied to the core hole locations.

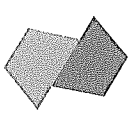
4.2 Subsoils

The following methods and procedures will be used for the drip pad subsoil study.

Objective

- Assess whether wood treating-related constituents are present in subsoils directly beneath the drip pad.
- Determine whether the concrete drip pad structure is needed to act as an effective cover to preclude direct soil contact.

A maximum depth of ~4 feet below the adjacent ground surface has been selected for the subsoil investigation because past investigations indicated that groundwater in the area of the drip pad is present at ~3 to 4 feet below ground surface and is already known to contain site-related constituents. As a consequence, only unsaturated/vadose zone soils will be collected for this investigation so as not to reflect the known saturated soil/groundwater area-wide impacts. Assessment of this data may be



complicated by site-related constituents contributed by the seasonal rising and falling of the extremely shallow water table and capillary fringe effect.

- At each of the 10 concrete core locations, hand-driven sampling equipment will be used to collect soil samples at the 0-1' interval below the drip pad and any gravel/construction base fill. These subsoil samples will be submitted for analysis.
- The soil bore will be extended to saturated soil or a maximum of 4 feet, photo-documentation will be collected, and the soil bore content will be visually characterized and documented.

5.0 CLOSURE DEMONSTRATION REPORT

All analytical and observational information will be collated into a report. The report will provide a description of the methods and materials used in the investigation, the results, and summary and conclusions. Final disposition of the drip pad concrete within the site-wide RCRA Corrective Action program will also be addressed, as described in the text bullets at the end of Section 1.0.

CERTIFICATION

"I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance the Rules of Professional Conduct in ch. A-E, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

HAROLD P. McCUTCHEON
Name

Signature

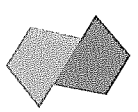
CHIEF ENGINEER, S-42245-6
Title and P.E. Number

P.E. Stamp

TABLE

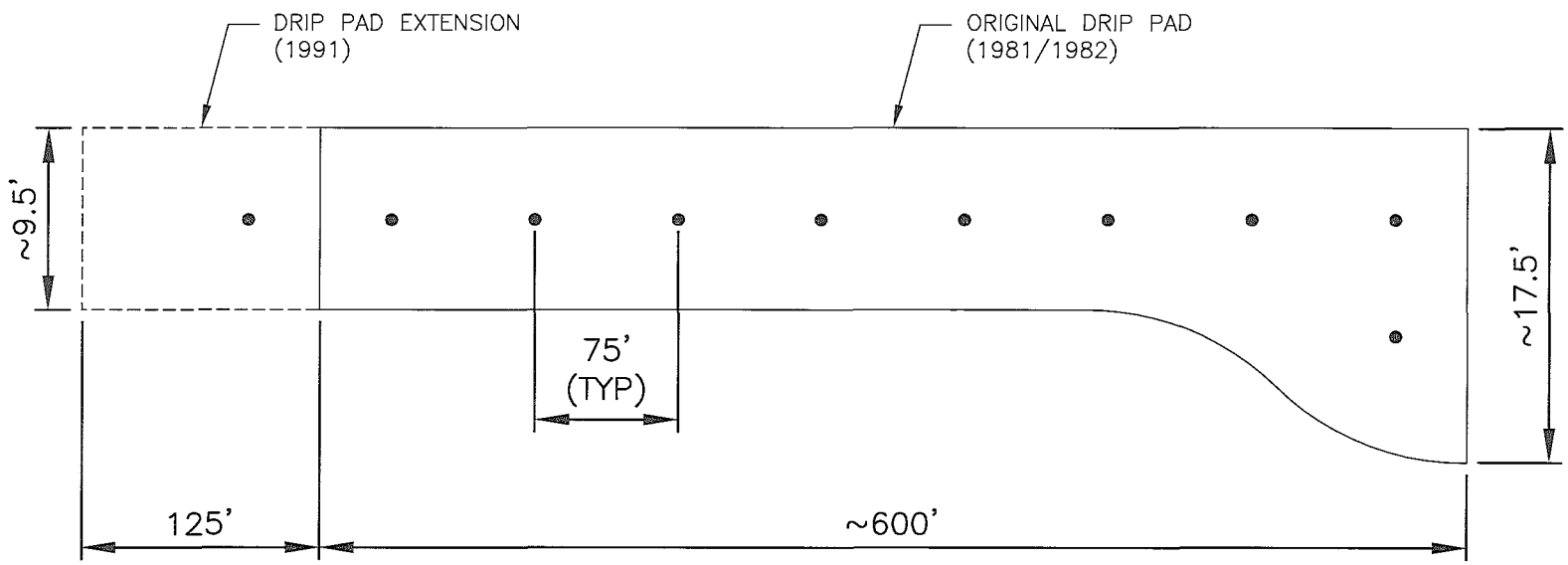
Table 1
List of PAHs and Phenolics

PAHs	Phenolics
Acenaphthene	Pentachlorophenol
Acenaphthylene	2,3,4,6-Tetrachlorophenol
Anthracene	2,3,5,6-Tetrachlorophenol
Benzo(a)anthracene	2,4,6-Trichlorophenol
Benzo(a)pyrene	4-Chloro-3-methylphenol
Benzo(b)fluoranthene	2-Chlorophenol
Benzo(g,h,i)perylene	2,4-Dichlorophenol
Benzo(k)fluoranthene	2,4-Dimethylphenol
Chrysene	2,4-Dinitrophenol
Dibenz(ah)anthracene	2-Methyl-4,6-dinitrophenol
Fluoranthene	2-Nitrophenol
Fluorene	4-Nitrophenol
Indeno(123-cd)pyrene	Phenol
Naphthalene	
Phenanthrene	
Pyrene	



FIGURE

Figure 1
Drip Pad Core Locations



LEGEND

- CORING/SAMPLING LOCATIONS

HORIZONTAL SCALE

0 100 FEET

VERTICAL SCALE

0 10 FEET

APPROVED	RTS 07/22/2016
CHECKED	RTS 07/22/2016
DRAWN	RAM 07/21/2016
CAD FILE NO.	16261A001
PROJECT NO.	KI.16216.SDPC

KU Resources, Inc.
22 South Linden Street
Duquesne, PA 15110
412.469.9331
412.469.9336 fax
www.kuresources.com

FIGURE 1

DRIP PAD CORE LOCATIONS
SUPERIOR FACILITY

TOWN OF SUPERIOR
DOUGLAS COUNTY, WISCONSIN

PREPARED FOR
KOPPERS INC
SUPERIOR, WISCONSIN

ATTACHMENTS

Attachment 1
WDNR correspondence to Koppers; Subject: Request for Final Closure Approval of Drip Pad
July 2, 2013

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
875 South 4th Avenue
Park Falls WI 54552

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

WISCONSIN DEPT. OF NATURAL RESOURCES

July 2, 2013

FID#: 816009810
HW/CORR
Douglas County

Ms. Leslie Hyde
Koppers, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

Subject: Request for Final Closure Approval of Drip Pad
Koppers, Inc. Superior, WI Facility – EPA ID #: WID006179493

Dear Ms. Hyde:

The Department of Natural Resources (Department) has received Koppers, Inc. (Koppers) correspondence dated May 21, 2013, regarding management of the drip pad. The letter requests concurrence by the Department for three items regarding the management of the drip pad. The Department is not able to provide concurrence to this request for the following reasons.

Item number one in Koppers' letter states that no further action at the drip pad is required at this time. The June 28, 2007, letter addressed to you from the former Department Waste Management Specialist James Ross clearly states that it is for review of a partial closure report submitted by Koppers, not clean closure. The letter also states that Section NR 665.0445(1), and (2), Wis. Adm. Code, allows the owner or operator to close the facility and perform long-term care in accordance with the closure and long-term care requirements that apply to landfills if all the contaminated sub-soils cannot be practically removed or decontaminated. Clean closure could not be approved without the removal of the drip track and excavation and proper treatment or disposal of any remaining contaminated soil beneath it.

The Department agrees that final closure of the drip pad could be issued to Koppers upon completion of the off-site remediation and closure of the overall RCRA Corrective Action site under ch. NR 726, Wis. Adm. Code. Site closure would include continuing obligations under s. 292.12(3), Wis. Stats., for inspection and maintenance of the concrete drip track as described below. However, the Department does not agree that there is no need for regular inspections of the drip pad or the re-application of low permeability coating. As stated in the June 28, 2007 letter, "We will also need to establish site operational conditions to periodically inspect and maintain the integrity of the drip pad as a **permanent** cap for the underlying contaminated soils, agree on an ongoing groundwater monitoring strategy, and a tentative schedule to achieve "final closure" of the facility." Long-term care requirements of the drip pad will need to be completed as part of any long-term care under Subpart W. The drip pad is considered by the Department as both a barrier cap that needs to be maintained and as a structural impediment to previous investigation and remediation actions.

Item number two in Koppers' letter states that the drip pad concrete can be maintained as a cover material similar to the other cover materials placed by Beazer as part of the on-property remedy. The Department does not agree that the drip pad can be maintained in the same manner as the soil and gravel caps installed elsewhere on the site. The soil and gravel caps placed by Beazer were allowed because the degree and extent of contamination was known and the caps were intended only to address the direct contact pathway. Due to the structural impediment

posed by the drip pad, we do not know the degree and extent of contamination under the drip pad and could not explicitly rule out impacts via the groundwater pathway. Filling of significant cracks in the concrete with soil or gravel could have the effect of concentrating water infiltration in those cracked areas, potentially increasing soil-to-groundwater leaching of contaminants.

Item number three in Koppers' letter states that the Continuing Obligations letter to be issued to the new property owner and the site survey to be filed with the Department's online GIS Registry will identify the drip pad as an area to be included within the continuing site obligations for long-term maintenance. However, your requests in items number one and two directly contradict this notion of long-term maintenance. Continuing obligations will continue to apply to the site unless the structural impediment and groundwater barrier of the drip track is removed and investigated. Koppers will need to research the repercussions of the Continuing Obligations letter with internal legal staff.

If you have any other questions regarding this matter, please contact me at (715) 762-1339.

Sincerely,

Steve Ashenbrucker
Waste Management Specialist

Cc: Chris Saari – WDNR Ashland
Jill Schoen – WDNR Eau Claire
Ed Lynch – WDNR Madison
Jane Patarcity – Beazer East, Inc.
Linda Paul – Koppers, Inc.

Attachment 2
E-mail Correspondence from Koppers to WDNR
July 17, 2012

Paul, Linda S

From: Saari, Christopher A - DNR [Christopher.Saari@Wisconsin.gov]
Sent: Thursday, August 09, 2012 3:03 PM
To: Paul Linda S; Ashenbrucker, Steven J - DNR; Lynch, Edward K - DNR
Cc: Robinson, John H - DNR; Gordon, Mark E - DNR; Patarcity, Jane (Pittsburgh) NA (Jane.Patarcity@hanson.biz)
Subject: RE: Koppers Inc., Superior, WI Facility, Drip Pad Closure

Hello Linda:

Following internal discussions between Wisconsin DNR's Waste and Materials Management (WMM) and Remediation and Redevelopment (RR) programs, it was determined that the RR program will have the lead on responding to your request below. Based on this message and previous discussions with you, it appears that Koppers Inc. is trying to achieve final closure for the former drip track area at the facility Superior. It also appears that a joint decision was made between Koppers Inc. and the WDNR prior to 2007 to close the drip track area as part of the site wide RCRA closure, rather than as a separate site under the drip track regulations (p. 2 of the May 2007 Decommissioning Report). Because final closure of the drip track area is apparently tied to the site wide closure, and site wide closure will not happen until after the off-property soil and sediment contamination has been addressed, it is not likely that the WDNR can provide Koppers Inc. with a final closure for the drip track area in the near term.

However, we can offer an alternative that might help explain the regulatory status of the drip track area and clarify any liability questions associated with that area. The WDNR's RR program can write General Liability Clarification Letters (GLCLs) that answer site-specific questions about status and liability issues. For more information, please refer to the GLCL Fact Sheet found at this link: http://dnr.wi.gov/files/PDF/pubs/rr/RR619.pdf. Requests for GLCLs are fee-based and should be accompanied by an application detailing the specific questions and/or issues for which the requestor is seeking clarification. The application can be found at this link: http://dnr.wi.gov/files/PDF/forms/4400/4400-237.pdf.

One issue that likely would require clarification would be the responsibility for ongoing inspection and maintenance of the concrete drip track. The WDNR considers the concrete covering the drip track area as both a barrier cap and a structural impediment. Under s. 292.12, Wis. Stats., barrier caps and structural impediments require continuing obligations at the time of case closure, in order to ensure that such things as inspection and maintenance activities are performed for as long as the contamination beneath the cap or structural impediment remains in place. These continuing obligations are conveyed with the property, meaning that the current property owner is responsible to make sure that the obligations are met. This does not preclude responsible parties and property owners from reaching separate agreements over which party or parties will take on those responsibilities, but I raise this as an issue now because of similarities between the continuing obligations for the drip track area and the direct contact soil barrier caps that Beazer installed in 2010 as part of the on-property cleanup work. This issue is also pertinent considering the potential sale of the property to the tie-grinding company (Omaha Track Materials?).

Once you have had a chance to look this material over, please contact me to let me know how you would like to proceed. Feel free to call me (715-685-2920) if you have any questions.

> **From:** Paul Linda S [mailto:PaulLS@koppers.com]
> **Sent:** Tuesday, July 17, 2012 3:27 PM
> **To:** Ashenbrucker, Steven J - DNR; Saari, Christopher A - DNR; Lynch, Edward K - DNR
> **Subject:** Koppers Inc., Superior, WI Facility, Drip Pad Closure
>
> Gentleman,

In recent discussions with Steve Ashenbrucker about a final drip pad closure at the Koppers Inc., Superior, WI facility, the question arose about the soil removal activities that had occurred in the drip track area. After review, the following summarizes information that was located on this subject.

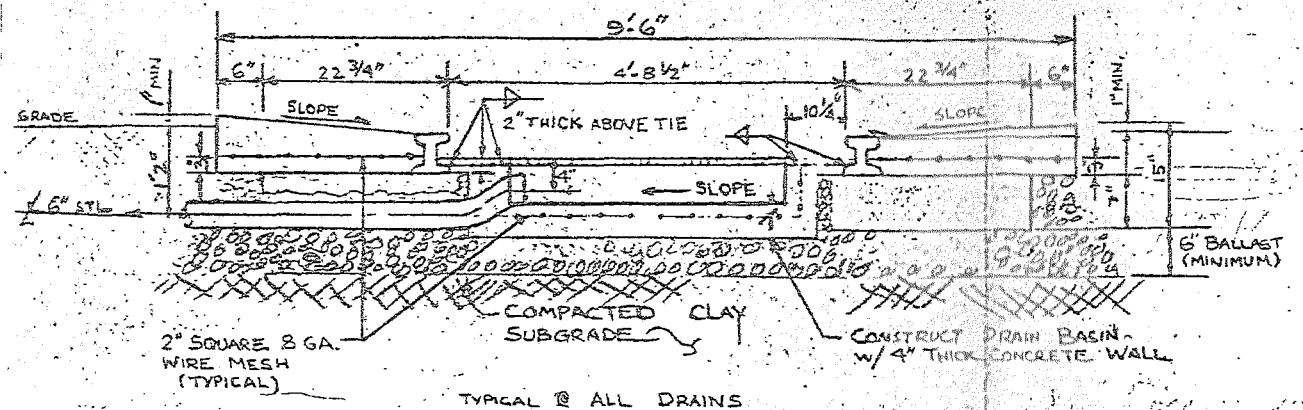
- From 1928 until either 1981 or 1982, the drip track adjacent to the treating building at Superior was unlined (*Phase II RFI, June 1991, page 1-5*).
- In 1981 or 1982, the concrete-lined drip track was constructed, after removal of underlying soils (*Phase II RFI, June 1991, page 1-5; and Drip Track Extension Soil Sampling & Analysis Plan, Sept. 1991, page 2-2*). No specific data on the depth or volume of soil removal has been located for this project. Based on the dates, the removal and concrete drip track construction would have been completed by Koppers Company, Inc. (Beazer East, Inc.).
- In late 1991, to comply with new RCRA regulations, Koppers Inc. extended the Superior drip track. A 125 foot extension was installed to the existing concrete drip track - extending the length by about 20% and an additional 25 ft. x 75 ft. drip pad was installed adjacent to the existing 9.5 ft x approx. 600 ft. concrete drip track (see Figure 1 of the attached *Draft Sampling and Analysis Report, May 1992*).
- Soils in each of the two drip track expansion construction areas were to "be excavated . . . to remove all soils showing visible evidence of site-related constituents" and it was "anticipated that 2 to 3 feet of soil" was to be excavated from each area prior to installation of the drip track extension/expansion. (*Drip Track Extension Soil Sampling & Analysis Plan, Sept. 1991, pages 2-1 and 3-1*). Beazer collected soil samples in the two excavation areas to provide data on the soils remaining beneath the two newly constructed drip track extension areas.
- The Drip Track Extension and Expansion Project was completed in the fall of 1991. There is reference to memos that indicate approximately 700 cubic yards of soil were removed but I have been unable to locate those memos at this time. After the visibly impacted surficial soils were excavated, soil samples were collected from 0.0 to 1.0 foot depth from ten locations in the two expansion areas as shown on Figure 1 of the *Draft Sampling and Analysis Report* for the drip track extension. The sampling results for TPH, total PAHs, total phenolics, and pentachlorophenol are included on page 1b of the *Draft Sampling and Analysis Report.*

The information provided previously by Koppers at the time of facility decommissioning demonstrated that the drip track concrete had been sufficiently cleaned (rinseate sampling) and soil samples and groundwater samples were collected from adjacent to the drip track as reported in the *January 2007 Drip Pad Closure Investigation Report* and May 2007 follow-up letter. Per the above, soils beneath at least portions the concrete drip track were removed (likely to the 2 to 3 foot depth) in two different projects coinciding with the original concrete pad construction and the extension in 1991.

I will contact you shortly to review the information contained herein and to determine any remaining steps to obtain final closure of the drip pad at the Superior facility. Thank you for your timely review of this information.

Linda S. Paul, P.E.
Koppers Inc.
436 Seventh Avenue, Suite 1800
Pittsburgh, PA 15219
Direct Dial: 412-227-2434
Fax: 412-227-2423
Cell: 412-512-6910
paulls@koppers.com

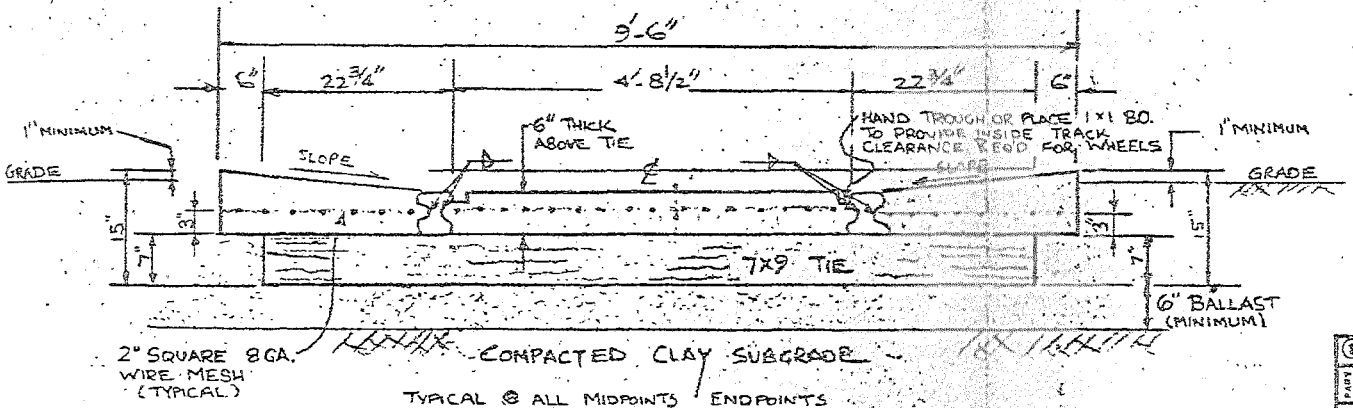
Attachment 3
Drip Pad Construction Schematic



TYPICAL @ ALL DRAINS

SECTION - B-B

3/4" = 1'0"



TYPICAL @ ALL MIDPOINTS ENDPOINTS

SECTION C-C

3/4" = 1'0"

from Signed 11/13/90

TRACK DRAIN ASSEMBLY

DETAIL D

3/4" = 1'0"

(TYP. OF 4)

NOTE

1. SITE TO BE CLEANED BY REMOVING ALL DELETERIOUS MATL., LARGE STONE EXCEEDING 4 INCHES, BANDING, METALS, AND OIL SATURATED SOILS.
2. CONCRETE TO BE 3000 PSI GRADE IN ACCORDANCE W/ ASTM-C150 SPEC.
3. ALL STL. REINFORCEMENT & RAIL TO BE FREE OF DIRT, OIL, & GREASE PRIOR TO POURING OF CONCRETE.
4. ALL REINF. TO BE #8 GA. OR LARGER AND BE 2 INCH MESH OR SMALLER.
5. REINF. TO BE SECURELY FASTENED TO RAILS BY WELD OR OTHER ADEQUATE METHOD.
6. ALL CONCRETE FORMS TO BE SUFFICIENTLY OILED FOR EASY REMOVAL.
7. PLACED REQUIRED FORMS WITHIN SWITCHING TO PROVIDE SUFFICIENT CLEARANCE FOR ALL MOVING TRACK & SWITCH GEAR.

DRAWN BY: NTL

CHECKED BY: PAS

REVISIONS

PART NO.	NO. REQ'D	MATL	NAME OF PART
1			

Forest Products Div., Koppers Company, Inc.
Pittsburgh, Pa. 15219

KOPPERS

SUPERIOR PLANT / WISCONSIN

DRIP TRACK CONCRETE PAD

PLAN & DETAIL

NO.	REVISED	DATE	BY		BY	DATE	SUPERSEDED BY:
1	Grade	12/17/71	JTD	DRAWN	NTL	12/16/71	ASSEMBLY DR:
2	Add A Material	3/24/72	NTL	CHECKED	PAS	12/17/71	

TL-7850

Appendix 2
WDNR Work Plan Considerations

From:	Lynch, Edward K - DNR
To:	rsmith@kuresources.com
Cc:	Saari, Christopher A - DNR; Fassbender, Judy L - DNR; Robinson, John H - DNR; Schoen, Jill M - DNR; Morris, John M - DNR
Subject:	RE: Koppers Wood Treating Site
Date:	Friday, July 14, 2017 5:47:04 PM

Hello Rob, Thanks for your patience on this matter, I apologize for the delay. As far as doing this work, I do not believe an approval from the department is needed. However, here are some questions/comments we would like you to consider for your proposed drip pad investigation:

- Will the proposed concrete coring locations be biased to areas with surface cracks, or will it be a more even spacing as depicted on Figure 1 of the proposal? Biased sampling would likely lead to a more accurate reflection of the presence of contaminants within and beneath the drip pad.
- What method(s) will be used to collect the soil samples from beneath the drip pad? Based on the description provided, 6 inches of ballast with embedded railroad ties is present between the drip pad and native soil. Attempting to collect soil samples through that substrate with standard hand methods (while confined to the holes cored through the concrete) would seem to be a difficult proposition. The Department recommends that you consider the use of direct-push technologies (e.g., Geoprobe) as your soil sample collection method.
- During the on-property remedial investigation conducted by Beazer, their consultant identified a list of contaminants of concern (COCs) in soil that included polynuclear aromatic hydrocarbons (PAH), phenolics (including pentachlorophenol), and polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDDs/PCDFs). The soil samples collected from beneath the drip pad should be analyzed for the same list of COCs.
- A more complete description of the concrete core patching/sealing process should be provided. The drip pad currently serves as a barrier to direct contact and infiltration, and you will need to document that your proposed coring activities do not interfere with either of these functions in the future.

When you have completed this project, please proved the information to Chris Saari and Jill Schoen.

Sincerely,

- Ed

BTW – This is my last day with the DNR. In the future, you should contact Chris Saari. Chris is the project manager for the department. At present we still have not filled our vacancy that covers this region.

……

We are committed to service excellence.

Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Edward K. Lynch, PE, Chief

Hazardous Waste Management Section

Phone: (608) 267-0545

From: Rob Smith [mailto:rsmith@kuresources.com]
Sent: Monday, May 08, 2017 11:51 AM
To: Lynch, Edward K - DNR
Subject: Koppers Wood Treating Site

Hello Ed: We spoke about a month ago about the work that Mr. Ashenbrucker had left behind.

We discussed this on the phone and then I sent you a copy of the Work Plan that Koppers was hoping to implement in order to address the presence or absence of historic wood treating constituents beneath the former drip pad.

Has this project been handed off yet? Is there someone I can contact to discuss implementation?

Thanks for your help.

Best regards.

Robert T. Smith, LRS
KU Resources, Inc.
22 South Linden Street
Duquesne, PA 15110
Phone: 412-469-9331 x 11
Cell: 724-575-3300

Appendix 3
WDNR Review of Partial Closure Report

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary
John Gozdzialski, Regional Director

Northern Region Headquarters
810 W. Maple Street
Spooner, Wisconsin 54801
Telephone 715-635-2101
FAX 715-635-4105
TTY Access via relay - 711

June 28, 2007

Ms. Leslie Hyde, Safety and Environmental Affairs
Koppers, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219-1800

FID# 816009810
HW/CORR
Douglas County

Subject: Review of Partial Closure Report for Koppers, Inc. Wood-Treating Facility in Superior, WI EPA I.D. # WID006179493

Dear Ms. Hyde:

This letter acknowledges receipt of your Drip Pad Decommissioning Report, dated May 1, 2007, for the creosote wood-treating process, equipment, and buildings at the Koppers, Inc. facility in Superior, WI. We have reviewed your submittal as a "partial closure" report and have determined that Koppers, Inc. has satisfied the majority of the closure performance standards stated in s. NR 665.0445 (1) and (3), Wis. Adm. Code. These standards state that at closure, the owner or operator shall remove decontaminate all waste residues, contaminated containment system components (such as pads and liners), contaminated sub-soils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste. The following chronology provides a background and other important information contained in your partial closure report:

Background

According to our records, creosote wood-treating at the Superior facility first began at Koppers Inc., in 1928. Wood-treating continued using a creosote preservative until 1955, when the facility (Koppers) began using pentachlorophenol as the primary wood preservative. This type of preservative was used from 1955 to 1982, and then discontinued. Koppers changed its treating solution back to a creosote preservative in 1983 and used this until November 18, 2007. Under s. NR 665.0440 (1), Wis. Adm. Code, Koppers is defined as an existing facility because it was constructed prior to June 1, 1995. As an existing wood-treating facility, Koppers was been exempted from the need to obtain a feasibility and plan of operation approval, and licensing to operate its Superior facility.

On December 29, 1988, through a series of business transactions, Beazer East (Beazer) acquired and sold the facility to Koppers, Inc. Under a contractual agreement with Koppers, Inc., Beazer retained responsibility for environmental contamination and releases occurring prior to the sale. Beazer initiated RCRA corrective action involving the removal and disposal of contaminated soil from two wastewater impoundments to an on-site capped-land disposal facility. Beazer began operating this closed landfill as a 30-year long-term care facility in 1988, and received its long-term care license No. 3157 from the Department of Natural Resources (Department) on December 20, 1990. Beazer and their environmental consultant, Blasland, Bouck & Lee, Inc., have been working closely with Jim Hosch, WDNR Remediation Hydrogeologist of our Superior office, on an on-going facility-wide corrective action investigation study to address other areas of on-site and off-site soil and groundwater contamination.

Closure Work Completed to Date

On April 19, 2006, Koppers issued a news release announcing the closure of its wood-treating operations in Superior. On this same day, the Department of Natural Resources (Department) received a copy of a work plan from Patrick Stark, Koppers, Inc., which detailed the steps necessary to decommission (partially close) the drip pad, wood-treating process, product storage tanks and buildings. Department staff reviewed this work plan and determined that the initial submittal report was incomplete. The Department requested that Koppers include a sampling plan with its closure work plan to further investigate possible contamination of the underlying soils and groundwater near the drip pad[s. NR 665.0445 (1), Wis. Adm. Code]. Koppers agreed to this request and submitted an acceptable sampling plan to the Department on November 6, 2006.The sampling plan included test methods and QA/QC laboratory procedures to sample the soil and groundwater at several locations and depths adjacent to the drip pad for total metals, polycyclic aromatic hydrocarbons (PAHs), total dioxins, pentachlorophenol, and volatile organic compounds (VOCs). The Department reviewed the proposed sampling plan and found it to be acceptable.

Decommissioning work on the drip pad, all treating equipment and buildings was completed during October 2006 through mid-January 2007. Work included asbestos removal from buildings, power washing and cleaning the drip pad, sumps, treating tank cylinders and product storage tanks. The drip pad and product transfer lines were power washed several times, using a washer rated at 3,500 psi at 200 degrees F. Rinseate water samples were obtained from the drip pad sump collection points after cleaning and then analyzed for metals and PAHs. Sample concentrations for the constituents were found to be less than or just slightly above the laboratory detection limits. The Department informed Koppers that the drip pad surface was determined to be clean for the purpose of partial closure. Koppers next applied an epoxy OverKrete E 100S coating seal with a permeability rating at $< 1 \times 10^{-10}$ cm/sec to the drip pad surface. Koppers plans to use the drip pad as a permanent cap over underlying soils to address possible direct contact concerns, i.e. ingestion of soils. All drip pad sumps were abandoned and then filled in with concrete. Stained areas located on the brick outside and inside the containment building were sandblasted to a visibly clean level. Sandblast grit material was then properly containerized and disposed of as a K001 hazardous waste. All rinseate water collected during drip pad and tank cleaning was shipped off-site and treated as a F034 type hazardous waste. All decommissioning work was overseen and documented by Brian McVeen, a registered professional engineer with EPC Engineering and Testing. As a follow-up, I completed two site inspections of the on-going closure work on November 30, 2006, and January 3, 2007.

As part of its closure work, the owner or operator of the drip pad is required to investigate the sub-soils and groundwater in the vicinity of the drip pad for possible contamination. Soil and groundwater samples were obtained from the drip pad area during the week of November 22-28, 2006. Section NR 665.0445 (1), and (3), Wis. Adm. Code, allows the owner or operator the option to close the facility and perform long-term care in accordance with the closure and long-term care requirements that apply to landfills if all the contaminated sub-soils cannot be practically removed or decontaminated. As an alternative to going through long-term care licensing, Koppers has the option of closing its drip pad unit in conformance with the closure performance standards stated in s. NR 665.0111, Wis. Adm. Code. Under this section, Koppers, Inc. may choose to meet, in the case of a landfill or surface impoundment, applicable groundwater protection requirements in ch. NR 140, soil clean-up standards in ch. NR 720, or meet the applicable closure requirements of subsections (2) or (3), whichever is more stringent. In your May 16, 2007, cover letter for a naphthalene groundwater re-sampling report, you indicated that you have been working with Beazer East and WDNR Remediation Hydrogeologist Jim Hosch, on a facility-wide RCRA Corrective Action investigation study to include the drip pad area. You stated in your cover letter that you plan to meet Wisconsin's soil and groundwater clean-up standards to address other areas of contamination, as well as the drip pad area, and plan to implement Natural Attenuation (NA) as the anticipated corrective action. Natural Attenuation is believed to be effective as an on-going process

leading to decreased concentrations of contaminants in groundwater over time. The rationale for selecting this option is based on the fact that closing your drip pad will be addressed as part of your facility-wide corrective action, and not as a separate, stand alone site. Another supporting factor includes historical soil and groundwater sampling data obtained from other areas of contamination at Koppers that is consistent with the concentrations found near the drip pad area. Although the sample concentrations for naphthalene and other PAHs are exceeding ch. NR 140 enforcement standards at several shallow well locations, groundwater flow at the site is low and no evidence of contaminant migration has been found beyond the facility boundary at levels above standards. Previous naphthalene monitoring completed during July 2004 and April 2005, ranged from 4,000 to 7,000 ug/l at well #W-16A. Naphthalene concentrations at well # W-10AR2 were measured at 2,000 ug/l for sampling completed on April 10, 2006. The most recent sampling event completed on April 10, 2007, at monitoring well #TW-2, showed naphthalene concentrations at 1,200 ug/l, which is consistent with earlier sampling results.

On-Going Corrective Action Work

We understand that Beazer is currently completing additional groundwater investigation work to further support its NA corrective action strategy. The anticipated timeframe for completing this study is scheduled for July 2007. As Beaser pursues this NA approach, I will need to work closely you and Jim Hosch to assess the feasibility of applying this treatment technology to meet ch. NR 720 standards. We will also need to establish site operational conditions to periodically inspect and maintain the integrity of the drip pad as a permanent cap for the underlying contaminated soils, agree on an on-going groundwater monitoring strategy, and a tentative schedule to achieve "final closure" of the facility.

Based on the information contained in your May 1, 2007, drip pad decommissioning report, it appears as though Koppers has satisfied many of the performance standards to partially close its wood-treating facility and drip pad in Superior, WI. We look forward to meeting with you and Beazer representatives after July 2007 to discuss the results of the facility-wide corrective action study and actions needed to achieve final closure of your facility. If you have questions on the findings or closure requirements contained in this letter, please feel free to call me at (715) 635-4068.

Sincerely,

James I. Ross
Waste Management Specialist
Northern Region

Cc: Ann Coakley – Rhinelander
Pete Flaherty – LS/5
Jill Schoen – WCR
Steve LaValley – Superior
Jim Hosch – Superior
Bruce Moore – Ashland

Jane Patercity – Beazer East, Inc.
Steve Willis – Koppers, Inc. (Superior)

John Robinson - Rhinelander
Pat Chabot – WA/3
Mark Gordon – RR/3

Appendix 4
Laboratory Analytical Data Packages

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

November 10, 2017

Rob Smith
KU Resources, Inc.
22 S. Linden Street
Duquesne, PA 15110

RE: Project: Superior,WI
Pace Project No.: 30231412

Dear Rob Smith:
Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 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.

Revision 1 - This report replaces the October 16, 2017 report. This report was reissued on November 8, 2017 to include comments clarifying certification for 2,3,5,6-Tetrachlorophenol.

Revision 1 - This report replaces the October 17, 2017 report. This project was revised on November 10, 2017 in order to have Pace Grand Rapids add a narrative concerning the N2 quailifer.

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

Sincerely,

Timothy Reed
timothy.reed@pacelabs.com
724-850-5614
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: Superior,WI
Pace Project No.: 30231412

Grand Rapids Certification ID's

5560 Corporate Exchange Ct SE, Grand Rapids, MI 49512
ISO/IEC 17025:2005, Certificate #AT-1542.01
DoD-ELAP, Certificate #ADE-1542
Minnesota Department of Health, Certificate #1177224
Arkansas Department of Environmental Quality, Certificate #17-046-0
Georgia Environmental Protection Division, Stipulation
Illinois Environmental Protection Agency, Certificate #004097
Michigan Department of Environmental Quality, Laboratory #0034
New York State Department of Health, Serial #56192 and 56193
North Carolina Division of Water Resources, Certificate #659
Virginia Department of General Services, Certificate #9028
Wisconsin Department of Natural Resources, Laboratory #999472650
U.S. Department of Agriculture Permit to Receive Soil, Permit #P330-14-00305

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Superior,WI
Pace Project No.: 30231412

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30231412001	SB-2[TOP6']	EPA 8270D	JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412002	SB-2[BOTT6']	EPA 8270D	JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412003	SB-5[TOP6']	EPA 8270D	DWJ, JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412004	SB-5[BOTT6']	EPA 8270D	DWJ, JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412005	SB-6[TOP6']	EPA 8270D	DWJ	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412006	SB-6[BOTT6']	EPA 8270D	DWJ	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412007	SB-8[TOP6']	EPA 8270D	DWJ	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412008	SB-8[BOTT6']	EPA 8270D	DWJ, JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412009	SB-10[TOP6']	EPA 8270D	DWJ, JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI
30231412010	SB-10[BOTT6']	EPA 8270D	DWJ, JLB	35	PASI-GRMI
		SM 2540 G-11/3550	NS1	1	PASI-GRMI

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231412

Method: EPA 8270D
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

General Information:
10 samples were analyzed for EPA 8270D. 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 3550C 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.

QC Batch: 6319

S0: Surrogate recovery outside laboratory control limits.

- MS (Lab ID: 26007)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- MSD (Lab ID: 26008)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- SB-10[BOTT6'] (Lab ID: 30231412010)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- SB-10[TOP6'] (Lab ID: 30231412009)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- SB-2[BOTT6'] (Lab ID: 30231412002)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- SB-2[TOP6'] (Lab ID: 30231412001)
  - 2,4,6-Tribromophenol (S)

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231412

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

QC Batch: 6319

S0: Surrogate recovery outside laboratory control limits.
- 2-Fluorophenol (S)
- Phenol-d6 (S)
- SB-8[BOTT6'] (Lab ID: 30231412008)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)

S4: Surrogate recovery not evaluated against control limits due to sample dilution.
- SB-6[BOTT6'] (Lab ID: 30231412006)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- SB-6[TOP6'] (Lab ID: 30231412005)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorobiphenyl (S)
  - 2-Fluorophenol (S)
  - Nitrobenzene-d5 (S)
  - Phenol-d6 (S)
  - o-Terphenyl (S)
- SB-8[TOP6'] (Lab ID: 30231412007)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)

S5: Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
- SB-10[BOTT6'] (Lab ID: 30231412010)
  - Phenol
- SB-10[TOP6'] (Lab ID: 30231412009)
  - Phenol
- SB-2[BOTT6'] (Lab ID: 30231412002)
  - Phenol
- SB-2[TOP6'] (Lab ID: 30231412001)
  - Phenol

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: 6319

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30231412001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- MS (Lab ID: 26007)

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231412

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

QC Batch: 6319

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30231412001

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

- 2,3,4,6-Tetrachlorophenol
- 2,4,6-Trichlorophenol
- 2,4-Dichlorophenol
- 2,4-Dinitrophenol
- 2-Chlorophenol
- 2-Nitrophenol
- 4,6-Dinitro-2-methylphenol
- 4-Chloro-3-methylphenol
- Pentachlorophenol
- Phenol

- MSD (Lab ID: 26008)
  - 2,3,4,6-Tetrachlorophenol
  - 2,4,6-Trichlorophenol
  - 2,4-Dichlorophenol
  - 2,4-Dinitrophenol
  - 2-Chlorophenol
  - 2-Nitrophenol
  - 4,6-Dinitro-2-methylphenol
  - 4-Chloro-3-methylphenol
  - Pentachlorophenol
  - Phenol

Additional Comments:

Analyte Comments:

QC Batch: 6319

1c: Due to matrix related Internal Standard failure, the sample was reanalyzed at a dilution. The RL for this analyte has been elevated.

- MS (Lab ID: 26007)
  - 2,4-Dichlorophenol
  - 2,4-Dimethylphenol
  - 2-Nitrophenol
  - 4-Chloro-3-methylphenol
  - Naphthalene
  - Nitrobenzene-d5 (S)
- SB-5[BOTT6'] (Lab ID: 30231412004)
  - 2,3,4,6-Tetrachlorophenol
  - 2,3,5,6-Tetrachlorophenol
  - 2,4,6-Tribromophenol (S)
  - 2,4,6-Trichlorophenol
  - 2,4-Dichlorophenol
  - 2,4-Dimethylphenol
  - 2,4-Dinitrophenol

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231412

Method: EPA 8270D
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

Analyte Comments:

QC Batch: 6319

1c: Due to matrix related Internal Standard failure, the sample was reanalyzed at a dilution. The RL for this analyte has been elevated.

- SB-5[BOTT6'] (Lab ID: 30231412004)
  - 2-Fluorobiphenyl (S)
  - 2-Fluorophenol (S)
  - 2-Chlorophenol
  - 2-Nitrophenol
  - 4-Chloro-3-methylphenol
  - 4-Nitrophenol
  - Acenaphthylene
  - Nitrobenzene-d5 (S)
  - Phenol-d6 (S)
- SB-5[TOP6'] (Lab ID: 30231412003)
  - Benzo(k)fluoranthene
  - Benzo(g,h,i)perylene
  - Benzo(b)fluoranthene
  - Benzo(a)pyrene
  - Dibenz(a,h)anthracene
  - Indeno(1,2,3-cd)pyrene

2c: Due to sample related Internal Standard failure, the samploe was reanalyzed at a dilution. The RL for this analyte has been elevated.

- SB-10[BOTT6'] (Lab ID: 30231412010)
  - 4-Chloro-3-methylphenol
  - Naphthalene
  - Nitrobenzene-d5 (S)
- SB-10[TOP6'] (Lab ID: 30231412009)
  - 4-Chloro-3-methylphenol
  - Naphthalene
  - Nitrobenzene-d5 (S)

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SB-6[BOTT6'] (Lab ID: 30231412006)
  - Phenol
- SB-6[TOP6'] (Lab ID: 30231412005)
  - Phenol
- SB-8[TOP6'] (Lab ID: 30231412007)
  - Phenol

N2: The lab does not hold NELAC/TNI accreditation for this parameter.

- BLANK (Lab ID: 26005)
  - 2,3,5,6-Tetrachlorophenol
- LCS (Lab ID: 26006)
  - 2,3,5,6-Tetrachlorophenol
- MS (Lab ID: 26007)
  - 2,3,5,6-Tetrachlorophenol

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231412

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

Analyte Comments:

QC Batch: 6319

N2: The lab does not hold NELAC/TNI accreditation for this parameter.

- MSD (Lab ID: 26008)
  - 2,3,5,6-Tetrachlorophenol
- SB-10[BOTT6'] (Lab ID: 30231412010)
  - 2,3,5,6-Tetrachlorophenol
- SB-10[TOP6'] (Lab ID: 30231412009)
  - 2,3,5,6-Tetrachlorophenol
- SB-2[BOTT6'] (Lab ID: 30231412002)
  - 2,3,5,6-Tetrachlorophenol
- SB-2[TOP6'] (Lab ID: 30231412001)
  - 2,3,5,6-Tetrachlorophenol
- SB-5[BOTT6'] (Lab ID: 30231412004)
  - 2,3,5,6-Tetrachlorophenol
- SB-5[TOP6'] (Lab ID: 30231412003)
  - 2,3,5,6-Tetrachlorophenol
- SB-6[BOTT6'] (Lab ID: 30231412006)
  - 2,3,5,6-Tetrachlorophenol
- SB-6[TOP6'] (Lab ID: 30231412005)
  - 2,3,5,6-Tetrachlorophenol
- SB-8[BOTT6'] (Lab ID: 30231412008)
  - 2,3,5,6-Tetrachlorophenol
- SB-8[TOP6'] (Lab ID: 30231412007)
  - 2,3,5,6-Tetrachlorophenol

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

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-2[TOP6'] **Lab ID: 30231412001** Collected: 09/26/17 08:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	83-32-9	
Acenaphthylene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	208-96-8	
Anthracene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	59-50-7	M1
2-Chlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	95-57-8	M1
Chrysene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	120-83-2	M1
2,4-Dimethylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 10:51	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 10:51	534-52-1	M1
2,4-Dinitrophenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 10:51	51-28-5	M1
Fluoranthene	**0.035**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	206-44-0	
Fluorene	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	193-39-5	
Naphthalene	**0.12**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	91-20-3	
2-Nitrophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	88-75-5	M1
4-Nitrophenol	ND	mg/kg	0.94	1	10/06/17 14:02	10/09/17 10:51	100-02-7	
Pentachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	87-86-5	M1
Phenanthrene	**0.14**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	85-01-8	
Phenol	**1.1**	mg/kg	0.24	1	10/06/17 14:02	10/09/17 10:51	108-95-2	M1,S5
Pyrene	**0.031**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	58-90-2	M1
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 10:51	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 10:51	88-06-2	M1
Surrogates								
Nitrobenzene-d5 (S)	70	%.	33-131	1	10/06/17 14:02	10/09/17 10:51	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	46-122	1	10/06/17 14:02	10/09/17 10:51	321-60-8	
o-Terphenyl (S)	85	%.	20-155	1	10/06/17 14:02	10/09/17 10:51	84-15-1	
Phenol-d6 (S)	22	%.	30-115	1	10/06/17 14:02	10/09/17 10:51	13127-88-3	S0
2-Fluorophenol (S)	2	%.	33-113	1	10/06/17 14:02	10/09/17 10:51	367-12-4	S0
2,4,6-Tribromophenol (S)	2	%.	12-124	1	10/06/17 14:02	10/09/17 10:51	118-79-6	S0
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**27.4**	%	0.10	1		10/07/17 11:51		

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-2[BOTT6'] **Lab ID: 30231412002** Collected: 09/26/17 08:35 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	83-32-9	
Acenaphthylene	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	208-96-8	
Anthracene	**0.042**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	120-12-7	
Benzo(a)anthracene	**0.071**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	56-55-3	
Benzo(a)pyrene	**0.033**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	50-32-8	
Benzo(b)fluoranthene	**0.057**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	191-24-2	
Benzo(k)fluoranthene	**0.045**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	59-50-7	
2-Chlorophenol	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	95-57-8	
Chrysene	**0.11**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.26	1	10/06/17 14:02	10/09/17 11:26	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.26	1	10/06/17 14:02	10/09/17 11:26	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.26	1	10/06/17 14:02	10/09/17 11:26	51-28-5	
Fluoranthene	**0.54**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	206-44-0	
Fluorene	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	193-39-5	
Naphthalene	**0.14**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	91-20-3	
2-Nitrophenol	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	88-75-5	
4-Nitrophenol	ND	mg/kg	1.0	1	10/06/17 14:02	10/09/17 11:26	100-02-7	
Pentachlorophenol	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	87-86-5	
Phenanthrene	**0.83**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	85-01-8	
Phenol	**0.92**	mg/kg	0.26	1	10/06/17 14:02	10/09/17 11:26	108-95-2	S5
Pyrene	**0.38**	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.051	1	10/06/17 14:02	10/09/17 11:26	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.026	1	10/06/17 14:02	10/09/17 11:26	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	74	%.	33-131	1	10/06/17 14:02	10/09/17 11:26	4165-60-0	
2-Fluorobiphenyl (S)	78	%.	46-122	1	10/06/17 14:02	10/09/17 11:26	321-60-8	
o-Terphenyl (S)	83	%.	20-155	1	10/06/17 14:02	10/09/17 11:26	84-15-1	
Phenol-d6 (S)	23	%.	30-115	1	10/06/17 14:02	10/09/17 11:26	13127-88-3	S0
2-Fluorophenol (S)	2	%.	33-113	1	10/06/17 14:02	10/09/17 11:26	367-12-4	S0
2,4,6-Tribromophenol (S)	0	%.	12-124	1	10/06/17 14:02	10/09/17 11:26	118-79-6	S0
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**33.5**	%	0.10	1		10/07/17 11:53		

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-5[TOP6'] **Lab ID: 30231412003** Collected: 09/26/17 11:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**1.2**	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	83-32-9	
Acenaphthylene	**0.046**	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	208-96-8	
Anthracene	**1.0**	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	120-12-7	
Benzo(a)anthracene	**1.8**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	50-32-8	1c
Benzo(b)fluoranthene	**1.6**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	205-99-2	1c
Benzo(g,h,i)perylene	ND	mg/kg	1.4	25	10/06/17 14:02	10/12/17 13:42	191-24-2	1c
Benzo(k)fluoranthene	**1.0**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	207-08-9	1c
4-Chloro-3-methylphenol	ND	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	59-50-7	
2-Chlorophenol	ND	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	95-57-8	
Chrysene	**3.2**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	1.4	25	10/06/17 14:02	10/12/17 13:42	53-70-3	1c
2,4-Dichlorophenol	ND	mg/kg	0.058	1	10/06/17 14:02	10/09/17 16:46	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.30	1	10/06/17 14:02	10/09/17 16:46	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.30	1	10/06/17 14:02	10/09/17 16:46	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.30	1	10/06/17 14:02	10/09/17 16:46	51-28-5	
Fluoranthene	**15.6**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	206-44-0	
Fluorene	**0.49**	mg/kg	0.058	1	10/06/17 14:02	10/09/17 16:46	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	1.4	25	10/06/17 14:02	10/12/17 13:42	193-39-5	1c
Naphthalene	**1.9**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	91-20-3	
2-Nitrophenol	ND	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	88-75-5	
4-Nitrophenol	ND	mg/kg	1.2	1	10/06/17 14:02	10/09/17 16:46	100-02-7	
Pentachlorophenol	ND	mg/kg	0.058	1	10/06/17 14:02	10/09/17 16:46	87-86-5	
Phenanthrene	**26.0**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	85-01-8	
Phenol	**13.0**	mg/kg	7.4	25	10/06/17 14:02	10/12/17 13:42	108-95-2	
Pyrene	**11.7**	mg/kg	0.74	25	10/06/17 14:02	10/12/17 13:42	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.058	1	10/06/17 14:02	10/09/17 16:46	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.058	1	10/06/17 14:02	10/09/17 16:46	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.030	1	10/06/17 14:02	10/09/17 16:46	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	33-131	1	10/06/17 14:02	10/09/17 16:46	4165-60-0	
2-Fluorobiphenyl (S)	72	%.	46-122	1	10/06/17 14:02	10/09/17 16:46	321-60-8	
o-Terphenyl (S)	56	%.	20-155	1	10/06/17 14:02	10/09/17 16:46	84-15-1	
Phenol-d6 (S)	77	%.	30-115	1	10/06/17 14:02	10/09/17 16:46	13127-88-3	
2-Fluorophenol (S)	43	%.	33-113	1	10/06/17 14:02	10/09/17 16:46	367-12-4	
2,4,6-Tribromophenol (S)	22	%.	12-124	1	10/06/17 14:02	10/09/17 16:46	118-79-6	
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**40.8**	%	0.10	1		10/07/17 11:57		

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-5[BOTT6'] **Lab ID: 30231412004** Collected: 09/26/17 11:35 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**10.7**	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	83-32-9	
Acenaphthylene	ND	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	208-96-8	1c
Anthracene	**1.7**	mg/kg	0.036	1	10/06/17 14:02	10/09/17 18:32	120-12-7	
Benzo(a)anthracene	**3.4**	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	56-55-3	
Benzo(a)pyrene	**0.51**	mg/kg	0.036	1	10/06/17 14:02	10/09/17 18:32	50-32-8	
Benzo(b)fluoranthene	**0.89**	mg/kg	0.036	1	10/06/17 14:02	10/09/17 18:32	205-99-2	
Benzo(g,h,i)perylene	**0.11**	mg/kg	0.070	1	10/06/17 14:02	10/09/17 18:32	191-24-2	
Benzo(k)fluoranthene	**0.75**	mg/kg	0.036	1	10/06/17 14:02	10/09/17 18:32	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	59-50-7	1c
2-Chlorophenol	ND	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	95-57-8	1c
Chrysene	**3.3**	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.070	1	10/06/17 14:02	10/09/17 18:32	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.70	10	10/06/17 14:02	10/12/17 12:31	120-83-2	1c
2,4-Dimethylphenol	ND	mg/kg	3.6	10	10/06/17 14:02	10/12/17 12:31	105-67-9	1c
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.36	1	10/06/17 14:02	10/09/17 18:32	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	3.6	10	10/06/17 14:02	10/12/17 12:31	51-28-5	1c
Fluoranthene	**21.3**	mg/kg	1.8	50	10/06/17 14:02	10/12/17 14:18	206-44-0	
Fluorene	**6.9**	mg/kg	0.70	10	10/06/17 14:02	10/12/17 12:31	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.14**	mg/kg	0.070	1	10/06/17 14:02	10/09/17 18:32	193-39-5	
Naphthalene	**6.1**	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	91-20-3	
2-Nitrophenol	ND	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	88-75-5	1c
4-Nitrophenol	ND	mg/kg	14.2	10	10/06/17 14:02	10/12/17 12:31	100-02-7	1c
Pentachlorophenol	ND	mg/kg	0.070	1	10/06/17 14:02	10/09/17 18:32	87-86-5	
Phenanthrene	**30.7**	mg/kg	1.8	50	10/06/17 14:02	10/12/17 14:18	85-01-8	
Phenol	**4.6**	mg/kg	3.6	10	10/06/17 14:02	10/12/17 12:31	108-95-2	
Pyrene	**15.2**	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.70	10	10/06/17 14:02	10/12/17 12:31	58-90-2	1c
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.70	10	10/06/17 14:02	10/12/17 12:31	935-95-5	1c,N2
2,4,6-Trichlorophenol	ND	mg/kg	0.36	10	10/06/17 14:02	10/12/17 12:31	88-06-2	1c
Surrogates								
Nitrobenzene-d5 (S)	54	%.	33-131	50	10/06/17 14:02	10/12/17 14:18	4165-60-0	
Nitrobenzene-d5 (S)	58	%.	33-131	10	10/06/17 14:02	10/12/17 12:31	4165-60-0	1c
2-Fluorobiphenyl (S)	63	%.	46-122	50	10/06/17 14:02	10/12/17 14:18	321-60-8	
2-Fluorobiphenyl (S)	67	%.	46-122	10	10/06/17 14:02	10/12/17 12:31	321-60-8	1c
o-Terphenyl (S)	75	%.	20-155	50	10/06/17 14:02	10/12/17 14:18	84-15-1	
o-Terphenyl (S)	30	%.	20-155	1	10/06/17 14:02	10/09/17 18:32	84-15-1	
Phenol-d6 (S)	63	%.	30-115	10	10/06/17 14:02	10/12/17 12:31	13127-88-3	1c
Phenol-d6 (S)	69	%.	30-115	50	10/06/17 14:02	10/12/17 14:18	13127-88-3	
2-Fluorophenol (S)	39	%.	33-113	10	10/06/17 14:02	10/12/17 12:31	367-12-4	1c
2-Fluorophenol (S)	35	%.	33-113	50	10/06/17 14:02	10/12/17 14:18	367-12-4	
2,4,6-Tribromophenol (S)	0	%.	12-124	50	10/06/17 14:02	10/12/17 14:18	118-79-6	
2,4,6-Tribromophenol (S)	45	%.	12-124	10	10/06/17 14:02	10/12/17 12:31	118-79-6	1c

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-5[BOTT6'] **Lab ID: 30231412004** Collected: 09/26/17 11:35 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**51.7**	%	0.10	1		10/07/17 11:56		

Sample: SB-6[TOP6'] **Lab ID: 30231412005** Collected: 09/26/17 12:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**536**	mg/kg	45.3	1000	10/06/17 14:02	10/13/17 12:35	83-32-9	
Acenaphthylene	**8.9**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	208-96-8	
Anthracene	**195**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	120-12-7	
Benzo(a)anthracene	**133**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	56-55-3	
Benzo(a)pyrene	**45.9**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	50-32-8	
Benzo(b)fluoranthene	**43.2**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	191-24-2	
Benzo(k)fluoranthene	**52.7**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	59-50-7	
2-Chlorophenol	ND	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	95-57-8	
Chrysene	**143**	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	45.3	100	10/06/17 14:02	10/12/17 20:47	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	45.3	100	10/06/17 14:02	10/12/17 20:47	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	45.3	100	10/06/17 14:02	10/12/17 20:47	51-28-5	
Fluoranthene	**863**	mg/kg	45.3	1000	10/06/17 14:02	10/13/17 12:35	206-44-0	
Fluorene	**415**	mg/kg	88.0	1000	10/06/17 14:02	10/13/17 12:35	86-73-7	
Indeno(1,2,3-cd)pyrene	**8.9**	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	193-39-5	
Naphthalene	**330**	mg/kg	45.3	1000	10/06/17 14:02	10/13/17 12:35	91-20-3	
2-Nitrophenol	ND	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	88-75-5	
4-Nitrophenol	ND	mg/kg	179	100	10/06/17 14:02	10/12/17 20:47	100-02-7	
Pentachlorophenol	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	87-86-5	
Phenanthrene	**1590**	mg/kg	45.3	1000	10/06/17 14:02	10/13/17 12:35	85-01-8	
Phenol	ND	mg/kg	45.3	100	10/06/17 14:02	10/12/17 20:47	108-95-2	D3
Pyrene	**612**	mg/kg	45.3	1000	10/06/17 14:02	10/13/17 12:35	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	8.8	100	10/06/17 14:02	10/12/17 20:47	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	4.5	100	10/06/17 14:02	10/12/17 20:47	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	33-131	100	10/06/17 14:02	10/12/17 20:47	4165-60-0	S4
2-Fluorobiphenyl (S)	0	%.	46-122	100	10/06/17 14:02	10/12/17 20:47	321-60-8	S4
o-Terphenyl (S)	0	%.	20-155	100	10/06/17 14:02	10/12/17 20:47	84-15-1	S4
Phenol-d6 (S)	0	%.	30-115	100	10/06/17 14:02	10/12/17 20:47	13127-88-3	S4

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-6[TOP6'] Lab ID: **30231412005** Collected: 09/26/17 12:30 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Surrogates								
2-Fluorophenol (S)	0	%.	33-113	100	10/06/17 14:02	10/12/17 20:47	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	12-124	100	10/06/17 14:02	10/12/17 20:47	118-79-6	S4
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**26.8**	%	0.10	1		10/07/17 11:58		

Sample: SB-6[BOTT6'] Lab ID: **30231412006** Collected: 09/26/17 12:35 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**9.4**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	83-32-9	
Acenaphthylene	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	208-96-8	
Anthracene	**4.3**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	120-12-7	
Benzo(a)anthracene	**2.8**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	56-55-3	
Benzo(a)pyrene	**0.87**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	50-32-8	
Benzo(b)fluoranthene	**1.2**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	191-24-2	
Benzo(k)fluoranthene	**1.1**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	59-50-7	
2-Chlorophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	95-57-8	
Chrysene	**3.0**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 17:50	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 17:50	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 17:50	51-28-5	
Fluoranthene	**15.4**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:10	206-44-0	
Fluorene	**7.8**	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	193-39-5	
Naphthalene	**2.5**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	91-20-3	
2-Nitrophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	88-75-5	
4-Nitrophenol	ND	mg/kg	9.2	10	10/06/17 14:02	10/12/17 17:50	100-02-7	
Pentachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	87-86-5	
Phenanthrene	**27.5**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:10	85-01-8	
Phenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 17:50	108-95-2	D3
Pyrene	**11.2**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:10	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 17:50	935-95-5	N2

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-6[BOTT6'] **Lab ID: 30231412006** Collected: 09/26/17 12:35 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
2,4,6-Trichlorophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 17:50	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	74	%.	33-131	10	10/06/17 14:02	10/12/17 17:50	4165-60-0	
2-Fluorobiphenyl (S)	79	%.	46-122	10	10/06/17 14:02	10/12/17 17:50	321-60-8	
o-Terphenyl (S)	80	%.	20-155	10	10/06/17 14:02	10/12/17 17:50	84-15-1	
Phenol-d6 (S)	20	%.	30-115	10	10/06/17 14:02	10/12/17 17:50	13127-88-3	S4
2-Fluorophenol (S)	1	%.	33-113	10	10/06/17 14:02	10/12/17 17:50	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	12-124	10	10/06/17 14:02	10/12/17 17:50	118-79-6	S4
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**24.8**	%	0.10	1		10/07/17 11:59		

Sample: SB-8[TOP6'] **Lab ID: 30231412007** Collected: 09/26/17 13:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**7.4**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	83-32-9	
Acenaphthylene	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	208-96-8	
Anthracene	**5.4**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	120-12-7	
Benzo(a)anthracene	**4.2**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	56-55-3	
Benzo(a)pyrene	**1.3**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	50-32-8	
Benzo(b)fluoranthene	**1.7**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	191-24-2	
Benzo(k)fluoranthene	**1.6**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	59-50-7	
2-Chlorophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	95-57-8	
Chrysene	**5.2**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 18:25	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 18:25	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 18:25	51-28-5	
Fluoranthene	**25.6**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:46	206-44-0	
Fluorene	**5.6**	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	193-39-5	
Naphthalene	**1.7**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	91-20-3	
2-Nitrophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	88-75-5	
4-Nitrophenol	ND	mg/kg	9.5	10	10/06/17 14:02	10/12/17 18:25	100-02-7	
Pentachlorophenol	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	87-86-5	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-8[TOP6'] **Lab ID: 30231412007** Collected: 09/26/17 13:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Phenanthrene	**47.1**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:46	85-01-8	
Phenol	**9.6**	mg/kg	2.4	10	10/06/17 14:02	10/12/17 18:25	108-95-2	D3
Pyrene	**19.5**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 13:46	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 18:25	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 18:25	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	68	%.	33-131	10	10/06/17 14:02	10/12/17 18:25	4165-60-0	
2-Fluorobiphenyl (S)	73	%.	46-122	10	10/06/17 14:02	10/12/17 18:25	321-60-8	
o-Terphenyl (S)	68	%.	20-155	10	10/06/17 14:02	10/12/17 18:25	84-15-1	
Phenol-d6 (S)	39	%.	30-115	10	10/06/17 14:02	10/12/17 18:25	13127-88-3	
2-Fluorophenol (S)	7	%.	33-113	10	10/06/17 14:02	10/12/17 18:25	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	12-124	10	10/06/17 14:02	10/12/17 18:25	118-79-6	S4
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**27.4**	%	0.10	1		10/07/17 12:01		

Sample: SB-8[BOTT6'] **Lab ID: 30231412008** Collected: 09/26/17 13:35 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**1.6**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 13:07	83-32-9	
Acenaphthylene	**0.030**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	208-96-8	
Anthracene	**0.91**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	120-12-7	
Benzo(a)anthracene	**0.69**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	56-55-3	
Benzo(a)pyrene	**0.21**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	50-32-8	
Benzo(b)fluoranthene	**0.31**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	205-99-2	
Benzo(g,h,i)perylene	**0.048**	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	191-24-2	
Benzo(k)fluoranthene	**0.27**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	59-50-7	
2-Chlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	95-57-8	
Chrysene	**0.72**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 17:21	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 17:21	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 17:21	51-28-5	
Fluoranthene	**3.7**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 13:07	206-44-0	
Fluorene	**1.4**	mg/kg	0.46	10	10/06/17 14:02	10/12/17 13:07	86-73-7	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-8[BOTT6'] **Lab ID: 30231412008** Collected: 09/26/17 13:35 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Indeno(1,2,3-cd)pyrene	**0.058**	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	193-39-5	
Naphthalene	**0.29**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	91-20-3	
2-Nitrophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	88-75-5	
4-Nitrophenol	ND	mg/kg	0.94	1	10/06/17 14:02	10/09/17 17:21	100-02-7	
Pentachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	87-86-5	
Phenanthrene	**6.5**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 13:07	85-01-8	
Phenol	**5.2**	mg/kg	2.4	10	10/06/17 14:02	10/12/17 13:07	108-95-2	
Pyrene	**2.6**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 13:07	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 17:21	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 17:21	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	77	%.	33-131	1	10/06/17 14:02	10/09/17 17:21	4165-60-0	
2-Fluorobiphenyl (S)	75	%.	46-122	1	10/06/17 14:02	10/09/17 17:21	321-60-8	
o-Terphenyl (S)	76	%.	20-155	1	10/06/17 14:02	10/09/17 17:21	84-15-1	
Phenol-d6 (S)	37	%.	30-115	1	10/06/17 14:02	10/09/17 17:21	13127-88-3	
2-Fluorophenol (S)	5	%.	33-113	1	10/06/17 14:02	10/09/17 17:21	367-12-4	S0
2,4,6-Tribromophenol (S)	8	%.	12-124	1	10/06/17 14:02	10/09/17 17:21	118-79-6	S0
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**28.6**	%	0.10	1		10/07/17 12:02		

Sample: SB-10[TOP6'] **Lab ID: 30231412009** Collected: 09/26/17 15:00 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**0.26**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	83-32-9	
Acenaphthylene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	208-96-8	
Anthracene	**0.089**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	120-12-7	
Benzo(a)anthracene	**0.10**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.13	5	10/06/17 14:02	10/12/17 14:53	59-50-7	2c
2-Chlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	95-57-8	
Chrysene	**0.086**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	120-83-2	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-10[TOP6'] **Lab ID: 30231412009** Collected: 09/26/17 15:00 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
2,4-Dimethylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:01	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:01	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:01	51-28-5	
Fluoranthene	**0.42**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	206-44-0	
Fluorene	**0.20**	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	193-39-5	
Naphthalene	ND	mg/kg	0.13	5	10/06/17 14:02	10/12/17 14:53	91-20-3	2c
2-Nitrophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	88-75-5	
4-Nitrophenol	ND	mg/kg	1.0	1	10/06/17 14:02	10/09/17 12:01	100-02-7	
Pentachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	87-86-5	
Phenanthrene	**1.0**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	85-01-8	
Phenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:01	108-95-2	S5
Pyrene	**0.50**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:01	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:01	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	70	%.	33-131	5	10/06/17 14:02	10/12/17 14:53	4165-60-0	2c
2-Fluorobiphenyl (S)	71	%.	46-122	1	10/06/17 14:02	10/09/17 12:01	321-60-8	
o-Terphenyl (S)	75	%.	20-155	1	10/06/17 14:02	10/09/17 12:01	84-15-1	
Phenol-d6 (S)	22	%.	30-115	1	10/06/17 14:02	10/09/17 12:01	13127-88-3	S0
2-Fluorophenol (S)	0	%.	33-113	1	10/06/17 14:02	10/09/17 12:01	367-12-4	S0
2,4,6-Tribromophenol (S)	5	%.	12-124	1	10/06/17 14:02	10/09/17 12:01	118-79-6	S0
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**29.4**	%	0.10	1		10/07/17 12:02		

Sample: SB-10[BOTT6'] **Lab ID: 30231412010** Collected: 09/26/17 15:05 Received: 09/28/17 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	83-32-9	
Acenaphthylene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	208-96-8	
Anthracene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	207-08-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231412

Sample: SB-10[BOTT6'] **Lab ID: 30231412010** Collected: 09/26/17 15:05 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
4-Chloro-3-methylphenol	ND	mg/kg	0.13	5	10/06/17 14:02	10/12/17 15:29	59-50-7	2c
2-Chlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	95-57-8	
Chrysene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:38	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:38	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:38	51-28-5	
Fluoranthene	**0.064**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	206-44-0	
Fluorene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	193-39-5	
Naphthalene	ND	mg/kg	0.13	5	10/06/17 14:02	10/12/17 15:29	91-20-3	2c
2-Nitrophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	88-75-5	
4-Nitrophenol	ND	mg/kg	0.99	1	10/06/17 14:02	10/09/17 12:38	100-02-7	
Pentachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	87-86-5	
Phenanthrene	**0.16**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	85-01-8	
Phenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 12:38	108-95-2	S5
Pyrene	**0.054**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 12:38	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 12:38	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	63	%.	33-131	5	10/06/17 14:02	10/12/17 15:29	4165-60-0	2c
2-Fluorobiphenyl (S)	56	%.	46-122	1	10/06/17 14:02	10/09/17 12:38	321-60-8	
o-Terphenyl (S)	73	%.	20-155	1	10/06/17 14:02	10/09/17 12:38	84-15-1	
Phenol-d6 (S)	12	%.	30-115	1	10/06/17 14:02	10/09/17 12:38	13127-88-3	S0
2-Fluorophenol (S)	0	%.	33-113	1	10/06/17 14:02	10/09/17 12:38	367-12-4	S0
2,4,6-Tribromophenol (S)	19	%.	12-124	1	10/06/17 14:02	10/09/17 12:38	118-79-6	
Percent Moisture	Analytical Method: SM 2540 G-11/3550							
Percent Moisture	**30.3**	%	0.10	1		10/07/17 12:04		

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QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231412

QC Batch: 6319 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550C Analysis Description: 8270D MSSV APP 9
Associated Lab Samples: 30231412001, 30231412002, 30231412003, 30231412004, 30231412005, 30231412006, 30231412007, 30231412008, 30231412009, 30231412010

METHOD BLANK: 26005 Matrix: Solid
Associated Lab Samples: 30231412001, 30231412002, 30231412003, 30231412004, 30231412005, 30231412006, 30231412007, 30231412008, 30231412009, 30231412010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,3,4,6-Tetrachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
2,3,5,6-Tetrachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	N2
2,4,6-Trichlorophenol	mg/kg	ND	0.017	10/09/17 09:06	
2,4-Dichlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
2,4-Dimethylphenol	mg/kg	ND	0.17	10/09/17 09:06	
2,4-Dinitrophenol	mg/kg	ND	0.17	10/09/17 09:06	
2-Chlorophenol	mg/kg	ND	0.017	10/09/17 09:06	
2-Nitrophenol	mg/kg	ND	0.017	10/09/17 09:06	
4,6-Dinitro-2-methylphenol	mg/kg	ND	0.17	10/09/17 09:06	
4-Chloro-3-methylphenol	mg/kg	ND	0.017	10/09/17 09:06	
4-Nitrophenol	mg/kg	ND	0.68	10/09/17 09:06	
Acenaphthene	mg/kg	ND	0.017	10/09/17 09:06	
Acenaphthylene	mg/kg	ND	0.017	10/09/17 09:06	
Anthracene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(a)anthracene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(a)pyrene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(b)fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(g,h,i)perylene	mg/kg	ND	0.034	10/09/17 09:06	
Benzo(k)fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Chrysene	mg/kg	ND	0.017	10/09/17 09:06	
Dibenz(a,h)anthracene	mg/kg	ND	0.034	10/09/17 09:06	
Fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Fluorene	mg/kg	ND	0.034	10/09/17 09:06	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.034	10/09/17 09:06	
Naphthalene	mg/kg	ND	0.017	10/09/17 09:06	
Pentachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
Phenanthrene	mg/kg	ND	0.017	10/09/17 09:06	
Phenol	mg/kg	ND	0.17	10/09/17 09:06	
Pyrene	mg/kg	ND	0.017	10/09/17 09:06	
2,4,6-Tribromophenol (S)	%.	70	12-124	10/09/17 09:06	
2-Fluorobiphenyl (S)	%.	77	46-122	10/09/17 09:06	
2-Fluorophenol (S)	%.	76	33-113	10/09/17 09:06	
Nitrobenzene-d5 (S)	%.	75	33-131	10/09/17 09:06	
o-Terphenyl (S)	%.	87	20-155	10/09/17 09:06	
Phenol-d6 (S)	%.	74	30-115	10/09/17 09:06	

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QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231412

LABORATORY CONTROL SAMPLE: 26006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,3,4,6-Tetrachlorophenol	mg/kg	.33	0.22	68	37-129	
2,3,5,6-Tetrachlorophenol	mg/kg	.33	0.21	64		N2
2,4,6-Trichlorophenol	mg/kg	.33	0.24	72	45-128	
2,4-Dichlorophenol	mg/kg	.33	0.25	77	50-128	
2,4-Dimethylphenol	mg/kg	.33	0.25	76	40-122	
2,4-Dinitrophenol	mg/kg	.33	0.23	70	25-105	
2-Chlorophenol	mg/kg	.33	0.26	78	62-118	
2-Nitrophenol	mg/kg	.33	0.27	81	55-115	
4,6-Dinitro-2-methylphenol	mg/kg	.33	0.26	78	26-136	
4-Chloro-3-methylphenol	mg/kg	.33	0.25	75	34-113	
4-Nitrophenol	mg/kg	.33	.22J	68	36-131	
Acenaphthene	mg/kg	.33	0.25	77	55-113	
Acenaphthylene	mg/kg	.33	0.27	83	56-138	
Anthracene	mg/kg	.33	0.26	78	63-134	
Benzo(a)anthracene	mg/kg	.33	0.26	80	53-142	
Benzo(a)pyrene	mg/kg	.33	0.24	72	54-136	
Benzo(b)fluoranthene	mg/kg	.33	0.27	82	49-146	
Benzo(g,h,i)perylene	mg/kg	.33	0.25	76	47-141	
Benzo(k)fluoranthene	mg/kg	.33	0.25	76	56-136	
Chrysene	mg/kg	.33	0.27	83	66-137	
Dibenz(a,h)anthracene	mg/kg	.33	0.23	70	52-142	
Fluoranthene	mg/kg	.33	0.26	80	66-140	
Fluorene	mg/kg	.33	0.26	78	60-131	
Indeno(1,2,3-cd)pyrene	mg/kg	.33	0.25	76	53-135	
Naphthalene	mg/kg	.33	0.27	82	52-128	
Pentachlorophenol	mg/kg	.33	0.21	64	19-117	
Phenanthrene	mg/kg	.33	0.27	81	58-134	
Phenol	mg/kg	.33	0.26	78	53-120	
Pyrene	mg/kg	.33	0.25	75	60-132	
2,4,6-Tribromophenol (S)	%.			70	12-124	
2-Fluorobiphenyl (S)	%.			74	46-122	
2-Fluorophenol (S)	%.			78	33-113	
Nitrobenzene-d5 (S)	%.			78	33-131	
o-Terphenyl (S)	%.			85	20-155	
Phenol-d6 (S)	%.			76	30-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26007 26008

Parameter	Units	30231412001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,3,4,6-Tetrachlorophenol	mg/kg	ND	.482	.482	.021J	.025J	4	5	15-116		M1
2,3,5,6-Tetrachlorophenol	mg/kg	ND	.482	.482	ND	.026J	0	5			N2
2,4,6-Trichlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	10-159		M1
2,4-Dichlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	38-131		1c,M1
2,4-Dimethylphenol	mg/kg	ND	.482	.482	.23J	0.31	47	65	22-136		1c

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QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231412

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26007 26008

Parameter	Units	30231412001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,4-Dinitrophenol	mg/kg	ND	.482	.482	ND	ND	0	0	1-138		M1
2-Chlorophenol	mg/kg	ND	.482	.482	ND	.0074J	0	2	25-154		M1
2-Nitrophenol	mg/kg	ND	.482	.482	.036J	ND	7	1	11-147		1c,M1
4,6-Dinitro-2-methylphenol	mg/kg	ND	.482	.482	ND	ND	0	0	10-114		M1
4-Chloro-3-methylphenol	mg/kg	ND	.482	.482	ND	0.040	0	8	18-143		1c,M1
4-Nitrophenol	mg/kg	ND	.482	.482	ND	ND	13	12	10-163		
Acenaphthene	mg/kg	ND	.482	.482	0.37	0.37	74	75	52-110	0	
Acenaphthylene	mg/kg	ND	.482	.482	0.39	0.39	80	82	52-139	1	
Anthracene	mg/kg	ND	.482	.482	0.37	0.42	74	86	48-138	14	
Benzo(a)anthracene	mg/kg	ND	.482	.482	0.39	0.41	78	82	48-134	4	
Benzo(a)pyrene	mg/kg	ND	.482	.482	0.35	0.35	67	69	36-129	1	
Benzo(b)fluoranthene	mg/kg	ND	.482	.482	0.39	0.39	77	80	44-141	2	
Benzo(g,h,i)perylene	mg/kg	ND	.482	.482	0.30	0.30	60	61	36-146	1	
Benzo(k)fluoranthene	mg/kg	ND	.482	.482	0.37	0.37	74	75	44-134	1	
Chrysene	mg/kg	ND	.482	.482	0.39	0.40	78	81	45-143	3	
Dibenz(a,h)anthracene	mg/kg	ND	.482	.482	0.29	0.30	60	63	38-149	3	
Fluoranthene	mg/kg	0.035	.482	.482	0.37	0.37	68	69	34-140	0	
Fluorene	mg/kg	ND	.482	.482	0.42	0.37	85	77	49-127	12	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	.482	.482	0.31	0.32	61	63	31-128	2	
Naphthalene	mg/kg	0.12	.482	.482	0.48	0.51	73	80	32-138	6	1c
Pentachlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	15-129		M1
Phenanthrene	mg/kg	0.14	.482	.482	0.50	0.52	75	81	39-134	4	
Phenol	mg/kg	1.1	.482	.482	0.77	0.97	-59	-19	23-140	23	M1
Pyrene	mg/kg	0.031	.482	.482	0.45	0.42	86	80	39-145	7	
2,4,6-Tribromophenol (S)	%.						1	3	12-124		S0
2-Fluorobiphenyl (S)	%.						71	74	46-122		
2-Fluorophenol (S)	%.						0	1	33-113		S0
Nitrobenzene-d5 (S)	%.						68	67	33-131		1c
o-Terphenyl (S)	%.						76	81	20-155		
Phenol-d6 (S)	%.						15	18	30-115		S0

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231412

QC Batch: 6320 Analysis Method: SM 2540 G-11/3550
QC Batch Method: SM 2540 G-11/3550 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30231412001, 30231412002, 30231412003, 30231412004, 30231412005, 30231412006, 30231412007, 30231412008, 30231412009, 30231412010

SAMPLE DUPLICATE: 26027

Parameter	Units	30231412001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	27.4	27.6	1	

SAMPLE DUPLICATE: 26028

Parameter	Units	30231412010 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	30.3	30.6	1	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Superior,WI
Pace Project No.: 30231412

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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-GRMI Pace Analytical Services - Grand Rapids

ANALYTE QUALIFIERS

1c	Due to matrix related Internal Standard failure, the sample was reanalyzed at a dilution. The RL for this analyte has been elevated.
2c	Due to sample related Internal Standard failure, the samploe was reanalyzed at a dilution. The RL for this analyte has been elevated.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Superior,WI
Pace Project No.: 30231412

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30231412001	**SB-2[TOP6']**	EPA 3550C	6319	EPA 8270D	6375
30231412002	**SB-2[BOTT6']**	EPA 3550C	6319	EPA 8270D	6375
30231412003	**SB-5[TOP6']**	EPA 3550C	6319	EPA 8270D	6375
30231412004	**SB-5[BOTT6']**	EPA 3550C	6319	EPA 8270D	6375
30231412005	**SB-6[TOP6']**	EPA 3550C	6319	EPA 8270D	6375
30231412006	**SB-6[BOTT6']**	EPA 3550C	6319	EPA 8270D	6375
30231412007	**SB-8[TOP6']**	EPA 3550C	6319	EPA 8270D	6375
30231412008	**SB-8[BOTT6']**	EPA 3550C	6319	EPA 8270D	6375
30231412009	**SB-10[TOP6']**	EPA 3550C	6319	EPA 8270D	6375
30231412010	**SB-10[BOTT6']**	EPA 3550C	6319	EPA 8270D	6375
30231412001	**SB-2[TOP6']**	SM 2540 G-11/3550	6320		
30231412002	**SB-2[BOTT6']**	SM 2540 G-11/3550	6320		
30231412003	**SB-5[TOP6']**	SM 2540 G-11/3550	6320		
30231412004	**SB-5[BOTT6']**	SM 2540 G-11/3550	6320		
30231412005	**SB-6[TOP6']**	SM 2540 G-11/3550	6320		
30231412006	**SB-6[BOTT6']**	SM 2540 G-11/3550	6320		
30231412007	**SB-8[TOP6']**	SM 2540 G-11/3550	6320		
30231412008	**SB-8[BOTT6']**	SM 2540 G-11/3550	6320		
30231412009	**SB-10[TOP6']**	SM 2540 G-11/3550	6320		
30231412010	**SB-10[BOTT6']**	SM 2540 G-11/3550	6320		

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30231412

Page: 1 of 1

2169064

Section A Required Client Information:	Section B Required Project Information:	Invoice Information:
Company: KH Resources	Report To: Rob Smith	Attention:
Address: 22 S. Linden St. Duquesne PA 15110	Copy To:	Company Name:
		Address:
Email To: rsmith@khresources.com	Purchase Order No.:	Pace Quote Reference:
Phone: 412.469.9331 Fax: 412.469.9330	Project Name: Superior, WI	Pace Project Manager:
Requested Due Date/TAT: STANDARD	Project Number:	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WI

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID (A-Z, 0-9 / ,- ; Sample IDs MUST BE UNIQUE)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N: 8270 - [redacted]	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-2 [TOP 6"]	SL	G			9-26-17	830											X		001
2	SB-2 [Bott 6"]						835											X		002
3	SB-5 [TOP 6"]						1130											X		003
4	SB-5 [Bott 6"]						1135											X		004
5	SB-6 [TOP 6"]						1230											X		005
6	SB-6 [Bott. 6"]						1235											X		006
7	SB-8 [TOP 6"]						1330											X		007
8	SB-8 [Bott 6"]						1335											X		008
9	SB-10 [TOP 6"]						1500											X		009
10	SB-10 [Bott 6"]						1505											X		010
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Concrete Samples		9-27-17	1430	KH Hooley	9/27/17	1430	14.5	Y	N	Y
	KH Hooley	9/27/17		C. Cassidy	9-28-17	1015	5.3	Y	N	Y
- Bottle order contained										

Call 412.469.9331 w/ questions ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Dunlop

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 09/27/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: KU Resources Project # 30231412

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label CRL
LIMS Login

Tracking #: 7020 2530 8738

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

Thermometer Used 6 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 5.3 °C Correction Factor: 0.0 °C Final Temp: 5.3 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 7/27/17 CR

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: SL		✓		5. NO time on Samples
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓	✓		10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.			✓	16.
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: CR Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: Date:

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

10405925

Chain of Custody

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Workorder: 30231412 **Workorder Name:** Superior,WI **Owner Received Date:** 9/28/2017 **Results Requested By:** 10/12/2017

Report To	Subcontract To
Timothy Reed Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3,4 Greensburg, PA 15601 Phone 724-850-5614	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: MeCl						Requested Analysis: 8270 * See List												LAB USE ONLY
													JTR	9/29/17										
1	SB-2[TOP6']	PS	9/26/2017 08:30	30231412001	Solid	1						X	X											
2	SB-2[BOTT6']	PS	9/26/2017 08:35	30231412002	Solid	1						X	X											
3	SB-5[TOP6']	PS	9/26/2017 11:30	30231412003	Solid	1						X	X											
4	SB-5[BOTT6']	PS	9/26/2017 11:35	30231412004	Solid	1						X	X											
5	SB-6[TOP6']	PS	9/26/2017 12:30	30231412005	Solid	1						X	X											
6	SB-6[BOTT6']	PS	9/26/2017 12:35	30231412006	Solid	1						X	X											
7	SB-8[TOP6']	PS	9/26/2017 13:30	30231412007	Solid	1						X	X											
8	SB-8[BOTT6']	PS	9/26/2017 13:35	30231412008	Solid	1						X	X											
9	SB-10[TOP6']	PS	9/26/2017 15:00	30231412009	Solid	1						X	X											
10	SB-10[BOTT6']	PS	9/26/2017 15:05	30231412010	Solid	1						X	X											

Transfers	Released By	Date/Time	Received By	Date/Time
1	Jonathan Pace	10/3/17 1715	[illegible] PMK 10-3-17	
2			alan PACE 10-4-17 945	
3				

Comments

Cooler Temperature on Receipt 4.2 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.21	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace PA

Project #: WO# : 10405925

10405925

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7060 2537 1241

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.4 **Cooler Temp Corrected (°C):** 4.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** -0.2 **Date and Initials of Person Examining Contents:** gk 10-4-17

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.

				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? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12. MeCl preserved?
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, 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 **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Erin Sanders **Date:** 10/05/17

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).

~~the 8290 list is the typical dioxins and furans~~ TRC 9/29/17

8270 Semi-volatile suite of compounds

PAHs	Phenolics
Acenaphthene	Pentachlorophenol
Acenaphthylene	2,3,4,6-Tetrachlorophenol
Anthracene	2,3,5,6-Tetrachlorophenol
Benzo(a)anthracene	2,4,6-Trichlorophenol
Benzo(a)pyrene	4-Chloro-3-methylphenol
Benzo(b)fluoranthene	2-Chlorophenol
Benzo(g,h,i)perylene	2,4-Dichlorophenol
Benzo(k)fluoranthene	2,4-Dimethylphenol
Chrysene	2,4-Dinitrophenol
Dibenz(ah)anthracene	2-Methyl-4,6-dinitrophenol
Fluoranthene	2-Nitrophenol
Fluorene	4-Nitrophenol
Indeno(123-cd)pyrene	Phenol
Naphthalene	
Phenanthrene	
Pyrene	

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Greensburg, PA 15601
(724)850-5600

November 10, 2017

Rob Smith
KU Resources, Inc.
22 S. Linden Street
Duquesne, PA 15110

RE: Project: Superior,WI
Pace Project No.: 30231415

Dear Rob Smith:
Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 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.

The samples were subcontracted to Pace Analytical Services, Inc., 1700 Elm Street, Suite 200, Minneapolis, MN 55414 for Dioxin analysis. Results of the analysis are reported on the Pace Analytical, Minnesota data tables.

Revision 1 - This report replaces the October 16, 2017 report. This report was reissued on November 8, 2017 to include comments clarifying certification for 2,3,5,6-Tetrachlorophenol.

Revision 1 - This report replaces the October 17, 2017 report. This project was revised on November 10, 2017 in order to have Pace Grand Rapids add a narrative concerning the N2 quailifer.

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

Sincerely,

Timothy Reed
timothy.reed@pacelabs.com
724-850-5614
Project Manager

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

Enclosures

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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: Superior,WI
Pace Project No.: 30231415

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
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
Massachusetts Certification #: M-MN064
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 DEP Certification #: 382
Wisconsin Certification #: 999407970

Grand Rapids Certification ID's

5560 Corporate Exchange Ct SE, Grand Rapids, MI 49512
ISO/IEC 17025:2005, Certificate #AT-1542.01
DoD-ELAP, Certificate #ADE-1542
Minnesota Department of Health, Certificate #1177224
Arkansas Department of Environmental Quality, Certificate #17-046-0
Georgia Environmental Protection Division, Stipulation
Illinois Environmental Protection Agency, Certificate #004097
Michigan Department of Environmental Quality, Laboratory #0034
New York State Department of Health, Serial #56192 and 56193
North Carolina Division of Water Resources, Certificate #659
Virginia Department of General Services, Certificate #9028
Wisconsin Department of Natural Resources, Laboratory #999472650
U.S. Department of Agriculture Permit to Receive Soil, Permit #P330-14-00305

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Superior,WI
Pace Project No.: 30231415

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30231415001	SB-1 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLB	35	PASI-GRMI
30231415002	SB-2 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLB	35	PASI-GRMI
30231415003	SB-3 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ	35	PASI-GRMI
30231415004	SB-4 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ	35	PASI-GRMI
30231415005	SB-5 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLB	35	PASI-GRMI
30231415006	SB-6 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ, JLB	35	PASI-GRMI
30231415007	SB-7 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ, JLB	35	PASI-GRMI
30231415008	SB-8 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ	35	PASI-GRMI
30231415009	SB-9 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	DWJ, JLB	35	PASI-GRMI
30231415010	SB-10 [0-1]	ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLB	35	PASI-GRMI

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231415

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

General Information:
10 samples were analyzed for EPA 8270D. 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 3550C 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.

QC Batch: 6319

S0: Surrogate recovery outside laboratory control limits.

- MS (Lab ID: 26007)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)
- MSD (Lab ID: 26008)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorophenol (S)
  - Phenol-d6 (S)

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.

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231415

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

QC Batch: 6319

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30231412001

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

- MS (Lab ID: 26007)
  - 2,3,4,6-Tetrachlorophenol
  - 2,4,6-Trichlorophenol
  - 2,4-Dichlorophenol
  - 2,4-Dinitrophenol
  - 2-Chlorophenol
  - 2-Nitrophenol
  - 4,6-Dinitro-2-methylphenol
  - 4-Chloro-3-methylphenol
  - Pentachlorophenol
  - Phenol
- MSD (Lab ID: 26008)
  - 2,3,4,6-Tetrachlorophenol
  - 2,4,6-Trichlorophenol
  - 2,4-Dichlorophenol
  - 2,4-Dinitrophenol
  - 2-Chlorophenol
  - 2-Nitrophenol
  - 4,6-Dinitro-2-methylphenol
  - 4-Chloro-3-methylphenol
  - Pentachlorophenol
  - Phenol

Additional Comments:

Analyte Comments:

QC Batch: 6319

1c: Due to matrix related Internal Standard failure, the sample was reanalyzed at a dilution. The RL for this analyte has been elevated.

- MS (Lab ID: 26007)
  - 2,4-Dichlorophenol
  - 2,4-Dimethylphenol
  - 2-Nitrophenol
  - 4-Chloro-3-methylphenol
  - Naphthalene
  - Nitrobenzene-d5 (S)

2c: Due to sample related Internal Standard failure, the samploe was reanalyzed at a dilution. The RL for this analyte has been elevated.

- SB-9 [0-1] (Lab ID: 30231415009)
  - Benzo(k)fluoranthene
  - Benzo(g,h,i)perylene
  - Benzo(b)fluoranthene
  - Benzo(a)pyrene

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PROJECT NARRATIVE

Project: Superior,WI
Pace Project No.: 30231415

Method: **EPA 8270D**
Description: 8270D MSSV APP IX Solid
Client: KU Resources, Inc.
Date: November 10, 2017

Analyte Comments:

QC Batch: 6319

2c: Due to sample related Internal Standard failure, the samploe was reanalyzed at a dilution. The RL for this analyte has been elevated.

- SB-9 [0-1] (Lab ID: 30231415009)
  - Dibenz(a,h)anthracene
  - Indeno(1,2,3-cd)pyrene

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SB-4 [0-1] (Lab ID: 30231415004)
  - Phenol
- SB-8 [0-1] (Lab ID: 30231415008)
  - Phenol

N2: The lab does not hold NELAC/TNI accreditation for this parameter.

- BLANK (Lab ID: 26005)
  - 2,3,5,6-Tetrachlorophenol
- LCS (Lab ID: 26006)
  - 2,3,5,6-Tetrachlorophenol
- MS (Lab ID: 26007)
  - 2,3,5,6-Tetrachlorophenol
- MSD (Lab ID: 26008)
  - 2,3,5,6-Tetrachlorophenol
- SB-1 [0-1] (Lab ID: 30231415001)
  - 2,3,5,6-Tetrachlorophenol
- SB-10 [0-1] (Lab ID: 30231415010)
  - 2,3,5,6-Tetrachlorophenol
- SB-2 [0-1] (Lab ID: 30231415002)
  - 2,3,5,6-Tetrachlorophenol
- SB-3 [0-1] (Lab ID: 30231415003)
  - 2,3,5,6-Tetrachlorophenol
- SB-4 [0-1] (Lab ID: 30231415004)
  - 2,3,5,6-Tetrachlorophenol
- SB-5 [0-1] (Lab ID: 30231415005)
  - 2,3,5,6-Tetrachlorophenol
- SB-6 [0-1] (Lab ID: 30231415006)
  - 2,3,5,6-Tetrachlorophenol
- SB-7 [0-1] (Lab ID: 30231415007)
  - 2,3,5,6-Tetrachlorophenol
- SB-8 [0-1] (Lab ID: 30231415008)
  - 2,3,5,6-Tetrachlorophenol
- SB-9 [0-1] (Lab ID: 30231415009)
  - 2,3,5,6-Tetrachlorophenol

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

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Greensburg, PA 15601
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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-1 [0-1] **Lab ID: 30231415001** Collected: 09/26/17 13:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**30.7**	%	0.10	1		10/05/17 15:52		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**0.40**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	83-32-9	
Acenaphthylene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	208-96-8	
Anthracene	**0.13**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	120-12-7	
Benzo(a)anthracene	**0.23**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	56-55-3	
Benzo(a)pyrene	**0.10**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	50-32-8	
Benzo(b)fluoranthene	**0.14**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	191-24-2	
Benzo(k)fluoranthene	**0.12**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	59-50-7	
2-Chlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	95-57-8	
Chrysene	**0.27**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 17:56	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 17:56	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 17:56	51-28-5	
Fluoranthene	**0.95**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	206-44-0	
Fluorene	**0.18**	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	193-39-5	
Naphthalene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	91-20-3	
2-Nitrophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	88-75-5	
4-Nitrophenol	ND	mg/kg	1.0	1	10/06/17 14:02	10/09/17 17:56	100-02-7	
Pentachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	87-86-5	
Phenanthrene	**0.21**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	85-01-8	
Phenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 17:56	108-95-2	
Pyrene	**0.98**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 17:56	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 17:56	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	76	%.	33-131	1	10/06/17 14:02	10/09/17 17:56	4165-60-0	
2-Fluorobiphenyl (S)	73	%.	46-122	1	10/06/17 14:02	10/09/17 17:56	321-60-8	
o-Terphenyl (S)	72	%.	20-155	1	10/06/17 14:02	10/09/17 17:56	84-15-1	
Phenol-d6 (S)	72	%.	30-115	1	10/06/17 14:02	10/09/17 17:56	13127-88-3	
2-Fluorophenol (S)	75	%.	33-113	1	10/06/17 14:02	10/09/17 17:56	367-12-4	
2,4,6-Tribromophenol (S)	76	%.	12-124	1	10/06/17 14:02	10/09/17 17:56	118-79-6	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-2 [0-1] **Lab ID: 30231415002** Collected: 09/27/17 08:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**38.5**	%	0.10	1		10/05/17 15:52		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	83-32-9	
Acenaphthylene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	208-96-8	
Anthracene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	59-50-7	
2-Chlorophenol	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	95-57-8	
Chrysene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.27	1	10/06/17 14:02	10/09/17 13:13	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.27	1	10/06/17 14:02	10/09/17 13:13	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.27	1	10/06/17 14:02	10/09/17 13:13	51-28-5	
Fluoranthene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	206-44-0	
Fluorene	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	193-39-5	
Naphthalene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	91-20-3	
2-Nitrophenol	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	88-75-5	
4-Nitrophenol	ND	mg/kg	1.1	1	10/06/17 14:02	10/09/17 13:13	100-02-7	
Pentachlorophenol	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	87-86-5	
Phenanthrene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	85-01-8	
Phenol	ND	mg/kg	0.27	1	10/06/17 14:02	10/09/17 13:13	108-95-2	
Pyrene	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.052	1	10/06/17 14:02	10/09/17 13:13	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.027	1	10/06/17 14:02	10/09/17 13:13	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	33-131	1	10/06/17 14:02	10/09/17 13:13	4165-60-0	
2-Fluorobiphenyl (S)	68	%.	46-122	1	10/06/17 14:02	10/09/17 13:13	321-60-8	
o-Terphenyl (S)	84	%.	20-155	1	10/06/17 14:02	10/09/17 13:13	84-15-1	
Phenol-d6 (S)	76	%.	30-115	1	10/06/17 14:02	10/09/17 13:13	13127-88-3	
2-Fluorophenol (S)	75	%.	33-113	1	10/06/17 14:02	10/09/17 13:13	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	12-124	1	10/06/17 14:02	10/09/17 13:13	118-79-6	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-3 [0-1] **Lab ID: 30231415003** Collected: 09/27/17 08:45 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**40.5**	%	0.10	1		10/05/17 15:52		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**3.4**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	83-32-9	
Acenaphthylene	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	208-96-8	
Anthracene	**1.6**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	120-12-7	
Benzo(a)anthracene	**1.8**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	56-55-3	
Benzo(a)pyrene	**1.0**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	50-32-8	
Benzo(b)fluoranthene	**1.6**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	191-24-2	
Benzo(k)fluoranthene	**1.2**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	59-50-7	
2-Chlorophenol	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	95-57-8	
Chrysene	**2.7**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	2.8	10	10/06/17 14:02	10/12/17 19:00	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	2.8	10	10/06/17 14:02	10/12/17 19:00	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.8	10	10/06/17 14:02	10/12/17 19:00	51-28-5	
Fluoranthene	**9.5**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	206-44-0	
Fluorene	**2.8**	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	193-39-5	
Naphthalene	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	91-20-3	
2-Nitrophenol	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	88-75-5	
4-Nitrophenol	ND	mg/kg	11.0	10	10/06/17 14:02	10/12/17 19:00	100-02-7	
Pentachlorophenol	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	87-86-5	
Phenanthrene	**8.9**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	85-01-8	
Phenol	ND	mg/kg	2.8	10	10/06/17 14:02	10/12/17 19:00	108-95-2	
Pyrene	**7.2**	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.54	10	10/06/17 14:02	10/12/17 19:00	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.28	10	10/06/17 14:02	10/12/17 19:00	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	63	%.	33-131	10	10/06/17 14:02	10/12/17 19:00	4165-60-0	
2-Fluorobiphenyl (S)	72	%.	46-122	10	10/06/17 14:02	10/12/17 19:00	321-60-8	
o-Terphenyl (S)	73	%.	20-155	10	10/06/17 14:02	10/12/17 19:00	84-15-1	
Phenol-d6 (S)	69	%.	30-115	10	10/06/17 14:02	10/12/17 19:00	13127-88-3	
2-Fluorophenol (S)	63	%.	33-113	10	10/06/17 14:02	10/12/17 19:00	367-12-4	
2,4,6-Tribromophenol (S)	66	%.	12-124	10	10/06/17 14:02	10/12/17 19:00	118-79-6	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-4 [0-1] **Lab ID: 30231415004** Collected: 09/27/17 09:00 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**28.4**	%	0.10	1		10/05/17 15:52		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**10.6**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	83-32-9	
Acenaphthylene	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	208-96-8	
Anthracene	**4.3**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	120-12-7	
Benzo(a)anthracene	**2.9**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	56-55-3	
Benzo(a)pyrene	**0.97**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	50-32-8	
Benzo(b)fluoranthene	**1.4**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	191-24-2	
Benzo(k)fluoranthene	**1.2**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	59-50-7	
2-Chlorophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	95-57-8	
Chrysene	**2.9**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 19:36	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 19:36	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 19:36	51-28-5	
Fluoranthene	**17.8**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 14:21	206-44-0	
Fluorene	**9.7**	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	193-39-5	
Naphthalene	**6.4**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	91-20-3	
2-Nitrophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	88-75-5	
4-Nitrophenol	ND	mg/kg	9.4	10	10/06/17 14:02	10/12/17 19:36	100-02-7	
Pentachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	87-86-5	
Phenanthrene	**33.0**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 14:21	85-01-8	
Phenol	ND	mg/kg	2.4	10	10/06/17 14:02	10/12/17 19:36	108-95-2	D3
Pyrene	**11.7**	mg/kg	1.2	50	10/06/17 14:02	10/13/17 14:21	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.46	10	10/06/17 14:02	10/12/17 19:36	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.24	10	10/06/17 14:02	10/12/17 19:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	57	%.	33-131	10	10/06/17 14:02	10/12/17 19:36	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	46-122	10	10/06/17 14:02	10/12/17 19:36	321-60-8	
o-Terphenyl (S)	67	%.	20-155	10	10/06/17 14:02	10/12/17 19:36	84-15-1	
Phenol-d6 (S)	59	%.	30-115	10	10/06/17 14:02	10/12/17 19:36	13127-88-3	
2-Fluorophenol (S)	57	%.	33-113	10	10/06/17 14:02	10/12/17 19:36	367-12-4	
2,4,6-Tribromophenol (S)	59	%.	12-124	10	10/06/17 14:02	10/12/17 19:36	118-79-6	

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ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-5 [0-1] **Lab ID: 30231415005** Collected: 09/27/17 09:15 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**25.7**	%	0.10	1		10/05/17 15:53		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**0.25**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	83-32-9	
Acenaphthylene	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	208-96-8	
Anthracene	**0.10**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	120-12-7	
Benzo(a)anthracene	**0.048**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	56-55-3	
Benzo(a)pyrene	**0.027**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	59-50-7	
2-Chlorophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	95-57-8	
Chrysene	**0.047**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 13:48	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 13:48	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 13:48	51-28-5	
Fluoranthene	**0.37**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	206-44-0	
Fluorene	**0.25**	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	193-39-5	
Naphthalene	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	91-20-3	
2-Nitrophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	88-75-5	
4-Nitrophenol	ND	mg/kg	0.89	1	10/06/17 14:02	10/09/17 13:48	100-02-7	
Pentachlorophenol	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	87-86-5	
Phenanthrene	**0.72**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	85-01-8	
Phenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 13:48	108-95-2	
Pyrene	**0.27**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.044	1	10/06/17 14:02	10/09/17 13:48	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 13:48	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	72	%.	33-131	1	10/06/17 14:02	10/09/17 13:48	4165-60-0	
2-Fluorobiphenyl (S)	72	%.	46-122	1	10/06/17 14:02	10/09/17 13:48	321-60-8	
o-Terphenyl (S)	80	%.	20-155	1	10/06/17 14:02	10/09/17 13:48	84-15-1	
Phenol-d6 (S)	72	%.	30-115	1	10/06/17 14:02	10/09/17 13:48	13127-88-3	
2-Fluorophenol (S)	73	%.	33-113	1	10/06/17 14:02	10/09/17 13:48	367-12-4	
2,4,6-Tribromophenol (S)	69	%.	12-124	1	10/06/17 14:02	10/09/17 13:48	118-79-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-6 [0-1] **Lab ID: 30231415006** Collected: 09/27/17 09:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**30.8**	%	0.10	1		10/05/17 15:53		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**0.67**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	83-32-9	
Acenaphthylene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	208-96-8	
Anthracene	**0.43**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	120-12-7	
Benzo(a)anthracene	**0.31**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	56-55-3	
Benzo(a)pyrene	**0.12**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	50-32-8	
Benzo(b)fluoranthene	**0.14**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	191-24-2	
Benzo(k)fluoranthene	**0.11**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	59-50-7	
2-Chlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	95-57-8	
Chrysene	**0.34**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 14:24	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 14:24	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 14:24	51-28-5	
Fluoranthene	**1.3**	mg/kg	0.050	2	10/06/17 14:02	10/12/17 16:04	206-44-0	
Fluorene	**0.52**	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	193-39-5	
Naphthalene	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	91-20-3	
2-Nitrophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	88-75-5	
4-Nitrophenol	ND	mg/kg	0.99	1	10/06/17 14:02	10/09/17 14:24	100-02-7	
Pentachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	87-86-5	
Phenanthrene	**1.6**	mg/kg	0.050	2	10/06/17 14:02	10/12/17 16:04	85-01-8	
Phenol	ND	mg/kg	0.25	1	10/06/17 14:02	10/09/17 14:24	108-95-2	
Pyrene	**1.1**	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.049	1	10/06/17 14:02	10/09/17 14:24	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.025	1	10/06/17 14:02	10/09/17 14:24	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	65	%.	33-131	1	10/06/17 14:02	10/09/17 14:24	4165-60-0	
2-Fluorobiphenyl (S)	65	%.	46-122	1	10/06/17 14:02	10/09/17 14:24	321-60-8	
o-Terphenyl (S)	74	%.	20-155	1	10/06/17 14:02	10/09/17 14:24	84-15-1	
Phenol-d6 (S)	65	%.	30-115	1	10/06/17 14:02	10/09/17 14:24	13127-88-3	
2-Fluorophenol (S)	72	%.	33-113	1	10/06/17 14:02	10/09/17 14:24	367-12-4	
2,4,6-Tribromophenol (S)	64	%.	12-124	1	10/06/17 14:02	10/09/17 14:24	118-79-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-7 [0-1] **Lab ID: 30231415007** Collected: 09/27/17 10:00 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.4**	%	0.10	1		10/05/17 15:53		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**9.3**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	83-32-9	
Acenaphthylene	**0.22**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	208-96-8	
Anthracene	**2.5**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	120-12-7	
Benzo(a)anthracene	**2.1**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	56-55-3	
Benzo(a)pyrene	**0.73**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	50-32-8	
Benzo(b)fluoranthene	**0.81**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	205-99-2	
Benzo(g,h,i)perylene	**0.11**	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	191-24-2	
Benzo(k)fluoranthene	**0.80**	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	59-50-7	
2-Chlorophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	95-57-8	
Chrysene	**2.2**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	218-01-9	
Dibenz(a,h)anthracene	**0.097**	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 19:07	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 19:07	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 19:07	51-28-5	
Fluoranthene	**13.3**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	206-44-0	
Fluorene	**7.0**	mg/kg	2.3	50	10/06/17 14:02	10/12/17 16:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.13**	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	193-39-5	
Naphthalene	**7.4**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	91-20-3	
2-Nitrophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	88-75-5	
4-Nitrophenol	ND	mg/kg	0.92	1	10/06/17 14:02	10/09/17 19:07	100-02-7	
Pentachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	87-86-5	
Phenanthrene	**22.9**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	85-01-8	
Phenol	ND	mg/kg	0.23	1	10/06/17 14:02	10/09/17 19:07	108-95-2	
Pyrene	**9.0**	mg/kg	1.2	50	10/06/17 14:02	10/12/17 16:39	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.046	1	10/06/17 14:02	10/09/17 19:07	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.023	1	10/06/17 14:02	10/09/17 19:07	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	71	%.	33-131	1	10/06/17 14:02	10/09/17 19:07	4165-60-0	
2-Fluorobiphenyl (S)	69	%.	46-122	1	10/06/17 14:02	10/09/17 19:07	321-60-8	
o-Terphenyl (S)	63	%.	20-155	1	10/06/17 14:02	10/09/17 19:07	84-15-1	
Phenol-d6 (S)	77	%.	30-115	1	10/06/17 14:02	10/09/17 19:07	13127-88-3	
2-Fluorophenol (S)	76	%.	33-113	1	10/06/17 14:02	10/09/17 19:07	367-12-4	
2,4,6-Tribromophenol (S)	55	%.	12-124	1	10/06/17 14:02	10/09/17 19:07	118-79-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-8 [0-1] **Lab ID: 30231415008** Collected: 09/27/17 10:15 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.3**	%	0.10	1		10/05/17 15:53		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**30.8**	mg/kg	4.7	200	10/06/17 14:02	10/13/17 14:56	83-32-9	
Acenaphthylene	**0.56**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	208-96-8	
Anthracene	**48.2**	mg/kg	4.7	200	10/06/17 14:02	10/13/17 14:56	120-12-7	
Benzo(a)anthracene	**9.6**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	56-55-3	
Benzo(a)pyrene	**3.2**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	50-32-8	
Benzo(b)fluoranthene	**3.5**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	205-99-2	
Benzo(g,h,i)perylene	**0.64**	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	191-24-2	
Benzo(k)fluoranthene	**3.2**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	59-50-7	
2-Chlorophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	95-57-8	
Chrysene	**10.6**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 20:11	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 20:11	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 20:11	51-28-5	
Fluoranthene	**52.0**	mg/kg	4.7	200	10/06/17 14:02	10/13/17 14:56	206-44-0	
Fluorene	**29.5**	mg/kg	9.1	200	10/06/17 14:02	10/13/17 14:56	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.63**	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	193-39-5	
Naphthalene	**4.4**	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	91-20-3	
2-Nitrophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	88-75-5	
4-Nitrophenol	ND	mg/kg	9.2	10	10/06/17 14:02	10/12/17 20:11	100-02-7	
Pentachlorophenol	ND	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	87-86-5	
Phenanthrene	**92.3**	mg/kg	4.7	200	10/06/17 14:02	10/13/17 14:56	85-01-8	
Phenol	ND	mg/kg	2.3	10	10/06/17 14:02	10/12/17 20:11	108-95-2	D3
Pyrene	**35.3**	mg/kg	4.7	200	10/06/17 14:02	10/13/17 14:56	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.45	10	10/06/17 14:02	10/12/17 20:11	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.23	10	10/06/17 14:02	10/12/17 20:11	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	33-131	10	10/06/17 14:02	10/12/17 20:11	4165-60-0	
2-Fluorobiphenyl (S)	72	%.	46-122	10	10/06/17 14:02	10/12/17 20:11	321-60-8	
o-Terphenyl (S)	65	%.	20-155	10	10/06/17 14:02	10/12/17 20:11	84-15-1	
Phenol-d6 (S)	71	%.	30-115	10	10/06/17 14:02	10/12/17 20:11	13127-88-3	
2-Fluorophenol (S)	70	%.	33-113	10	10/06/17 14:02	10/12/17 20:11	367-12-4	
2,4,6-Tribromophenol (S)	61	%.	12-124	10	10/06/17 14:02	10/12/17 20:11	118-79-6	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-9 [0-1] **Lab ID: 30231415009** Collected: 09/27/17 10:30 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.8**	%	0.10	1		10/05/17 15:54		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	**1.6**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	83-32-9	
Acenaphthylene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	208-96-8	
Anthracene	**0.83**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	120-12-7	
Benzo(a)anthracene	**1.3**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	56-55-3	
Benzo(a)pyrene	**0.43**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	50-32-8	2c
Benzo(b)fluoranthene	**0.68**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	205-99-2	2c
Benzo(g,h,i)perylene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 17:14	191-24-2	2c
Benzo(k)fluoranthene	**0.50**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	207-08-9	2c
4-Chloro-3-methylphenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	59-50-7	
2-Chlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	95-57-8	
Chrysene	**1.5**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 17:14	53-70-3	2c
2,4-Dichlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 19:42	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 19:42	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 19:42	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 19:42	51-28-5	
Fluoranthene	**7.9**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	206-44-0	
Fluorene	**1.9**	mg/kg	0.47	10	10/06/17 14:02	10/12/17 17:14	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.47	10	10/06/17 14:02	10/12/17 17:14	193-39-5	2c
Naphthalene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	91-20-3	
2-Nitrophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	88-75-5	
4-Nitrophenol	ND	mg/kg	0.96	1	10/06/17 14:02	10/09/17 19:42	100-02-7	
Pentachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 19:42	87-86-5	
Phenanthrene	**4.2**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	85-01-8	
Phenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 19:42	108-95-2	
Pyrene	**6.1**	mg/kg	0.24	10	10/06/17 14:02	10/12/17 17:14	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 19:42	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 19:42	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 19:42	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	69	%.	33-131	1	10/06/17 14:02	10/09/17 19:42	4165-60-0	
2-Fluorobiphenyl (S)	69	%.	46-122	1	10/06/17 14:02	10/09/17 19:42	321-60-8	
o-Terphenyl (S)	59	%.	20-155	1	10/06/17 14:02	10/09/17 19:42	84-15-1	
Phenol-d6 (S)	72	%.	30-115	1	10/06/17 14:02	10/09/17 19:42	13127-88-3	
2-Fluorophenol (S)	78	%.	33-113	1	10/06/17 14:02	10/09/17 19:42	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	12-124	1	10/06/17 14:02	10/09/17 19:42	118-79-6	

REPORT OF LABORATORY ANALYSIS

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(724)850-5600

ANALYTICAL RESULTS

Project: Superior,WI
Pace Project No.: 30231415

Sample: SB-10 [0-1] **Lab ID: 30231415010** Collected: 09/27/17 10:45 Received: 09/28/17 10:15 Matrix: Solid

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

Comments: • The laboratory holds WI certification for 2,3,5,6-Tetrachlorophenol under 8270. The N2 flag applies to the MN NELAC Certification.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**28.3**	%	0.10	1		10/05/17 15:54		
8270D MSSV APP IX Solid	Analytical Method: EPA 8270D Preparation Method: EPA 3550C							
Acenaphthene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	83-32-9	
Acenaphthylene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	208-96-8	
Anthracene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	120-12-7	
Benzo(a)anthracene	**0.037**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	56-55-3	
Benzo(a)pyrene	**0.031**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	50-32-8	
Benzo(b)fluoranthene	**0.032**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	191-24-2	
Benzo(k)fluoranthene	**0.028**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	207-08-9	
4-Chloro-3-methylphenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	59-50-7	
2-Chlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	95-57-8	
Chrysene	**0.056**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	53-70-3	
2,4-Dichlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	120-83-2	
2,4-Dimethylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 15:00	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 15:00	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 15:00	51-28-5	
Fluoranthene	**0.14**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	206-44-0	
Fluorene	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	193-39-5	
Naphthalene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	91-20-3	
2-Nitrophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	88-75-5	
4-Nitrophenol	ND	mg/kg	0.95	1	10/06/17 14:02	10/09/17 15:00	100-02-7	
Pentachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	87-86-5	
Phenanthrene	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	85-01-8	
Phenol	ND	mg/kg	0.24	1	10/06/17 14:02	10/09/17 15:00	108-95-2	
Pyrene	**0.15**	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	129-00-0	
2,3,4,6-Tetrachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	58-90-2	
2,3,5,6-Tetrachlorophenol	ND	mg/kg	0.047	1	10/06/17 14:02	10/09/17 15:00	935-95-5	N2
2,4,6-Trichlorophenol	ND	mg/kg	0.024	1	10/06/17 14:02	10/09/17 15:00	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	33-131	1	10/06/17 14:02	10/09/17 15:00	4165-60-0	
2-Fluorobiphenyl (S)	68	%.	46-122	1	10/06/17 14:02	10/09/17 15:00	321-60-8	
o-Terphenyl (S)	78	%.	20-155	1	10/06/17 14:02	10/09/17 15:00	84-15-1	
Phenol-d6 (S)	74	%.	30-115	1	10/06/17 14:02	10/09/17 15:00	13127-88-3	
2-Fluorophenol (S)	76	%.	33-113	1	10/06/17 14:02	10/09/17 15:00	367-12-4	
2,4,6-Tribromophenol (S)	65	%.	12-124	1	10/06/17 14:02	10/09/17 15:00	118-79-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231415

QC Batch: 500727 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 30231415001, 30231415002, 30231415003, 30231415004, 30231415005, 30231415006, 30231415007, 30231415008, 30231415009, 30231415010

SAMPLE DUPLICATE: 2722346

Parameter	Units	30231417001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	41.7	45.3	8	

SAMPLE DUPLICATE: 2722347

Parameter	Units	30231415001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	30.7	29.8	3	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231415

QC Batch: 6319 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550C Analysis Description: 8270D MSSV APP 9
Associated Lab Samples: 30231415001, 30231415002, 30231415003, 30231415004, 30231415005, 30231415006, 30231415007, 30231415008, 30231415009, 30231415010

METHOD BLANK: 26005 Matrix: Solid
Associated Lab Samples: 30231415001, 30231415002, 30231415003, 30231415004, 30231415005, 30231415006, 30231415007, 30231415008, 30231415009, 30231415010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,3,4,6-Tetrachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
2,3,5,6-Tetrachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	N2
2,4,6-Trichlorophenol	mg/kg	ND	0.017	10/09/17 09:06	
2,4-Dichlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
2,4-Dimethylphenol	mg/kg	ND	0.17	10/09/17 09:06	
2,4-Dinitrophenol	mg/kg	ND	0.17	10/09/17 09:06	
2-Chlorophenol	mg/kg	ND	0.017	10/09/17 09:06	
2-Nitrophenol	mg/kg	ND	0.017	10/09/17 09:06	
4,6-Dinitro-2-methylphenol	mg/kg	ND	0.17	10/09/17 09:06	
4-Chloro-3-methylphenol	mg/kg	ND	0.017	10/09/17 09:06	
4-Nitrophenol	mg/kg	ND	0.68	10/09/17 09:06	
Acenaphthene	mg/kg	ND	0.017	10/09/17 09:06	
Acenaphthylene	mg/kg	ND	0.017	10/09/17 09:06	
Anthracene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(a)anthracene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(a)pyrene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(b)fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Benzo(g,h,i)perylene	mg/kg	ND	0.034	10/09/17 09:06	
Benzo(k)fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Chrysene	mg/kg	ND	0.017	10/09/17 09:06	
Dibenz(a,h)anthracene	mg/kg	ND	0.034	10/09/17 09:06	
Fluoranthene	mg/kg	ND	0.017	10/09/17 09:06	
Fluorene	mg/kg	ND	0.034	10/09/17 09:06	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.034	10/09/17 09:06	
Naphthalene	mg/kg	ND	0.017	10/09/17 09:06	
Pentachlorophenol	mg/kg	ND	0.034	10/09/17 09:06	
Phenanthrene	mg/kg	ND	0.017	10/09/17 09:06	
Phenol	mg/kg	ND	0.17	10/09/17 09:06	
Pyrene	mg/kg	ND	0.017	10/09/17 09:06	
2,4,6-Tribromophenol (S)	%.	70	12-124	10/09/17 09:06	
2-Fluorobiphenyl (S)	%.	77	46-122	10/09/17 09:06	
2-Fluorophenol (S)	%.	76	33-113	10/09/17 09:06	
Nitrobenzene-d5 (S)	%.	75	33-131	10/09/17 09:06	
o-Terphenyl (S)	%.	87	20-155	10/09/17 09:06	
Phenol-d6 (S)	%.	74	30-115	10/09/17 09:06	

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REPORT OF LABORATORY ANALYSIS

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(724)850-5600

QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231415

LABORATORY CONTROL SAMPLE: 26006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,3,4,6-Tetrachlorophenol	mg/kg	.33	0.22	68	37-129	
2,3,5,6-Tetrachlorophenol	mg/kg	.33	0.21	64		N2
2,4,6-Trichlorophenol	mg/kg	.33	0.24	72	45-128	
2,4-Dichlorophenol	mg/kg	.33	0.25	77	50-128	
2,4-Dimethylphenol	mg/kg	.33	0.25	76	40-122	
2,4-Dinitrophenol	mg/kg	.33	0.23	70	25-105	
2-Chlorophenol	mg/kg	.33	0.26	78	62-118	
2-Nitrophenol	mg/kg	.33	0.27	81	55-115	
4,6-Dinitro-2-methylphenol	mg/kg	.33	0.26	78	26-136	
4-Chloro-3-methylphenol	mg/kg	.33	0.25	75	34-113	
4-Nitrophenol	mg/kg	.33	.22J	68	36-131	
Acenaphthene	mg/kg	.33	0.25	77	55-113	
Acenaphthylene	mg/kg	.33	0.27	83	56-138	
Anthracene	mg/kg	.33	0.26	78	63-134	
Benzo(a)anthracene	mg/kg	.33	0.26	80	53-142	
Benzo(a)pyrene	mg/kg	.33	0.24	72	54-136	
Benzo(b)fluoranthene	mg/kg	.33	0.27	82	49-146	
Benzo(g,h,i)perylene	mg/kg	.33	0.25	76	47-141	
Benzo(k)fluoranthene	mg/kg	.33	0.25	76	56-136	
Chrysene	mg/kg	.33	0.27	83	66-137	
Dibenz(a,h)anthracene	mg/kg	.33	0.23	70	52-142	
Fluoranthene	mg/kg	.33	0.26	80	66-140	
Fluorene	mg/kg	.33	0.26	78	60-131	
Indeno(1,2,3-cd)pyrene	mg/kg	.33	0.25	76	53-135	
Naphthalene	mg/kg	.33	0.27	82	52-128	
Pentachlorophenol	mg/kg	.33	0.21	64	19-117	
Phenanthrene	mg/kg	.33	0.27	81	58-134	
Phenol	mg/kg	.33	0.26	78	53-120	
Pyrene	mg/kg	.33	0.25	75	60-132	
2,4,6-Tribromophenol (S)	%.			70	12-124	
2-Fluorobiphenyl (S)	%.			74	46-122	
2-Fluorophenol (S)	%.			78	33-113	
Nitrobenzene-d5 (S)	%.			78	33-131	
o-Terphenyl (S)	%.			85	20-155	
Phenol-d6 (S)	%.			76	30-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26007 26008

Parameter	Units	30231412001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,3,4,6-Tetrachlorophenol	mg/kg	ND	.482	.482	.021J	.025J	4	5	15-116		M1
2,3,5,6-Tetrachlorophenol	mg/kg	ND	.482	.482	ND	.026J	0	5			N2
2,4,6-Trichlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	10-159		M1
2,4-Dichlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	38-131		1c,M1
2,4-Dimethylphenol	mg/kg	ND	.482	.482	.23J	0.31	47	65	22-136		1c

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REPORT OF LABORATORY ANALYSIS

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(724)850-5600

QUALITY CONTROL DATA

Project: Superior,WI
Pace Project No.: 30231415

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26007 26008

Parameter	Units	30231412001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
2,4-Dinitrophenol	mg/kg	ND	.482	.482	ND	ND	0	0	1-138		M1
2-Chlorophenol	mg/kg	ND	.482	.482	ND	.0074J	0	2	25-154		M1
2-Nitrophenol	mg/kg	ND	.482	.482	.036J	ND	7	1	11-147		1c,M1
4,6-Dinitro-2-methylphenol	mg/kg	ND	.482	.482	ND	ND	0	0	10-114		M1
4-Chloro-3-methylphenol	mg/kg	ND	.482	.482	ND	0.040	0	8	18-143		1c,M1
4-Nitrophenol	mg/kg	ND	.482	.482	ND	ND	13	12	10-163		
Acenaphthene	mg/kg	ND	.482	.482	0.37	0.37	74	75	52-110	0	
Acenaphthylene	mg/kg	ND	.482	.482	0.39	0.39	80	82	52-139	1	
Anthracene	mg/kg	ND	.482	.482	0.37	0.42	74	86	48-138	14	
Benzo(a)anthracene	mg/kg	ND	.482	.482	0.39	0.41	78	82	48-134	4	
Benzo(a)pyrene	mg/kg	ND	.482	.482	0.35	0.35	67	69	36-129	1	
Benzo(b)fluoranthene	mg/kg	ND	.482	.482	0.39	0.39	77	80	44-141	2	
Benzo(g,h,i)perylene	mg/kg	ND	.482	.482	0.30	0.30	60	61	36-146	1	
Benzo(k)fluoranthene	mg/kg	ND	.482	.482	0.37	0.37	74	75	44-134	1	
Chrysene	mg/kg	ND	.482	.482	0.39	0.40	78	81	45-143	3	
Dibenz(a,h)anthracene	mg/kg	ND	.482	.482	0.29	0.30	60	63	38-149	3	
Fluoranthene	mg/kg	0.035	.482	.482	0.37	0.37	68	69	34-140	0	
Fluorene	mg/kg	ND	.482	.482	0.42	0.37	85	77	49-127	12	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	.482	.482	0.31	0.32	61	63	31-128	2	
Naphthalene	mg/kg	0.12	.482	.482	0.48	0.51	73	80	32-138	6	1c
Pentachlorophenol	mg/kg	ND	.482	.482	ND	ND	0	0	15-129		M1
Phenanthrene	mg/kg	0.14	.482	.482	0.50	0.52	75	81	39-134	4	
Phenol	mg/kg	1.1	.482	.482	0.77	0.97	-59	-19	23-140	23	M1
Pyrene	mg/kg	0.031	.482	.482	0.45	0.42	86	80	39-145	7	
2,4,6-Tribromophenol (S)	%.						1	3	12-124		S0
2-Fluorobiphenyl (S)	%.						71	74	46-122		
2-Fluorophenol (S)	%.						0	1	33-113		S0
Nitrobenzene-d5 (S)	%.						68	67	33-131		1c
o-Terphenyl (S)	%.						76	81	20-155		
Phenol-d6 (S)	%.						15	18	30-115		S0

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REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
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QUALIFIERS

Project: Superior,WI
Pace Project No.: 30231415

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

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-GRMI	Pace Analytical Services - Grand Rapids
PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

1c	Due to matrix related Internal Standard failure, the sample was reanalyzed at a dilution. The RL for this analyte has been elevated.
2c	Due to sample related Internal Standard failure, the samploe was reanalyzed at a dilution. The RL for this analyte has been elevated.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
S0	Surrogate recovery outside laboratory control limits.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Superior,WI
Pace Project No.: 30231415

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30231415001	SB-1 [0-1]	ASTM D2974	500727		
30231415002	SB-2 [0-1]	ASTM D2974	500727		
30231415003	SB-3 [0-1]	ASTM D2974	500727		
30231415004	SB-4 [0-1]	ASTM D2974	500727		
30231415005	SB-5 [0-1]	ASTM D2974	500727		
30231415006	SB-6 [0-1]	ASTM D2974	500727		
30231415007	SB-7 [0-1]	ASTM D2974	500727		
30231415008	SB-8 [0-1]	ASTM D2974	500727		
30231415009	SB-9 [0-1]	ASTM D2974	500727		
30231415010	SB-10 [0-1]	ASTM D2974	500727		
30231415001	SB-1 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415002	SB-2 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415003	SB-3 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415004	SB-4 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415005	SB-5 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415006	SB-6 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415007	SB-7 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415008	SB-8 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415009	SB-9 [0-1]	EPA 3550C	6319	EPA 8270D	6375
30231415010	SB-10 [0-1]	EPA 3550C	6319	EPA 8270D	6375

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CHAIN-OF-C[illegible] WO#: 30231415 t

The Chain-of-Custody

30231415

Page: 1 of 1

2169062

Section A Required Client Information:	Section B Required Project Information:	Invoice Information:
Company: KU Resources	Report To: Rob Smith	Attention:
Address: 22 S. Linden St. Duquesne, PA 15110	Copy To:	Company Name:
Email To: rsmith@kuresources.com	Purchase Order No.:	Address:
Phone: 412.469.9331 Fax: 412.469.9336	Project Name: Superior, WI	Pace Quote Reference:
Requested Due Date/TAT: Standard	Project Number:	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WI

Section D Required Client Information

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8270	8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-1 [0-1]	SO	G			9-26-17	1330		2	2								X	X		001
2	SB-2 [0-1]					9-27-17	1000		2	2								X	X		002
3	SB-3 [0-1]						845		2	2								X	X		003
4	SB-4 [0-1]						900		2	2								X	X		004
5	SB-5 [0-1]						915		2	2								X	X		005
6	SB-6 [0-1]						930		2	2								X	X		006
7	SB-7 [0-1]						1000		2	2								X	X		007
8	SB-8 [0-1]						1015		2	2								X	X		008
9	SB-9 [0-1]						1030		2	2								X	X		009
10	SB-10 [0-1]						1045		2	2								X	X		010
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Bottle order contained	[signature]	9/27/17	1430	[signature]	9/27/17	1430	4.5	Y	N	Y
	[signature]	9/27/17		[signature]	9/27/17	1053	3.6	Y	N	Y
-Call 412.469.9331										
with questions										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Dowling

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 09/27/2017

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: KU Res Project # 30231415

Courier: ~~☑~~ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ok
LIMS Login SLM

Tracking #: 7060 2536 8727

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

Thermometer Used 6 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 3.6 °C Correction Factor 0.0 °C Final Temp: 3.6 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 7/28/17 CR

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID Matrix: SL				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.			✓	16.
All containers needing preservation are found to be in compliance with EPA recommendation.				
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed CR Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: Date:

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

30231415

Pace Container Order #276287

PLEASE RETURN THIS COPY WITH COC

Addresses

Order By :		Ship To :		Return To:	
Company	KU Resources, Inc.	Company	Pace Analytical Services	Company	Pace Analytical Pittsburgh
Contact	Dowling, Ryan	Contact	Ryan Dowling	Contact	Reed, Timothy
Email	rdowling@kuresources.com	Email	rdowling@kuresources.com	Email	timothy.reed@pacelabs.com
Address	22 South Linden	Address	4730 Oneota Street	Address	1638 Roseytown Road
Address 2		Address 2		Address 2	Suites 2,3,4
City	Duquesne	City	Duluth	City	Greensburg
State	PA Zip 15110	State	MN Zip 55807	State	PA Zip 15601
Phone	(412)469-9331	Phone		Phone	724-850-5614

Info

Project Name	Superior	**Due Date**	09/21/2017	**Profile**	5363	**Quote**	
Project Manager	Reed, Timothy	**Return**		**Carrier**	FedEx Standard Overnight	**Location**	MN

Trip Blanks

- [ ] Include Trip Blanks

Bottle Labels

- [ ] Blank
- [X] Pre-Printed No Sample IDs
- [ ] Pre-Printed With Sample IDs

Bottles

- [ ] Boxed Cases
- [ ] Individually Wrapped
- [ ] Grouped By Sample

Return Shipping Labels

- [ ] No Shipper Number
- [X] With Shipper Number

COC Options

- [X] Number of Blanks 5
- [ ] Pre-Printed

Misc

- [ ] Sampling Instructions
- [ ] Custody Seal
- [ ] Temp. Blanks
- [X] Coolers
- [ ] Syringes
- [ ] Extra Bubble Wrap
- [ ] Short Hold/Rush Stickers
- [ ] DI Water Liter(s)
- [ ] USDA Regulated Soils

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
26	SL	8290 HighRes	4oz. Amber Wide Mouth Jar unpres	26	0	080717-3TE	
26	SL	8270 SVOC	4oz. Amber Wide Mouth Jar unpres	26	0	080717-3TE	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Monday through Friday 8:00 am to 6:00 pm and Saturday from 9:00 am to 12:00 pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

Sample Notes

Ship Date :	09/20/2017
Prepared By:	David F Gunsallus
Verified By:	Ben Mountan

Chain of Custody

10405727

Pace Analytical®
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Workorder: 30231415 **Workorder Name:** Superior,WI **Owner Received Date:** 9/28/2017 **Results Requested By:** 10/12/2017

Report To	Subcontract To
Timothy Reed Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3,4 Greensburg, PA 15601 Phone 724-850-5614	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collected Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Dioxin 8290	8270- See Attached*											LAB USE ONLY
1	SB-1 [0-1]	PS	9/26/2017 13:30	30231415001	Solid	1						X	X											001
2	SB-2 [0-1]	PS	9/27/2017 08:30	30231415002	Solid	1						X	X											002
3	SB-3 [0-1]	PS	9/27/2017 08:45	30231415003	Solid	1						X	X											003
4	SB-4 [0-1]	PS	9/27/2017 09:00	30231415004	Solid	1						X	X											004
5	SB-5 [0-1]	PS	9/27/2017 09:15	30231415005	Solid	1						X	X											005
6	SB-6 [0-1]	PS	9/27/2017 09:30	30231415006	Solid	1						X	X											006
7	SB-7 [0-1]	PS	9/27/2017 10:00	30231415007	Solid	1						X	X											007
8	SB-8 [0-1]	PS	9/27/2017 10:15	30231415008	Solid	1						X	X											008
9	SB-9 [0-1]	PS	9/27/2017 10:30	30231415009	Solid	1						X	X											009
10	SB-10 [0-1]	PS	9/27/2017 10:45	30231415010	Solid	1						X	X											010

Transfers	Released By	Date/Time	Received By	Date/Time
1	C. Carney 10/2/17	1500	QLA - PACE	10-3-17 945
2				
3				

Comments:

Cooler Temperature on Receipt 0.4 °C	Custody Seal Y or (N)	Received on Ice (Y) or N	Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.21	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace PA

Project #: WO# : 10405727

10405727

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 253709 44 (cannot Read 15t 4 digits)

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.6 **Cooler Temp Corrected (°C):** 0.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** -0.2 **Date and Initials of Person Examining Contents:** GL 10-3-17

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.

				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.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, 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 **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Heather Roberg **Date:** 10/5/17

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).

JO# : 463098

463098

437 609 9-12

10405732

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Page 29 of 36

Workorder: 30231415 **Workorder Name:** Superior,WI **Owner Received Date:** 9/28/2017 **Results Requested By:** 10/12/2017

Report To	Subcontract To	Requested Analysis
Timothy Reed Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3,4 Greensburg, PA 15601 Phone 724-850-5614	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700	

Item	Sample ID*	Sample Type	Date/Time Collect*	Lab ID*	Matrix*	Preservative/Containers: Unpreserved	Dioxin 8290	8270- See Attached*	LAB USE ONLY
1	SB-1 [0-1]	PS	9/26/2017 13:30	30231415001	Solid	1	X	X	001
2	SB-2 [0-1]	PS	9/27/2017 08:30	30231415002	Solid	1	X	X	002
3	SB-3 [0-1]	PS	9/27/2017 08:45	30231415003	Solid	1	X	X	003
4	SB-4 [0-1]	PS	9/27/2017 09:00	30231415004	Solid	1	X	X	004
5	SB-5 [0-1]	PS	9/27/2017 09:15	30231415005	Solid	1	X	X	005
6	SB-6 [0-1]	PS	9/27/2017 09:30	30231415006	Solid	1	X	X	006
7	SB-7 [0-1]	PS	9/27/2017 10:00	30231415007	Solid	1	X	X	007
8	SB-8 [0-1]	PS	9/27/2017 10:15	30231415008	Solid	1	X	X	008
9	SB-9 [0-1]	PS	9/27/2017 10:30	30231415009	Solid	1	X	X	009
10	SB-10 [0-1]	PS	9/27/2017 10:45	30231415010	Solid	1	X	X	010

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	C. Carney PACE 10/2/17	1500	PACE 10-3-17	945
2	PACE	10/5/17 1311	Pace 10/6/17	0840
3				

Cooler Temperature on Receipt 0.4 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical®

SAMPLE RECEIVING / LOG-IN CHECKLIST

Client	Pace Analytical	Work Order #: 463098	New / Add To
Receipt Record Page/Line #	9-12	Project Chemist	Sample #s 001-010

Recorded by (initials/date)		Qty Received	Thermometer Used	
[initials] 10/6/17	☑ Cooler ☐ Box ☐ Other____	1	☑ IR Gun (#202) ☐ Digital Thermometer (#54) ☐ Other (#____)	☐ See Additional Cooler Information Form

	Cooler 1	Cooler 2	Cooler 3	Cooler 4
Cooler #	106008			
Time	1031			
Custody Seals: None	☐	☐	☐	☐
Present / Intact	☑	☐	☐	☐
Present / Not Intact	☐	☐	☐	☐
Coolant Type: Loose Ice	☐	☐	☐	☐
Bagged Ice	☑	☐	☐	☐
Blue Ice	☐	☐	☐	☐
None	☐	☐	☐	☐
Coolant Location: Dispersed / Top / Middle / Bottom	Top (circled)			
Temp Blank Present: Yes / No	☑ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
If Present, Temperature Blank Location is: Representative / Not Representative	☑ Representative ☐ Not Representative	☐ Representative ☐ Not Representative	☐ Representative ☐ Not Representative	☐ Representative ☐ Not Representative

Cooler 1	Observed °C	Correction Factor °C	Actual °C
Temp Blank:	0.9	-	0.9
Sample 1:	5.3	-	5.3
Sample 2:	5.1	-	5.1
Sample 3:	4.3	-	4.3

3 Sample Average °C: 4.9 (Cooler 1); Coolers 2–4: blank

☐ Cooler ID on COC? ☐ VOC Trip Blank received? (each cooler)

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☑	☐	Chain of Custody record(s)? If No, Initiated By ________
☑		Received for Lab Signed/Date/Time?
☑	☐	Shipping document?
☐	☑	Other ________

COC Information

☑ Pace COC ☐ Other ________

COC ID Numbers:

Check Sample Preservation

N/A	Yes	No	
	☐	☑	Temperature Blank OR average sample temperature, ≥6° C?
☑	☐	☐	If either is ≥6° C, was thermal preservation required?
☑	☐		If "Yes", Project Chemist Approval Initials: ________
☑	☐		If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☑	☐		Completed Sample Preservation Verification Form?
☑	☐	☐	Samples chemically preserved correctly?
☑	☐		If "No", added orange tag?
	☐	☑	Received pre-preserved VOC soils? ☐ MeOH ☐ Na_2SO_4

Check COC for Accuracy

Yes	No	
☑	☐	Analysis Requested?
☑	☐	Sample ID matches COC?
☑	☐	Sample Date and Time matches COC?
☑		Container type completed on COC?
☑	☐	All container types indicated are received?

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological
☐ Air Bags
☐ EnCores / Methanol Pre-Preserved
☐ Formaldehyde/Aldehyde
☐ Green-tagged containers
☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)
☐ NONE RECEIVED
☐ RECEIVED, COCs TO LAB(S)

Sample Condition Summary

N/A	Yes	No	
	☐	☑	Broken containers/lids?
	☐	☑	Missing or incomplete labels?
	☐	☑	Illegible information on labels?
	☐	☑	Low volume received?
	☐	☑	Inappropriate or non-Pace containers received?
☑	☐	☐	VOC vials / TOX containers have headspace?
☐	☐	☑	Extra sample locations / containers not listed on COC?

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	≤1 Hour Goal Met?
10/6/17 0840	10/6/17 1058	Yes / No (circled)

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Tim Reed
PACE Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg PA 15601

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

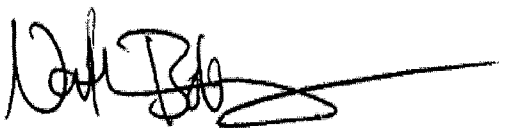
Pace Project #: 10405727
Sample Receipt Date: 10/03/2017
Client Project #: 30231415
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nathan Boberg, your Pace Project Manager.

This report has been reviewed by:



October 19, 2017
Nathan Boberg, Project Manager

(612) 607-6444 (fax)
nathan.boberg@pacelabs.com

Report Prepared Date:
October 19, 2017

Report of Laboratory Analysis

Pace Analytical™

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on ten samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 46-148%. Except for two elevated values, which were flagged "R" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates. In cases where the estimated detection limits (EDLs) were above the standard reporting limits, the EDLs were reported and flagged "A". Results obtained from the analysis of a diluted sample extract were flagged "D".

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

Laboratory and matrix spike samples were also prepared using clean reference matrix or sample matrix that had been fortified with native standard materials. The recoveries of the native compounds generally ranged from 85-120% with relative percent differences (RPDs) generally from 0.3-14.2%. The background-subtracted recovery values obtained for 1,2,3,6,7,8-HxCDD, 1,2,3,4,6,7,8-HpCDF, HpCDD, OCDF, and OCDD in the matrix spike and/or matrix spike duplicate analyses were above the 70-130% target range. Also, the RPD values obtained for these five congeners were above the 20% target upper limit. These deviations may be due to the levels of these congeners in the sample material and/or sample inhomogeneity. Matrix spikes were prepared with the remaining sample batch using sample material from a separate project; results from these analyses will be provided upon request.

The response obtained for the labeled OCDD in calibration standard analysis U1701014B_21 was outside the target range. As specified in the method, the average of the daily response factors for this compound was used in the calculations for the samples from this runshift. The affected values were flagged "Y" on the results tables. It should be noted that the accuracy of the native congener determinations was not impacted by this deviation.

Pace Analytical™

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

10405727

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 30231415 **Workorder Name:** Superior,WI **Owner Received Date:** 9/28/2017 **Results Requested By:** 10/12/2017

Report To	Subcontract To
Timothy Reed Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3,4 Greensburg, PA 15601 Phone 724-850-5614	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	# Preserved Containers: Unpreserved	Requested Analysis: Dioxin 8290	8270- See Attached*	LAB USE ONLY
1	SB-1 [0-1]	PS	9/26/2017 13:30	30231415001	Solid	1	X	X	001
2	SB-2 [0-1]	PS	9/27/2017 08:30	30231415002	Solid	1	X	X	002
3	SB-3 [0-1]	PS	9/27/2017 08:45	30231415003	Solid	1	X	X	003
4	SB-4 [0-1]	PS	9/27/2017 09:00	30231415004	Solid	1	X	X	004
5	SB-5 [0-1]	PS	9/27/2017 09:15	30231415005	Solid	1	X	X	005
6	SB-6 [0-1]	PS	9/27/2017 09:30	30231415006	Solid	1	X	X	006
7	SB-7 [0-1]	PS	9/27/2017 10:00	30231415007	Solid	1	X	X	007
8	SB-8 [0-1]	PS	9/27/2017 10:15	30231415008	Solid	1	X	X	008
9	SB-9 [0-1]	PS	9/27/2017 10:30	30231415009	Solid	1	X	X	009
10	SB-10 [0-1]	PS	9/27/2017 10:45	30231415010	Solid	1	X	X	010

Transfers	Released By	Date/Time	Received By	Date/Time
1	C. Carney 10/2/17	1500	GLA - PACE 10-3-17	945
2				
3				

Comments:

Cooler Temperature on Receipt 0.4 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Report No.....10405727_8290FC_DFR

Page 6 of 26

Page 36 of 56

CHAIN-OF-C[illegible]

The Chain-of-Custody [illegible]

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Page: 1 of 1

2169062

Section A Required Client Information:	Section B Required Project Information:	
Company: KU Resources	Report To: Rob Smith	Attention:
Address: 22 S. Linden St. Duquesne, PA 15110	Copy To:	Company Name:
		Address:
Email To: rsmith@kuresources.com	Purchase Order No.:	Pace Quote Reference:
Phone: 412.469.9331 Fax: 412.469.9336	Project Name: Superior, WI	Pace Project Manager:
Requested Due Date/TAT: STANDARD	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WI

Section D Required Client Information

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test ↓ 8270 - [redacted]	8290	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-1 [0-1]	SL	G			9-26-17	1330		2	2									X	X		001
2	SB-2 [0-1]					9-27-17	1[illegible] 830		2	2									X	X		002
3	SB-3 [0-1]						845		2	2									X	X		003
4	SB-4 [0-1]						900		2	2									X	X		004
5	SB-5 [0-1]						915		2	2									X	X		005
6	SB-6 [0-1]						930		2	2									X	X		006
7	SB-7 [0-1]						1000		2	2									X	X		007
8	SB-8 [0-1]						1015		2	2									X	X		008
9	SB-9 [0-1]						1030		2	2									X	X		009
10	SB-10 [0-1]						1045		2	2									X	X		010
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Bottle order contained	[signature]	9/27/17	1430	[signature]	9/27/17	1430	4.5	Y	N	Y
-Call 412.469.9331	K&K Hoxley	9/27/17		[signature]	9/28/17	1045	3.6	Y	N	Y
with questions										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Dowling

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 09/27/2017

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.21	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Pace PA **Project #:** WO# : 10405727

10405727

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 253709 44 (cannot Read 1st 4 digits)

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.6 **Cooler Temp Corrected (°C):** 0.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A
Temp should be above freezing to 6°C **Correction Factor:** -0.2 **Date and Initials of Person Examining Contents:** GL 10-3-17

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.

				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.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, 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 **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Kathran Boeing **Date:** 10/5/17

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).

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-1 [0-1]		
Lab Sample ID	30231415001		
Filename	U171016B_03		
Injected By	BAL		
Total Amount Extracted	13.2 g	Matrix	Solid
% Moisture	30.7	Dilution	NA
Dry Weight Extracted	9.15 g	Collected	09/26/2017 13:30
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 19:11

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	58
Total TCDF	ND	—	1.0	2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	53
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	54
Total TCDD	ND	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	64
				1,2,3,4,7,8-HxCDF-13C	2.00	56
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	57
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	59
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	54
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	51
				1,2,3,4,7,8,9-HpCDF-13C	2.00	53
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	ND	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	15	—	5.0			
1,2,3,4,6,7,8-HpCDF	14	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 1.9 ng/Kg		
Total HpCDF	14	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	79	—	5.0			
Total HpCDD	310	—	5.0			
OCDF	54	—	10			
OCDD	940	—	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-2 [0-1]		
Lab Sample ID	30231415002		
Filename	U171016B_04		
Injected By	BAL		
Total Amount Extracted	13.3 g	Matrix	Solid
% Moisture	38.5	Dilution	NA
Dry Weight Extracted	8.18 g	Collected	09/27/2017 08:30
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 19:57

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0		2,3,7,8-TCDF-13C	2.00	49
Total TCDF	1.0	—	1.0	J	2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	46
2,3,7,8-TCDD	ND	—	1.0		2,3,4,7,8-PeCDF-13C	2.00	46
Total TCDD	7.6	—	1.0		1,2,3,7,8-PeCDD-13C	2.00	56
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	—	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	ND	—	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	51
Total PeCDF	7.0	—	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	52
					1,2,3,4,7,8-HxCDD-13C	2.00	56
1,2,3,7,8-PeCDD	ND	—	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	ND	—	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	46
					1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	6.2	—	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	55
1,2,3,6,7,8-HxCDF	ND	—	5.0		OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	ND	—	5.0				
1,2,3,7,8,9-HxCDF	ND	—	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	27	—	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0		2,3,7,8-TCDD-37Cl4	0.20	54
1,2,3,6,7,8-HxCDD	9.6	—	5.0				
1,2,3,7,8,9-HxCDD	ND	—	5.0				
Total HxCDD	53	—	5.0				
1,2,3,4,6,7,8-HpCDF	68	—	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.0	—	5.0	J	Equivalence: 12 ng/Kg		
Total HpCDF	74	—	5.0		(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	380	—	5.0				
Total HpCDD	890	—	5.0				
OCDF	290	—	10				
OCDD	5300	—	10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-3 [0-1]		
Lab Sample ID	30231415003		
Filename	U171016B_05		
Injected By	BAL		
Total Amount Extracted	13.8 g	Matrix	Solid
% Moisture	40.5	Dilution	NA
Dry Weight Extracted	8.21 g	Collected	09/27/2017 08:45
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 20:43

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0		2,3,7,8-TCDF-13C	2.00	52
Total TCDF	4.2	—	1.0		2,3,7,8-TCDD-13C	2.00	68
					1,2,3,7,8-PeCDF-13C	2.00	46
2,3,7,8-TCDD	ND	—	1.0		2,3,4,7,8-PeCDF-13C	2.00	47
Total TCDD	2.6	—	1.0		1,2,3,7,8-PeCDD-13C	2.00	55
					1,2,3,4,7,8-HxCDF-13C	2.00	53
1,2,3,7,8-PeCDF	ND	—	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	ND	—	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	6.0	—	5.0	J	1,2,3,7,8,9-HxCDF-13C	2.00	55
					1,2,3,4,7,8-HxCDD-13C	2.00	57
1,2,3,7,8-PeCDD	ND	—	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	ND	—	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	47
					1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	ND	—	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	56
1,2,3,6,7,8-HxCDF	ND	—	5.0		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	ND	—	5.0				
1,2,3,7,8,9-HxCDF	ND	—	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	24	—	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0		2,3,7,8-TCDD-37Cl4	0.20	56
1,2,3,6,7,8-HxCDD	9.3	—	5.0				
1,2,3,7,8,9-HxCDD	ND	—	5.0				
Total HxCDD	44	—	5.0				
1,2,3,4,6,7,8-HpCDF	53	—	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0		Equivalence: 7.0 ng/Kg		
Total HpCDF	53	—	5.0		(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	260	—	5.0				
Total HpCDD	680	—	5.0				
OCDF	200	—	10				
OCDD	2800	—	10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Pace Analytical™

Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-4 [0-1]		
Lab Sample ID	30231415004		
Filename	U171016B_06		
Injected By	BAL		
Total Amount Extracted	12.8 g	Matrix	Solid
% Moisture	28.4	Dilution	NA
Dry Weight Extracted	9.16 g	Collected	09/27/2017 09:00
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 21:29

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0		2,3,7,8-TCDF-13C	2.00	65
Total TCDF	1.0	—	1.0	J	2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	—	1.0		2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	1.1	—	1.0		1,2,3,7,8-PeCDD-13C	2.00	70
					1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	—	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	ND	—	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	ND	—	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	68
					1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	—	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	ND	—	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	58
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	ND	—	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	—	5.0		OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	ND	—	5.0				
1,2,3,7,8,9-HxCDF	ND	—	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	12	—	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0		2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	9.3	—	5.0				
1,2,3,7,8,9-HxCDD	ND	—	5.0				
Total HxCDD	40	—	5.0				
1,2,3,4,6,7,8-HpCDF	40	—	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0		Equivalence: 7.5 ng/Kg		
Total HpCDF	160	—	5.0		(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	270	—	5.0				
Total HpCDD	600	—	5.0				
OCDF	210	—	10				
OCDD	3200	—	10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-5 [0-1]		
Lab Sample ID	30231415005		
Filename	U171016B_07		
Injected By	BAL		
Total Amount Extracted	12.5 g	Matrix	Solid
% Moisture	25.7	Dilution	NA
Dry Weight Extracted	9.29 g	Collected	09/27/2017 09:15
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 22:15

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	—	1.0	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	57
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	ND	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	60
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	66
				1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	55
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	55
				1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	66
1,2,3,6,7,8-HxCDD	ND	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	6.1	—	5.0			
1,2,3,4,6,7,8-HpCDF	7.8	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 1.5 ng/Kg		
Total HpCDF	35	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	58	—	5.0			
Total HpCDD	180	—	5.0			
OCDF	32	—	10			
OCDD	860	—	10			

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REPORT OF LABORATORY ANALYSIS

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Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-6 [0-1]		
Lab Sample ID	30231415006		
Filename	U171016B_08		
Injected By	BAL		
Total Amount Extracted	14.2 g	Matrix	Solid
% Moisture	30.8	Dilution	NA
Dry Weight Extracted	9.83 g	Collected	09/27/2017 09:30
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/16/2017 23:01

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	1.0	—	1.0	2,3,7,8-TCDD-13C	2.00	76
				1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	2.0	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	62
				1,2,3,4,7,8-HxCDF-13C	2.00	60
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	63
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	54
				1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	67
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	48	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	7.1	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	53	—	5.0			
1,2,3,4,6,7,8-HpCDF	41	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 8.5 ng/Kg		
Total HpCDF	210	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	290	—	5.0			
Total HpCDD	810	—	5.0			
OCDF	200	—	10			
OCDD	4300	—	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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RL = Reporting Limit

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NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical™

Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-7 [0-1]		
Lab Sample ID	30231415007		
Filename	F171018A_13		
Injected By	SMT		
Total Amount Extracted	12.9 g	Matrix	Solid
% Moisture	27.4	Dilution	5
Dry Weight Extracted	9.37 g	Collected	09/27/2017 10:00
ICAL ID	F171017	Received	10/03/2017 09:45
CCal Filename(s)	F171017B_17 & F171019A_02	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/18/2017 17:07

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	—	3.2	DA	2,3,7,8-TCDF-13C	2.00	65	D
Total TCDF	ND	—	3.2	D	2,3,7,8-TCDD-13C	2.00	75	D
					1,2,3,7,8-PeCDF-13C	2.00	54	D
2,3,7,8-TCDD	ND	—	2.2	DA	2,3,4,7,8-PeCDF-13C	2.00	70	D
Total TCDD	ND	—	2.2	D	1,2,3,7,8-PeCDD-13C	2.00	69	D
					1,2,3,4,7,8-HxCDF-13C	2.00	52	D
1,2,3,7,8-PeCDF	ND	—	5.0	D	1,2,3,6,7,8-HxCDF-13C	2.00	58	D
2,3,4,7,8-PeCDF	ND	—	5.0	D	2,3,4,6,7,8-HxCDF-13C	2.00	50	D
Total PeCDF	ND	—	5.0	D	1,2,3,7,8,9-HxCDF-13C	2.00	104	D
					1,2,3,4,7,8-HxCDD-13C	2.00	80	D
1,2,3,7,8-PeCDD	ND	—	5.0	D	1,2,3,6,7,8-HxCDD-13C	2.00	57	D
Total PeCDD	6.9	—	5.0	JD	1,2,3,4,6,7,8-HpCDF-13C	2.00	79	D
					1,2,3,4,7,8,9-HpCDF-13C	2.00	98	D
1,2,3,4,7,8-HxCDF	ND	—	5.0	D	1,2,3,4,6,7,8-HpCDD-13C	2.00	117	D
1,2,3,6,7,8-HxCDF	ND	—	5.0	D	OCDD-13C	4.00	127	D
2,3,4,6,7,8-HxCDF	ND	—	5.0	D				
1,2,3,7,8,9-HxCDF	ND	—	5.0	D	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	45	—	5.0	D	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	—	5.0	D	2,3,7,8-TCDD-37Cl4	0.20	68	D
1,2,3,6,7,8-HxCDD	ND	—	5.0	D				
1,2,3,7,8,9-HxCDD	ND	—	5.0	D				
Total HxCDD	120	—	5.0	D				
1,2,3,4,6,7,8-HpCDF	21	—	5.0	JD	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	D	Equivalence: 5.1 ng/Kg			
Total HpCDF	94	—	5.0	D	(Lower-bound - Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	260	—	5.0	D				
Total HpCDD	1300	—	5.0	D				
OCDF	100	—	10	D				
OCDD	2200	—	10	D				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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J = Estimated value
A = Reporting Limit based on signal to noise
D = Result obtained from analysis of diluted sample

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-8 [0-1]		
Lab Sample ID	30231415008		
Filename	F171018A_12		
Injected By	SMT		
Total Amount Extracted	12.5 g	Matrix	Solid
% Moisture	27.3	Dilution	NA
Dry Weight Extracted	9.09 g	Collected	09/27/2017 10:15
ICAL ID	F171017	Received	10/03/2017 09:45
CCal Filename(s)	F171017B_17 & F171019A_02	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58012	Analyzed	10/18/2017 16:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	—	1.0		2,3,7,8-TCDF-13C	2.00	63	
Total TCDF	ND	—	1.0		2,3,7,8-TCDD-13C	2.00	59	
					1,2,3,7,8-PeCDF-13C	2.00	53	
2,3,7,8-TCDD	ND	—	1.0		2,3,4,7,8-PeCDF-13C	2.00	66	
Total TCDD	ND	—	1.0		1,2,3,7,8-PeCDD-13C	2.00	68	
					1,2,3,4,7,8-HxCDF-13C	2.00	86	
1,2,3,7,8-PeCDF	ND	—	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	62	
2,3,4,7,8-PeCDF	ND	—	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	86	
Total PeCDF	5.2	—	5.0	J	1,2,3,7,8,9-HxCDF-13C	2.00	139	R
					1,2,3,4,7,8-HxCDD-13C	2.00	106	
1,2,3,7,8-PeCDD	ND	—	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	106	
Total PeCDD	ND	—	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	97	
					1,2,3,4,7,8,9-HpCDF-13C	2.00	104	
1,2,3,4,7,8-HxCDF	7.9	—	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	103	
1,2,3,6,7,8-HxCDF	ND	—	5.0		OCDD-13C	4.00	148	R
2,3,4,6,7,8-HxCDF	ND	—	5.0					
1,2,3,7,8,9-HxCDF	ND	—	5.0		1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	180	—	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	—	5.0		2,3,7,8-TCDD-37Cl4	0.20	55	
1,2,3,6,7,8-HxCDD	17	—	5.0					
1,2,3,7,8,9-HxCDD	ND	—	5.0					
Total HxCDD	110	—	5.0					
1,2,3,4,6,7,8-HpCDF	96	—	5.0		Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	8.1	—	5.0		Equivalence: 18 ng/Kg			
Total HpCDF	350	—	5.0		(Lower-bound - Using ITE Factors)			
1,2,3,4,6,7,8-HpCDD	630	—	5.0					
Total HpCDD	1900	—	5.0					
OCDF	480	—	10					
OCDD	7900	—	10	E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

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NA = Not Applicable
NC = Not Calculated

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J = Estimated value
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-9 [0-1]		
Lab Sample ID	30231415009		
Filename	U171016B_11		
Injected By	BAL		
Total Amount Extracted	13.2 g	Matrix	Solid
% Moisture	27.8	Dilution	NA
Dry Weight Extracted	9.53 g	Collected	09/27/2017 10:30
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58014	Analyzed	10/17/2017 01:20

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0		2,3,7,8-TCDF-13C	2.00	68
Total TCDF	2.7	—	1.0		2,3,7,8-TCDD-13C	2.00	86
					1,2,3,7,8-PeCDF-13C	2.00	64
2,3,7,8-TCDD	ND	—	1.0		2,3,4,7,8-PeCDF-13C	2.00	60
Total TCDD	14	—	1.0		1,2,3,7,8-PeCDD-13C	2.00	68
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	—	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	—	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	16	—	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	—	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	9.8	—	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	60
					1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	18	—	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	—	5.0		OCDD-13C	4.00	78
2,3,4,6,7,8-HxCDF	ND	—	5.0				
1,2,3,7,8,9-HxCDF	7.6	—	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	380	—	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	6.2	—	5.0		2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	40	—	5.0				
1,2,3,7,8,9-HxCDD	9.9	—	5.0				
Total HxCDD	490	—	5.0				
1,2,3,4,6,7,8-HpCDF	280	—	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	18	—	5.0		Equivalence: 60 ng/Kg		
Total HpCDF	1500	—	5.0		(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	2000	—	5.0				
Total HpCDD	6100	—	5.0	E			
OCDF	1600	—	10				
OCDD	27000	—	10	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Method 8290 Sample Analysis Results

Client - PACE Pittsburgh

Client's Sample ID	SB-10 [0-1]		
Lab Sample ID	30231415010		
Filename	U171016B_12		
Injected By	BAL		
Total Amount Extracted	12.9 g	Matrix	Solid
% Moisture	28.3	Dilution	NA
Dry Weight Extracted	9.25 g	Collected	09/27/2017 10:45
ICAL ID	U170516	Received	10/03/2017 09:45
CCal Filename(s)	U171016A_11 & U171016B_16	Extracted	10/06/2017 18:00
Method Blank ID	BLANK-58014	Analyzed	10/17/2017 02:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	ND	—	1.0	2,3,7,8-TCDD-13C	2.00	85
				1,2,3,7,8-PeCDF-13C	2.00	59
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	2.6	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	72
				1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	68
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	69
				1,2,3,4,7,8-HxCDD-13C	2.00	68
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	55
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	11	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	ND	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	27	—	5.0			
1,2,3,4,6,7,8-HpCDF	27	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 4.3 ng/Kg		
Total HpCDF	27	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	170	—	5.0			
Total HpCDD	440	—	5.0			
OCDF	100	—	10			
OCDD	2200	—	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical™

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-58014	Matrix	Solid
Filename	U171014B_09	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	10/06/2017 18:00
ICAL ID	U170516	Analyzed	10/14/2017 19:45
CCal Filename(s)	U171014B_05 & U171014B_21	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	55
Total TCDF	ND	—	1.0	2,3,7,8-TCDD-13C	2.00	73
				1,2,3,7,8-PeCDF-13C	2.00	46
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	50
Total TCDD	ND	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	60
				1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	60
				1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	69
				1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	63 Y
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	59
1,2,3,6,7,8-HxCDD	ND	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	ND	—	5.0			
1,2,3,4,6,7,8-HpCDF	ND	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	—	5.0			
Total HpCDD	ND	—	5.0			
OCDF	ND	—	10			
OCDD	ND	—	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical™

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-58012	Matrix	Solid
Filename	U171016A_04	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	10/06/2017 18:00
ICAL ID	U170516	Analyzed	10/16/2017 11:05
CCal Filename(s)	U171015B_04 & U171016A_11	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—	1.0	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	—	1.0	2,3,7,8-TCDD-13C	2.00	78
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	—	1.0	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	ND	—	1.0	1,2,3,7,8-PeCDD-13C	2.00	86
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	—	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	ND	—	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	—	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	—	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	ND	—	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	67
				1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	ND	—	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	ND	—	5.0	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	ND	—	5.0			
1,2,3,7,8,9-HxCDF	ND	—	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—	5.0	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,6,7,8-HxCDD	ND	—	5.0			
1,2,3,7,8,9-HxCDD	ND	—	5.0			
Total HxCDD	ND	—	5.0			
1,2,3,4,6,7,8-HpCDF	ND	—	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	—	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	—	5.0	(Lower-bound - Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	—	5.0			
Total HpCDD	ND	—	5.0			
OCDF	ND	—	10			
OCDD	ND	—	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-58015		
Filename	U171016A_01	Matrix	Solid
Total Amount Extracted	10.6 g	Dilution	NA
ICAL ID	U170516	Extracted	10/06/2017 18:00
CCal Filename(s)	U171015B_04 & U171016A_11	Analyzed	10/16/2017 08:43
Method Blank ID	BLANK-58014	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	108	2,3,7,8-TCDF-13C	2.0	77
Total TCDF				2,3,7,8-TCDD-13C	2.0	98
				1,2,3,7,8-PeCDF-13C	2.0	82
2,3,7,8-TCDD	0.20	0.17	85	2,3,4,7,8-PeCDF-13C	2.0	87
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	106
				1,2,3,4,7,8-HxCDF-13C	2.0	75
1,2,3,7,8-PeCDF	1.0	1.1	114	1,2,3,6,7,8-HxCDF-13C	2.0	86
2,3,4,7,8-PeCDF	1.0	1.1	111	2,3,4,6,7,8-HxCDF-13C	2.0	85
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	84
				1,2,3,4,7,8-HxCDD-13C	2.0	80
1,2,3,7,8-PeCDD	1.0	1.0	100	1,2,3,6,7,8-HxCDD-13C	2.0	80
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	78
				1,2,3,4,7,8,9-HpCDF-13C	2.0	79
1,2,3,4,7,8-HxCDF	1.0	1.1	114	1,2,3,4,6,7,8-HpCDD-13C	2.0	91
1,2,3,6,7,8-HxCDF	1.0	1.1	109	OCDD-13C	4.0	83
2,3,4,6,7,8-HxCDF	1.0	1.0	103			
1,2,3,7,8,9-HxCDF	1.0	1.1	108	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	0.97	97	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	1.0	1.2	119			
1,2,3,7,8,9-HxCDD	1.0	1.1	114			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.00	100			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	101			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.99	99			
Total HpCDD						
OCDF	2.0	2.0	102			
OCDD	2.0	2.1	105			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-58013		
Filename	U171016A_02	Matrix	Solid
Total Amount Extracted	10.7 g	Dilution	NA
ICAL ID	U170516	Extracted	10/06/2017 18:00
CCal Filename(s)	U171015B_04 & U171016A_11	Analyzed	10/16/2017 09:34
Method Blank ID	BLANK-58012	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	110	2,3,7,8-TCDF-13C	2.0	64
Total TCDF				2,3,7,8-TCDD-13C	2.0	77
				1,2,3,7,8-PeCDF-13C	2.0	67
2,3,7,8-TCDD	0.20	0.19	93	2,3,4,7,8-PeCDF-13C	2.0	74
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	84
				1,2,3,4,7,8-HxCDF-13C	2.0	66
1,2,3,7,8-PeCDF	1.0	1.2	116	1,2,3,6,7,8-HxCDF-13C	2.0	76
2,3,4,7,8-PeCDF	1.0	1.1	107	2,3,4,6,7,8-HxCDF-13C	2.0	75
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	70
				1,2,3,4,7,8-HxCDD-13C	2.0	70
1,2,3,7,8-PeCDD	1.0	1.0	102	1,2,3,6,7,8-HxCDD-13C	2.0	72
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	70
				1,2,3,4,7,8,9-HpCDF-13C	2.0	66
1,2,3,4,7,8-HxCDF	1.0	1.2	119	1,2,3,4,6,7,8-HpCDD-13C	2.0	76
1,2,3,6,7,8-HxCDF	1.0	1.2	116	OCDD-13C	4.0	72
2,3,4,6,7,8-HxCDF	1.0	1.1	107			
1,2,3,7,8,9-HxCDF	1.0	1.1	114	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.1	114	2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,6,7,8-HxCDD	1.0	1.1	110			
1,2,3,7,8,9-HxCDD	1.0	1.2	119			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.1	107			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	101			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	1.0	103			
Total HpCDD						
OCDF	2.0	2.2	108			
OCDD	2.0	2.2	109			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Method 8290 Spiked Sample Report

Client - PACE Pittsburgh

Client's Sample ID	SB-2 [0-1]-MS		
Lab Sample ID	30231415002-MS		
Filename	U171016B_14	Matrix	Solid
Total Amount Extracted	13.3 g	Dilution	NA
ICAL ID	U170516	Extracted	10/06/2017 18:00
CCal Filename(s)	U171016A_11 & U171016B_16	Analyzed	10/17/2017 03:38
Method Blank ID	BLANK-58012	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C	2.00	61
				2,3,7,8-TCDD-13C	2.00	73
				1,2,3,7,8-PeCDF-13C	2.00	53
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	53
				1,2,3,7,8-PeCDD-13C	2.00	64
				1,2,3,4,7,8-HxCDF-13C	2.00	56
1,2,3,7,8-PeCDF	1.00	1.16	116	1,2,3,6,7,8-HxCDF-13C	2.00	57
2,3,4,7,8-PeCDF	1.00	1.09	109	2,3,4,6,7,8-HxCDF-13C	2.00	57
				1,2,3,7,8,9-HxCDF-13C	2.00	62
				1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	1.00	0.99	99	1,2,3,6,7,8-HxCDD-13C	2.00	48
				1,2,3,4,6,7,8-HpCDF-13C	2.00	51
				1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	1.00	1.21	121	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	1.00	1.15	115	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	1.00	1.09	109			
1,2,3,7,8,9-HxCDF	1.00	1.12	112	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.01	101	2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,6,7,8-HxCDD	1.00	1.39	139			
1,2,3,7,8,9-HxCDD	1.00	1.21	121			
1,2,3,4,6,7,8-HpCDF	1.00	1.74	174			
1,2,3,4,7,8,9-HpCDF	1.00	1.03	103			
1,2,3,4,6,7,8-HpCDD	1.00	4.78	478			
OCDF	2.00	5.23	261			
OCDD	2.00	56.26	2813			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - PACE Pittsburgh

Client's Sample ID	SB-2 [0-1]-MSD		
Lab Sample ID	30231415002-MSD		
Filename	U171016B_15	Matrix	Solid
Total Amount Extracted	13.1 g	Dilution	NA
ICAL ID	U170516	Extracted	10/06/2017 18:00
CCal Filename(s)	U171016A_11 & U171016B_16	Analyzed	10/17/2017 04:24
Method Blank ID	BLANK-58012	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	115	2,3,7,8-TCDF-13C	2.00	60
				2,3,7,8-TCDD-13C	2.00	77
				1,2,3,7,8-PeCDF-13C	2.00	52
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	51
				1,2,3,7,8-PeCDD-13C	2.00	60
				1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	1.00	1.15	115	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	1.00	1.13	113	2,3,4,6,7,8-HxCDF-13C	2.00	65
				1,2,3,7,8,9-HxCDF-13C	2.00	64
				1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	1.00	1.04	104	1,2,3,6,7,8-HxCDD-13C	2.00	63
				1,2,3,4,6,7,8-HpCDF-13C	2.00	53
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	1.00	1.25	125	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	1.00	1.14	114	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	1.00	1.11	111			
1,2,3,7,8,9-HxCDF	1.00	1.19	119	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.16	116	2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,6,7,8-HxCDD	1.00	1.40	140			
1,2,3,7,8,9-HxCDD	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDF	1.00	3.09	309			
1,2,3,4,7,8,9-HpCDF	1.00	1.11	111			
1,2,3,4,6,7,8-HpCDD	1.00	11.31	1131			
OCDF	2.00	12.48	624			
OCDD	2.00	133.24	6662 E			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Spike Sample Results

Client - PACE Pittsburgh

Client Sample ID	SB-2 [0-1]			Dry Weights	
Lab Sample ID	30231415002	Sample Filename	U171016B_04	Sample Amount	8.18 g
MS ID	30231415002-MS	MS Filename	U171016B_14	MS Amount	8.2 g
MSD ID	30231415002-MSD	MSD Filename	U171016B_15	MSD Amount	8.1 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	Background Subtracted MSD % Rec.	Background Subtracted RPD
2,3,7,8-TCDF	0.000	0.20	0.21	0.23	8.4	106	115	8.4
2,3,7,8-TCDD	0.000	0.20	0.18	0.18	0.3	91	91	0.3
1,2,3,7,8-PeCDF	0.000	1.00	1.16	1.15	0.5	116	115	0.5
2,3,4,7,8-PeCDF	0.000	1.00	1.09	1.13	3.0	108	112	3.0
1,2,3,7,8-PeCDD	0.000	1.00	0.99	1.04	4.8	98	103	4.9
1,2,3,4,7,8-HxCDF	6.194	1.00	1.21	1.25	3.2	116	120	3.3
1,2,3,6,7,8-HxCDF	0.000	1.00	1.15	1.14	1.2	114	112	1.2
2,3,4,6,7,8-HxCDF	0.000	1.00	1.09	1.11	2.4	106	109	2.5
1,2,3,7,8,9-HxCDF	0.000	1.00	1.12	1.19	6.5	110	117	6.6
1,2,3,4,7,8-HxCDD	0.000	1.00	1.01	1.16	14.2	100	115	14.4
1,2,3,6,7,8-HxCDD	9.608	1.00	1.39	1.40	0.5	131	132	0.7
1,2,3,7,8,9-HxCDD	0.000	1.00	1.21	1.18	2.4	119	116	2.4
1,2,3,4,6,7,8-HpCDF	67.985	1.00	1.74	3.09	55.8	119	254	72.8
1,2,3,4,7,8,9-HpCDF	5.964	1.00	1.03	1.11	7.5	98	106	7.9
1,2,3,4,6,7,8-HpCDD	379.455	1.00	4.78	11.31	81.2	167	826	132.6
OCDF	288.440	2.00	5.23	12.48	81.9	143	508	111.9
OCDD	5275.223	2.00	56.26	133.24	81.2	656	4537	149.5

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Appendix 5
Concrete Core Photo-Documentation

SB-1 Concrete Core.

SB-2 Concrete Core

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: **KOPPERS INC.**

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	

PLATE 1

SB-5 Concrete Core.

SB-6 Concrete Core

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: **KOPPERS INC.**

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	

PLATE 2

SB-8 Concrete Core

SB-10 Concrete Core

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: **KOPPERS INC.**

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	

PLATE 3

Appendix 6
Boring Logs

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-1
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
	DP-1	45	0	1' Thick Concrete Pad Fill: gravel, sand, wet Red, sandy clay, slight odor, some black staining around 1.5' to 2.2', damp to moist.	• No visual impacts to the Concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/27/2017
Date Completed: 09/27/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-2
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
				Ground Surface	
0				1' thick concrete pad.	
				Fill: gravel, sand, wet	
	DP-1	39	0	Brown to red sandy (fine grained) clay, damp to moist, no odors or visual impacts.	No visual impacts to the Concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/27/2017
Date Completed: 09/27/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-3
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
				Ground Surface	
0				1' thick concrete pad	No visual impacts of concrete core.
	DP-1	36	0	Fill: gravel, sand, wet Brown to tan sandy (fine grained) clay, with some odor, damp. Some black staining from 0-2'.	Off set from original location due to a ballast being present.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/27/2017
Date Completed: 09/27/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-4
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	
				Fill: gravel, sand, wet	No visual impacts of concrete core.
	DP-1	38	0	Tan to red sandy (fine grained) clay, damp	Off set from original location due to a ballast being present.
5				Slight odor and some black staining at approx. 2'.	
				END BORING AT 5 FT.	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-5
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	
				Fill: gravel, sand, wet	
	DP-1	44	2.5	Tan to red sandy (fine grained) clay, damp, slight odor, no visual impacts.	No visual impact of the concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-6
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	
				Fill: gravel, sand, wet	
	DP-1	45	2.2	Tan and red sandy (fine grained) clay, damp, no visual impacts, strong odor throughout.	No visual impact of the concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-7
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	
				Fill: gravel, sand, wet	
	DP-1	41	5.7	Tan and red sandy (fine grained) clay, damp, no visual impacts, slgiht odor throughout.	No visual impacts of concrete core.
5				**END BORING AT 5 FT.**	Off set from original location due to a ballast being present.
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-8
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	
	DP-1	42	5.2	Fill: gravel, sand, wet Tan and red sandy (fine grained) clay, damp, no visual impacts, slight odor throughout.	No visual impacts of concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft):54 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-9
Page 1 o f 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
				1' thick concrete pad	No visual impacts of concrete core.
	DP-1	29	3.8	Fill: gravel, sand, wet Tan and red sandy (fine grained) clay, damp, no visual impacts, slight odor throughout.	
5				**END BORING AT 5 FT.**	
10					
15					
20					

KU Resources, Inc.
Innovative Solutions, Outstanding Support.

BORING LOG

Client: Koppers Inc.
Site: Superior Site
Location: Superior, WI
Project No.: KI16261SDPC
Date Started: 09/26/2017
Date Completed: 09/26/2017

Driller: Twin Port Testing
Method: Direct Push
Equip.: TackMounted GeoProbe ©
Surface Elevation(ft/msl): 665
Bottom of Boring (ft): 5 FT
Ground Water (ft): NR 0/Hr/NR 24 Hrs

Boring No.: SB-10
Page 1 of 1
Latitude/Northing: 46º 38' 49.49" N
Longitude/Easting: 92º 04' 05.856" W
Field Scientist: R. Dowling
Checked By: R. Smith

Depth (ft)	Sample No. and Type	Sample Recovery (in)	PID (ppm)	Lithologic Description	Comments
0				Ground Surface	
	DP-1	34	2.5	Fill: gravel, sand, wet Brown fine grained sand, wet Brown to red sandy (fine grained) clay, damp, no visual impacts with a slight odor.	No visual impacts of concrete core.
5				**END BORING AT 5 FT.**	
10					
15					
20					

Appendix 7
Subsoil Boring Photo-Documentation

SB-1 Sample

SB-2 Sample

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: KOPPERS INC.

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	

PLATE 1

SB- 3 Sample

SB-4 Sample

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: KOPPERS INC.

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	
PLATE 2		

SB-5 Sample

SB-6 Sample

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: KOPPERS INC.

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	

PLATE 3

SB- 7 Sample

SB-8 Sample

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: KOPPERS INC.

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	
PLATE 4		

SB- 9 Sample

SB-10 Sample

KU Resources, Inc.

SITE PHOTOGRAPHS

FORMER KOPPERS WOOD TREATMENT FACILITY
SUPERIOR, WISCONSIN

Prepared for: KOPPERS INC.

DRAWN BY:	MRD	10/04/17
CHECKED BY:	RTS	10/04/17
APPROVED BY:	RTS	10/04/17
PROJECT NO.	KI16261SDPC	
PLATE 5		