



Gannett Fleming

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January 16, 2018

File #34265.003

Mr. John Sager

Wisconsin Department of Natural Resources

1701 North 4th Street

Superior, WI 54880

Re: Facility-Wide Groundwater Monitoring Report for 2017
Superior Refining Company LLC, Superior, WI
WDNR BRRTS# 02-16-559511 and Facility ID: 816009590

Dear John:

On behalf of Superior Refining Company LLC (SRC), Gannett Fleming, Inc. (GF) is submitting the 2017 annual report for the facility-wide groundwater monitoring network (WDNR BRRTS# 02-16-559511) at the subject refinery in Superior. The report summarizes network field activities completed in 2017, the groundwater sampling protocol used, and laboratory analytical results. In addition, it includes pertinent site background information for reference. Periodic reporting of site remediation progress to the Wisconsin Department of Natural Resources (WDNR) is required pursuant to ss. NR 700.11(1) and 724.13(3), Wisconsin Administrative Code. A completed certification page for the report is also attached.

Pertinent Site Background

Figure 1 is a location map showing the refinery, its approximate property boundary, and the area around the refinery and was prepared using the most recent USGS topographic map. The refinery occupies portions of Sections 25, 26, 30, and 36; Township 49 North; Range 14 West; in Superior Township of Douglas County. Figure 2 shows the locations of the 23 monitoring wells (MW-1, MW-1/T67, MW-2, MW-2/T66, MW-3/T50, MW-3D, MW-5/T40, MW-5/T70, MW-7, MW-8R, MW-9B, and MW-11 through MW-22) and 8 piezometers (PZ-2/T66, PZ-3D, PZ-8R, PZ-11, PZ-13, PZ-16, PZ17, and PZ-21) in the network.

The topography at the refinery slopes gently to the east. Surface elevations range from approximately 650 to 660 feet above mean sea level (MSL). The closest natural surface water body is Newton Creek, located approximately 850 feet east of the refinery's closest aboveground storage tank (AST), as shown on Figure 1. The creek flows about 1.5 miles to Hog Island Inlet, which connects to Lake Superior Bay. Storm water retention and fire water ponds,

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along with two artificial wetlands for wastewater treatment plant discharge polishing, are located just northwest of the Newton Creek headwaters, near the intersection of Stinson/24th Avenue and Bardon Avenue.

Other than the process areas, which are generally paved, most of the refinery property is unpaved. Depending on time of year and topography, the depth to groundwater in the network monitoring wells ranges from <1.0 to >5.9 feet below ground surface (bgs). The direction of shallow groundwater flow below the refinery is to the east (see Figure 2).

The hydraulic conductivity of the native clay underlying the refinery is on the order of 10^{-7} centimeters per second. Assuming a horizontal hydraulic gradient of 0.003 and effective porosity of 0.06, the estimated horizontal groundwater flow velocity is approximately 0.01 foot per year (ft/yr). The red-brown lean clay till is relatively homogenous and extends to approximately 100 feet bgs beneath the site.

On October 1, 2011, Calumet Superior LLC (Calumet) acquired the refinery from Murphy Oil (Murphy). In May 2014, the WDNR approved Calumet's April 2014 *Site Investigation and Remedial Action Plan* (SI/RAP) for the refinery. Effective November 8, 2017, Husky Superior Refining Holding Corp (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC. The April 2014 SI/RAP will become a component of a Memorandum of Agreement (MOA) between SRC and the WDNR, a draft of which is currently being reviewed.

In conjunction with the SI/RAP, a network of 23 wells and 8 piezometers for monitoring overall groundwater quality was established. Twice a year, starting in 2015, all wells and piezometers in the network are gauged (to check for free product, track seasonal changes in water levels, and prepare groundwater contour maps), and the perimeter wells and all piezometers are purged and sampled. As part of the MOA, a single new refinery-wide Environmental Repair Program (ERP) site will be created at the refinery, and this site will be referred to as a facility-wide ERP. Table 1 provides a summary of ERP well locations, designations, and monitoring parameters for reference. Note that:

1. MW-1, MW-2, MW-3D, MW-8R, and MW-9B are also classified as "pond" wells. Once a year, samples from these wells are analyzed for volatile organic compounds (VOCs) using

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Method 8260 and select inorganics, in conjunction with wastewater treatment Ponds 1 and 6 post-closure monitoring. As stipulated by the WDNR Groundwater and Environmental Monitoring System (GEMS) program, MW-8R serves as an upgradient monitoring well, located approximately 2,500 feet southwest of the ponds.

2. MW-1/T67, MW-2/T66, MW-3/T50, MW-5/T40, and MW-5/T70 are gauged along with the perimeter wells and piezometers. However, they are not routinely purged and sampled as part of the ERP monitoring program. Consequently, these wells are not classified as perimeter wells and are designated as “other” wells in Table 1.
3. The piezometers and perimeter wells are purged using a modified purge method, as approved by the WDNR in 2015. All the piezometers and perimeter wells are purged twice prior to sampling. At each perimeter well, field staff either bail the well dry or stop purging at a volume of 4 gallons per visit, or up to 8 gallons total after the second time. At each piezometer, field staff either bail the piezometer dry or stop purging at a volume of 6.5 gallons per visit, or up to 13 gallons total after the second time. This modified method replaces the practice of simply bailing all wells and piezometers dry each time, as described on page 16 of the April 2014 SI/RAP, and increases the probability that the wells and piezometers will reach static conditions between gauging and purging events.
4. Field work is generally conducted by staff from Insight Environmental of Superior and/or GF of Madison. Insight Environmental typically conducts the routine gauging and purging. GF joins Insight Environmental twice a year for the groundwater sampling events.

Dates and Descriptions of Field Activities in 2017

- On April 26, Insight Environmental gauged the entire network of wells and piezometers for the first time in 2017 (see Table 2). In addition, on April 26 and May 8, Insight Environmental purged the perimeter wells and all the piezometers prior to sampling.
- On May 15, GF and Insight Environmental completed the first round of groundwater monitoring in 2017 and sampled the piezometers and perimeter wells for petroleum volatile organic compounds (PVOCs) and naphthalene.
- On September 27, Insight Environmental gauged all the wells and piezometers for the second time (see Table 2). In addition, on September 27 and October 9, Insight Environmental purged the perimeter wells and all the piezometers prior to sampling.

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- On October 24 and 25, GF and Insight Environmental completed the second round of groundwater monitoring and sampled the piezometers and perimeter wells for PVOCs and naphthalene. Samples from the five pond wells (i.e., MW-1, MW-2, MW-3D, MW-8R, and MW-9B) were analyzed for VOCs and select inorganics for the GEMS program, as described in the *Pertinent Site Background* section (Note #1) above.

Groundwater Sample Collection/Preservation and Laboratory Analytical Results

GF and Insight Environmental used a new disposable polyethylene bailer with nylon rope to collect each groundwater sample and immediately transferred the sample into laboratory-supplied vials pre-filled with the appropriate volume of hydrochloric acid preservative. The sample vials were labelled, placed on ice stored in a cooler, shipped overnight to Pace Analytical of Green Bay (Wisconsin laboratory certification #405132750), and analyzed for PVOCs and naphthalene using Method 8021 (or 8260 for the pond wells, once a year).

The PVOc/naphthalene analytical results for 2017 (with MW-1, MW-2, MW-3D, MW-8R, and MW-9B flagged as *ERP and GEMS* well locations) are summarized in Table 3. Only the PVOc/naphthalene data for 2017 are presented in this report; complete VOC and inorganic analytical results for the five pond wells will be submitted to WDNR GEMS program staff by January 31, 2018. Attachment A includes copies of the laboratory reports and chain of custody records for the groundwater samples collected in 2017.

Findings

Results from the third year of groundwater monitoring in 2017 document that:

- The depth to groundwater in the perimeter wells ranged from 1.81 to 6.91 feet below top of casing (i.e., from approximately -0.5 to 2.9 feet bgs), and no free product was observed. Calculated vertical gradients were all negative/downward and ranged from 0.12 to 0.58. All water level elevation data are presented in Table 2. Negative vertical gradients are shown in parenthesis in (red).
- The direction of shallow groundwater flow below the refinery is to the east (see Figure 2), which is consistent with previously determined groundwater flow directions. Likewise, the range of horizontal gradients (i.e., from 0.0018 to 0.010) is consistent with those previously observed.

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- Analytical results were all non-detect for PVOCs and naphthalene, and the detection limits for PVOCs and naphthalene were all below their respective preventative action limits, as shown in Table 3. In 2015 and 2016, PVOC/naphthalene analytical results were all non-detect also.

2018 Monitoring Plan

In 2018, SRC will:

- Continue to gauge fluid levels in all the wells and piezometers, and purge and sample all the piezometers and perimeter wells twice a year.
- Continue to use a modified purge method, as described in the *Pertinent Site Background* section (Note #3) above.
- Continue to lab analyze the groundwater samples for PVOCs/naphthalene using:
 - Method 8021 on a routine basis.
 - Method 8260 when monitoring the five pond wells for VOCs once a year.

Contact me or Matt Turner at Husky Superior if you have any questions or need additional information.

Sincerely,

GANNETT FLEMING, INC.



Clifford C. Wright, P.E., P.G.
Project Engineer

CCW/jec/Enc.

Electronic cc: Matt Turner (Husky Superior)

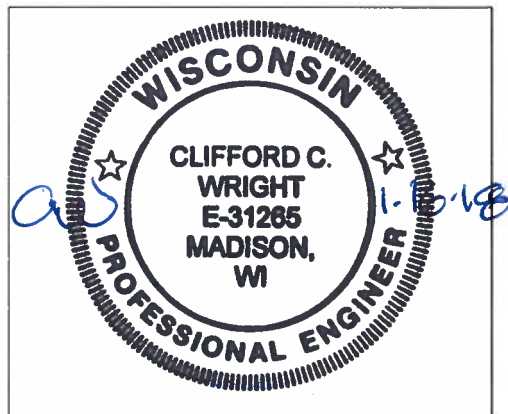
CERTIFICATION

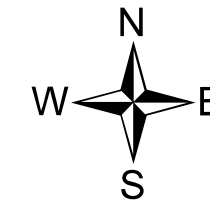
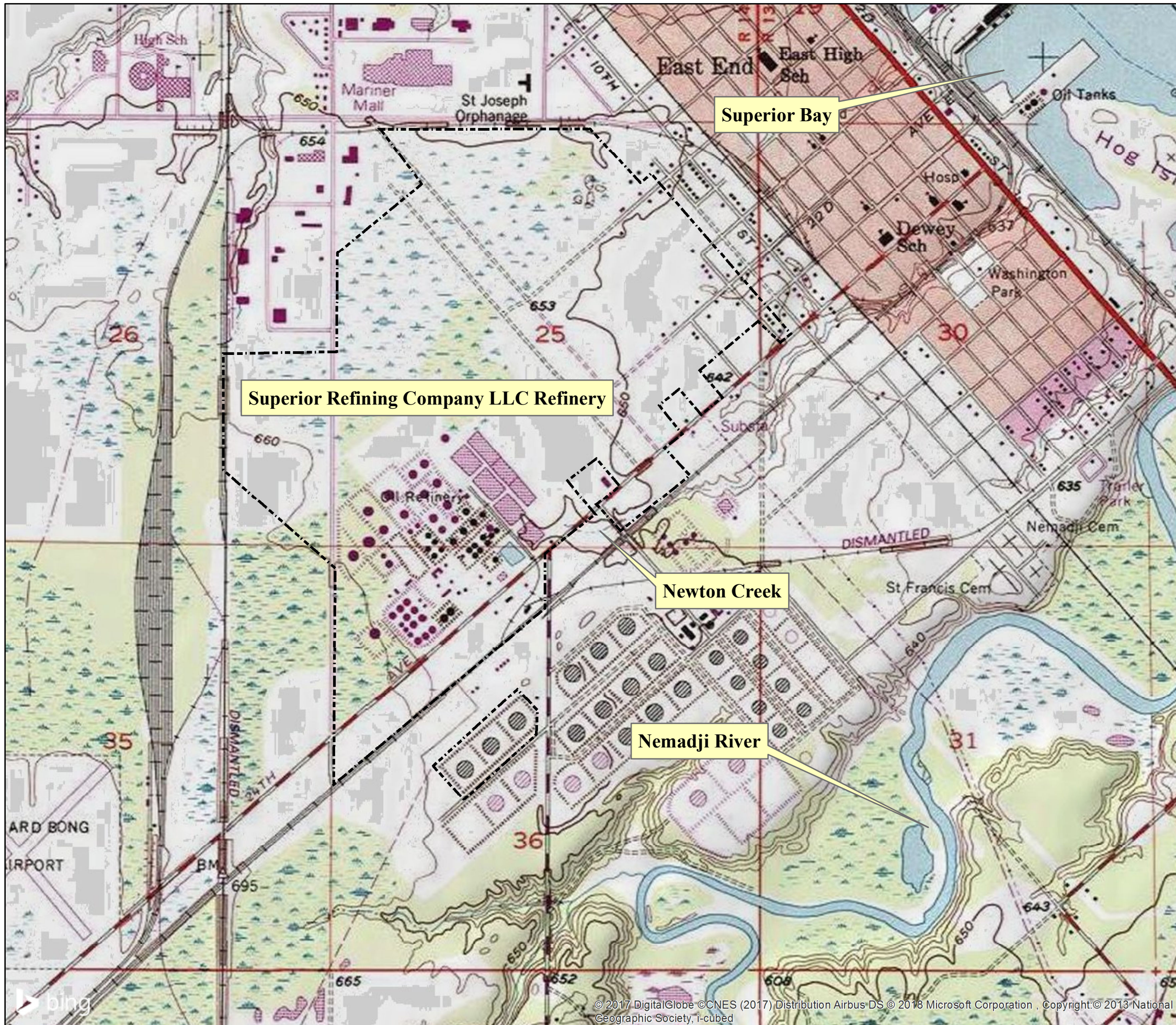
Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring, or an investigation. Other persons may sign this form for sites with no response activities during the six month reporting period.

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 with the rules of Professional Conduct in ch. A-E 8, 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.

Print Name Clifford C. Wright	Title Project Engineer
Signature <i>Clifford C. Wright</i>	Date 1-16-18

Professional Seal, if applicable:



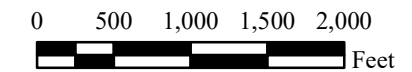



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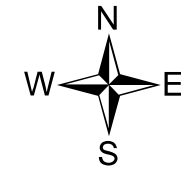
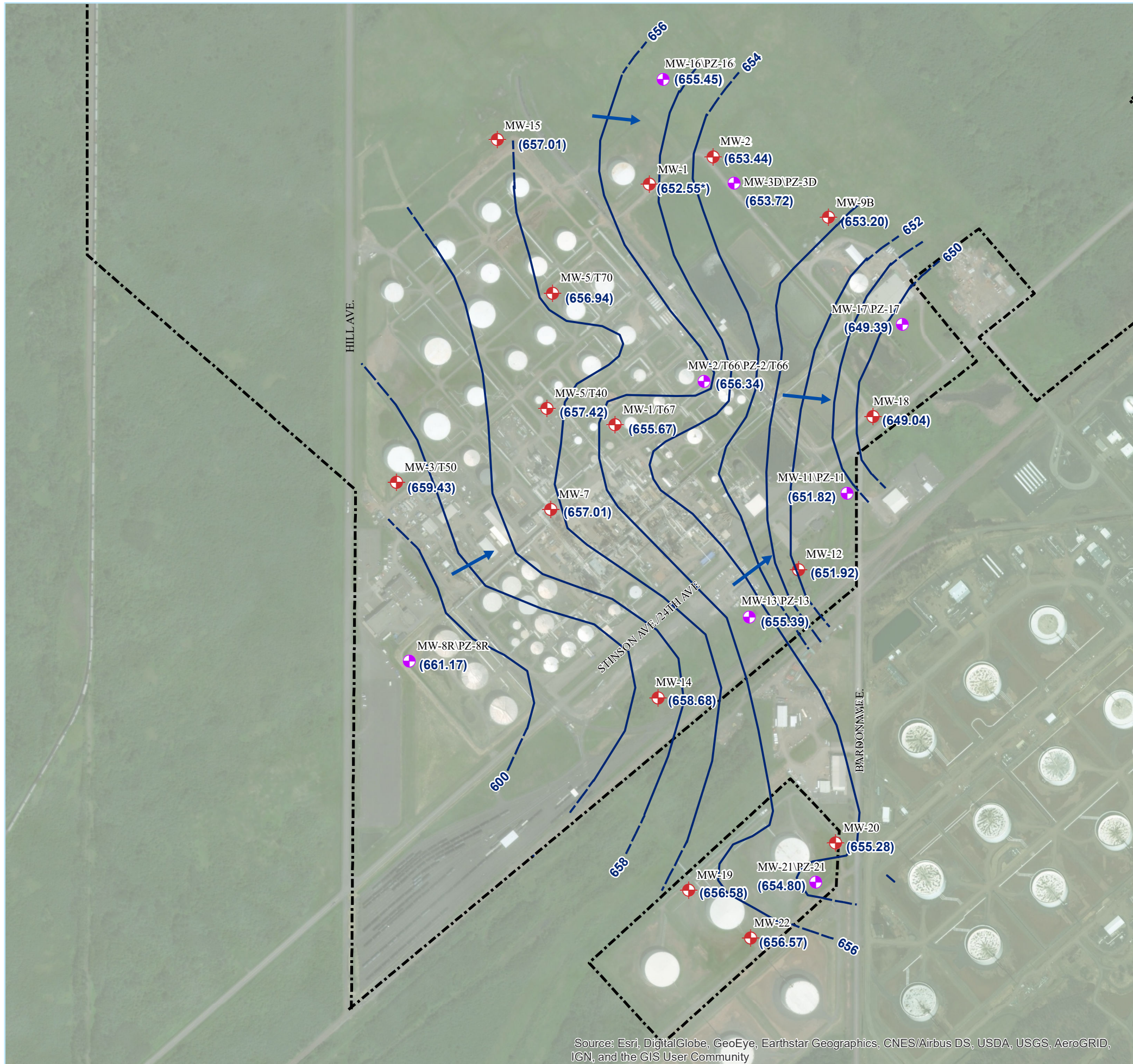
----- Approximate Calumet Superior Property Boundary

Notes:

1. Contour interval = 10ft.
2. Site datum = mean sea level (MSL).
3. Topographic map obtained from ArcGIS USA Topo Map Service. Service includes seamless, scanned image of USGS topographic maps.



Site Location Map			
SUPERIOR REFINING COMPANY LLC REFINERY SUPERIOR, WISCONSIN			
		Gannett Fleming, Inc. 8025 Excelsior Drive Madison WI 53717-1900 (608) 836-1500 www.gannettfleming.com	
Project No.	34265.003	Date	1/8/18 Figure 1

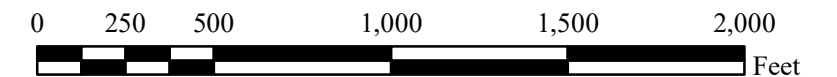


Legend

- 656** — Groundwater Contour (dashed where inferred)
- Groundwater Flow Direction
- (654.30)** Groundwater Elevation (ft MSL)
- ⊕ Monitoring Well
- ⊕ Monitoring Well\Piezometer Pair (groundwater elevation shown is for monitoring well)
- - - Approximate Facility Property Boundary

Notes:

1. The data from MW-1 and MW-3D were not used to develop the contour map.
2. Site datum = mean sea level (MSL).
3. Well\Piezometer locations based on 02/06/15 survey by TKDA using a Trimble GNSS RTK GPS R8 Model 3.



Groundwater Flow Map (May 2017)

SUPERIOR REFINING COMPANY LLC REFINERY
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Project No.	34265.003	Date	1/8/18	Figure	2
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SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

TABLE 1

ERP WELL LOCATION, DESIGNATION, AND MONITORING PARAMETER SUMMARY

Well ID	Well Location	Well Designation(s)			ERP Monitoring Parameter(s)	
		Perimeter	Pond/GEMS	Other	Water Level	PVOC/Naphthalene
MW-1	Northeast corner of refinery	X	X		X	X
MW-1/T67	Tank 67 basin			X	X	
MW-2	Northeast corner of refinery	X	X		X	X
MW-3/T50	Tank 50 basin			X	X	
MW-2/T66	Southeast of Tank 65 basin			X	X	
MW-3D	Northeast corner of refinery	X	X		X	X
MW-3/T50	Tank 50 basin			X	X	
MW-5/T40	Tank 40 basin			X	X	
MW-5/T70	Tank 70 basin			X	X	
MW-7	Central area of refinery	X			X	X
MW-8R	Tanks 106/112/114; SW corner of refinery	X	X		X	X
MW-9B	Northwest of wastewater treatment plant	X	X		X	X
MW-11	Near intersection of Stinson & Bardon Ave.	X			X	X
MW-12	South central property boundary	X			X	X
MW-13	South central property boundary	X			X	X
MW-14	South central property boundary	X			X	X
MW-15	North of refinery	X			X	X
MW-16	Northeast corner of refinery	X			X	X
MW-17	Southeast of wastewater treatment plant	X			X	X
MW-18	Near intersection of Stinson & Bardon Ave.	X			X	X
MW-19	South tank farm	X			X	X
MW-20	South tank farm	X			X	X
MW-21	South tank farm	X			X	X
MW-22	South tank farm	X			X	X

NOTES:

Water Level = Measure depth to water, twice a year, for groundwater elevation.

PVOC/Naphthalene = Sample, twice a year, for petroleum volatile organic compounds/naphthalene.

ERP = Wisconsin Department of Natural Resources (WDNR) Environmental Repair Program.

GEMS = WDNR Groundwater and Environmental Monitoring System.

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

TABLE 2

WATER LEVEL ELEVATION DATA FOR ERP WELLS AND PIEZOMETERS

Description	Monitoring Well ID and Reference Information													
	MW-1	MW-1/T67	MW-2	MW-2/T66	PZ-2/T66	MW-3D	PZ-3D	MW-3/T50	MW-5/T40	MW-5/T70	MW-7	MW-8R	PZ-8R	MW-9B
Top of casing (ft MSL)	659.46	657.75	658.03	659.51	659.07	655.53	656.29	663.73	660.62	660.37	661.12	663.75	664.19	655.82
Ground surface (ft MSL)	655.43	656.41	654.99	657.01	656.30	653.79	653.49	659.96	658.03	657.86	659.59	661.45	661.38	654.38
Top of screen (ft MSL)	649.0	653.4	648.5	654.4	621.6	650.3	618.8	659.2	655.2	655.4	654.7	659.8	626.7	651.1
Bottom of well (ft MSL)	633.8	638.4	633.5	639.4	616.6	635.3	613.8	649.2	645.2	645.4	639.5	649.8	621.7	636.1
Measurement Date	Depth to Water from Top of Casing (feet)													
05/28/15	7.65	2.00	4.62	4.10	13.72	2.72	15.30	4.72	3.23	2.52	4.27	3.30	10.75	3.53
09/03/15	7.66	2.15	7.12	3.88	19.66	3.01	20.68	4.81	3.44	4.85	3.78	3.39	13.94	3.16
05/04/16	6.61	2.54	5.21	4.41	12.88	3.32	14.31	6.04	3.75	3.81	4.25	4.91	9.69	3.19
09/07/16	8.24	2.15	7.71	6.06	16.20	3.65	17.15	4.75	3.51	3.69	5.09	4.91	11.17	6.58
04/26/17	6.91	2.08	4.59	3.17	12.66	1.81	13.77	4.30	3.20	3.43	4.11	2.58	6.56	2.62
09/27/17	6.31	1.84	4.28	3.23	14.31	1.99	15.50	4.37	3.15	3.74	3.95	2.72	10.35	3.75
	Water Elevation (ft MSL)													
05/28/15	651.81	655.75	653.41	655.41	645.35	652.81	640.99	659.01	657.39	657.85	656.85	660.45	653.44	652.29
09/03/15	651.80	655.60	650.91	655.63	639.41	652.52	635.61	658.92	657.18	655.52	657.34	660.36	650.25	652.66
05/04/16	652.85	655.21	652.82	655.10	646.19	652.21	641.98	657.69	656.87	656.56	656.87	658.84	654.50	652.63
09/07/16	651.22	655.60	650.32	653.45	642.87	651.88	639.14	658.98	657.11	656.68	656.03	658.84	653.02	649.24
04/26/17	652.55	655.67	653.44	656.34	646.41	653.72	642.52	659.43	657.42	656.94	657.01	661.17	657.63	653.20
09/27/17	653.15	655.91	653.75	656.28	644.76	653.54	640.79	659.36	657.47	656.63	657.17	661.03	653.84	652.07
	Calculated Vertical Gradient													
05/28/15	--	--	--	--	(0.36)	--	(0.45)	--	--	--	--	--	(0.23)	--
09/03/15	--	--	--	--	(0.58)	--	(0.64)	--	--	--	--	--	(0.33)	--
05/04/16	--	--	--	--	(0.32)	--	(0.39)	--	--	--	--	--	(0.14)	--
09/07/16	--	--	--	--	(0.39)	--	(0.48)	--	--	--	--	--	(0.19)	--
04/26/17	--	--	--	--	(0.36)	--	(0.42)	--	--	--	--	--	(0.12)	--
09/27/17	--	--	--	--	(0.41)	--	(0.48)	--	--	--	--	--	(0.24)	--

NOTES:

Site datum = feet above mean sea level (ft MSL). No measurable thickness of free product observed in any of the monitoring wells.
Negative/downward calculated vertical gradients are enclosed in parenthesis and (red).

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

TABLE 3

PVOC/NAPHTHALENE DATA FOR ERP PIEZOMETERS AND PERIMETER WELLS (2017)

Substance	Benzene	Ethylbenzene	Methyl tert butyl ether	Naphthalene	Toluene	Trimethylbenzenes	Xylenes
NR 140 PAL	0.5	140	12	10	160	96	400
NR 140 ES	5.0	700	60	100	800	480	2,000
MW-1 (ERP and GEMS)							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/25/17	<0.50	<0.50	<0.17	<2.5	<0.50	<1.00	<1.5
MW-2 (ERP and GEMS)							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/25/17	<0.50	<0.50	<0.17	<2.5	<0.50	<1.00	<1.5
PZ-2/T66							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-3D (ERP and GEMS) ⁽¹⁾							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/25/17	<0.50	<0.50	<0.17	<2.5	<0.50	<1.00	<1.5
PZ-3D							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-7							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-8R (ERP and GEMS)							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/25/17	<0.50	<0.50	<0.17	<2.5	<0.50	<1.00	<1.5
PZ-8R							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-9B (ERP and GEMS) ⁽²⁾							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/25/17	<0.50	<0.50	<0.17	<2.5	<0.50	<1.00	<1.5
MW-11							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
PZ-11							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-12							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-13							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
PZ-13							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25

TABLE 3

PVOC/NAPHTHALENE DATA FOR ERP PIEZOMETERS AND PERIMETER WELLS (2017)

Substance	Benzene	Ethylbenzene	Methyl tert butyl ether	Naphthalene	Toluene	Trimethylbenzenes	Xylenes
NR 140 PAL	0.5	140	12	10	160	96	400
NR 140 ES	5.0	700	60	100	800	480	2,000
MW-14							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-15							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-16							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
PZ-16							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-17							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
PZ-17							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-18							
05/15/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-19							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-20							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-21							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
PZ-21							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
MW-22							
05/16/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25
10/24/17	<0.40	<0.39	<0.48	<0.42	<0.39	<0.84	<1.25

NOTES:

Concentrations are in micrograms per liter ($\mu\text{g}/\ell$). No results are at or above an NR 140 ES or PAL.
 NR 140 ES = Wisconsin Administrative Code NR 140 Enforcement Standard (February 2017).
 NR 140 PAL = Wisconsin Administrative Code NR 140 Preventative Action Limit (February 2017).

FOOTNOTES:

- (1) MW-3D is a replacement for MW-3B.
- (2) MW-9B is a replacement for MW-9.

ATTACHMENT A

**LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS FOR
GROUNDWATER SAMPLES COLLECTED IN 2017**

May 22, 2017

Project #34265.003
ERP wells (1 of 2)
Reviewed by CCW
5/22/17

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150012

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on May 16, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40150012001	MW-1	Water	05/15/17 13:00	05/16/17 12:30
40150012002	MW-2	Water	05/15/17 13:15	05/16/17 12:30
40150012003	PZ-2/T-66	Water	05/15/17 14:15	05/16/17 12:30
40150012004	MW-3D	Water	05/15/17 13:20	05/16/17 12:30
40150012005	PZ-3D	Water	05/15/17 13:25	05/16/17 12:30
40150012006	MW-7	Water	05/15/17 14:25	05/16/17 12:30
40150012007	MW-8R	Water	05/15/17 10:33	05/16/17 12:30
40150012008	PZ-8R	Water	05/15/17 10:35	05/16/17 12:30
40150012009	MW-9B	Water	05/15/17 13:45	05/16/17 12:30
40150012010	MW-11	Water	05/15/17 14:55	05/16/17 12:30
40150012011	PZ-11	Water	05/15/17 15:00	05/16/17 12:30
40150012012	MW-14	Water	05/15/17 14:45	05/16/17 12:30
40150012013	MW-15	Water	05/15/17 11:25	05/16/17 12:30
40150012014	MW-16	Water	05/15/17 13:05	05/16/17 12:30
40150012015	PZ-16	Water	05/15/17 13:10	05/16/17 12:30
40150012016	MW-17	Water	05/15/17 13:50	05/16/17 12:30
40150012017	PZ-17	Water	05/15/17 13:55	05/16/17 12:30
40150012018	MW-18	Water	05/15/17 14:10	05/16/17 12:30
40150012019	TRIP BLANK	Water	05/15/17 00:00	05/16/17 12:30

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150012

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40150012001	MW-1	EPA 8021	ALD	10	PASI-G
40150012002	MW-2	EPA 8021	ALD	10	PASI-G
40150012003	PZ-2/T-66	EPA 8021	ALD	10	PASI-G
40150012004	MW-3D	EPA 8021	ALD	10	PASI-G
40150012005	PZ-3D	EPA 8021	ALD	10	PASI-G
40150012006	MW-7	EPA 8021	ALD	10	PASI-G
40150012007	MW-8R	EPA 8021	ALD	10	PASI-G
40150012008	PZ-8R	EPA 8021	ALD	10	PASI-G
40150012009	MW-9B	EPA 8021	ALD	10	PASI-G
40150012010	MW-11	EPA 8021	ALD	10	PASI-G
40150012011	PZ-11	EPA 8021	ALD	10	PASI-G
40150012012	MW-14	EPA 8021	ALD	10	PASI-G
40150012013	MW-15	EPA 8021	ALD	10	PASI-G
40150012014	MW-16	EPA 8021	ALD	10	PASI-G
40150012015	PZ-16	EPA 8021	ALD	10	PASI-G
40150012016	MW-17	EPA 8021	ALD	10	PASI-G
40150012017	PZ-17	EPA 8021	ALD	10	PASI-G
40150012018	MW-18	EPA 8021	ALD	10	PASI-G
40150012019	TRIP BLANK	EPA 8021	ALD	10	PASI-G

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Method: EPA 8021

Description: 8021 GCV Short List

Client: Gannett Fleming Inc.

Date: May 22, 2017

General Information:

19 samples were analyzed for EPA 8021. 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.

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.

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-1 **Lab ID: 40150012001** Collected: 05/15/17 13:00 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 10:17	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 10:17	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 10:17	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 10:17	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 10:17	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 10:17	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 10:17	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 10:17	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 10:17	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 10:17	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-2 **Lab ID: 40150012002** Collected: 05/15/17 13:15 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 10:43	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 10:43	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 10:43	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 10:43	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 10:43	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 10:43	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 10:43	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 10:43	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 10:43	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 10:43	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-2/T-66 **Lab ID: 40150012003** Collected: 05/15/17 14:15 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 11:10	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 11:10	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 11:10	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 11:10	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 11:10	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 11:10	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 11:10	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 11:10	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 11:10	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 11:10	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-3D **Lab ID: 40150012004** Collected: 05/15/17 13:20 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 11:35	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 11:35	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 11:35	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 11:35	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 11:35	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 11:35	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 11:35	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 11:35	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 11:35	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 11:35	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-3D **Lab ID: 40150012005** Collected: 05/15/17 13:25 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 12:01	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:01	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 12:01	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 12:01	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:01	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:01	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:01	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 12:01	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 12:01	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 12:01	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-7 **Lab ID: 40150012006** Collected: 05/15/17 14:25 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 12:27	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:27	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 12:27	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 12:27	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:27	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:27	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:27	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 12:27	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 12:27	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	85-115		1		05/17/17 12:27	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-8R **Lab ID: 40150012007** Collected: 05/15/17 10:33 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 12:52	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:52	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 12:52	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 12:52	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 12:52	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:52	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 12:52	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 12:52	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 12:52	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		05/17/17 12:52	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-8R **Lab ID: 40150012008** Collected: 05/15/17 10:35 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 13:18	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 13:18	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 13:18	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 13:18	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 13:18	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 13:18	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 13:18	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 13:18	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 13:18	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 13:18	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-9B **Lab ID: 40150012009** Collected: 05/15/17 13:45 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 15:51	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 15:51	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 15:51	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 15:51	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 15:51	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 15:51	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 15:51	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 15:51	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 15:51	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 15:51	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-11 **Lab ID: 40150012010** Collected: 05/15/17 14:55 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 16:17	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 16:17	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 16:17	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 16:17	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 16:17	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 16:17	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 16:17	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 16:17	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 16:17	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 16:17	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-11 **Lab ID: 40150012011** Collected: 05/15/17 15:00 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 16:43	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 16:43	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 16:43	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 16:43	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 16:43	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 16:43	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 16:43	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 16:43	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 16:43	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		05/17/17 16:43	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-14 **Lab ID: 40150012012** Collected: 05/15/17 14:45 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 17:08	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:08	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 17:08	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 17:08	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:08	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:08	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:08	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 17:08	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 17:08	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 17:08	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-15 **Lab ID: 40150012013** Collected: 05/15/17 11:25 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 17:34	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:34	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 17:34	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 17:34	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:34	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:34	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:34	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 17:34	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 17:34	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 17:34	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-16 **Lab ID: 40150012014** Collected: 05/15/17 13:05 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 17:59	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:59	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 17:59	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 17:59	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 17:59	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:59	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 17:59	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 17:59	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 17:59	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 17:59	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-16 **Lab ID: 40150012015** Collected: 05/15/17 13:10 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 18:25	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 18:25	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 18:25	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 18:25	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 18:25	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 18:25	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 18:25	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 18:25	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 18:25	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		05/17/17 18:25	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-17 **Lab ID: 40150012016** Collected: 05/15/17 13:50 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 18:50	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 18:50	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 18:50	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 18:50	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 18:50	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 18:50	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 18:50	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 18:50	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 18:50	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 18:50	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: PZ-17 **Lab ID: 40150012017** Collected: 05/15/17 13:55 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 19:16	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 19:16	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 19:16	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 19:16	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 19:16	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 19:16	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 19:16	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 19:16	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 19:16	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 19:16	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: MW-18 **Lab ID: 40150012018** Collected: 05/15/17 14:10 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 19:42	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 19:42	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 19:42	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 19:42	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 19:42	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 19:42	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 19:42	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 19:42	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 19:42	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 19:42	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Sample: TRIP BLANK **Lab ID: 40150012019** Collected: 05/15/17 00:00 Received: 05/16/17 12:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/17/17 13:43	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/17/17 13:43	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/17/17 13:43	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/17/17 13:43	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/17/17 13:43	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 13:43	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/17/17 13:43	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/17/17 13:43	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/17/17 13:43	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/17/17 13:43	98-08-8	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150012

QC Batch: 255832 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 40150012001, 40150012002, 40150012003, 40150012004, 40150012005, 40150012006, 40150012007, 40150012008, 40150012009, 40150012010, 40150012011, 40150012012, 40150012013, 40150012014, 40150012015, 40150012016, 40150012017, 40150012018, 40150012019

METHOD BLANK: 1508218 Matrix: Water
Associated Lab Samples: 40150012001, 40150012002, 40150012003, 40150012004, 40150012005, 40150012006, 40150012007, 40150012008, 40150012009, 40150012010, 40150012011, 40150012012, 40150012013, 40150012014, 40150012015, 40150012016, 40150012017, 40150012018, 40150012019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	05/17/17 08:35	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	05/17/17 08:35	
Benzene	ug/L	<0.40	1.0	05/17/17 08:35	
Ethylbenzene	ug/L	<0.39	1.0	05/17/17 08:35	
m&p-Xylene	ug/L	<0.80	2.0	05/17/17 08:35	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	05/17/17 08:35	
Naphthalene	ug/L	<0.42	5.0	05/17/17 08:35	
o-Xylene	ug/L	<0.45	1.0	05/17/17 08:35	
Toluene	ug/L	<0.39	1.0	05/17/17 08:35	
a,a,a-Trifluorotoluene (S)	%	99	85-115	05/17/17 08:35	

LABORATORY CONTROL SAMPLE & LCSD: 1508219 1508220

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.7	21.2	103	106	85-115	3	20	
1,3,5-Trimethylbenzene	ug/L	20	20.0	20.4	100	102	85-115	2	20	
Benzene	ug/L	20	20.2	20.3	101	102	85-115	1	20	
Ethylbenzene	ug/L	20	20.1	20.4	100	102	85-115	1	20	
m&p-Xylene	ug/L	40	39.8	40.5	100	101	85-115	2	20	
Methyl-tert-butyl ether	ug/L	20	20.7	20.7	103	104	85-115	0	20	
Naphthalene	ug/L	20	21.3	21.9	106	110	85-122	3	20	
o-Xylene	ug/L	20	20.2	20.5	101	102	85-115	2	20	
Toluene	ug/L	20	19.9	20.1	99	101	85-115	1	20	
a,a,a-Trifluorotoluene (S)	%				100	100	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1508408 1508409

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40150012001 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	ug/L	<0.42	20	20	22.2	22.0	111	110	11-200	1	20
1,3,5-Trimethylbenzene	ug/L	<0.42	20	20	21.5	21.3	107	106	54-142	1	20
Benzene	ug/L	<0.40	20	20	21.3	21.0	106	105	66-140	1	20
Ethylbenzene	ug/L	<0.39	20	20	21.6	21.3	108	107	66-143	1	20
m&p-Xylene	ug/L	<0.80	40	40	42.8	42.4	107	106	60-141	1	20
Methyl-tert-butyl ether	ug/L	<0.48	20	20	21.3	20.8	106	104	70-129	2	20

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

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1508408		1508409		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40150012001 Result	MS Spike Conc.	MSD Spike Conc.									
Naphthalene	ug/L	<0.42	20	20	22.2	21.9	111	109	64-129	2	20		
o-Xylene	ug/L	<0.45	20	20	21.4	21.2	107	106	68-132	1	20		
Toluene	ug/L	<0.39	20	20	21.3	21.0	106	105	76-130	1	20		
a,a,a-Trifluorotoluene (S)	%						99	100	85-115				

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150012

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150012

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40150012001	MW-1	EPA 8021	255832		
40150012002	MW-2	EPA 8021	255832		
40150012003	PZ-2/T-66	EPA 8021	255832		
40150012004	MW-3D	EPA 8021	255832		
40150012005	PZ-3D	EPA 8021	255832		
40150012006	MW-7	EPA 8021	255832		
40150012007	MW-8R	EPA 8021	255832		
40150012008	PZ-8R	EPA 8021	255832		
40150012009	MW-9B	EPA 8021	255832		
40150012010	MW-11	EPA 8021	255832		
40150012011	PZ-11	EPA 8021	255832		
40150012012	MW-14	EPA 8021	255832		
40150012013	MW-15	EPA 8021	255832		
40150012014	MW-16	EPA 8021	255832		
40150012015	PZ-16	EPA 8021	255832		
40150012016	MW-17	EPA 8021	255832		
40150012017	PZ-17	EPA 8021	255832		
40150012018	MW-18	EPA 8021	255832		
40150012019	TRIP BLANK	EPA 8021	255832		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming
 Branch/Location: Madison WI
 Project Contact: Cliff Wright
 Phone: 608-836-1500
 Project Number: 34265-003
 Project Name: Calumet Superfund
 Project State: WI
 Sampled By (Print): Marcus Mussey
 Sampled By (Sign): [Signature]
 PO #:
 Regulatory Program:



UPPER MIDWEST REGION
 MN: 612-607-1700 WI: 920-469-2436

4015012

CHAIN OF CUSTODY

*Preservation Codes
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO)
 PRESERVATION (CODE)*

Y/N	Pick Letter	Analysis Requested																			
N	B	PVOCs/Naph. 8021																			

Quote #: Pace 2017
 Mail To Contact: Cliff Wright
 Mail To Company: Gannett Fleming
 Mail To Address: 2025 Excelsior Dr
Madison WI 53717
 Invoice To Contact: See Mail To info
 Invoice To Company:
 Invoice To Address:
 Invoice To Phone: 608-836-1500
 CLIENT COMMENTS
 LAB COMMENTS (Lab Use Only)
 Profile #

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Analysis Requested
		DATE	TIME		
001	MW-1	5/15	1300	GW	3
002	MW-2		1315		3
003	PZ-2/T-66		1415		3
004	MW-3D		1320		3
005	PZ-3D		1325		3
006	MW-7		1425		3
007	MW-8R		1038		3
008	MW-9B PZ-8R		1035		3
009	MW-11 MW-9B		1345		3
010	PZ-11 MW-11		1455		3
011	MW-14 PZ-11		1500		3
012	MW-15 MW-14		1445		3
013	MW-16 MW-15		1125		3

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)
 Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:
 Email #2:
 Telephone:
 Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: Marcus Mussey Date/Time: 5-15/1630
 Relinquished By: Fed Ex Date/Time: 5/16/17 1230
 Relinquished By: Date/Time:
 Relinquished By: Date/Time:
 Relinquished By: Date/Time:

Received By: Fedex Date/Time:
 Received By: [Signature] Date/Time: 5/16/17 1230
 Received By: Date/Time:
 Received By: Date/Time:
 Received By: Date/Time:

PACE Project No. 4015012
 Receipt Temp = ROT °C
 Sample Receipt pH OK / Adjusted
 Cooler Custody Seal Present / Not Present Intact / Not Intact

(Please Print Clearly)

Company Name: _____
 Branch/Location: *see page 2*
 Project Contact: _____
 Phone: _____
 Project Number: _____
 Project Name: _____
 Project State: _____
 Sampled By (Print): _____
 Sampled By (Sign): _____
 PO #: _____ Regulatory Program: _____



UPPER MIDWEST REGION
 MN: 612-607-1700 WI: 920-469-2436

40150012

CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED? (YES/NO)
 PRESERVATION (CODE)*

Y/N	N																			
Pick Letter	B																			
Analyses Requested																				

PVOCs / Nap h. 8021

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: *see page 2*
 Invoice To Contact: *see page 2*
 Invoice To Company: _____
 Invoice To Address: *1*
 Invoice To Phone: _____

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
014	MW-16	5-15	1305	GW
015	PZ-16		1310	
016	MW-17		1350	
017	PZ-17		1355	
018	MW-18		1410	
019	TRIP BLANK			

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	<i>3-40mL^B</i>	
	↓	
	<i>2-40mL^B</i>	

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed: _____ Transmit Prelim Rush Results by (complete what you want): _____ Email #1: _____ Email #2: _____ Telephone: _____ Fax: _____ Samples on HOLD are subject to special pricing and release of liability	Relinquished By: <i>Marius Musely</i> Date/Time: <i>5-15/1630</i> Relinquished By: <i>Fed Ex</i> Date/Time: <i>5/16/17 1230</i> Relinquished By: _____ Date/Time: _____ Relinquished By: _____ Date/Time: _____ Relinquished By: _____ Date/Time: _____	Received By: <i>Fedex</i> Date/Time: _____ Received By: <i>Paul M...</i> Date/Time: <i>5/16/17 1230</i> Received By: _____ Date/Time: _____ Received By: _____ Date/Time: _____ Received By: _____ Date/Time: _____	PACE Project No. <i>40150012</i> Receipt Temp = <i>20</i> °C Sample Receipt pH <i>OK / Adjusted</i> Cooler Custody Seal <i>Present / Not Present Intact / Not Intact</i>
--	---	---	---



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40150012

Client Name: Garnett Fleming

Courier: [X] Fed Ex [] UPS [] Client [] Pace Other: []

Tracking #: 8718 1210 6446



40150012

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

Custody Seal on Samples Present: [] yes [X] no Seals intact: [] yes [] no

Packing Material: [X] Bubble Wrap [] Bubble Bags [] None [] Other

Thermometer Used: N/A Type of Ice: [X] Wet [] Blue [] Dry [] None [X] Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: N/A Corr: [] Biological Tissue is Frozen: [] yes [] no

Temp Blank Present: [] yes [X] no

Person examining contents:
Date: 5/16/17
Initials: SSM

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Table with 15 rows of inspection criteria and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, Containers Intact, etc.

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 5/16/17

May 25, 2017

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

Project #34265.003
Calumet West,
T40/T68, and
ERP & T70 (2 of 2)
Reviewed by CCW
5/26/17

RE: Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40150095001	MW-12	Water	05/16/17 09:35	05/17/17 10:30
40150095002	MW-13	Water	05/16/17 09:25	05/17/17 10:30
40150095003	PZ-13	Water	05/16/17 09:30	05/17/17 10:30
40150095004	MW-19	Water	05/16/17 10:00	05/17/17 10:30
40150095005	MW-20	Water	05/16/17 10:45	05/17/17 10:30
40150095006	MW-21	Water	05/16/17 10:15	05/17/17 10:30
40150095007	PZ-21	Water	05/16/17 10:10	05/17/17 10:30
40150095008	MW-22	Water	05/16/17 10:35	05/17/17 10:30
40150095009	MW-1/CW	Water	05/16/17 13:30	05/17/17 10:30
40150095010	MW-2/CW	Water	05/16/17 13:20	05/17/17 10:30
40150095011	MW-3/CW	Water	05/16/17 13:05	05/17/17 10:30
40150095012	MW-4/CW	Water	05/16/17 13:00	05/17/17 10:30
40150095013	MW-1/T40	Water	05/16/17 14:30	05/17/17 10:30
40150095014	MW-2/T40	Water	05/16/17 14:35	05/17/17 10:30
40150095015	MW-4/T40	Water	05/16/17 14:55	05/17/17 10:30
40150095016	MW-5/T40	Water	05/16/17 14:40	05/17/17 10:30
40150095017	MW-6/T40	Water	05/16/17 14:45	05/17/17 10:30
40150095018	MW-7/T40	Water	05/16/17 14:50	05/17/17 10:30
40150095019	TS-1/T40	Water	05/16/17 15:00	05/17/17 10:30
40150095020	MW-1/T68	Water	05/16/17 14:10	05/17/17 10:30
40150095021	MW-2/T68	Water	05/16/17 14:20	05/17/17 10:30
40150095022	MW-4/T68	Water	05/16/17 14:15	05/17/17 10:30
40150095023	MW-5/T66	Water	05/16/17 11:20	05/17/17 10:30
40150095024	MW-5/T68	Water	05/16/17 11:40	05/17/17 10:30
40150095025	MW-6/T68	Water	05/16/17 11:30	05/17/17 10:30
40150095026	MW-2R/T70	Water	05/16/17 15:15	05/17/17 10:30
40150095027	MW-5/T70	Water	05/16/17 15:10	05/17/17 10:30
40150095028	MW-6/T70	Water	05/16/17 15:20	05/17/17 10:30
40150095029	TRIP BLANK	Water	05/16/17 00:00	05/17/17 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40150095001	MW-12	EPA 8021	ALD	10	PASI-G
40150095002	MW-13	EPA 8021	ALD	10	PASI-G
40150095003	PZ-13	EPA 8021	ALD	10	PASI-G
40150095004	MW-19	EPA 8021	ALD	10	PASI-G
40150095005	MW-20	EPA 8021	ALD	10	PASI-G
40150095006	MW-21	EPA 8021	ALD	10	PASI-G
40150095007	PZ-21	EPA 8021	ALD	10	PASI-G
40150095008	MW-22	EPA 8021	ALD	10	PASI-G
40150095009	MW-1/CW	EPA 8260	SMT	12	PASI-G
40150095010	MW-2/CW	EPA 8260	SMT	12	PASI-G
40150095011	MW-3/CW	EPA 8260	SMT	12	PASI-G
40150095012	MW-4/CW	EPA 8260	SMT	12	PASI-G
40150095013	MW-1/T40	EPA 8260	SMT	11	PASI-G
40150095014	MW-2/T40	EPA 8260	SMT	11	PASI-G
40150095015	MW-4/T40	EPA 8260	SMT	11	PASI-G
40150095016	MW-5/T40	EPA 8260	SMT	11	PASI-G
40150095017	MW-6/T40	EPA 8260	SMT	11	PASI-G
40150095018	MW-7/T40	EPA 8260	SMT	11	PASI-G
40150095019	TS-1/T40	EPA 8260	SMT	11	PASI-G
40150095020	MW-1/T68	EPA 8260	LAP	63	PASI-G
40150095021	MW-2/T68	EPA 8260	LAP	63	PASI-G
40150095022	MW-4/T68	EPA 8260	LAP	63	PASI-G
40150095023	MW-5/T66	EPA 8260	LAP	63	PASI-G
40150095024	MW-5/T68	EPA 8260	LAP	63	PASI-G
40150095025	MW-6/T68	EPA 8260	LAP	63	PASI-G
40150095026	MW-2R/T70	EPA 8260	SMT	12	PASI-G
40150095027	MW-5/T70	EPA 8260	HNW	12	PASI-G
40150095028	MW-6/T70	EPA 8260	LAP	12	PASI-G
40150095029	TRIP BLANK	EPA 8260	LAP	63	PASI-G

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Method: EPA 8021

Description: 8021 GCV Short List

Client: Gannett Fleming Inc.

Date: May 25, 2017

General Information:

8 samples were analyzed for EPA 8021. 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.

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.

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Method: EPA 8260

Description: 8260 MSV

Client: Gannett Fleming Inc.

Date: May 25, 2017

General Information:

7 samples were analyzed for EPA 8260. 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: May 25, 2017

General Information:

14 samples were analyzed for EPA 8260. 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-12 **Lab ID: 40150095001** Collected: 05/16/17 09:35 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 14:32	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 14:32	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 14:32	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 14:32	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 14:32	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 14:32	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 14:32	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 14:32	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 14:32	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	85-115		1		05/19/17 14:32	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-13 **Lab ID: 40150095002** Collected: 05/16/17 09:25 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 14:58	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 14:58	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 14:58	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 14:58	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 14:58	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 14:58	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 14:58	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 14:58	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 14:58	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/19/17 14:58	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: PZ-13 **Lab ID: 40150095003** Collected: 05/16/17 09:30 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 15:23	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 15:23	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 15:23	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 15:23	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 15:23	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 15:23	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 15:23	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 15:23	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 15:23	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/19/17 15:23	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-19 **Lab ID: 40150095004** Collected: 05/16/17 10:00 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 15:49	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 15:49	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 15:49	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 15:49	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 15:49	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 15:49	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 15:49	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 15:49	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 15:49	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/19/17 15:49	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-20 **Lab ID: 40150095005** Collected: 05/16/17 10:45 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 16:15	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 16:15	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 16:15	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 16:15	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 16:15	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 16:15	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 16:15	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 16:15	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 16:15	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	85-115		1		05/19/17 16:15	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-21 **Lab ID: 40150095006** Collected: 05/16/17 10:15 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 16:40	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 16:40	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 16:40	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 16:40	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 16:40	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 16:40	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 16:40	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 16:40	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 16:40	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/19/17 16:40	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: PZ-21 **Lab ID: 40150095007** Collected: 05/16/17 10:10 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 17:06	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 17:06	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 17:06	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 17:06	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 17:06	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 17:06	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 17:06	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 17:06	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 17:06	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		05/19/17 17:06	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-22 **Lab ID: 40150095008** Collected: 05/16/17 10:35 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		05/19/17 17:32	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		05/19/17 17:32	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		05/19/17 17:32	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		05/19/17 17:32	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		05/19/17 17:32	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 17:32	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		05/19/17 17:32	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		05/19/17 17:32	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		05/19/17 17:32	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	85-115		1		05/19/17 17:32	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: TRIP BLANK **Lab ID: 40150095029** Collected: 05/16/17 00:00 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		05/19/17 09:59	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		05/19/17 09:59	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		05/19/17 09:59	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		05/19/17 09:59	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		05/19/17 09:59	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		05/19/17 09:59	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		05/19/17 09:59	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		05/19/17 09:59	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		05/19/17 09:59	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		05/19/17 09:59	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		05/19/17 09:59	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		05/19/17 09:59	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		05/19/17 09:59	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		05/19/17 09:59	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		05/19/17 09:59	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		05/19/17 09:59	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		05/19/17 09:59	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		05/19/17 09:59	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		05/19/17 09:59	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		05/19/17 09:59	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		05/19/17 09:59	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		05/19/17 09:59	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		05/19/17 09:59	98-82-8	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/19/17 09:59	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		05/19/17 09:59	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		05/19/17 09:59	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	108-88-3	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: TRIP BLANK **Lab ID: 40150095029** Collected: 05/16/17 00:00 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Trichloroethene	<0.33	ug/L	1.0	0.33	1		05/19/17 09:59	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		05/19/17 09:59	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		05/19/17 09:59	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/19/17 09:59	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		05/19/17 09:59	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		05/19/17 09:59	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		05/19/17 09:59	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		05/19/17 09:59	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/19/17 09:59	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		05/19/17 09:59	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	80	%	61-118		1		05/19/17 09:59	460-00-4	
Dibromofluoromethane (S)	96	%	67-124		1		05/19/17 09:59	1868-53-7	
Toluene-d8 (S)	99	%	80-120		1		05/19/17 09:59	2037-26-5	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

QC Batch: 255985 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 40150095001, 40150095002, 40150095003, 40150095004, 40150095005, 40150095006, 40150095007, 40150095008

METHOD BLANK: 1509027 Matrix: Water
Associated Lab Samples: 40150095001, 40150095002, 40150095003, 40150095004, 40150095005, 40150095006, 40150095007, 40150095008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	05/19/17 08:32	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	05/19/17 08:32	
Benzene	ug/L	<0.40	1.0	05/19/17 08:32	
Ethylbenzene	ug/L	<0.39	1.0	05/19/17 08:32	
m&p-Xylene	ug/L	<0.80	2.0	05/19/17 08:32	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	05/19/17 08:32	
Naphthalene	ug/L	<0.42	5.0	05/19/17 08:32	
o-Xylene	ug/L	<0.45	1.0	05/19/17 08:32	
Toluene	ug/L	<0.39	1.0	05/19/17 08:32	
a,a,a-Trifluorotoluene (S)	%	99	85-115	05/19/17 08:32	

LABORATORY CONTROL SAMPLE & LCSD: 1509028

Parameter	Units	1509029								Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	
1,2,4-Trimethylbenzene	ug/L	20	20.5	20.4	102	102	85-115	0	20	
1,3,5-Trimethylbenzene	ug/L	20	19.8	19.7	99	99	85-115	0	20	
Benzene	ug/L	20	21.1	21.0	106	105	85-115	1	20	
Ethylbenzene	ug/L	20	20.8	20.7	104	103	85-115	1	20	
m&p-Xylene	ug/L	40	41.5	41.1	104	103	85-115	1	20	
Methyl-tert-butyl ether	ug/L	20	19.4	18.6	97	93	85-115	4	20	
Naphthalene	ug/L	20	22.7	22.2	113	111	85-122	2	20	
o-Xylene	ug/L	20	20.8	20.6	104	103	85-115	1	20	
Toluene	ug/L	20	20.6	20.5	103	102	85-115	1	20	
a,a,a-Trifluorotoluene (S)	%				100	100	85-115			

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

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

QC Batch: 255978 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
 Associated Lab Samples: 40150095020, 40150095021, 40150095022, 40150095023, 40150095024, 40150095025, 40150095029

METHOD BLANK: 1509016 Matrix: Water
 Associated Lab Samples: 40150095020, 40150095021, 40150095022, 40150095023, 40150095024, 40150095025, 40150095029

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	05/18/17 10:06	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	05/18/17 10:06	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	05/18/17 10:06	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	05/18/17 10:06	
1,1-Dichloroethane	ug/L	<0.24	1.0	05/18/17 10:06	
1,1-Dichloroethene	ug/L	<0.41	1.0	05/18/17 10:06	
1,1-Dichloropropene	ug/L	<0.44	1.0	05/18/17 10:06	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	05/18/17 10:06	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	05/18/17 10:06	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	05/18/17 10:06	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/18/17 10:06	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	05/18/17 10:06	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	05/18/17 10:06	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	05/18/17 10:06	
1,2-Dichloroethane	ug/L	<0.17	1.0	05/18/17 10:06	
1,2-Dichloropropane	ug/L	<0.23	1.0	05/18/17 10:06	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/18/17 10:06	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	05/18/17 10:06	
1,3-Dichloropropane	ug/L	<0.50	1.0	05/18/17 10:06	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	05/18/17 10:06	
2,2-Dichloropropane	ug/L	<0.48	1.0	05/18/17 10:06	
2-Chlorotoluene	ug/L	<0.50	1.0	05/18/17 10:06	
4-Chlorotoluene	ug/L	<0.21	1.0	05/18/17 10:06	
Benzene	ug/L	<0.50	1.0	05/18/17 10:06	
Bromobenzene	ug/L	<0.23	1.0	05/18/17 10:06	
Bromochloromethane	ug/L	<0.34	1.0	05/18/17 10:06	
Bromodichloromethane	ug/L	<0.50	1.0	05/18/17 10:06	
Bromoform	ug/L	<0.50	1.0	05/18/17 10:06	
Bromomethane	ug/L	<2.4	5.0	05/18/17 10:06	
Carbon tetrachloride	ug/L	<0.50	1.0	05/18/17 10:06	
Chlorobenzene	ug/L	<0.50	1.0	05/18/17 10:06	
Chloroethane	ug/L	<0.37	1.0	05/18/17 10:06	
Chloroform	ug/L	<2.5	5.0	05/18/17 10:06	
Chloromethane	ug/L	<0.50	1.0	05/18/17 10:06	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	05/18/17 10:06	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	05/18/17 10:06	
Dibromochloromethane	ug/L	<0.50	1.0	05/18/17 10:06	
Dibromomethane	ug/L	<0.43	1.0	05/18/17 10:06	
Dichlorodifluoromethane	ug/L	<0.22	1.0	05/18/17 10:06	
Ethylbenzene	ug/L	<0.50	1.0	05/18/17 10:06	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	05/18/17 10:06	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

METHOD BLANK: 1509016

Matrix: Water

Associated Lab Samples: 40150095020, 40150095021, 40150095022, 40150095023, 40150095024, 40150095025, 40150095029

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	05/18/17 10:06	
m&p-Xylene	ug/L	<1.0	2.0	05/18/17 10:06	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/18/17 10:06	
Methylene Chloride	ug/L	<0.23	1.0	05/18/17 10:06	
n-Butylbenzene	ug/L	<0.50	1.0	05/18/17 10:06	
n-Propylbenzene	ug/L	<0.50	1.0	05/18/17 10:06	
Naphthalene	ug/L	<2.5	5.0	05/18/17 10:06	
o-Xylene	ug/L	<0.50	1.0	05/18/17 10:06	
p-Isopropyltoluene	ug/L	<0.50	1.0	05/18/17 10:06	
sec-Butylbenzene	ug/L	<2.2	5.0	05/18/17 10:06	
Styrene	ug/L	<0.50	1.0	05/18/17 10:06	
tert-Butylbenzene	ug/L	<0.18	1.0	05/18/17 10:06	
Tetrachloroethane	ug/L	<0.50	1.0	05/18/17 10:06	
Toluene	ug/L	<0.50	1.0	05/18/17 10:06	
trans-1,2-Dichloroethane	ug/L	<0.26	1.0	05/18/17 10:06	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	05/18/17 10:06	
Trichloroethene	ug/L	<0.33	1.0	05/18/17 10:06	
Trichlorofluoromethane	ug/L	<0.18	1.0	05/18/17 10:06	
Vinyl chloride	ug/L	<0.18	1.0	05/18/17 10:06	
4-Bromofluorobenzene (S)	%	84	61-118	05/18/17 10:06	
Dibromofluoromethane (S)	%	95	67-124	05/18/17 10:06	
Toluene-d8 (S)	%	99	80-120	05/18/17 10:06	

LABORATORY CONTROL SAMPLE: 1509017

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	49.1	98	85-130	
1,1,2,2-Tetrachloroethane	ug/L	50	46.6	93	72-114	
1,1,2-Trichloroethane	ug/L	50	57.0	114	80-120	
1,1-Dichloroethane	ug/L	50	46.3	93	71-132	
1,1-Dichloroethene	ug/L	50	47.4	95	75-130	
1,2,4-Trichlorobenzene	ug/L	50	49.2	98	74-117	
1,2-Dibromo-3-chloropropane	ug/L	50	40.3	81	63-121	
1,2-Dibromoethane (EDB)	ug/L	50	54.8	110	80-120	
1,2-Dichlorobenzene	ug/L	50	51.3	103	80-120	
1,2-Dichloroethane	ug/L	50	46.8	94	79-131	
1,2-Dichloropropane	ug/L	50	57.3	115	80-120	
1,3-Dichlorobenzene	ug/L	50	49.2	98	80-120	
1,4-Dichlorobenzene	ug/L	50	50.8	102	80-120	
Benzene	ug/L	50	56.0	112	81-142	
Bromodichloromethane	ug/L	50	49.0	98	80-120	
Bromoform	ug/L	50	55.0	110	67-122	
Bromomethane	ug/L	50	40.0	80	40-128	
Carbon tetrachloride	ug/L	50	48.6	97	85-133	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

LABORATORY CONTROL SAMPLE: 1509017

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	56.1	112	80-120	
Chloroethane	ug/L	50	53.8	108	58-120	
Chloroform	ug/L	50	48.2	96	80-121	
Chloromethane	ug/L	50	46.9	94	40-127	
cis-1,2-Dichloroethene	ug/L	50	54.6	109	83-129	
cis-1,3-Dichloropropene	ug/L	50	48.8	98	80-120	
Dibromochloromethane	ug/L	50	55.2	110	80-120	
Dichlorodifluoromethane	ug/L	50	42.0	84	20-135	
Ethylbenzene	ug/L	50	57.3	115	87-129	
Isopropylbenzene (Cumene)	ug/L	50	58.0	116	82-128	
m&p-Xylene	ug/L	100	124	124	87-130	
Methyl-tert-butyl ether	ug/L	50	46.1	92	66-143	
Methylene Chloride	ug/L	50	43.4	87	73-126	
o-Xylene	ug/L	50	59.5	119	84-130	
Styrene	ug/L	50	59.9	120	82-122	
Tetrachloroethene	ug/L	50	57.2	114	80-120	
Toluene	ug/L	50	60.1	120	82-130	
trans-1,2-Dichloroethene	ug/L	50	46.5	93	75-132	
trans-1,3-Dichloropropene	ug/L	50	52.6	105	71-114	
Trichloroethene	ug/L	50	53.8	108	80-120	
Trichlorofluoromethane	ug/L	50	44.8	90	82-133	
Vinyl chloride	ug/L	50	54.3	109	57-136	
4-Bromofluorobenzene (S)	%			99	61-118	
Dibromofluoromethane (S)	%			92	67-124	
Toluene-d8 (S)	%			103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1509302 1509303

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40150015002 Result	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	<1.0	50	50	48.2	49.2	96	98	85-134	2	20		
1,1,2,2-Tetrachloroethane	ug/L	<1.0	50	50	49.0	51.6	98	103	72-114	5	20		
1,1,2-Trichloroethane	ug/L	<1.0	50	50	54.5	54.7	109	109	80-120	0	20		
1,1-Dichloroethane	ug/L	<1.0	50	50	46.0	45.8	92	92	71-133	0	20		
1,1-Dichloroethene	ug/L	<1.0	50	50	47.3	44.0	95	88	75-136	7	20		
1,2,4-Trichlorobenzene	ug/L	<5.0	50	50	56.7	46.6	113	93	74-117	20	20		
1,2-Dibromo-3-chloropropane	ug/L	<5.0	50	50	43.1	38.8	86	78	63-123	11	20		
1,2-Dibromoethane (EDB)	ug/L	<1.0	50	50	52.2	54.9	104	110	80-120	5	20		
1,2-Dichlorobenzene	ug/L	<1.0	50	50	55.0	51.3	110	103	80-120	7	20		
1,2-Dichloroethane	ug/L	<1.0	50	50	45.0	42.7	90	85	79-131	5	20		
1,2-Dichloropropane	ug/L	<1.0	50	50	54.6	55.4	109	111	80-120	2	20		
1,3-Dichlorobenzene	ug/L	<1.0	50	50	48.5	49.2	97	98	80-120	1	20		
1,4-Dichlorobenzene	ug/L	<1.0	50	50	49.5	50.6	99	101	80-120	2	20		
Benzene	ug/L	<1.0	50	50	54.8	53.3	110	107	81-142	3	20		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1509302		1509303		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40150015002 Result	MS Spike Conc.	MSD Spike Conc.								
Bromodichloromethane	ug/L	<1.0	50	50	47.4	48.2	95	96	80-120	2	20	
Bromoform	ug/L	<1.0	50	50	49.7	53.5	99	107	67-122	7	20	
Bromomethane	ug/L	<5.0	50	50	41.7	40.3	83	81	40-129	4	20	
Carbon tetrachloride	ug/L	<1.0	50	50	48.1	49.1	96	98	85-134	2	20	
Chlorobenzene	ug/L	<1.0	50	50	53.7	54.6	107	109	80-120	2	20	
Chloroethane	ug/L	<1.0	50	50	51.5	50.7	103	101	58-120	2	20	
Chloroform	ug/L	<5.0	50	50	47.3	48.3	95	97	80-121	2	20	
Chloromethane	ug/L	<1.0	50	50	42.8	50.8	86	102	40-128	17	20	
cis-1,2-Dichloroethene	ug/L	<1.0	50	50	53.2	54.1	106	108	83-129	2	20	
cis-1,3-Dichloropropene	ug/L	<1.0	50	50	48.0	46.9	96	94	80-120	2	20	
Dibromochloromethane	ug/L	<1.0	50	50	52.2	55.2	104	110	80-120	5	20	
Dichlorodifluoromethane	ug/L	<1.0	50	50	38.3	41.0	77	82	20-146	7	20	
Ethylbenzene	ug/L	<1.0	50	50	54.5	57.3	109	115	87-129	5	20	
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	51.1	57.7	102	115	80-128	12	20	
m&p-Xylene	ug/L	<2.0	100	100	117	121	117	121	87-130	3	20	
Methyl-tert-butyl ether	ug/L	<1.0	50	50	45.6	44.6	91	89	66-143	2	20	
Methylene Chloride	ug/L	<1.0	50	50	44.0	42.3	88	85	73-127	4	20	
o-Xylene	ug/L	<1.0	50	50	55.1	56.6	110	113	84-130	3	20	
Styrene	ug/L	<1.0	50	50	54.3	58.1	109	116	80-122	7	20	
Tetrachloroethene	ug/L	<1.0	50	50	54.4	53.3	109	107	80-120	2	20	
Toluene	ug/L	<1.0	50	50	59.7	54.2	119	108	82-131	10	20	
trans-1,2-Dichloroethene	ug/L	<1.0	50	50	46.6	44.3	93	89	75-135	5	20	
trans-1,3-Dichloropropene	ug/L	<1.0	50	50	49.4	48.9	99	98	71-120	1	20	
Trichloroethene	ug/L	<1.0	50	50	51.3	53.6	103	107	80-120	4	20	
Trichlorofluoromethane	ug/L	<1.0	50	50	44.1	44.4	88	89	76-150	1	20	
Vinyl chloride	ug/L	<1.0	50	50	48.8	53.6	98	107	56-143	9	20	
4-Bromofluorobenzene (S)	%						85	93	61-118			
Dibromofluoromethane (S)	%						93	94	67-124			
Toluene-d8 (S)	%						101	96	80-120			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

QC Batch: 256061 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40150095009, 40150095010, 40150095011, 40150095012, 40150095013, 40150095014, 40150095015, 40150095016, 40150095017, 40150095018, 40150095019, 40150095026

METHOD BLANK: 1509353 Matrix: Water
Associated Lab Samples: 40150095009, 40150095010, 40150095011, 40150095012, 40150095013, 40150095014, 40150095015, 40150095016, 40150095017, 40150095018, 40150095019, 40150095026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/19/17 09:16	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/19/17 09:16	
Benzene	ug/L	<0.50	1.0	05/19/17 09:16	
Ethylbenzene	ug/L	<0.50	1.0	05/19/17 09:16	
m&p-Xylene	ug/L	<1.0	2.0	05/19/17 09:16	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/19/17 09:16	
Naphthalene	ug/L	<2.5	5.0	05/19/17 09:16	
o-Xylene	ug/L	<0.50	1.0	05/19/17 09:16	
Toluene	ug/L	<0.50	1.0	05/19/17 09:16	
4-Bromofluorobenzene (S)	%	90	61-118	05/19/17 09:16	
Dibromofluoromethane (S)	%	94	67-124	05/19/17 09:16	
Toluene-d8 (S)	%	96	80-120	05/19/17 09:16	

LABORATORY CONTROL SAMPLE: 1509354

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	50.1	100	81-142	
Ethylbenzene	ug/L	50	53.9	108	87-129	
m&p-Xylene	ug/L	100	116	116	87-130	
Methyl-tert-butyl ether	ug/L	50	51.3	103	66-143	
o-Xylene	ug/L	50	57.2	114	84-130	
Toluene	ug/L	50	53.0	106	82-130	
4-Bromofluorobenzene (S)	%			101	61-118	
Dibromofluoromethane (S)	%			94	67-124	
Toluene-d8 (S)	%			96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1509355 1509356

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual	
		40150111006 Result	Spike Conc.	Spike Conc.	MS Result						MSD Result
Benzene	ug/L	<0.50	50	50	51.3	48.4	103	97	81-142	6	20
Ethylbenzene	ug/L	<0.50	50	50	54.4	54.0	109	108	87-129	1	20
m&p-Xylene	ug/L	<1.0	100	100	117	115	117	115	87-130	2	20
Methyl-tert-butyl ether	ug/L	<0.17	50	50	54.1	51.0	108	102	66-143	6	20
o-Xylene	ug/L	<0.50	50	50	58.1	56.3	116	113	84-130	3	20
Toluene	ug/L	<0.50	50	50	54.0	52.3	108	105	82-131	3	20
4-Bromofluorobenzene (S)	%						102	103	61-118		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Parameter	Units	1509355		1509356		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Dibromofluoromethane (S)	%	40150111006				96	94	67-124			
Toluene-d8 (S)	%					98	98	80-120			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

QC Batch: 256183 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40150095027

METHOD BLANK: 1509959 Matrix: Water
Associated Lab Samples: 40150095027

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/22/17 08:49	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/22/17 08:49	
Benzene	ug/L	<0.50	1.0	05/22/17 08:49	
Ethylbenzene	ug/L	<0.50	1.0	05/22/17 08:49	
m&p-Xylene	ug/L	<1.0	2.0	05/22/17 08:49	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/22/17 08:49	
Naphthalene	ug/L	<2.5	5.0	05/22/17 08:49	
o-Xylene	ug/L	<0.50	1.0	05/22/17 08:49	
Toluene	ug/L	<0.50	1.0	05/22/17 08:49	
4-Bromofluorobenzene (S)	%	98	61-118	05/22/17 08:49	
Dibromofluoromethane (S)	%	94	67-124	05/22/17 08:49	
Toluene-d8 (S)	%	100	80-120	05/22/17 08:49	

LABORATORY CONTROL SAMPLE: 1509960

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.6	107	81-142	
Ethylbenzene	ug/L	50	54.4	109	87-129	
m&p-Xylene	ug/L	100	105	105	87-130	
Methyl-tert-butyl ether	ug/L	50	41.6	83	66-143	
o-Xylene	ug/L	50	51.0	102	84-130	
Toluene	ug/L	50	50.7	101	82-130	
4-Bromofluorobenzene (S)	%			109	61-118	
Dibromofluoromethane (S)	%			95	67-124	
Toluene-d8 (S)	%			100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1511079 1511080

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40150035015 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<1.0	50	50	54.0	55.9	108	112	81-142	3	20	
Ethylbenzene	ug/L	<1.0	50	50	54.6	56.6	109	113	87-129	4	20	
m&p-Xylene	ug/L	<2.0	100	100	105	110	105	109	87-130	4	20	
Methyl-tert-butyl ether	ug/L	<1.0	50	50	45.2	44.0	90	88	66-143	3	20	
o-Xylene	ug/L	<1.0	50	50	52.0	54.7	104	109	84-130	5	20	
Toluene	ug/L	<1.0	50	50	51.2	53.6	102	107	82-131	4	20	
4-Bromofluorobenzene (S)	%						108	108	61-118			
Dibromofluoromethane (S)	%						98	97	67-124			

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1511079		1511080									
Parameter	Units	40150035015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						102	100	80-120				

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

QC Batch: 256588 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40150095028

METHOD BLANK: 1512205 Matrix: Water
Associated Lab Samples: 40150095028

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/24/17 08:00	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/24/17 08:00	
Benzene	ug/L	<0.50	1.0	05/24/17 08:00	
Ethylbenzene	ug/L	<0.50	1.0	05/24/17 08:00	
m&p-Xylene	ug/L	<1.0	2.0	05/24/17 08:00	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/24/17 08:00	
Naphthalene	ug/L	<2.5	5.0	05/24/17 08:00	
o-Xylene	ug/L	<0.50	1.0	05/24/17 08:00	
Toluene	ug/L	<0.50	1.0	05/24/17 08:00	
4-Bromofluorobenzene (S)	%	95	61-118	05/24/17 08:00	
Dibromofluoromethane (S)	%	99	67-124	05/24/17 08:00	
Toluene-d8 (S)	%	102	80-120	05/24/17 08:00	

LABORATORY CONTROL SAMPLE: 1512206

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	47.4	95	70-130	
1,3,5-Trimethylbenzene	ug/L	50	47.9	96	70-130	
Benzene	ug/L	50	45.6	91	81-142	
Ethylbenzene	ug/L	50	49.7	99	87-129	
m&p-Xylene	ug/L	100	102	102	87-130	
Methyl-tert-butyl ether	ug/L	50	56.1	112	66-143	
Naphthalene	ug/L	50	46.7	93	70-130	
o-Xylene	ug/L	50	50.6	101	84-130	
Toluene	ug/L	50	48.2	96	82-130	
4-Bromofluorobenzene (S)	%			105	61-118	
Dibromofluoromethane (S)	%			99	67-124	
Toluene-d8 (S)	%			102	80-120	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40150095001	MW-12	EPA 8021	255985		
40150095002	MW-13	EPA 8021	255985		
40150095003	PZ-13	EPA 8021	255985		
40150095004	MW-19	EPA 8021	255985		
40150095005	MW-20	EPA 8021	255985		
40150095006	MW-21	EPA 8021	255985		
40150095007	PZ-21	EPA 8021	255985		
40150095008	MW-22	EPA 8021	255985		
40150095020	MW-1/T68	EPA 8260	255978		
40150095021	MW-2/T68	EPA 8260	255978		
40150095022	MW-4/T68	EPA 8260	255978		
40150095023	MW-5/T66	EPA 8260	255978		
40150095024	MW-5/T68	EPA 8260	255978		
40150095025	MW-6/T68	EPA 8260	255978		
40150095029	TRIP BLANK	EPA 8260	255978		
40150095009	MW-1/CW	EPA 8260	256061		
40150095010	MW-2/CW	EPA 8260	256061		
40150095011	MW-3/CW	EPA 8260	256061		
40150095012	MW-4/CW	EPA 8260	256061		
40150095013	MW-1/T40	EPA 8260	256061		
40150095014	MW-2/T40	EPA 8260	256061		
40150095015	MW-4/T40	EPA 8260	256061		
40150095016	MW-5/T40	EPA 8260	256061		
40150095017	MW-6/T40	EPA 8260	256061		
40150095018	MW-7/T40	EPA 8260	256061		
40150095019	TS-1/T40	EPA 8260	256061		
40150095026	MW-2R/T70	EPA 8260	256061		
40150095027	MW-5/T70	EPA 8260	256183		
40150095028	MW-6/T70	EPA 8260	256588		

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(Please Print Clearly)

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

40150095



CHAIN OF CUSTODY

Preservation Codes
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)
 PRESERVATION
(CODE)*

Y/N	N	N	N							
Pick Letter	B	B	B							
Analyses Requested	PVOCs/Naph	PVOCs/Naph	PVOCs							
	802	826	876							

Company Name: **Gannett Fleming**
 Location: **Madison, WI**
 Project Contact: **Cliff Wright**
 Phone: **608 836 1500**
 Project Number: **34265.003**
 Project Name: **Calumet Superior**
 Project State: **WI**
 Sampled By (Print): **Marcus Mussey**
 Sampled By (Sign): *[Signature]*
 PO #: _____ Regulatory Program: _____

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 W = Water DW = Drinking Water
 B = Biota GW = Ground Water
 C = Charcoal SW = Surface Water
 O = Oil WW = Waste Water
 S = Soil WP = Wipe
 Sl = Sludge

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW-12	5/14	935	GW
002	MW-13		925	
003	MW PZ-13		930	
004	MW-19		1000	
005	MW-20		1045	
006	MW-21		1015	
007	PZ-21		1010	
008	MW-22		1035	
009	MW-1/CW		1330	
010	MW-2/CW		1320	
011	MW-3/CW		1305	
012	MW-4/CW		1300	
013	MW-1/T40		1430	

Quote #: **Peace 2017**
 Mail To Contact: **Cliff Wright**
 Mail To Company: **Gannett Flemmy**
 Mail To Address: **8025 Excelsior Dr
Madison WI 53717**
 Invoice To Contact: **See**
 Invoice To Company: **See**
 Invoice To Address: **Above**
 Invoice To Phone: **608 836 1500**
 CLIENT COMMENTS: _____
 LAB COMMENTS (Lab Use Only): **3-40mLV B**
 Profile #: _____

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed: _____ Transmit Prelim Rush Results by (complete what you want): _____ Email #1: _____ Email #2: _____ Telephone: _____ Fax: _____ Samples on HOLD are subject to special pricing and release of liability	Relinquished By: Marcus Mussey Date/Time: 1645	Received By: Fedex Date/Time: _____	PACE Project No. 40150095 Receipt Temp = ROI °C Sample Receipt pH OK Adjusted 7.5 Cooler Custody Seal Present/Not Present Intact/Not Intact
	Relinquished By: FED EX Date/Time: 5-17-17 1030	Received By: Mickie Pugh Pace Date/Time: 5-17-17 1030	
	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	

(Please Print Clearly)

40150095

Page 62 of 63



CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)
 PRESERVATION
(CODE)*

Y/N	Pick Letter	Analyses Requested
N	B	PVOCs/Naph 8-260

Quote #:

Mail To Contact:

Mail To Company:

Mail To Address:

Invoice To Contact:

Invoice To Company:

Invoice To Address:

Invoice To Phone:

Company Name:

Branch/Location:

Project Contact: *see page 1*

Phone:

Project Number:

Project Name:

Project State:

Sampled By (Print):

Sampled By (Sign):

PO #:

Regulatory Program:

Data Package Options (billable)

EPA Level III

EPA Level IV

MS/MSD

On your sample (billable)

NOT needed on your sample

Matrix Codes

A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
027	MW-5/T70	5/16	1510	GW
028	MW-6/T70	5/16	1520	GW
029	Temp Blank			

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	3-40MLV B	
	↓ 2-40MLV B	

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By:	Date/Time:	Received By:	Date/Time:	PACE Project No. 40150095 Receipt Temp = ROT °C Sample Receipt pH (not adjusted) 6.5 Cooler Custody Seal Present / Not Present Intact / Not Intact
	Relinquished By: <i>FED EX</i>	Date/Time: <i>5-17-17 1030</i>	Received By: <i>Melissa Reed Pace</i>	Date/Time: <i>5-17-17 1030</i>	
	Relinquished By:	Date/Time:	Received By:	Date/Time:	
	Relinquished By:	Date/Time:	Received By:	Date/Time:	
Transmit Prelim Rush Results by (complete what you want): Email #1: Email #2: Telephone: Fax:	Relinquished By:	Date/Time:	Received By:	Date/Time:	
Samples on HOLD are subject to special pricing and release of liability	Relinquished By:	Date/Time:	Received By:	Date/Time:	

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical
Client Name: Gannett Fleming

Project #: **WO# : 40150095**

Courier: Fed Ex UPS Client Pace Other: _____

Tracking #: 8718 1210 6424



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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used SR67 Type of Ice: Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0 / Corr: 0.5 Biological Tissue is Frozen: yes no

Temp Blank Present: yes no

Person examining contents:
Date: 5-17-17
Initials: ER

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1. client info 1st pg only kt 5/17/17
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. 1st 2 kt 5/17/17
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3. 1 page only ER 5-17-17
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4. 0
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. 026 1 vial 1D MW-ZR kt 5/17/17
-Includes date/time/ID/Analysis Matrix: <u>GW</u>		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤ 2; NaOH+ZnAct ≥ 9, NaOH ≥ 12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: <input checked="" type="checkbox"/> VOA, Coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		Initial when completed: _____ Lab Std #/ID of preservative: _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>372</u>		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: RMW for DM Date: 5/17/17

October 30, 2017

Project #34265.003
Calumet Superior
Reviewed by CCW
10/30/17

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34265.000 CALUMET SUPERIOR
Pace Project No.: 40159415

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 25, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40159415001	PZ-2/T66	Water	10/24/17 09:25	10/25/17 09:10
40159415002	PZ-3D	Water	10/24/17 08:35	10/25/17 09:10
40159415003	MW-7	Water	10/24/17 09:35	10/25/17 09:10
40159415004	PZ-8R	Water	10/24/17 07:45	10/25/17 09:10
40159415005	MW-11	Water	10/24/17 12:40	10/25/17 09:10
40159415006	PZ-11	Water	10/24/17 12:45	10/25/17 09:10
40159415007	MW-12	Water	10/24/17 11:50	10/25/17 09:10
40159415008	MW-13	Water	10/24/17 12:00	10/25/17 09:10
40159415009	PZ-13	Water	10/24/17 12:10	10/25/17 09:10
40159415010	MW-14	Water	10/24/17 12:20	10/25/17 09:10
40159415011	MW-15	Water	10/24/17 08:10	10/25/17 09:10
40159415012	MW-16	Water	10/24/17 08:30	10/25/17 09:10
40159415013	PZ-16	Water	10/24/17 08:20	10/25/17 09:10
40159415014	MW-17	Water	10/24/17 08:50	10/25/17 09:10
40159415015	PZ-17	Water	10/24/17 08:55	10/25/17 09:10
40159415016	MW-18	Water	10/24/17 09:10	10/25/17 09:10
40159415017	MW-19	Water	10/24/17 13:00	10/25/17 09:10
40159415018	MW-20	Water	10/24/17 13:50	10/25/17 09:10
40159415019	MW-21	Water	10/24/17 13:30	10/25/17 09:10
40159415020	PZ-21	Water	10/24/17 13:35	10/25/17 09:10
40159415021	MW-22	Water	10/24/17 13:10	10/25/17 09:10
40159415022	MW-1/CW	Water	10/24/17 10:30	10/25/17 09:10
40159415023	MW-2/CW	Water	10/24/17 10:25	10/25/17 09:10
40159415024	MW-3/CW	Water	10/24/17 10:15	10/25/17 09:10
40159415025	MW-4/CW	Water	10/24/17 10:20	10/25/17 09:10
40159415026	TRIP BLANK	Water	10/24/17 00:00	10/25/17 09:10

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SAMPLE ANALYTE COUNT

Project: 34265.000 CALUMET SUPERIOR
Pace Project No.: 40159415

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159415001	PZ-2/T66	EPA 8021	ALD	10	PASI-G
40159415002	PZ-3D	EPA 8021	ALD	10	PASI-G
40159415003	MW-7	EPA 8021	ALD	10	PASI-G
40159415004	PZ-8R	EPA 8021	ALD	10	PASI-G
40159415005	MW-11	EPA 8021	ALD	10	PASI-G
40159415006	PZ-11	EPA 8021	ALD	10	PASI-G
40159415007	MW-12	EPA 8021	ALD	10	PASI-G
40159415008	MW-13	EPA 8021	ALD	10	PASI-G
40159415009	PZ-13	EPA 8021	ALD	10	PASI-G
40159415010	MW-14	EPA 8021	ALD	10	PASI-G
40159415011	MW-15	EPA 8021	ALD	10	PASI-G
40159415012	MW-16	EPA 8021	ALD	10	PASI-G
40159415013	PZ-16	EPA 8021	ALD	10	PASI-G
40159415014	MW-17	EPA 8021	ALD	10	PASI-G
40159415015	PZ-17	EPA 8021	ALD	10	PASI-G
40159415016	MW-18	EPA 8021	ALD	10	PASI-G
40159415017	MW-19	EPA 8021	ALD	10	PASI-G
40159415018	MW-20	EPA 8021	ALD	10	PASI-G
40159415019	MW-21	EPA 8021	ALD	10	PASI-G
40159415020	PZ-21	EPA 8021	ALD	10	PASI-G
40159415021	MW-22	EPA 8021	ALD	10	PASI-G
40159415022	MW-1/CW	EPA 8260	HNW	13	PASI-G
40159415023	MW-2/CW	EPA 8260	HNW	12	PASI-G
40159415024	MW-3/CW	EPA 8260	HNW	12	PASI-G
40159415025	MW-4/CW	EPA 8260	HNW	12	PASI-G
40159415026	TRIP BLANK	EPA 8021	ALD	10	PASI-G

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Method: EPA 8021

Description: 8021 GCV Short List

Client: Gannett Fleming Inc.

Date: October 30, 2017

General Information:

22 samples were analyzed for EPA 8021. 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.

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.

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: October 30, 2017

General Information:

4 samples were analyzed for EPA 8260. 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-2/T66 **Lab ID: 40159415001** Collected: 10/24/17 09:25 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 11:00	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:00	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 11:00	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 11:00	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:00	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:00	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:00	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 11:00	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 11:00	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 11:00	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-3D **Lab ID: 40159415002** Collected: 10/24/17 08:35 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 11:26	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:26	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 11:26	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 11:26	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:26	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:26	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:26	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 11:26	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 11:26	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 11:26	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-7 **Lab ID: 40159415003** Collected: 10/24/17 09:35 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 11:52	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:52	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 11:52	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 11:52	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 11:52	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:52	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 11:52	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 11:52	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 11:52	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 11:52	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-8R **Lab ID: 40159415004** Collected: 10/24/17 07:45 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 12:17	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 12:17	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 12:17	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 12:17	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 12:17	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 12:17	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 12:17	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 12:17	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 12:17	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 12:17	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-11 **Lab ID: 40159415005** Collected: 10/24/17 12:40 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 12:43	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 12:43	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 12:43	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 12:43	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 12:43	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 12:43	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 12:43	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 12:43	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 12:43	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 12:43	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-11 **Lab ID: 40159415006** Collected: 10/24/17 12:45 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 13:08	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:08	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 13:08	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 13:08	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:08	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:08	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:08	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 13:08	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 13:08	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 13:08	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-12 **Lab ID: 40159415007** Collected: 10/24/17 11:50 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 13:34	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:34	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 13:34	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 13:34	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:34	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:34	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:34	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 13:34	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 13:34	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 13:34	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-13 **Lab ID: 40159415008** Collected: 10/24/17 12:00 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 13:59	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:59	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 13:59	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 13:59	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 13:59	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:59	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 13:59	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 13:59	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 13:59	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 13:59	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-13 **Lab ID: 40159415009** Collected: 10/24/17 12:10 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 14:25	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:25	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 14:25	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 14:25	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:25	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:25	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:25	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 14:25	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 14:25	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 14:25	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-14 **Lab ID: 40159415010** Collected: 10/24/17 12:20 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 14:50	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:50	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 14:50	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 14:50	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:50	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:50	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:50	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 14:50	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 14:50	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 14:50	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-15 **Lab ID: 40159415011** Collected: 10/24/17 08:10 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 16:58	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 16:58	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 16:58	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 16:58	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 16:58	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 16:58	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 16:58	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 16:58	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 16:58	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 16:58	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-16 **Lab ID: 40159415012** Collected: 10/24/17 08:30 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 17:24	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 17:24	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 17:24	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 17:24	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 17:24	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 17:24	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 17:24	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 17:24	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 17:24	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 17:24	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-16 **Lab ID: 40159415013** Collected: 10/24/17 08:20 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 17:49	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 17:49	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 17:49	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 17:49	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 17:49	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 17:49	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 17:49	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 17:49	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 17:49	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 17:49	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-17 **Lab ID: 40159415014** Collected: 10/24/17 08:50 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 18:15	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:15	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 18:15	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 18:15	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:15	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:15	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:15	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 18:15	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 18:15	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 18:15	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-17 **Lab ID: 40159415015** Collected: 10/24/17 08:55 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 18:40	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:40	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 18:40	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 18:40	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:40	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:40	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:40	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 18:40	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 18:40	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 18:40	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-18 **Lab ID: 40159415016** Collected: 10/24/17 09:10 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 19:06	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:06	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 19:06	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 19:06	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:06	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:06	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:06	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 19:06	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 19:06	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	85-115		1		10/26/17 19:06	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-19 **Lab ID: 40159415017** Collected: 10/24/17 13:00 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 19:31	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:31	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 19:31	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 19:31	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:31	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:31	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:31	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 19:31	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 19:31	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 19:31	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-20 **Lab ID: 40159415018** Collected: 10/24/17 13:50 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 19:57	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:57	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 19:57	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 19:57	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 19:57	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:57	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 19:57	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 19:57	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 19:57	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	97	%	85-115		1		10/26/17 19:57	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-21 **Lab ID: 40159415019** Collected: 10/24/17 13:30 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 20:23	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 20:23	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 20:23	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 20:23	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 20:23	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 20:23	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 20:23	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 20:23	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 20:23	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 20:23	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: PZ-21 **Lab ID: 40159415020** Collected: 10/24/17 13:35 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 20:48	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 20:48	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 20:48	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 20:48	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 20:48	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 20:48	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 20:48	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 20:48	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 20:48	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	85-115		1		10/26/17 20:48	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: MW-22 **Lab ID: 40159415021** Collected: 10/24/17 13:10 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 14:41	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:41	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 14:41	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 14:41	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 14:41	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:41	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 14:41	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 14:41	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 14:41	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	85-115		1		10/26/17 14:41	98-08-8	

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ANALYTICAL RESULTS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Sample: TRIP BLANK **Lab ID: 40159415026** Collected: 10/24/17 00:00 Received: 10/25/17 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/26/17 18:31	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:31	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/26/17 18:31	1634-04-4	
Naphthalene	<0.42	ug/L	5.0	0.42	1		10/26/17 18:31	91-20-3	
Toluene	<0.39	ug/L	1.0	0.39	1		10/26/17 18:31	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:31	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/26/17 18:31	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/26/17 18:31	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/26/17 18:31	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	85-115		1		10/26/17 18:31	98-08-8	

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QUALITY CONTROL DATA

Project: 34265.000 CALUMET SUPERIOR
Pace Project No.: 40159415

QC Batch: 271925 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 40159415001, 40159415002, 40159415003, 40159415004, 40159415005, 40159415006, 40159415007, 40159415008, 40159415009, 40159415010, 40159415011, 40159415012, 40159415013, 40159415014, 40159415015, 40159415016, 40159415017, 40159415018, 40159415019, 40159415020

METHOD BLANK: 1599069 Matrix: Water
Associated Lab Samples: 40159415001, 40159415002, 40159415003, 40159415004, 40159415005, 40159415006, 40159415007, 40159415008, 40159415009, 40159415010, 40159415011, 40159415012, 40159415013, 40159415014, 40159415015, 40159415016, 40159415017, 40159415018, 40159415019, 40159415020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	10/26/17 09:18	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	10/26/17 09:18	
Benzene	ug/L	<0.40	1.0	10/26/17 09:18	
Ethylbenzene	ug/L	<0.39	1.0	10/26/17 09:18	
m&p-Xylene	ug/L	<0.80	2.0	10/26/17 09:18	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	10/26/17 09:18	
Naphthalene	ug/L	<0.42	5.0	10/26/17 09:18	
o-Xylene	ug/L	<0.45	1.0	10/26/17 09:18	
Toluene	ug/L	<0.39	1.0	10/26/17 09:18	
a,a,a-Trifluorotoluene (S)	%	98	85-115	10/26/17 09:18	

LABORATORY CONTROL SAMPLE & LCSD: 1599070 1599071

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.8	20.9	104	104	85-115	0	20	
1,3,5-Trimethylbenzene	ug/L	20	20.5	20.4	102	102	85-115	0	20	
Benzene	ug/L	20	19.8	19.7	99	99	85-115	0	20	
Ethylbenzene	ug/L	20	20.2	20.0	101	100	85-115	1	20	
m&p-Xylene	ug/L	40	40.2	40.0	101	100	85-115	1	20	
Methyl-tert-butyl ether	ug/L	20	18.8	18.9	94	95	85-115	0	20	
Naphthalene	ug/L	20	19.3	19.6	96	98	85-122	2	20	
o-Xylene	ug/L	20	20.2	20.1	101	100	85-115	1	20	
Toluene	ug/L	20	19.8	19.7	99	99	85-115	1	20	
a,a,a-Trifluorotoluene (S)	%				100	99	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1599368 1599369

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40159415001 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	ug/L	<0.42	20	20	22.4	22.7	112	113	11-200	1	20
1,3,5-Trimethylbenzene	ug/L	<0.42	20	20	22.1	22.3	110	112	54-142	1	20
Benzene	ug/L	<0.40	20	20	21.0	20.9	105	105	66-140	0	20
Ethylbenzene	ug/L	<0.39	20	20	21.9	21.9	109	110	66-143	0	20
m&p-Xylene	ug/L	<0.80	40	40	43.7	44.0	109	110	60-141	1	20
Methyl-tert-butyl ether	ug/L	<0.48	20	20	19.7	19.6	99	98	70-129	1	20

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

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QUALITY CONTROL DATA

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1599368		1599369		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159415001 Result	MS Spike Conc.	MSD Spike Conc.									
Naphthalene	ug/L	<0.42	20	20	20.9	21.4	105	107	64-129	2	20		
o-Xylene	ug/L	<0.45	20	20	21.7	21.9	109	109	68-132	1	20		
Toluene	ug/L	<0.39	20	20	21.2	21.1	106	105	76-130	1	20		
a,a,a-Trifluorotoluene (S)	%						100	99	85-115				

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

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QUALITY CONTROL DATA

Project: 34265.000 CALUMET SUPERIOR

Project No.: 40159415

QC Batch: 271926

Analysis Method: EPA 8021

QC Batch Method: EPA 8021

Analysis Description: 8021 GCV BTEX

Associated Lab Samples: 40159415021, 40159415026

METHOD BLANK: 1599072

Matrix: Water

Associated Lab Samples: 40159415021, 40159415026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	10/26/17 09:08	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	10/26/17 09:08	
Benzene	ug/L	<0.40	1.0	10/26/17 09:08	
Ethylbenzene	ug/L	<0.39	1.0	10/26/17 09:08	
m&p-Xylene	ug/L	<0.80	2.0	10/26/17 09:08	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	10/26/17 09:08	
Naphthalene	ug/L	<0.42	5.0	10/26/17 09:08	
o-Xylene	ug/L	<0.45	1.0	10/26/17 09:08	
Toluene	ug/L	<0.39	1.0	10/26/17 09:08	
a,a,a-Trifluorotoluene (S)	%	101	85-115	10/26/17 09:08	

LABORATORY CONTROL SAMPLE & LCSD: 1599073

1599074

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.8	20.3	104	101	85-115	2	20	
1,3,5-Trimethylbenzene	ug/L	20	19.9	19.5	100	97	85-115	2	20	
Benzene	ug/L	20	19.7	19.7	99	98	85-115	0	20	
Ethylbenzene	ug/L	20	19.9	19.6	100	98	85-115	2	20	
m&p-Xylene	ug/L	40	39.7	38.7	99	97	85-115	2	20	
Methyl-tert-butyl ether	ug/L	20	20.5	20.3	102	101	85-115	1	20	
Naphthalene	ug/L	20	21.1	20.6	105	103	85-122	2	20	
o-Xylene	ug/L	20	20.2	19.7	101	99	85-115	3	20	
Toluene	ug/L	20	19.7	19.5	99	98	85-115	1	20	
a,a,a-Trifluorotoluene (S)	%				100	100	85-115			

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.000 CALUMET SUPERIOR
Pace Project No.: 40159415

QC Batch: 271914 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40159415022, 40159415023, 40159415024, 40159415025

METHOD BLANK: 1599040 Matrix: Water
Associated Lab Samples: 40159415022, 40159415023, 40159415024, 40159415025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 07:30	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 07:30	
2-Methylnaphthalene	ug/L	<2.3	5.0	10/27/17 07:30	
Benzene	ug/L	<0.50	1.0	10/27/17 07:30	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 07:30	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 07:30	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 07:30	
Naphthalene	ug/L	<2.5	5.0	10/27/17 07:30	
o-Xylene	ug/L	<0.50	1.0	10/27/17 07:30	
Toluene	ug/L	<0.50	1.0	10/27/17 07:30	
4-Bromofluorobenzene (S)	%	92	61-130	10/27/17 07:30	
Dibromofluoromethane (S)	%	97	67-130	10/27/17 07:30	
Toluene-d8 (S)	%	100	70-130	10/27/17 07:30	

LABORATORY CONTROL SAMPLE: 1599041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	49.6	46.4	94	73-145	
Ethylbenzene	ug/L	49.6	49.7	100	87-129	
m&p-Xylene	ug/L	99.2	90.5	91	70-130	
Methyl-tert-butyl ether	ug/L	49.6	49.8	100	66-143	
o-Xylene	ug/L	49.6	48.4	98	70-130	
Toluene	ug/L	49.6	46.2	93	82-130	
4-Bromofluorobenzene (S)	%			102	61-130	
Dibromofluoromethane (S)	%			99	67-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600183 1600184

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual	
		40159415022 Result	Spike Conc.	Spike Conc.	Result						Result
Benzene	ug/L	<0.50	49.6	49.6	51.4	48.1	104	97	73-145	7	20
Ethylbenzene	ug/L	<0.50	49.6	49.6	54.9	50.4	111	102	87-129	8	20
m&p-Xylene	ug/L	<1.0	99.2	99.2	99.7	92.4	101	93	70-130	8	20
Methyl-tert-butyl ether	ug/L	<0.17	49.6	49.6	54.5	52.6	110	106	66-143	3	20
o-Xylene	ug/L	<0.50	49.6	49.6	54.2	49.9	109	101	70-130	8	20
Toluene	ug/L	<0.50	49.6	49.6	51.1	48.0	103	97	82-131	6	20
4-Bromofluorobenzene (S)	%						102	102	61-130		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600183		1600184		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159415022 Result	MS Spike Conc.	MSD Spike Conc.											
Dibromofluoromethane (S)	%									102	103	67-130			
Toluene-d8 (S)	%									98	98	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.000 CALUMET SUPERIOR

Pace Project No.: 40159415

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40159415001	PZ-2/T66	EPA 8021	271925		
40159415002	PZ-3D	EPA 8021	271925		
40159415003	MW-7	EPA 8021	271925		
40159415004	PZ-8R	EPA 8021	271925		
40159415005	MW-11	EPA 8021	271925		
40159415006	PZ-11	EPA 8021	271925		
40159415007	MW-12	EPA 8021	271925		
40159415008	MW-13	EPA 8021	271925		
40159415009	PZ-13	EPA 8021	271925		
40159415010	MW-14	EPA 8021	271925		
40159415011	MW-15	EPA 8021	271925		
40159415012	MW-16	EPA 8021	271925		
40159415013	PZ-16	EPA 8021	271925		
40159415014	MW-17	EPA 8021	271925		
40159415015	PZ-17	EPA 8021	271925		
40159415016	MW-18	EPA 8021	271925		
40159415017	MW-19	EPA 8021	271925		
40159415018	MW-20	EPA 8021	271925		
40159415019	MW-21	EPA 8021	271925		
40159415020	PZ-21	EPA 8021	271925		
40159415021	MW-22	EPA 8021	271926		
40159415026	TRIP BLANK	EPA 8021	271926		
40159415022	MW-1/CW	EPA 8260	271914		
40159415023	MW-2/CW	EPA 8260	271914		
40159415024	MW-3/CW	EPA 8260	271914		
40159415025	MW-4/CW	EPA 8260	271914		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gunnett Fleming
 Branch/Location: Madison, WI
 Project Contact: Cliff Wright
 Phone: 608-8361500
 Project Number: 34265.000
 Project Name: Calumet Superior
 Project State: WI
 Sampled By (Print): Marcus Mussey
 Sampled By (Sign): [Signature]



MN: 612-607-1700 WI: 920-469-2436

40159415

CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)

PRESERVATION
(CODE)*

Y/N	Pick Letter	Analyses Requested																
		PVOC/Naph	303	302														
		X																

Quote #:		
Mail To Contact:		
Mail To Company:		
Mail To Address:	8025 Excursion Dr. Madison, WI 53717	
Invoice To Contact:		
Invoice To Company:		
Invoice To Address:		
Invoice To Phone:		
CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	3-40mlvB	

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Filtered?	Preservation	Analyzes Requested
		DATE	TIME				
001	PZ-2/T66	10/24	925	GW			X
002	PZ-30		835				
003	MW-7		935				
004	PZ-8R		745				
005	MW-11		1240				
006	PZ-11		1245				
007	MW-12		1150				
008	MW-13		1200				
009	PZ-13		1210				
010	MW-14		1220				
011	MW-15		810				
012	MW-16		830				
013	PZ-16		820				

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: Marcus Mussey	Date/Time: 10/24, 1600	Received By:	Date/Time:	PACE Project No. 40159415
	Transmit Prelim Rush Results by (complete what you want):	Relinquished By: Fedor	Date/Time: 10/24/11 0910	Received By: [Signature]	
Email #1:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Receipt Temp = 20.1 °C
Email #2:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Sample Receipt pH OK / Adjusted
Telephone:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Cooler Custody Seal Present / Not Present
Fax:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Intact / Not Intact

Samples on HOLD are subject to special pricing and release of liability



Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40159415

Client Name: Gannett Fleming

Courier: Fed Ex UPS Client Pace Other:

Tracking #: 812058142905



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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used N/A Type of Ice: Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: /Corr: 201 Biological Tissue is Frozen: yes no

Temp Blank Present: yes no

Person examining contents:
Date: 10/25/17
Initials: [Signature]

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Comments:

Table with 15 rows of inspection items and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, Rush Turn Around Time Requested, etc.

Client Notification/ Resolution: Person Contacted: Date/Time: Comments/ Resolution:

Project Manager Review: AL for DM Date: 10-25-17

November 08, 2017

Project #34265.003
Calumet Superior
Reviewed by CCW
11/9/17

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40159506001	MW-1	Water	10/25/17 08:30	10/26/17 10:40
40159506002	MW-2	Water	10/25/17 08:45	10/26/17 10:40
40159506003	MW-3D	Water	10/25/17 09:00	10/26/17 10:40
40159506004	MW-8R	Water	10/25/17 08:10	10/26/17 10:40
40159506005	MW-9B	Water	10/25/17 09:10	10/26/17 10:40
40159506006	TRIP BLANK	Water	10/25/17 00:00	10/26/17 10:40

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159506001	MW-1	EPA 6010	JLD	1	PASI-G
		EPA 6010	JLD	1	PASI-G
		EPA 8260	HNW	63	PASI-G
			RMW	4	PASI-G
		EPA 310.2	DAW	1	PASI-G
40159506002	MW-2	EPA 6010	JLD	1	PASI-G
		EPA 6010	JLD	1	PASI-G
		EPA 8260	HNW	63	PASI-G
			RMW	4	PASI-G
		EPA 310.2	DAW	1	PASI-G
40159506003	MW-3D	EPA 6010	JLD	1	PASI-G
		EPA 6010	JLD	1	PASI-G
		EPA 8260	HNW	63	PASI-G
			RMW	4	PASI-G
		EPA 310.2	DAW	1	PASI-G
40159506004	MW-8R	EPA 6010	JLD	1	PASI-G
		EPA 6010	JLD	1	PASI-G
		EPA 8260	HNW	63	PASI-G
			RMW	4	PASI-G
		EPA 310.2	DAW	1	PASI-G
40159506005	MW-9B	EPA 6010	JLD	1	PASI-G
		EPA 6010	JLD	1	PASI-G
		EPA 8260	HNW	63	PASI-G
			RMW	4	PASI-G
		EPA 310.2	DAW	1	PASI-G
40159506006	TRIP BLANK	EPA 8260	HNW	63	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40159506001	MW-1					
EPA 6010	Total Hardness by 2340B	311000	ug/L	20000	11/01/17 11:26	
	Field pH	7.2	Std. Units		10/25/17 08:30	
	Field Specific Conductance	897	umhos/cm		10/25/17 08:30	
	Static Water Level	653.15	feet		10/25/17 08:30	
	Temperature, Water (C)	9.9	deg C		10/25/17 08:30	
EPA 310.2	Alkalinity, Total as CaCO3	387	mg/L	23.5	11/02/17 11:35	
40159506002	MW-2					
EPA 6010	Total Hardness by 2340B	449000	ug/L	2000	11/03/17 16:43	
	Field pH	7.3	Std. Units		10/25/17 08:45	
	Field Specific Conductance	1215	umhos/cm		10/25/17 08:45	
	Static Water Level	653.75	feet		10/25/17 08:45	
	Temperature, Water (C)	10.7	deg C		10/25/17 08:45	
EPA 310.2	Alkalinity, Total as CaCO3	489	mg/L	47.0	11/02/17 11:36	
40159506003	MW-3D					
EPA 6010	Total Hardness by 2340B	422000	ug/L	2000	11/03/17 16:45	
	Field pH	7.3	Std. Units		10/25/17 09:00	
	Field Specific Conductance	954	umhos/cm		10/25/17 09:00	
	Static Water Level	653.54	feet		10/25/17 09:00	
	Temperature, Water (C)	10.4	deg C		10/25/17 09:00	
EPA 310.2	Alkalinity, Total as CaCO3	429	mg/L	47.0	11/02/17 11:37	
40159506004	MW-8R					
EPA 6010	Total Hardness by 2340B	709000	ug/L	2000	11/03/17 16:48	
EPA 6010	Lead, Dissolved	4.4J	ug/L	13.0	10/30/17 18:34	
	Field pH	6.2	Std. Units		10/25/17 08:10	
	Field Specific Conductance	1262	umhos/cm		10/25/17 08:10	
	Static Water Level	661.03	feet		10/25/17 08:10	
	Temperature, Water (C)	11.0	deg C		10/25/17 08:10	
EPA 310.2	Alkalinity, Total as CaCO3	737	mg/L	117	11/02/17 11:39	
40159506005	MW-9B					
EPA 6010	Total Hardness by 2340B	468000	ug/L	2000	11/03/17 16:50	
	Field pH	7.2	Std. Units		10/25/17 09:10	
	Field Specific Conductance	1077	umhos/cm		10/25/17 09:10	
	Static Water Level	652.07	feet		10/25/17 09:10	
	Temperature, Water (C)	10.5	deg C		10/25/17 09:10	
EPA 310.2	Alkalinity, Total as CaCO3	477	mg/L	47.0	11/02/17 11:39	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Method: EPA 6010

Description: 6010 MET ICP

Client: Gannett Fleming Inc.

Date: November 08, 2017

General Information:

5 samples were analyzed for EPA 6010. 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 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Method: EPA 6010

Description: 6010 MET ICP, Dissolved

Client: Gannett Fleming Inc.

Date: November 08, 2017

General Information:

5 samples were analyzed for EPA 6010. 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Method: EPA 8260

Description: 8260 MSV

Client: Gannett Fleming Inc.

Date: November 08, 2017

General Information:

6 samples were analyzed for EPA 8260. 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 272114

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40159533005

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

- MS (Lab ID: 1600714)
- trans-1,3-Dichloropropene

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Method:

Description: Field Data

Client: Gannett Fleming Inc.

Date: November 08, 2017

General Information:

5 samples were analyzed for . 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.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Method: EPA 310.2
Description: 310.2 Alkalinity
Client: Gannett Fleming Inc.
Date: November 08, 2017

General Information:

5 samples were analyzed for EPA 310.2. 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.

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-1 **Lab ID: 40159506001** Collected: 10/25/17 08:30 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Total Hardness by 2340B	311000	ug/L	20000	1500	10	10/31/17 12:07	11/01/17 11:26		
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Lead, Dissolved	<4.3	ug/L	13.0	4.3	1		10/30/17 18:27	7439-92-1	
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 20:17	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 20:17	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 20:17	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 20:17	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 20:17	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 20:17	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 20:17	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 20:17	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 20:17	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 20:17	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 20:17	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 20:17	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 20:17	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 20:17	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 20:17	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 20:17	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 20:17	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 20:17	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 20:17	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 20:17	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 20:17	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 20:17	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 20:17	98-82-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Sample: MW-1 **Lab ID: 40159506001** Collected: 10/25/17 08:30 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 20:17	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 20:17	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 20:17	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 20:17	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 20:17	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 20:17	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 20:17	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 20:17	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:17	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 20:17	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 20:17	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 20:17	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 20:17	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	88	%	61-130		1		10/27/17 20:17	460-00-4	
Dibromofluoromethane (S)	96	%	67-130		1		10/27/17 20:17	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		10/27/17 20:17	2037-26-5	
Field Data		Analytical Method:							
Field pH	7.2	Std. Units			1		10/25/17 08:30		
Field Specific Conductance	897	umhos/cm			1		10/25/17 08:30		
Static Water Level	653.15	feet			1		10/25/17 08:30		
Temperature, Water (C)	9.9	deg C			1		10/25/17 08:30		
310.2 Alkalinity		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	387	mg/L	23.5	7.0	1		11/02/17 11:35		

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Sample: MW-2 Lab ID: 40159506002 Collected: 10/25/17 08:45 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Total Hardness by 2340B	449000	ug/L	2000	150	1	10/31/17 12:07	11/03/17 16:43		
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Lead, Dissolved	<4.3	ug/L	13.0	4.3	1		10/30/17 18:30	7439-92-1	
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 20:42	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 20:42	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 20:42	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 20:42	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 20:42	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 20:42	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 20:42	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 20:42	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 20:42	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 20:42	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 20:42	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 20:42	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 20:42	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 20:42	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 20:42	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 20:42	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 20:42	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 20:42	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 20:42	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 20:42	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 20:42	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 20:42	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 20:42	98-82-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-2 **Lab ID: 40159506002** Collected: 10/25/17 08:45 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 20:42	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 20:42	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 20:42	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 20:42	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 20:42	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 20:42	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 20:42	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 20:42	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 20:42	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 20:42	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 20:42	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 20:42	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 20:42	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	85	%	61-130		1		10/27/17 20:42	460-00-4	
Dibromofluoromethane (S)	98	%	67-130		1		10/27/17 20:42	1868-53-7	
Toluene-d8 (S)	97	%	70-130		1		10/27/17 20:42	2037-26-5	
Field Data		Analytical Method:							
Field pH	7.3	Std. Units			1		10/25/17 08:45		
Field Specific Conductance	1215	umhos/cm			1		10/25/17 08:45		
Static Water Level	653.75	feet			1		10/25/17 08:45		
Temperature, Water (C)	10.7	deg C			1		10/25/17 08:45		
310.2 Alkalinity		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	489	mg/L	47.0	14.1	2		11/02/17 11:36		

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Sample: MW-3D **Lab ID: 40159506003** Collected: 10/25/17 09:00 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Total Hardness by 2340B	422000	ug/L	2000	150	1	10/31/17 12:07	11/03/17 16:45		
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Lead, Dissolved	<4.3	ug/L	13.0	4.3	1		10/30/17 18:32	7439-92-1	
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:04	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 21:04	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 21:04	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 21:04	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 21:04	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 21:04	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:04	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:04	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 21:04	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 21:04	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 21:04	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 21:04	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 21:04	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 21:04	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:04	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 21:04	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 21:04	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 21:04	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 21:04	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 21:04	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 21:04	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:04	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 21:04	98-82-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-3D **Lab ID: 40159506003** Collected: 10/25/17 09:00 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 21:04	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 21:04	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 21:04	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 21:04	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:04	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 21:04	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:04	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 21:04	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:04	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:04	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 21:04	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:04	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:04	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	87	%	61-130		1		10/27/17 21:04	460-00-4	
Dibromofluoromethane (S)	101	%	67-130		1		10/27/17 21:04	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		10/27/17 21:04	2037-26-5	
Field Data		Analytical Method:							
Field pH	7.3	Std. Units			1		10/25/17 09:00		
Field Specific Conductance	954	umhos/cm			1		10/25/17 09:00		
Static Water Level	653.54	feet			1		10/25/17 09:00		
Temperature, Water (C)	10.4	deg C			1		10/25/17 09:00		
310.2 Alkalinity		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	429	mg/L	47.0	14.1	2		11/02/17 11:37		

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-8R Lab ID: 40159506004 Collected: 10/25/17 08:10 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Total Hardness by 2340B	709000	ug/L	2000	150	1	10/31/17 12:07	11/03/17 16:48		
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Lead, Dissolved	4.4J	ug/L	13.0	4.3	1		10/30/17 18:34	7439-92-1	
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:26	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 21:26	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 21:26	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 21:26	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 21:26	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 21:26	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:26	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:26	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 21:26	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 21:26	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 21:26	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 21:26	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 21:26	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 21:26	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:26	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 21:26	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 21:26	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 21:26	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 21:26	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 21:26	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 21:26	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:26	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 21:26	98-82-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-8R **Lab ID: 40159506004** Collected: 10/25/17 08:10 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 21:26	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 21:26	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 21:26	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 21:26	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:26	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 21:26	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:26	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 21:26	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:26	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:26	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 21:26	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:26	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:26	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	91	%	61-130		1		10/27/17 21:26	460-00-4	
Dibromofluoromethane (S)	102	%	67-130		1		10/27/17 21:26	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		10/27/17 21:26	2037-26-5	
Field Data		Analytical Method:							
Field pH	6.2	Std. Units			1		10/25/17 08:10		
Field Specific Conductance	1262	umhos/cm			1		10/25/17 08:10		
Static Water Level	661.03	feet			1		10/25/17 08:10		
Temperature, Water (C)	11.0	deg C			1		10/25/17 08:10		
310.2 Alkalinity		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	737	mg/L	117	35.2	5		11/02/17 11:39		

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Sample: MW-9B **Lab ID: 40159506005** Collected: 10/25/17 09:10 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Total Hardness by 2340B	468000	ug/L	2000	150	1	10/31/17 12:07	11/03/17 16:50		
6010 MET ICP, Dissolved		Analytical Method: EPA 6010							
Lead, Dissolved	<4.3	ug/L	13.0	4.3	1		10/30/17 18:37	7439-92-1	
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:49	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 21:49	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 21:49	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 21:49	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 21:49	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 21:49	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:49	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:49	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 21:49	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 21:49	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 21:49	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 21:49	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 21:49	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 21:49	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:49	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 21:49	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 21:49	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 21:49	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 21:49	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 21:49	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 21:49	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 21:49	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 21:49	98-82-8	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: MW-9B **Lab ID: 40159506005** Collected: 10/25/17 09:10 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 21:49	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 21:49	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 21:49	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	108-88-3	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 21:49	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 21:49	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 21:49	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:49	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 21:49	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 21:49	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 21:49	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 21:49	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 21:49	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 21:49	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	87	%	61-130		1		10/27/17 21:49	460-00-4	
Dibromofluoromethane (S)	100	%	67-130		1		10/27/17 21:49	1868-53-7	
Toluene-d8 (S)	97	%	70-130		1		10/27/17 21:49	2037-26-5	
Field Data		Analytical Method:							
Field pH	7.2	Std. Units			1		10/25/17 09:10		
Field Specific Conductance	1077	umhos/cm			1		10/25/17 09:10		
Static Water Level	652.07	feet			1		10/25/17 09:10		
Temperature, Water (C)	10.5	deg C			1		10/25/17 09:10		
310.2 Alkalinity		Analytical Method: EPA 310.2							
Alkalinity, Total as CaCO3	477	mg/L	47.0	14.1	2		11/02/17 11:39		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

Sample: TRIP BLANK **Lab ID: 40159506006** Collected: 10/25/17 00:00 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		10/27/17 17:52	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/27/17 17:52	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/27/17 17:52	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/27/17 17:52	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/27/17 17:52	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/27/17 17:52	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/27/17 17:52	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 17:52	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/27/17 17:52	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/27/17 17:52	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/27/17 17:52	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/27/17 17:52	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/27/17 17:52	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/27/17 17:52	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/27/17 17:52	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/27/17 17:52	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/27/17 17:52	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/27/17 17:52	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/27/17 17:52	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/27/17 17:52	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/27/17 17:52	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/27/17 17:52	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/27/17 17:52	98-82-8	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 17:52	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/27/17 17:52	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/27/17 17:52	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	108-88-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Sample: TRIP BLANK **Lab ID: 40159506006** Collected: 10/25/17 00:00 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV									
Analytical Method: EPA 8260									
Trichloroethene	<0.33	ug/L	1.0	0.33	1		10/27/17 17:52	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/27/17 17:52	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/27/17 17:52	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 17:52	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/27/17 17:52	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/27/17 17:52	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/27/17 17:52	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/27/17 17:52	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/27/17 17:52	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/27/17 17:52	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	89	%	61-130		1		10/27/17 17:52	460-00-4	
Dibromofluoromethane (S)	123	%	67-130		1		10/27/17 17:52	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		10/27/17 17:52	2037-26-5	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

QC Batch: 272328

Analysis Method: EPA 6010

QC Batch Method: EPA 6010

Analysis Description: ICP Metals, Trace, Dissolved

Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

METHOD BLANK: 1601876

Matrix: Water

Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	<4.3	13.0	10/30/17 17:33	

LABORATORY CONTROL SAMPLE: 1601877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	500	483	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1601878 1601879

Parameter	Units	1601878		1601879		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40159131001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Lead, Dissolved	ug/L	<4.3	500	500	497	511	99	101	75-125	3	20

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

QC Batch: 272498 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

METHOD BLANK: 1602777 Matrix: Water
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Hardness by 2340B	ug/L	<150	2000	11/01/17 11:21	

LABORATORY CONTROL SAMPLE: 1602778

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness by 2340B	ug/L		32900			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1602779 1602780

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40159506001 Result	Spike Conc.	Spike Conc.	Result						
Total Hardness by 2340B	ug/L	311000			368000	353000			4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

QC Batch:	272087	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV
Associated Lab Samples:	40159506006		

METHOD BLANK: 1600212 Matrix: Water

Associated Lab Samples: 40159506006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/27/17 07:25	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/27/17 07:25	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/27/17 07:25	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/27/17 07:25	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/27/17 07:25	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/27/17 07:25	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/27/17 07:25	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/27/17 07:25	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/27/17 07:25	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/27/17 07:25	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 07:25	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/27/17 07:25	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/27/17 07:25	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 07:25	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/27/17 07:25	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/27/17 07:25	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 07:25	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 07:25	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/27/17 07:25	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 07:25	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/27/17 07:25	
2-Chlorotoluene	ug/L	<0.50	1.0	10/27/17 07:25	
4-Chlorotoluene	ug/L	<0.21	1.0	10/27/17 07:25	
Benzene	ug/L	<0.50	1.0	10/27/17 07:25	
Bromobenzene	ug/L	<0.23	1.0	10/27/17 07:25	
Bromochloromethane	ug/L	<0.34	1.0	10/27/17 07:25	
Bromodichloromethane	ug/L	<0.50	1.0	10/27/17 07:25	
Bromoform	ug/L	<0.50	1.0	10/27/17 07:25	
Bromomethane	ug/L	<2.4	5.0	10/27/17 07:25	
Carbon tetrachloride	ug/L	<0.50	1.0	10/27/17 07:25	
Chlorobenzene	ug/L	<0.50	1.0	10/27/17 07:25	
Chloroethane	ug/L	<0.37	1.0	10/27/17 07:25	
Chloroform	ug/L	<2.5	5.0	10/27/17 07:25	
Chloromethane	ug/L	<0.50	1.0	10/27/17 07:25	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 07:25	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/27/17 07:25	
Dibromochloromethane	ug/L	<0.50	1.0	10/27/17 07:25	
Dibromomethane	ug/L	<0.43	1.0	10/27/17 07:25	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/27/17 07:25	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 07:25	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/27/17 07:25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

METHOD BLANK: 1600212

Matrix: Water

Associated Lab Samples: 40159506006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/27/17 07:25	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 07:25	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 07:25	
Methylene Chloride	ug/L	<0.23	1.0	10/27/17 07:25	
n-Butylbenzene	ug/L	<0.50	1.0	10/27/17 07:25	
n-Propylbenzene	ug/L	<0.50	1.0	10/27/17 07:25	
Naphthalene	ug/L	<2.5	5.0	10/27/17 07:25	
o-Xylene	ug/L	<0.50	1.0	10/27/17 07:25	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/27/17 07:25	
sec-Butylbenzene	ug/L	<2.2	5.0	10/27/17 07:25	
Styrene	ug/L	<0.50	1.0	10/27/17 07:25	
tert-Butylbenzene	ug/L	<0.18	1.0	10/27/17 07:25	
Tetrachloroethene	ug/L	<0.50	1.0	10/27/17 07:25	
Toluene	ug/L	<0.50	1.0	10/27/17 07:25	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 07:25	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/27/17 07:25	
Trichloroethene	ug/L	<0.33	1.0	10/27/17 07:25	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/27/17 07:25	
Vinyl chloride	ug/L	<0.18	1.0	10/27/17 07:25	
4-Bromofluorobenzene (S)	%	89	61-130	10/27/17 07:25	
Dibromofluoromethane (S)	%	118	67-130	10/27/17 07:25	
Toluene-d8 (S)	%	101	70-130	10/27/17 07:25	

LABORATORY CONTROL SAMPLE: 1600213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	49.6	52.9	107	70-130	
1,1,2,2-Tetrachloroethane	ug/L	49.6	55.2	111	70-130	
1,1,2-Trichloroethane	ug/L	49.6	56.0	113	70-130	
1,1-Dichloroethane	ug/L	49.6	62.5	126	71-132	
1,1-Dichloroethene	ug/L	49.6	50.7	102	75-130	
1,2,4-Trichlorobenzene	ug/L	49.6	39.8	80	70-130	
1,2-Dibromo-3-chloropropane	ug/L	49.6	50.5	102	63-123	
1,2-Dibromoethane (EDB)	ug/L	49.6	52.4	106	70-130	
1,2-Dichlorobenzene	ug/L	49.6	49.2	99	70-130	
1,2-Dichloroethane	ug/L	49.6	59.1	119	70-131	
1,2-Dichloropropane	ug/L	49.6	56.8	114	80-120	
1,3-Dichlorobenzene	ug/L	49.6	46.4	94	70-130	
1,4-Dichlorobenzene	ug/L	49.6	51.4	104	70-130	
Benzene	ug/L	49.6	52.4	106	73-145	
Bromodichloromethane	ug/L	49.6	54.9	111	70-130	
Bromoform	ug/L	49.6	52.3	105	67-130	
Bromomethane	ug/L	50	46.9	94	26-128	
Carbon tetrachloride	ug/L	49.6	53.9	109	70-133	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

LABORATORY CONTROL SAMPLE: 1600213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	49.6	52.8	106	70-130	
Chloroethane	ug/L	50	57.4	115	58-120	
Chloroform	ug/L	49.6	55.9	113	80-121	
Chloromethane	ug/L	50	41.7	83	40-127	
cis-1,2-Dichloroethene	ug/L	49.6	48.9	99	70-130	
cis-1,3-Dichloropropene	ug/L	49.6	45.6	92	70-130	
Dibromochloromethane	ug/L	49.6	51.8	105	70-130	
Dichlorodifluoromethane	ug/L	50	33.7	67	20-135	
Ethylbenzene	ug/L	49.6	51.7	104	87-129	
Isopropylbenzene (Cumene)	ug/L	49.6	49.9	101	70-130	
m&p-Xylene	ug/L	99.2	103	104	70-130	
Methyl-tert-butyl ether	ug/L	49.6	54.7	110	66-143	
Methylene Chloride	ug/L	49.6	54.8	110	70-130	
o-Xylene	ug/L	49.6	49.3	99	70-130	
Styrene	ug/L	49.6	51.2	103	70-130	
Tetrachloroethene	ug/L	49.6	49.8	100	70-130	
Toluene	ug/L	49.6	51.3	103	82-130	
trans-1,2-Dichloroethene	ug/L	49.6	54.9	111	75-132	
trans-1,3-Dichloropropene	ug/L	49.6	44.8	90	70-130	
Trichloroethene	ug/L	49.6	51.7	104	70-130	
Trichlorofluoromethane	ug/L	50	64.3	129	76-133	
Vinyl chloride	ug/L	50	48.1	96	57-136	
4-Bromofluorobenzene (S)	%			105	61-130	
Dibromofluoromethane (S)	%			112	67-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600214 1600215

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40159499011 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	<0.50	49.6	49.6	55.4	54.0	112	109	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	49.6	49.6	55.5	55.6	112	112	70-130	0	20	
1,1,2-Trichloroethane	ug/L	<0.20	49.6	49.6	55.2	56.0	111	113	70-130	1	20	
1,1-Dichloroethane	ug/L	<0.24	49.6	49.6	63.6	62.8	128	127	71-133	1	20	
1,1-Dichloroethene	ug/L	<0.41	49.6	49.6	53.9	52.0	109	105	75-136	4	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	49.6	49.6	39.1	39.0	78	78	70-130	0	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	49.6	49.6	52.2	51.8	105	104	63-123	1	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	49.6	49.6	52.4	52.4	106	106	70-130	0	20	
1,2-Dichlorobenzene	ug/L	<0.50	49.6	49.6	48.8	48.1	98	97	70-130	1	20	
1,2-Dichloroethane	ug/L	<0.17	49.6	49.6	59.5	58.9	120	119	70-131	1	20	
1,2-Dichloropropane	ug/L	<0.23	49.6	49.6	56.1	56.4	113	114	80-120	0	20	
1,3-Dichlorobenzene	ug/L	<0.50	49.6	49.6	46.6	46.2	94	93	70-130	1	20	
1,4-Dichlorobenzene	ug/L	<0.50	49.6	49.6	51.1	50.8	103	102	70-130	1	20	
Benzene	ug/L	<0.50	49.6	49.6	53.8	52.5	109	106	73-145	2	20	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Parameter	Units	1600214		1600215		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40159499011 Result	MS Spike Conc.	MSD Spike Conc.	MSD Result							
Bromodichloromethane	ug/L	<0.50	49.6	49.6	55.2	54.4	111	110	70-130	1	20	
Bromoform	ug/L	<0.50	49.6	49.6	51.8	51.9	105	105	67-130	0	20	
Bromomethane	ug/L	<2.4	50	50	55.0	56.3	108	111	26-129	2	20	
Carbon tetrachloride	ug/L	<0.50	49.6	49.6	58.2	55.4	117	112	70-134	5	20	
Chlorobenzene	ug/L	<0.50	49.6	49.6	52.7	52.7	106	106	70-130	0	20	
Chloroethane	ug/L	<0.37	50	50	59.7	58.5	119	117	58-120	2	20	
Chloroform	ug/L	<2.5	49.6	49.6	56.8	55.8	115	112	80-121	2	20	
Chloromethane	ug/L	3.1	50	50	43.2	46.2	80	86	40-128	7	20	
cis-1,2-Dichloroethene	ug/L	14.9	49.6	49.6	64.7	65.0	100	101	70-130	0	20	
cis-1,3-Dichloropropene	ug/L	<0.50	49.6	49.6	46.2	45.7	93	92	70-130	1	20	
Dibromochloromethane	ug/L	<0.50	49.6	49.6	51.8	51.8	104	104	70-130	0	20	
Dichlorodifluoromethane	ug/L	<0.22	50	50	36.2	34.2	72	68	20-146	6	20	
Ethylbenzene	ug/L	<0.50	49.6	49.6	52.3	51.5	105	104	87-129	1	20	
Isopropylbenzene (Cumene)	ug/L	<0.14	49.6	49.6	50.4	49.3	102	99	70-130	2	20	
m&p-Xylene	ug/L	<1.0	99.2	99.2	104	103	105	103	70-130	2	20	
Methyl-tert-butyl ether	ug/L	<0.17	49.6	49.6	55.7	55.3	112	112	66-143	1	20	
Methylene Chloride	ug/L	<0.23	49.6	49.6	55.7	55.3	112	111	70-130	1	20	
o-Xylene	ug/L	<0.50	49.6	49.6	49.8	49.5	100	100	70-130	1	20	
Styrene	ug/L	<0.50	49.6	49.6	51.0	51.2	103	103	70-130	0	20	
Tetrachloroethene	ug/L	<0.50	49.6	49.6	51.2	49.8	103	100	70-130	3	20	
Toluene	ug/L	<0.50	49.6	49.6	52.1	51.6	105	104	82-131	1	20	
trans-1,2-Dichloroethene	ug/L	0.59J	49.6	49.6	57.0	56.2	114	112	75-135	1	20	
trans-1,3-Dichloropropene	ug/L	<0.23	49.6	49.6	45.2	45.4	91	91	70-130	0	20	
Trichloroethene	ug/L	1.7	49.6	49.6	54.8	53.2	107	104	70-130	3	20	
Trichlorofluoromethane	ug/L	<0.18	50	50	70.8	67.4	142	135	76-150	5	20	
Vinyl chloride	ug/L	<0.18	50	50	52.3	50.6	105	101	56-143	3	20	
4-Bromofluorobenzene (S)	%						104	103	61-130			
Dibromofluoromethane (S)	%						113	111	67-130			
Toluene-d8 (S)	%						103	104	70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

QC Batch: 272114 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

METHOD BLANK: 1600307 Matrix: Water
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/27/17 15:27	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/27/17 15:27	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/27/17 15:27	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/27/17 15:27	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/27/17 15:27	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/27/17 15:27	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/27/17 15:27	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/27/17 15:27	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/27/17 15:27	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/27/17 15:27	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 15:27	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/27/17 15:27	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/27/17 15:27	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 15:27	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/27/17 15:27	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/27/17 15:27	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 15:27	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 15:27	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/27/17 15:27	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 15:27	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/27/17 15:27	
2-Chlorotoluene	ug/L	<0.50	1.0	10/27/17 15:27	
4-Chlorotoluene	ug/L	<0.21	1.0	10/27/17 15:27	
Benzene	ug/L	<0.50	1.0	10/27/17 15:27	
Bromobenzene	ug/L	<0.23	1.0	10/27/17 15:27	
Bromochloromethane	ug/L	<0.34	1.0	10/27/17 15:27	
Bromodichloromethane	ug/L	<0.50	1.0	10/27/17 15:27	
Bromoform	ug/L	<0.50	1.0	10/27/17 15:27	
Bromomethane	ug/L	<2.4	5.0	10/27/17 15:27	
Carbon tetrachloride	ug/L	<0.50	1.0	10/27/17 15:27	
Chlorobenzene	ug/L	<0.50	1.0	10/27/17 15:27	
Chloroethane	ug/L	<0.37	1.0	10/27/17 15:27	
Chloroform	ug/L	<2.5	5.0	10/27/17 15:27	
Chloromethane	ug/L	<0.50	1.0	10/27/17 15:27	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 15:27	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/27/17 15:27	
Dibromochloromethane	ug/L	<0.50	1.0	10/27/17 15:27	
Dibromomethane	ug/L	<0.43	1.0	10/27/17 15:27	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/27/17 15:27	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 15:27	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/27/17 15:27	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

METHOD BLANK: 1600307

Matrix: Water

Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/27/17 15:27	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 15:27	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 15:27	
Methylene Chloride	ug/L	<0.23	1.0	10/27/17 15:27	
n-Butylbenzene	ug/L	<0.50	1.0	10/27/17 15:27	
n-Propylbenzene	ug/L	<0.50	1.0	10/27/17 15:27	
Naphthalene	ug/L	<2.5	5.0	10/27/17 15:27	
o-Xylene	ug/L	<0.50	1.0	10/27/17 15:27	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/27/17 15:27	
sec-Butylbenzene	ug/L	<2.2	5.0	10/27/17 15:27	
Styrene	ug/L	<0.50	1.0	10/27/17 15:27	
tert-Butylbenzene	ug/L	<0.18	1.0	10/27/17 15:27	
Tetrachloroethene	ug/L	<0.50	1.0	10/27/17 15:27	
Toluene	ug/L	<0.50	1.0	10/27/17 15:27	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 15:27	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/27/17 15:27	
Trichloroethene	ug/L	<0.33	1.0	10/27/17 15:27	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/27/17 15:27	
Vinyl chloride	ug/L	<0.18	1.0	10/27/17 15:27	
4-Bromofluorobenzene (S)	%	91	61-130	10/27/17 15:27	
Dibromofluoromethane (S)	%	100	67-130	10/27/17 15:27	
Toluene-d8 (S)	%	99	70-130	10/27/17 15:27	

LABORATORY CONTROL SAMPLE: 1600308

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	19.8	20.2	102	70-130	
1,1,2,2-Tetrachloroethane	ug/L	19.8	16.8	84	70-130	
1,1,2-Trichloroethane	ug/L	19.8	17.2	86	70-130	
1,1-Dichloroethane	ug/L	19.8	24.7	124	71-132	
1,1-Dichloroethene	ug/L	19.8	23.3	117	75-130	
1,2,4-Trichlorobenzene	ug/L	19.8	17.3	87	70-130	
1,2-Dibromo-3-chloropropane	ug/L	19.8	13.0	65	63-123	
1,2-Dibromoethane (EDB)	ug/L	19.8	15.8	80	70-130	
1,2-Dichlorobenzene	ug/L	19.8	18.8	95	70-130	
1,2-Dichloroethane	ug/L	19.8	19.3	97	70-131	
1,2-Dichloropropane	ug/L	19.8	18.2	92	80-120	
1,3-Dichlorobenzene	ug/L	19.8	18.9	95	70-130	
1,4-Dichlorobenzene	ug/L	19.8	18.9	95	70-130	
Benzene	ug/L	19.8	20.5	103	73-145	
Bromodichloromethane	ug/L	19.8	18.1	91	70-130	
Bromoform	ug/L	19.8	16.3	82	67-130	
Bromomethane	ug/L	20	15.7	78	26-128	
Carbon tetrachloride	ug/L	19.8	19.7	99	70-133	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

LABORATORY CONTROL SAMPLE: 1600308

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	19.8	19.7	99	70-130	
Chloroethane	ug/L	20	21.8	109	58-120	
Chloroform	ug/L	19.8	20.9	105	80-121	
Chloromethane	ug/L	20	14.9	74	40-127	
cis-1,2-Dichloroethene	ug/L	19.8	19.8	100	70-130	
cis-1,3-Dichloropropene	ug/L	19.8	16.2	82	70-130	
Dibromochloromethane	ug/L	19.8	16.8	85	70-130	
Dichlorodifluoromethane	ug/L	20	13.8	69	20-135	
Ethylbenzene	ug/L	19.8	19.4	98	87-129	
Isopropylbenzene (Cumene)	ug/L	19.8	16.2	82	70-130	
m&p-Xylene	ug/L	39.7	34.1	86	70-130	
Methyl-tert-butyl ether	ug/L	19.8	21.7	109	66-143	
Methylene Chloride	ug/L	19.8	22.1	111	70-130	
o-Xylene	ug/L	19.8	18.4	93	70-130	
Styrene	ug/L	19.8	16.0	81	70-130	
Tetrachloroethene	ug/L	19.8	17.8	90	70-130	
Toluene	ug/L	19.8	18.8	95	82-130	
trans-1,2-Dichloroethene	ug/L	19.8	24.4	123	75-132	
trans-1,3-Dichloropropene	ug/L	19.8	14.6	73	70-130	
Trichloroethene	ug/L	19.8	19.6	99	70-130	
Trichlorofluoromethane	ug/L	20	23.4	117	76-133	
Vinyl chloride	ug/L	20	21.5	108	57-136	
4-Bromofluorobenzene (S)	%			97	61-130	
Dibromofluoromethane (S)	%			105	67-130	
Toluene-d8 (S)	%			96	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600714 1600715

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40159533005 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	<0.50	49.6	49.6	46.2	44.4	93	90	70-134	4	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	49.6	49.6	41.1	41.2	83	83	70-130	0	20	
1,1,2-Trichloroethane	ug/L	<0.20	49.6	49.6	40.3	40.6	81	82	70-130	1	20	
1,1-Dichloroethane	ug/L	<0.24	49.6	49.6	54.7	53.5	110	108	71-133	2	20	
1,1-Dichloroethene	ug/L	<0.41	49.6	49.6	52.7	51.6	106	104	75-136	2	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	49.6	49.6	42.9	46.0	86	93	70-130	7	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	49.6	49.6	33.9	34.0	68	69	63-123	0	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	49.6	49.6	37.8	40.3	76	81	70-130	6	20	
1,2-Dichlorobenzene	ug/L	<0.50	49.6	49.6	44.4	45.6	90	92	70-130	3	20	
1,2-Dichloroethane	ug/L	<0.17	49.6	49.6	43.9	42.8	89	86	70-131	3	20	
1,2-Dichloropropane	ug/L	<0.23	49.6	49.6	41.5	41.9	84	84	80-120	1	20	
1,3-Dichlorobenzene	ug/L	<0.50	49.6	49.6	45.3	46.7	91	94	70-130	3	20	
1,4-Dichlorobenzene	ug/L	<0.50	49.6	49.6	44.2	44.6	89	90	70-130	1	20	
Benzene	ug/L	<0.50	49.6	49.6	46.1	45.8	93	92	73-145	1	20	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600714		1600715		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159533005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromodichloromethane	ug/L	<0.50	49.6	49.6	41.9	43.5	85	88	70-130	4	20		
Bromoform	ug/L	<0.50	49.6	49.6	34.1	35.3	69	71	67-130	4	20		
Bromomethane	ug/L	<2.4	50	50	38.5	42.1	77	84	26-129	9	20		
Carbon tetrachloride	ug/L	<0.50	49.6	49.6	42.0	40.8	85	82	70-134	3	20		
Chlorobenzene	ug/L	<0.50	49.6	49.6	45.0	46.3	91	93	70-130	3	20		
Chloroethane	ug/L	<0.37	50	50	50.6	49.0	101	98	58-120	3	20		
Chloroform	ug/L	<2.5	49.6	49.6	46.9	45.1	94	91	80-121	4	20		
Chloromethane	ug/L	<0.50	50	50	31.9	31.3	64	63	40-128	2	20		
cis-1,2-Dichloroethene	ug/L	<0.26	49.6	49.6	44.6	42.5	90	86	70-130	5	20		
cis-1,3-Dichloropropene	ug/L	<0.50	49.6	49.6	38.0	39.4	77	79	70-130	4	20		
Dibromochloromethane	ug/L	<0.50	49.6	49.6	35.9	37.5	72	76	70-130	4	20		
Dichlorodifluoromethane	ug/L	<0.22	50	50	29.1	30.3	58	61	20-146	4	20		
Ethylbenzene	ug/L	<0.50	49.6	49.6	47.2	48.9	95	99	87-129	4	20		
Isopropylbenzene (Cumene)	ug/L	<0.14	49.6	49.6	43.0	44.1	87	89	70-130	2	20		
m&p-Xylene	ug/L	<1.0	99.2	99.2	85.5	88.6	86	89	70-130	4	20		
Methyl-tert-butyl ether	ug/L	<0.17	49.6	49.6	47.7	45.8	96	92	66-143	4	20		
Methylene Chloride	ug/L	<0.23	49.6	49.6	49.0	46.6	99	94	70-130	5	20		
o-Xylene	ug/L	<0.50	49.6	49.6	46.2	46.8	93	94	70-130	1	20		
Styrene	ug/L	<0.50	49.6	49.6	41.7	43.4	84	88	70-130	4	20		
Tetrachloroethene	ug/L	<0.50	49.6	49.6	41.4	44.3	84	89	70-130	7	20		
Toluene	ug/L	<0.50	49.6	49.6	44.8	46.0	90	93	82-131	3	20		
trans-1,2-Dichloroethene	ug/L	<0.26	49.6	49.6	54.6	53.9	110	109	75-135	1	20		
trans-1,3-Dichloropropene	ug/L	<0.23	49.6	49.6	34.5	35.1	69	71	70-130	2	20	M1	
Trichloroethene	ug/L	<0.33	49.6	49.6	44.0	45.2	89	91	70-130	3	20		
Trichlorofluoromethane	ug/L	<0.18	50	50	55.0	53.9	110	108	76-150	2	20		
Vinyl chloride	ug/L	<0.18	50	50	49.4	48.1	99	96	56-143	3	20		
4-Bromofluorobenzene (S)	%						100	100	61-130				
Dibromofluoromethane (S)	%						102	99	67-130				
Toluene-d8 (S)	%						96	98	70-130				

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40159506

QC Batch: 272773 Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2 Analysis Description: 310.2 Alkalinity
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

METHOD BLANK: 1604652 Matrix: Water
Associated Lab Samples: 40159506001, 40159506002, 40159506003, 40159506004, 40159506005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.0	23.5	11/02/17 11:33	

LABORATORY CONTROL SAMPLE: 1604653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	99.1	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1604654 1604655

Parameter	Units	MS		MSD		% Rec		% Rec Limits	RPD	Max RPD	Qual	
		40159666001 Result	Spike Conc.	Spike Conc.	Result	MSD Result	% Rec					% Rec
Alkalinity, Total as CaCO3	mg/L	611	500	500	1100	1090	98	96	90-110	1	20	

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QUALIFIERS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40159506

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40159506001	MW-1	EPA 3010	272498	EPA 6010	272637
40159506002	MW-2	EPA 3010	272498	EPA 6010	272637
40159506003	MW-3D	EPA 3010	272498	EPA 6010	272637
40159506004	MW-8R	EPA 3010	272498	EPA 6010	272637
40159506005	MW-9B	EPA 3010	272498	EPA 6010	272637
40159506001	MW-1	EPA 6010	272328		
40159506002	MW-2	EPA 6010	272328		
40159506003	MW-3D	EPA 6010	272328		
40159506004	MW-8R	EPA 6010	272328		
40159506005	MW-9B	EPA 6010	272328		
40159506001	MW-1	EPA 8260	272114		
40159506002	MW-2	EPA 8260	272114		
40159506003	MW-3D	EPA 8260	272114		
40159506004	MW-8R	EPA 8260	272114		
40159506005	MW-9B	EPA 8260	272114		
40159506006	TRIP BLANK	EPA 8260	272087		
40159506001	MW-1				
40159506002	MW-2				
40159506003	MW-3D				
40159506004	MW-8R				
40159506005	MW-9B				
40159506001	MW-1	EPA 310.2	272773		
40159506002	MW-2	EPA 310.2	272773		
40159506003	MW-3D	EPA 310.2	272773		
40159506004	MW-8R	EPA 310.2	272773		
40159506005	MW-9B	EPA 310.2	272773		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming
 Branch/Location: Madison, WI
 Project Contact: Cliff Wright
 Phone: 608 8361500
 Project Number: 34265.003
 Project Name: Calumet Superior
 Project State: WI
 Sampled By (Print): Marcus Mussey
 Sampled By (Sign): *[Signature]*



UPPER MIDWEST REGION
 MN: 612-607-1700 WI: 920-469-2436

40159506

CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)
 PRESERVATION
(CODE)*

Y/N	N	N	N	Y					
Pick Letter	B	A	D	D					
Analyses Requested	VOCs	Alkalinity	Hardness	Dis. Lead					
	8260								

Quote #:
 Mail To Contact:
 Mail To Company:
 Mail To Address: 8025 Excelsior Dr. Madison, WI 53717
 Invoice To Contact:
 Invoice To Company:
 Invoice To Address:
 Invoice To Phone:
 CLIENT COMMENTS: GEMS, Field data will follow
 LAB COMMENTS (Lab Use Only): 3-250mLp ADD 3-40mL^B
 Profile #:
 2-40mL^B

Data Package Options (billable)
 EPA Level III
 EPA Level IV

MS/MSD
 On your sample (billable)
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Biota DW = Drinking Water
 C = Charcoal GW = Ground Water
 O = Oil SW = Surface Water
 S = Soil WW = Waste Water
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW-1	10/25	830	GW
002	MW-2		845	
003	MW-3D		900	
004	MW-8R		810	
005	MW-9B		910	
006	Trip Blank			

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)
 Date Needed:
 Relinquished By: *[Signature]* Date/Time: 1630
 Received By: FedEx Date/Time:
 Transmit Prelim Rush Results by (complete what you want): Fed Ex 10/26/17 1040
 Received By: Kim Rother Pace 10/26/17 1040
 PACE Project No. 40159506
 Receipt Temp = 20.1 °C
 Sample Receipt pH (OK) Adjusted
 Cooler Custody Seal Present / Not Present Intact / Not Intact



Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40159506

Client Name: Gannott Fleming

Courier: [X] Fed Ex [] UPS [] Client [] Pace Other []
Tracking #: 8120 5814 2927



Custody Seal on Cooler/Box Present: [] yes [X] no
Custody Seal on Samples Present: [] yes [X] no
Packing Material: [X] Bubble Wrap [X] Bubble Bags [] None [] Other
Thermometer Used: NA Type of Ice: [X] Wet [] Blue [] Dry [] None
Cooler Temperature: Uncorr: RO / Corr: Biological Tissue is Frozen: [] yes [] no
Temp Blank Present: [] yes [X] no

Person examining contents:
Date: 10-26-17
Initials: KR

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Comments:

Table with 15 rows of inspection items and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, and Trip Blank Present.

Client Notification/ Resolution:
Person Contacted: Date/Time:
Comments/ Resolution: Client sent 6-40mLvB empty in shipment 10-26-17 KR

Project Manager Review: KR for DM Date: 10/26/17