



Gannett Fleming

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February 21, 2018

File #34265.003

John Sager
Wisconsin Department of Natural Resources
1701 North 4th Street
Superior, WI 54880

Re: Remediation Progress Report for Tank 40 Release Site (July 2015 – Dec. 2017)
Superior Refining Company LLC Refinery, Superior, WI
WDNR BRRTS# 02-16-222712 and Facility ID: 816009590

Dear John:

On behalf of Superior Refining Company LLC (SRC), Gannett Fleming, Inc. (GF) is submitting this remediation progress report for the Murphy Oil (Murphy) Tank #40 release site (WDNR BRRTS# 02-16-222712) at the SRC refinery in Superior, for the period July 2015 through December 2017. In addition, the report includes background information on the refinery and the subject site's remedial history. Periodic reporting of remediation site 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 and Tank 40 Basin Information

Figure 1 is a site location map showing Tank 40, the refinery, its approximate property boundary, and the area around the refinery and was prepared using the most recent USGS topographic map. The Tank 40 basin is in the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 25, Township 49 North, Range 14 West, Superior Township of Douglas County.

The land surrounding the basin is also owned by SRC and is part of the refinery. The closest surface water is Newton Creek, located approximately 2,000 feet east, as shown on Figure 1. The Tank 40 basin is located on relatively level land in the north-central area of the refinery. The basin's ground surface is unpaved. The basin is underlain by native clay, the depth to groundwater is approximately 3 feet below ground surface (bgs), and the regional direction of shallow groundwater flow below the refinery is to the east.

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

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porosity of 0.06, the estimated horizontal groundwater flow velocity is approximately 0.01 foot per year. This does not include contaminant retardation.

In October 2011, Calumet Superior LLC (Calumet) acquired the refinery from Murphy. Effective November 8, 2017, Husky Superior Refining Holding Corp (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC.

October 1998 Release and August 2003 Interceptor Trench “Operating” History

On October 17, 1998, approximately 2,300 gallons of straight-run gasoline were released in the Tank 40 basin. Murphy notified the WDNR of the release in a December 2, 1998, letter. At the time of the spill, the diked area was full of storm water, and the released gasoline floated on top of the storm water within the diked area. A vacuum truck was used to recover storm water and residual product from the diked area. These liquids were placed in Murphy’s No. 1 American Petroleum Institute (API) oil/water separator for recovery of the gasoline. As a safety precaution, the affected area was washed with water, and the wash water was also removed with a vacuum truck and run through the API separator. In November 1998, Twin Ports Testing of Superior collected soil samples at Geoprobe boring locations GP-1 through GP-7, as shown on Figure 2.

As described in previously submitted status reports to the WDNR for the Tank 40 release site, measurable product has been encountered in this basin on multiple occasions. Free product was initially encountered in the basin in July 2000. Since then, the monitoring network in the Tank 40 basin (monitoring wells MW-1/T40 through MW-7/T40, monitoring points MP-1/T40 through MP-3/T40, and test pit sump TP-1/T40) and an interceptor trench with a recovery sump (TS-1/T40) have been routinely monitored for the presence of product, and if present, product was removed and treated in the refinery’s No. 1 API oil/water separator/wastewater treatment plant (WWTP). Figure 2 is a site plan showing the layout of the monitoring well network.

As reported in GF’s June 2004 site status update, based on the consistent and relatively widespread presence of product in the basin between July 2000 and July 2003, in August 2003 Gannett Fleming personnel supervised the installation of a 100-foot-long interceptor trench near the downgradient edge of the area with apparent free product. Each end of the 8- to 8.5-foot-deep trench slopes toward its middle, and a 6-inch-diameter sump (TS-1/T40) was installed in the middle of the trench. Figure 2 shows the location of the recovery trench and sump. Since the native clay surrounding this trench has a low permeability, the interceptor trench fills relatively slowly.

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Between June 2004 and April 2010, the trench (TS-1/T40) was periodically pumped, and approximately 187,000 gallons of gasoline-contaminated groundwater were recovered. The pumped water was treated in the refinery's No. 1 API separator/WWTP. The goal was to keep the water level in the trench relatively low to promote the flow of petroleum-contaminated groundwater and product into the trench. Since the trench was installed in August 2003, no measurable product, only petroleum-contaminated groundwater, has accumulated in TS-1/T40. As a result, no further pumping of the trench is currently planned unless product accumulates in TS-1/T40, as described in the Future Work section of this report.

Remedial and Monitoring Activities (July 2015 through December 2017)

Since the last remediation progress report was submitted to the WDNR on August 6, 2015, work in the Tank 40 basin has included the monitoring and recovery of product from the on-site wells and collection of groundwater samples from select locations.

During the reporting period, measurable product was encountered on eight occasions in MP-3/T40 and five occasions in MW-2/T40, as shown in Table 1, which includes fluid level monitoring data for July 2015 through December 2017. The thickest layer of free product (1.15 feet) was measured on 10/06/15 in MP-3/T40. Traces of product (up to 0.10 foot on 11/24/15) were also measured in MW-2/T40. Otherwise, no measurable thickness of product was observed in MP-1/T40, MP-2/T40, the other five Tank 40 monitoring wells, or TS-1/T40 throughout the reporting period.

Through December 2017, approximately 539 gallons of product have been recovered, with almost all (i.e., over 95%) of it coming from MW-2/T40, MW-3/T40, MW-4/T40, and MP-3/T40. Approximately 59% (317 gallons) of the product total was from MW-2/T40 and 5.5% (30 gallons) from MP-3/T40. Between July 2015 and December 2017, approximately 0.03 and 0.6 gallon was recovered from MW-2/T40 and MP-3/T40, respectively. These are <0.1% and about 2% of the total volumes recovered from MW-2/T40 and MP-3/T40, respectively, to date. GF's April 2014 report included an 18-page table summarizing the historical volume of product removed from each well and a plot of the cumulative product recovered from all the monitoring wells for reference.

SRC will continue to check for free product, but for all practical purposes, we believe free product has been recovered to the extent practical from the Tank 40 basin.

Groundwater samples were collected at the site during the reporting period in October 2015 and May and October 2016 and 2017. Each well was purged dry twice and allowed to recover

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for at least 7 days, prior to the collection of the samples. Monitoring wells MW-1/T40 and MW-4/T40 through MW-7/T40 and trench sump TS-1/T40 were routinely sampled. Gannett Fleming used new one-time-use polyethylene bailers with new nylon rope to collect each groundwater sample. The groundwater samples were sent to Pace Analytical of Green Bay (Wisconsin laboratory certification #405132750) and analyzed for petroleum volatile organic compounds (PVOCs). In October 2015 and October 2017, samples were not collected from MW-2/T40 due to the presence of product on the day of the sampling event.

Table 2 presents the analytical results of the groundwater samples in micrograms per liter ($\mu\text{g}/\ell$). As shown in Table 2, at least one PVOC compound has been present at a concentration at or above its applicable NR 140 enforcement standard (ES) in each well and sump historically. However, because of the removal of accumulated free product over the years, PVOC concentrations in the wells have been stable or decreasing. For example, Figure 3 presents trend analysis plots for benzene concentrations in the groundwater at MW-1/T40, MW-4/T40, MW-5/T40, MW-6/T40, and MW-7/T40. Note that the plotted data for each well only includes the time period since a) free product was most recently removed and b) samples were collected at least once a year. In addition, the best-fit exponential trend lines were generated using Excel. As shown on Figure 3, dissolved-phase benzene concentrations in the wells have followed a general downward trend. Attachment A provides copies of the laboratory reports and chain of custody records for the groundwater samples collected between July 2015 and December 2017.

Historically, a groundwater contour map for the October 1998 Tank 40 release site has not been prepared because groundwater levels in the wells either are influenced by local surface/melt water in the spring or typically do not have sufficient time to reach static levels after they are bailed later in the year. Consequently, a groundwater contour map representing static conditions for the Tank 40 site cannot be created.

Future Work

Due to relatively shallow groundwater, cold weather, and snow, year-round access to wells at the refinery is not practical. During time periods when it's warm enough to allow access (i.e., between April/May and October/November), SRG's work plan for 2018 follows:

- Continue to manually bail product from the six monitoring wells (MW-1/T40, MW-2/T40, and MW-4/T40 through MW-7/T40), three monitoring points (MP-1/T40 through MP-3/T40), and the test pit sump (TP-1/T40) when free product is present.

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- If product is observed, then check the wells, points, and test pit sump monthly. If product is not observed, then check the wells, points, and sump quarterly. The purged product/water will continue to be treated in the refinery's No. 1 API oil/water separator/WWTP.
- Continue to gauge TS-1/T40, along with the monitoring wells, etc. If product is observed in TS-1/T40, then pump the recovery trench using an on-site vacuum truck. The pumped product/water would be treated in the refinery's No. 1 API oil/water separator/WWTP.
- Collect groundwater samples from those monitoring wells (and TS-1/T40) without product biannually, and have the samples analyzed for PVOCs by a Wisconsin-certified laboratory using EPA Method 8021. Each monitoring well (but not TS-1/T40) will be purged dry twice and allowed to recover, prior to the collection of the samples.
- Report the results of the groundwater samples, as well as the results of the recovery of product, in our next remediation progress report to the WDNR by the end of January 2019.

Feel free to contact me and/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.

ecc: Matt Turner (Husky Superior)

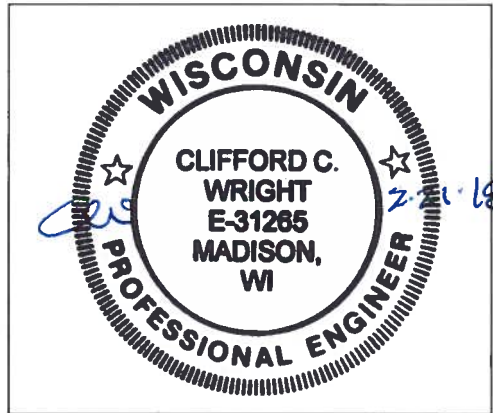
CERTIFICATION

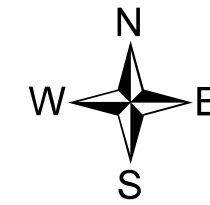
Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring, or an investigation. Other persons may sign this form for sites with no response activities during the six month reporting period.

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 <i>Clifford C. Wright</i>	Title <i>Project engineer</i>
Signature <i>Clifford C. Wright</i>	Date <i>2.21.18</i>

Professional Seal, if applicable:



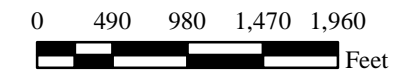


Legend

----- Approx. Property Boundary

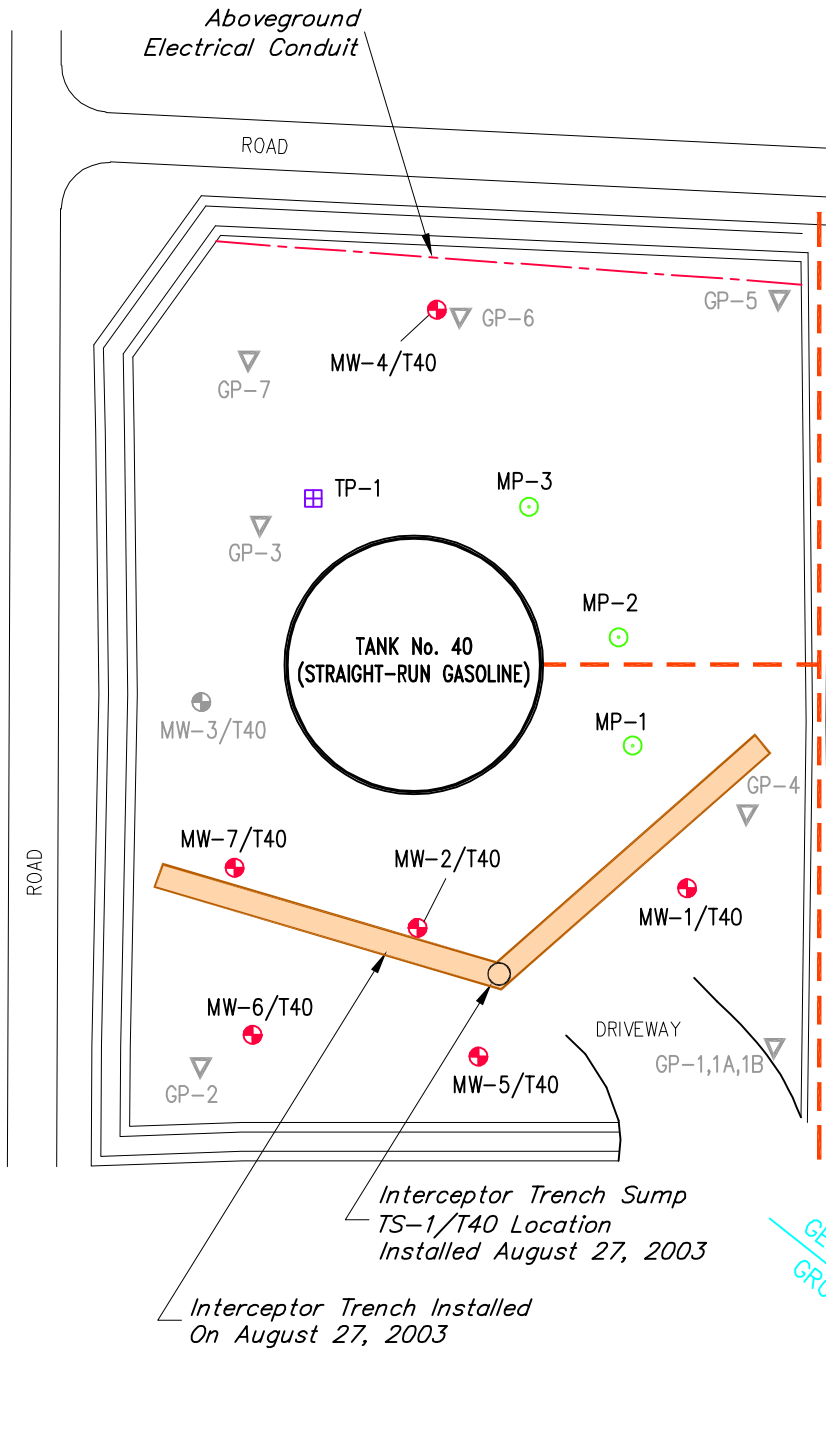
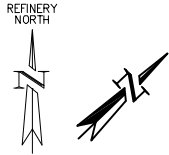
Note:

Topographic map obtained from ArcGIS USA Topo Map service. Service includes seamless, scanned images of USGS topographic maps.



Site Location Map			
SUPERIOR REFINING COMPANY LLC REFINERY SUPERIOR, WISCONSIN			
		<small>Gannett Fleming, Inc. 8025 Excelsior Drive Madison WI 53717-1900 (608) 836-1500 www.gannettfleming.com</small>	
Project No.	34265.003	Date	07/30/2015
			Figure 1

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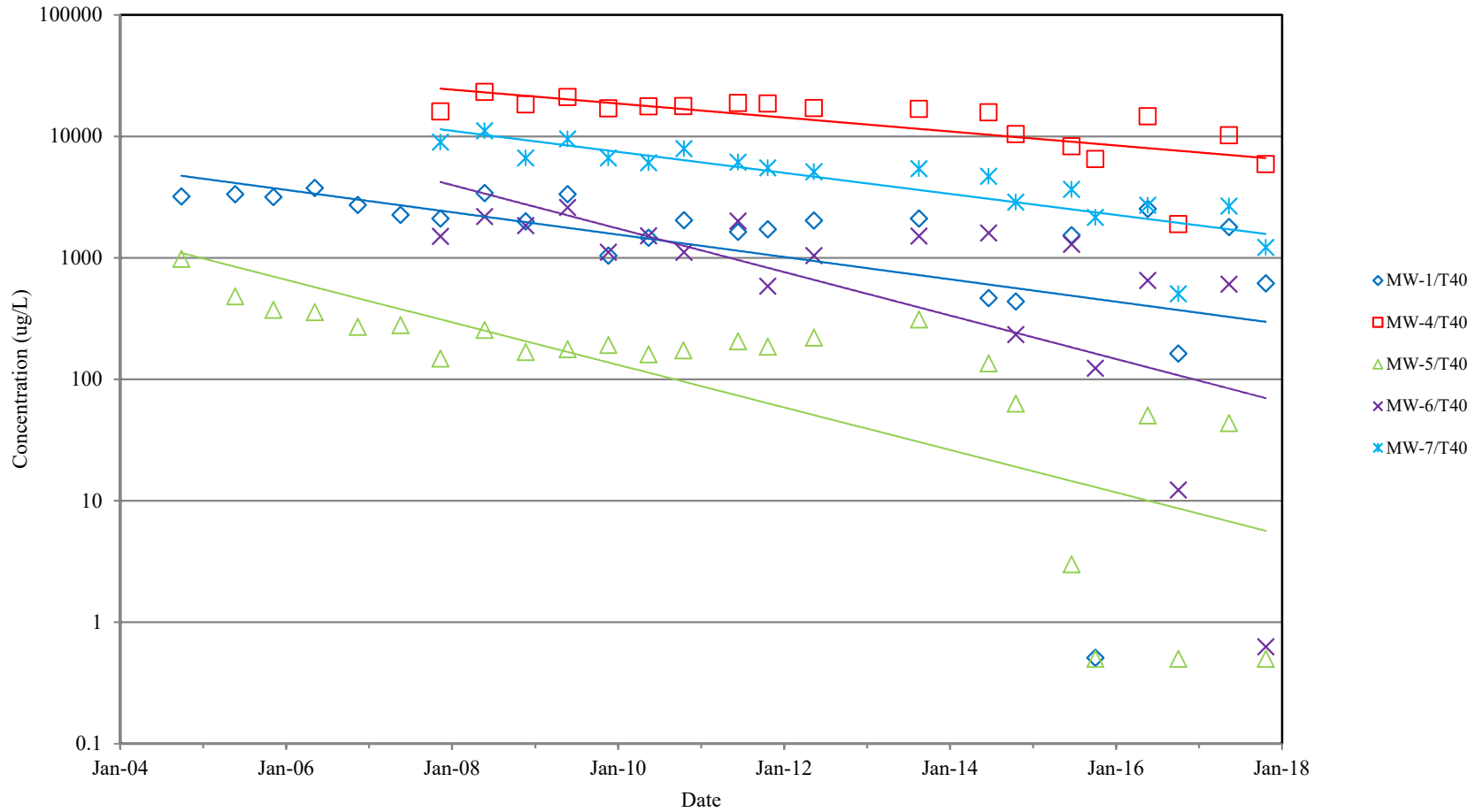
- Monitoring Point (July 2001)
- ⊞ Test Pit Sump (July 2000)
- ⊕ Monitoring Well
- ▽ Twin Ports Geoprobe Soil Sample Location (November 1998)
- Piping Run

NOTES:

1. Site Not Surveyed, Locations Are Approximate And Based On Field Measurements.
2. Each Monitoring Point Is 7 Feet Deep And Consists Of 4"Ø PVC With 3 Feet Of Slotted PVC Screen.
3. The Test Pit Sump (TP-1) Is 8 Feet Deep And Consists Of 6"Ø PVC With 4 Feet Of Slotted PVC Screen.
4. The Interceptor Sump Is 9.5' Deep And Consists Of 5"Ø PVC With 5' Of Slotted PVC.
5. Shaded Well And Geoprobe Boring Locations Have Been Abandoned.



**OCTOBER 1998 TANK 40
RELEASE SITE PLAN
SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN**



Note: Best-fit exponential trend lines generated using Excel and non-detect concentrations (if any) plotted at detection limit.

BENZENE GROUNDWATER CONCENTRATIONS TANK 40 BASIN

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TABLE 1

FLUID LEVEL MONITORING DATA FOR OCTOBER 1998 TANK 40 RELEASE SITE (JULY 2015 - DECEMBER 2017)⁽¹⁾

Date	MP-1/T40		MP-2/T40		MP-3/T40		MW-1/T40		MW-2/T40		MW-4/T40		MW-5/T40		MW-6/T40		MW-7/T40		TP-1/T40		TS-1/T40		Comments/ Footnotes
	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	DTP	DTW	
	Depth to Fluid from Top of Casing (feet)																						
07/15/15	--	4.41	--	4.95	--	6.26	--	3.50	3.12	3.15	--	4.38	--	3.27	--	3.54	--	3.04	nm	nm	--	2.59	(2)
08/07/15	--	6.21	--	4.80	8.02	8.12	--	3.45	3.83	3.87	--	4.17	--	3.91	--	4.77	--	3.97	--	5.45	--	2.42	(3)
09/04/15	--	4.16	--	5.03	--	6.16	--	3.51	--	3.55	--	4.30	--	3.51	--	3.80	--	3.25	--	4.80	--	2.60	(4)
09/24/15	--	4.77	--	4.81	5.81	6.05	--	3.56	--	3.34	--	4.06	--	3.30	--	3.64	--	3.25	--	4.12	--	2.41	(5)
10/06/15	nm	nm	nm	nm	6.74	7.89	--	4.58	3.74	3.75	--	5.21	--	4.04	--	4.18	--	4.65	nm	nm	--	3.74	(6)
11/24/15	--	4.97	--	4.76	6.71	7.20	--	3.42	3.40	3.50	--	4.20	--	3.36	--	3.43	--	3.32	--	4.62	--	2.55	(3)
05/06/16	--	4.90	--	5.55	--	6.90	--	3.25	--	2.82	--	4.85	--	3.91	--	4.18	--	3.40	--	4.95	--	3.31	(4)
05/17/16	nm	nm	nm	nm	nm	nm	--	4.56	--	4.21	--	4.38	--	4.40	--	4.91	--	4.06	nm	nm	nm	nm	(4)
05/24/16	--	5.57	--	5.77	8.08	8.11	--	4.81	--	3.02	--	6.37	--	4.51	--	4.01	--	4.06	nm	nm	--	3.08	(6)
06/29/16	nm	nm	nm	nm	--	6.90	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	(7)
07/21/16	--	4.89	--	5.06	--	6.51	--	4.19	--	3.26	--	4.64	--	3.76	--	4.02	--	3.66	--	5.06	--	2.70	
08/17/16	--	5.40	--	5.87	--	7.32	--	5.35	--	3.47	--	4.91	--	3.99	--	3.91	--	4.30	--	5.56	--	3.88	
09/08/16	--	5.04	--	5.06	--	7.25	--	4.61	--	3.41		4.31	--	3.51	--	3.46	--	3.51	--	4.54	--	2.60	(4)
09/22/16	--	4.76	--	5.02	6.76	6.87	--	3.82	--	4.16		4.23	--	3.38	--	3.72	--	3.40	--	5.10	--	2.70	(5)
10/05/16	--	4.72	--	5.22	6.82	7.64	--	3.97	--	3.79		4.38	--	3.59	--	3.70	--	3.61	nm	nm	--	2.80	(6)
11/07/16	--	5.02	--	5.60	7.20	8.00	--	3.41	--	4.00		5.30	--	4.30	--	4.40	--	3.90	--	5.29	--	3.60	(7)
04/27/17	--	4.20	--	6.17	--	6.61	--	3.56	--	2.51		4.26	--	3.20	--	3.39	--	2.99	--	4.46	--	2.80	(4)
05/09/17	--	4.71	--	5.80	--	6.75	--	3.95	--	2.89		4.50	--	3.65	--	3.86	--	3.29	--	4.85	--	3.25	(4)
05/16/17	--	4.57	--	5.12	--	6.21	--	3.53	--	2.79		4.35	--	3.36	--	3.39	--	3.11	nm	nm	--	4.39	Sampled
09/27/17	--	4.34	--	5.20	--	6.51	--	3.52	--	3.02		4.32	--	3.15	--	3.39	--	3.10	--	4.45	--	2.80	(4)
10/10/17	--	4.52	--	5.31	--	6.37	--	3.57	--	4.09		4.58	--	3.41	--	3.35	--	3.22	--	4.78	--	2.91	(4)
10/25/17	--	4.52	--	5.34	--	6.52	--	3.75	4.78	4.79		4.51	--	3.37	--	3.56	--	3.11	nm	nm	--	2.98	(6)
11/07/17	--	4.56	--	ice	--	6.62	--	3.69	--	3.42		4.37	--	3.34	--	3.41	--	3.15	--	4.82	--	ice	

TABLE 1

FLUID LEVEL MONITORING DATA FOR OCTOBER 1998 TANK 40 RELEASE SITE (JULY 2015 - DECEMBER 2017)⁽¹⁾

NOTES:

DTP = Depth to product.

DTW = Depth to water.

nm = Not measured.

-- = Not applicable/no free product.

FOOTNOTES:

(1) Table does not include data from MW-5/T40 when that well was gauged for Environmental Repair Program (ERP) monitoring.

(2) Bailed MW-2/T40 dry to address free product.

(3) Bailed MP-3/T40 and MW-2/T40 dry to address free product.

(4) Bailed those monitoring wells (MWs) without free product dry in preparation for sampling.

(5) Bailed MP-3/T40 dry to address free product and bailed the MWs without free product dry in preparation for sampling.

(6) Bailed MP-3/T40 or MW-2/T40 dry to address free product and sampled the MWs without free product (see Table 2 for summary of analytical results).

(7) Bailed MP-3/T40 dry to address free product and/or promote its recovery.

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR GRO AND DETECTED VOCs - OCTOBER 1998 TANK 40 RELEASE SITE

Well ID Date	Substance								
	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	TMBs	MTBE	Isopropylbenzene	n-Propylbenzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	NS
MW-1/T40									
10/06/99	8,180	445	206	961	2,850	525	<6.0	36.2	<15.0
12/09/99	8,860	433	293	402	3,170	2,677	<6.0	na	na
03/09/00	15,000	1,700	720	1,400	5,800	1,170	<16	na	na
06/14/00	21,000	2,400	570	2,100	6,900	1,620	<24	na	na
09/12/00	32,000	2,100	850	1,000	5,500	1,180	<24	na	na
03/21/01	20,000	2,700	890	860	7,100	1,520	<24	na	na
03/06/02	10,000	2,000	500	140	5,200	1,200	<10	na	na
09/12/02	14,000	1,600	710	32	4,210	1,170	<4.3	na	na
03/12/03	FP	FP	FP	FP	FP	FP	FP	FP	FP
09/30/04	23,000	3,200	1,400	2,800	6,700	1,280	<9.0	na	na
05/26/05	25,100	3,340	1,600	2,620	8,370	1,705	<30.0	na	na
11/09/05	18,200	3,170	1,350	1,780	8,560	1,605	<30.0	na	na
05/10/06	20,500	3,750	1,290	1,500	8,190	1,674	<15.0	na	na
11/16/06	25,800	2,730	1,670	2,200	7,900	1,557	<30.0	na	na
05/23/07	16,700	2,260	706	756	5,350	1,385	<15.0	na	na
11/15/07	22,500	2,100	1,220	621	6,740	1,897	<60.0	na	na
05/27/08	22,400	3,410	1,270	763	7,700	1,614	<60.0	na	na
11/24/08	16,600	1,990	882	401	5,760	1,543	<30.0	na	na
05/27/09	19,700	3,340	1,510	361	7,870	1,703	<30.0	na	na
11/23/09	8,720	1,040	377	66.0	3,264	791	<6.00	na	na
05/19/10	10,400	1,460	642	44.8 J	3,644	845	<15.0	na	na
10/21/10	15,000	2,040	817	23.8 J	5,391	1,396	<15.0	na	na
06/16/11	na	1,640	742	20.0 U	4,067	837	<25.0	na	na
10/25/11	na	1,720	684	20.0 U	4,646	1,198	<25.0	na	na
05/16/12	na	2,030	868	13.4 U	5,088	1,377	<12.2	na	na
08/21/13	na	2,110	1,050	8.8 U	5,499	1,769	<9.9	na	na
06/24/14	na	466	83.9	5.0 U	1,797	779	<1.7	na	na
10/21/14	na	438	6.1	2.5 U	2,406	901	<0.87	na	na
06/23/15	na	1,530	480	5.0 U	3,996	1,105	<1.7	na	na
10/06/15	na	0.51 J	0.79 J	1.4	8.51 J	123.0	<0.17	na	na
05/24/16	na	2,520	1,030	10.0 U	5,744	1,189	<3.5	na	na
10/05/16	na	163	7.5 J	5.0 U	1,003.1	312.9	<1.7	na	na
05/16/17	na	1,790	815	12.5 U	5,250	1,252	<4.4	na	na
10/25/17	na	616	27.0	12.5 U	2,094.3	569	<4.4	na	na
MW-2/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	FP	FP	FP	FP	FP	FP	FP	FP	FP
03/12/03	FP	FP	FP	FP	FP	FP	FP	FP	FP
09/30/04	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/26/05	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/09/05	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/16/06	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/23/07	FP	FP	FP	FP	FP	FP	FP	FP	FP

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR GRO AND DETECTED VOCs - OCTOBER 1998 TANK 40 RELEASE SITE

Well ID Date	Substance								
	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	TMBs	MTBE	Isopropylbenzene	n-Propylbenzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	NS
11/15/07	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/27/08	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/24/08	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/27/09	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/23/09	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/19/10	FP	FP	FP	FP	FP	FP	FP	FP	FP
10/21/10	FP	FP	FP	FP	FP	FP	FP	FP	FP
06/16/11	FP	FP	FP	FP	FP	FP	FP	FP	FP
10/25/11	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/16/12	FP	FP	FP	FP	FP	FP	FP	FP	FP
08/21/13	na	13,400	3,190	13,100	12,460	2,599	<49.4	na	na
06/24/14	na	12,000	2,000	10,100	9,370	1,375	<21.8	na	na
10/21/14	FP	FP	FP	FP	FP	FP	FP	FP	FP
06/23/15	FP	FP	FP	FP	FP	FP	FP	FP	FP
10/06/15	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/24/16	na	15,300	1,740	7,970	8,770	1,374	<17.4	na	na
10/05/16	na	6,870	899	4,330	9,840	2,186	<8.7	na	na
05/16/17	na	11,500	1,640	4,730	10,470	1,392	<17.4	na	na
10/25/17	FP	FP	FP	FP	FP	FP	FP	FP	FP
MW-3/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	FP	FP	FP	FP	FP	FP	FP	FP	FP
03/12/03	FP	FP	FP	FP	FP	FP	FP	FP	FP
09/30/04	Well was not available for monitoring due to construction activities and was subsequently abandoned in July 2007								
MW-4/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	42,000	19,000	1,300	6,200	4,500	760	<110	<82	<120
03/12/03	FP	FP	FP	FP	FP	FP	FP	FP	FP
09/30/04	FP	FP	FP	FP	FP	FP	FP	FP	FP
05/26/05	64,300	20,500	2,010	11,900	9,360	1,581	<150	na	na
11/09/05	66,600	17,000	1,620	9,190	10,710	3,017	<300	na	na
05/10/06	62,000	24,900	2,020	12,100	9,160	1,780	<60.0	na	na
11/16/06	52,100	20,900	1,450	8,680	7,970	1,462	<15.0	na	na
05/23/07	FP	FP	FP	FP	FP	FP	FP	FP	FP
11/15/07	50,200	16,000	1,810	7,720	7,220	1,519	<75.0	na	na
05/27/08	62,100	23,200	2,100	10,400	9,940	2,067	<75.0	na	na
11/24/08	51,100	18,300	1,630	8,000	8,810	2,167	<75.0	na	na
05/27/09	50,900	21,000	1,570	8,410	9,910	1,994	<60.0	na	na
11/23/09	46,300	17,000	1,050	6,290	8,590	1,798	<30.0	na	na
05/19/10	47,900	17,600	1,150	6,350	8,470	1,805	<60.0	na	na
10/19/10	53,500	17,700	1,140	6,180	11,900	3,136	<75.0	na	na
06/16/11	na	18,800	1,120	5,880	7,630	1,446	<250	na	na
10/25/11	na	18,600	1,980	6,460	8,360	1,419	<250	na	na
05/16/12	na	17,100	1,220	4,910	8,640	2,058	<61.0	na	na
08/21/13	na	16,800	1,630	3,070	9,200	2,428	<49.9	na	na
06/24/14	na	15,700	949	1,490	7,660	1,616	<34.8	na	na
10/21/14	na	10,400	537	790	6,830	1,510	<17.4	na	na

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR GRO AND DETECTED VOCs - OCTOBER 1998 TANK 40 RELEASE SITE

Well ID Date	Substance								
	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	TMBs	MTBE	Isopropylbenzene	n-Propylbenzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	NS
06/23/15	na	8,260	516	277	5,180	1,437	<17.4	na	na
10/06/15	na	6,500	109	50 U	4,530	1,103	<17.4	na	na
05/24/16	na	14,600	836	50 U	7,240	1,550	<17.4	na	na
10/05/16	na	1,890	10.0 U	10.0 U	2,293	778	<3.5	na	na
05/16/17	na	10,200	807	50 U	7,120	1,285	<17.4	na	na
10/25/17	na	5,890	138	50 U	6,500	1,459	<17.4	na	na
MW-5/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	<50	<0.25	<0.53	0.84 U	<1.83	<1.33	<0.87	<0.66	<0.95
03/12/03	100	3.9	1.4 J	0.68 U	6.0 J	4.1	<0.43	na	na
09/30/04	18,000	980	1,900	10.0 J	5,800	1,170	4.2 J	na	na
05/26/05	18,700	482	1,930	60 U	7,750	1,558	<60	na	na
11/09/05	11,500	372	1,550	30.0 U	5,430	1,066	<30.0	na	na
05/10/06	10,500	357	1,400	3.00 U	5,200	855	<3.00	na	na
11/16/06	14,900	270	1,820	15.0 U	6,310	1,381	<15.0	na	na
05/23/07	16,700	279	1,900	6.00 U	7,070	1,611	<6.00	na	na
11/15/07	9,840	148	495	6.00 U	2,588	1,059	<6.00	na	na
05/27/08	10,400	254	833	28.7	3,194	1,006	<6.00	na	na
11/24/08	11,000	167	1,020	24.8	3,288	1,052	23.2 J	na	na
05/27/09	5,010	177	324	33.8 J	1,132	427	<15.0	na	na
11/23/09	9,990	191	888	21.2 J	2,725	821	<6.00	na	na
05/19/10	8,730	160	638	7.40 U	2,170	805	<6.00	na	na
10/19/10	9,980	173	833	7.40 U	2,663	880	14.6 J	na	na
06/16/11	na	205	607	8.00 U	1,835	576	<10.0	na	na
10/25/11	na	185	778	8.00 U	2,331	1,142	<10.0	na	na
05/16/12	na	220	579	3.4 U	1,566	492	<3.0	na	na
08/21/13	na	310	825	4.4 U	1,601	736	<4.9	na	na
06/24/14	na	135	756	2.5 U	1,840	673	<0.87	na	na
10/21/14	na	63.1	208	1.2 U	611.0	256.7	<0.44	na	na
06/23/15	na	3.0	11.2	0.50 U	28.9 U	10.7	<0.17	na	na
10/06/15	na	0.50 U	0.50 U	0.70 J	1.60 J	1.01 J	<0.17	na	na
05/24/16	na	50.3	152	1.0 U	479.7 J	165.9	<0.35	na	na
10/05/16	na	0.50 U	0.50 U	0.50 U	1.50 U	1.00 U	<0.17	na	na
05/16/17	na	43.6	259	1.2 U	668.5 J	247.7	<0.44	na	na
10/25/17	na	0.50 U	0.50 U	0.50 U	1.50 U	1.00 U	<0.17	na	na
MW-6/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	<50	6.8	<0.53	0.84 U	<1.83	<1.33	<0.87	<0.66	<0.95
03/12/03	370	170	8	0.85 J	18.2	6.2	<0.43	na	na
11/15/07	4,440	1,500	396	6.00 U	545	108	<6.00	na	na
05/27/08	5,420	2,190	572	6.00 U	666	158	<6.00	na	na
11/24/08	6,570	1,840	808	6.00 U	1,092	275	26.2 J	na	na
05/27/09	6,070	2,590	866	7.40 U	1,074	257	24.7 J	na	na
11/23/09	3,900	1,110	421	3.70 U	691	135	<3.00	na	na
05/19/10	4,470	1,520	503	7.40 U	636	170	<6.00	na	na
10/21/10	2,630	1,110	274	7.40 U	225	62.7 J	12.5 J	na	na
06/16/11	na	2,010	615	8.00 U	668.1	165.8	<10.0	na	na

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR GRO AND DETECTED VOCs - OCTOBER 1998 TANK 40 RELEASE SITE

Well ID Date	Substance								
	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	TMBs	MTBE	Isopropylbenzene	n-Propylbenzene
NR 140 PAL	NS	0.5	140	160	400	96	12	NS	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	NS
10/25/11	na	584	100	8.00 U	63.63 J	37.9 J	<10.0	na	na
05/16/12	na	1,040	249	6.7 U	140.1	72.2	<6.1	na	na
08/21/13	na	1,510	607	4.4 U	373	183.1 J	<4.9	na	na
06/24/14	na	1,600	539	12.5 U	375 U	49.6 U	<4.4	na	na
10/21/14	na	233	56.1	1.0 U	81.3 U	36.1 J	<0.35	na	na
06/23/15	na	1,290	507	5.0 U	552.0 U	138.6	<1.7	na	na
10/06/15	na	123	8.8	0.50 U	9.3 U	5.3 U	<0.17	na	na
05/24/16	na	649	209	2.0 U	245.0 U	69.7	<0.70	na	na
10/05/16	na	12.3	0.50 U	0.50 U	1.50 U	1.00 U	<0.17	na	na
05/16/17	na	607	342	2.0 U	475.2 J	109.6	<0.70	na	na
10/25/17	na	0.63 J	0.50 U	0.50 U	1.50 U	1.80 U	<0.17	na	na
MW-7/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	46,000	12,000	3,100	13,000	9,700	1,410	<87	150 J	220 J
03/12/03	48,000	10,000	2,800	11,000	8,900	1,540	<22	na	na
11/15/07	56,300	8,940	2,190	12,100	9,870	2,167	<60.0	na	na
05/27/08	112,000	11,100	3,180	15,500	18,370	6,110	<60.0	na	na
11/24/08	38,800	6,620	1,280	7,970	9,270	2,402	<60.0	na	na
05/27/09	51,000	9,480	2,010	10,800	11,120	2,227	<60.0	na	na
11/23/09	37,000	6,640	1,090	7,000	9,020	1,922	<30.0	na	na
05/19/10	33,300	6,050	814	5,380	7,580	1,869	<60.0	na	na
10/21/10	248,000	7,900	4,560	10,400	34,300	17,700	<60.0	na	na
06/16/11	na	6,110	511	4,430	5,060	896	<100	na	na
10/25/11	na	5,490	1,750	5,590	9,310	2,175	<100	na	na
05/16/12	na	5,090	1,570	4,220	11,330	6,170	<24.4	na	na
08/21/13	na	5,400	1,700	2,400	9,450	2,424	<9.9	na	na
06/24/14	na	4,680	893	1,010	6,090	1,043	<8.7	na	na
10/21/14	na	2,870	651	266	4,740	881	<8.7	na	na
06/23/15	na	3,660	733	167	4,890	920	<7.0	na	na
10/06/15	na	2,150	513	39.3 J	3,410	607	<7.0	na	na
05/24/16	na	2,710	351	10.0 U	2,415	452	<3.5	na	na
10/05/16	na	506	71.0	5.2	1,148	280.3	<0.87	na	na
05/16/17	na	2,670	528	25.8	3,234	541	<3.5	na	na
10/25/17	na	1,220	113	10.0 U	2,101	565	<3.5	na	na
TS-1/T40 (recovery sump installed in a groundwater interceptor trench)									
09/30/04	4,300	140	480	6.7	529	530	0.94 J	na	na
05/26/05	1,510	30.4	2.50 U	105	519	208	<1.50	na	na
11/09/05	3,120	125	312	15.0 U	318.9	666	<15.0	na	na
11/16/06	1,020	139	61.8	0.300 U	44.08	225	<0.300	na	na
11/15/07	3,790	348	681	3.00 U	773	351	<3.00	na	na
05/27/08	4,140	275	555	15.1	549	645	<3.00	na	na
11/24/08	1,020	80.1	158	7.28 J	137.2	178	<3.00	na	na
05/27/09	655	103	15.1	0.370 U	7.40	13.7	1.68 J	na	na
11/23/09	462	67	20.5	4.64	6.78	18	<0.300	na	na
05/19/10	803	127	83.8	0.370 U	33.1	77	1.61 J	na	na
10/21/10	<50.0	0.310 U	0.500 U	0.370 U	1.390 U	<0.84	<0.300	na	na
06/16/11	na	54.9	84.0	0.40 U	67.32	62.29	<0.50	na	na

TABLE 2

GROUNDWATER ANALYTICAL RESULTS FOR GRO AND DETECTED VOCs - OCTOBER 1998 TANK 40 RELEASE SITE

Well ID Date	Substance								
	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	TMBs	MTBE	Isopropylbenzene	n-Propylbenzene
NR 140 PAL	NS	<i>0.5</i>	<i>140</i>	<i>160</i>	<i>400</i>	<i>96</i>	<i>12</i>	NS	NS
NR 140 ES	NS	5	700	800	2,000	480	60	NS	NS
10/25/11	na	393	<i>152</i>	4.00 U	84.1	<i>147.0</i>	<5.00	na	na
05/16/12	na	229	103	<1.7 U	59.2	35.6	<1.5	na	na
08/21/13	na	41.2	12.2	0.44 U	4.6	14.6 J	<0.49	na	na
10/21/14	na	0.50 U	0.50 U	0.50 U	1.50 U	1.00 U	<0.17	na	na
06/23/15	na	34.9	1.9	0.50 U	1.50 U	2.29 J	<0.17	na	na
10/06/15	na	<i>4.6</i>	1.1	0.50 U	1.50 U	10.9	<0.17	na	na
05/24/16	na	73.4	78.2	0.50 U	32.60 U	64.0	<0.17	na	na
10/05/16	na	<i>1.6</i>	0.50 U	0.50 U	1.50 U	3.0	<0.17	na	na
05/16/17	na	<i>0.67</i> J	1.0	0.50 U	1.50 U	3.2	<0.17	na	na
10/25/17	na	<i>2.2</i>	1.0	0.50 U	1.80 J	6.5	<0.17	na	na

NOTES:

Results are in micrograms per liter ($\mu\text{g}/\ell$).

Detected concentrations at or above an applicable NR 140 PAL are in red font and italicized; those at or above an NR 140 ES are in red font and bold.

Any non-detect concentration included was added at the detection limit for both xylenes and TMBs.

Duplicate sample results are averaged for statistical analysis/plotting, per December 2013 Interstate Technology & Regulatory Council guidance.

Initial round of samples collected from each well were analyzed for VOCs, all subsequent samples analyzed for GRO/PVOCs or PVOCs.

Between Sept. 2004 and May 2007, MW-3/T40, MW-6/T40, and MW-7/T40 were temporarily buried as part of the expansion of an access road.

FP = Free product encountered; sample not collected.

GRO = Gasoline range organics.

J = Estimated concentration, concentration below the laboratory's level of quantitation.

MTBE = Methyl tert butyl ether.

na = Not analyzed.

NI = Not installed.

NR 140 ES = Wisconsin Administrative Code NR 140 Enforcement Standard.

NR 140 PAL = Wisconsin Administrative Code NR 140 Preventive Action Limit.

NS = No standard.

PVOCs = Petroleum volatile organic compounds.

TMBs = Trimethylbenzenes.

U = Compound not detected at or above the detection limit, which is the value shown for all parameters except xylenes and TMBs.

ATTACHMENT A

**LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS FOR GROUNDWATER
SAMPLES COLLECTED BETWEEN JULY 2015 AND DECEMBER 2017**

October 19, 2015

Project #34265.003
Calumet Superior
Reviewed by CCW
10/20/15

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 08, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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
Project Manager

Enclosures

cc: Dave Olig, Gannett Fleming



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
Virginia VELAP ID: 460263

North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Virginia VELAP ID: 460263
Virginia VELAP Certification ID: 460263
Wisconsin Certification #: 405132750

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SAMPLE SUMMARY

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40122459001	MW-1/CW	Water	10/06/15 12:00	10/08/15 10:40
40122459002	MW-2/CW	Water	10/06/15 12:02	10/08/15 10:40
40122459003	MW-3/CW	Water	10/06/15 12:10	10/08/15 10:40
40122459004	MW-4/CW	Water	10/06/15 12:05	10/08/15 10:40
40122459005	MW-1/T40	Water	10/06/15 08:00	10/08/15 10:40
40122459006	MW-4/T40	Water	10/06/15 08:25	10/08/15 10:40
40122459007	MW-5/T40	Water	10/06/15 08:10	10/08/15 10:40
40122459008	MW-6/T40	Water	10/06/15 08:15	10/08/15 10:40
40122459009	MW-7/T40	Water	10/06/15 08:20	10/08/15 10:40
40122459010	TS-1/T40	Water	10/06/15 08:22	10/08/15 10:40
40122459011	MW-1/T68	Water	10/06/15 08:40	10/08/15 10:40
40122459012	MW-2/T68	Water	10/06/15 09:00	10/08/15 10:40
40122459013	MW-4/T68	Water	10/06/15 08:55	10/08/15 10:40
40122459014	MW-5/T66	Water	10/06/15 08:45	10/08/15 10:40
40122459015	MW-6/T68	Water	10/06/15 09:05	10/08/15 10:40
40122459016	MW-1R/T70	Water	10/06/15 09:40	10/08/15 10:40
40122459017	MW-2R/T70	Water	10/06/15 09:15	10/08/15 10:40
40122459018	MW-3/T70	Water	10/06/15 09:30	10/08/15 10:40
40122459019	MW-4/T70	Water	10/06/15 09:35	10/08/15 10:40
40122459020	MW-5/T70	Water	10/06/15 09:20	10/08/15 10:40
40122459021	MW-6/T70	Water	10/06/15 09:25	10/08/15 10:40
40122459022	TRIP BLANK	Water	10/06/15 00:00	10/08/15 10:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40122459001	MW-1/CW	EPA 8260	HNW	12	PASI-G
40122459002	MW-2/CW	EPA 8260	HNW	12	PASI-G
40122459003	MW-3/CW	EPA 8260	HNW	12	PASI-G
40122459004	MW-4/CW	EPA 8260	HNW	12	PASI-G
40122459005	MW-1/T40	EPA 8260	HNW	11	PASI-G
40122459006	MW-4/T40	EPA 8260	HNW	11	PASI-G
40122459007	MW-5/T40	EPA 8260	AJP	11	PASI-G
40122459008	MW-6/T40	EPA 8260	LAP	11	PASI-G
40122459009	MW-7/T40	EPA 8260	AJP	11	PASI-G
40122459010	TS-1/T40	EPA 8260	AJP	11	PASI-G
40122459011	MW-1/T68	EPA 8260	LAP	63	PASI-G
40122459012	MW-2/T68	EPA 8260	LAP	63	PASI-G
40122459013	MW-4/T68	EPA 8260	LAP	63	PASI-G
40122459014	MW-5/T66	EPA 8260	LAP	63	PASI-G
40122459015	MW-6/T68	EPA 8260	LAP	63	PASI-G
40122459016	MW-1R/T70	EPA 8260	AJP	12	PASI-G
40122459017	MW-2R/T70	EPA 8260	AJP	12	PASI-G
40122459018	MW-3/T70	EPA 8260	AJP	12	PASI-G
40122459019	MW-4/T70	EPA 8260	AJP	12	PASI-G
40122459020	MW-5/T70	EPA 8260	AJP	12	PASI-G
40122459021	MW-6/T70	EPA 8260	LAP	12	PASI-G
40122459022	TRIP BLANK	EPA 8260	AJP	12	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40122459002	MW-2/CW					
EPA 8260	1,2,4-Trimethylbenzene	51.5	ug/L	5.0	10/12/15 13:28	
EPA 8260	1,3,5-Trimethylbenzene	4.6J	ug/L	5.0	10/12/15 13:28	
EPA 8260	Benzene	434	ug/L	5.0	10/12/15 13:28	
EPA 8260	Ethylbenzene	61.9	ug/L	5.0	10/12/15 13:28	
EPA 8260	Toluene	6.3	ug/L	5.0	10/12/15 13:28	
EPA 8260	m&p-Xylene	73.1	ug/L	10.0	10/12/15 13:28	
EPA 8260	o-Xylene	8.1	ug/L	5.0	10/12/15 13:28	
40122459003	MW-3/CW					
EPA 8260	1,2,4-Trimethylbenzene	282	ug/L	100	10/12/15 10:59	
EPA 8260	1,3,5-Trimethylbenzene	119	ug/L	100	10/12/15 10:59	
EPA 8260	Benzene	12500	ug/L	100	10/12/15 10:59	
EPA 8260	Ethylbenzene	409	ug/L	100	10/12/15 10:59	
EPA 8260	Toluene	265	ug/L	100	10/12/15 10:59	
EPA 8260	m&p-Xylene	1930	ug/L	200	10/12/15 10:59	
EPA 8260	o-Xylene	270	ug/L	100	10/12/15 10:59	
40122459004	MW-4/CW					
EPA 8260	1,2,4-Trimethylbenzene	1300	ug/L	50.0	10/12/15 11:22	
EPA 8260	1,3,5-Trimethylbenzene	352	ug/L	50.0	10/12/15 11:22	
EPA 8260	Benzene	8180	ug/L	50.0	10/12/15 11:22	
EPA 8260	Ethylbenzene	979	ug/L	50.0	10/12/15 11:22	
EPA 8260	Naphthalene	155J	ug/L	250	10/12/15 11:22	
EPA 8260	Toluene	282	ug/L	50.0	10/12/15 11:22	
EPA 8260	m&p-Xylene	3750	ug/L	100	10/12/15 11:22	
EPA 8260	o-Xylene	582	ug/L	50.0	10/12/15 11:22	
40122459005	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	2.0	ug/L	1.0	10/12/15 10:14	
EPA 8260	1,3,5-Trimethylbenzene	121	ug/L	1.0	10/12/15 10:14	
EPA 8260	Benzene	0.51J	ug/L	1.0	10/12/15 10:14	
EPA 8260	Ethylbenzene	0.79J	ug/L	1.0	10/12/15 10:14	
EPA 8260	Toluene	1.4	ug/L	1.0	10/12/15 10:14	
EPA 8260	m&p-Xylene	7.6	ug/L	2.0	10/12/15 10:14	
EPA 8260	o-Xylene	0.91J	ug/L	1.0	10/12/15 10:14	
40122459006	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	858	ug/L	100	10/12/15 11:44	
EPA 8260	1,3,5-Trimethylbenzene	245	ug/L	100	10/12/15 11:44	
EPA 8260	Benzene	6500	ug/L	100	10/12/15 11:44	
EPA 8260	Ethylbenzene	109	ug/L	100	10/12/15 11:44	
EPA 8260	m&p-Xylene	3000	ug/L	200	10/12/15 11:44	
EPA 8260	o-Xylene	1530	ug/L	100	10/12/15 11:44	
40122459007	MW-5/T40					
EPA 8260	1,2,4-Trimethylbenzene	0.51J	ug/L	1.0	10/10/15 12:49	
EPA 8260	Toluene	0.70J	ug/L	1.0	10/10/15 12:49	
EPA 8260	m&p-Xylene	1.1J	ug/L	2.0	10/10/15 12:49	

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40122459008	MW-6/T40					
EPA 8260	1,2,4-Trimethylbenzene	4.8	ug/L	1.0	10/13/15 19:18	
EPA 8260	Benzene	123	ug/L	1.0	10/13/15 19:18	
EPA 8260	Ethylbenzene	8.8	ug/L	1.0	10/13/15 19:18	
EPA 8260	m&p-Xylene	8.8	ug/L	2.0	10/13/15 19:18	
40122459009	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	458	ug/L	40.0	10/10/15 16:06	
EPA 8260	1,3,5-Trimethylbenzene	149	ug/L	40.0	10/10/15 16:06	
EPA 8260	Benzene	2150	ug/L	40.0	10/10/15 16:06	
EPA 8260	Ethylbenzene	513	ug/L	40.0	10/10/15 16:06	
EPA 8260	Toluene	39.3J	ug/L	40.0	10/10/15 16:06	
EPA 8260	m&p-Xylene	2340	ug/L	80.0	10/10/15 16:06	
EPA 8260	o-Xylene	1070	ug/L	40.0	10/10/15 16:06	
40122459010	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	6.7	ug/L	1.0	10/10/15 13:11	
EPA 8260	1,3,5-Trimethylbenzene	4.2	ug/L	1.0	10/10/15 13:11	
EPA 8260	Benzene	4.6	ug/L	1.0	10/10/15 13:11	
EPA 8260	Ethylbenzene	1.1	ug/L	1.0	10/10/15 13:11	
40122459012	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	2090	ug/L	200	10/12/15 11:27	
EPA 8260	1,2-Dichloroethane	894	ug/L	200	10/12/15 11:27	
EPA 8260	1,3,5-Trimethylbenzene	537	ug/L	200	10/12/15 11:27	
EPA 8260	Benzene	18300	ug/L	200	10/12/15 11:27	
EPA 8260	Ethylbenzene	995	ug/L	200	10/12/15 11:27	
EPA 8260	Toluene	18500	ug/L	200	10/12/15 11:27	
EPA 8260	m&p-Xylene	10200	ug/L	400	10/12/15 11:27	
EPA 8260	o-Xylene	4800	ug/L	200	10/12/15 11:27	
40122459013	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	2.1	ug/L	1.0	10/12/15 16:25	
EPA 8260	Benzene	10.1	ug/L	1.0	10/12/15 16:25	
EPA 8260	Ethylbenzene	1.5	ug/L	1.0	10/12/15 16:25	
EPA 8260	m&p-Xylene	2.2	ug/L	2.0	10/12/15 16:25	
40122459014	MW-5/T66					
EPA 8260	1,2,4-Trimethylbenzene	3620	ug/L	200	10/12/15 16:47	
EPA 8260	1,3,5-Trimethylbenzene	965	ug/L	200	10/12/15 16:47	
EPA 8260	Benzene	11800	ug/L	200	10/12/15 16:47	
EPA 8260	Ethylbenzene	2080	ug/L	200	10/12/15 16:47	
EPA 8260	Isopropylbenzene (Cumene)	74.7J	ug/L	200	10/12/15 16:47	
EPA 8260	Naphthalene	510J	ug/L	1000	10/12/15 16:47	
EPA 8260	Toluene	20900	ug/L	200	10/12/15 16:47	
EPA 8260	m&p-Xylene	11700	ug/L	400	10/12/15 16:47	
EPA 8260	n-Propylbenzene	316	ug/L	200	10/12/15 16:47	
EPA 8260	o-Xylene	4970	ug/L	200	10/12/15 16:47	
40122459015	MW-6/T68					
EPA 8260	1,2,4-Trimethylbenzene	3360	ug/L	50.0	10/12/15 10:22	

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40122459015	MW-6/T68					
EPA 8260	1,2-Dichloroethane	43.5J	ug/L	50.0	10/12/15 10:22	
EPA 8260	1,3,5-Trimethylbenzene	947	ug/L	50.0	10/12/15 10:22	
EPA 8260	Benzene	6000	ug/L	50.0	10/12/15 10:22	
EPA 8260	Ethylbenzene	43.0J	ug/L	50.0	10/12/15 10:22	
EPA 8260	Naphthalene	342	ug/L	250	10/12/15 10:22	
EPA 8260	Toluene	3010	ug/L	50.0	10/12/15 10:22	
EPA 8260	m&p-Xylene	12200	ug/L	100	10/12/15 10:22	
EPA 8260	o-Xylene	5950	ug/L	50.0	10/12/15 10:22	
40122459016	MW-1R/T70					
EPA 8260	1,2,4-Trimethylbenzene	1500	ug/L	125	10/10/15 16:28	
EPA 8260	1,3,5-Trimethylbenzene	404	ug/L	125	10/10/15 16:28	
EPA 8260	Benzene	10400	ug/L	125	10/10/15 16:28	
EPA 8260	Ethylbenzene	570	ug/L	125	10/10/15 16:28	
EPA 8260	Toluene	8130	ug/L	125	10/10/15 16:28	
EPA 8260	m&p-Xylene	6440	ug/L	250	10/10/15 16:28	
EPA 8260	o-Xylene	2310	ug/L	125	10/10/15 16:28	
40122459017	MW-2R/T70					
EPA 8260	1,2,4-Trimethylbenzene	3200	ug/L	250	10/10/15 16:50	
EPA 8260	1,3,5-Trimethylbenzene	802	ug/L	250	10/10/15 16:50	
EPA 8260	Benzene	15200	ug/L	250	10/10/15 16:50	
EPA 8260	Ethylbenzene	1600	ug/L	250	10/10/15 16:50	
EPA 8260	Toluene	24100	ug/L	250	10/10/15 16:50	
EPA 8260	m&p-Xylene	12600	ug/L	500	10/10/15 16:50	
EPA 8260	o-Xylene	5250	ug/L	250	10/10/15 16:50	
40122459018	MW-3/T70					
EPA 8260	1,2,4-Trimethylbenzene	0.78J	ug/L	1.0	10/10/15 13:33	
EPA 8260	Benzene	4.0	ug/L	1.0	10/10/15 13:33	
EPA 8260	Ethylbenzene	0.70J	ug/L	1.0	10/10/15 13:33	
EPA 8260	o-Xylene	0.77J	ug/L	1.0	10/10/15 13:33	
40122459019	MW-4/T70					
EPA 8260	1,2,4-Trimethylbenzene	2550	ug/L	100	10/10/15 17:12	
EPA 8260	1,3,5-Trimethylbenzene	640	ug/L	100	10/10/15 17:12	
EPA 8260	Benzene	10700	ug/L	100	10/10/15 17:12	
EPA 8260	Ethylbenzene	1500	ug/L	100	10/10/15 17:12	
EPA 8260	Naphthalene	515	ug/L	500	10/10/15 17:12	
EPA 8260	Toluene	17600	ug/L	100	10/10/15 17:12	
EPA 8260	m&p-Xylene	12000	ug/L	200	10/10/15 17:12	
EPA 8260	o-Xylene	5470	ug/L	100	10/10/15 17:12	
40122459020	MW-5/T70					
EPA 8260	1,2,4-Trimethylbenzene	2.0	ug/L	1.0	10/10/15 13:55	
EPA 8260	1,3,5-Trimethylbenzene	1.1	ug/L	1.0	10/10/15 13:55	
EPA 8260	Benzene	1.6	ug/L	1.0	10/10/15 13:55	
EPA 8260	Ethylbenzene	0.59J	ug/L	1.0	10/10/15 13:55	
EPA 8260	Naphthalene	10.9	ug/L	5.0	10/10/15 13:55	

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40122459020	MW-5/T70					
EPA 8260	m&p-Xylene	3.7	ug/L	2.0	10/10/15 13:55	
EPA 8260	o-Xylene	7.6	ug/L	1.0	10/10/15 13:55	
40122459021	MW-6/T70					
EPA 8260	1,2,4-Trimethylbenzene	18.9	ug/L	1.0	10/13/15 19:40	
EPA 8260	1,3,5-Trimethylbenzene	6.1	ug/L	1.0	10/13/15 19:40	
EPA 8260	Benzene	84.1	ug/L	1.0	10/13/15 19:40	
EPA 8260	Ethylbenzene	4.6	ug/L	1.0	10/13/15 19:40	
EPA 8260	Naphthalene	4.0J	ug/L	5.0	10/13/15 19:40	
EPA 8260	Toluene	6.4	ug/L	1.0	10/13/15 19:40	
EPA 8260	m&p-Xylene	66.4	ug/L	2.0	10/13/15 19:40	
EPA 8260	o-Xylene	35.3	ug/L	1.0	10/13/15 19:40	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Method: EPA 8260

Description: 8260 MSV

Client: Gannett Fleming Inc.

Date: October 19, 2015

General Information:

5 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.: 40122459

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: October 19, 2015

General Information:

17 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: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: MW-1/T40 **Lab ID: 40122459005** Collected: 10/06/15 08:00 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	2.0	ug/L	1.0	0.50	1		10/12/15 10:14	95-63-6	
1,3,5-Trimethylbenzene	121	ug/L	1.0	0.50	1		10/12/15 10:14	108-67-8	
Benzene	0.51J	ug/L	1.0	0.50	1		10/12/15 10:14	71-43-2	
Ethylbenzene	0.79J	ug/L	1.0	0.50	1		10/12/15 10:14	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/12/15 10:14	1634-04-4	
Toluene	1.4	ug/L	1.0	0.50	1		10/12/15 10:14	108-88-3	
m&p-Xylene	7.6	ug/L	2.0	1.0	1		10/12/15 10:14	179601-23-1	
o-Xylene	0.91J	ug/L	1.0	0.50	1		10/12/15 10:14	95-47-6	
Surrogates									
Dibromofluoromethane (S)	98	%	70-130		1		10/12/15 10:14	1868-53-7	
Toluene-d8 (S)	95	%	70-130		1		10/12/15 10:14	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		1		10/12/15 10:14	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: MW-4/T40 **Lab ID: 40122459006** Collected: 10/06/15 08:25 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	858	ug/L	100	50.0	100		10/12/15 11:44	95-63-6	
1,3,5-Trimethylbenzene	245	ug/L	100	50.0	100		10/12/15 11:44	108-67-8	
Benzene	6500	ug/L	100	50.0	100		10/12/15 11:44	71-43-2	
Ethylbenzene	109	ug/L	100	50.0	100		10/12/15 11:44	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		10/12/15 11:44	1634-04-4	
Toluene	<50.0	ug/L	100	50.0	100		10/12/15 11:44	108-88-3	
m&p-Xylene	3000	ug/L	200	100	100		10/12/15 11:44	179601-23-1	
o-Xylene	1530	ug/L	100	50.0	100		10/12/15 11:44	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	70-130		100		10/12/15 11:44	1868-53-7	
Toluene-d8 (S)	95	%	70-130		100		10/12/15 11:44	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130		100		10/12/15 11:44	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: MW-5/T40 **Lab ID: 40122459007** Collected: 10/06/15 08:10 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	0.51J	ug/L	1.0	0.50	1		10/10/15 12:49	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/10/15 12:49	108-67-8	
Benzene	<0.50	ug/L	1.0	0.50	1		10/10/15 12:49	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/10/15 12:49	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/10/15 12:49	1634-04-4	
Toluene	0.70J	ug/L	1.0	0.50	1		10/10/15 12:49	108-88-3	
m&p-Xylene	1.1J	ug/L	2.0	1.0	1		10/10/15 12:49	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/10/15 12:49	95-47-6	
Surrogates									
Dibromofluoromethane (S)	103	%	70-130		1		10/10/15 12:49	1868-53-7	
Toluene-d8 (S)	107	%	70-130		1		10/10/15 12:49	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130		1		10/10/15 12:49	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: MW-6/T40 **Lab ID: 40122459008** Collected: 10/06/15 08:15 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	4.8	ug/L	1.0	0.50	1		10/13/15 19:18	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/15 19:18	108-67-8	
Benzene	123	ug/L	1.0	0.50	1		10/13/15 19:18	71-43-2	
Ethylbenzene	8.8	ug/L	1.0	0.50	1		10/13/15 19:18	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/13/15 19:18	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/13/15 19:18	108-88-3	
m&p-Xylene	8.8	ug/L	2.0	1.0	1		10/13/15 19:18	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/13/15 19:18	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		10/13/15 19:18	1868-53-7	
Toluene-d8 (S)	96	%	70-130		1		10/13/15 19:18	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		1		10/13/15 19:18	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: MW-7/T40 **Lab ID: 40122459009** Collected: 10/06/15 08:20 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	458	ug/L	40.0	20.0	40		10/10/15 16:06	95-63-6	
1,3,5-Trimethylbenzene	149	ug/L	40.0	20.0	40		10/10/15 16:06	108-67-8	
Benzene	2150	ug/L	40.0	20.0	40		10/10/15 16:06	71-43-2	
Ethylbenzene	513	ug/L	40.0	20.0	40		10/10/15 16:06	100-41-4	
Methyl-tert-butyl ether	<7.0	ug/L	40.0	7.0	40		10/10/15 16:06	1634-04-4	
Toluene	39.3J	ug/L	40.0	20.0	40		10/10/15 16:06	108-88-3	
m&p-Xylene	2340	ug/L	80.0	40.0	40		10/10/15 16:06	179601-23-1	
o-Xylene	1070	ug/L	40.0	20.0	40		10/10/15 16:06	95-47-6	
Surrogates									
Dibromofluoromethane (S)	100	%	70-130		40		10/10/15 16:06	1868-53-7	
Toluene-d8 (S)	106	%	70-130		40		10/10/15 16:06	2037-26-5	
4-Bromofluorobenzene (S)	107	%	70-130		40		10/10/15 16:06	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: TS-1/T40 **Lab ID: 40122459010** Collected: 10/06/15 08:22 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	6.7	ug/L	1.0	0.50	1		10/10/15 13:11	95-63-6	
1,3,5-Trimethylbenzene	4.2	ug/L	1.0	0.50	1		10/10/15 13:11	108-67-8	
Benzene	4.6	ug/L	1.0	0.50	1		10/10/15 13:11	71-43-2	
Ethylbenzene	1.1	ug/L	1.0	0.50	1		10/10/15 13:11	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/10/15 13:11	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/10/15 13:11	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/10/15 13:11	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/10/15 13:11	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		1		10/10/15 13:11	1868-53-7	
Toluene-d8 (S)	104	%	70-130		1		10/10/15 13:11	2037-26-5	
4-Bromofluorobenzene (S)	110	%	70-130		1		10/10/15 13:11	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Sample: TRIP BLANK **Lab ID: 40122459022** Collected: 10/06/15 00:00 Received: 10/08/15 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	108-67-8	
Benzene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/10/15 11:00	1634-04-4	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/10/15 11:00	91-20-3	
Toluene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/10/15 11:00	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/10/15 11:00	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		1		10/10/15 11:00	1868-53-7	
Toluene-d8 (S)	103	%	70-130		1		10/10/15 11:00	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130		1		10/10/15 11:00	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

QC Batch: MSV/30585 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
 Associated Lab Samples: 40122459011, 40122459012, 40122459013, 40122459014, 40122459015

METHOD BLANK: 1236760 Matrix: Water
 Associated Lab Samples: 40122459011, 40122459012, 40122459013, 40122459014, 40122459015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/12/15 06:43	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/12/15 06:43	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/12/15 06:43	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/12/15 06:43	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/12/15 06:43	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/12/15 06:43	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/12/15 06:43	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/12/15 06:43	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/12/15 06:43	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/12/15 06:43	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/12/15 06:43	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/12/15 06:43	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/12/15 06:43	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/12/15 06:43	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/12/15 06:43	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/12/15 06:43	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/12/15 06:43	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/12/15 06:43	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/12/15 06:43	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/12/15 06:43	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/12/15 06:43	
2-Chlorotoluene	ug/L	<0.50	1.0	10/12/15 06:43	
4-Chlorotoluene	ug/L	<0.21	1.0	10/12/15 06:43	
Benzene	ug/L	<0.50	1.0	10/12/15 06:43	
Bromobenzene	ug/L	<0.23	1.0	10/12/15 06:43	
Bromochloromethane	ug/L	<0.34	1.0	10/12/15 06:43	
Bromodichloromethane	ug/L	<0.50	1.0	10/12/15 06:43	
Bromoform	ug/L	<0.50	1.0	10/12/15 06:43	
Bromomethane	ug/L	<2.4	5.0	10/12/15 06:43	
Carbon tetrachloride	ug/L	<0.50	1.0	10/12/15 06:43	
Chlorobenzene	ug/L	<0.50	1.0	10/12/15 06:43	
Chloroethane	ug/L	<0.37	1.0	10/12/15 06:43	
Chloroform	ug/L	<2.5	5.0	10/12/15 06:43	
Chloromethane	ug/L	<0.50	1.0	10/12/15 06:43	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/12/15 06:43	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/12/15 06:43	
Dibromochloromethane	ug/L	<0.50	1.0	10/12/15 06:43	
Dibromomethane	ug/L	<0.43	1.0	10/12/15 06:43	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/12/15 06:43	
Ethylbenzene	ug/L	<0.50	1.0	10/12/15 06:43	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/12/15 06:43	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

METHOD BLANK: 1236760 Matrix: Water
Associated Lab Samples: 40122459011, 40122459012, 40122459013, 40122459014, 40122459015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/12/15 06:43	
m&p-Xylene	ug/L	<1.0	2.0	10/12/15 06:43	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/12/15 06:43	
Methylene Chloride	ug/L	<0.23	1.0	10/12/15 06:43	
n-Butylbenzene	ug/L	<0.50	1.0	10/12/15 06:43	
n-Propylbenzene	ug/L	<0.50	1.0	10/12/15 06:43	
Naphthalene	ug/L	<2.5	5.0	10/12/15 06:43	
o-Xylene	ug/L	<0.50	1.0	10/12/15 06:43	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/12/15 06:43	
sec-Butylbenzene	ug/L	<2.2	5.0	10/12/15 06:43	
Styrene	ug/L	<0.50	1.0	10/12/15 06:43	
tert-Butylbenzene	ug/L	<0.18	1.0	10/12/15 06:43	
Tetrachloroethene	ug/L	<0.50	1.0	10/12/15 06:43	
Toluene	ug/L	<0.50	1.0	10/12/15 06:43	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/12/15 06:43	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/12/15 06:43	
Trichloroethene	ug/L	<0.33	1.0	10/12/15 06:43	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/12/15 06:43	
Vinyl chloride	ug/L	<0.18	1.0	10/12/15 06:43	
4-Bromofluorobenzene (S)	%	92	70-130	10/12/15 06:43	
Dibromofluoromethane (S)	%	104	70-130	10/12/15 06:43	
Toluene-d8 (S)	%	100	70-130	10/12/15 06:43	

LABORATORY CONTROL SAMPLE: 1236761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	53.0	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	47.8	96	70-130	
1,1,2-Trichloroethane	ug/L	50	48.6	97	70-130	
1,1-Dichloroethane	ug/L	50	50.7	101	70-130	
1,1-Dichloroethene	ug/L	50	53.6	107	70-130	
1,2,4-Trichlorobenzene	ug/L	50	44.3	89	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	42.7	85	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	49.1	98	70-130	
1,2-Dichlorobenzene	ug/L	50	46.5	93	70-130	
1,2-Dichloroethane	ug/L	50	50.9	102	70-131	
1,2-Dichloropropane	ug/L	50	49.4	99	70-130	
1,3-Dichlorobenzene	ug/L	50	45.6	91	70-130	
1,4-Dichlorobenzene	ug/L	50	44.6	89	70-130	
Benzene	ug/L	50	51.2	102	70-130	
Bromodichloromethane	ug/L	50	48.4	97	70-130	
Bromoform	ug/L	50	45.6	91	68-130	
Bromomethane	ug/L	50	27.5	55	38-137	
Carbon tetrachloride	ug/L	50	54.7	109	70-130	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

LABORATORY CONTROL SAMPLE: 1236761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	48.2	96	70-130	
Chloroethane	ug/L	50	51.9	104	70-136	
Chloroform	ug/L	50	51.2	102	70-130	
Chloromethane	ug/L	50	45.8	92	48-144	
cis-1,2-Dichloroethene	ug/L	50	50.5	101	70-130	
cis-1,3-Dichloropropene	ug/L	50	45.4	91	70-130	
Dibromochloromethane	ug/L	50	47.7	95	70-130	
Dichlorodifluoromethane	ug/L	50	45.8	92	33-157	
Ethylbenzene	ug/L	50	50.3	101	70-132	
Isopropylbenzene (Cumene)	ug/L	50	52.4	105	70-130	
m&p-Xylene	ug/L	100	102	102	70-131	
Methyl-tert-butyl ether	ug/L	50	49.0	98	48-141	
Methylene Chloride	ug/L	50	50.5	101	70-130	
o-Xylene	ug/L	50	49.4	99	70-131	
Styrene	ug/L	50	51.5	103	70-130	
Tetrachloroethene	ug/L	50	47.4	95	70-130	
Toluene	ug/L	50	49.8	100	70-130	
trans-1,2-Dichloroethene	ug/L	50	51.6	103	70-130	
trans-1,3-Dichloropropene	ug/L	50	44.1	88	70-130	
Trichloroethene	ug/L	50	50.6	101	70-130	
Trichlorofluoromethane	ug/L	50	53.8	108	50-150	
Vinyl chloride	ug/L	50	48.6	97	65-142	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			105	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1237024 1237025

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40122459011 Result	Spike Conc.	Spike Conc.	MSD Result								
1,1,1-Trichloroethane	ug/L	<0.50	50	50	55.1	53.2	110	106	70-130	4	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	49.3	47.2	99	94	70-130	4	20		
1,1,2-Trichloroethane	ug/L	<0.20	50	50	49.2	47.9	98	96	70-130	3	20		
1,1-Dichloroethane	ug/L	<0.24	50	50	52.5	50.6	105	101	70-134	4	20		
1,1-Dichloroethene	ug/L	<0.41	50	50	55.8	53.8	112	108	70-139	3	20		
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	48.5	46.4	97	93	70-130	4	20		
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	44.7	43.4	89	87	50-150	3	20		
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	51.1	49.7	102	99	70-130	3	20		
1,2-Dichlorobenzene	ug/L	<0.50	50	50	49.6	47.4	99	95	70-130	4	20		
1,2-Dichloroethane	ug/L	<0.17	50	50	52.3	50.2	105	100	70-132	4	20		
1,2-Dichloropropane	ug/L	<0.23	50	50	50.8	49.8	102	100	70-130	2	20		
1,3-Dichlorobenzene	ug/L	<0.50	50	50	47.8	46.2	96	92	70-130	3	20		
1,4-Dichlorobenzene	ug/L	<0.50	50	50	46.7	45.2	93	90	70-130	3	20		
Benzene	ug/L	<0.50	50	50	53.1	51.7	106	103	70-130	3	20		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1237024		1237025		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40122459011 Result	MS Spike Conc.	MSD Spike Conc.									
Bromodichloromethane	ug/L	<0.50	50	50	50.6	48.3	101	97	70-132	5	20		
Bromoform	ug/L	<0.50	50	50	47.6	45.7	95	91	68-130	4	20		
Bromomethane	ug/L	<2.4	50	50	38.8	41.5	78	83	38-141	7	20		
Carbon tetrachloride	ug/L	<0.50	50	50	56.3	54.9	113	110	70-130	3	20		
Chlorobenzene	ug/L	<0.50	50	50	50.0	48.8	100	98	70-130	3	20		
Chloroethane	ug/L	<0.37	50	50	53.2	51.6	106	103	66-152	3	20		
Chloroform	ug/L	<2.5	50	50	53.2	51.0	106	102	70-130	4	20		
Chloromethane	ug/L	<0.50	50	50	49.9	48.9	100	98	44-151	2	20		
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	52.7	50.5	105	101	70-130	4	20		
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	47.4	45.9	95	92	70-130	3	20		
Dibromochloromethane	ug/L	<0.50	50	50	50.1	48.4	100	97	70-130	4	20		
Dichlorodifluoromethane	ug/L	<0.22	50	50	46.3	45.1	93	90	29-160	3	20		
Ethylbenzene	ug/L	<0.50	50	50	52.1	50.6	104	101	70-132	3	20		
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	53.1	52.1	106	104	70-130	2	20		
m&p-Xylene	ug/L	<1.0	100	100	105	103	105	103	70-131	2	20		
Methyl-tert-butyl ether	ug/L	<0.17	50	50	51.8	49.1	104	98	48-143	5	20		
Methylene Chloride	ug/L	<0.23	50	50	52.7	50.9	105	102	70-130	3	20		
o-Xylene	ug/L	<0.50	50	50	51.1	49.7	102	99	70-131	3	20		
Styrene	ug/L	<0.50	50	50	53.5	52.0	107	104	70-130	3	20		
Tetrachloroethene	ug/L	<0.50	50	50	49.1	48.2	98	96	70-130	2	20		
Toluene	ug/L	<0.50	50	50	51.0	49.5	102	99	70-130	3	20		
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	54.3	52.2	109	104	70-132	4	20		
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	46.4	45.4	93	91	70-130	2	20		
Trichloroethene	ug/L	<0.33	50	50	52.4	50.9	105	102	70-130	3	20		
Trichlorofluoromethane	ug/L	<0.18	50	50	55.4	54.4	111	109	50-153	2	20		
Vinyl chloride	ug/L	<0.18	50	50	51.4	51.1	103	102	60-155	1	20		
4-Bromofluorobenzene (S)	%						101	101	70-130				
Dibromofluoromethane (S)	%						105	103	70-130				
Toluene-d8 (S)	%						98	100	70-130				

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

QC Batch: MSV/30565 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40122459001, 40122459002, 40122459003, 40122459004, 40122459005, 40122459006

METHOD BLANK: 1235209 Matrix: Water
Associated Lab Samples: 40122459001, 40122459002, 40122459003, 40122459004, 40122459005, 40122459006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/10/15 08:53	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/10/15 08:53	
Benzene	ug/L	<0.50	1.0	10/10/15 08:53	
Ethylbenzene	ug/L	<0.50	1.0	10/10/15 08:53	
m&p-Xylene	ug/L	<1.0	2.0	10/10/15 08:53	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/10/15 08:53	
Naphthalene	ug/L	<2.5	5.0	10/10/15 08:53	
o-Xylene	ug/L	<0.50	1.0	10/10/15 08:53	
Toluene	ug/L	<0.50	1.0	10/10/15 08:53	
4-Bromofluorobenzene (S)	%	92	70-130	10/10/15 08:53	
Dibromofluoromethane (S)	%	100	70-130	10/10/15 08:53	
Toluene-d8 (S)	%	96	70-130	10/10/15 08:53	

LABORATORY CONTROL SAMPLE: 1235210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	50.7	101	70-130	
Ethylbenzene	ug/L	50	56.3	113	70-132	
m&p-Xylene	ug/L	100	117	117	70-131	
Methyl-tert-butyl ether	ug/L	50	42.6	85	48-141	
o-Xylene	ug/L	50	57.0	114	70-131	
Toluene	ug/L	50	56.2	112	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Dibromofluoromethane (S)	%			86	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235343 1235344

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40122448011 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<0.50	50	50	62.1	61.2	124	122	70-130	1	20	
Ethylbenzene	ug/L	<0.50	50	50	56.9	56.2	114	112	70-132	1	20	
m&p-Xylene	ug/L	<1.0	100	100	116	115	116	115	70-131	1	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	52.4	52.0	105	104	48-143	1	20	
o-Xylene	ug/L	<0.50	50	50	57.2	57.3	114	115	70-131	0	20	
Toluene	ug/L	<0.50	50	50	57.4	55.9	115	112	70-130	3	20	
4-Bromofluorobenzene (S)	%						99	100	70-130			
Dibromofluoromethane (S)	%						104	105	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.: 40122459

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1235343		1235344									
Parameter	Units	40122448011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						97	97	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR
 Pace Project No.: 40122459

QC Batch: MSV/30584 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
 Associated Lab Samples: 40122459007, 40122459009, 40122459010, 40122459016, 40122459017, 40122459018, 40122459019, 40122459020, 40122459022

METHOD BLANK: 1236271 Matrix: Water
 Associated Lab Samples: 40122459007, 40122459009, 40122459010, 40122459016, 40122459017, 40122459018, 40122459019, 40122459020, 40122459022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/10/15 09:11	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/10/15 09:11	
Benzene	ug/L	<0.50	1.0	10/10/15 09:11	
Ethylbenzene	ug/L	<0.50	1.0	10/10/15 09:11	
m&p-Xylene	ug/L	<1.0	2.0	10/10/15 09:11	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/10/15 09:11	
Naphthalene	ug/L	<2.5	5.0	10/10/15 09:11	
o-Xylene	ug/L	<0.50	1.0	10/10/15 09:11	
Toluene	ug/L	<0.50	1.0	10/10/15 09:11	
4-Bromofluorobenzene (S)	%	103	70-130	10/10/15 09:11	
Dibromofluoromethane (S)	%	107	70-130	10/10/15 09:11	
Toluene-d8 (S)	%	107	70-130	10/10/15 09:11	

LABORATORY CONTROL SAMPLE: 1236272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	54.4	109	70-130	
Ethylbenzene	ug/L	50	61.5	123	70-132	
m&p-Xylene	ug/L	100	111	111	70-131	
Methyl-tert-butyl ether	ug/L	50	52.7	105	48-141	
o-Xylene	ug/L	50	53.4	107	70-131	
Toluene	ug/L	50	57.8	116	70-130	
4-Bromofluorobenzene (S)	%			114	70-130	
Dibromofluoromethane (S)	%			111	70-130	
Toluene-d8 (S)	%			105	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1236295 1236296

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40122508003 Result	Spike Conc.	Spike Conc.	MS Result						
Benzene	ug/L	<1.0	50	50	48.6	53.5	97	107	70-130	10	20
Ethylbenzene	ug/L	<1.0	50	50	52.6	57.2	105	114	70-132	8	20
m&p-Xylene	ug/L	<2.0	100	100	95.9	106	96	106	70-131	10	20
Methyl-tert-butyl ether	ug/L	<1.0	50	50	46.7	49.6	93	99	48-143	6	20
o-Xylene	ug/L	<1.0	50	50	47.1	50.8	94	102	70-131	8	20
Toluene	ug/L	<1.0	50	50	51.6	56.7	103	113	70-130	9	20
4-Bromofluorobenzene (S)	%						113	115	70-130		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Parameter	Units	40122508003		1236295		1236296		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result	MSD Result							
Dibromofluoromethane (S)	%							114	112		70-130			
Toluene-d8 (S)	%							103	103		70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR
Pace Project No.: 40122459

QC Batch: MSV/30590 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40122459008, 40122459021

METHOD BLANK: 1237062 Matrix: Water
Associated Lab Samples: 40122459008, 40122459021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/13/15 17:24	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/13/15 17:24	
Benzene	ug/L	<0.50	1.0	10/13/15 17:24	
Ethylbenzene	ug/L	<0.50	1.0	10/13/15 17:24	
m&p-Xylene	ug/L	<1.0	2.0	10/13/15 17:24	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/13/15 17:24	
Naphthalene	ug/L	<2.5	5.0	10/13/15 17:24	
o-Xylene	ug/L	<0.50	1.0	10/13/15 17:24	
Toluene	ug/L	<0.50	1.0	10/13/15 17:24	
4-Bromofluorobenzene (S)	%	97	70-130	10/13/15 17:24	
Dibromofluoromethane (S)	%	106	70-130	10/13/15 17:24	
Toluene-d8 (S)	%	96	70-130	10/13/15 17:24	

LABORATORY CONTROL SAMPLE: 1237063

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	49.1	98	70-130	
Ethylbenzene	ug/L	50	53.0	106	70-132	
m&p-Xylene	ug/L	100	106	106	70-131	
Methyl-tert-butyl ether	ug/L	50	46.1	92	48-141	
o-Xylene	ug/L	50	50.3	101	70-131	
Toluene	ug/L	50	50.3	101	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1238144 1238145

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40122508006 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<1.0	50	50	49.9	49.0	100	98	70-130	2	20	
Ethylbenzene	ug/L	<1.0	50	50	54.8	53.4	109	106	70-132	3	20	
m&p-Xylene	ug/L	<2.0	100	100	108	104	107	104	70-131	3	20	
Methyl-tert-butyl ether	ug/L	<1.0	50	50	49.0	47.0	98	94	48-143	4	20	
o-Xylene	ug/L	<1.0	50	50	52.9	50.7	106	101	70-131	4	20	
Toluene	ug/L	<1.0	50	50	51.9	50.8	104	101	70-130	2	20	
4-Bromofluorobenzene (S)	%						103	100	70-130			
Dibromofluoromethane (S)	%						109	107	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.

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1238144		1238145		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40122508006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Toluene-d8 (S)	%					99	97	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 CALUMET-SUPERIOR

Pace Project No.: 40122459

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.: 40122459

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40122459011	MW-1/T68	EPA 8260	MSV/30585		
40122459012	MW-2/T68	EPA 8260	MSV/30585		
40122459013	MW-4/T68	EPA 8260	MSV/30585		
40122459014	MW-5/T66	EPA 8260	MSV/30585		
40122459015	MW-6/T68	EPA 8260	MSV/30585		
40122459001	MW-1/CW	EPA 8260	MSV/30565		
40122459002	MW-2/CW	EPA 8260	MSV/30565		
40122459003	MW-3/CW	EPA 8260	MSV/30565		
40122459004	MW-4/CW	EPA 8260	MSV/30565		
40122459005	MW-1/T40	EPA 8260	MSV/30565		
40122459006	MW-4/T40	EPA 8260	MSV/30565		
40122459007	MW-5/T40	EPA 8260	MSV/30584		
40122459008	MW-6/T40	EPA 8260	MSV/30590		
40122459009	MW-7/T40	EPA 8260	MSV/30584		
40122459010	TS-1/T40	EPA 8260	MSV/30584		
40122459016	MW-1R/T70	EPA 8260	MSV/30584		
40122459017	MW-2R/T70	EPA 8260	MSV/30584		
40122459018	MW-3/T70	EPA 8260	MSV/30584		
40122459019	MW-4/T70	EPA 8260	MSV/30584		
40122459020	MW-5/T70	EPA 8260	MSV/30584		
40122459021	MW-6/T70	EPA 8260	MSV/30590		
40122459022	TRIP BLANK	EPA 8260	MSV/30584		

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-Superior
 Project State: WI
 Sampled By (Print): Marcus Mussey
 Sampled By (Sign): [Signature]



UPPER MIDWEST REGION

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

40122459

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	PVOC NapH	PVOC 8260	VOC 8260															

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 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	Y/N	Pick Letter	Analyses Requested	N	N	N									
		DATE	TIME																
001	MW-1/CW	8/06	12:00	GW		B													
002	MW2/CW		12:02			B													
003	MW-3/CW		12:10			B													
004	MW-4/CW		12:05			B													
005	MW-1/T40		8:00							3									
006	MW-4/T40		8:25							3									
007	MW-5/T40		8:10							3									
008	MW-6/T40		8:15							3									
009	MW-7/T40		8:20							3									
010	ATS-1/T40		8:22							3									
011	MW-1/T68		8:40							3									
012	MW-2/T68		9:00							3									
013	MW-4/T68		8:55							3									

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: <u>Marcus Mussey</u>	Date/Time: <u>10/7/15, 8:30</u>	Received By: _____	Date/Time: _____
Relinquished By: <u>Kedra</u>	Date/Time: <u>10/8/15 1040</u>	Received By: <u>Cliff Wright/Pace</u>	Date/Time: <u>10/8/15 1040</u>
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____

PACE Project No.
40122459

Receipt Temp = 10.5 °C

Sample Receipt pH
 OK / Adjusted

Cooler Custody Seal
 Present / Not Present
 Intact / Not Intact

(Please Print Clearly)



UPPER MIDWEST REGION

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

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

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								
Pick Letter	B	B								
Analyses Requested	PVOC Napn	VOC BZCO								
	8260									

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 Invoice To Phone: _____

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	3-40mV ^B	
	2-40mV ^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	
014	MW-5/T66	10/6	8:45	GW
015	MW-6/T68		9:05	
016	MW-1R/T70		9:48	
017	MW-2R/T70		9:15	
018	MW-3/T70		9:30	
019	MW-4/T70		9:35	
020	MW-5/T70		9:20	
021	MW-6/T70		9:25	
022	Trip Blank Z	Y		

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 Musy* Date/Time: *10-7-15/8:30*
 Relinquished By: *Red Es* Date/Time: *10/8/15 1040*
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____
 Received By: *Corey R/Pace* Date/Time: *10/8/15 1040*
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____

PACE Project No.
40122459

Receipt Temp = *RO I °C*

Sample Receipt pH
 OK / Adjusted

Cooler Custody Seal
 Present / Not Present
 Intact / Not Intact



Sample Condition Upon Receipt

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

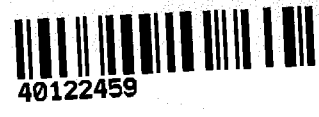
Project #:

WO#: 40122459

Client Name: Gunneth Fleming

Courier: Fed Ex UPS Client Pace Other: _____

Tracking #: 808913861809



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: Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: _____ /Corr: ROT Biological Tissue is Frozen: yes

Temp Blank Present: yes no no

Person examining contents:
Date: 10/8/15
Initials: CF

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.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
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 checked="" type="checkbox"/> No <input 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 type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</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.
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 type="checkbox"/> No	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>03 9415-3CC</u>	

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 10/8/15

June 02, 2016

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

Project #34265.003
Calumet Superior
Reviewed by CCW
6/6/16

RE: Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on May 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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
Project Manager

Enclosures

cc: Dave Olig, Gannett Fleming



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
Virginia VELAP ID: 460263
North Dakota Certification #: R-150

South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Virginia VELAP ID: 460263
Virginia VELAP Certification ID: 460263
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444

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SAMPLE SUMMARY

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40132890001	LRS-1	Water	05/24/16 11:30	05/25/16 12:45
40132890002	LRS-2	Water	05/24/16 11:40	05/25/16 12:45
40132890003	LRS-3	Water	05/24/16 11:50	05/25/16 12:45
40132890004	LRS-4	Water	05/24/16 11:55	05/25/16 12:45
40132890005	LRS-6	Water	05/24/16 11:45	05/25/16 12:45
40132890006	LRS-7	Water	05/24/16 12:05	05/25/16 12:45
40132890007	MW-1/FL	Water	05/24/16 10:30	05/25/16 12:45
40132890008	MW-2/FL	Water	05/24/16 10:20	05/25/16 12:45
40132890009	MW-3/FL	Water	05/24/16 10:05	05/25/16 12:45
40132890010	MW-9/FL	Water	05/24/16 12:15	05/25/16 12:45
40132890011	MW-10/FL	Water	05/24/16 12:20	05/25/16 12:45
40132890012	MW-11/FL	Water	05/24/16 10:45	05/25/16 12:45
40132890013	MW-13/FL	Water	05/24/16 11:25	05/25/16 12:45
40132890014	MW-14/FL	Water	05/24/16 11:10	05/25/16 12:45
40132890015	MW-1/CW	Water	05/24/16 09:05	05/25/16 12:45
40132890016	MW-2/CW	Water	05/24/16 09:00	05/25/16 12:45
40132890017	MW-3/CW	Water	05/24/16 09:10	05/25/16 12:45
40132890018	MW-4/CW	Water	05/24/16 08:50	05/25/16 12:45
40132890019	MW-1/T40	Water	05/24/16 13:30	05/25/16 12:45
40132890020	MW-2/T40	Water	05/24/16 13:05	05/25/16 12:45
40132890021	MW-4/T40	Water	05/24/16 13:25	05/25/16 12:45
40132890022	MW-5/T40	Water	05/24/16 13:10	05/25/16 12:45
40132890023	MW-6/T40	Water	05/24/16 13:15	05/25/16 12:45
40132890024	MW-7/T40	Water	05/24/16 13:20	05/25/16 12:45
40132890025	TS-1/T40	Water	05/24/16 13:35	05/25/16 12:45
40132890026	MW-1/T68	Water	05/24/16 14:00	05/25/16 12:45
40132890027	MW-2/T68	Water	05/24/16 14:15	05/25/16 12:45
40132890028	MW-4/T68	Water	05/24/16 14:10	05/25/16 12:45
40132890029	MW-5/T66	Water	05/24/16 14:20	05/25/16 12:45
40132890030	MW-1R/T70	Water	05/24/16 15:15	05/25/16 12:45
40132890031	MW-2R/T70	Water	05/24/16 14:50	05/25/16 12:45
40132890032	MW-3/T70	Water	05/24/16 14:25	05/25/16 12:45
40132890033	MW-4/T70	Water	05/24/16 14:20	05/25/16 12:45
40132890034	MW-5/T70	Water	05/24/16 14:55	05/25/16 12:45
40132890035	MW-6/T70	Water	05/24/16 15:00	05/25/16 12:45
40132890036	TRIP BLANK	Water	05/24/16 00:00	05/25/16 12:45

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40132890001	LRS-1	EPA 8021	PMS	9	PASI-G
40132890002	LRS-2	EPA 8021	PMS	9	PASI-G
40132890003	LRS-3	EPA 8021	PMS	9	PASI-G
40132890004	LRS-4	EPA 8021	PMS	9	PASI-G
40132890005	LRS-6	EPA 8021	PMS	9	PASI-G
40132890006	LRS-7	EPA 8021	PMS	9	PASI-G
40132890007	MW-1/FL	EPA 8021	PMS	9	PASI-G
40132890008	MW-2/FL	EPA 8021	PMS	9	PASI-G
40132890009	MW-3/FL	EPA 8021	PMS	9	PASI-G
40132890010	MW-9/FL	EPA 8021	PMS	9	PASI-G
40132890011	MW-10/FL	EPA 8021	PMS	9	PASI-G
40132890012	MW-11/FL	EPA 8021	PMS	9	PASI-G
40132890013	MW-13/FL	EPA 8021	PMS	9	PASI-G
40132890014	MW-14/FL	EPA 8021	PMS	9	PASI-G
40132890015	MW-1/CW	EPA 8260	LAP	12	PASI-G
40132890016	MW-2/CW	EPA 8260	LAP	12	PASI-G
40132890017	MW-3/CW	EPA 8260	LAP	12	PASI-G
40132890018	MW-4/CW	EPA 8260	HNW	12	PASI-G
40132890019	MW-1/T40	EPA 8260	HNW	11	PASI-G
40132890020	MW-2/T40	EPA 8260	HNW	11	PASI-G
40132890021	MW-4/T40	EPA 8260	HNW	11	PASI-G
40132890022	MW-5/T40	EPA 8260	HNW	11	PASI-G
40132890023	MW-6/T40	EPA 8260	HNW	11	PASI-G
40132890024	MW-7/T40	EPA 8260	HNW	11	PASI-G
40132890025	TS-1/T40	EPA 8260	HNW	11	PASI-G
40132890026	MW-1/T68	EPA 8260	LAP	63	PASI-G
40132890027	MW-2/T68	EPA 8260	LAP	63	PASI-G
40132890028	MW-4/T68	EPA 8260	LAP	63	PASI-G
40132890029	MW-5/T66	EPA 8260	LAP	63	PASI-G
40132890030	MW-1R/T70	EPA 8260	HNW	12	PASI-G
40132890031	MW-2R/T70	EPA 8260	HNW	12	PASI-G
40132890032	MW-3/T70	EPA 8260	HNW	12	PASI-G
40132890033	MW-4/T70	EPA 8260	HNW	12	PASI-G
40132890034	MW-5/T70	EPA 8260	HNW	12	PASI-G
40132890035	MW-6/T70	EPA 8260	HNW	12	PASI-G
40132890036	TRIP BLANK	EPA 8260	LAP	63	PASI-G

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40132890014	MW-14/FL					
EPA 8021	o-Xylene	308	ug/L	10.0	05/27/16 18:05	
40132890016	MW-2/CW					
EPA 8260	1,2,4-Trimethylbenzene	397	ug/L	40.0	05/27/16 01:50	
EPA 8260	1,3,5-Trimethylbenzene	70.4	ug/L	40.0	05/27/16 01:50	
EPA 8260	Benzene	6360	ug/L	40.0	05/27/16 01:50	
EPA 8260	Ethylbenzene	451	ug/L	40.0	05/27/16 01:50	
EPA 8260	Toluene	140	ug/L	40.0	05/27/16 01:50	
EPA 8260	m&p-Xylene	1380	ug/L	80.0	05/27/16 01:50	
EPA 8260	o-Xylene	183	ug/L	40.0	05/27/16 01:50	
40132890017	MW-3/CW					
EPA 8260	1,2,4-Trimethylbenzene	653	ug/L	100	05/27/16 02:13	
EPA 8260	1,3,5-Trimethylbenzene	193	ug/L	100	05/27/16 02:13	
EPA 8260	Benzene	9630	ug/L	100	05/27/16 02:13	
EPA 8260	Ethylbenzene	1170	ug/L	100	05/27/16 02:13	
EPA 8260	Toluene	172	ug/L	100	05/27/16 02:13	
EPA 8260	m&p-Xylene	3690	ug/L	200	05/27/16 02:13	
EPA 8260	o-Xylene	85.7J	ug/L	100	05/27/16 02:13	
40132890018	MW-4/CW					
EPA 8260	1,2,4-Trimethylbenzene	1120	ug/L	50.0	05/31/16 09:04	
EPA 8260	1,3,5-Trimethylbenzene	291	ug/L	50.0	05/31/16 09:04	
EPA 8260	Benzene	8200	ug/L	50.0	05/31/16 09:04	
EPA 8260	Ethylbenzene	804	ug/L	50.0	05/31/16 09:04	
EPA 8260	Naphthalene	132J	ug/L	250	05/31/16 09:04	
EPA 8260	Toluene	223	ug/L	50.0	05/31/16 09:04	
EPA 8260	m&p-Xylene	3020	ug/L	100	05/31/16 09:04	
EPA 8260	o-Xylene	495	ug/L	50.0	05/31/16 09:04	
40132890019	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	922	ug/L	20.0	05/31/16 09:25	
EPA 8260	1,3,5-Trimethylbenzene	267	ug/L	20.0	05/31/16 09:25	
EPA 8260	Benzene	2520	ug/L	20.0	05/31/16 09:25	
EPA 8260	Ethylbenzene	1030	ug/L	20.0	05/31/16 09:25	
EPA 8260	m&p-Xylene	5620	ug/L	40.0	05/31/16 09:25	
EPA 8260	o-Xylene	124	ug/L	20.0	05/31/16 09:25	
40132890020	MW-2/T40					
EPA 8260	1,2,4-Trimethylbenzene	1080	ug/L	100	06/01/16 10:30	
EPA 8260	1,3,5-Trimethylbenzene	294	ug/L	100	06/01/16 10:30	
EPA 8260	Benzene	15300	ug/L	100	06/01/16 10:30	
EPA 8260	Ethylbenzene	1740	ug/L	100	06/01/16 10:30	
EPA 8260	Toluene	7970	ug/L	100	06/01/16 10:30	
EPA 8260	m&p-Xylene	6100	ug/L	200	06/01/16 10:30	
EPA 8260	o-Xylene	2670	ug/L	100	06/01/16 10:30	
40132890021	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	1250	ug/L	100	05/31/16 10:08	
EPA 8260	1,3,5-Trimethylbenzene	300	ug/L	100	05/31/16 10:08	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40132890021	MW-4/T40					
EPA 8260	Benzene	14600	ug/L	100	05/31/16 10:08	
EPA 8260	Ethylbenzene	836	ug/L	100	05/31/16 10:08	
EPA 8260	m&p-Xylene	4830	ug/L	200	05/31/16 10:08	
EPA 8260	o-Xylene	2410	ug/L	100	05/31/16 10:08	
40132890022	MW-5/T40					
EPA 8260	1,2,4-Trimethylbenzene	126	ug/L	2.0	05/31/16 08:43	
EPA 8260	1,3,5-Trimethylbenzene	39.9	ug/L	2.0	05/31/16 08:43	
EPA 8260	Benzene	50.3	ug/L	2.0	05/31/16 08:43	
EPA 8260	Ethylbenzene	152	ug/L	2.0	05/31/16 08:43	M1
EPA 8260	m&p-Xylene	478	ug/L	4.0	05/31/16 08:43	M1
EPA 8260	o-Xylene	1.7J	ug/L	2.0	05/31/16 08:43	
40132890023	MW-6/T40					
EPA 8260	1,2,4-Trimethylbenzene	58.6	ug/L	4.0	05/31/16 14:44	
EPA 8260	1,3,5-Trimethylbenzene	11.1	ug/L	4.0	05/31/16 14:44	
EPA 8260	Benzene	649	ug/L	4.0	05/31/16 14:44	
EPA 8260	Ethylbenzene	209	ug/L	4.0	05/31/16 14:44	
EPA 8260	m&p-Xylene	243	ug/L	8.0	05/31/16 14:44	
40132890024	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	333	ug/L	20.0	06/01/16 02:55	
EPA 8260	1,3,5-Trimethylbenzene	119	ug/L	20.0	06/01/16 02:55	
EPA 8260	Benzene	2710	ug/L	20.0	06/01/16 02:55	
EPA 8260	Ethylbenzene	351	ug/L	20.0	06/01/16 02:55	
EPA 8260	m&p-Xylene	1680	ug/L	40.0	06/01/16 02:55	
EPA 8260	o-Xylene	735	ug/L	20.0	06/01/16 02:55	
40132890025	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	46.4	ug/L	1.0	05/31/16 12:15	
EPA 8260	1,3,5-Trimethylbenzene	17.6	ug/L	1.0	05/31/16 12:15	
EPA 8260	Benzene	73.4	ug/L	1.0	05/31/16 12:15	
EPA 8260	Ethylbenzene	78.2	ug/L	1.0	05/31/16 12:15	
EPA 8260	m&p-Xylene	32.1	ug/L	2.0	05/31/16 12:15	
40132890027	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	2120	ug/L	200	06/01/16 10:10	
EPA 8260	1,2-Dichloroethane	1260	ug/L	200	06/01/16 10:10	
EPA 8260	1,3,5-Trimethylbenzene	543	ug/L	200	06/01/16 10:10	
EPA 8260	Benzene	21400	ug/L	200	06/01/16 10:10	
EPA 8260	Ethylbenzene	1370	ug/L	200	06/01/16 10:10	
EPA 8260	Isopropylbenzene (Cumene)	48.3J	ug/L	200	06/01/16 10:10	
EPA 8260	Toluene	22200	ug/L	200	06/01/16 10:10	
EPA 8260	m&p-Xylene	11200	ug/L	400	06/01/16 10:10	
EPA 8260	n-Propylbenzene	104J	ug/L	200	06/01/16 10:10	
EPA 8260	o-Xylene	4960	ug/L	200	06/01/16 10:10	
40132890028	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	144	ug/L	2.5	06/01/16 10:33	
EPA 8260	1,3,5-Trimethylbenzene	4.6	ug/L	2.5	06/01/16 10:33	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-1/T40 **Lab ID: 40132890019** Collected: 05/24/16 13:30 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	922	ug/L	20.0	10.0	20		05/31/16 09:25	95-63-6	
1,3,5-Trimethylbenzene	267	ug/L	20.0	10.0	20		05/31/16 09:25	108-67-8	
Benzene	2520	ug/L	20.0	10.0	20		05/31/16 09:25	71-43-2	
Ethylbenzene	1030	ug/L	20.0	10.0	20		05/31/16 09:25	100-41-4	
Methyl-tert-butyl ether	<3.5	ug/L	20.0	3.5	20		05/31/16 09:25	1634-04-4	
Toluene	<10.0	ug/L	20.0	10.0	20		05/31/16 09:25	108-88-3	
m&p-Xylene	5620	ug/L	40.0	20.0	20		05/31/16 09:25	179601-23-1	
o-Xylene	124	ug/L	20.0	10.0	20		05/31/16 09:25	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		20		05/31/16 09:25	1868-53-7	
Toluene-d8 (S)	96	%	70-130		20		05/31/16 09:25	2037-26-5	
4-Bromofluorobenzene (S)	78	%	70-130		20		05/31/16 09:25	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-2/T40 **Lab ID: 40132890020** Collected: 05/24/16 13:05 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1080	ug/L	100	50.0	100		06/01/16 10:30	95-63-6	
1,3,5-Trimethylbenzene	294	ug/L	100	50.0	100		06/01/16 10:30	108-67-8	
Benzene	15300	ug/L	100	50.0	100		06/01/16 10:30	71-43-2	
Ethylbenzene	1740	ug/L	100	50.0	100		06/01/16 10:30	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		06/01/16 10:30	1634-04-4	
Toluene	7970	ug/L	100	50.0	100		06/01/16 10:30	108-88-3	
m&p-Xylene	6100	ug/L	200	100	100		06/01/16 10:30	179601-23-1	
o-Xylene	2670	ug/L	100	50.0	100		06/01/16 10:30	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		100		06/01/16 10:30	1868-53-7	
Toluene-d8 (S)	94	%	70-130		100		06/01/16 10:30	2037-26-5	
4-Bromofluorobenzene (S)	78	%	70-130		100		06/01/16 10:30	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-4/T40 **Lab ID: 40132890021** Collected: 05/24/16 13:25 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1250	ug/L	100	50.0	100		05/31/16 10:08	95-63-6	
1,3,5-Trimethylbenzene	300	ug/L	100	50.0	100		05/31/16 10:08	108-67-8	
Benzene	14600	ug/L	100	50.0	100		05/31/16 10:08	71-43-2	
Ethylbenzene	836	ug/L	100	50.0	100		05/31/16 10:08	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		05/31/16 10:08	1634-04-4	
Toluene	<50.0	ug/L	100	50.0	100		05/31/16 10:08	108-88-3	
m&p-Xylene	4830	ug/L	200	100	100		05/31/16 10:08	179601-23-1	
o-Xylene	2410	ug/L	100	50.0	100		05/31/16 10:08	95-47-6	
Surrogates									
Dibromofluoromethane (S)	105	%	70-130		100		05/31/16 10:08	1868-53-7	
Toluene-d8 (S)	100	%	70-130		100		05/31/16 10:08	2037-26-5	
4-Bromofluorobenzene (S)	79	%	70-130		100		05/31/16 10:08	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-5/T40 **Lab ID: 40132890022** Collected: 05/24/16 13:10 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	126	ug/L	2.0	1.0	2		05/31/16 08:43	95-63-6	
1,3,5-Trimethylbenzene	39.9	ug/L	2.0	1.0	2		05/31/16 08:43	108-67-8	
Benzene	50.3	ug/L	2.0	1.0	2		05/31/16 08:43	71-43-2	
Ethylbenzene	152	ug/L	2.0	1.0	2		05/31/16 08:43	100-41-4	M1
Methyl-tert-butyl ether	<0.35	ug/L	2.0	0.35	2		05/31/16 08:43	1634-04-4	
Toluene	<1.0	ug/L	2.0	1.0	2		05/31/16 08:43	108-88-3	
m&p-Xylene	478	ug/L	4.0	2.0	2		05/31/16 08:43	179601-23-1	M1
o-Xylene	1.7J	ug/L	2.0	1.0	2		05/31/16 08:43	95-47-6	
Surrogates									
Dibromofluoromethane (S)	105	%	70-130		2		05/31/16 08:43	1868-53-7	
Toluene-d8 (S)	98	%	70-130		2		05/31/16 08:43	2037-26-5	
4-Bromofluorobenzene (S)	78	%	70-130		2		05/31/16 08:43	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-6/T40 **Lab ID: 40132890023** Collected: 05/24/16 13:15 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	58.6	ug/L	4.0	2.0	4		05/31/16 14:44	95-63-6	
1,3,5-Trimethylbenzene	11.1	ug/L	4.0	2.0	4		05/31/16 14:44	108-67-8	
Benzene	649	ug/L	4.0	2.0	4		05/31/16 14:44	71-43-2	
Ethylbenzene	209	ug/L	4.0	2.0	4		05/31/16 14:44	100-41-4	
Methyl-tert-butyl ether	<0.70	ug/L	4.0	0.70	4		05/31/16 14:44	1634-04-4	
Toluene	<2.0	ug/L	4.0	2.0	4		05/31/16 14:44	108-88-3	
m&p-Xylene	243	ug/L	8.0	4.0	4		05/31/16 14:44	179601-23-1	
o-Xylene	<2.0	ug/L	4.0	2.0	4		05/31/16 14:44	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		4		05/31/16 14:44	1868-53-7	
Toluene-d8 (S)	96	%	70-130		4		05/31/16 14:44	2037-26-5	
4-Bromofluorobenzene (S)	80	%	70-130		4		05/31/16 14:44	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: MW-7/T40 **Lab ID: 40132890024** Collected: 05/24/16 13:20 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	333	ug/L	20.0	10.0	20		06/01/16 02:55	95-63-6	
1,3,5-Trimethylbenzene	119	ug/L	20.0	10.0	20		06/01/16 02:55	108-67-8	
Benzene	2710	ug/L	20.0	10.0	20		06/01/16 02:55	71-43-2	
Ethylbenzene	351	ug/L	20.0	10.0	20		06/01/16 02:55	100-41-4	
Methyl-tert-butyl ether	<3.5	ug/L	20.0	3.5	20		06/01/16 02:55	1634-04-4	
Toluene	<10.0	ug/L	20.0	10.0	20		06/01/16 02:55	108-88-3	
m&p-Xylene	1680	ug/L	40.0	20.0	20		06/01/16 02:55	179601-23-1	
o-Xylene	735	ug/L	20.0	10.0	20		06/01/16 02:55	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		20		06/01/16 02:55	1868-53-7	
Toluene-d8 (S)	95	%	70-130		20		06/01/16 02:55	2037-26-5	
4-Bromofluorobenzene (S)	79	%	70-130		20		06/01/16 02:55	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: TS-1/T40 **Lab ID: 40132890025** Collected: 05/24/16 13:35 Received: 05/25/16 12:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	46.4	ug/L	1.0	0.50	1		05/31/16 12:15	95-63-6	
1,3,5-Trimethylbenzene	17.6	ug/L	1.0	0.50	1		05/31/16 12:15	108-67-8	
Benzene	73.4	ug/L	1.0	0.50	1		05/31/16 12:15	71-43-2	
Ethylbenzene	78.2	ug/L	1.0	0.50	1		05/31/16 12:15	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/31/16 12:15	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/31/16 12:15	108-88-3	
m&p-Xylene	32.1	ug/L	2.0	1.0	1		05/31/16 12:15	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/31/16 12:15	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		05/31/16 12:15	1868-53-7	
Toluene-d8 (S)	95	%	70-130		1		05/31/16 12:15	2037-26-5	
4-Bromofluorobenzene (S)	81	%	70-130		1		05/31/16 12:15	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

Sample: TRIP BLANK **Lab ID: 40132890036** Collected: 05/24/16 00:00 Received: 05/25/16 12:45 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		06/01/16 11:41	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		06/01/16 11:41	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		06/01/16 11:41	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		06/01/16 11:41	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		06/01/16 11:41	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		06/01/16 11:41	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		06/01/16 11:41	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		06/01/16 11:41	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		06/01/16 11:41	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		06/01/16 11:41	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		06/01/16 11:41	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		06/01/16 11:41	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		06/01/16 11:41	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		06/01/16 11:41	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		06/01/16 11:41	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		06/01/16 11:41	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		06/01/16 11:41	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		06/01/16 11:41	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		06/01/16 11:41	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		06/01/16 11:41	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		06/01/16 11:41	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		06/01/16 11:41	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		06/01/16 11:41	98-82-8	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		06/01/16 11:41	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		06/01/16 11:41	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		06/01/16 11:41	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	108-88-3	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Sample: TRIP BLANK **Lab ID: 40132890036** Collected: 05/24/16 00:00 Received: 05/25/16 12:45 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		06/01/16 11:41	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		06/01/16 11:41	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		06/01/16 11:41	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		06/01/16 11:41	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		06/01/16 11:41	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		06/01/16 11:41	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		06/01/16 11:41	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		06/01/16 11:41	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		06/01/16 11:41	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		06/01/16 11:41	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		06/01/16 11:41	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		1		06/01/16 11:41	1868-53-7	
Toluene-d8 (S)	108	%	70-130		1		06/01/16 11:41	2037-26-5	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

QC Batch: MSV/33712 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
 Associated Lab Samples: 40132890026, 40132890027, 40132890028, 40132890029, 40132890036

METHOD BLANK: 1342374 Matrix: Water
 Associated Lab Samples: 40132890026, 40132890027, 40132890028, 40132890029, 40132890036

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	06/01/16 06:47	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	06/01/16 06:47	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	06/01/16 06:47	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	06/01/16 06:47	
1,1-Dichloroethane	ug/L	<0.24	1.0	06/01/16 06:47	
1,1-Dichloroethene	ug/L	<0.41	1.0	06/01/16 06:47	
1,1-Dichloropropene	ug/L	<0.44	1.0	06/01/16 06:47	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	06/01/16 06:47	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	06/01/16 06:47	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	06/01/16 06:47	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	06/01/16 06:47	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	06/01/16 06:47	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	06/01/16 06:47	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	06/01/16 06:47	
1,2-Dichloroethane	ug/L	<0.17	1.0	06/01/16 06:47	
1,2-Dichloropropane	ug/L	<0.23	1.0	06/01/16 06:47	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	06/01/16 06:47	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	06/01/16 06:47	
1,3-Dichloropropane	ug/L	<0.50	1.0	06/01/16 06:47	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	06/01/16 06:47	
2,2-Dichloropropane	ug/L	<0.48	1.0	06/01/16 06:47	
2-Chlorotoluene	ug/L	<0.50	1.0	06/01/16 06:47	
4-Chlorotoluene	ug/L	<0.21	1.0	06/01/16 06:47	
Benzene	ug/L	<0.50	1.0	06/01/16 06:47	
Bromobenzene	ug/L	<0.23	1.0	06/01/16 06:47	
Bromochloromethane	ug/L	<0.34	1.0	06/01/16 06:47	
Bromodichloromethane	ug/L	<0.50	1.0	06/01/16 06:47	
Bromoform	ug/L	<0.50	1.0	06/01/16 06:47	
Bromomethane	ug/L	<2.4	5.0	06/01/16 06:47	
Carbon tetrachloride	ug/L	<0.50	1.0	06/01/16 06:47	
Chlorobenzene	ug/L	<0.50	1.0	06/01/16 06:47	
Chloroethane	ug/L	<0.37	1.0	06/01/16 06:47	
Chloroform	ug/L	<2.5	5.0	06/01/16 06:47	
Chloromethane	ug/L	<0.50	1.0	06/01/16 06:47	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	06/01/16 06:47	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	06/01/16 06:47	
Dibromochloromethane	ug/L	<0.50	1.0	06/01/16 06:47	
Dibromomethane	ug/L	<0.43	1.0	06/01/16 06:47	
Dichlorodifluoromethane	ug/L	<0.22	1.0	06/01/16 06:47	
Ethylbenzene	ug/L	<0.50	1.0	06/01/16 06:47	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	06/01/16 06:47	

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.: 40132890

METHOD BLANK: 1342374 Matrix: Water
Associated Lab Samples: 40132890026, 40132890027, 40132890028, 40132890029, 40132890036

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	06/01/16 06:47	
m&p-Xylene	ug/L	<1.0	2.0	06/01/16 06:47	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	06/01/16 06:47	
Methylene Chloride	ug/L	<0.23	1.0	06/01/16 06:47	
n-Butylbenzene	ug/L	<0.50	1.0	06/01/16 06:47	
n-Propylbenzene	ug/L	<0.50	1.0	06/01/16 06:47	
Naphthalene	ug/L	<2.5	5.0	06/01/16 06:47	
o-Xylene	ug/L	<0.50	1.0	06/01/16 06:47	
p-Isopropyltoluene	ug/L	<0.50	1.0	06/01/16 06:47	
sec-Butylbenzene	ug/L	<2.2	5.0	06/01/16 06:47	
Styrene	ug/L	<0.50	1.0	06/01/16 06:47	
tert-Butylbenzene	ug/L	<0.18	1.0	06/01/16 06:47	
Tetrachloroethene	ug/L	<0.50	1.0	06/01/16 06:47	
Toluene	ug/L	<0.50	1.0	06/01/16 06:47	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	06/01/16 06:47	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	06/01/16 06:47	
Trichloroethene	ug/L	<0.33	1.0	06/01/16 06:47	
Trichlorofluoromethane	ug/L	<0.18	1.0	06/01/16 06:47	
Vinyl chloride	ug/L	<0.18	1.0	06/01/16 06:47	
4-Bromofluorobenzene (S)	%	92	70-130	06/01/16 06:47	
Dibromofluoromethane (S)	%	98	70-130	06/01/16 06:47	
Toluene-d8 (S)	%	102	70-130	06/01/16 06:47	

LABORATORY CONTROL SAMPLE: 1342375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	49.8	100	70-131	
1,1,2,2-Tetrachloroethane	ug/L	50	50.2	100	67-130	
1,1,2-Trichloroethane	ug/L	50	52.5	105	70-130	
1,1-Dichloroethane	ug/L	50	48.6	97	70-133	
1,1-Dichloroethene	ug/L	50	47.8	96	70-130	
1,2,4-Trichlorobenzene	ug/L	50	42.7	85	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	48.4	97	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	54.5	109	70-130	
1,2-Dichlorobenzene	ug/L	50	49.8	100	70-130	
1,2-Dichloroethane	ug/L	50	50.3	101	70-130	
1,2-Dichloropropane	ug/L	50	50.7	101	70-130	
1,3-Dichlorobenzene	ug/L	50	48.9	98	70-130	
1,4-Dichlorobenzene	ug/L	50	48.1	96	70-130	
Benzene	ug/L	50	49.4	99	60-135	
Bromodichloromethane	ug/L	50	51.8	104	70-130	
Bromoform	ug/L	50	50.5	101	70-130	
Bromomethane	ug/L	50	34.7	69	33-130	
Carbon tetrachloride	ug/L	50	50.5	101	70-138	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

LABORATORY CONTROL SAMPLE: 1342375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	52.8	106	70-130	
Chloroethane	ug/L	50	50.2	100	51-130	
Chloroform	ug/L	50	49.3	99	70-130	
Chloromethane	ug/L	50	42.8	86	25-132	
cis-1,2-Dichloroethene	ug/L	50	48.0	96	69-130	
cis-1,3-Dichloropropene	ug/L	50	45.7	91	70-130	
Dibromochloromethane	ug/L	50	52.4	105	70-130	
Dichlorodifluoromethane	ug/L	50	35.2	70	23-130	
Ethylbenzene	ug/L	50	54.3	109	70-136	
Isopropylbenzene (Cumene)	ug/L	50	55.7	111	70-140	
m&p-Xylene	ug/L	100	114	114	70-138	
Methyl-tert-butyl ether	ug/L	50	48.7	97	66-138	
Methylene Chloride	ug/L	50	47.2	94	70-130	
o-Xylene	ug/L	50	54.7	109	70-134	
Styrene	ug/L	50	57.4	115	70-133	
Tetrachloroethene	ug/L	50	50.4	101	70-138	
Toluene	ug/L	50	54.1	108	70-130	
trans-1,2-Dichloroethene	ug/L	50	48.4	97	70-131	
trans-1,3-Dichloropropene	ug/L	50	48.6	97	69-130	
Trichloroethene	ug/L	50	51.2	102	70-130	
Trichlorofluoromethane	ug/L	50	49.8	100	50-150	
Vinyl chloride	ug/L	50	44.3	89	49-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Dibromofluoromethane (S)	%			101	70-130	
Toluene-d8 (S)	%			106	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1343476 1343477

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40132886002 Result	Spike Conc.	Spike Conc.	MSD Result								
1,1,1-Trichloroethane	ug/L	<1.0	50	50	50	45.7	43.0	91	86	70-134	6	20	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	50	50	50	51.0	48.9	102	98	67-130	4	20	
1,1,2-Trichloroethane	ug/L	<1.0	50	50	50	50.6	48.2	101	96	70-130	5	20	
1,1-Dichloroethane	ug/L	<1.0	50	50	50	44.0	41.8	88	84	70-134	5	20	
1,1-Dichloroethene	ug/L	<1.0	50	50	50	42.7	39.6	85	79	68-136	7	20	
1,2,4-Trichlorobenzene	ug/L	<5.0	50	50	50	41.1	39.4	82	78	62-139	4	20	
1,2-Dibromo-3-chloropropane	ug/L	<5.0	50	50	50	47.0	48.2	94	96	50-150	2	20	
1,2-Dibromoethane (EDB)	ug/L	<1.0	50	50	50	53.3	48.9	107	98	70-130	8	20	
1,2-Dichlorobenzene	ug/L	<1.0	50	50	50	48.4	45.9	97	92	70-130	5	20	
1,2-Dichloroethane	ug/L	<1.0	50	50	50	46.4	43.4	93	87	70-130	7	20	
1,2-Dichloropropane	ug/L	<1.0	50	50	50	48.5	47.1	97	94	70-130	3	20	
1,3-Dichlorobenzene	ug/L	<1.0	50	50	50	46.6	44.9	93	90	70-131	4	20	
1,4-Dichlorobenzene	ug/L	<1.0	50	50	50	46.2	44.7	92	89	70-130	3	20	
Benzene	ug/L	<1.0	50	50	50	45.2	42.7	90	85	57-138	6	20	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Parameter	Units	40132886002		1343476		1343477		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Bromodichloromethane	ug/L	<1.0	50	50	48.8	45.5	98	91	70-130	7	20		
Bromoform	ug/L	<1.0	50	50	48.2	47.0	96	94	70-130	2	20		
Bromomethane	ug/L	<5.0	50	50	32.8	31.7	66	63	33-130	3	27		
Carbon tetrachloride	ug/L	<1.0	50	50	47.0	44.1	94	88	70-138	6	20		
Chlorobenzene	ug/L	<1.0	50	50	48.5	46.4	97	93	70-130	5	20		
Chloroethane	ug/L	<1.0	50	50	42.8	40.7	86	81	51-130	5	20		
Chloroform	ug/L	<5.0	50	50	45.8	42.8	92	86	70-130	7	20		
Chloromethane	ug/L	<1.0	50	50	35.6	33.0	71	66	25-132	8	20		
cis-1,2-Dichloroethene	ug/L	<1.0	50	50	43.4	40.4	87	81	61-140	7	20		
cis-1,3-Dichloropropene	ug/L	<1.0	50	50	44.7	42.0	89	84	70-130	6	20		
Dibromochloromethane	ug/L	<1.0	50	50	49.6	46.9	99	94	70-130	6	20		
Dichlorodifluoromethane	ug/L	<1.0	50	50	26.8	24.6	54	49	23-130	9	20		
Ethylbenzene	ug/L	<1.0	50	50	50.6	48.1	101	96	70-138	5	20		
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	51.6	48.9	103	98	70-152	5	20		
m&p-Xylene	ug/L	<2.0	100	100	105	99.2	105	99	70-140	5	20		
Methyl-tert-butyl ether	ug/L	<1.0	50	50	46.8	43.6	94	87	66-139	7	20		
Methylene Chloride	ug/L	<1.0	50	50	44.5	41.3	89	83	70-130	7	20		
o-Xylene	ug/L	<1.0	50	50	50.6	47.5	101	95	70-134	6	20		
Styrene	ug/L	<1.0	50	50	53.2	50.1	106	100	70-138	6	20		
Tetrachloroethene	ug/L	<1.0	50	50	47.2	44.5	94	89	70-148	6	20		
Toluene	ug/L	<1.0	50	50	50.5	48.3	101	97	70-130	4	20		
trans-1,2-Dichloroethene	ug/L	<1.0	50	50	43.0	41.1	86	82	70-133	5	20		
trans-1,3-Dichloropropene	ug/L	<1.0	50	50	46.1	43.9	92	88	69-130	5	20		
Trichloroethene	ug/L	<1.0	50	50	46.9	44.3	94	89	70-131	6	20		
Trichlorofluoromethane	ug/L	<1.0	50	50	43.7	41.1	87	82	50-150	6	20		
Vinyl chloride	ug/L	<1.0	50	50	38.1	35.6	76	71	49-133	7	20		
4-Bromofluorobenzene (S)	%						102	102	70-130				
Dibromofluoromethane (S)	%						97	97	70-130				
Toluene-d8 (S)	%						105	104	70-130				

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

QC Batch: MSV/33697 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40132890015, 40132890016, 40132890017

METHOD BLANK: 1341593 Matrix: Water

Associated Lab Samples: 40132890015, 40132890016, 40132890017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/26/16 15:41	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/26/16 15:41	
Benzene	ug/L	<0.50	1.0	05/26/16 15:41	
Ethylbenzene	ug/L	<0.50	1.0	05/26/16 15:41	
m&p-Xylene	ug/L	<1.0	2.0	05/26/16 15:41	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/26/16 15:41	
Naphthalene	ug/L	<2.5	5.0	05/26/16 15:41	
o-Xylene	ug/L	<0.50	1.0	05/26/16 15:41	
Toluene	ug/L	<0.50	1.0	05/26/16 15:41	
4-Bromofluorobenzene (S)	%	87	70-130	05/26/16 15:41	
Dibromofluoromethane (S)	%	124	70-130	05/26/16 15:41	
Toluene-d8 (S)	%	86	70-130	05/26/16 15:41	

LABORATORY CONTROL SAMPLE: 1341594

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	56.6	113	60-135	
Ethylbenzene	ug/L	50	54.0	108	70-136	
m&p-Xylene	ug/L	100	112	112	70-138	
Methyl-tert-butyl ether	ug/L	50	42.4	85	66-138	
o-Xylene	ug/L	50	53.3	107	70-134	
Toluene	ug/L	50	54.0	108	70-130	
4-Bromofluorobenzene (S)	%			108	70-130	
Dibromofluoromethane (S)	%			118	70-130	
Toluene-d8 (S)	%			87	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1342376 1342377

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40132629002 Result	Spike Conc.	Spike Conc.	MS Result						
Benzene	ug/L	<0.50	50	50	53.5	53.4	107	107	57-138	0	20
Ethylbenzene	ug/L	<0.50	50	50	51.1	50.7	102	101	70-138	1	20
m&p-Xylene	ug/L	<1.0	100	100	109	105	109	105	70-140	3	20
Methyl-tert-butyl ether	ug/L	<0.17	50	50	41.3	40.6	83	81	66-139	2	20
o-Xylene	ug/L	<0.50	50	50	50.4	50.0	101	100	70-134	1	20
Toluene	ug/L	<0.50	50	50	51.7	51.3	103	103	70-130	1	20
4-Bromofluorobenzene (S)	%						107	108	70-130		
Dibromofluoromethane (S)	%						118	119	70-130		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

Parameter	Units	40132629002		1342376		1342377		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result	MSD Result							
Toluene-d8 (S)	%							87	88		70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

QC Batch:	MSV/33720	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV UST-WATER
Associated Lab Samples:	40132890018, 40132890019, 40132890020, 40132890021, 40132890022, 40132890023, 40132890024, 40132890025, 40132890030, 40132890031, 40132890032, 40132890033, 40132890034, 40132890035		

METHOD BLANK: 1343277 Matrix: Water
Associated Lab Samples: 40132890018, 40132890019, 40132890020, 40132890021, 40132890022, 40132890023, 40132890024, 40132890025, 40132890030, 40132890031, 40132890032, 40132890033, 40132890034, 40132890035

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/31/16 07:17	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/31/16 07:17	
Benzene	ug/L	<0.50	1.0	05/31/16 07:17	
Ethylbenzene	ug/L	<0.50	1.0	05/31/16 07:17	
m&p-Xylene	ug/L	<1.0	2.0	05/31/16 07:17	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/31/16 07:17	
Naphthalene	ug/L	<2.5	5.0	05/31/16 07:17	
o-Xylene	ug/L	<0.50	1.0	05/31/16 07:17	
Toluene	ug/L	<0.50	1.0	05/31/16 07:17	
4-Bromofluorobenzene (S)	%	74	70-130	05/31/16 07:17	
Dibromofluoromethane (S)	%	105	70-130	05/31/16 07:17	
Toluene-d8 (S)	%	98	70-130	05/31/16 07:17	

LABORATORY CONTROL SAMPLE: 1343278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.1	106	60-135	
Ethylbenzene	ug/L	50	47.8	96	70-136	
m&p-Xylene	ug/L	100	99.9	100	70-138	
Methyl-tert-butyl ether	ug/L	50	43.7	87	66-138	
o-Xylene	ug/L	50	47.8	96	70-134	
Toluene	ug/L	50	46.5	93	70-130	
4-Bromofluorobenzene (S)	%			84	70-130	
Dibromofluoromethane (S)	%			107	70-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1343305 1343306

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40132890022 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	50.3	50	50	84.3	91.3	68	82	57-138	8	20	
Ethylbenzene	ug/L	152	50	50	168	179	33	55	70-138	6	20	M1
m&p-Xylene	ug/L	478	100	100	515	562	37	84	70-140	9	20	M1
Methyl-tert-butyl ether	ug/L	<0.35	50	50	41.1	43.6	82	87	66-139	6	20	
o-Xylene	ug/L	1.7J	50	50	49.7	50.2	96	97	70-134	1	20	
Toluene	ug/L	<1.0	50	50	45.3	46.7	91	93	70-130	3	20	
4-Bromofluorobenzene (S)	%						93	89	70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40132890

Parameter	Units	40132890022		1343305		1343306		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Dibromofluoromethane (S)	%							100	100		70-130			
Toluene-d8 (S)	%							96	95		70-130			

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QUALIFIERS

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40132890

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.

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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.: 40132890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40132890001	LRS-1	EPA 8021	GCV/16083		
40132890002	LRS-2	EPA 8021	GCV/16083		
40132890003	LRS-3	EPA 8021	GCV/16083		
40132890004	LRS-4	EPA 8021	GCV/16083		
40132890005	LRS-6	EPA 8021	GCV/16083		
40132890006	LRS-7	EPA 8021	GCV/16083		
40132890007	MW-1/FL	EPA 8021	GCV/16083		
40132890008	MW-2/FL	EPA 8021	GCV/16083		
40132890009	MW-3/FL	EPA 8021	GCV/16083		
40132890010	MW-9/FL	EPA 8021	GCV/16083		
40132890011	MW-10/FL	EPA 8021	GCV/16083		
40132890012	MW-11/FL	EPA 8021	GCV/16083		
40132890013	MW-13/FL	EPA 8021	GCV/16083		
40132890014	MW-14/FL	EPA 8021	GCV/16083		
40132890026	MW-1/T68	EPA 8260	MSV/33712		
40132890027	MW-2/T68	EPA 8260	MSV/33712		
40132890028	MW-4/T68	EPA 8260	MSV/33712		
40132890029	MW-5/T66	EPA 8260	MSV/33712		
40132890036	TRIP BLANK	EPA 8260	MSV/33712		
40132890015	MW-1/CW	EPA 8260	MSV/33697		
40132890016	MW-2/CW	EPA 8260	MSV/33697		
40132890017	MW-3/CW	EPA 8260	MSV/33697		
40132890018	MW-4/CW	EPA 8260	MSV/33720		
40132890019	MW-1/T40	EPA 8260	MSV/33720		
40132890020	MW-2/T40	EPA 8260	MSV/33720		
40132890021	MW-4/T40	EPA 8260	MSV/33720		
40132890022	MW-5/T40	EPA 8260	MSV/33720		
40132890023	MW-6/T40	EPA 8260	MSV/33720		
40132890024	MW-7/T40	EPA 8260	MSV/33720		
40132890025	TS-1/T40	EPA 8260	MSV/33720		
40132890030	MW-1R/T70	EPA 8260	MSV/33720		
40132890031	MW-2R/T70	EPA 8260	MSV/33720		
40132890032	MW-3/T70	EPA 8260	MSV/33720		
40132890033	MW-4/T70	EPA 8260	MSV/33720		
40132890034	MW-5/T70	EPA 8260	MSV/33720		
40132890035	MW-6/T70	EPA 8260	MSV/33720		

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 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
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
013	MW-12/FL	5/24		GW
013	MW-13/FL	5/24	11:25	GW
014	MW-14/FL		11:10	
015	MW-1/CW		9:05	
016	MW-2/CW		9:00	
017	MW-3/CW		9:10	
018	MW-4/CW		8:50	
019	MW-1/T40		13:30	
020	MW-2/T40		13:05	
021	MW-4/T40		13:25	
022	MW-5/T40		13:10	
023	MW-6/T40		13:15	
024	MW-7/T40		13:20	



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																		
			1	2	3	4	5	6	7	8	9	10								
	B	PVOCs 8021																		
	B	PVOCs/NaPh. 8260																		
	B	PVOCs 8260																		

Quote #: _____
 Mail To Contact: _____
 Mail To Company: *See page*
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 Invoice To Phone: _____

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

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: _____ Date/Time: 16:30
 Relinquished By: *Fed Ex* Date/Time: 5-25-16 12:45
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____
 Received By: *Susan Kyle* Date/Time: 5-25-16 12:45
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____

PACE Project No. 4032890
 Receipt Temp = *ROI* °C
 Sample Receipt pH OK / Adjusted
 Cooler Custody Seal Present / Not Present Intact / Not Intact

(Please Print Clearly)

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



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 8260	VOCs 8260	PVOCs 8260 Napn															

Quote #: _____
 Mail To Contact: *See page*
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: *1*
 Invoice To Phone: _____
 CLIENT COMMENTS: _____
 LAB COMMENTS (Lab Use Only): *3-40ml VB*
 Profile #: _____
240ml VB

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
		DATE	TIME	
025	TS-1 / T90	5/24	13:35	GW
026	MW-1 / T68		14:00	
027	MW-2 / T68		14:15	
028	MW-4 / T68		14:10	
029	MW-5 / T66		14:20	
030	MW-1R / T70		15:15	
031	MW-2R / T70		14:50	
032	MW-3 / T70		14:25	
033	MW-4 / T70		14:20	
034	MW-5 / T70		14:55	
035	MW-6 / T70	↓	15:00	↓
	MW-7 / T70		15:05	↓
036	Trip Blank	↓		

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: _____ Date/Time: 16:30
 Relinquished By: *Ted Ex* Date/Time: 5-25-16 12:45
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____
 Received By: *Susant Nyle Paul* Date/Time: 5-25-16 12:45
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____

PACE Project No. 40132890
 Receipt Temp = ROT °C
 Sample Receipt pH OK / Adjusted
 Cooler Custody Seal Present / Not Present Intact / Not Intact

Sample Condition Upon Receipt

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



Client Name: Gannett Fleming

Project # **WO# : 40132890**

Courier: Fed Ex UPS Client Pace Other:
Tracking #: 8718 1210 7902



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: ROI / Corr: _____ Biological Tissue is Frozen: yes no

Temp Blank Present: yes no no

Person examining contents:
Date: 5-25-16
Initials: SKW

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.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>024-1-40ml v3 collect time 13:40</u>
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>5-25-16</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: VOA: coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	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):		

Client Notification/ Resolution: _____ If checked, see attached form for additional comments
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

Project Manager Review: AMH/BRM Date: 5/25/16

October 17, 2016

Project #34265.003
Calumet Superior
Reviewed by CCW
10/18/16

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34265.003 CALUMET
Pace Project No.: 40139615

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2016. 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
Project Manager

Enclosures

cc: Dave Olig, Gannett Fleming



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

Virginia VELAP ID: 460263

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Virginia VELAP ID: 460263

Virginia VELAP Certification ID: 460263

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40139615001	MW-1/T40	Water	10/05/16 14:00	10/06/16 09:10
40139615002	MW-2/T40	Water	10/05/16 14:10	10/06/16 09:10
40139615003	MW-4/T40	Water	10/05/16 13:45	10/06/16 09:10
40139615004	MW-5/T40	Water	10/05/16 13:25	10/06/16 09:10
40139615005	MW-6/T40	Water	10/05/16 13:35	10/06/16 09:10
40139615006	MW-7/T40	Water	10/05/16 13:40	10/06/16 09:10
40139615007	TS-1/T40	Water	10/05/16 13:20	10/06/16 09:10
40139615008	MW-1/T68	Water	10/05/16 14:15	10/06/16 09:10
40139615009	MW-2/T68	Water	10/05/16 14:30	10/06/16 09:10
40139615010	MW-4/T68	Water	10/05/16 14:40	10/06/16 09:10
40139615011	MW-5/T66	Water	10/05/16 14:50	10/06/16 09:10
40139615012	MW-6/T68	Water	10/05/16 14:45	10/06/16 09:10
40139615013	MW-1R/T70	Water	10/05/16 15:40	10/06/16 09:10
40139615014	MW-2R/T70	Water	10/05/16 15:10	10/06/16 09:10
40139615015	MW-3/T70	Water	10/05/16 15:30	10/06/16 09:10
40139615016	MW-4/T70	Water	10/05/16 15:35	10/06/16 09:10
40139615017	MW-5/T70	Water	10/05/16 15:15	10/06/16 09:10
40139615018	MW-6/T70	Water	10/05/16 15:25	10/06/16 09:10
40139615019	TRIP BLANK	Water	10/05/16 00:00	10/06/16 09:10
40139615020	LRS-1	Water	10/05/16 10:45	10/06/16 09:10
40139615021	LRS-2	Water	10/05/16 10:55	10/06/16 09:10
40139615022	LRS-3	Water	10/05/16 11:15	10/06/16 09:10
40139615023	LRS-4	Water	10/05/16 11:30	10/06/16 09:10
40139615024	LRS-6	Water	10/05/16 11:10	10/06/16 09:10
40139615025	LRS-8	Water	10/05/16 11:45	10/06/16 09:10
40139615026	MW-1/FL	Water	10/05/16 10:30	10/06/16 09:10
40139615027	MW-2/FL	Water	10/05/16 10:25	10/06/16 09:10
40139615028	MW-3/FL	Water	10/05/16 10:20	10/06/16 09:10
40139615029	MW-9/FL	Water	10/05/16 12:10	10/06/16 09:10
40139615030	MW-10/FL	Water	10/05/16 12:15	10/06/16 09:10
40139615031	MW-11/FL	Water	10/05/16 12:00	10/06/16 09:10
40139615032	MW-13/FL	Water	10/05/16 11:55	10/06/16 09:10
40139615033	MW-14/FL	Water	10/05/16 11:50	10/06/16 09:10

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40139615001	MW-1/T40	EPA 8260	LAP	11	PASI-G
40139615002	MW-2/T40	EPA 8260	LAP	11	PASI-G
40139615003	MW-4/T40	EPA 8260	LAP	11	PASI-G
40139615004	MW-5/T40	EPA 8260	LAP	11	PASI-G
40139615005	MW-6/T40	EPA 8260	LAP	11	PASI-G
40139615006	MW-7/T40	EPA 8260	LAP	11	PASI-G
40139615007	TS-1/T40	EPA 8260	LAP	11	PASI-G
40139615008	MW-1/T68	EPA 8260	HNW	63	PASI-G
40139615009	MW-2/T68	EPA 8260	HNW	63	PASI-G
40139615010	MW-4/T68	EPA 8260	HNW	63	PASI-G
40139615011	MW-5/T66	EPA 8260	LAP	63	PASI-G
40139615012	MW-6/T68	EPA 8260	LAP	63	PASI-G
40139615013	MW-1R/T70	EPA 8260	LAP	12	PASI-G
40139615014	MW-2R/T70	EPA 8260	LAP	12	PASI-G
40139615015	MW-3/T70	EPA 8260	LAP	12	PASI-G
40139615016	MW-4/T70	EPA 8260	LAP	12	PASI-G
40139615017	MW-5/T70	EPA 8260	LAP	12	PASI-G
40139615018	MW-6/T70	EPA 8260	LAP	12	PASI-G
40139615019	TRIP BLANK	EPA 8260	LAP	63	PASI-G
40139615020	LRS-1	EPA 8021	PMS	9	PASI-G
40139615021	LRS-2	EPA 8021	PMS	9	PASI-G
40139615022	LRS-3	EPA 8021	PMS	9	PASI-G
40139615023	LRS-4	EPA 8021	PMS	9	PASI-G
40139615024	LRS-6	EPA 8021	PMS	9	PASI-G
40139615025	LRS-8	EPA 8021	PMS	9	PASI-G
40139615026	MW-1/FL	EPA 8021	PMS	9	PASI-G
40139615027	MW-2/FL	EPA 8021	PMS	9	PASI-G
40139615028	MW-3/FL	EPA 8021	PMS	9	PASI-G
40139615029	MW-9/FL	EPA 8021	PMS	9	PASI-G
40139615030	MW-10/FL	EPA 8021	PMS	9	PASI-G
40139615031	MW-11/FL	EPA 8021	PMS	9	PASI-G
40139615032	MW-13/FL	EPA 8021	PMS	9	PASI-G
40139615033	MW-14/FL	EPA 8021	PMS	9	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40139615001	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	221	ug/L	10.0	10/11/16 09:14	
EPA 8260	1,3,5-Trimethylbenzene	91.9	ug/L	10.0	10/11/16 09:14	
EPA 8260	Benzene	163	ug/L	10.0	10/11/16 09:14	
EPA 8260	Ethylbenzene	7.5J	ug/L	10.0	10/11/16 09:14	
EPA 8260	m&p-Xylene	970	ug/L	20.0	10/11/16 09:14	
EPA 8260	o-Xylene	33.1	ug/L	10.0	10/11/16 09:14	
40139615002	MW-2/T40					
EPA 8260	1,2,4-Trimethylbenzene	1730	ug/L	50.0	10/11/16 02:07	
EPA 8260	1,3,5-Trimethylbenzene	456	ug/L	50.0	10/11/16 02:07	
EPA 8260	Benzene	6870	ug/L	50.0	10/11/16 02:07	
EPA 8260	Ethylbenzene	899	ug/L	50.0	10/11/16 02:07	
EPA 8260	Toluene	4330	ug/L	50.0	10/11/16 02:07	
EPA 8260	m&p-Xylene	6640	ug/L	100	10/11/16 02:07	
EPA 8260	o-Xylene	3200	ug/L	50.0	10/11/16 02:07	
40139615003	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	610	ug/L	20.0	10/11/16 09:36	
EPA 8260	1,3,5-Trimethylbenzene	168	ug/L	20.0	10/11/16 09:36	
EPA 8260	Benzene	1890	ug/L	20.0	10/11/16 09:36	
EPA 8260	m&p-Xylene	1490	ug/L	40.0	10/11/16 09:36	
EPA 8260	o-Xylene	803	ug/L	20.0	10/11/16 09:36	
40139615005	MW-6/T40					
EPA 8260	Benzene	12.3	ug/L	1.0	10/11/16 08:52	
40139615006	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	217	ug/L	5.0	10/13/16 01:25	
EPA 8260	1,3,5-Trimethylbenzene	63.3	ug/L	5.0	10/13/16 01:25	
EPA 8260	Benzene	506	ug/L	5.0	10/13/16 01:25	
EPA 8260	Ethylbenzene	71.0	ug/L	5.0	10/13/16 01:25	
EPA 8260	Toluene	5.2	ug/L	5.0	10/13/16 01:25	
EPA 8260	m&p-Xylene	809	ug/L	10.0	10/13/16 01:25	
EPA 8260	o-Xylene	339	ug/L	5.0	10/13/16 01:25	
40139615007	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	1.9	ug/L	1.0	10/12/16 21:25	
EPA 8260	1,3,5-Trimethylbenzene	1.1	ug/L	1.0	10/12/16 21:25	
EPA 8260	Benzene	1.6	ug/L	1.0	10/12/16 21:25	
40139615009	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	2150	ug/L	200	10/14/16 09:42	
EPA 8260	1,2-Dichloroethane	1150	ug/L	200	10/14/16 09:42	
EPA 8260	1,3,5-Trimethylbenzene	523	ug/L	200	10/14/16 09:42	
EPA 8260	Benzene	20900	ug/L	200	10/14/16 09:42	
EPA 8260	Ethylbenzene	1350	ug/L	200	10/14/16 09:42	
EPA 8260	Isopropylbenzene (Cumene)	45.3J	ug/L	200	10/14/16 09:42	
EPA 8260	Toluene	20300	ug/L	200	10/14/16 09:42	
EPA 8260	m&p-Xylene	10400	ug/L	400	10/14/16 09:42	
EPA 8260	n-Propylbenzene	105J	ug/L	200	10/14/16 09:42	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET
Pace Project No.: 40139615

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40139615009	MW-2/T68					
EPA 8260	o-Xylene	4970	ug/L	200	10/14/16 09:42	
40139615010	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	2.7	ug/L	1.0	10/14/16 15:59	
EPA 8260	Benzene	3.3	ug/L	1.0	10/14/16 15:59	
EPA 8260	Ethylbenzene	0.83J	ug/L	1.0	10/14/16 15:59	
EPA 8260	Toluene	0.99J	ug/L	1.0	10/14/16 15:59	
EPA 8260	m&p-Xylene	2.4	ug/L	2.0	10/14/16 15:59	
EPA 8260	o-Xylene	1.7	ug/L	1.0	10/14/16 15:59	
40139615011	MW-5/T66					
EPA 8260	1,2,4-Trimethylbenzene	2520	ug/L	200	10/14/16 12:01	
EPA 8260	1,3,5-Trimethylbenzene	721	ug/L	200	10/14/16 12:01	
EPA 8260	Benzene	9090	ug/L	200	10/14/16 12:01	
EPA 8260	Ethylbenzene	2700	ug/L	200	10/14/16 12:01	
EPA 8260	Isopropylbenzene (Cumene)	65.2J	ug/L	200	10/14/16 12:01	
EPA 8260	Toluene	15900	ug/L	200	10/14/16 12:01	
EPA 8260	m&p-Xylene	12100	ug/L	400	10/14/16 12:01	
EPA 8260	n-Propylbenzene	222	ug/L	200	10/14/16 12:01	
EPA 8260	o-Xylene	4700	ug/L	200	10/14/16 12:01	
40139615012	MW-6/T68					
EPA 8260	1,2,4-Trimethylbenzene	3200	ug/L	50.0	10/14/16 11:39	
EPA 8260	1,2-Dichloroethane	37.5J	ug/L	50.0	10/14/16 11:39	
EPA 8260	1,3,5-Trimethylbenzene	865	ug/L	50.0	10/14/16 11:39	
EPA 8260	Benzene	5070	ug/L	50.0	10/14/16 11:39	
EPA 8260	Ethylbenzene	45.5J	ug/L	50.0	10/14/16 11:39	
EPA 8260	Naphthalene	334	ug/L	250	10/14/16 11:39	
EPA 8260	Toluene	1560	ug/L	50.0	10/14/16 11:39	
EPA 8260	m&p-Xylene	9240	ug/L	100	10/14/16 11:39	
EPA 8260	o-Xylene	5080	ug/L	50.0	10/14/16 11:39	
40139615013	MW-1R/T70					
EPA 8260	1,2,4-Trimethylbenzene	969	ug/L	125	10/12/16 12:45	
EPA 8260	1,3,5-Trimethylbenzene	311	ug/L	125	10/12/16 12:45	
EPA 8260	Benzene	12400	ug/L	125	10/12/16 12:45	
EPA 8260	Ethylbenzene	106J	ug/L	125	10/12/16 12:45	
EPA 8260	Toluene	8630	ug/L	125	10/12/16 12:45	
EPA 8260	m&p-Xylene	5960	ug/L	250	10/12/16 12:45	
EPA 8260	o-Xylene	2490	ug/L	125	10/12/16 12:45	
40139615014	MW-2R/T70					
EPA 8260	1,2,4-Trimethylbenzene	2400	ug/L	250	10/12/16 13:08	
EPA 8260	1,3,5-Trimethylbenzene	686	ug/L	250	10/12/16 13:08	
EPA 8260	Benzene	19200	ug/L	250	10/12/16 13:08	
EPA 8260	Ethylbenzene	1480	ug/L	250	10/12/16 13:08	
EPA 8260	Toluene	25700	ug/L	250	10/12/16 13:08	
EPA 8260	m&p-Xylene	13100	ug/L	500	10/12/16 13:08	
EPA 8260	o-Xylene	5570	ug/L	250	10/12/16 13:08	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40139615016	MW-4/T70					
EPA 8260	1,2,4-Trimethylbenzene	2750	ug/L	100	10/12/16 23:58	
EPA 8260	1,3,5-Trimethylbenzene	696	ug/L	100	10/12/16 23:58	
EPA 8260	Benzene	10600	ug/L	100	10/12/16 23:58	
EPA 8260	Ethylbenzene	1520	ug/L	100	10/12/16 23:58	
EPA 8260	Naphthalene	686	ug/L	500	10/12/16 23:58	
EPA 8260	Toluene	15700	ug/L	100	10/12/16 23:58	
EPA 8260	m&p-Xylene	12600	ug/L	200	10/12/16 23:58	
EPA 8260	o-Xylene	5760	ug/L	100	10/12/16 23:58	
40139615017	MW-5/T70					
EPA 8260	1,2,4-Trimethylbenzene	12.1	ug/L	1.0	10/12/16 21:47	
EPA 8260	1,3,5-Trimethylbenzene	4.8	ug/L	1.0	10/12/16 21:47	
EPA 8260	Benzene	3.4	ug/L	1.0	10/12/16 21:47	
EPA 8260	Ethylbenzene	3.2	ug/L	1.0	10/12/16 21:47	
EPA 8260	Naphthalene	42.2	ug/L	5.0	10/12/16 21:47	
EPA 8260	Toluene	7.5	ug/L	1.0	10/12/16 21:47	
EPA 8260	m&p-Xylene	19.2	ug/L	2.0	10/12/16 21:47	
EPA 8260	o-Xylene	21.8	ug/L	1.0	10/12/16 21:47	
40139615018	MW-6/T70					
EPA 8260	1,2,4-Trimethylbenzene	41.7	ug/L	1.0	10/12/16 22:53	
EPA 8260	1,3,5-Trimethylbenzene	13.1	ug/L	1.0	10/12/16 22:53	
EPA 8260	Benzene	147	ug/L	1.0	10/12/16 22:53	
EPA 8260	Ethylbenzene	8.1	ug/L	1.0	10/12/16 22:53	
EPA 8260	Naphthalene	11.4	ug/L	5.0	10/12/16 22:53	
EPA 8260	Toluene	9.1	ug/L	1.0	10/12/16 22:53	
EPA 8260	m&p-Xylene	138	ug/L	2.0	10/12/16 22:53	
EPA 8260	o-Xylene	73.3	ug/L	1.0	10/12/16 22:53	
40139615020	LRS-1					
EPA 8021	Benzene	158	ug/L	5.0	10/07/16 14:28	
EPA 8021	Ethylbenzene	45.3	ug/L	5.0	10/07/16 14:28	
EPA 8021	Toluene	17.4	ug/L	5.0	10/07/16 14:28	
EPA 8021	1,2,4-Trimethylbenzene	201	ug/L	5.0	10/07/16 14:28	
EPA 8021	1,3,5-Trimethylbenzene	181	ug/L	5.0	10/07/16 14:28	M1
EPA 8021	m&p-Xylene	387	ug/L	10.0	10/07/16 14:28	
EPA 8021	o-Xylene	226	ug/L	5.0	10/07/16 14:28	
40139615021	LRS-2					
EPA 8021	Benzene	442	ug/L	5.0	10/07/16 15:45	
EPA 8021	Ethylbenzene	58.9	ug/L	5.0	10/07/16 15:45	
EPA 8021	Toluene	2.3J	ug/L	5.0	10/07/16 15:45	
EPA 8021	1,2,4-Trimethylbenzene	146	ug/L	5.0	10/07/16 15:45	
EPA 8021	1,3,5-Trimethylbenzene	73.9	ug/L	5.0	10/07/16 15:45	
EPA 8021	m&p-Xylene	338	ug/L	10.0	10/07/16 15:45	
EPA 8021	o-Xylene	204	ug/L	5.0	10/07/16 15:45	
40139615022	LRS-3					
EPA 8021	Benzene	1030	ug/L	5.0	10/07/16 16:10	

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40139615022	LRS-3					
EPA 8021	Ethylbenzene	44.9	ug/L	5.0	10/07/16 16:10	
EPA 8021	Toluene	21.6	ug/L	5.0	10/07/16 16:10	
EPA 8021	1,2,4-Trimethylbenzene	99.6	ug/L	5.0	10/07/16 16:10	
EPA 8021	1,3,5-Trimethylbenzene	84.4	ug/L	5.0	10/07/16 16:10	
EPA 8021	m&p-Xylene	224	ug/L	10.0	10/07/16 16:10	
EPA 8021	o-Xylene	244	ug/L	5.0	10/07/16 16:10	
40139615023	LRS-4					
EPA 8021	Benzene	5820	ug/L	40.0	10/07/16 13:11	
EPA 8021	Ethylbenzene	853	ug/L	40.0	10/07/16 13:11	
EPA 8021	Toluene	118	ug/L	40.0	10/07/16 13:11	
EPA 8021	1,2,4-Trimethylbenzene	709	ug/L	40.0	10/07/16 13:11	
EPA 8021	1,3,5-Trimethylbenzene	173	ug/L	40.0	10/07/16 13:11	
EPA 8021	m&p-Xylene	1890	ug/L	80.0	10/07/16 13:11	
EPA 8021	o-Xylene	88.2	ug/L	40.0	10/07/16 13:11	
40139615024	LRS-6					
EPA 8021	Benzene	2250	ug/L	20.0	10/07/16 16:36	
EPA 8021	Ethylbenzene	107	ug/L	20.0	10/07/16 16:36	
EPA 8021	Toluene	821	ug/L	20.0	10/07/16 16:36	
EPA 8021	1,2,4-Trimethylbenzene	621	ug/L	20.0	10/07/16 16:36	
EPA 8021	1,3,5-Trimethylbenzene	242	ug/L	20.0	10/07/16 16:36	
EPA 8021	m&p-Xylene	1720	ug/L	40.0	10/07/16 16:36	
EPA 8021	o-Xylene	854	ug/L	20.0	10/07/16 16:36	
40139615025	LRS-8					
EPA 8021	Benzene	267	ug/L	4.0	10/07/16 17:01	
EPA 8021	Ethylbenzene	154	ug/L	4.0	10/07/16 17:01	
EPA 8021	Toluene	4.2	ug/L	4.0	10/07/16 17:01	
EPA 8021	1,2,4-Trimethylbenzene	152	ug/L	4.0	10/07/16 17:01	
EPA 8021	1,3,5-Trimethylbenzene	30.8	ug/L	4.0	10/07/16 17:01	
EPA 8021	m&p-Xylene	342	ug/L	8.0	10/07/16 17:01	
EPA 8021	o-Xylene	29.2	ug/L	4.0	10/07/16 17:01	
40139615026	MW-1/FL					
EPA 8021	Benzene	1310	ug/L	10.0	10/07/16 17:27	
EPA 8021	Ethylbenzene	167	ug/L	10.0	10/07/16 17:27	
EPA 8021	Toluene	6.0J	ug/L	10.0	10/07/16 17:27	
EPA 8021	1,2,4-Trimethylbenzene	86.3	ug/L	10.0	10/07/16 17:27	
EPA 8021	1,3,5-Trimethylbenzene	57.6	ug/L	10.0	10/07/16 17:27	
EPA 8021	m&p-Xylene	19.3J	ug/L	20.0	10/07/16 17:27	
40139615027	MW-2/FL					
EPA 8021	Benzene	253	ug/L	1.0	10/07/16 18:43	
EPA 8021	Ethylbenzene	28.4	ug/L	1.0	10/07/16 18:43	
EPA 8021	Methyl-tert-butyl ether	1.0	ug/L	1.0	10/07/16 18:43	
EPA 8021	Toluene	1.2	ug/L	1.0	10/07/16 18:43	
EPA 8021	1,2,4-Trimethylbenzene	1.6	ug/L	1.0	10/07/16 18:43	
EPA 8021	1,3,5-Trimethylbenzene	2.7	ug/L	1.0	10/07/16 18:43	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET
Pace Project No.: 40139615

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40139615027	MW-2/FL					
EPA 8021	m&p-Xylene	10.6	ug/L	2.0	10/07/16 18:43	
EPA 8021	o-Xylene	0.55J	ug/L	1.0	10/07/16 18:43	
40139615028	MW-3/FL					
EPA 8021	Benzene	1260	ug/L	20.0	10/07/16 17:52	
EPA 8021	Ethylbenzene	577	ug/L	20.0	10/07/16 17:52	
EPA 8021	Toluene	90.8	ug/L	20.0	10/07/16 17:52	
EPA 8021	1,2,4-Trimethylbenzene	1500	ug/L	20.0	10/07/16 17:52	
EPA 8021	1,3,5-Trimethylbenzene	508	ug/L	20.0	10/07/16 17:52	
EPA 8021	m&p-Xylene	3400	ug/L	40.0	10/07/16 17:52	
EPA 8021	o-Xylene	425	ug/L	20.0	10/07/16 17:52	
40139615029	MW-9/FL					
EPA 8021	Benzene	212	ug/L	1.0	10/07/16 19:09	
EPA 8021	Ethylbenzene	27.7	ug/L	1.0	10/07/16 19:09	
EPA 8021	Toluene	3.6	ug/L	1.0	10/07/16 19:09	
EPA 8021	1,2,4-Trimethylbenzene	27.3	ug/L	1.0	10/07/16 19:09	
EPA 8021	1,3,5-Trimethylbenzene	2.8	ug/L	1.0	10/07/16 19:09	
EPA 8021	m&p-Xylene	15.0	ug/L	2.0	10/07/16 19:09	
EPA 8021	o-Xylene	4.8	ug/L	1.0	10/07/16 19:09	
40139615032	MW-13/FL					
EPA 8021	Benzene	738	ug/L	4.0	10/07/16 18:18	
EPA 8021	Ethylbenzene	135	ug/L	4.0	10/07/16 18:18	
EPA 8021	Toluene	5.2	ug/L	4.0	10/07/16 18:18	
EPA 8021	1,2,4-Trimethylbenzene	138	ug/L	4.0	10/07/16 18:18	
EPA 8021	m&p-Xylene	11.0	ug/L	8.0	10/07/16 18:18	
EPA 8021	o-Xylene	20.7	ug/L	4.0	10/07/16 18:18	
40139615033	MW-14/FL					
EPA 8021	Benzene	90.0	ug/L	1.0	10/07/16 12:45	
EPA 8021	Ethylbenzene	131	ug/L	1.0	10/07/16 12:45	
EPA 8021	Toluene	1.5	ug/L	1.0	10/07/16 12:45	
EPA 8021	1,2,4-Trimethylbenzene	38.1	ug/L	1.0	10/07/16 12:45	
EPA 8021	1,3,5-Trimethylbenzene	15.4	ug/L	1.0	10/07/16 12:45	
EPA 8021	m&p-Xylene	614	ug/L	2.0	10/07/16 12:45	
EPA 8021	o-Xylene	13.0	ug/L	1.0	10/07/16 12:45	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 CALUMET
Pace Project No.: 40139615

Method: EPA 8021
Description: 8021 GCV Short List
Client: Gannett Fleming Inc.
Date: October 17, 2016

General Information:

14 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.

QC Batch: 237415

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40139615020

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

- MS (Lab ID: 1407441)
 - 1,3,5-Trimethylbenzene

Additional Comments:

Analyte Comments:

QC Batch: 237415

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

- LRS-1 (Lab ID: 40139615020)
 - a,a,a-Trifluorotoluene (S)

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PROJECT NARRATIVE

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Method: EPA 8260

Description: 8260 MSV

Client: Gannett Fleming Inc.

Date: October 17, 2016

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: 237506

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40139484001

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

- MSD (Lab ID: 1409837)
 - Styrene

R1: RPD value was outside control limits.

- MSD (Lab ID: 1409837)
 - Styrene

QC Batch: 237560

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40139746014

R1: RPD value was outside control limits.

- MSD (Lab ID: 1408145)
 - 1,1-Dichloroethane

Additional Comments:

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PROJECT NARRATIVE

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: October 17, 2016

General Information:

13 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: 237494

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40139530042

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

- MSD (Lab ID: 1408609)
- Methyl-tert-butyl ether

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

Pace Project No.: 40139615

Sample: MW-1/T40 **Lab ID: 40139615001** Collected: 10/05/16 14:00 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	221	ug/L	10.0	5.0	10		10/11/16 09:14	95-63-6	
1,3,5-Trimethylbenzene	91.9	ug/L	10.0	5.0	10		10/11/16 09:14	108-67-8	
Benzene	163	ug/L	10.0	5.0	10		10/11/16 09:14	71-43-2	
Ethylbenzene	7.5J	ug/L	10.0	5.0	10		10/11/16 09:14	100-41-4	
Methyl-tert-butyl ether	<1.7	ug/L	10.0	1.7	10		10/11/16 09:14	1634-04-4	
Toluene	<5.0	ug/L	10.0	5.0	10		10/11/16 09:14	108-88-3	
m&p-Xylene	970	ug/L	20.0	10.0	10		10/11/16 09:14	179601-23-1	
o-Xylene	33.1	ug/L	10.0	5.0	10		10/11/16 09:14	95-47-6	
Surrogates									
Dibromofluoromethane (S)	101	%	70-130		10		10/11/16 09:14	1868-53-7	
Toluene-d8 (S)	90	%	70-130		10		10/11/16 09:14	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130		10		10/11/16 09:14	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: MW-2/T40 **Lab ID: 40139615002** Collected: 10/05/16 14:10 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1730	ug/L	50.0	25.0	50		10/11/16 02:07	95-63-6	
1,3,5-Trimethylbenzene	456	ug/L	50.0	25.0	50		10/11/16 02:07	108-67-8	
Benzene	6870	ug/L	50.0	25.0	50		10/11/16 02:07	71-43-2	
Ethylbenzene	899	ug/L	50.0	25.0	50		10/11/16 02:07	100-41-4	
Methyl-tert-butyl ether	<8.7	ug/L	50.0	8.7	50		10/11/16 02:07	1634-04-4	
Toluene	4330	ug/L	50.0	25.0	50		10/11/16 02:07	108-88-3	
m&p-Xylene	6640	ug/L	100	50.0	50		10/11/16 02:07	179601-23-1	
o-Xylene	3200	ug/L	50.0	25.0	50		10/11/16 02:07	95-47-6	
Surrogates									
Dibromofluoromethane (S)	101	%	70-130		50		10/11/16 02:07	1868-53-7	
Toluene-d8 (S)	90	%	70-130		50		10/11/16 02:07	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130		50		10/11/16 02:07	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: MW-4/T40 **Lab ID: 40139615003** Collected: 10/05/16 13:45 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	610	ug/L	20.0	10.0	20		10/11/16 09:36	95-63-6	
1,3,5-Trimethylbenzene	168	ug/L	20.0	10.0	20		10/11/16 09:36	108-67-8	
Benzene	1890	ug/L	20.0	10.0	20		10/11/16 09:36	71-43-2	
Ethylbenzene	<10.0	ug/L	20.0	10.0	20		10/11/16 09:36	100-41-4	
Methyl-tert-butyl ether	<3.5	ug/L	20.0	3.5	20		10/11/16 09:36	1634-04-4	
Toluene	<10.0	ug/L	20.0	10.0	20		10/11/16 09:36	108-88-3	
m&p-Xylene	1490	ug/L	40.0	20.0	20		10/11/16 09:36	179601-23-1	
o-Xylene	803	ug/L	20.0	10.0	20		10/11/16 09:36	95-47-6	
Surrogates									
Dibromofluoromethane (S)	98	%	70-130		20		10/11/16 09:36	1868-53-7	
Toluene-d8 (S)	89	%	70-130		20		10/11/16 09:36	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130		20		10/11/16 09:36	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: MW-5/T40 **Lab ID: 40139615004** Collected: 10/05/16 13:25 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	108-67-8	
Benzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/11/16 08:30	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/11/16 08:30	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:30	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	70-130		1		10/11/16 08:30	1868-53-7	
Toluene-d8 (S)	90	%	70-130		1		10/11/16 08:30	2037-26-5	
4-Bromofluorobenzene (S)	84	%	70-130		1		10/11/16 08:30	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: MW-6/T40 **Lab ID: 40139615005** Collected: 10/05/16 13:35 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:52	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:52	108-67-8	
Benzene	12.3	ug/L	1.0	0.50	1		10/11/16 08:52	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:52	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/11/16 08:52	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:52	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/11/16 08:52	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/11/16 08:52	95-47-6	
Surrogates									
Dibromofluoromethane (S)	103	%	70-130		1		10/11/16 08:52	1868-53-7	
Toluene-d8 (S)	90	%	70-130		1		10/11/16 08:52	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		10/11/16 08:52	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: MW-7/T40 **Lab ID: 40139615006** Collected: 10/05/16 13:40 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	217	ug/L	5.0	2.5	5		10/13/16 01:25	95-63-6	
1,3,5-Trimethylbenzene	63.3	ug/L	5.0	2.5	5		10/13/16 01:25	108-67-8	
Benzene	506	ug/L	5.0	2.5	5		10/13/16 01:25	71-43-2	
Ethylbenzene	71.0	ug/L	5.0	2.5	5		10/13/16 01:25	100-41-4	
Methyl-tert-butyl ether	<0.87	ug/L	5.0	0.87	5		10/13/16 01:25	1634-04-4	
Toluene	5.2	ug/L	5.0	2.5	5		10/13/16 01:25	108-88-3	
m&p-Xylene	809	ug/L	10.0	5.0	5		10/13/16 01:25	179601-23-1	
o-Xylene	339	ug/L	5.0	2.5	5		10/13/16 01:25	95-47-6	
Surrogates									
Dibromofluoromethane (S)	92	%	70-130		5		10/13/16 01:25	1868-53-7	
Toluene-d8 (S)	97	%	70-130		5		10/13/16 01:25	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130		5		10/13/16 01:25	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: TS-1/T40 **Lab ID: 40139615007** Collected: 10/05/16 13:20 Received: 10/06/16 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	1.9	ug/L	1.0	0.50	1		10/12/16 21:25	95-63-6	
1,3,5-Trimethylbenzene	1.1	ug/L	1.0	0.50	1		10/12/16 21:25	108-67-8	
Benzene	1.6	ug/L	1.0	0.50	1		10/12/16 21:25	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/12/16 21:25	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/12/16 21:25	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/12/16 21:25	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/12/16 21:25	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/12/16 21:25	95-47-6	
Surrogates									
Dibromofluoromethane (S)	94	%	70-130		1		10/12/16 21:25	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		10/12/16 21:25	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130		1		10/12/16 21:25	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: TRIP BLANK **Lab ID: 40139615019** Collected: 10/05/16 00:00 Received: 10/06/16 09:10 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		10/13/16 16:01	630-20-6	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	71-55-6	
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		10/13/16 16:01	79-34-5	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		10/13/16 16:01	79-00-5	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		10/13/16 16:01	75-34-3	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		10/13/16 16:01	75-35-4	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		10/13/16 16:01	563-58-6	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		10/13/16 16:01	87-61-6	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	96-18-4	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		10/13/16 16:01	120-82-1	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	95-63-6	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		10/13/16 16:01	96-12-8	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		10/13/16 16:01	106-93-4	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	95-50-1	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		10/13/16 16:01	107-06-2	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		10/13/16 16:01	78-87-5	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	108-67-8	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	541-73-1	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	142-28-9	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	106-46-7	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		10/13/16 16:01	594-20-7	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		10/13/16 16:01	106-43-4	
Benzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		10/13/16 16:01	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		10/13/16 16:01	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		10/13/16 16:01	74-83-9	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		10/13/16 16:01	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		10/13/16 16:01	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	74-87-3	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	124-48-1	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		10/13/16 16:01	74-95-3	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		10/13/16 16:01	75-71-8	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		10/13/16 16:01	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		10/13/16 16:01	98-82-8	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/13/16 16:01	1634-04-4	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		10/13/16 16:01	75-09-2	
Naphthalene	<2.5	ug/L	5.0	2.5	1		10/13/16 16:01	91-20-3	
Styrene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	100-42-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	108-88-3	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Sample: TRIP BLANK **Lab ID: 40139615019** Collected: 10/05/16 00:00 Received: 10/06/16 09:10 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		10/13/16 16:01	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		10/13/16 16:01	75-69-4	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		10/13/16 16:01	75-01-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/13/16 16:01	156-59-2	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	10061-01-5	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/13/16 16:01	179601-23-1	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	104-51-8	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	103-65-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	95-47-6	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		10/13/16 16:01	99-87-6	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		10/13/16 16:01	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		10/13/16 16:01	98-06-6	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		10/13/16 16:01	156-60-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		10/13/16 16:01	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	86	%	70-130		1		10/13/16 16:01	460-00-4	
Dibromofluoromethane (S)	93	%	70-130		1		10/13/16 16:01	1868-53-7	
Toluene-d8 (S)	89	%	70-130		1		10/13/16 16:01	2037-26-5	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

QC Batch: 237415 Analysis Method: EPA 8021
 QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
 Associated Lab Samples: 40139615020, 40139615021, 40139615022, 40139615023, 40139615024, 40139615025, 40139615026, 40139615027, 40139615028, 40139615029, 40139615030, 40139615031, 40139615032, 40139615033

METHOD BLANK: 1407029 Matrix: Water
 Associated Lab Samples: 40139615020, 40139615021, 40139615022, 40139615023, 40139615024, 40139615025, 40139615026, 40139615027, 40139615028, 40139615029, 40139615030, 40139615031, 40139615032, 40139615033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	10/07/16 08:04	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	10/07/16 08:04	
Benzene	ug/L	<0.40	1.0	10/07/16 08:04	
Ethylbenzene	ug/L	<0.39	1.0	10/07/16 08:04	
m&p-Xylene	ug/L	<0.80	2.0	10/07/16 08:04	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	10/07/16 08:04	
o-Xylene	ug/L	<0.45	1.0	10/07/16 08:04	
Toluene	ug/L	<0.39	1.0	10/07/16 08:04	
a,a,a-Trifluorotoluene (S)	%	103	80-120	10/07/16 08:04	

LABORATORY CONTROL SAMPLE & LCSD: 1407030 1407031

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	20.9	19.9	104	99	80-120	5	20	
1,3,5-Trimethylbenzene	ug/L	20	19.8	18.8	99	94	80-120	5	20	
Benzene	ug/L	20	20.7	19.6	104	98	80-120	6	20	
Ethylbenzene	ug/L	20	19.9	18.8	100	94	80-120	6	20	
m&p-Xylene	ug/L	40	39.3	37.2	98	93	80-120	6	20	
Methyl-tert-butyl ether	ug/L	20	20.9	20.3	104	101	80-120	3	20	
o-Xylene	ug/L	20	20.2	19.2	101	96	80-120	5	20	
Toluene	ug/L	20	20.4	19.2	102	96	80-120	6	20	
a,a,a-Trifluorotoluene (S)	%				102	102	80-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1407441 1407442

Parameter	Units	40139615020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	ug/L	201	100	100	348	332	148	131	48-177	5	20	
1,3,5-Trimethylbenzene	ug/L	181	100	100	328	311	147	130	73-145	5	20	M1
Benzene	ug/L	158	100	100	261	244	104	86	74-139	7	20	
Ethylbenzene	ug/L	45.3	100	100	148	129	102	83	74-140	14	20	
m&p-Xylene	ug/L	387	200	200	623	583	118	98	55-165	7	20	
Methyl-tert-butyl ether	ug/L	<2.4	100	100	98.4	81.6	98	82	80-120	19	20	
o-Xylene	ug/L	226	100	100	346	326	121	101	73-136	6	20	
Toluene	ug/L	17.4	100	100	120	100	103	83	80-128	18	20	
a,a,a-Trifluorotoluene (S)	%						105	106	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.

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237506 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40139615019

METHOD BLANK: 1407486 Matrix: Water
Associated Lab Samples: 40139615019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/13/16 07:15	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/13/16 07:15	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/13/16 07:15	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/13/16 07:15	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/13/16 07:15	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/13/16 07:15	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/13/16 07:15	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/13/16 07:15	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/13/16 07:15	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/13/16 07:15	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/13/16 07:15	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/13/16 07:15	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/13/16 07:15	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/13/16 07:15	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/13/16 07:15	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/13/16 07:15	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/13/16 07:15	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/13/16 07:15	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/13/16 07:15	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/13/16 07:15	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/13/16 07:15	
2-Chlorotoluene	ug/L	<0.50	1.0	10/13/16 07:15	
4-Chlorotoluene	ug/L	<0.21	1.0	10/13/16 07:15	
Benzene	ug/L	<0.50	1.0	10/13/16 07:15	
Bromobenzene	ug/L	<0.23	1.0	10/13/16 07:15	
Bromochloromethane	ug/L	<0.34	1.0	10/13/16 07:15	
Bromodichloromethane	ug/L	<0.50	1.0	10/13/16 07:15	
Bromoform	ug/L	<0.50	1.0	10/13/16 07:15	
Bromomethane	ug/L	<2.4	5.0	10/13/16 07:15	
Carbon tetrachloride	ug/L	<0.50	1.0	10/13/16 07:15	
Chlorobenzene	ug/L	<0.50	1.0	10/13/16 07:15	
Chloroethane	ug/L	<0.37	1.0	10/13/16 07:15	
Chloroform	ug/L	<2.5	5.0	10/13/16 07:15	
Chloromethane	ug/L	<0.50	1.0	10/13/16 07:15	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/13/16 07:15	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/13/16 07:15	
Dibromochloromethane	ug/L	<0.50	1.0	10/13/16 07:15	
Dibromomethane	ug/L	<0.43	1.0	10/13/16 07:15	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/13/16 07:15	
Ethylbenzene	ug/L	<0.50	1.0	10/13/16 07:15	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/13/16 07:15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

METHOD BLANK: 1407486

Matrix: Water

Associated Lab Samples: 40139615019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/13/16 07:15	
m&p-Xylene	ug/L	<1.0	2.0	10/13/16 07:15	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/13/16 07:15	
Methylene Chloride	ug/L	<0.23	1.0	10/13/16 07:15	
n-Butylbenzene	ug/L	<0.50	1.0	10/13/16 07:15	
n-Propylbenzene	ug/L	<0.50	1.0	10/13/16 07:15	
Naphthalene	ug/L	<2.5	5.0	10/13/16 07:15	
o-Xylene	ug/L	<0.50	1.0	10/13/16 07:15	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/13/16 07:15	
sec-Butylbenzene	ug/L	<2.2	5.0	10/13/16 07:15	
Styrene	ug/L	<0.50	1.0	10/13/16 07:15	
tert-Butylbenzene	ug/L	<0.18	1.0	10/13/16 07:15	
Tetrachloroethene	ug/L	<0.50	1.0	10/13/16 07:15	
Toluene	ug/L	<0.50	1.0	10/13/16 07:15	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/13/16 07:15	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/13/16 07:15	
Trichloroethene	ug/L	<0.33	1.0	10/13/16 07:15	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/13/16 07:15	
Vinyl chloride	ug/L	<0.18	1.0	10/13/16 07:15	
4-Bromofluorobenzene (S)	%	93	70-130	10/13/16 07:15	
Dibromofluoromethane (S)	%	94	70-130	10/13/16 07:15	
Toluene-d8 (S)	%	94	70-130	10/13/16 07:15	

LABORATORY CONTROL SAMPLE: 1407487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	48.6	97	70-131	
1,1,2,2-Tetrachloroethane	ug/L	50	50.2	100	67-130	
1,1,2-Trichloroethane	ug/L	50	52.3	105	70-130	
1,1-Dichloroethane	ug/L	50	49.8	100	70-133	
1,1-Dichloroethene	ug/L	50	46.1	92	70-130	
1,2,4-Trichlorobenzene	ug/L	50	46.1	92	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	53.4	107	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	52.5	105	70-130	
1,2-Dichlorobenzene	ug/L	50	48.5	97	70-130	
1,2-Dichloroethane	ug/L	50	51.7	103	70-130	
1,2-Dichloropropane	ug/L	50	50.0	100	70-130	
1,3-Dichlorobenzene	ug/L	50	48.2	96	70-130	
1,4-Dichlorobenzene	ug/L	50	47.6	95	70-130	
Benzene	ug/L	50	50.0	100	60-135	
Bromodichloromethane	ug/L	50	49.3	99	70-130	
Bromoform	ug/L	50	55.3	111	70-130	
Bromomethane	ug/L	50	44.4	89	33-130	
Carbon tetrachloride	ug/L	50	50.7	101	70-138	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

LABORATORY CONTROL SAMPLE: 1407487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	50.0	100	70-130	
Chloroethane	ug/L	50	52.3	105	51-130	
Chloroform	ug/L	50	50.3	101	70-130	
Chloromethane	ug/L	50	45.0	90	25-132	
cis-1,2-Dichloroethene	ug/L	50	45.2	90	69-130	
cis-1,3-Dichloropropene	ug/L	50	48.1	96	70-130	
Dibromochloromethane	ug/L	50	50.1	100	70-130	
Dichlorodifluoromethane	ug/L	50	43.5	87	23-130	
Ethylbenzene	ug/L	50	49.8	100	70-136	
Isopropylbenzene (Cumene)	ug/L	50	50.7	101	70-140	
m&p-Xylene	ug/L	100	103	103	70-138	
Methyl-tert-butyl ether	ug/L	50	53.8	108	66-138	
Methylene Chloride	ug/L	50	49.1	98	70-130	
o-Xylene	ug/L	50	49.8	100	70-134	
Styrene	ug/L	50	51.6	103	70-133	
Tetrachloroethene	ug/L	50	50.2	100	70-138	
Toluene	ug/L	50	50.9	102	70-130	
trans-1,2-Dichloroethene	ug/L	50	46.2	92	70-131	
trans-1,3-Dichloropropene	ug/L	50	49.4	99	69-130	
Trichloroethene	ug/L	50	50.0	100	70-130	
Trichlorofluoromethane	ug/L	50	53.4	107	50-150	
Vinyl chloride	ug/L	50	54.8	110	49-130	
4-Bromofluorobenzene (S)	%			93	70-130	
Dibromofluoromethane (S)	%			96	70-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1409836 1409837

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40139484001 Result	Spike Conc.	Spike Conc.	MSD Result								
1,1,1-Trichloroethane	ug/L	<0.50	50	50	49.4	49.2	99	98	70-134	0	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	52.4	53.9	105	108	67-130	3	20		
1,1,2-Trichloroethane	ug/L	<0.20	50	50	52.4	52.5	105	105	70-130	0	20		
1,1-Dichloroethane	ug/L	<0.24	50	50	50.0	49.5	100	99	70-134	1	20		
1,1-Dichloroethene	ug/L	<0.41	50	50	46.1	45.2	92	90	68-136	2	20		
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	48.5	49.6	96	98	62-139	2	20		
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	53.6	53.2	107	106	50-150	1	20		
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	53.0	54.3	106	109	70-130	2	20		
1,2-Dichlorobenzene	ug/L	<0.50	50	50	49.3	50.2	99	100	70-130	2	20		
1,2-Dichloroethane	ug/L	<0.17	50	50	52.0	52.1	104	104	70-130	0	20		
1,2-Dichloropropane	ug/L	<0.23	50	50	51.8	51.9	104	104	70-130	0	20		
1,3-Dichlorobenzene	ug/L	<0.50	50	50	49.8	49.6	100	99	70-131	0	20		
1,4-Dichlorobenzene	ug/L	<0.50	50	50	49.0	49.8	98	100	70-130	2	20		
Benzene	ug/L	<0.50	50	50	49.9	50.7	100	101	57-138	2	20		

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1409836		1409837		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40139484001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromodichloromethane	ug/L	<0.50	50	50	51.1	49.7	102	99	70-130	3	20		
Bromoform	ug/L	<0.50	50	50	54.9	54.1	110	108	70-130	2	20		
Bromomethane	ug/L	<2.4	50	50	49.5	55.0	99	110	33-130	11	27		
Carbon tetrachloride	ug/L	<0.50	50	50	51.5	50.8	103	102	70-138	1	20		
Chlorobenzene	ug/L	<0.50	50	50	49.3	50.4	99	101	70-130	2	20		
Chloroethane	ug/L	<0.37	50	50	52.7	52.6	105	105	51-130	0	20		
Chloroform	ug/L	<2.5	50	50	49.9	49.9	100	100	70-130	0	20		
Chloromethane	ug/L	<0.50	50	50	44.4	46.7	89	93	25-132	5	20		
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	48.1	46.2	96	92	61-140	4	20		
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	49.8	48.2	100	96	70-130	3	20		
Dibromochloromethane	ug/L	<0.50	50	50	50.8	50.9	102	102	70-130	0	20		
Dichlorodifluoromethane	ug/L	<0.22	50	50	42.3	42.7	85	85	23-130	1	20		
Ethylbenzene	ug/L	<0.50	50	50	48.0	46.5	96	93	70-138	3	20		
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	49.5	47.9	99	96	70-152	3	20		
m&p-Xylene	ug/L	<1.0	100	100	91.0	84.0	91	84	70-140	8	20		
Methyl-tert-butyl ether	ug/L	<0.17	50	50	54.4	54.9	109	110	66-139	1	20		
Methylene Chloride	ug/L	<0.23	50	50	50.1	50.1	100	100	70-130	0	20		
o-Xylene	ug/L	<0.50	50	50	44.3	42.8	89	86	70-134	3	20		
Styrene	ug/L	<0.50	50	50	37.0	29.7	74	59	70-138	22	20	M1, R1	
Tetrachloroethene	ug/L	<0.50	50	50	48.6	49.6	97	99	70-148	2	20		
Toluene	ug/L	<0.50	50	50	48.5	49.7	97	99	70-130	2	20		
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	47.9	47.0	96	94	70-133	2	20		
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	49.2	47.8	98	96	69-130	3	20		
Trichloroethene	ug/L	<0.33	50	50	50.3	50.7	101	101	70-131	1	20		
Trichlorofluoromethane	ug/L	<0.18	50	50	51.9	51.9	104	104	50-150	0	20		
Vinyl chloride	ug/L	<0.18	50	50	53.5	53.7	107	107	49-133	0	20		
4-Bromofluorobenzene (S)	%							92	89	70-130			
Dibromofluoromethane (S)	%							96	94	70-130			
Toluene-d8 (S)	%							94	91	70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237560 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40139615008, 40139615009, 40139615010

METHOD BLANK: 1408142 Matrix: Water
Associated Lab Samples: 40139615008, 40139615009, 40139615010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/14/16 07:09	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/14/16 07:09	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/14/16 07:09	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/14/16 07:09	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/14/16 07:09	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/14/16 07:09	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/14/16 07:09	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/14/16 07:09	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/14/16 07:09	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/14/16 07:09	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/14/16 07:09	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/14/16 07:09	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/14/16 07:09	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 07:09	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/14/16 07:09	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/14/16 07:09	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/14/16 07:09	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 07:09	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/14/16 07:09	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 07:09	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/14/16 07:09	
2-Chlorotoluene	ug/L	<0.50	1.0	10/14/16 07:09	
4-Chlorotoluene	ug/L	<0.21	1.0	10/14/16 07:09	
Benzene	ug/L	<0.50	1.0	10/14/16 07:09	
Bromobenzene	ug/L	<0.23	1.0	10/14/16 07:09	
Bromochloromethane	ug/L	<0.34	1.0	10/14/16 07:09	
Bromodichloromethane	ug/L	<0.50	1.0	10/14/16 07:09	
Bromoform	ug/L	<0.50	1.0	10/14/16 07:09	
Bromomethane	ug/L	<2.4	5.0	10/14/16 07:09	
Carbon tetrachloride	ug/L	<0.50	1.0	10/14/16 07:09	
Chlorobenzene	ug/L	<0.50	1.0	10/14/16 07:09	
Chloroethane	ug/L	<0.37	1.0	10/14/16 07:09	
Chloroform	ug/L	<2.5	5.0	10/14/16 07:09	
Chloromethane	ug/L	<0.50	1.0	10/14/16 07:09	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/14/16 07:09	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/14/16 07:09	
Dibromochloromethane	ug/L	<0.50	1.0	10/14/16 07:09	
Dibromomethane	ug/L	<0.43	1.0	10/14/16 07:09	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/14/16 07:09	
Ethylbenzene	ug/L	<0.50	1.0	10/14/16 07:09	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/14/16 07:09	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

METHOD BLANK: 1408142 Matrix: Water
Associated Lab Samples: 40139615008, 40139615009, 40139615010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/14/16 07:09	
m&p-Xylene	ug/L	<1.0	2.0	10/14/16 07:09	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/14/16 07:09	
Methylene Chloride	ug/L	<0.23	1.0	10/14/16 07:09	
n-Butylbenzene	ug/L	<0.50	1.0	10/14/16 07:09	
n-Propylbenzene	ug/L	<0.50	1.0	10/14/16 07:09	
Naphthalene	ug/L	<2.5	5.0	10/14/16 07:09	
o-Xylene	ug/L	<0.50	1.0	10/14/16 07:09	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/14/16 07:09	
sec-Butylbenzene	ug/L	<2.2	5.0	10/14/16 07:09	
Styrene	ug/L	<0.50	1.0	10/14/16 07:09	
tert-Butylbenzene	ug/L	<0.18	1.0	10/14/16 07:09	
Tetrachloroethene	ug/L	<0.50	1.0	10/14/16 07:09	
Toluene	ug/L	<0.50	1.0	10/14/16 07:09	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/14/16 07:09	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/14/16 07:09	
Trichloroethene	ug/L	<0.33	1.0	10/14/16 07:09	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/14/16 07:09	
Vinyl chloride	ug/L	<0.18	1.0	10/14/16 07:09	
4-Bromofluorobenzene (S)	%	93	70-130	10/14/16 07:09	
Dibromofluoromethane (S)	%	100	70-130	10/14/16 07:09	
Toluene-d8 (S)	%	99	70-130	10/14/16 07:09	

LABORATORY CONTROL SAMPLE: 1408143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	51.6	103	70-131	
1,1,2,2-Tetrachloroethane	ug/L	50	46.3	93	67-130	
1,1,2-Trichloroethane	ug/L	50	47.7	95	70-130	
1,1-Dichloroethane	ug/L	50	53.9	108	70-133	
1,1-Dichloroethene	ug/L	50	47.5	95	70-130	
1,2,4-Trichlorobenzene	ug/L	50	44.4	89	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	45.6	91	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	47.9	96	70-130	
1,2-Dichlorobenzene	ug/L	50	47.8	96	70-130	
1,2-Dichloroethane	ug/L	50	49.9	100	70-130	
1,2-Dichloropropane	ug/L	50	49.8	100	70-130	
1,3-Dichlorobenzene	ug/L	50	48.4	97	70-130	
1,4-Dichlorobenzene	ug/L	50	48.8	98	70-130	
Benzene	ug/L	50	51.6	103	60-135	
Bromodichloromethane	ug/L	50	47.8	96	70-130	
Bromoform	ug/L	50	44.8	90	70-130	
Bromomethane	ug/L	50	39.1	78	33-130	
Carbon tetrachloride	ug/L	50	51.1	102	70-138	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

LABORATORY CONTROL SAMPLE: 1408143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	50.2	100	70-130	
Chloroethane	ug/L	50	44.4	89	51-130	
Chloroform	ug/L	50	51.3	103	70-130	
Chloromethane	ug/L	50	33.6	67	25-132	
cis-1,2-Dichloroethene	ug/L	50	52.2	104	69-130	
cis-1,3-Dichloropropene	ug/L	50	48.8	98	70-130	
Dibromochloromethane	ug/L	50	47.9	96	70-130	
Dichlorodifluoromethane	ug/L	50	29.1	58	23-130	
Ethylbenzene	ug/L	50	52.2	104	70-136	
Isopropylbenzene (Cumene)	ug/L	50	53.2	106	70-140	
m&p-Xylene	ug/L	100	105	105	70-138	
Methyl-tert-butyl ether	ug/L	50	49.8	100	66-138	
Methylene Chloride	ug/L	50	48.1	96	70-130	
o-Xylene	ug/L	50	52.0	104	70-134	
Styrene	ug/L	50	51.7	103	70-133	
Tetrachloroethene	ug/L	50	47.7	95	70-138	
Toluene	ug/L	50	51.5	103	70-130	
trans-1,2-Dichloroethene	ug/L	50	46.3	93	70-131	
trans-1,3-Dichloropropene	ug/L	50	50.7	101	69-130	
Trichloroethene	ug/L	50	49.6	99	70-130	
Trichlorofluoromethane	ug/L	50	50.8	102	50-150	
Vinyl chloride	ug/L	50	46.0	92	49-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1408144 1408145

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40139746014 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	<0.50	50	50	49.9	51.4	100	103	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	44.2	48.6	88	97	67-130	9	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	44.3	48.2	89	96	70-130	8	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	51.5	41.6	103	83	70-134	21	20	R1
1,1-Dichloroethene	ug/L	<0.41	50	50	42.8	49.5	86	99	68-136	15	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	44.7	47.6	88	93	62-139	6	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	43.0	49.9	86	100	50-150	15	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	44.9	49.2	90	98	70-130	9	20	
1,2-Dichlorobenzene	ug/L	<0.50	50	50	48.4	51.2	97	102	70-130	6	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	46.8	50.9	94	102	70-130	8	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	45.7	52.2	91	104	70-130	13	20	
1,3-Dichlorobenzene	ug/L	<0.50	50	50	48.5	50.9	97	101	70-131	5	20	
1,4-Dichlorobenzene	ug/L	<0.50	50	50	49.1	51.7	98	103	70-130	5	20	
Benzene	ug/L	<0.50	50	50	50.6	52.7	101	105	57-138	4	20	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Parameter	Units	40139746014		MS		MSD		MS		MSD		% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	MSD % Rec								
MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			1408144				1408145									
Bromodichloromethane	ug/L	<0.50	50	50	47.2	51.0	94	102	70-130	8	20					
Bromoform	ug/L	<0.50	50	50	42.4	46.2	85	92	70-130	9	20					
Bromomethane	ug/L	<2.4	50	50	43.9	45.5	88	91	33-130	3	27					
Carbon tetrachloride	ug/L	<0.50	50	50	51.6	53.2	103	106	70-138	3	20					
Chlorobenzene	ug/L	<0.50	50	50	49.3	51.3	99	103	70-130	4	20					
Chloroethane	ug/L	<0.37	50	50	41.4	43.3	83	87	51-130	5	20					
Chloroform	ug/L	<2.5	50	50	49.1	52.1	98	104	70-130	6	20					
Chloromethane	ug/L	<0.50	50	50	31.1	33.3	62	67	25-132	7	20					
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	50.0	52.0	100	104	61-140	4	20					
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	49.1	52.6	98	105	70-130	7	20					
Dibromochloromethane	ug/L	<0.50	50	50	46.5	49.9	93	100	70-130	7	20					
Dichlorodifluoromethane	ug/L	<0.22	50	50	28.2	28.6	56	57	23-130	1	20					
Ethylbenzene	ug/L	<0.50	50	50	51.3	54.2	103	108	70-138	6	20					
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	52.7	56.4	105	113	70-152	7	20					
m&p-Xylene	ug/L	<1.0	100	100	103	108	103	108	70-140	4	20					
Methyl-tert-butyl ether	ug/L	<0.17	50	50	49.7	51.5	99	103	66-139	3	20					
Methylene Chloride	ug/L	<0.23	50	50	48.2	51.9	96	104	70-130	7	20					
o-Xylene	ug/L	<0.50	50	50	51.5	54.2	103	108	70-134	5	20					
Styrene	ug/L	<0.50	50	50	50.6	53.8	101	108	70-138	6	20					
Tetrachloroethene	ug/L	<0.50	50	50	46.8	50.1	94	100	70-148	7	20					
Toluene	ug/L	<0.50	50	50	51.0	53.2	102	106	70-130	4	20					
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	50.1	51.8	100	104	70-133	3	20					
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	47.6	51.7	95	103	69-130	8	20					
Trichloroethene	ug/L	<0.33	50	50	49.3	52.6	99	105	70-131	7	20					
Trichlorofluoromethane	ug/L	<0.18	50	50	52.0	50.5	104	101	50-150	3	20					
Vinyl chloride	ug/L	<0.18	50	50	44.2	45.5	88	91	49-133	3	20					
4-Bromofluorobenzene (S)	%						96	101	70-130							
Dibromofluoromethane (S)	%						101	98	70-130							
Toluene-d8 (S)	%						98	99	70-130							

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237951 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40139615011, 40139615012

METHOD BLANK: 1409719 Matrix: Water
Associated Lab Samples: 40139615011, 40139615012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/14/16 06:55	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/14/16 06:55	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/14/16 06:55	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/14/16 06:55	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/14/16 06:55	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/14/16 06:55	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/14/16 06:55	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/14/16 06:55	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/14/16 06:55	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/14/16 06:55	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/14/16 06:55	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/14/16 06:55	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/14/16 06:55	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 06:55	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/14/16 06:55	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/14/16 06:55	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/14/16 06:55	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 06:55	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/14/16 06:55	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/14/16 06:55	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/14/16 06:55	
2-Chlorotoluene	ug/L	<0.50	1.0	10/14/16 06:55	
4-Chlorotoluene	ug/L	<0.21	1.0	10/14/16 06:55	
Benzene	ug/L	<0.50	1.0	10/14/16 06:55	
Bromobenzene	ug/L	<0.23	1.0	10/14/16 06:55	
Bromochloromethane	ug/L	<0.34	1.0	10/14/16 06:55	
Bromodichloromethane	ug/L	<0.50	1.0	10/14/16 06:55	
Bromoform	ug/L	<0.50	1.0	10/14/16 06:55	
Bromomethane	ug/L	<2.4	5.0	10/14/16 06:55	
Carbon tetrachloride	ug/L	<0.50	1.0	10/14/16 06:55	
Chlorobenzene	ug/L	<0.50	1.0	10/14/16 06:55	
Chloroethane	ug/L	<0.37	1.0	10/14/16 06:55	
Chloroform	ug/L	<2.5	5.0	10/14/16 06:55	
Chloromethane	ug/L	<0.50	1.0	10/14/16 06:55	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/14/16 06:55	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/14/16 06:55	
Dibromochloromethane	ug/L	<0.50	1.0	10/14/16 06:55	
Dibromomethane	ug/L	<0.43	1.0	10/14/16 06:55	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/14/16 06:55	
Ethylbenzene	ug/L	<0.50	1.0	10/14/16 06:55	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/14/16 06:55	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

METHOD BLANK: 1409719 Matrix: Water
Associated Lab Samples: 40139615011, 40139615012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/14/16 06:55	
m&p-Xylene	ug/L	<1.0	2.0	10/14/16 06:55	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/14/16 06:55	
Methylene Chloride	ug/L	<0.23	1.0	10/14/16 06:55	
n-Butylbenzene	ug/L	<0.50	1.0	10/14/16 06:55	
n-Propylbenzene	ug/L	<0.50	1.0	10/14/16 06:55	
Naphthalene	ug/L	<2.5	5.0	10/14/16 06:55	
o-Xylene	ug/L	<0.50	1.0	10/14/16 06:55	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/14/16 06:55	
sec-Butylbenzene	ug/L	<2.2	5.0	10/14/16 06:55	
Styrene	ug/L	<0.50	1.0	10/14/16 06:55	
tert-Butylbenzene	ug/L	<0.18	1.0	10/14/16 06:55	
Tetrachloroethene	ug/L	<0.50	1.0	10/14/16 06:55	
Toluene	ug/L	<0.50	1.0	10/14/16 06:55	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/14/16 06:55	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/14/16 06:55	
Trichloroethene	ug/L	<0.33	1.0	10/14/16 06:55	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/14/16 06:55	
Vinyl chloride	ug/L	<0.18	1.0	10/14/16 06:55	
4-Bromofluorobenzene (S)	%	86	70-130	10/14/16 06:55	
Dibromofluoromethane (S)	%	91	70-130	10/14/16 06:55	
Toluene-d8 (S)	%	95	70-130	10/14/16 06:55	

LABORATORY CONTROL SAMPLE: 1409720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	49.4	99	70-131	
1,1,2,2-Tetrachloroethane	ug/L	50	49.9	100	67-130	
1,1,2-Trichloroethane	ug/L	50	49.9	100	70-130	
1,1-Dichloroethane	ug/L	50	42.0	84	70-133	
1,1-Dichloroethene	ug/L	50	40.9	82	70-130	
1,2,4-Trichlorobenzene	ug/L	50	49.5	99	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	47.8	96	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	55.3	111	70-130	
1,2-Dichlorobenzene	ug/L	50	52.7	105	70-130	
1,2-Dichloroethane	ug/L	50	47.9	96	70-130	
1,2-Dichloropropane	ug/L	50	50.6	101	70-130	
1,3-Dichlorobenzene	ug/L	50	53.2	106	70-130	
1,4-Dichlorobenzene	ug/L	50	51.2	102	70-130	
Benzene	ug/L	50	50.8	102	60-135	
Bromodichloromethane	ug/L	50	51.3	103	70-130	
Bromoform	ug/L	50	48.6	97	70-130	
Bromomethane	ug/L	50	30.6	61	33-130	
Carbon tetrachloride	ug/L	50	51.8	104	70-138	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

LABORATORY CONTROL SAMPLE: 1409720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	55.1	110	70-130	
Chloroethane	ug/L	50	40.9	82	51-130	
Chloroform	ug/L	50	47.8	96	70-130	
Chloromethane	ug/L	50	34.4	69	25-132	
cis-1,2-Dichloroethene	ug/L	50	39.9	80	69-130	
cis-1,3-Dichloropropene	ug/L	50	48.5	97	70-130	
Dibromochloromethane	ug/L	50	54.1	108	70-130	
Dichlorodifluoromethane	ug/L	50	31.0	62	23-130	
Ethylbenzene	ug/L	50	54.7	109	70-136	
Isopropylbenzene (Cumene)	ug/L	50	54.9	110	70-140	
m&p-Xylene	ug/L	100	111	111	70-138	
Methyl-tert-butyl ether	ug/L	50	40.4	81	66-138	
Methylene Chloride	ug/L	50	41.3	83	70-130	
o-Xylene	ug/L	50	55.0	110	70-134	
Styrene	ug/L	50	53.0	106	70-133	
Tetrachloroethene	ug/L	50	57.5	115	70-138	
Toluene	ug/L	50	53.6	107	70-130	
trans-1,2-Dichloroethene	ug/L	50	41.3	83	70-131	
trans-1,3-Dichloropropene	ug/L	50	48.6	97	69-130	
Trichloroethene	ug/L	50	53.3	107	70-130	
Trichlorofluoromethane	ug/L	50	46.0	92	50-150	
Vinyl chloride	ug/L	50	44.4	89	49-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Dibromofluoromethane (S)	%			95	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1410881 1410882

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40139749001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	<0.50	50	50	49.1	50.4	98	101	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	50.0	50.3	100	101	67-130	0	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	51.3	50.8	103	102	70-130	1	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	37.1	42.5	74	85	70-134	13	20	
1,1-Dichloroethene	ug/L	<0.41	50	50	35.5	41.2	71	82	68-136	15	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	50.7	51.0	100	101	62-139	1	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	48.9	48.7	98	97	50-150	0	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	53.9	53.9	108	108	70-130	0	20	
1,2-Dichlorobenzene	ug/L	<0.50	50	50	53.0	52.9	106	106	70-130	0	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	41.0	48.5	82	97	70-130	17	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	49.9	50.6	100	101	70-130	1	20	
1,3-Dichlorobenzene	ug/L	<0.50	50	50	53.7	54.2	107	108	70-131	1	20	
1,4-Dichlorobenzene	ug/L	<0.50	50	50	51.0	52.4	102	105	70-130	3	20	
Benzene	ug/L	<0.50	50	50	44.2	52.2	88	104	57-138	17	20	

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1410881		1410882		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40139749001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Bromodichloromethane	ug/L	<0.50	50	50	51.8	52.3	104	105	70-130	1	20	
Bromoform	ug/L	<0.50	50	50	49.8	48.8	100	98	70-130	2	20	
Bromomethane	ug/L	<2.4	50	50	26.7	32.4	53	65	33-130	19	27	
Carbon tetrachloride	ug/L	<0.50	50	50	51.4	53.6	103	107	70-138	4	20	
Chlorobenzene	ug/L	<0.50	50	50	55.0	54.9	110	110	70-130	0	20	
Chloroethane	ug/L	<0.37	50	50	35.9	41.9	72	84	51-130	15	20	
Chloroform	ug/L	<2.5	50	50	47.7	49.5	95	99	70-130	4	20	
Chloromethane	ug/L	<0.50	50	50	28.7	34.2	57	68	25-132	18	20	
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	36.2	38.7	72	77	61-140	7	20	
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	49.2	49.5	98	99	70-130	1	20	
Dibromochloromethane	ug/L	<0.50	50	50	54.7	54.5	109	109	70-130	0	20	
Dichlorodifluoromethane	ug/L	<0.22	50	50	24.6	29.5	49	59	23-130	18	20	
Ethylbenzene	ug/L	<0.50	50	50	55.6	54.7	111	109	70-138	2	20	
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	55.7	55.1	111	110	70-152	1	20	
m&p-Xylene	ug/L	<1.0	100	100	112	112	112	111	70-140	1	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	35.1	41.5	70	83	66-139	17	20	
Methylene Chloride	ug/L	<0.23	50	50	35.4	42.5	71	85	70-130	18	20	
o-Xylene	ug/L	<0.50	50	50	54.7	53.2	109	106	70-134	3	20	
Styrene	ug/L	<0.50	50	50	52.0	51.4	104	103	70-138	1	20	
Tetrachloroethene	ug/L	0.58J	50	50	59.1	56.8	117	112	70-148	4	20	
Toluene	ug/L	<0.50	50	50	54.3	53.9	109	108	70-130	1	20	
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	36.2	43.3	72	87	70-133	18	20	
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	49.0	48.4	98	97	69-130	1	20	
Trichloroethene	ug/L	<0.33	50	50	54.0	53.9	108	108	70-131	0	20	
Trichlorofluoromethane	ug/L	<0.18	50	50	38.9	46.0	78	92	50-150	17	20	
Vinyl chloride	ug/L	<0.18	50	50	38.6	45.0	77	90	49-133	15	20	
4-Bromofluorobenzene (S)	%						97	97	70-130			
Dibromofluoromethane (S)	%						92	97	70-130			
Toluene-d8 (S)	%						97	96	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237494 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40139615001, 40139615002, 40139615003, 40139615004, 40139615005

METHOD BLANK: 1407451 Matrix: Water
Associated Lab Samples: 40139615001, 40139615002, 40139615003, 40139615004, 40139615005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/10/16 16:12	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/10/16 16:12	
Benzene	ug/L	<0.50	1.0	10/10/16 16:12	
Ethylbenzene	ug/L	<0.50	1.0	10/10/16 16:12	
m&p-Xylene	ug/L	<1.0	2.0	10/10/16 16:12	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/10/16 16:12	
o-Xylene	ug/L	<0.50	1.0	10/10/16 16:12	
Toluene	ug/L	<0.50	1.0	10/10/16 16:12	
4-Bromofluorobenzene (S)	%	85	70-130	10/10/16 16:12	
Dibromofluoromethane (S)	%	100	70-130	10/10/16 16:12	
Toluene-d8 (S)	%	90	70-130	10/10/16 16:12	

LABORATORY CONTROL SAMPLE: 1407452

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.0	90	60-135	
Ethylbenzene	ug/L	20	17.8	89	70-136	
m&p-Xylene	ug/L	40	39.4	98	70-138	
Methyl-tert-butyl ether	ug/L	20	15.9	80	66-138	
o-Xylene	ug/L	20	18.6	93	70-134	
Toluene	ug/L	20	17.5	87	70-130	
4-Bromofluorobenzene (S)	%			89	70-130	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			92	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1408608 1408609

Parameter	Units	40139530042		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Benzene	ug/L	4.5	50	50	51.8	52.1	95	95	57-138	1	20		
Ethylbenzene	ug/L	<1.0	50	50	49.3	49.0	98	98	70-138	1	20		
m&p-Xylene	ug/L	<2.0	100	100	104	104	104	104	70-140	0	20		
Methyl-tert-butyl ether	ug/L	<1.0	50	50	34.4	31.7	69	63	66-139	8	20	M1	
o-Xylene	ug/L	<1.0	50	50	50.8	49.9	101	99	70-134	2	20		
Toluene	ug/L	<1.0	50	50	47.8	46.6	95	92	70-130	3	20		
4-Bromofluorobenzene (S)	%						92	92	70-130				
Dibromofluoromethane (S)	%						105	99	70-130				
Toluene-d8 (S)	%						91	90	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237572 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40139615013, 40139615014

METHOD BLANK: 1408185 Matrix: Water
Associated Lab Samples: 40139615013, 40139615014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/12/16 09:46	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/12/16 09:46	
Benzene	ug/L	<0.50	1.0	10/12/16 09:46	
Ethylbenzene	ug/L	<0.50	1.0	10/12/16 09:46	
m&p-Xylene	ug/L	<1.0	2.0	10/12/16 09:46	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/12/16 09:46	
Naphthalene	ug/L	<2.5	5.0	10/12/16 09:46	
o-Xylene	ug/L	<0.50	1.0	10/12/16 09:46	
Toluene	ug/L	<0.50	1.0	10/12/16 09:46	
4-Bromofluorobenzene (S)	%	85	70-130	10/12/16 09:46	
Dibromofluoromethane (S)	%	128	70-130	10/12/16 09:46	
Toluene-d8 (S)	%	96	70-130	10/12/16 09:46	

LABORATORY CONTROL SAMPLE: 1408186

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	56.3	113	60-135	
Ethylbenzene	ug/L	50	57.6	115	70-136	
m&p-Xylene	ug/L	100	120	120	70-138	
Methyl-tert-butyl ether	ug/L	50	57.3	115	66-138	
o-Xylene	ug/L	50	58.2	116	70-134	
Toluene	ug/L	50	59.0	118	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Dibromofluoromethane (S)	%			127	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1409361 1409362

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40139746025 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<0.50	50	50	58.0	58.0	116	116	57-138	0	20	
Ethylbenzene	ug/L	<0.50	50	50	57.0	57.6	114	115	70-138	1	20	
m&p-Xylene	ug/L	<1.0	100	100	121	123	121	123	70-140	1	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	58.8	59.5	118	119	66-139	1	20	
o-Xylene	ug/L	<0.50	50	50	57.5	58.5	115	117	70-134	2	20	
Toluene	ug/L	0.56J	50	50	59.3	60.4	118	120	70-130	2	20	
4-Bromofluorobenzene (S)	%						101	103	70-130			
Dibromofluoromethane (S)	%						108	127	70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1409361		1409362									
Parameter	Units	40139746025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						97	99	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET
Pace Project No.: 40139615

QC Batch: 237908 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40139615006, 40139615007, 40139615015, 40139615016, 40139615017, 40139615018

METHOD BLANK: 1409580 Matrix: Water
Associated Lab Samples: 40139615006, 40139615007, 40139615015, 40139615016, 40139615017, 40139615018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/12/16 15:57	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/12/16 15:57	
Benzene	ug/L	<0.50	1.0	10/12/16 15:57	
Ethylbenzene	ug/L	<0.50	1.0	10/12/16 15:57	
m&p-Xylene	ug/L	<1.0	2.0	10/12/16 15:57	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/12/16 15:57	
Naphthalene	ug/L	<2.5	5.0	10/12/16 15:57	
o-Xylene	ug/L	<0.50	1.0	10/12/16 15:57	
Toluene	ug/L	<0.50	1.0	10/12/16 15:57	
4-Bromofluorobenzene (S)	%	87	70-130	10/12/16 15:57	
Dibromofluoromethane (S)	%	96	70-130	10/12/16 15:57	
Toluene-d8 (S)	%	98	70-130	10/12/16 15:57	

LABORATORY CONTROL SAMPLE: 1409581

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	51.3	103	60-135	
Ethylbenzene	ug/L	50	54.0	108	70-136	
m&p-Xylene	ug/L	100	109	109	70-138	
Methyl-tert-butyl ether	ug/L	50	42.0	84	66-138	
o-Xylene	ug/L	50	53.2	106	70-134	
Toluene	ug/L	50	53.7	107	70-130	
4-Bromofluorobenzene (S)	%			96	70-130	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1409582 1409583

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40139750021 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<0.50	50	50	50.4	50.7	101	101	57-138	0	20	
Ethylbenzene	ug/L	<0.50	50	50	53.0	53.9	106	108	70-138	2	20	
m&p-Xylene	ug/L	<1.0	100	100	107	107	107	106	70-140	0	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	40.1	41.2	80	82	66-139	3	20	
o-Xylene	ug/L	<0.50	50	50	51.7	53.0	103	106	70-134	2	20	
Toluene	ug/L	<0.50	50	50	51.9	52.6	104	105	70-130	2	20	
4-Bromofluorobenzene (S)	%						100	97	70-130			
Dibromofluoromethane (S)	%						98	98	70-130			

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QUALITY CONTROL DATA

Project: 34265.003 CALUMET

Pace Project No.: 40139615

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1409582		1409583									
Parameter	Units	40139750021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						97	96	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 CALUMET

Pace Project No.: 40139615

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

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

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

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 CALUMET

Pace Project No.: 40139615

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40139615020	LRS-1	EPA 8021	237415		
40139615021	LRS-2	EPA 8021	237415		
40139615022	LRS-3	EPA 8021	237415		
40139615023	LRS-4	EPA 8021	237415		
40139615024	LRS-6	EPA 8021	237415		
40139615025	LRS-8	EPA 8021	237415		
40139615026	MW-1/FL	EPA 8021	237415		
40139615027	MW-2/FL	EPA 8021	237415		
40139615028	MW-3/FL	EPA 8021	237415		
40139615029	MW-9/FL	EPA 8021	237415		
40139615030	MW-10/FL	EPA 8021	237415		
40139615031	MW-11/FL	EPA 8021	237415		
40139615032	MW-13/FL	EPA 8021	237415		
40139615033	MW-14/FL	EPA 8021	237415		
40139615008	MW-1/T68	EPA 8260	237560		
40139615009	MW-2/T68	EPA 8260	237560		
40139615010	MW-4/T68	EPA 8260	237560		
40139615011	MW-5/T66	EPA 8260	237951		
40139615012	MW-6/T68	EPA 8260	237951		
40139615019	TRIP BLANK	EPA 8260	237506		
40139615001	MW-1/T40	EPA 8260	237494		
40139615002	MW-2/T40	EPA 8260	237494		
40139615003	MW-4/T40	EPA 8260	237494		
40139615004	MW-5/T40	EPA 8260	237494		
40139615005	MW-6/T40	EPA 8260	237494		
40139615006	MW-7/T40	EPA 8260	237908		
40139615007	TS-1/T40	EPA 8260	237908		
40139615013	MW-1R/T70	EPA 8260	237572		
40139615014	MW-2R/T70	EPA 8260	237572		
40139615015	MW-3/T70	EPA 8260	237908		
40139615016	MW-4/T70	EPA 8260	237908		
40139615017	MW-5/T70	EPA 8260	237908		
40139615018	MW-6/T70	EPA 8260	237908		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming
 Branch/Location: Madison
 Project Contact: Cliff Wright
 Phone: 608 836 1500
 Project Number: 34265.003
 Project Name: Calumet
 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

Page 1 of 3

40139615

Page 72 of 72

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	Matrix Codes
N	B	PVOCs 8260	W = Water
N	B	VOCs 8260	DW = Drinking Water
N	B	PVOCs/Naph 8260	GW = Ground Water
			SW = Surface Water
			WW = Waste Water
			WP = Wipe

Quote #: Pace 2016
 Mail To Contact: Cliff Wright
 Mail To Company: GF
 Mail To Address: 8025 Excelsior
Madison, WI 53717
 Invoice To Contact: _____
 Invoice To Company: See above ↑
 Invoice To Address: _____
 Invoice To Phone: _____
 CLIENT COMMENTS: _____
 LAB COMMENTS (Lab Use Only): 3-40ml vB
 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 B = Biota C = Charcoal O = Oil S = Soil SI = Sludge
 W = Water DW = Drinking Water GW = Ground Water SW = Surface Water WW = Waste Water WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW-1/T40	10/5	14:00	6W
002	MW-2/T40		1410	
003	MW-4/T40		13:45	
004	MW-5/T40		13:25	
005	MW-6/T40		1335	
006	MW-7/T40		1340	
007	TS-1/T40		13:20	
008	MW-1/T68		1415	
009	MW-2/T68		1430	
010	MW-4/T68		1440	
011	MW-5/T66		1450	
012	MW-6/T68		1445	
013	MW-1R/T70		1540	

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: 10/5, 1700
 Relinquished By: Fed Ex Date/Time: 10/16/16 0910
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____
 Received By: [Signature] pace Date/Time: 10/16/16 0910
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____

PACE Project No. 40139615
 Receipt Temp = RSL °C
 Sample Receipt pH OK / Adjusted
 Cooler Custody Seal Present / Not Present
 Intact / Not Intact

(Please Print Clearly)

UPPER MIDWEST REGION

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



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	Matrix Codes
N	B	PVOCs Naph
N	B	8260
		PVOCs 8021

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	
014	MW-2R/T70	10/5	15:10	6W
015	MW-3/T70		15:30	
016	MW-4/T70		15:35	
017	MW-5/T70		15:15	
018	MW-6/T70		15:25	
019	Trip Blank			
020	LRS-1	10/5	10:45	GW
021	LRS-2		10:55	
022	LRS-3		11:15	
023	LRS-4		11:30	
024	LRS-6		11:10	
025	LRS-8		11:45	
026	MW-1/FL		10:30	

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

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	3-40mlvB	
	2-40mlvB	
	3-40mlvB	

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>Marcus</i>	Date/Time: 10/5, 1700
Relinquished By: <i>Fed Ex</i>	Date/Time: 10/6/11 0910
Relinquished By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____

Received By: <i>[Signature]</i>	Date/Time: 10/6/11 0910
Received By: _____	Date/Time: _____
Received By: _____	Date/Time: _____
Received By: _____	Date/Time: _____

PACE Project No. 40139015

Receipt Temp = *ROI*°C

Sample Receipt pH *-OK / Adjusted*

Cooler Custody Seal *Present / Not Present*
 Intact / Not Intact

(Please Print Clearly)



UPPER MIDWEST REGION

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

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

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 8021																

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 Invoice To Phone: _____
 CLIENT COMMENTS: _____
 LAB COMMENTS (Lab Use Only): *3-40mlVB*
 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
 SI = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
027	MW-2/FL	10/5	1025	GW
028	MW-3/FL		1020	
029	MW-4/FL		1215	
030	MW-10/FL		1215	
031	MW-11/FL		1200	
032	MW-13/FL		1155	
033	MW-14/FL		1150	

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: *[Signature]* Date/Time: *10/5/1700*
 Relinquished By: *Fed Ex* Date/Time: *10/6/16 0910*
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____
 Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____
 Received By: *[Signature]* Date/Time: *pace 10/6/16 0910*
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____
 Received By: _____ Date/Time: _____

PACE Project No. *40139015*
 Receipt Temp = *ROJ* °C
 Sample Receipt pH *OK / Adjusted*
 Cooler Custody Seal *Present / Not Present*
 Intact / Not Intact *Present / Not Present*

Sample Condition Upon Receipt

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



Project #: **WO# : 40139615**

Client Name: Gannett Fleming

Courier: Fed Ex UPS Client Pace Other: _____

Tracking #: 8103 9247 1304



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

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

Temp Blank Present: yes no

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

Person examining contents:
Date: 10/6/16
Initials: BJD

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
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 type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>all - ED mw - 5/T60 mm10616</u>
-Includes date/time/ID/Analysis Matrix:	<u>max 10616</u> <u>W</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: (VOA coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER: _____)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	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>369</u>		

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ If checked, see attached form for additional comments

Comments/ Resolution: _____

Project Manager Review:

AMH for DM

Date:

10/6/16

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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SUMMARY OF DETECTION

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40150095010	MW-2/CW					
EPA 8260	1,2,4-Trimethylbenzene	399	ug/L	40.0	05/19/17 14:16	
EPA 8260	1,3,5-Trimethylbenzene	138	ug/L	40.0	05/19/17 14:16	
EPA 8260	Benzene	5090	ug/L	40.0	05/19/17 14:16	
EPA 8260	Ethylbenzene	202	ug/L	40.0	05/19/17 14:16	
EPA 8260	Toluene	197	ug/L	40.0	05/19/17 14:16	
EPA 8260	m&p-Xylene	986	ug/L	80.0	05/19/17 14:16	
EPA 8260	o-Xylene	299	ug/L	40.0	05/19/17 14:16	
40150095011	MW-3/CW					
EPA 8260	1,2,4-Trimethylbenzene	1370	ug/L	100	05/19/17 14:38	
EPA 8260	1,3,5-Trimethylbenzene	372	ug/L	100	05/19/17 14:38	
EPA 8260	Benzene	11000	ug/L	100	05/19/17 14:38	
EPA 8260	Ethylbenzene	2070	ug/L	100	05/19/17 14:38	
EPA 8260	Toluene	306	ug/L	100	05/19/17 14:38	
EPA 8260	m&p-Xylene	5670	ug/L	200	05/19/17 14:38	
EPA 8260	o-Xylene	278	ug/L	100	05/19/17 14:38	
40150095012	MW-4/CW					
EPA 8260	1,2,4-Trimethylbenzene	1340	ug/L	50.0	05/19/17 15:00	
EPA 8260	1,3,5-Trimethylbenzene	346	ug/L	50.0	05/19/17 15:00	
EPA 8260	Benzene	7490	ug/L	50.0	05/19/17 15:00	
EPA 8260	Ethylbenzene	772	ug/L	50.0	05/19/17 15:00	
EPA 8260	Naphthalene	154J	ug/L	250	05/19/17 15:00	
EPA 8260	Toluene	241	ug/L	50.0	05/19/17 15:00	
EPA 8260	m&p-Xylene	3830	ug/L	100	05/19/17 15:00	
EPA 8260	o-Xylene	552	ug/L	50.0	05/19/17 15:00	
40150095013	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	944	ug/L	25.0	05/19/17 15:21	
EPA 8260	1,3,5-Trimethylbenzene	308	ug/L	25.0	05/19/17 15:21	
EPA 8260	Benzene	1790	ug/L	25.0	05/19/17 15:21	
EPA 8260	Ethylbenzene	815	ug/L	25.0	05/19/17 15:21	
EPA 8260	m&p-Xylene	5150	ug/L	50.0	05/19/17 15:21	
EPA 8260	o-Xylene	100	ug/L	25.0	05/19/17 15:21	
40150095014	MW-2/T40					
EPA 8260	1,2,4-Trimethylbenzene	1080	ug/L	100	05/19/17 15:42	
EPA 8260	1,3,5-Trimethylbenzene	312	ug/L	100	05/19/17 15:42	
EPA 8260	Benzene	11500	ug/L	100	05/19/17 15:42	
EPA 8260	Ethylbenzene	1640	ug/L	100	05/19/17 15:42	
EPA 8260	Toluene	4730	ug/L	100	05/19/17 15:42	
EPA 8260	m&p-Xylene	7220	ug/L	200	05/19/17 15:42	
EPA 8260	o-Xylene	3250	ug/L	100	05/19/17 15:42	
40150095015	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	1030	ug/L	100	05/19/17 16:04	
EPA 8260	1,3,5-Trimethylbenzene	255	ug/L	100	05/19/17 16:04	
EPA 8260	Benzene	10200	ug/L	100	05/19/17 16:04	
EPA 8260	Ethylbenzene	807	ug/L	100	05/19/17 16:04	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 CALUMET SUPERIOR
Pace Project No.: 40150095

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40150095015	MW-4/T40					
EPA 8260	m&p-Xylene	4700	ug/L	200	05/19/17 16:04	
EPA 8260	o-Xylene	2420	ug/L	100	05/19/17 16:04	
40150095016	MW-5/T40					
EPA 8260	1,2,4-Trimethylbenzene	193	ug/L	2.5	05/19/17 16:25	
EPA 8260	1,3,5-Trimethylbenzene	54.7	ug/L	2.5	05/19/17 16:25	
EPA 8260	Benzene	43.6	ug/L	2.5	05/19/17 16:25	
EPA 8260	Ethylbenzene	259	ug/L	2.5	05/19/17 16:25	
EPA 8260	m&p-Xylene	667	ug/L	5.0	05/19/17 16:25	
EPA 8260	o-Xylene	1.5J	ug/L	2.5	05/19/17 16:25	
40150095017	MW-6/T40					
EPA 8260	1,2,4-Trimethylbenzene	87.0	ug/L	4.0	05/19/17 16:47	
EPA 8260	1,3,5-Trimethylbenzene	22.6	ug/L	4.0	05/19/17 16:47	
EPA 8260	Benzene	607	ug/L	4.0	05/19/17 16:47	
EPA 8260	Ethylbenzene	342	ug/L	4.0	05/19/17 16:47	
EPA 8260	m&p-Xylene	473	ug/L	8.0	05/19/17 16:47	
EPA 8260	o-Xylene	2.2J	ug/L	4.0	05/19/17 16:47	
40150095018	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	421	ug/L	20.0	05/19/17 17:08	
EPA 8260	1,3,5-Trimethylbenzene	120	ug/L	20.0	05/19/17 17:08	
EPA 8260	Benzene	2670	ug/L	20.0	05/19/17 17:08	
EPA 8260	Ethylbenzene	528	ug/L	20.0	05/19/17 17:08	
EPA 8260	Toluene	25.8	ug/L	20.0	05/19/17 17:08	
EPA 8260	m&p-Xylene	2330	ug/L	40.0	05/19/17 17:08	
EPA 8260	o-Xylene	904	ug/L	20.0	05/19/17 17:08	
40150095019	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	2.1	ug/L	1.0	05/19/17 13:55	
EPA 8260	1,3,5-Trimethylbenzene	1.1	ug/L	1.0	05/19/17 13:55	
EPA 8260	Benzene	0.67J	ug/L	1.0	05/19/17 13:55	
EPA 8260	Ethylbenzene	1.0	ug/L	1.0	05/19/17 13:55	
40150095021	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	2450	ug/L	200	05/18/17 14:31	
EPA 8260	1,2-Dichloroethane	1420	ug/L	200	05/18/17 14:31	
EPA 8260	1,3,5-Trimethylbenzene	742	ug/L	200	05/18/17 14:31	
EPA 8260	Benzene	22100	ug/L	200	05/18/17 14:31	
EPA 8260	Ethylbenzene	933	ug/L	200	05/18/17 14:31	
EPA 8260	Toluene	19200	ug/L	200	05/18/17 14:31	
EPA 8260	m&p-Xylene	10300	ug/L	400	05/18/17 14:31	
EPA 8260	o-Xylene	5100	ug/L	200	05/18/17 14:31	
40150095022	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	606	ug/L	40.0	05/19/17 10:21	
EPA 8260	1,3,5-Trimethylbenzene	68.5	ug/L	40.0	05/19/17 10:21	
EPA 8260	Benzene	3930	ug/L	40.0	05/19/17 10:21	
EPA 8260	Ethylbenzene	602	ug/L	40.0	05/19/17 10:21	
EPA 8260	Isopropylbenzene (Cumene)	10.4J	ug/L	40.0	05/19/17 10:21	

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.

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-1/T40 **Lab ID: 40150095013** Collected: 05/16/17 14:30 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	944	ug/L	25.0	12.5	25		05/19/17 15:21	95-63-6	
1,3,5-Trimethylbenzene	308	ug/L	25.0	12.5	25		05/19/17 15:21	108-67-8	
Benzene	1790	ug/L	25.0	12.5	25		05/19/17 15:21	71-43-2	
Ethylbenzene	815	ug/L	25.0	12.5	25		05/19/17 15:21	100-41-4	
Methyl-tert-butyl ether	<4.4	ug/L	25.0	4.4	25		05/19/17 15:21	1634-04-4	
Toluene	<12.5	ug/L	25.0	12.5	25		05/19/17 15:21	108-88-3	
m&p-Xylene	5150	ug/L	50.0	25.0	25		05/19/17 15:21	179601-23-1	
o-Xylene	100	ug/L	25.0	12.5	25		05/19/17 15:21	95-47-6	
Surrogates									
Dibromofluoromethane (S)	94	%	67-124		25		05/19/17 15:21	1868-53-7	
Toluene-d8 (S)	97	%	80-120		25		05/19/17 15:21	2037-26-5	
4-Bromofluorobenzene (S)	97	%	61-118		25		05/19/17 15:21	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-2/T40 **Lab ID: 40150095014** Collected: 05/16/17 14:35 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1080	ug/L	100	50.0	100		05/19/17 15:42	95-63-6	
1,3,5-Trimethylbenzene	312	ug/L	100	50.0	100		05/19/17 15:42	108-67-8	
Benzene	11500	ug/L	100	50.0	100		05/19/17 15:42	71-43-2	
Ethylbenzene	1640	ug/L	100	50.0	100		05/19/17 15:42	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		05/19/17 15:42	1634-04-4	
Toluene	4730	ug/L	100	50.0	100		05/19/17 15:42	108-88-3	
m&p-Xylene	7220	ug/L	200	100	100		05/19/17 15:42	179601-23-1	
o-Xylene	3250	ug/L	100	50.0	100		05/19/17 15:42	95-47-6	
Surrogates									
Dibromofluoromethane (S)	97	%	67-124		100		05/19/17 15:42	1868-53-7	
Toluene-d8 (S)	95	%	80-120		100		05/19/17 15:42	2037-26-5	
4-Bromofluorobenzene (S)	97	%	61-118		100		05/19/17 15:42	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-4/T40 **Lab ID: 40150095015** Collected: 05/16/17 14:55 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	1030	ug/L	100	50.0	100		05/19/17 16:04	95-63-6	
1,3,5-Trimethylbenzene	255	ug/L	100	50.0	100		05/19/17 16:04	108-67-8	
Benzene	10200	ug/L	100	50.0	100		05/19/17 16:04	71-43-2	
Ethylbenzene	807	ug/L	100	50.0	100		05/19/17 16:04	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		05/19/17 16:04	1634-04-4	
Toluene	<50.0	ug/L	100	50.0	100		05/19/17 16:04	108-88-3	
m&p-Xylene	4700	ug/L	200	100	100		05/19/17 16:04	179601-23-1	
o-Xylene	2420	ug/L	100	50.0	100		05/19/17 16:04	95-47-6	
Surrogates									
Dibromofluoromethane (S)	97	%	67-124		100		05/19/17 16:04	1868-53-7	
Toluene-d8 (S)	99	%	80-120		100		05/19/17 16:04	2037-26-5	
4-Bromofluorobenzene (S)	100	%	61-118		100		05/19/17 16:04	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-5/T40 **Lab ID: 40150095016** Collected: 05/16/17 14:40 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	193	ug/L	2.5	1.2	2.5		05/19/17 16:25	95-63-6	
1,3,5-Trimethylbenzene	54.7	ug/L	2.5	1.2	2.5		05/19/17 16:25	108-67-8	
Benzene	43.6	ug/L	2.5	1.2	2.5		05/19/17 16:25	71-43-2	
Ethylbenzene	259	ug/L	2.5	1.2	2.5		05/19/17 16:25	100-41-4	
Methyl-tert-butyl ether	<0.44	ug/L	2.5	0.44	2.5		05/19/17 16:25	1634-04-4	
Toluene	<1.2	ug/L	2.5	1.2	2.5		05/19/17 16:25	108-88-3	
m&p-Xylene	667	ug/L	5.0	2.5	2.5		05/19/17 16:25	179601-23-1	
o-Xylene	1.5J	ug/L	2.5	1.2	2.5		05/19/17 16:25	95-47-6	
Surrogates									
Dibromofluoromethane (S)	94	%	67-124		2.5		05/19/17 16:25	1868-53-7	
Toluene-d8 (S)	101	%	80-120		2.5		05/19/17 16:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%	61-118		2.5		05/19/17 16:25	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-6/T40 **Lab ID: 40150095017** Collected: 05/16/17 14:45 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	87.0	ug/L	4.0	2.0	4		05/19/17 16:47	95-63-6	
1,3,5-Trimethylbenzene	22.6	ug/L	4.0	2.0	4		05/19/17 16:47	108-67-8	
Benzene	607	ug/L	4.0	2.0	4		05/19/17 16:47	71-43-2	
Ethylbenzene	342	ug/L	4.0	2.0	4		05/19/17 16:47	100-41-4	
Methyl-tert-butyl ether	<0.70	ug/L	4.0	0.70	4		05/19/17 16:47	1634-04-4	
Toluene	<2.0	ug/L	4.0	2.0	4		05/19/17 16:47	108-88-3	
m&p-Xylene	473	ug/L	8.0	4.0	4		05/19/17 16:47	179601-23-1	
o-Xylene	2.2J	ug/L	4.0	2.0	4		05/19/17 16:47	95-47-6	
Surrogates									
Dibromofluoromethane (S)	96	%	67-124		4		05/19/17 16:47	1868-53-7	
Toluene-d8 (S)	99	%	80-120		4		05/19/17 16:47	2037-26-5	
4-Bromofluorobenzene (S)	99	%	61-118		4		05/19/17 16:47	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: MW-7/T40 **Lab ID: 40150095018** Collected: 05/16/17 14:50 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	421	ug/L	20.0	10.0	20		05/19/17 17:08	95-63-6	
1,3,5-Trimethylbenzene	120	ug/L	20.0	10.0	20		05/19/17 17:08	108-67-8	
Benzene	2670	ug/L	20.0	10.0	20		05/19/17 17:08	71-43-2	
Ethylbenzene	528	ug/L	20.0	10.0	20		05/19/17 17:08	100-41-4	
Methyl-tert-butyl ether	<3.5	ug/L	20.0	3.5	20		05/19/17 17:08	1634-04-4	
Toluene	25.8	ug/L	20.0	10.0	20		05/19/17 17:08	108-88-3	
m&p-Xylene	2330	ug/L	40.0	20.0	20		05/19/17 17:08	179601-23-1	
o-Xylene	904	ug/L	20.0	10.0	20		05/19/17 17:08	95-47-6	
Surrogates									
Dibromofluoromethane (S)	96	%	67-124		20		05/19/17 17:08	1868-53-7	
Toluene-d8 (S)	98	%	80-120		20		05/19/17 17:08	2037-26-5	
4-Bromofluorobenzene (S)	98	%	61-118		20		05/19/17 17:08	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 CALUMET SUPERIOR

Pace Project No.: 40150095

Sample: TS-1/T40 **Lab ID: 40150095019** Collected: 05/16/17 15:00 Received: 05/17/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	2.1	ug/L	1.0	0.50	1		05/19/17 13:55	95-63-6	
1,3,5-Trimethylbenzene	1.1	ug/L	1.0	0.50	1		05/19/17 13:55	108-67-8	
Benzene	0.67J	ug/L	1.0	0.50	1		05/19/17 13:55	71-43-2	
Ethylbenzene	1.0	ug/L	1.0	0.50	1		05/19/17 13:55	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/19/17 13:55	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/19/17 13:55	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		05/19/17 13:55	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/19/17 13:55	95-47-6	
Surrogates									
Dibromofluoromethane (S)	100	%	67-124		1		05/19/17 13:55	1868-53-7	
Toluene-d8 (S)	96	%	80-120		1		05/19/17 13:55	2037-26-5	
4-Bromofluorobenzene (S)	97	%	61-118		1		05/19/17 13:55	460-00-4	

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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: 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	
Tetrachloroethene	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-Dichloroethene	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	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	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1509355		1509356		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40150111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Dibromofluoromethane (S)	%					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			

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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				

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

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		

REPORT OF LABORATORY ANALYSIS

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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						
	8028	8260	8760						

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:
 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**
 Relinquished By: **FED EX** Date/Time: **5-17-17 1030**
 Relinquished By:
 Relinquished By:
 Relinquished By:

Received By: **Fedex** Date/Time:
 Received By: **Michelle Pusch Pace** Date/Time: **5-17-17 1030**
 Received By:
 Received By:
 Received By:

PACE Project No. **40150095**
 Receipt Temp = **ROI** °C
 Sample Receipt pH **OK Adjusted 7.5**
 Cooler Custody Seal
 Present / Not Present
 Intact / Not Intact

(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 8228		VOCs 8260		PVOCS/Naph 8260													

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 (billable)
 On your sample
 NOT needed on your sample

Matrix Codes
 A = Air W = Water
 B = Blota 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-2/T40	5/16	1435	GW
015	MW-4/T40		1435	
016	MW-5/T40		1440	
017	MW-6/T40		1445	
018	MW-7/T40		1450	
019	TS-1/T40		1500	
020	MW-1/T68		1410	
021	MW-2/T68		1420	
022	MW-4/T68		1415	
023	MW-5/T66		1120	
024	MW-5/T68		1140	
025	MW-6/T68		1130	
026	MW-2R/T70		1515	

Quote #: _____
Mail To Contact: _____
Mail To Company: _____
Mail To Address: _____
Invoice To Contact: _____
Invoice To Company: _____
Invoice To Address: _____
Invoice To Phone: _____

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
14:35	2-40MLV ^B	
14:55	3-40MLV ^B	
14:40		
14:45		
14:50		
15:00		

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: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: FED EX	Date/Time: 5-17-17	Received By: Chloe Rose Pace	Date/Time: 1030
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____

PACE Project No. **40150095**

Receipt Temp = **ROI** °C

Sample Receipt pH **OK Adjusted 0.5**

Cooler Custody Seal Present Not Present Intact Not Intact

(Please Print Clearly)

UPPER MIDWEST REGION

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

Page 3 of 3

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																			

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			

Quote #: _____
 Mail To Contact: _____
 Mail To Company: _____
 Mail To Address: _____
 Invoice To Contact: _____
 Invoice To Company: _____
 Invoice To Address: _____
 Invoice To Phone: _____

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
	Relinquished By: <i>FED EX 5-17-17</i> Date/Time: <i>1030</i>	Received By: <i>Wilson Road Pace 5-17-17 1030</i> Date/Time: _____	
Transmit Prelim Rush Results by (complete what you want):	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	Sample Receipt pH <i>7.5</i>
Email #1: _____	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	<input checked="" type="checkbox"/> Cooler Custody Seal Present / Not Present Intact / Not Intact
Email #2: _____	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Telephone: _____	Relinquished By: _____ Date/Time: _____	Received By: _____ Date/Time: _____	
Fax: _____	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 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		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

November 02, 2017

Project #34265.003
Calumet Superior
Reviewed by CCW
11/2/13

Clifford Wright
Gannett Fleming
8025 Excelsior Drive
Madison, WI 53717

RE: Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

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: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

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: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40159507001	MW-1/T40	Water	10/25/17 13:20	10/26/17 10:40
40159507002	MW-4/T40	Water	10/25/17 13:10	10/26/17 10:40
40159507003	MW-5/T40	Water	10/25/17 12:50	10/26/17 10:40
40159507004	MW-6/T40	Water	10/25/17 13:00	10/26/17 10:40
40159507005	MW-7/T40	Water	10/25/17 13:05	10/26/17 10:40
40159507006	TS-1/T40	Water	10/25/17 13:15	10/26/17 10:40
40159507007	MW-1/T68	Water	10/25/17 13:40	10/26/17 10:40
40159507008	MW-2/T68	Water	10/25/17 13:45	10/26/17 10:40
40159507009	MW-4/T68	Water	10/25/17 13:30	10/26/17 10:40
40159507010	MW-5/T66	Water	10/25/17 13:50	10/26/17 10:40
40159507011	MW-6/T68	Water	10/25/17 13:55	10/26/17 10:40
40159507012	MW-1R/T70	Water	10/25/17 14:25	10/26/17 10:40
40159507013	MW-2R/T70	Water	10/25/17 14:15	10/26/17 10:40
40159507014	MW-3/T70	Water	10/25/17 14:05	10/26/17 10:40
40159507015	MW-4/T70	Water	10/25/17 14:00	10/26/17 10:40
40159507016	MW-5/T70	Water	10/25/17 14:10	10/26/17 10:40
40159507017	MW-6/T70	Water	10/25/17 14:20	10/26/17 10:40
40159507018	LRS-1	Water	10/25/17 11:00	10/26/17 10:40
40159507019	LRS-2	Water	10/25/17 10:45	10/26/17 10:40
40159507020	LRS-3	Water	10/25/17 11:20	10/26/17 10:40
40159507021	LRS-4	Water	10/25/17 11:25	10/26/17 10:40
40159507022	LRS-6	Water	10/25/17 11:10	10/26/17 10:40
40159507023	LRS-7	Water	10/25/17 10:35	10/26/17 10:40
40159507024	MW-1/FL	Water	10/25/17 10:10	10/26/17 10:40
40159507025	MW-2/FL	Water	10/25/17 10:05	10/26/17 10:40
40159507026	MW-3/FL	Water	10/25/17 13:00	10/26/17 10:40
40159507027	MW-9/FL	Water	10/25/17 11:30	10/26/17 10:40
40159507028	MW-10/FL	Water	10/25/17 11:35	10/26/17 10:40
40159507029	MW-11/FL	Water	10/25/17 10:15	10/26/17 10:40
40159507030	MW-13/FL	Water	10/25/17 10:20	10/26/17 10:40
40159507031	MW-14/FL	Water	10/25/17 10:25	10/26/17 10:40
40159507032	TRIP BLANK	Water	10/25/17 00:00	10/26/17 10:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159507001	MW-1/T40	EPA 8260	LAP	11	PASI-G
40159507002	MW-4/T40	EPA 8260	LAP	11	PASI-G
40159507003	MW-5/T40	EPA 8260	LAP	11	PASI-G
40159507004	MW-6/T40	EPA 8260	LAP	11	PASI-G
40159507005	MW-7/T40	EPA 8260	LAP	11	PASI-G
40159507006	TS-1/T40	EPA 8260	LAP	11	PASI-G
40159507007	MW-1/T68	EPA 8260	MDS	63	PASI-G
40159507008	MW-2/T68	EPA 8260	MDS	63	PASI-G
40159507009	MW-4/T68	EPA 8260	MDS	63	PASI-G
40159507010	MW-5/T66	EPA 8260	MDS	63	PASI-G
40159507011	MW-6/T68	EPA 8260	HNW	63	PASI-G
40159507012	MW-1R/T70	EPA 8260	LAP	12	PASI-G
40159507013	MW-2R/T70	EPA 8260	LAP	12	PASI-G
40159507014	MW-3/T70	EPA 8260	MDS	12	PASI-G
40159507015	MW-4/T70	EPA 8260	LAP	12	PASI-G
40159507016	MW-5/T70	EPA 8260	MDS	12	PASI-G
40159507017	MW-6/T70	EPA 8260	LAP	12	PASI-G
40159507018	LRS-1	EPA 8021	ALD	9	PASI-G
40159507019	LRS-2	EPA 8021	ALD	9	PASI-G
40159507020	LRS-3	EPA 8021	ALD	9	PASI-G
40159507021	LRS-4	EPA 8021	ALD	9	PASI-G
40159507022	LRS-6	EPA 8021	ALD	9	PASI-G
40159507023	LRS-7	EPA 8021	ALD	9	PASI-G
40159507024	MW-1/FL	EPA 8021	ALD	9	PASI-G
40159507025	MW-2/FL	EPA 8021	ALD	9	PASI-G
40159507026	MW-3/FL	EPA 8021	ALD	9	PASI-G
40159507027	MW-9/FL	EPA 8021	ALD	9	PASI-G
40159507028	MW-10/FL	EPA 8021	ALD	9	PASI-G
40159507029	MW-11/FL	EPA 8021	ALD	9	PASI-G
40159507030	MW-13/FL	EPA 8021	ALD	9	PASI-G
40159507031	MW-14/FL	EPA 8021	ALD	9	PASI-G
40159507032	TRIP BLANK	EPA 8021	ALD	9	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40159507001	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	409	ug/L	25.0	10/27/17 17:52	
EPA 8260	1,3,5-Trimethylbenzene	160	ug/L	25.0	10/27/17 17:52	
EPA 8260	Benzene	616	ug/L	25.0	10/27/17 17:52	
EPA 8260	Ethylbenzene	27.0	ug/L	25.0	10/27/17 17:52	
EPA 8260	m&p-Xylene	2060	ug/L	50.0	10/27/17 17:52	
EPA 8260	o-Xylene	34.3	ug/L	25.0	10/27/17 17:52	
40159507002	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	1140	ug/L	100	10/27/17 18:15	
EPA 8260	1,3,5-Trimethylbenzene	319	ug/L	100	10/27/17 18:15	
EPA 8260	Benzene	5890	ug/L	100	10/27/17 18:15	
EPA 8260	Ethylbenzene	138	ug/L	100	10/27/17 18:15	
EPA 8260	m&p-Xylene	4270	ug/L	200	10/27/17 18:15	
EPA 8260	o-Xylene	2230	ug/L	100	10/27/17 18:15	
40159507004	MW-6/T40					
EPA 8260	1,2,4-Trimethylbenzene	1.3	ug/L	1.0	10/30/17 16:12	
EPA 8260	Benzene	0.63J	ug/L	1.0	10/30/17 16:12	
40159507005	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	405	ug/L	20.0	10/27/17 16:16	
EPA 8260	1,3,5-Trimethylbenzene	160	ug/L	20.0	10/27/17 16:16	
EPA 8260	Benzene	1220	ug/L	20.0	10/27/17 16:16	
EPA 8260	Ethylbenzene	113	ug/L	20.0	10/27/17 16:16	
EPA 8260	m&p-Xylene	1620	ug/L	40.0	10/27/17 16:16	
EPA 8260	o-Xylene	481	ug/L	20.0	10/27/17 16:16	
40159507006	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	4.4	ug/L	1.0	10/27/17 15:10	
EPA 8260	1,3,5-Trimethylbenzene	2.1	ug/L	1.0	10/27/17 15:10	
EPA 8260	Benzene	2.2	ug/L	1.0	10/27/17 15:10	
EPA 8260	Ethylbenzene	1.0	ug/L	1.0	10/27/17 15:10	
EPA 8260	m&p-Xylene	1.3J	ug/L	2.0	10/27/17 15:10	
40159507007	MW-1/T68					
EPA 8260	1,2,4-Trimethylbenzene	0.58J	ug/L	1.0	10/27/17 17:21	
EPA 8260	Toluene	2.3	ug/L	1.0	10/27/17 17:21	
EPA 8260	m&p-Xylene	1.7J	ug/L	2.0	10/27/17 17:21	
EPA 8260	o-Xylene	0.68J	ug/L	1.0	10/27/17 17:21	
40159507008	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	2420	ug/L	250	10/28/17 13:06	
EPA 8260	1,2-Dichloroethane	1610	ug/L	250	10/28/17 13:06	
EPA 8260	1,3,5-Trimethylbenzene	702	ug/L	250	10/28/17 13:06	
EPA 8260	Benzene	30600	ug/L	250	10/28/17 13:06	
EPA 8260	Ethylbenzene	1170	ug/L	250	10/28/17 13:06	
EPA 8260	Toluene	24500	ug/L	250	10/28/17 13:06	
EPA 8260	m&p-Xylene	13100	ug/L	500	10/28/17 13:06	
EPA 8260	o-Xylene	6450	ug/L	250	10/28/17 13:06	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Method: EPA 8021

Description: 8021 GCV Short List

Client: Gannett Fleming Inc.

Date: November 02, 2017

General Information:

15 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:

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PROJECT NARRATIVE

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

Method: EPA 8260
Description: 8260 MSV
Client: Gannett Fleming Inc.
Date: November 02, 2017

General Information:

5 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: 272177

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40159567004

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

- MSD (Lab ID: 1600920)
 - Chloroethane
 - Trichloroethene

R1: RPD value was outside control limits.

- MSD (Lab ID: 1600920)
 - Bromomethane

QC Batch: 272258

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40159632008

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

- MS (Lab ID: 1601755)
 - Chloroethane
- MSD (Lab ID: 1601756)

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PROJECT NARRATIVE

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Method: EPA 8260

Description: 8260 MSV

Client: Gannett Fleming Inc.

Date: November 02, 2017

QC Batch: 272258

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40159632008

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

- 1,1-Dichloroethane
- Chloroethane

Additional Comments:

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PROJECT NARRATIVE

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

Method: EPA 8260
Description: 8260 MSV UST
Client: Gannett Fleming Inc.
Date: November 02, 2017

General Information:

12 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: 272089

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40159544001

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

- MS (Lab ID: 1600424)
 - Toluene
- MSD (Lab ID: 1600425)
 - Toluene

Additional Comments:

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

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: MW-1/T40 **Lab ID: 40159507001** Collected: 10/25/17 13:20 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	409	ug/L	25.0	12.5	25		10/27/17 17:52	95-63-6	
1,3,5-Trimethylbenzene	160	ug/L	25.0	12.5	25		10/27/17 17:52	108-67-8	
Benzene	616	ug/L	25.0	12.5	25		10/27/17 17:52	71-43-2	
Ethylbenzene	27.0	ug/L	25.0	12.5	25		10/27/17 17:52	100-41-4	
Methyl-tert-butyl ether	<4.4	ug/L	25.0	4.4	25		10/27/17 17:52	1634-04-4	
Toluene	<12.5	ug/L	25.0	12.5	25		10/27/17 17:52	108-88-3	
m&p-Xylene	2060	ug/L	50.0	25.0	25		10/27/17 17:52	179601-23-1	
o-Xylene	34.3	ug/L	25.0	12.5	25		10/27/17 17:52	95-47-6	
Surrogates									
Dibromofluoromethane (S)	98	%	67-130		25		10/27/17 17:52	1868-53-7	
Toluene-d8 (S)	95	%	70-130		25		10/27/17 17:52	2037-26-5	
4-Bromofluorobenzene (S)	92	%	61-130		25		10/27/17 17:52	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: MW-4/T40 **Lab ID: 40159507002** Collected: 10/25/17 13:10 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1140	ug/L	100	50.0	100		10/27/17 18:15	95-63-6	
1,3,5-Trimethylbenzene	319	ug/L	100	50.0	100		10/27/17 18:15	108-67-8	
Benzene	5890	ug/L	100	50.0	100		10/27/17 18:15	71-43-2	
Ethylbenzene	138	ug/L	100	50.0	100		10/27/17 18:15	100-41-4	
Methyl-tert-butyl ether	<17.4	ug/L	100	17.4	100		10/27/17 18:15	1634-04-4	
Toluene	<50.0	ug/L	100	50.0	100		10/27/17 18:15	108-88-3	
m&p-Xylene	4270	ug/L	200	100	100		10/27/17 18:15	179601-23-1	
o-Xylene	2230	ug/L	100	50.0	100		10/27/17 18:15	95-47-6	
Surrogates									
Dibromofluoromethane (S)	96	%	67-130		100		10/27/17 18:15	1868-53-7	
Toluene-d8 (S)	99	%	70-130		100		10/27/17 18:15	2037-26-5	
4-Bromofluorobenzene (S)	95	%	61-130		100		10/27/17 18:15	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: MW-5/T40 **Lab ID: 40159507003** Collected: 10/25/17 12:50 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	108-67-8	
Benzene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/30/17 15:49	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/30/17 15:49	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/30/17 15:49	95-47-6	
Surrogates									
Dibromofluoromethane (S)	99	%	67-130		1		10/30/17 15:49	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		10/30/17 15:49	2037-26-5	
4-Bromofluorobenzene (S)	84	%	61-130		1		10/30/17 15:49	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: MW-6/T40 **Lab ID: 40159507004** Collected: 10/25/17 13:00 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	1.3	ug/L	1.0	0.50	1		10/30/17 16:12	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		10/30/17 16:12	108-67-8	
Benzene	0.63J	ug/L	1.0	0.50	1		10/30/17 16:12	71-43-2	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		10/30/17 16:12	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/30/17 16:12	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/30/17 16:12	108-88-3	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		10/30/17 16:12	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/30/17 16:12	95-47-6	
Surrogates									
Dibromofluoromethane (S)	98	%	67-130		1		10/30/17 16:12	1868-53-7	
Toluene-d8 (S)	94	%	70-130		1		10/30/17 16:12	2037-26-5	
4-Bromofluorobenzene (S)	92	%	61-130		1		10/30/17 16:12	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: MW-7/T40 **Lab ID: 40159507005** Collected: 10/25/17 13:05 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	405	ug/L	20.0	10.0	20		10/27/17 16:16	95-63-6	
1,3,5-Trimethylbenzene	160	ug/L	20.0	10.0	20		10/27/17 16:16	108-67-8	
Benzene	1220	ug/L	20.0	10.0	20		10/27/17 16:16	71-43-2	
Ethylbenzene	113	ug/L	20.0	10.0	20		10/27/17 16:16	100-41-4	
Methyl-tert-butyl ether	<3.5	ug/L	20.0	3.5	20		10/27/17 16:16	1634-04-4	
Toluene	<10.0	ug/L	20.0	10.0	20		10/27/17 16:16	108-88-3	
m&p-Xylene	1620	ug/L	40.0	20.0	20		10/27/17 16:16	179601-23-1	
o-Xylene	481	ug/L	20.0	10.0	20		10/27/17 16:16	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	67-130		20		10/27/17 16:16	1868-53-7	
Toluene-d8 (S)	94	%	70-130		20		10/27/17 16:16	2037-26-5	
4-Bromofluorobenzene (S)	94	%	61-130		20		10/27/17 16:16	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: TS-1/T40 **Lab ID: 40159507006** Collected: 10/25/17 13:15 Received: 10/26/17 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	4.4	ug/L	1.0	0.50	1		10/27/17 15:10	95-63-6	
1,3,5-Trimethylbenzene	2.1	ug/L	1.0	0.50	1		10/27/17 15:10	108-67-8	
Benzene	2.2	ug/L	1.0	0.50	1		10/27/17 15:10	71-43-2	
Ethylbenzene	1.0	ug/L	1.0	0.50	1		10/27/17 15:10	100-41-4	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		10/27/17 15:10	1634-04-4	
Toluene	<0.50	ug/L	1.0	0.50	1		10/27/17 15:10	108-88-3	
m&p-Xylene	1.3J	ug/L	2.0	1.0	1		10/27/17 15:10	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		10/27/17 15:10	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	67-130		1		10/27/17 15:10	1868-53-7	
Toluene-d8 (S)	99	%	70-130		1		10/27/17 15:10	2037-26-5	
4-Bromofluorobenzene (S)	92	%	61-130		1		10/27/17 15:10	460-00-4	

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ANALYTICAL RESULTS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Sample: TRIP BLANK **Lab ID: 40159507032** 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
8021 GCV Short List		Analytical Method: EPA 8021							
Benzene	<0.40	ug/L	1.0	0.40	1		10/31/17 16:42	71-43-2	
Ethylbenzene	<0.39	ug/L	1.0	0.39	1		10/31/17 16:42	100-41-4	
Methyl-tert-butyl ether	<0.48	ug/L	1.0	0.48	1		10/31/17 16:42	1634-04-4	
Toluene	<0.39	ug/L	1.0	0.39	1		10/31/17 16:42	108-88-3	
1,2,4-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/31/17 16:42	95-63-6	
1,3,5-Trimethylbenzene	<0.42	ug/L	1.0	0.42	1		10/31/17 16:42	108-67-8	
m&p-Xylene	<0.80	ug/L	2.0	0.80	1		10/31/17 16:42	179601-23-1	
o-Xylene	<0.45	ug/L	1.0	0.45	1		10/31/17 16:42	95-47-6	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	85-115		1		10/31/17 16:42	98-08-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272425 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 40159507018, 40159507019, 40159507020, 40159507021, 40159507022, 40159507023, 40159507024, 40159507025, 40159507026, 40159507027, 40159507028, 40159507029, 40159507030, 40159507031, 40159507032

METHOD BLANK: 1602276 Matrix: Water
Associated Lab Samples: 40159507018, 40159507019, 40159507020, 40159507021, 40159507022, 40159507023, 40159507024, 40159507025, 40159507026, 40159507027, 40159507028, 40159507029, 40159507030, 40159507031, 40159507032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.42	1.0	10/31/17 09:53	
1,3,5-Trimethylbenzene	ug/L	<0.42	1.0	10/31/17 09:53	
Benzene	ug/L	<0.40	1.0	10/31/17 09:53	
Ethylbenzene	ug/L	<0.39	1.0	10/31/17 09:53	
m&p-Xylene	ug/L	<0.80	2.0	10/31/17 09:53	
Methyl-tert-butyl ether	ug/L	<0.48	1.0	10/31/17 09:53	
o-Xylene	ug/L	<0.45	1.0	10/31/17 09:53	
Toluene	ug/L	<0.39	1.0	10/31/17 09:53	
a,a,a-Trifluorotoluene (S)	%	100	85-115	10/31/17 09:53	

LABORATORY CONTROL SAMPLE & LCSD: 1602277 1602278

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	20.6	20.2	103	101	85-115	2	20	
1,3,5-Trimethylbenzene	ug/L	20	19.9	19.6	100	98	85-115	2	20	
Benzene	ug/L	20	20.3	20.2	101	101	85-115	0	20	
Ethylbenzene	ug/L	20	20.2	19.9	101	99	85-115	2	20	
m&p-Xylene	ug/L	40	40.1	39.1	100	98	85-115	2	20	
Methyl-tert-butyl ether	ug/L	20	19.8	19.7	99	98	85-115	1	20	
o-Xylene	ug/L	20	20.4	19.9	102	100	85-115	3	20	
Toluene	ug/L	20	20.2	20.0	101	100	85-115	1	20	
a,a,a-Trifluorotoluene (S)	%				100	99	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1603152 1603153

Parameter	Units	40159507023 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	ug/L	<0.42	20	20	20.9	21.8	104	109	11-200	4	20	
1,3,5-Trimethylbenzene	ug/L	<0.42	20	20	20.3	21.1	101	105	54-142	4	20	
Benzene	ug/L	0.49J	20	20	21.9	22.0	107	108	66-140	1	20	
Ethylbenzene	ug/L	<0.39	20	20	21.0	21.5	105	108	66-143	3	20	
m&p-Xylene	ug/L	<0.80	40	40	41.9	43.2	105	108	60-141	3	20	
Methyl-tert-butyl ether	ug/L	<0.48	20	20	20.6	21.2	103	106	70-129	3	20	
o-Xylene	ug/L	<0.45	20	20	21.0	21.7	105	108	68-132	3	20	
Toluene	ug/L	<0.39	20	20	21.6	21.8	108	109	76-130	1	20	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1603152		1603153									
Parameter	Units	40159507023 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
a,a,a-Trifluorotoluene (S)	%						99	100	85-115				

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272177 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40159507007, 40159507008, 40159507009, 40159507010

METHOD BLANK: 1600592 Matrix: Water
Associated Lab Samples: 40159507007, 40159507008, 40159507009, 40159507010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/27/17 12:17	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/27/17 12:17	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/27/17 12:17	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/27/17 12:17	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/27/17 12:17	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/27/17 12:17	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/27/17 12:17	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/27/17 12:17	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/27/17 12:17	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/27/17 12:17	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 12:17	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/27/17 12:17	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/27/17 12:17	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 12:17	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/27/17 12:17	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/27/17 12:17	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 12:17	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 12:17	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/27/17 12:17	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/27/17 12:17	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/27/17 12:17	
2-Chlorotoluene	ug/L	<0.50	1.0	10/27/17 12:17	
4-Chlorotoluene	ug/L	<0.21	1.0	10/27/17 12:17	
Benzene	ug/L	<0.50	1.0	10/27/17 12:17	
Bromobenzene	ug/L	<0.23	1.0	10/27/17 12:17	
Bromochloromethane	ug/L	<0.34	1.0	10/27/17 12:17	
Bromodichloromethane	ug/L	<0.50	1.0	10/27/17 12:17	
Bromoform	ug/L	<0.50	1.0	10/27/17 12:17	
Bromomethane	ug/L	<2.4	5.0	10/27/17 12:17	
Carbon tetrachloride	ug/L	<0.50	1.0	10/27/17 12:17	
Chlorobenzene	ug/L	<0.50	1.0	10/27/17 12:17	
Chloroethane	ug/L	<0.37	1.0	10/27/17 12:17	
Chloroform	ug/L	<2.5	5.0	10/27/17 12:17	
Chloromethane	ug/L	<0.50	1.0	10/27/17 12:17	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 12:17	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/27/17 12:17	
Dibromochloromethane	ug/L	<0.50	1.0	10/27/17 12:17	
Dibromomethane	ug/L	<0.43	1.0	10/27/17 12:17	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/27/17 12:17	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 12:17	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/27/17 12:17	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

METHOD BLANK: 1600592 Matrix: Water
Associated Lab Samples: 40159507007, 40159507008, 40159507009, 40159507010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/27/17 12:17	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 12:17	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 12:17	
Methylene Chloride	ug/L	<0.23	1.0	10/27/17 12:17	
n-Butylbenzene	ug/L	<0.50	1.0	10/27/17 12:17	
n-Propylbenzene	ug/L	<0.50	1.0	10/27/17 12:17	
Naphthalene	ug/L	<2.5	5.0	10/27/17 12:17	
o-Xylene	ug/L	<0.50	1.0	10/27/17 12:17	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/27/17 12:17	
sec-Butylbenzene	ug/L	<2.2	5.0	10/27/17 12:17	
Styrene	ug/L	<0.50	1.0	10/27/17 12:17	
tert-Butylbenzene	ug/L	<0.18	1.0	10/27/17 12:17	
Tetrachloroethene	ug/L	<0.50	1.0	10/27/17 12:17	
Toluene	ug/L	<0.50	1.0	10/27/17 12:17	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/27/17 12:17	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/27/17 12:17	
Trichloroethene	ug/L	<0.33	1.0	10/27/17 12:17	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/27/17 12:17	
Vinyl chloride	ug/L	<0.18	1.0	10/27/17 12:17	
4-Bromofluorobenzene (S)	%	83	61-130	10/27/17 12:17	
Dibromofluoromethane (S)	%	122	67-130	10/27/17 12:17	
Toluene-d8 (S)	%	89	70-130	10/27/17 12:17	

LABORATORY CONTROL SAMPLE: 1600593

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	49.6	47.2	95	70-130	
1,1,2,2-Tetrachloroethane	ug/L	49.6	45.1	91	70-130	
1,1,2-Trichloroethane	ug/L	49.6	49.5	100	70-130	
1,1-Dichloroethane	ug/L	49.6	50.9	103	71-132	
1,1-Dichloroethene	ug/L	49.6	46.3	93	75-130	
1,2,4-Trichlorobenzene	ug/L	49.6	41.1	83	70-130	
1,2-Dibromo-3-chloropropane	ug/L	49.6	41.4	83	63-123	
1,2-Dibromoethane (EDB)	ug/L	49.6	48.7	98	70-130	
1,2-Dichlorobenzene	ug/L	49.6	46.1	93	70-130	
1,2-Dichloroethane	ug/L	49.6	40.1	81	70-131	
1,2-Dichloropropane	ug/L	49.6	52.1	105	80-120	
1,3-Dichlorobenzene	ug/L	49.6	46.8	94	70-130	
1,4-Dichlorobenzene	ug/L	49.6	46.7	94	70-130	
Benzene	ug/L	49.6	49.0	99	73-145	
Bromodichloromethane	ug/L	49.6	53.6	108	70-130	
Bromoform	ug/L	49.6	47.5	96	67-130	
Bromomethane	ug/L	50	33.2	66	26-128	
Carbon tetrachloride	ug/L	49.6	51.9	105	70-133	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

LABORATORY CONTROL SAMPLE: 1600593

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	49.6	49.4	100	70-130	
Chloroethane	ug/L	50	46.2	92	58-120	
Chloroform	ug/L	49.6	50.6	102	80-121	
Chloromethane	ug/L	50	22.4	45	40-127	
cis-1,2-Dichloroethene	ug/L	49.6	54.0	109	70-130	
cis-1,3-Dichloropropene	ug/L	49.6	46.9	95	70-130	
Dibromochloromethane	ug/L	49.6	46.1	93	70-130	
Dichlorodifluoromethane	ug/L	50	36.2	72	20-135	
Ethylbenzene	ug/L	49.6	49.6	100	87-129	
Isopropylbenzene (Cumene)	ug/L	49.6	51.1	103	70-130	
m&p-Xylene	ug/L	99.2	106	107	70-130	
Methyl-tert-butyl ether	ug/L	49.6	47.4	96	66-143	
Methylene Chloride	ug/L	49.6	49.1	99	70-130	
o-Xylene	ug/L	49.6	50.8	102	70-130	
Styrene	ug/L	49.6	50.0	101	70-130	
Tetrachloroethene	ug/L	49.6	45.4	92	70-130	
Toluene	ug/L	49.6	50.4	102	82-130	
trans-1,2-Dichloroethene	ug/L	49.6	52.1	105	75-132	
trans-1,3-Dichloropropene	ug/L	49.6	42.8	86	70-130	
Trichloroethene	ug/L	49.6	53.4	108	70-130	
Trichlorofluoromethane	ug/L	50	43.5	87	76-133	
Vinyl chloride	ug/L	50	40.6	81	57-136	
4-Bromofluorobenzene (S)	%			110	61-130	
Dibromofluoromethane (S)	%			100	67-130	
Toluene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600919 1600920

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40159567004	Spike Conc.	MSD Spike Conc.	MSD Result								
1,1,1-Trichloroethane	ug/L	<10.0	992	992	992	1030	1060	103	107	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<5.0	992	992	992	937	989	94	100	70-130	5	20	
1,1,2-Trichloroethane	ug/L	<3.9	992	992	992	991	1020	100	103	70-130	3	20	
1,1-Dichloroethane	ug/L	<4.8	992	992	992	1070	1010	108	102	71-133	5	20	
1,1-Dichloroethene	ug/L	<8.2	992	992	992	972	988	98	100	75-136	2	20	
1,2,4-Trichlorobenzene	ug/L	<44.2	992	992	992	794	868	80	88	70-130	9	20	
1,2-Dibromo-3-chloropropane	ug/L	<43.3	992	992	992	808	839	81	85	63-123	4	20	
1,2-Dibromoethane (EDB)	ug/L	<3.6	992	992	992	994	1060	100	106	70-130	6	20	
1,2-Dichlorobenzene	ug/L	<10.0	992	992	992	864	966	87	97	70-130	11	20	
1,2-Dichloroethane	ug/L	<3.4	992	992	992	950	962	96	97	70-131	1	20	
1,2-Dichloropropane	ug/L	<4.7	992	992	992	1070	1100	107	111	80-120	3	20	
1,3-Dichlorobenzene	ug/L	<10.0	992	992	992	933	959	94	97	70-130	3	20	
1,4-Dichlorobenzene	ug/L	<10.0	992	992	992	939	992	95	100	70-130	5	20	
Benzene	ug/L	<10.0	992	992	992	1110	1100	112	111	73-145	1	20	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600919		1600920		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159567004 Result	MS Spike Conc.	MSD Spike Conc.									
Bromodichloromethane	ug/L	<10.0	992	992	1060	1130	107	114	70-130	7	20		
Bromoform	ug/L	<10.0	992	992	979	995	99	100	67-130	2	20		
Bromomethane	ug/L	<48.7	1000	1000	793	1000	79	99	26-129	23	20	R1	
Carbon tetrachloride	ug/L	<10.0	992	992	1110	1130	112	114	70-134	2	20		
Chlorobenzene	ug/L	<10.0	992	992	1020	1040	102	105	70-130	2	20		
Chloroethane	ug/L	<7.5	1000	1000	1040	1250	104	125	58-120	18	20	M1	
Chloroform	ug/L	<50.0	992	992	1070	1140	107	115	80-121	7	20		
Chloromethane	ug/L	<10.0	1000	1000	581	636	58	64	40-128	9	20		
cis-1,2-Dichloroethene	ug/L	<5.1	992	992	1020	1100	103	110	70-130	7	20		
cis-1,3-Dichloropropene	ug/L	<10.0	992	992	986	1030	99	104	70-130	4	20		
Dibromochloromethane	ug/L	<10.0	992	992	938	977	95	99	70-130	4	20		
Dichlorodifluoromethane	ug/L	<4.5	1000	1000	928	937	93	94	20-146	1	20		
Ethylbenzene	ug/L	<10.0	992	992	1020	1030	103	104	87-129	1	20		
Isopropylbenzene (Cumene)	ug/L	<2.9	992	992	1020	1060	103	107	70-130	3	20		
m&p-Xylene	ug/L	<20.0	1980	1980	2140	2250	108	113	70-130	5	20		
Methyl-tert-butyl ether	ug/L	<3.5	992	992	1020	997	103	101	66-143	2	20		
Methylene Chloride	ug/L	<4.7	992	992	1020	1030	102	103	70-130	1	20		
o-Xylene	ug/L	<10.0	992	992	1040	1070	105	108	70-130	3	20		
Styrene	ug/L	<10.0	992	992	1020	1070	103	108	70-130	5	20		
Tetrachloroethene	ug/L	<10.0	992	992	924	965	93	97	70-130	4	20		
Toluene	ug/L	10.1J	992	992	1020	1060	102	106	82-131	4	20		
trans-1,2-Dichloroethene	ug/L	<5.1	992	992	1050	988	106	100	75-135	6	20		
trans-1,3-Dichloropropene	ug/L	<4.6	992	992	873	920	88	93	70-130	5	20		
Trichloroethene	ug/L	4610	992	992	5600	5910	99	131	70-130	5	20	M1	
Trichlorofluoromethane	ug/L	<3.7	1000	1000	978	1080	98	108	76-150	10	20		
Vinyl chloride	ug/L	<3.5	1000	1000	1010	1070	101	107	56-143	5	20		
4-Bromofluorobenzene (S)	%						108	103	61-130				
Dibromofluoromethane (S)	%						107	103	67-130				
Toluene-d8 (S)	%						97	95	70-130				

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272258 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40159507011

METHOD BLANK: 1601679 Matrix: Water
Associated Lab Samples: 40159507011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	10/30/17 08:47	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	10/30/17 08:47	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	10/30/17 08:47	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	10/30/17 08:47	
1,1-Dichloroethane	ug/L	<0.24	1.0	10/30/17 08:47	
1,1-Dichloroethene	ug/L	<0.41	1.0	10/30/17 08:47	
1,1-Dichloropropene	ug/L	<0.44	1.0	10/30/17 08:47	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	10/30/17 08:47	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	10/30/17 08:47	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	10/30/17 08:47	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/30/17 08:47	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	10/30/17 08:47	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	10/30/17 08:47	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	10/30/17 08:47	
1,2-Dichloroethane	ug/L	<0.17	1.0	10/30/17 08:47	
1,2-Dichloropropane	ug/L	<0.23	1.0	10/30/17 08:47	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/30/17 08:47	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	10/30/17 08:47	
1,3-Dichloropropane	ug/L	<0.50	1.0	10/30/17 08:47	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	10/30/17 08:47	
2,2-Dichloropropane	ug/L	<0.48	1.0	10/30/17 08:47	
2-Chlorotoluene	ug/L	<0.50	1.0	10/30/17 08:47	
4-Chlorotoluene	ug/L	<0.21	1.0	10/30/17 08:47	
Benzene	ug/L	<0.50	1.0	10/30/17 08:47	
Bromobenzene	ug/L	<0.23	1.0	10/30/17 08:47	
Bromochloromethane	ug/L	<0.34	1.0	10/30/17 08:47	
Bromodichloromethane	ug/L	<0.50	1.0	10/30/17 08:47	
Bromoform	ug/L	<0.50	1.0	10/30/17 08:47	
Bromomethane	ug/L	<2.4	5.0	10/30/17 08:47	
Carbon tetrachloride	ug/L	<0.50	1.0	10/30/17 08:47	
Chlorobenzene	ug/L	<0.50	1.0	10/30/17 08:47	
Chloroethane	ug/L	<0.37	1.0	10/30/17 08:47	
Chloroform	ug/L	<2.5	5.0	10/30/17 08:47	
Chloromethane	ug/L	<0.50	1.0	10/30/17 08:47	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	10/30/17 08:47	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	10/30/17 08:47	
Dibromochloromethane	ug/L	<0.50	1.0	10/30/17 08:47	
Dibromomethane	ug/L	<0.43	1.0	10/30/17 08:47	
Dichlorodifluoromethane	ug/L	<0.22	1.0	10/30/17 08:47	
Ethylbenzene	ug/L	<0.50	1.0	10/30/17 08:47	
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	10/30/17 08:47	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

METHOD BLANK: 1601679

Matrix: Water

Associated Lab Samples: 40159507011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	10/30/17 08:47	
m&p-Xylene	ug/L	<1.0	2.0	10/30/17 08:47	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/30/17 08:47	
Methylene Chloride	ug/L	<0.23	1.0	10/30/17 08:47	
n-Butylbenzene	ug/L	<0.50	1.0	10/30/17 08:47	
n-Propylbenzene	ug/L	<0.50	1.0	10/30/17 08:47	
Naphthalene	ug/L	<2.5	5.0	10/30/17 08:47	
o-Xylene	ug/L	<0.50	1.0	10/30/17 08:47	
p-Isopropyltoluene	ug/L	<0.50	1.0	10/30/17 08:47	
sec-Butylbenzene	ug/L	<2.2	5.0	10/30/17 08:47	
Styrene	ug/L	<0.50	1.0	10/30/17 08:47	
tert-Butylbenzene	ug/L	<0.18	1.0	10/30/17 08:47	
Tetrachloroethene	ug/L	<0.50	1.0	10/30/17 08:47	
Toluene	ug/L	<0.50	1.0	10/30/17 08:47	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	10/30/17 08:47	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	10/30/17 08:47	
Trichloroethene	ug/L	<0.33	1.0	10/30/17 08:47	
Trichlorofluoromethane	ug/L	<0.18	1.0	10/30/17 08:47	
Vinyl chloride	ug/L	<0.18	1.0	10/30/17 08:47	
4-Bromofluorobenzene (S)	%	89	61-130	10/30/17 08:47	
Dibromofluoromethane (S)	%	122	67-130	10/30/17 08:47	
Toluene-d8 (S)	%	100	70-130	10/30/17 08:47	

LABORATORY CONTROL SAMPLE: 1601680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	49.6	53.5	108	70-130	
1,1,2,2-Tetrachloroethane	ug/L	49.6	51.1	103	70-130	
1,1,2-Trichloroethane	ug/L	49.6	52.3	105	70-130	
1,1-Dichloroethane	ug/L	49.6	62.7	126	71-132	
1,1-Dichloroethene	ug/L	49.6	51.9	105	75-130	
1,2,4-Trichlorobenzene	ug/L	49.6	37.5	76	70-130	
1,2-Dibromo-3-chloropropane	ug/L	49.6	46.4	94	63-123	
1,2-Dibromoethane (EDB)	ug/L	49.6	48.5	98	70-130	
1,2-Dichlorobenzene	ug/L	49.6	46.1	93	70-130	
1,2-Dichloroethane	ug/L	49.6	61.0	123	70-131	
1,2-Dichloropropane	ug/L	49.6	55.0	111	80-120	
1,3-Dichlorobenzene	ug/L	49.6	44.4	89	70-130	
1,4-Dichlorobenzene	ug/L	49.6	48.9	98	70-130	
Benzene	ug/L	49.6	52.7	106	73-145	
Bromodichloromethane	ug/L	49.6	52.1	105	70-130	
Bromoform	ug/L	49.6	47.4	96	67-130	
Bromomethane	ug/L	50	47.4	95	26-128	
Carbon tetrachloride	ug/L	49.6	54.9	111	70-133	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

LABORATORY CONTROL SAMPLE: 1601680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	49.6	50.0	101	70-130	
Chloroethane	ug/L	50	58.6	117	58-120	
Chloroform	ug/L	49.6	55.3	112	80-121	
Chloromethane	ug/L	50	41.4	83	40-127	
cis-1,2-Dichloroethene	ug/L	49.6	50.0	101	70-130	
cis-1,3-Dichloropropene	ug/L	49.6	43.9	88	70-130	
Dibromochloromethane	ug/L	49.6	48.2	97	70-130	
Dichlorodifluoromethane	ug/L	50	32.3	65	20-135	
Ethylbenzene	ug/L	49.6	49.7	100	87-129	
Isopropylbenzene (Cumene)	ug/L	49.6	48.0	97	70-130	
m&p-Xylene	ug/L	99.2	99.1	100	70-130	
Methyl-tert-butyl ether	ug/L	49.6	53.7	108	66-143	
Methylene Chloride	ug/L	49.6	55.0	111	70-130	
o-Xylene	ug/L	49.6	47.3	95	70-130	
Styrene	ug/L	49.6	48.6	98	70-130	
Tetrachloroethene	ug/L	49.6	47.7	96	70-130	
Toluene	ug/L	49.6	49.2	99	82-130	
trans-1,2-Dichloroethene	ug/L	49.6	55.2	111	75-132	
trans-1,3-Dichloropropene	ug/L	49.6	42.3	85	70-130	
Trichloroethene	ug/L	49.6	50.0	101	70-130	
Trichlorofluoromethane	ug/L	50	66.7	133	76-133	
Vinyl chloride	ug/L	50	49.3	99	57-136	
4-Bromofluorobenzene (S)	%			105	61-130	
Dibromofluoromethane (S)	%			115	67-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1601755 1601756

Parameter	Units	MS 40159632008		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Spike Conc.	Result	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	<2.0	198	198	198	216	224	109	113	70-134	4	20	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	198	198	198	201	213	101	108	70-130	6	20	
1,1,2-Trichloroethane	ug/L	<0.79	198	198	198	214	217	108	109	70-130	1	20	
1,1-Dichloroethane	ug/L	<0.97	198	198	198	256	267	129	135	71-133	5	20	M1
1,1-Dichloroethene	ug/L	<1.6	198	198	198	212	223	107	112	75-136	5	20	
1,2,4-Trichlorobenzene	ug/L	<8.8	198	198	198	189	192	95	97	70-130	2	20	
1,2-Dibromo-3-chloropropane	ug/L	<8.7	198	198	198	203	219	103	110	63-123	7	20	
1,2-Dibromoethane (EDB)	ug/L	<0.71	198	198	198	197	205	99	103	70-130	4	20	
1,2-Dichlorobenzene	ug/L	<2.0	198	198	198	191	197	96	99	70-130	3	20	
1,2-Dichloroethane	ug/L	<0.67	198	198	198	248	257	125	129	70-131	3	20	
1,2-Dichloropropane	ug/L	<0.93	198	198	198	222	227	112	115	80-120	2	20	
1,3-Dichlorobenzene	ug/L	<2.0	198	198	198	190	195	96	98	70-130	3	20	
1,4-Dichlorobenzene	ug/L	<2.0	198	198	198	194	198	98	100	70-130	2	20	
Benzene	ug/L	165	198	198	198	370	381	103	109	73-145	3	20	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1601755		1601756		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159632008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromodichloromethane	ug/L	<2.0	198	198	208	212	105	107	70-130	2	20		
Bromoform	ug/L	<2.0	198	198	192	189	97	95	67-130	2	20		
Bromomethane	ug/L	<9.7	200	200	210	229	105	114	26-129	8	20		
Carbon tetrachloride	ug/L	<2.0	198	198	222	228	112	115	70-134	3	20		
Chlorobenzene	ug/L	<2.0	198	198	202	202	102	102	70-130	0	20		
Chloroethane	ug/L	<1.5	200	200	255	254	128	127	58-120	1	20	M1	
Chloroform	ug/L	<10.0	198	198	224	232	113	117	80-121	3	20		
Chloromethane	ug/L	<2.0	200	200	175	195	88	98	40-128	11	20		
cis-1,2-Dichloroethene	ug/L	<1.0	198	198	200	210	101	106	70-130	5	20		
cis-1,3-Dichloropropene	ug/L	<2.0	198	198	179	191	90	96	70-130	7	20		
Dibromochloromethane	ug/L	<2.0	198	198	195	192	98	97	70-130	2	20		
Dichlorodifluoromethane	ug/L	<0.90	200	200	122	133	61	67	20-146	9	20		
Ethylbenzene	ug/L	377	198	198	594	579	110	102	87-129	3	20		
Isopropylbenzene (Cumene)	ug/L	34.7	198	198	241	242	104	105	70-130	0	20		
m&p-Xylene	ug/L	7.7J	397	397	406	412	100	102	70-130	1	20		
Methyl-tert-butyl ether	ug/L	<0.70	198	198	219	236	110	119	66-143	7	20		
Methylene Chloride	ug/L	<0.93	198	198	224	237	113	119	70-130	6	20		
o-Xylene	ug/L	66.9	198	198	270	269	102	102	70-130	0	20		
Styrene	ug/L	<2.0	198	198	199	199	100	100	70-130	0	20		
Tetrachloroethene	ug/L	<2.0	198	198	192	193	97	97	70-130	0	20		
Toluene	ug/L	<2.0	198	198	201	202	100	101	82-131	1	20		
trans-1,2-Dichloroethene	ug/L	<1.0	198	198	224	235	113	119	75-135	5	20		
trans-1,3-Dichloropropene	ug/L	<0.92	198	198	175	183	88	92	70-130	4	20		
Trichloroethene	ug/L	<1.3	198	198	202	208	102	105	70-130	3	20		
Trichlorofluoromethane	ug/L	<0.74	200	200	266	277	133	139	76-150	4	20		
Vinyl chloride	ug/L	<0.70	200	200	202	223	101	112	56-143	10	20		
4-Bromofluorobenzene (S)	%						103	102	61-130				
Dibromofluoromethane (S)	%						114	114	67-130				
Toluene-d8 (S)	%						103	102	70-130				

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

QC Batch: 272086

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV UST-WATER

Associated Lab Samples: 40159507001, 40159507002

METHOD BLANK: 1600210

Matrix: Water

Associated Lab Samples: 40159507001, 40159507002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 08:36	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 08:36	
Benzene	ug/L	<0.50	1.0	10/27/17 08:36	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 08:36	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 08:36	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 08:36	
o-Xylene	ug/L	<0.50	1.0	10/27/17 08:36	
Toluene	ug/L	<0.50	1.0	10/27/17 08:36	
4-Bromofluorobenzene (S)	%	91	61-130	10/27/17 08:36	
Dibromofluoromethane (S)	%	98	67-130	10/27/17 08:36	
Toluene-d8 (S)	%	101	70-130	10/27/17 08:36	

LABORATORY CONTROL SAMPLE: 1600211

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	49.6	46.5	94	73-145	
Ethylbenzene	ug/L	49.6	53.2	107	87-129	
m&p-Xylene	ug/L	99.2	107	108	70-130	
Methyl-tert-butyl ether	ug/L	49.6	50.5	102	66-143	
o-Xylene	ug/L	49.6	52.9	107	70-130	
Toluene	ug/L	49.6	49.7	100	82-130	
4-Bromofluorobenzene (S)	%			98	61-130	
Dibromofluoromethane (S)	%			103	67-130	
Toluene-d8 (S)	%			97	70-130	

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272089 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40159507014, 40159507015, 40159507016, 40159507017

METHOD BLANK: 1600220 Matrix: Water
Associated Lab Samples: 40159507014, 40159507015, 40159507016, 40159507017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 09:09	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 09:09	
Benzene	ug/L	<0.50	1.0	10/27/17 09:09	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 09:09	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 09:09	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 09:09	
Naphthalene	ug/L	<2.5	5.0	10/27/17 09:09	
o-Xylene	ug/L	<0.50	1.0	10/27/17 09:09	
Toluene	ug/L	<0.50	1.0	10/27/17 09:09	
4-Bromofluorobenzene (S)	%	93	61-130	10/27/17 09:09	
Dibromofluoromethane (S)	%	109	67-130	10/27/17 09:09	
Toluene-d8 (S)	%	102	70-130	10/27/17 09:09	

LABORATORY CONTROL SAMPLE: 1600221

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	49.6	53.4	108	73-145	
Ethylbenzene	ug/L	49.6	50.3	101	87-129	
m&p-Xylene	ug/L	99.2	99.4	100	70-130	
Methyl-tert-butyl ether	ug/L	49.6	44.7	90	66-143	
o-Xylene	ug/L	49.6	50.0	101	70-130	
Toluene	ug/L	49.6	50.3	101	82-130	
4-Bromofluorobenzene (S)	%			102	61-130	
Dibromofluoromethane (S)	%			100	67-130	
Toluene-d8 (S)	%			108	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600424 1600425

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40159544001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	0.46 mg/L	496	496	947	991	99	107	73-145	5	20	
Ethylbenzene	ug/L	0.46 mg/L	496	496	971	980	103	105	87-129	1	20	
m&p-Xylene	ug/L	2470	992	992	3270	3410	80	94	70-130	4	20	
Methyl-tert-butyl ether	ug/L	<0.0017 mg/L	496	496	476	456	96	92	66-143	4	20	
o-Xylene	ug/L	1020	496	496	1500	1530	96	103	70-130	2	20	
Toluene	ug/L	2.3 mg/L	496	496	2640	2610	78	72	82-131	1	20	M1
4-Bromofluorobenzene (S)	%						109	107	61-130			

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600424		1600425		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40159544001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Dibromofluoromethane (S)	%					96	97	67-130			
Toluene-d8 (S)	%					109	106	70-130			

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272105 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40159507005, 40159507006, 40159507012

METHOD BLANK: 1600270 Matrix: Water
Associated Lab Samples: 40159507005, 40159507006, 40159507012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 08:18	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/27/17 08:18	
Benzene	ug/L	<0.50	1.0	10/27/17 08:18	
Ethylbenzene	ug/L	<0.50	1.0	10/27/17 08:18	
m&p-Xylene	ug/L	<1.0	2.0	10/27/17 08:18	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/27/17 08:18	
Naphthalene	ug/L	<2.5	5.0	10/27/17 08:18	
o-Xylene	ug/L	<0.50	1.0	10/27/17 08:18	
Toluene	ug/L	<0.50	1.0	10/27/17 08:18	
4-Bromofluorobenzene (S)	%	90	61-130	10/27/17 08:18	
Dibromofluoromethane (S)	%	102	67-130	10/27/17 08:18	
Toluene-d8 (S)	%	97	70-130	10/27/17 08:18	

LABORATORY CONTROL SAMPLE: 1600271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	49.6	51.9	105	73-145	
Ethylbenzene	ug/L	49.6	54.0	109	87-129	
m&p-Xylene	ug/L	99.2	111	112	70-130	
Methyl-tert-butyl ether	ug/L	49.6	51.4	104	66-143	
o-Xylene	ug/L	49.6	54.5	110	70-130	
Toluene	ug/L	49.6	52.9	107	82-130	
4-Bromofluorobenzene (S)	%			98	61-130	
Dibromofluoromethane (S)	%			102	67-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1600272 1600273

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40159524001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<0.50	49.6	49.6	54.1	56.7	109	114	73-145	5	20	
Ethylbenzene	ug/L	<0.50	49.6	49.6	55.0	58.2	111	117	87-129	6	20	
m&p-Xylene	ug/L	<1.0	99.2	99.2	113	119	114	119	70-130	5	20	
Methyl-tert-butyl ether	ug/L	<0.17	49.6	49.6	54.6	55.3	110	111	66-143	1	20	
o-Xylene	ug/L	<0.50	49.6	49.6	55.2	58.0	111	117	70-130	5	20	
Toluene	ug/L	<0.50	49.6	49.6	53.1	56.5	107	114	82-131	6	20	
4-Bromofluorobenzene (S)	%						97	100	61-130			
Dibromofluoromethane (S)	%						104	106	67-130			

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: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1600272		1600273									
Parameter	Units	40159524001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						94	96	70-130				

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR
Pace Project No.: 40159507

QC Batch: 272282 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40159507003, 40159507004, 40159507013

METHOD BLANK: 1601757 Matrix: Water
Associated Lab Samples: 40159507003, 40159507004, 40159507013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	10/30/17 12:25	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	10/30/17 12:25	
Benzene	ug/L	<0.50	1.0	10/30/17 12:25	
Ethylbenzene	ug/L	<0.50	1.0	10/30/17 12:25	
m&p-Xylene	ug/L	<1.0	2.0	10/30/17 12:25	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	10/30/17 12:25	
Naphthalene	ug/L	<2.5	5.0	10/30/17 12:25	
o-Xylene	ug/L	<0.50	1.0	10/30/17 12:25	
Toluene	ug/L	<0.50	1.0	10/30/17 12:25	
4-Bromofluorobenzene (S)	%	89	61-130	10/30/17 12:25	
Dibromofluoromethane (S)	%	99	67-130	10/30/17 12:25	
Toluene-d8 (S)	%	100	70-130	10/30/17 12:25	

LABORATORY CONTROL SAMPLE: 1601758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	49.6	46.5	94	73-145	
Ethylbenzene	ug/L	49.6	55.1	111	87-129	
m&p-Xylene	ug/L	99.2	106	107	70-130	
Methyl-tert-butyl ether	ug/L	49.6	47.6	96	66-143	
o-Xylene	ug/L	49.6	54.7	110	70-130	
Toluene	ug/L	49.6	51.5	104	82-130	
4-Bromofluorobenzene (S)	%			101	61-130	
Dibromofluoromethane (S)	%			101	67-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1601962 1601963

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40159608021 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Benzene	ug/L	<1.0	49.6	49.6	47.5	47.9	96	97	73-145	1	20	
Ethylbenzene	ug/L	<1.0	49.6	49.6	56.6	56.9	114	115	87-129	1	20	
m&p-Xylene	ug/L	<2.0	99.2	99.2	118	115	119	116	70-130	3	20	
Methyl-tert-butyl ether	ug/L	<1.0	49.6	49.6	51.8	51.8	104	104	66-143	0	20	
o-Xylene	ug/L	<1.0	49.6	49.6	57.8	55.9	116	113	70-130	3	20	
Toluene	ug/L	<1.0	49.6	49.6	51.8	50.6	104	102	82-131	2	20	
4-Bromofluorobenzene (S)	%						99	104	61-130			
Dibromofluoromethane (S)	%						102	101	67-130			

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QUALITY CONTROL DATA

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1601962		1601963									
Parameter	Units	40159608021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Toluene-d8 (S)	%						97	97	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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QUALIFIERS

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

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.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34625.003 CALUMET SUPERIOR

Pace Project No.: 40159507

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40159507018	LRS-1	EPA 8021	272425		
40159507019	LRS-2	EPA 8021	272425		
40159507020	LRS-3	EPA 8021	272425		
40159507021	LRS-4	EPA 8021	272425		
40159507022	LRS-6	EPA 8021	272425		
40159507023	LRS-7	EPA 8021	272425		
40159507024	MW-1/FL	EPA 8021	272425		
40159507025	MW-2/FL	EPA 8021	272425		
40159507026	MW-3/FL	EPA 8021	272425		
40159507027	MW-9/FL	EPA 8021	272425		
40159507028	MW-10/FL	EPA 8021	272425		
40159507029	MW-11/FL	EPA 8021	272425		
40159507030	MW-13/FL	EPA 8021	272425		
40159507031	MW-14/FL	EPA 8021	272425		
40159507032	TRIP BLANK	EPA 8021	272425		
40159507007	MW-1/T68	EPA 8260	272177		
40159507008	MW-2/T68	EPA 8260	272177		
40159507009	MW-4/T68	EPA 8260	272177		
40159507010	MW-5/T66	EPA 8260	272177		
40159507011	MW-6/T68	EPA 8260	272258		
40159507001	MW-1/T40	EPA 8260	272086		
40159507002	MW-4/T40	EPA 8260	272086		
40159507003	MW-5/T40	EPA 8260	272282		
40159507004	MW-6/T40	EPA 8260	272282		
40159507005	MW-7/T40	EPA 8260	272105		
40159507006	TS-1/T40	EPA 8260	272105		
40159507012	MW-1R/T70	EPA 8260	272105		
40159507013	MW-2R/T70	EPA 8260	272282		
40159507014	MW-3/T70	EPA 8260	272089		
40159507015	MW-4/T70	EPA 8260	272089		
40159507016	MW-5/T70	EPA 8260	272089		
40159507017	MW-6/T70	EPA 8260	272089		

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: 34625.003
 Project Name: Calumet Superior
 Project State: WI
 Sampled By (Print): Marcus Mussey
 Sampled By (Sign): [Signature]
 PO #:



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

40159507

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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 8260	VOCS 8260	PVOC/Naph 8260							

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
		DATE	TIME	
001	MW-1/T40	10/25	1320	GW
002	MW-4/T40		1310	
003	MW-5/T40		1250	
004	MW-6/T40		1300	
005	MW-7/T40		1305	
006	TS-1/T40		1315	
007	MW-1/T68		1340	
008	MW-2/T68		1345	
009	MW-4/T68		1330	
010	MW-5/T66		1350	
011	MW-6/T68		1355	
012	MW-1R/T70		1425	
013	MW-2R/T70		1415	

Quote #:
 Mail To Contact:
 Mail To Company:
 Mail To Address: 8025 Exclusion 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

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:

Relinquished By: [Signature] Date/Time: 1630
 Relinquished By: Fedex Date/Time: 10/26/17 1040
 Relinquished By: Date/Time:
 Relinquished By: Date/Time:

Received By: Fedex Date/Time:
 Received By: Steve Pace Date/Time: 10/26/17 1040
 Received By: Date/Time:
 Received By: Date/Time:

PACE Project No. 40159507
 Receipt Temp = RO °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#: 40159507

Client Name: Garnett Fleming

Courier: Fed Ex UPS Client Pace Other:

Tracking #: 812058142914



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

Cooler Temperature Uncorr: /Corr: ROI Biological Tissue is Frozen: yes

Temp Blank Present: yes no

Person examining contents:
Date: 10/26/17
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, Sufficient Volume, Containers Intact, Sample Labels match COC, Headspace in VOA Vials, Trip Blank Present, etc.

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: [Signature]

Date: 10/26/17