



Gannett Fleming

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November 26, 2019

File #34265.003

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

Re: 2019 Remediation Progress Report for Tank 40 Release Site
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 2019. 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.

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The hydraulic conductivity of the native clay underlying the refinery is on the order of 10^{-7} centimeters per second. Assuming a horizontal hydraulic gradient of 0.003 and effective porosity of 0.06, the estimated horizontal groundwater flow velocity is approximately 0.01 foot per year. 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 GF 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

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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.

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 in 2019

Since the last remediation progress report was submitted to the WDNR on November 12, 2018, work in the Tank 40 basin has included monitoring on-site wells for free product and collecting groundwater samples from select locations.

During the reporting period, no measurable product was observed. 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.

GF and Insight Environmental field staff collected groundwater samples at the site during the reporting period in May and October 2019. Each well was purged dry twice and allowed to recover for at least 14 days, prior to the collection of the samples. Monitoring wells MW-1/T40, MW-2/T40, and MW-4/T40 through MW-7/T40 and trench sump TS-1/T40 were routinely sampled. Field staff 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).

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

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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 in 2019.

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 2020 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.
- 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 PVOs by a Wisconsin-certified laboratory

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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 2021.

Feel free to contact Matt Turner at SRC and/or me if you have any comments, questions, or need additional information.

Sincerely,

GANNETT FLEMING, INC.



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

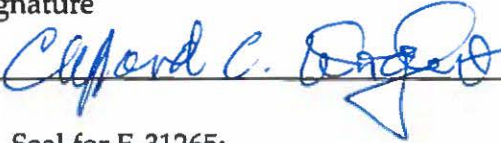
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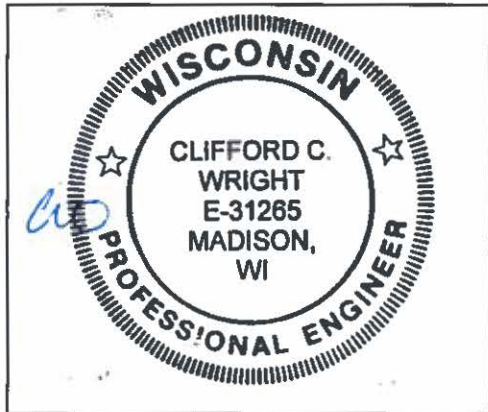
ecc: Matt Turner (SRC)
Dennis Kugle and Tony Miller (GF)

ENGINEERING AND HYDROGEOLOGIST CERTIFICATIONS

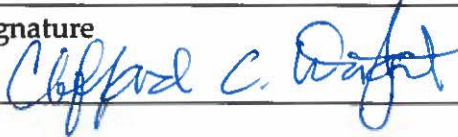
I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

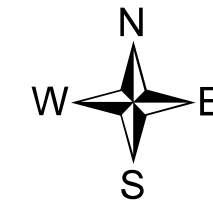
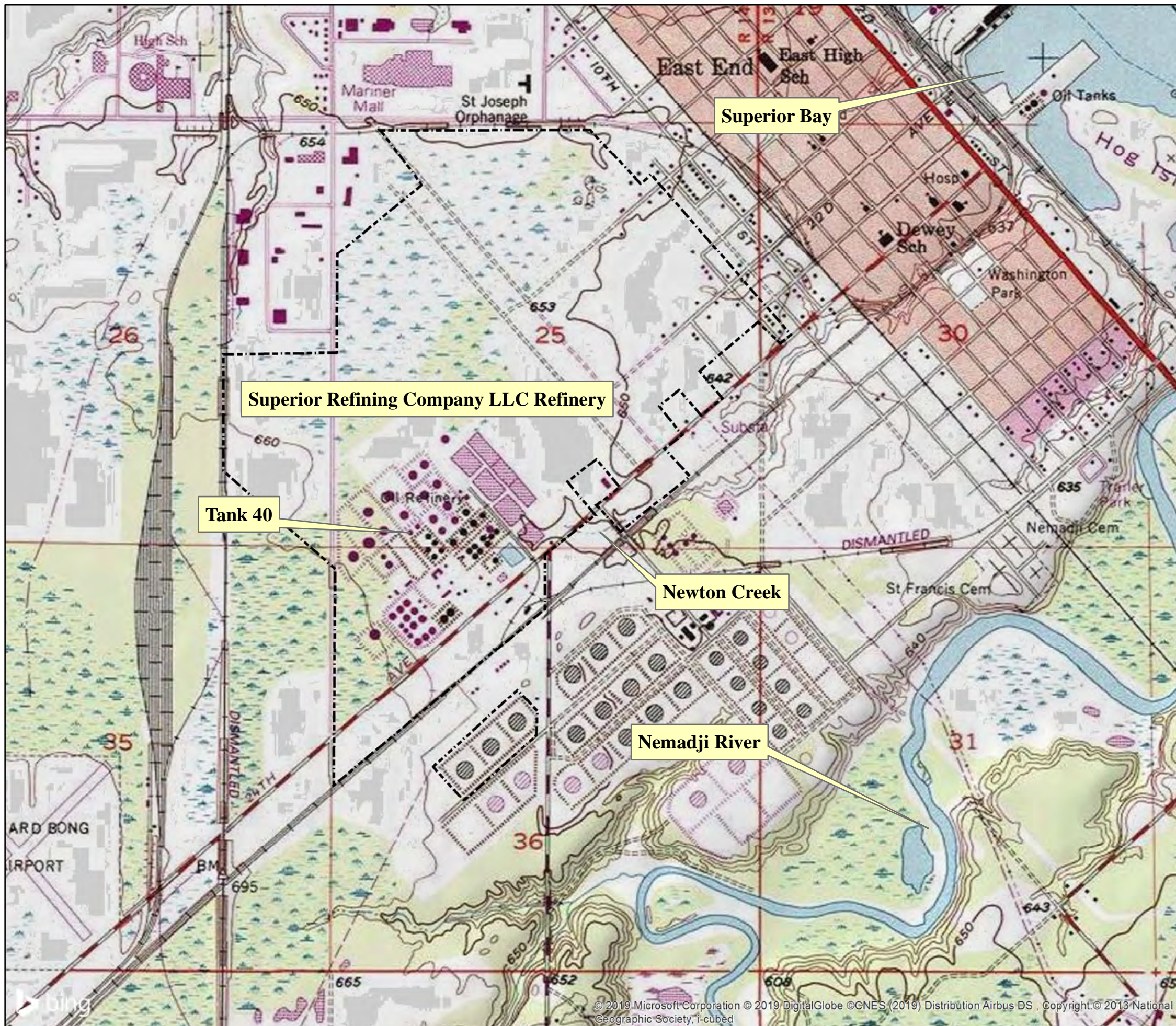
Print Name Clifford C. Wright	Title Project Engineer
Signature 	Date

P.E. Seal for E-31265:



I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print Name Clifford C. Wright	Title Project Geologist
Signature 	Date

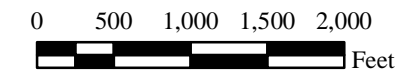


Legend

--- Approximate Property Boundary

Notes:

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



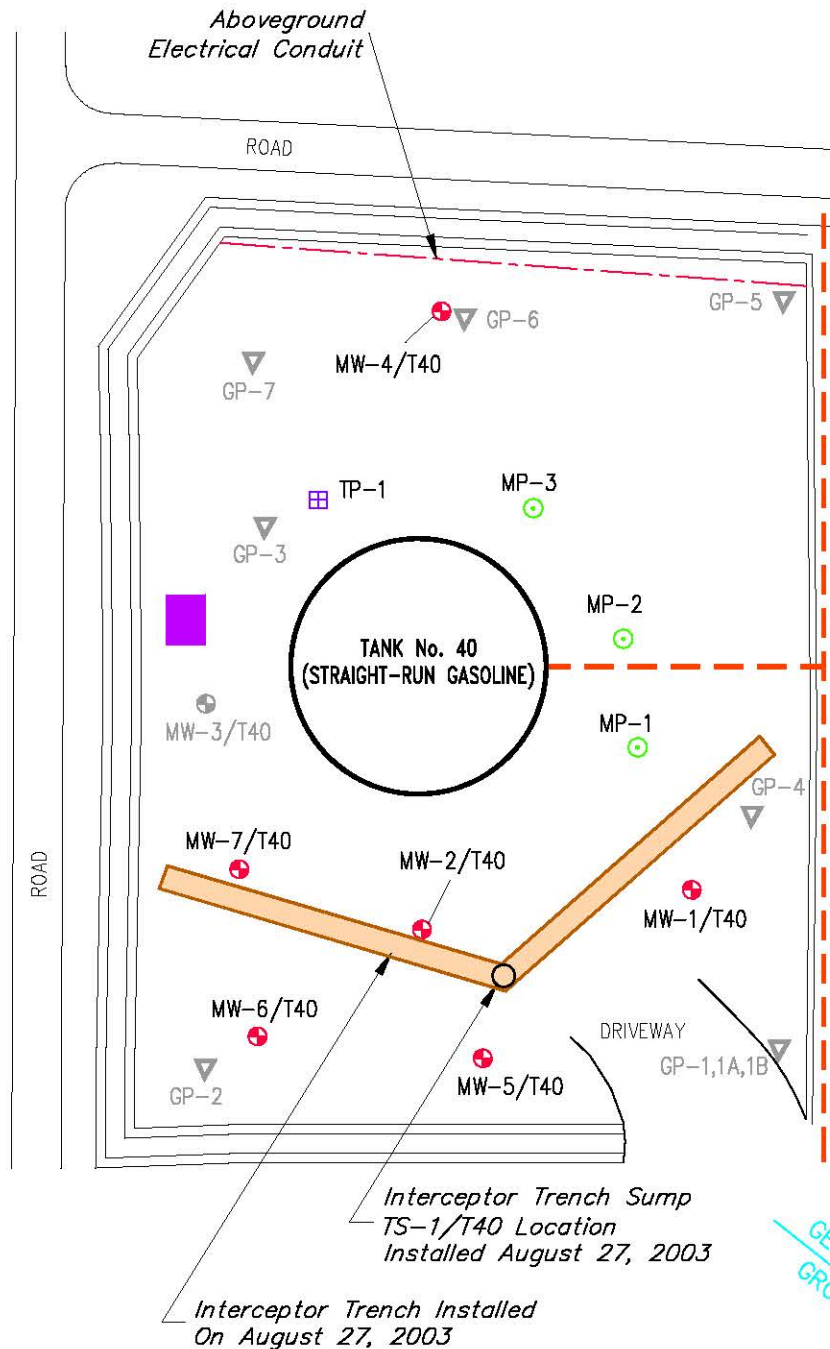
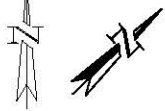
Site Location Map

SUPERIOR REFINING COMPANY LLC REFINERY
SUPERIOR, WISCONSIN



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LEGEND

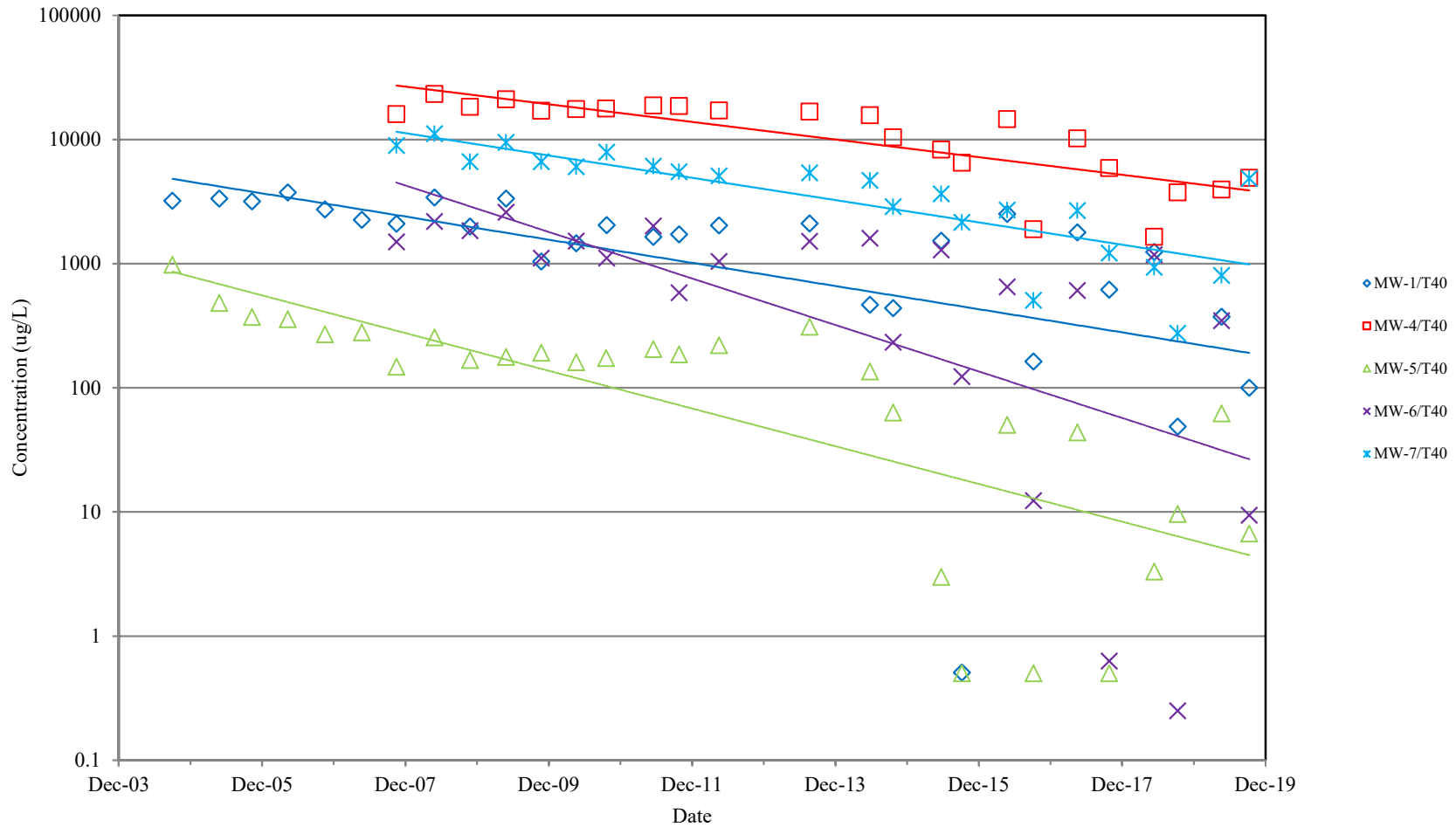
- Monitoring Point (July 2001)
- Test Pit Sump (July 2000)
- Monitoring Well
- Twin Ports Geoprobe Soil Sample Location (November 1998)
- Piping Run

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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SUPERIOR, WISCONSIN

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SUPERIOR, WISCONSIN

TABLE 1

2019 FLUID LEVEL MONITORING DATA FOR THE OCTOBER 1998 TANK 40 RELEASE SITE⁽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)																						
04/25/19	--	4.59	--	5.12	--	6.31	--	3.92	--	4.29	--	4.59	--	3.27	--	3.56	--	3.36	--	4.74	--	3.15	(2)
05/07/19	--	4.69	--	5.49	--	6.83	--	4.12	--	3.48	--	4.61	--	3.49	--	3.70	--	3.42	--	4.72	--	3.36	(2)
05/21/19	--	4.63	--	5.62	--	6.67	--	3.94	--	2.74	--	4.53	--	3.28	--	3.50	--	3.31	--	nm	--	3.25	Sampled
09/10/19	--	6.10	--	5.68	--	7.18	--	5.14	--	4.29	--	4.55	--	3.62	--	4.19	--	5.04	--	4.55	--	3.16	(2)
09/24/19	--	5.72	--	5.66	--	6.69	--	4.13	--	6.79	--	4.71	--	3.36	--	3.68	--	3.37	--	4.89	--	3.33	(2)
10/09/19	--	4.71	--	5.54	--	6.63	--	4.15	--	6.94	--	5.75	--	3.42	--	3.69	--	6.36	--	nm	--	3.31	Sampled

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 the monitoring wells (MWs) dry in preparation for sampling.

SUPERIOR REFINING COMPANY LLC
SUPERIOR, WISCONSIN

TABLE 2

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

Well ID	Substance Concentration (µg/l) and Results Qualifier (if any)									
	Date	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	
06/12/18	na	1,240	405	10.0 U	3,616.2	1,106	<3.5	na	na	
10/09/18	na	48.7	0.79 J	0.86 J	374.3	183.9	<1.2	na	na	
05/21/19	na	374	103	0.61 J	1,179.8	426	<1.2	na	na	
10/09/19	na	100	1.2	0.55 J	317.2	133.5	<1.2	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	
thru	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	

TABLE 2

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

Well ID	Substance Concentration (µg/l) and Results Qualifier (if any)								
	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
06/24/14	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
06/12/18	na	10,400	1,570	2,080	9,920	1,635	<21.8	na	na
10/09/18	na	8,450	1,280	1,130	9,980	1,349 J	<156	na	na
05/21/19	na	12,100	1,710	661	10,300	1,473 J	<156	na	na
10/09/19	na	10,600	1,670	464 J	8,910	1,445 J	<156	na	na
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 J	<250	na	na
10/25/11	na	18,600	1,980	6,460	8,360	1,419 J	<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
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
06/12/18	na	1,640	39.3	10.0 U	1,282	377.6	<3.5	na	na
10/09/18	na	3,750	28.4	3.4 U	4,780	1,096	<24.9	na	na

TABLE 2

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

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)								
	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
05/21/19	na	3,950	185	3.4 U	2,421	562	<24.9	na	na
10/09/19	na	4,910	214	5.3 J	3,710	1,061	<24.9	na	na
MW-5/T40									
03/06/02	NI	NI	NI	NI	NI	NI	NI	NI	NI
09/12/02	<50	0.25 U	0.53 U	0.84 U	1.83 U	1.33 U	<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
06/12/18	na	3.3	16.6	0.50 U	76.40 U	33.9	<0.17	na	na
10/09/18	na	9.6	30.4	0.17 U	115.26 U	81.9	<1.2	na	na
05/21/19	na	62.2	218	0.17 U	859.99 J	353.8	<1.2	na	na
10/09/19	na	6.7	8.2	0.17 U	172.44 J	120.7	<1.2	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
10/25/11	na	584	100	8.00 U	63.63 J	37.9 J	<10.0	na	na

TABLE 2

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

Well ID	Substance Concentration (µg/l) and Results Qualifier (if any)								
	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
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	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
06/12/18	na	1,180	662	0.50 U	824.3	278.3	<0.17	na	na
10/09/18	na	0.25 U	0.22 U	0.17 U	0.73 U	1.71 U	<1.2	na	na
05/21/19	na	347	195	0.17 U	249.26 U	75.2	<1.2	na	na
10/09/19	na	9.4	0.22 U	0.17 U	0.73 U	1.71 U	<1.2	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
06/12/18	na	934	71.4	10.0 U	1,141	280	<3.5	na	na
10/09/18	na	275	33.3	1.9 J	376.3	120.2	<2.5	na	na
05/21/19	na	802	189	4.4 J	809	187.0	<2.5	na	na
10/09/19	na	4,850	1,200	5.6 J	4,262	1,091	<12.5	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

TABLE 2

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

Well ID Date	Substance Concentration (µg/l) and Results Qualifier (if any)								
	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
11/24/08	1,020	80.1	<i>158</i>	7.28 J	137.2	<i>178</i>	<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
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
06/12/18	na	20.9	2.2	0.50 U	2.00 JU	6.6	<0.17	na	na
10/09/18	na	<i>2.1</i>	0.22 U	0.17 U	0.73 U	1.71 U	<1.2	na	na
05/21/19	na	10.1	2.5	0.17 U	1.00 JU	3.5 J	<1.2	na	na
10/09/19	na	<i>0.64</i> J	0.22 U	0.17 U	0.73 U	1.71 U	<1.2	na	na

NOTES:

Concentrations are in micrograms per liter (µg/l).

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 IN 2019**

June 04, 2019

Project #34265.003
T40/T50/T68/T70 GW Data
Reviewed by CCW
6/5/19

Clifford Wright
Gannett Fleming
8040 Excelsior Drive, Ste 303
Madison, WI 53717

RE: Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40188098

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2019. 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 SUPERIOR REFINING CO
Pace Project No.: 40188098

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150

Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40188098

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40188098001	MW-1/T40	Water	05/21/19 08:50	05/22/19 08:20
40188098002	MW-2/T40	Water	05/21/19 08:35	05/22/19 08:20
40188098003	MW-4/T40	Water	05/21/19 08:55	05/22/19 08:20
40188098004	MW-5/T40	Water	05/21/19 08:30	05/22/19 08:20
40188098005	MW-6/T40	Water	05/21/19 08:40	05/22/19 08:20
40188098006	MW-7/T40	Water	05/21/19 08:45	05/22/19 08:20
40188098007	TS-1/T40	Water	05/21/19 08:25	05/22/19 08:20
40188098008	MW-1/T68	Water	05/21/19 09:00	05/22/19 08:20
40188098009	MW-2/T68	Water	05/21/19 09:30	05/22/19 08:20
40188098010	MW-4/T68	Water	05/21/19 09:25	05/22/19 08:20
40188098011	MW-5/T66	Water	05/21/19 09:15	05/22/19 08:20
40188098012	MW-5/T68	Water	05/21/19 09:10	05/22/19 08:20
40188098013	MW-6/T68	Water	05/21/19 09:20	05/22/19 08:20
40188098014	MW-2R/T70	Water	05/21/19 09:45	05/22/19 08:20
40188098015	MW-3/T70	Water	05/21/19 10:00	05/22/19 08:20
40188098016	MW-4/T70	Water	05/21/19 10:05	05/22/19 08:20
40188098017	MW-5/T70	Water	05/21/19 09:50	05/22/19 08:20
40188098018	MW-6/T70	Water	05/21/19 09:55	05/22/19 08:20
40188098019	MW-4/T50	Water	05/21/19 08:10	05/22/19 08:20
40188098020	MW-5/T50	Water	05/21/19 08:05	05/22/19 08:20
40188098021	MW-6/T50	Water	05/21/19 08:15	05/22/19 08:20
40188098022	TRIP BLANK	Water	05/21/19 00:00	05/22/19 08:20

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SAMPLE ANALYTE COUNT

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40188098001	MW-1/T40	EPA 8260	HNW	11	PASI-G
40188098002	MW-2/T40	EPA 8260	HNW	11	PASI-G
40188098003	MW-4/T40	EPA 8260	HNW	11	PASI-G
40188098004	MW-5/T40	EPA 8260	HNW	11	PASI-G
40188098005	MW-6/T40	EPA 8260	HNW	11	PASI-G
40188098006	MW-7/T40	EPA 8260	HNW	11	PASI-G
40188098007	TS-1/T40	EPA 8260	HNW	11	PASI-G
40188098008	MW-1/T68	EPA 8260	HNW	63	PASI-G
40188098009	MW-2/T68	EPA 8260	SMT	63	PASI-G
40188098010	MW-4/T68	EPA 8260	SMT	63	PASI-G
40188098011	MW-5/T66	EPA 8260	HNW	63	PASI-G
40188098012	MW-5/T68	EPA 8260	HNW	63	PASI-G
40188098013	MW-6/T68	EPA 8260	HNW	63	PASI-G
40188098014	MW-2R/T70	EPA 8260	HNW	12	PASI-G
40188098015	MW-3/T70	EPA 8260	HNW	12	PASI-G
40188098016	MW-4/T70	EPA 8260	LAP	12	PASI-G
40188098017	MW-5/T70	EPA 8260	LAP	12	PASI-G
40188098018	MW-6/T70	EPA 8260	LAP	12	PASI-G
40188098019	MW-4/T50	EPA 8021	ALD	10	PASI-G
40188098020	MW-5/T50	EPA 8021	ALD	10	PASI-G
40188098021	MW-6/T50	EPA 8021	ALD	10	PASI-G
40188098022	TRIP BLANK	EPA 8260	SMT	63	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40188098001	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	288	ug/L	2.8	05/24/19 08:51	
EPA 8260	1,3,5-Trimethylbenzene	138	ug/L	2.9	05/24/19 08:51	
EPA 8260	Benzene	374	ug/L	10.0	05/24/19 09:12	HS, M1
EPA 8260	Ethylbenzene	103	ug/L	1.0	05/24/19 08:51	M1
EPA 8260	Toluene	0.61J	ug/L	5.0	05/24/19 08:51	
EPA 8260	m&p-Xylene	1160	ug/L	20.0	05/24/19 09:12	HS, M1
EPA 8260	o-Xylene	19.8	ug/L	1.0	05/24/19 08:51	M1
40188098002	MW-2/T40					
EPA 8260	1,2,4-Trimethylbenzene	1150	ug/L	350	05/24/19 09:33	
EPA 8260	1,3,5-Trimethylbenzene	323J	ug/L	364	05/24/19 09:33	
EPA 8260	Benzene	12100	ug/L	125	05/24/19 09:33	
EPA 8260	Ethylbenzene	1710	ug/L	125	05/24/19 09:33	
EPA 8260	Toluene	661	ug/L	625	05/24/19 09:33	
EPA 8260	m&p-Xylene	7270	ug/L	250	05/24/19 09:33	
EPA 8260	o-Xylene	3030	ug/L	125	05/24/19 09:33	
40188098003	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	460	ug/L	56.0	05/24/19 09:55	
EPA 8260	1,3,5-Trimethylbenzene	102	ug/L	58.2	05/24/19 09:55	
EPA 8260	Benzene	3950	ug/L	20.0	05/24/19 09:55	
EPA 8260	Ethylbenzene	185	ug/L	20.0	05/24/19 09:55	
EPA 8260	m&p-Xylene	1720	ug/L	40.0	05/24/19 09:55	
EPA 8260	o-Xylene	701	ug/L	20.0	05/24/19 09:55	
40188098004	MW-5/T40					
EPA 8260	1,2,4-Trimethylbenzene	270	ug/L	28.0	05/28/19 10:40	
EPA 8260	1,3,5-Trimethylbenzene	83.8	ug/L	2.9	05/25/19 01:02	
EPA 8260	Benzene	62.2	ug/L	1.0	05/25/19 01:02	
EPA 8260	Ethylbenzene	218	ug/L	1.0	05/25/19 01:02	
EPA 8260	m&p-Xylene	859	ug/L	20.0	05/28/19 10:40	
EPA 8260	o-Xylene	0.99J	ug/L	1.0	05/25/19 01:02	
40188098005	MW-6/T40					
EPA 8260	1,2,4-Trimethylbenzene	57.6	ug/L	2.8	05/25/19 01:24	
EPA 8260	1,3,5-Trimethylbenzene	17.6	ug/L	2.9	05/25/19 01:24	
EPA 8260	Benzene	347	ug/L	5.0	05/28/19 11:01	
EPA 8260	Ethylbenzene	195	ug/L	1.0	05/25/19 01:24	
EPA 8260	m&p-Xylene	249	ug/L	2.0	05/25/19 01:24	
40188098006	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	157	ug/L	5.6	05/24/19 10:17	
EPA 8260	1,3,5-Trimethylbenzene	30.0	ug/L	5.8	05/24/19 10:17	
EPA 8260	Benzene	802	ug/L	10.0	05/25/19 02:29	
EPA 8260	Ethylbenzene	189	ug/L	2.0	05/24/19 10:17	
EPA 8260	Toluene	4.4J	ug/L	10.0	05/24/19 10:17	
EPA 8260	m&p-Xylene	668	ug/L	4.0	05/24/19 10:17	
EPA 8260	o-Xylene	141	ug/L	2.0	05/24/19 10:17	

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SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40188098007	TS-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	2.3J	ug/L	2.8	05/28/19 11:44	
EPA 8260	1,3,5-Trimethylbenzene	1.2J	ug/L	2.9	05/28/19 11:44	
EPA 8260	Benzene	10.1	ug/L	1.0	05/28/19 11:44	
EPA 8260	Ethylbenzene	2.5	ug/L	1.0	05/28/19 11:44	
EPA 8260	m&p-Xylene	0.74J	ug/L	2.0	05/28/19 11:44	
40188098009	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	288	ug/L	2.8	05/31/19 13:18	
EPA 8260	1,2-Dichloroethane	8.0	ug/L	1.0	05/31/19 13:18	
EPA 8260	1,3,5-Trimethylbenzene	146	ug/L	2.9	05/31/19 13:18	
EPA 8260	Benzene	106	ug/L	1.0	05/31/19 13:18	
EPA 8260	Ethylbenzene	3.6	ug/L	1.0	05/31/19 13:18	
EPA 8260	Naphthalene	23.8	ug/L	5.0	05/31/19 13:18	
EPA 8260	Toluene	105	ug/L	5.0	05/31/19 13:18	
EPA 8260	m&p-Xylene	512	ug/L	2.0	05/31/19 13:18	
EPA 8260	o-Xylene	487	ug/L	2.5	06/03/19 14:46	pH
EPA 8260	sec-Butylbenzene	19.3	ug/L	5.0	05/31/19 13:18	
40188098010	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	351	ug/L	28.0	05/31/19 15:09	
EPA 8260	1,3,5-Trimethylbenzene	25.0J	ug/L	29.1	05/31/19 15:09	
EPA 8260	Benzene	1790	ug/L	10.0	05/31/19 15:09	
EPA 8260	Ethylbenzene	278	ug/L	10.0	05/31/19 15:09	
EPA 8260	Isopropylbenzene (Cumene)	8.4J	ug/L	50.0	05/31/19 15:09	
EPA 8260	Naphthalene	13.1J	ug/L	50.0	05/31/19 15:09	
EPA 8260	Toluene	4.9J	ug/L	50.0	05/31/19 15:09	
EPA 8260	m&p-Xylene	550	ug/L	20.0	05/31/19 15:09	
EPA 8260	n-Propylbenzene	17.9J	ug/L	50.0	05/31/19 15:09	
40188098011	MW-5/T66					
EPA 8260	1,2,4-Trimethylbenzene	2780	ug/L	140	05/30/19 18:35	
EPA 8260	1,3,5-Trimethylbenzene	845	ug/L	146	05/30/19 18:35	
EPA 8260	Benzene	2810	ug/L	50.0	05/30/19 18:35	
EPA 8260	Ethylbenzene	1410	ug/L	50.0	05/30/19 18:35	
EPA 8260	Isopropylbenzene (Cumene)	37.0J	ug/L	250	05/30/19 18:35	
EPA 8260	Naphthalene	382	ug/L	250	05/30/19 18:35	
EPA 8260	Toluene	7130	ug/L	250	05/30/19 18:35	
EPA 8260	m&p-Xylene	9400	ug/L	100	05/30/19 18:35	
EPA 8260	n-Propylbenzene	108J	ug/L	250	05/30/19 18:35	
EPA 8260	o-Xylene	3760	ug/L	50.0	05/30/19 18:35	
40188098012	MW-5/T68					
EPA 8260	1,2,4-Trimethylbenzene	2750	ug/L	700	05/30/19 18:58	
EPA 8260	1,3,5-Trimethylbenzene	730	ug/L	728	05/30/19 18:58	
EPA 8260	Benzene	27400	ug/L	250	05/30/19 18:58	
EPA 8260	Ethylbenzene	2730	ug/L	250	05/30/19 18:58	
EPA 8260	Naphthalene	432J	ug/L	1250	05/30/19 18:58	
EPA 8260	Toluene	41600	ug/L	1250	05/30/19 18:58	
EPA 8260	m&p-Xylene	17100	ug/L	500	05/30/19 18:58	

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PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Method: EPA 8021

Description: 8021 GCV Short List

Client: Gannett Fleming Inc.

Date: June 04, 2019

General Information:

3 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: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40188098

Method: EPA 8260
Description: 8260 MSV
Client: Gannett Fleming Inc.
Date: June 04, 2019

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.

- pH: Post-analysis pH measurement indicates insufficient VOA sample preservation.
- MW-2/T68 (Lab ID: 40188098009)

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: 322936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40188564001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1875584)
 - 1,1-Dichloroethane
 - Methyl-tert-butyl ether

Additional Comments:

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PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: June 04, 2019

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: 322305

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40188098001

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

- MS (Lab ID: 1871922)
 - Benzene
 - Ethylbenzene
 - m&p-Xylene
 - o-Xylene
- MSD (Lab ID: 1871923)
 - Benzene
 - Ethylbenzene
 - m&p-Xylene

Additional Comments:

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PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Method: EPA 8260

Description: 8260 MSV UST

Client: Gannett Fleming Inc.

Date: June 04, 2019

Analyte Comments:

QC Batch: 322305

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1871922)
 - Benzene
 - m&p-Xylene
- MSD (Lab ID: 1871923)
 - Benzene
 - m&p-Xylene

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

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-1/T40 **Lab ID: 40188098001** Collected: 05/21/19 08:50 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	288	ug/L	2.8	0.84	1		05/24/19 08:51	95-63-6	
1,3,5-Trimethylbenzene	138	ug/L	2.9	0.87	1		05/24/19 08:51	108-67-8	
Benzene	374	ug/L	10.0	2.5	10		05/24/19 09:12	71-43-2	HS, M1
Ethylbenzene	103	ug/L	1.0	0.22	1		05/24/19 08:51	100-41-4	M1
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/24/19 08:51	1634-04-4	
Toluene	0.61J	ug/L	5.0	0.17	1		05/24/19 08:51	108-88-3	
m&p-Xylene	1160	ug/L	20.0	4.7	10		05/24/19 09:12	179601-23-1	HS, M1
o-Xylene	19.8	ug/L	1.0	0.26	1		05/24/19 08:51	95-47-6	M1
Surrogates									
Dibromofluoromethane (S)	106	%	70-130		1		05/24/19 08:51	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		05/24/19 08:51	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		1		05/24/19 08:51	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-2/T40 **Lab ID: 40188098002** Collected: 05/21/19 08:35 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	1150	ug/L	350	105	125		05/24/19 09:33	95-63-6	
1,3,5-Trimethylbenzene	323J	ug/L	364	109	125		05/24/19 09:33	108-67-8	
Benzene	12100	ug/L	125	30.8	125		05/24/19 09:33	71-43-2	
Ethylbenzene	1710	ug/L	125	27.3	125		05/24/19 09:33	100-41-4	
Methyl-tert-butyl ether	<156	ug/L	519	156	125		05/24/19 09:33	1634-04-4	
Toluene	661	ug/L	625	21.5	125		05/24/19 09:33	108-88-3	
m&p-Xylene	7270	ug/L	250	58.2	125		05/24/19 09:33	179601-23-1	
o-Xylene	3030	ug/L	125	32.7	125		05/24/19 09:33	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		125		05/24/19 09:33	1868-53-7	
Toluene-d8 (S)	99	%	70-130		125		05/24/19 09:33	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130		125		05/24/19 09:33	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-4/T40 **Lab ID: 40188098003** Collected: 05/21/19 08:55 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	460	ug/L	56.0	16.8	20		05/24/19 09:55	95-63-6	
1,3,5-Trimethylbenzene	102	ug/L	58.2	17.5	20		05/24/19 09:55	108-67-8	
Benzene	3950	ug/L	20.0	4.9	20		05/24/19 09:55	71-43-2	
Ethylbenzene	185	ug/L	20.0	4.4	20		05/24/19 09:55	100-41-4	
Methyl-tert-butyl ether	<24.9	ug/L	83.1	24.9	20		05/24/19 09:55	1634-04-4	
Toluene	<3.4	ug/L	100	3.4	20		05/24/19 09:55	108-88-3	
m&p-Xylene	1720	ug/L	40.0	9.3	20		05/24/19 09:55	179601-23-1	
o-Xylene	701	ug/L	20.0	5.2	20		05/24/19 09:55	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		20		05/24/19 09:55	1868-53-7	
Toluene-d8 (S)	100	%	70-130		20		05/24/19 09:55	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		20		05/24/19 09:55	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-5/T40 **Lab ID: 40188098004** Collected: 05/21/19 08:30 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	270	ug/L	28.0	8.4	10		05/28/19 10:40	95-63-6	
1,3,5-Trimethylbenzene	83.8	ug/L	2.9	0.87	1		05/25/19 01:02	108-67-8	
Benzene	62.2	ug/L	1.0	0.25	1		05/25/19 01:02	71-43-2	
Ethylbenzene	218	ug/L	1.0	0.22	1		05/25/19 01:02	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/25/19 01:02	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		05/25/19 01:02	108-88-3	
m&p-Xylene	859	ug/L	20.0	4.7	10		05/28/19 10:40	179601-23-1	
o-Xylene	0.99J	ug/L	1.0	0.26	1		05/25/19 01:02	95-47-6	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		05/25/19 01:02	1868-53-7	
Toluene-d8 (S)	99	%	70-130		1		05/25/19 01:02	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130		1		05/25/19 01:02	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-6/T40 **Lab ID: 40188098005** Collected: 05/21/19 08:40 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	57.6	ug/L	2.8	0.84	1		05/25/19 01:24	95-63-6	
1,3,5-Trimethylbenzene	17.6	ug/L	2.9	0.87	1		05/25/19 01:24	108-67-8	
Benzene	347	ug/L	5.0	1.2	5		05/28/19 11:01	71-43-2	
Ethylbenzene	195	ug/L	1.0	0.22	1		05/25/19 01:24	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/25/19 01:24	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		05/25/19 01:24	108-88-3	
m&p-Xylene	249	ug/L	2.0	0.47	1		05/25/19 01:24	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		05/25/19 01:24	95-47-6	
Surrogates									
Dibromofluoromethane (S)	106	%	70-130		1		05/25/19 01:24	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		05/25/19 01:24	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		1		05/25/19 01:24	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: MW-7/T40 **Lab ID: 40188098006** Collected: 05/21/19 08:45 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	157	ug/L	5.6	1.7	2		05/24/19 10:17	95-63-6	
1,3,5-Trimethylbenzene	30.0	ug/L	5.8	1.7	2		05/24/19 10:17	108-67-8	
Benzene	802	ug/L	10.0	2.5	10		05/25/19 02:29	71-43-2	
Ethylbenzene	189	ug/L	2.0	0.44	2		05/24/19 10:17	100-41-4	
Methyl-tert-butyl ether	<2.5	ug/L	8.3	2.5	2		05/24/19 10:17	1634-04-4	
Toluene	4.4J	ug/L	10.0	0.34	2		05/24/19 10:17	108-88-3	
m&p-Xylene	668	ug/L	4.0	0.93	2		05/24/19 10:17	179601-23-1	
o-Xylene	141	ug/L	2.0	0.52	2		05/24/19 10:17	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		2		05/24/19 10:17	1868-53-7	
Toluene-d8 (S)	101	%	70-130		2		05/24/19 10:17	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130		2		05/24/19 10:17	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: TS-1/T40 **Lab ID: 40188098007** Collected: 05/21/19 08:25 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	2.3J	ug/L	2.8	0.84	1		05/28/19 11:44	95-63-6	
1,3,5-Trimethylbenzene	1.2J	ug/L	2.9	0.87	1		05/28/19 11:44	108-67-8	
Benzene	10.1	ug/L	1.0	0.25	1		05/28/19 11:44	71-43-2	
Ethylbenzene	2.5	ug/L	1.0	0.22	1		05/28/19 11:44	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/28/19 11:44	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		05/28/19 11:44	108-88-3	
m&p-Xylene	0.74J	ug/L	2.0	0.47	1		05/28/19 11:44	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		05/28/19 11:44	95-47-6	
Surrogates									
Dibromofluoromethane (S)	106	%	70-130		1		05/28/19 11:44	1868-53-7	
Toluene-d8 (S)	93	%	70-130		1		05/28/19 11:44	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130		1		05/28/19 11:44	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: TRIP BLANK **Lab ID: 40188098022** Collected: 05/21/19 00:00 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		05/31/19 11:05	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		05/31/19 11:05	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		05/31/19 11:05	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		05/31/19 11:05	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		05/31/19 11:05	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		05/31/19 11:05	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		05/31/19 11:05	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		05/31/19 11:05	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		05/31/19 11:05	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		05/31/19 11:05	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		05/31/19 11:05	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		05/31/19 11:05	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		05/31/19 11:05	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		05/31/19 11:05	594-20-7	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		05/31/19 11:05	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		05/31/19 11:05	106-43-4	
Benzene	<0.25	ug/L	1.0	0.25	1		05/31/19 11:05	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		05/31/19 11:05	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		05/31/19 11:05	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		05/31/19 11:05	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		05/31/19 11:05	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		05/31/19 11:05	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		05/31/19 11:05	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		05/31/19 11:05	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		05/31/19 11:05	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		05/31/19 11:05	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		05/31/19 11:05	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		05/31/19 11:05	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		05/31/19 11:05	75-71-8	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		05/31/19 11:05	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		05/31/19 11:05	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		05/31/19 11:05	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		05/31/19 11:05	1634-04-4	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		05/31/19 11:05	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		05/31/19 11:05	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		05/31/19 11:05	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		05/31/19 11:05	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		05/31/19 11:05	108-88-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Sample: TRIP BLANK **Lab ID: 40188098022** Collected: 05/21/19 00:00 Received: 05/22/19 08:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Trichloroethene	<0.26	ug/L	1.0	0.26	1		05/31/19 11:05	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		05/31/19 11:05	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		05/31/19 11:05	75-01-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		05/31/19 11:05	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		05/31/19 11:05	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		05/31/19 11:05	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		05/31/19 11:05	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		05/31/19 11:05	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		05/31/19 11:05	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		05/31/19 11:05	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		05/31/19 11:05	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		05/31/19 11:05	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		05/31/19 11:05	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		05/31/19 11:05	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	87	%	70-130		1		05/31/19 11:05	460-00-4	
Dibromofluoromethane (S)	96	%	70-130		1		05/31/19 11:05	1868-53-7	HS
Toluene-d8 (S)	98	%	70-130		1		05/31/19 11:05	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40188098

QC Batch: 322441 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 40188098019, 40188098020, 40188098021

METHOD BLANK: 1873411 Matrix: Water
Associated Lab Samples: 40188098019, 40188098020, 40188098021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.34	1.1	05/28/19 10:25	
1,3,5-Trimethylbenzene	ug/L	<0.33	1.1	05/28/19 10:25	
Benzene	ug/L	<0.31	1.0	05/28/19 10:25	
Ethylbenzene	ug/L	<0.33	1.1	05/28/19 10:25	
m&p-Xylene	ug/L	<0.66	2.2	05/28/19 10:25	
Methyl-tert-butyl ether	ug/L	<0.32	1.1	05/28/19 10:25	
Naphthalene	ug/L	<0.51	1.7	05/28/19 10:25	
o-Xylene	ug/L	<0.32	1.0	05/28/19 10:25	
Toluene	ug/L	<0.49	1.6	05/28/19 10:25	
a,a,a-Trifluorotoluene (S)	%	101	85-115	05/28/19 10:25	

LABORATORY CONTROL SAMPLE & LCSD: 1873412 1873413

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	20.3	19.7	102	98	87-118	3	20	
1,3,5-Trimethylbenzene	ug/L	20	20.1	19.6	101	98	84-115	3	20	
Benzene	ug/L	20	21.2	21.1	106	106	85-115	1	20	
Ethylbenzene	ug/L	20	20.8	20.3	104	101	85-115	3	20	
m&p-Xylene	ug/L	40	41.6	40.4	104	101	85-115	3	20	
Methyl-tert-butyl ether	ug/L	20	21.1	20.7	105	103	85-115	2	20	
Naphthalene	ug/L	20	20.2	20.1	101	100	83-119	1	20	
o-Xylene	ug/L	20	20.7	20.1	104	101	85-115	3	20	
Toluene	ug/L	20	21.1	20.8	105	104	85-115	2	20	
a,a,a-Trifluorotoluene (S)	%				102	101	85-115			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873802 1873803

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188097005 Result	Spike Conc.	Spike Conc.	MS Result						
1,2,4-Trimethylbenzene	ug/L	<0.34	20	20	21.7	21.2	108	106	72-135	2	20
1,3,5-Trimethylbenzene	ug/L	<0.33	20	20	21.6	21.2	108	106	67-134	2	20
Benzene	ug/L	<0.31	20	20	22.4	22.0	112	110	85-122	2	20
Ethylbenzene	ug/L	<0.33	20	20	22.4	21.9	112	110	85-129	2	20
m&p-Xylene	ug/L	<0.66	40	40	44.8	43.8	112	110	85-124	2	20
Methyl-tert-butyl ether	ug/L	<0.32	20	20	20.9	20.3	105	102	85-118	3	20
Naphthalene	ug/L	<0.51	20	20	20.0	20.0	100	100	78-132	0	20
o-Xylene	ug/L	<0.32	20	20	21.9	21.5	110	107	85-124	2	20
Toluene	ug/L	<0.49	20	20	22.6	22.0	113	110	85-122	2	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873802 1873803												
Parameter	Units	40188097005 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
a,a,a-Trifluorotoluene (S)	%						102	102	85-115			

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch: 322350 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

METHOD BLANK: 1872065 Matrix: Water
Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	05/30/19 15:35	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	05/30/19 15:35	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	05/30/19 15:35	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	05/30/19 15:35	
1,1-Dichloroethane	ug/L	<0.27	1.0	05/30/19 15:35	
1,1-Dichloroethene	ug/L	<0.24	1.0	05/30/19 15:35	
1,1-Dichloropropene	ug/L	<0.54	1.8	05/30/19 15:35	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	05/30/19 15:35	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	05/30/19 15:35	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	05/30/19 15:35	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/30/19 15:35	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	05/30/19 15:35	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	05/30/19 15:35	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	05/30/19 15:35	
1,2-Dichloroethane	ug/L	<0.28	1.0	05/30/19 15:35	
1,2-Dichloropropane	ug/L	<0.28	1.0	05/30/19 15:35	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/30/19 15:35	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	05/30/19 15:35	
1,3-Dichloropropane	ug/L	<0.83	2.8	05/30/19 15:35	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	05/30/19 15:35	
2,2-Dichloropropane	ug/L	<2.3	7.6	05/30/19 15:35	
2-Chlorotoluene	ug/L	<0.93	5.0	05/30/19 15:35	
4-Chlorotoluene	ug/L	<0.76	2.5	05/30/19 15:35	
Benzene	ug/L	<0.25	1.0	05/30/19 15:35	
Bromobenzene	ug/L	<0.24	1.0	05/30/19 15:35	
Bromochloromethane	ug/L	<0.36	5.0	05/30/19 15:35	
Bromodichloromethane	ug/L	<0.36	1.2	05/30/19 15:35	
Bromoform	ug/L	<4.0	13.2	05/30/19 15:35	
Bromomethane	ug/L	<0.97	5.0	05/30/19 15:35	
Carbon tetrachloride	ug/L	<0.17	1.0	05/30/19 15:35	
Chlorobenzene	ug/L	<0.71	2.4	05/30/19 15:35	
Chloroethane	ug/L	<1.3	5.0	05/30/19 15:35	
Chloroform	ug/L	<1.3	5.0	05/30/19 15:35	
Chloromethane	ug/L	<2.2	7.3	05/30/19 15:35	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	05/30/19 15:35	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	05/30/19 15:35	
Dibromochloromethane	ug/L	<2.6	8.7	05/30/19 15:35	
Dibromomethane	ug/L	<0.94	3.1	05/30/19 15:35	
Dichlorodifluoromethane	ug/L	<0.50	5.0	05/30/19 15:35	
Ethylbenzene	ug/L	<0.22	1.0	05/30/19 15:35	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	05/30/19 15:35	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

METHOD BLANK: 1872065

Matrix: Water

Associated Lab Samples: 40188098008, 40188098011, 40188098012, 40188098013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	05/30/19 15:35	
m&p-Xylene	ug/L	<0.47	2.0	05/30/19 15:35	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/30/19 15:35	
Methylene Chloride	ug/L	<0.58	5.0	05/30/19 15:35	
n-Butylbenzene	ug/L	<0.71	2.4	05/30/19 15:35	
n-Propylbenzene	ug/L	<0.81	5.0	05/30/19 15:35	
Naphthalene	ug/L	<1.2	5.0	05/30/19 15:35	
o-Xylene	ug/L	<0.26	1.0	05/30/19 15:35	
p-Isopropyltoluene	ug/L	<0.80	2.7	05/30/19 15:35	
sec-Butylbenzene	ug/L	<0.85	5.0	05/30/19 15:35	
Styrene	ug/L	<0.47	1.6	05/30/19 15:35	
tert-Butylbenzene	ug/L	<0.30	1.0	05/30/19 15:35	
Tetrachloroethene	ug/L	<0.33	1.1	05/30/19 15:35	
Toluene	ug/L	<0.17	5.0	05/30/19 15:35	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	05/30/19 15:35	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	05/30/19 15:35	
Trichloroethene	ug/L	<0.26	1.0	05/30/19 15:35	
Trichlorofluoromethane	ug/L	<0.21	1.0	05/30/19 15:35	
Vinyl chloride	ug/L	<0.17	1.0	05/30/19 15:35	
4-Bromofluorobenzene (S)	%	96	70-130	05/30/19 15:35	
Dibromofluoromethane (S)	%	98	70-130	05/30/19 15:35	
Toluene-d8 (S)	%	98	70-130	05/30/19 15:35	

LABORATORY CONTROL SAMPLE: 1872066

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	46.8	94	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	52.1	104	70-130	
1,1,2-Trichloroethane	ug/L	50	54.8	110	70-130	
1,1-Dichloroethane	ug/L	50	54.3	109	73-150	
1,1-Dichloroethene	ug/L	50	58.8	118	73-138	
1,2,4-Trichlorobenzene	ug/L	50	47.0	94	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	44.1	88	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	70-130	
1,2-Dichlorobenzene	ug/L	50	49.0	98	70-130	
1,2-Dichloroethane	ug/L	50	47.7	95	75-140	
1,2-Dichloropropane	ug/L	50	50.8	102	73-135	
1,3-Dichlorobenzene	ug/L	50	47.8	96	70-130	
1,4-Dichlorobenzene	ug/L	50	48.8	98	70-130	
Benzene	ug/L	50	54.8	110	70-130	
Bromodichloromethane	ug/L	50	54.7	109	70-130	
Bromoform	ug/L	50	46.3	93	68-129	
Bromomethane	ug/L	50	42.8	86	18-159	
Carbon tetrachloride	ug/L	50	46.3	93	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

LABORATORY CONTROL SAMPLE: 1872066

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	52.4	105	70-130	
Chloroethane	ug/L	50	47.8	96	53-147	
Chloroform	ug/L	50	50.8	102	74-136	
Chloromethane	ug/L	50	28.6	57	29-115	
cis-1,2-Dichloroethene	ug/L	50	56.7	113	70-130	
cis-1,3-Dichloropropene	ug/L	50	44.8	90	70-130	
Dibromochloromethane	ug/L	50	45.7	91	70-130	
Dichlorodifluoromethane	ug/L	50	35.1	70	10-130	
Ethylbenzene	ug/L	50	54.7	109	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.7	111	70-130	
m&p-Xylene	ug/L	100	113	113	70-130	
Methyl-tert-butyl ether	ug/L	50	51.2	102	54-137	
Methylene Chloride	ug/L	50	57.3	115	73-138	
o-Xylene	ug/L	50	55.6	111	70-130	
Styrene	ug/L	50	56.4	113	70-130	
Tetrachloroethene	ug/L	50	51.9	104	70-130	
Toluene	ug/L	50	56.1	112	80-126	
trans-1,2-Dichloroethene	ug/L	50	57.1	114	73-145	
trans-1,3-Dichloropropene	ug/L	50	43.5	87	70-130	
Trichloroethene	ug/L	50	55.3	111	70-130	
Trichlorofluoromethane	ug/L	50	52.9	106	76-147	
Vinyl chloride	ug/L	50	45.4	91	51-120	
4-Bromofluorobenzene (S)	%			104	70-130	
Dibromofluoromethane (S)	%			96	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1872175 1872176

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188180001 Result	Spike Conc.	Spike Conc.	Conc.								
1,1,1-Trichloroethane	ug/L	<0.24	50	50	50	47.0	47.2	94	94	70-130	0	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	50	51.6	52.1	103	104	70-130	1	20	
1,1,2-Trichloroethane	ug/L	<0.55	50	50	50	53.8	54.0	108	108	70-137	0	20	
1,1-Dichloroethane	ug/L	<0.27	50	50	50	54.5	54.5	109	109	73-153	0	20	
1,1-Dichloroethene	ug/L	<0.24	50	50	50	58.4	58.2	117	116	73-138	0	20	
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	50	48.5	48.4	96	96	70-130	0	20	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	50	44.0	44.3	88	89	58-129	1	20	
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	50	53.1	52.9	106	106	70-130	0	20	
1,2-Dichlorobenzene	ug/L	<0.71	50	50	50	48.9	48.7	98	97	70-130	0	20	
1,2-Dichloroethane	ug/L	<0.28	50	50	50	47.8	47.7	96	95	75-140	0	20	
1,2-Dichloropropane	ug/L	<0.28	50	50	50	50.2	51.4	100	103	71-138	2	20	
1,3-Dichlorobenzene	ug/L	<0.63	50	50	50	48.2	48.4	96	97	70-130	0	20	
1,4-Dichlorobenzene	ug/L	<0.94	50	50	50	49.2	49.0	98	98	70-130	0	20	
Benzene	ug/L	<0.25	50	50	50	55.1	55.3	110	111	70-130	0	20	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1872175		1872176		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188180001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromodichloromethane	ug/L	<0.36	50	50	54.1	54.5	108	109	70-130	1	20		
Bromoform	ug/L	<4.0	50	50	46.0	46.0	92	92	68-129	0	20		
Bromomethane	ug/L	<0.97	50	50	46.3	47.3	93	95	15-170	2	20		
Carbon tetrachloride	ug/L	<0.17	50	50	46.3	46.7	93	93	70-130	1	20		
Chlorobenzene	ug/L	<0.71	50	50	52.2	51.9	104	104	70-130	1	20		
Chloroethane	ug/L	<1.3	50	50	46.2	46.5	92	93	51-148	1	20		
Chloroform	ug/L	<1.3	50	50	51.1	51.0	102	102	74-136	0	20		
Chloromethane	ug/L	<2.2	50	50	26.2	26.3	52	53	23-115	0	20		
cis-1,2-Dichloroethene	ug/L	<0.27	50	50	57.3	57.6	115	115	70-131	0	20		
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	46.7	47.4	93	95	70-130	1	20		
Dibromochloromethane	ug/L	<2.6	50	50	45.6	45.5	91	91	70-130	0	20		
Dichlorodifluoromethane	ug/L	<0.50	50	50	23.1	22.9	46	46	10-132	1	20		
Ethylbenzene	ug/L	<0.22	50	50	54.4	54.4	109	109	80-125	0	20		
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	55.5	55.1	111	110	70-130	1	20		
m&p-Xylene	ug/L	<0.47	100	100	113	112	113	112	70-130	1	20		
Methyl-tert-butyl ether	ug/L	<1.2	50	50	51.2	51.7	102	103	51-145	1	20		
Methylene Chloride	ug/L	<0.58	50	50	57.5	58.2	115	116	73-140	1	20		
o-Xylene	ug/L	<0.26	50	50	55.4	55.1	111	110	70-130	1	20		
Styrene	ug/L	<0.47	50	50	56.5	55.8	113	112	70-130	1	20		
Tetrachloroethene	ug/L	<0.33	50	50	52.4	52.2	105	104	70-130	0	20		
Toluene	ug/L	<0.17	50	50	55.8	55.8	112	112	80-131	0	20		
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	58.3	57.8	117	116	73-148	1	20		
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	44.8	45.0	90	90	70-130	1	20		
Trichloroethene	ug/L	<0.26	50	50	54.7	55.2	109	110	70-130	1	20		
Trichlorofluoromethane	ug/L	<0.21	50	50	50.2	49.9	100	100	74-147	1	20		
Vinyl chloride	ug/L	<0.17	50	50	41.7	41.3	83	83	41-129	1	20		
4-Bromofluorobenzene (S)	%						104	103	70-130				
Dibromofluoromethane (S)	%						97	98	70-130				
Toluene-d8 (S)	%						98	99	70-130				

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch: 322936 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40188098009, 40188098010, 40188098022

METHOD BLANK: 1875570 Matrix: Water

Associated Lab Samples: 40188098009, 40188098010, 40188098022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	05/31/19 07:57	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	05/31/19 07:57	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	05/31/19 07:57	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	05/31/19 07:57	
1,1-Dichloroethane	ug/L	<0.27	1.0	05/31/19 07:57	
1,1-Dichloroethene	ug/L	<0.24	1.0	05/31/19 07:57	
1,1-Dichloropropene	ug/L	<0.54	1.8	05/31/19 07:57	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	05/31/19 07:57	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	05/31/19 07:57	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	05/31/19 07:57	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/31/19 07:57	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	05/31/19 07:57	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	05/31/19 07:57	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	05/31/19 07:57	
1,2-Dichloroethane	ug/L	<0.28	1.0	05/31/19 07:57	
1,2-Dichloropropane	ug/L	<0.28	1.0	05/31/19 07:57	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/31/19 07:57	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	05/31/19 07:57	
1,3-Dichloropropane	ug/L	<0.83	2.8	05/31/19 07:57	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	05/31/19 07:57	
2,2-Dichloropropane	ug/L	<2.3	7.6	05/31/19 07:57	
2-Chlorotoluene	ug/L	<0.93	5.0	05/31/19 07:57	
4-Chlorotoluene	ug/L	<0.76	2.5	05/31/19 07:57	
Benzene	ug/L	<0.25	1.0	05/31/19 07:57	
Bromobenzene	ug/L	<0.24	1.0	05/31/19 07:57	
Bromochloromethane	ug/L	<0.36	5.0	05/31/19 07:57	
Bromodichloromethane	ug/L	<0.36	1.2	05/31/19 07:57	
Bromoform	ug/L	<4.0	13.2	05/31/19 07:57	
Bromomethane	ug/L	<0.97	5.0	05/31/19 07:57	
Carbon tetrachloride	ug/L	<0.17	1.0	05/31/19 07:57	
Chlorobenzene	ug/L	<0.71	2.4	05/31/19 07:57	
Chloroethane	ug/L	<1.3	5.0	05/31/19 07:57	
Chloroform	ug/L	<1.3	5.0	05/31/19 07:57	
Chloromethane	ug/L	<2.2	7.3	05/31/19 07:57	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	05/31/19 07:57	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	05/31/19 07:57	
Dibromochloromethane	ug/L	<2.6	8.7	05/31/19 07:57	
Dibromomethane	ug/L	<0.94	3.1	05/31/19 07:57	
Dichlorodifluoromethane	ug/L	<0.50	5.0	05/31/19 07:57	
Ethylbenzene	ug/L	<0.22	1.0	05/31/19 07:57	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	05/31/19 07:57	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

METHOD BLANK: 1875570

Matrix: Water

Associated Lab Samples: 40188098009, 40188098010, 40188098022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	05/31/19 07:57	
m&p-Xylene	ug/L	<0.47	2.0	05/31/19 07:57	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/31/19 07:57	
Methylene Chloride	ug/L	<0.58	5.0	05/31/19 07:57	
n-Butylbenzene	ug/L	<0.71	2.4	05/31/19 07:57	
n-Propylbenzene	ug/L	<0.81	5.0	05/31/19 07:57	
Naphthalene	ug/L	<1.2	5.0	05/31/19 07:57	
o-Xylene	ug/L	<0.26	1.0	05/31/19 07:57	
p-Isopropyltoluene	ug/L	<0.80	2.7	05/31/19 07:57	
sec-Butylbenzene	ug/L	<0.85	5.0	05/31/19 07:57	
Styrene	ug/L	<0.47	1.6	05/31/19 07:57	
tert-Butylbenzene	ug/L	<0.30	1.0	05/31/19 07:57	
Tetrachloroethene	ug/L	<0.33	1.1	05/31/19 07:57	
Toluene	ug/L	<0.17	5.0	05/31/19 07:57	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	05/31/19 07:57	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	05/31/19 07:57	
Trichloroethene	ug/L	<0.26	1.0	05/31/19 07:57	
Trichlorofluoromethane	ug/L	<0.21	1.0	05/31/19 07:57	
Vinyl chloride	ug/L	<0.17	1.0	05/31/19 07:57	
4-Bromofluorobenzene (S)	%	86	70-130	05/31/19 07:57	
Dibromofluoromethane (S)	%	94	70-130	05/31/19 07:57	
Toluene-d8 (S)	%	100	70-130	05/31/19 07:57	

LABORATORY CONTROL SAMPLE: 1875571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	48.5	97	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	51.7	103	70-130	
1,1,2-Trichloroethane	ug/L	50	53.2	106	70-130	
1,1-Dichloroethane	ug/L	50	54.1	108	73-150	
1,1-Dichloroethene	ug/L	50	47.7	95	73-138	
1,2,4-Trichlorobenzene	ug/L	50	42.6	85	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	41.4	83	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	50.1	100	70-130	
1,2-Dichlorobenzene	ug/L	50	51.0	102	70-130	
1,2-Dichloroethane	ug/L	50	47.5	95	75-140	
1,2-Dichloropropane	ug/L	50	52.1	104	73-135	
1,3-Dichlorobenzene	ug/L	50	49.8	100	70-130	
1,4-Dichlorobenzene	ug/L	50	50.0	100	70-130	
Benzene	ug/L	50	49.2	98	70-130	
Bromodichloromethane	ug/L	50	51.6	103	70-130	
Bromoform	ug/L	50	43.0	86	68-129	
Bromomethane	ug/L	50	31.4	63	18-159	
Carbon tetrachloride	ug/L	50	50.1	100	70-130	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

LABORATORY CONTROL SAMPLE: 1875571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	52.2	104	70-130	
Chloroethane	ug/L	50	44.8	90	53-147	
Chloroform	ug/L	50	48.8	98	74-136	
Chloromethane	ug/L	50	34.0	68	29-115	
cis-1,2-Dichloroethene	ug/L	50	47.1	94	70-130	
cis-1,3-Dichloropropene	ug/L	50	42.3	85	70-130	
Dibromochloromethane	ug/L	50	47.3	95	70-130	
Dichlorodifluoromethane	ug/L	50	37.8	76	10-130	
Ethylbenzene	ug/L	50	53.9	108	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.3	111	70-130	
m&p-Xylene	ug/L	100	109	109	70-130	
Methyl-tert-butyl ether	ug/L	50	45.0	90	54-137	
Methylene Chloride	ug/L	50	59.6	119	73-138	
o-Xylene	ug/L	50	54.9	110	70-130	
Styrene	ug/L	50	55.3	111	70-130	
Tetrachloroethene	ug/L	50	49.4	99	70-130	
Toluene	ug/L	50	52.6	105	80-126	
trans-1,2-Dichloroethene	ug/L	50	48.7	97	73-145	
trans-1,3-Dichloropropene	ug/L	50	40.4	81	70-130	
Trichloroethene	ug/L	50	55.0	110	70-130	
Trichlorofluoromethane	ug/L	50	43.8	88	76-147	
Vinyl chloride	ug/L	50	41.5	83	51-120	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			93	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875583 1875584

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188564001 Result	Spike Conc.	Spike Conc.	MS Result								
1,1,1-Trichloroethane	ug/L	<0.24	50	50	49.5	47.1	99	94	70-130	5	20		
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	51.2	50.7	102	101	70-130	1	20		
1,1,2-Trichloroethane	ug/L	<0.55	50	50	51.4	51.1	103	102	70-137	1	20		
1,1-Dichloroethane	ug/L	<0.27	50	50	67.2	50.8	134	102	73-153	28	20	R1	
1,1-Dichloroethene	ug/L	<0.24	50	50	50.6	47.4	101	95	73-138	7	20		
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	46.9	45.0	94	90	70-130	4	20		
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	44.6	42.9	89	86	58-129	4	20		
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	49.3	50.6	99	101	70-130	3	20		
1,2-Dichlorobenzene	ug/L	<0.71	50	50	51.2	48.4	102	97	70-130	6	20		
1,2-Dichloroethane	ug/L	<0.28	50	50	46.9	46.3	94	93	75-140	1	20		
1,2-Dichloropropane	ug/L	<0.28	50	50	51.8	50.3	104	101	71-138	3	20		
1,3-Dichlorobenzene	ug/L	<0.63	50	50	49.2	49.4	98	99	70-130	0	20		
1,4-Dichlorobenzene	ug/L	<0.94	50	50	50.6	48.3	101	97	70-130	5	20		
Benzene	ug/L	<0.25	50	50	48.9	47.3	98	95	70-130	3	20		

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875583		1875584		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188564001 Result	MS Spike Conc.	MSD Spike Conc.									
Bromodichloromethane	ug/L	<0.36	50	50	51.7	50.8	103	102	70-130	2	20		
Bromoform	ug/L	<4.0	50	50	45.1	44.2	90	88	68-129	2	20		
Bromomethane	ug/L	<0.97	50	50	35.8	38.6	72	77	15-170	8	20		
Carbon tetrachloride	ug/L	<0.17	50	50	50.3	49.0	101	98	70-130	3	20		
Chlorobenzene	ug/L	<0.71	50	50	51.0	50.6	102	101	70-130	1	20		
Chloroethane	ug/L	<1.3	50	50	44.4	43.0	89	86	51-148	3	20		
Chloroform	ug/L	<1.3	50	50	48.8	47.0	98	94	74-136	4	20		
Chloromethane	ug/L	<2.2	50	50	36.4	34.8	73	70	23-115	4	20		
cis-1,2-Dichloroethene	ug/L	0.65J	50	50	47.9	45.8	95	90	70-131	5	20		
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	43.9	43.1	88	86	70-130	2	20		
Dibromochloromethane	ug/L	<2.6	50	50	45.4	46.9	91	94	70-130	3	20		
Dichlorodifluoromethane	ug/L	<0.50	50	50	41.2	37.5	82	75	10-132	9	20		
Ethylbenzene	ug/L	<0.22	50	50	52.7	52.8	105	106	80-125	0	20		
Isopropylbenzene (Cumene)	ug/L	<0.39	50	50	53.7	53.7	107	107	70-130	0	20		
m&p-Xylene	ug/L	<0.47	100	100	105	105	105	105	70-130	0	20		
Methyl-tert-butyl ether	ug/L	<1.2	50	50	43.5	55.3	87	111	51-145	24	20	R1	
Methylene Chloride	ug/L	<0.58	50	50	50.1	58.0	100	116	73-140	15	20		
o-Xylene	ug/L	<0.26	50	50	52.3	53.7	105	107	70-130	3	20		
Styrene	ug/L	<0.47	50	50	53.2	53.5	106	107	70-130	1	20		
Tetrachloroethene	ug/L	0.81J	50	50	49.2	51.3	97	101	70-130	4	20		
Toluene	ug/L	<0.17	50	50	51.0	51.9	102	104	80-131	2	20		
trans-1,2-Dichloroethene	ug/L	<1.1	50	50	46.7	56.9	93	114	73-148	20	20		
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	42.0	42.4	84	85	70-130	1	20		
Trichloroethene	ug/L	2.1	50	50	55.9	54.7	108	105	70-130	2	20		
Trichlorofluoromethane	ug/L	<0.21	50	50	43.6	42.9	87	86	74-147	2	20		
Vinyl chloride	ug/L	<0.17	50	50	41.3	40.5	83	81	41-129	2	20		
4-Bromofluorobenzene (S)	%						98	100	70-130				
Dibromofluoromethane (S)	%						99	94	70-130				
Toluene-d8 (S)	%						97	100	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 SUPERIOR REFINING CO
Pace Project No.: 40188098

QC Batch: 322305 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 40188098001, 40188098002, 40188098003, 40188098004, 40188098005, 40188098006, 40188098007, 40188098014, 40188098015

METHOD BLANK: 1871893 Matrix: Water
Associated Lab Samples: 40188098001, 40188098002, 40188098003, 40188098004, 40188098005, 40188098006, 40188098007, 40188098014, 40188098015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/24/19 07:25	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/24/19 07:25	
Benzene	ug/L	<0.25	1.0	05/24/19 07:25	
Ethylbenzene	ug/L	<0.22	1.0	05/24/19 07:25	
m&p-Xylene	ug/L	<0.47	2.0	05/24/19 07:25	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/24/19 07:25	
Naphthalene	ug/L	<1.2	5.0	05/24/19 07:25	
o-Xylene	ug/L	<0.26	1.0	05/24/19 07:25	
Toluene	ug/L	<0.17	5.0	05/24/19 07:25	
4-Bromofluorobenzene (S)	%	93	70-130	05/24/19 07:25	
Dibromofluoromethane (S)	%	113	70-130	05/24/19 07:25	
Toluene-d8 (S)	%	97	70-130	05/24/19 07:25	

LABORATORY CONTROL SAMPLE: 1871894

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.5	107	70-130	
Ethylbenzene	ug/L	50	56.6	113	80-124	
m&p-Xylene	ug/L	100	113	113	70-130	
Methyl-tert-butyl ether	ug/L	50	43.6	87	54-137	
o-Xylene	ug/L	50	55.0	110	70-130	
Toluene	ug/L	50	54.7	109	80-126	
4-Bromofluorobenzene (S)	%			104	70-130	
Dibromofluoromethane (S)	%			113	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1871922 1871923

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40188098001 Result	Spike Conc.	Spike Conc.	Result							Result
Benzene	ug/L	374	50	50	598	494	449	241	70-130	19	20	E,M1
Ethylbenzene	ug/L	103	50	50	195	168	183	130	80-125	15	20	M1
m&p-Xylene	ug/L	1160	100	100	1560	1340	402	182	70-130	15	20	E,M1
Methyl-tert-butyl ether	ug/L	<1.2	50	50	44.4	43.0	89	86	51-145	3	20	
o-Xylene	ug/L	19.8	50	50	86.4	81.3	133	123	70-130	6	20	M1
Toluene	ug/L	0.61J	50	50	54.5	55.2	108	109	80-131	1	20	
4-Bromofluorobenzene (S)	%						102	101	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1871922		1871923		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40188098001 Result	MS Spike Conc.	MSD Spike Conc.									
Dibromofluoromethane (S)	%							112	106	70-130			
Toluene-d8 (S)	%							102	102	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

QC Batch: 322341

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV UST-WATER

Associated Lab Samples: 40188098016, 40188098017, 40188098018

METHOD BLANK: 1872039

Matrix: Water

Associated Lab Samples: 40188098016, 40188098017, 40188098018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	05/28/19 06:02	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	05/28/19 06:02	
Benzene	ug/L	<0.25	1.0	05/28/19 06:02	
Ethylbenzene	ug/L	<0.22	1.0	05/28/19 06:02	
m&p-Xylene	ug/L	<0.47	2.0	05/28/19 06:02	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	05/28/19 06:02	
Naphthalene	ug/L	<1.2	5.0	05/28/19 06:02	
o-Xylene	ug/L	<0.26	1.0	05/28/19 06:02	
Toluene	ug/L	<0.17	5.0	05/28/19 06:02	
4-Bromofluorobenzene (S)	%	88	70-130	05/28/19 06:02	
Dibromofluoromethane (S)	%	106	70-130	05/28/19 06:02	
Toluene-d8 (S)	%	102	70-130	05/28/19 06:02	

LABORATORY CONTROL SAMPLE: 1872040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	53.1	106	70-130	
Ethylbenzene	ug/L	50	54.2	108	80-124	
m&p-Xylene	ug/L	100	112	112	70-130	
Methyl-tert-butyl ether	ug/L	50	51.4	103	54-137	
o-Xylene	ug/L	50	55.2	110	70-130	
Toluene	ug/L	50	53.4	107	80-126	
4-Bromofluorobenzene (S)	%			98	70-130	
Dibromofluoromethane (S)	%			110	70-130	
Toluene-d8 (S)	%			104	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40188098

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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

E Analyte concentration exceeded the calibration range. The reported result is estimated.

HS Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

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

R1 RPD value was outside control limits.

pH Post-analysis pH measurement indicates insufficient VOA sample preservation.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40188098

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40188098019	MW-4/T50	EPA 8021	322441		
40188098020	MW-5/T50	EPA 8021	322441		
40188098021	MW-6/T50	EPA 8021	322441		
40188098008	MW-1/T68	EPA 8260	322350		
40188098009	MW-2/T68	EPA 8260	322936		
40188098010	MW-4/T68	EPA 8260	322936		
40188098011	MW-5/T66	EPA 8260	322350		
40188098012	MW-5/T68	EPA 8260	322350		
40188098013	MW-6/T68	EPA 8260	322350		
40188098022	TRIP BLANK	EPA 8260	322936		
40188098001	MW-1/T40	EPA 8260	322305		
40188098002	MW-2/T40	EPA 8260	322305		
40188098003	MW-4/T40	EPA 8260	322305		
40188098004	MW-5/T40	EPA 8260	322305		
40188098005	MW-6/T40	EPA 8260	322305		
40188098006	MW-7/T40	EPA 8260	322305		
40188098007	TS-1/T40	EPA 8260	322305		
40188098014	MW-2R/T70	EPA 8260	322305		
40188098015	MW-3/T70	EPA 8260	322305		
40188098016	MW-4/T70	EPA 8260	322341		
40188098017	MW-5/T70	EPA 8260	322341		
40188098018	MW-6/T70	EPA 8260	322341		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming, Inc.
Branch/Location: Madison, WI
Project Contact: Cliff Wright
Phone: 608/836-1500 x6722
Project Number: 34265.003
Project Name: Superior Refining Company (SRC)
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

COC No. 40188098

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	A	A																
Analyses Requested	PVOCs 8760	VOCs 8700																

Quote #: Pace 2019
Mail To Contact: Cliff Wright
Mail To Company: Gannett Fleming
Mail To Address: 8025 Excelsior Dr. Madison, WI 53717
Invoice To Contact: See "Mail to Contact" info above
Invoice To Company: "
Invoice To Address: "
Invoice To Phone: 608/836-1500 x6722

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	Analyses Requested	Y/N	N	N												
		DATE	TIME																	
001	MW-1/T40	5/21	4:00	LW	3															
002	MW-2/T40		9:30																	
003	MW-4/T40		9:7																	
004	MW-5/T40		8:30																	
005	MW-6/T40		8:40																	
006	MW-7/T40		8:45																	
007	TS-1/T40		8:25																	
008	MW-1/T68		9:00																	
009	MW-2/T68		9:30																	
010	MW-4/T68		9:25																	
011	MW-5/T66		9:15																	
012	MW-5/T68		9:10																	
013	MW-6/T68		9:20																	

CLIENT COMMENTS
8:50
8:35
8:55

LAB COMMENTS (Lab Use Only)
[Signature]

Profile #

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

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

Relinquished By: Marcus Mussey	Date/Time: 5/21, 1630	Received By: Goin' Postal	Date/Time: _____
Relinquished By: Fedex	Date/Time: 5/22/19 0820	Received By: Myer	Date/Time: 5/22/19 0820
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____

PACE Project No. 40188098
Receipt Temp = 1201 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact

Special Pricing and Release of Liability: Samples on HOLD are subject to special pricing and release of liability

(Please Print Clearly)

Company Name: Gannett Fleming, Inc.
Branch/Location: Madison, WI
Project Contact: Cliff Wright
Phone: 608/836-1500 x6722
Project Number: 34265.003
Project Name: Superior Refining Company (SRC)
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

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

Quote #: Pace 2019
Mail To Contact: Cliff Wright
Mail To Company: Gannett Fleming
Mail To Address: 8025 Excelsior Dr. Madison, WI 53717
Invoice To Contact: See "Mail to Contact" info above
Invoice To Company: "
Invoice To Address: "
Invoice To Phone: 608/836-1500 x6722

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

Y/N	N	N															
Filtered? (YES/NO)	Pick Letter	Analyses Requested	DATE	TIME	MATRIX												
	A	PVOC/Naph	5/21	9:45	GW												
	A	PVOC/Naph		10:00													
				10:05													
				9:50													
				9:55													
				8:10													
				8:05													
				8:15													

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	Filtered?	Pick Letter	Analyses Requested	DATE	TIME	MATRIX
		DATE	TIME							
014	MW-2R/T70	5/21	9:45	GW		A	PVOC/Naph	5/21	9:45	GW
015	MW-3/T70		10:00						10:00	
016	MW-4/T70		10:05						10:05	
017	MW-5/T70		9:50						9:50	
018	MW-6/T70		9:55						9:55	
019	MW-4/T50		8:10						8:10	
020	MW-5/T50		8:05						8:05	
021	MW-6/T50		8:15						8:15	
022	Trip Blank									

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: Marcus Mussey	Date/Time: 5/21, 16 30	Received By: 601mg Postal	Date/Time:	PACE Project No. 40188098
	Transmit Prelim Results by (complete what you want):	Relinquished By: Feder	Date/Time: 5/21/16 0820	Received By: [Signature]	
Email #1:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Receipt Temp = 21 °C
Email #2:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Sample Receipt pH OK / Adjusted
Telephone:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Cooler Custody Seal Present / Not Present
Fax:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Intact / Not Intact
Samples on HOLD are subject to special pricing and release of liability					

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 606
Green Bay, WI 54302

Client Name: Gannett Fleming

Project # 460188098

All containers needing preservation have been checked and noted below: Yes No N/A

Initial when completed:

Date/Time:

Page 59 of 66

Lab Lot# of pH paper:


Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic						Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)				
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T								ZPLC	GN		
001																	3																		2.5 / 5 / 10
002																	3																		2.5 / 5 / 10
003																	3																		2.5 / 5 / 10
004																	3																		2.5 / 5 / 10
005																	3																		2.5 / 5 / 10
006																	3																		2.5 / 5 / 10
007																	3																		2.5 / 5 / 10
008																	3																		2.5 / 5 / 10
009																	3																		2.5 / 5 / 10
010																	3																		2.5 / 5 / 10
011																	3																		2.5 / 5 / 10
012																	3																		2.5 / 5 / 10
013																	3																		2.5 / 5 / 10
014																	3																		2.5 / 5 / 10
015																	3																		2.5 / 5 / 10
016																	3																		2.5 / 5 / 10
017																	3																		2.5 / 5 / 10
018																	3																		2.5 / 5 / 10
019																	3																		2.5 / 5 / 10
020																	3																		2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm): Yes No N/A *If yes look in headspace column

AG1U 1 liter amber glass	BP1U 1 liter plastic unpres	DG9A 40 mL amber ascorbic	JGFU 4 oz amber jar unpres
AG1H 1 liter amber glass HCL	BP2N 500 mL plastic HNO3	DG9T 40 mL amber Na Thio	WGFU 4 oz clear jar unpres
AG4S 125 mL amber glass H2SO4	BP2Z 500 mL plastic NaOH, Znact	VG9U 40 mL clear vial unpres	WPFU 4 oz plastic jar unpres
AG4U 120 mL amber glass unpres	BP3U 250 mL plastic unpres	VG9H 40 mL clear vial HCL	
AG5U 100 mL amber glass unpres	BP3B 250 mL plastic NaOH	VG9M 40 mL clear vial MeOH	SP5T 120 mL plastic Na Thiosulfate
AG2S 500 mL amber glass H2SO4	BP3N 250 mL plastic HNO3	VG9D 40 mL clear vial DI	ZPLC ziploc bag
BG3U 250 mL clear glass unpres	BP3S 250 mL plastic H2SO4		GN:

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Gannett Fleming
Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____

Project #: _____

WO#: 40188098



40188098

Tracking #: 8146 9026 794
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: SR - NA **Type of Ice:** Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: 201 /Corr: _____

Temp Blank Present: yes no **Biological Tissue is Frozen:** yes no

Person examining contents:

Date: 5/23/19

Initials: ML

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

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	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	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	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	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input 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>lv</u>	
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
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>423</u>	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Run for PM

Date: 5/23/19

October 17, 2019

Clifford Wright
Gannett Fleming
8040 Excelsior Drive, Ste 303
Madison, WI 53717

Project #34265.003
SRC Fall 2019 GW
Reviewed by CCW
10/18/19

RE: Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40197129

Dear Clifford Wright:

Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 2019. 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 SUPERIOR REFINING CO

Pace Project No.: 40197129

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 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40197129001	LRS-1	Water	10/09/19 08:50	10/11/19 09:15
40197129002	LRS-2	Water	10/09/19 08:55	10/11/19 09:15
40197129003	LRS-3	Water	10/09/19 09:00	10/11/19 09:15
40197129004	LRS-4	Water	10/09/19 08:45	10/11/19 09:15
40197129005	LRS-7	Water	10/09/19 09:05	10/11/19 09:15
40197129006	MW-1/FL	Water	10/09/19 07:50	10/11/19 09:15
40197129007	MW-2/FL	Water	10/09/19 07:55	10/11/19 09:15
40197129008	MW-3/FL	Water	10/09/19 08:00	10/11/19 09:15
40197129009	MW-9/FL	Water	10/09/19 09:15	10/11/19 09:15
40197129010	MW-10/FL	Water	10/09/19 09:10	10/11/19 09:15
40197129011	MW-11/FL	Water	10/09/19 08:08	10/11/19 09:15
40197129012	MW-13/FL	Water	10/09/19 08:10	10/11/19 09:15
40197129013	MW-14/FL	Water	10/09/19 08:15	10/11/19 09:15
40197129014	MW-1/T40	Water	10/09/19 09:35	10/11/19 09:15
40197129015	MW-2/T40	Water	10/09/19 09:45	10/11/19 09:15
40197129016	MW-4/T40	Water	10/09/19 10:10	10/11/19 09:15
40197129017	MW-5/T40	Water	10/09/19 09:50	10/11/19 09:15
40197129018	MW-6/T40	Water	10/09/19 10:00	10/11/19 09:15
40197129019	MW-7/T40	Water	10/09/19 10:05	10/11/19 09:15
40197129020	TS-1/T40	Water	10/09/19 09:55	10/11/19 09:15
40197129021	MW-1/T68	Water	10/09/19 10:20	10/11/19 09:15
40197129022	MW-2/T68	Water	10/09/19 10:30	10/11/19 09:15
40197129023	MW-4/T68	Water	10/09/19 10:25	10/11/19 09:15
40197129024	MW-5/T66	Water	10/09/19 10:40	10/11/19 09:15
40197129025	MW-5/T68	Water	10/09/19 10:15	10/11/19 09:15
40197129026	MW-6/T68	Water	10/09/19 10:15	10/11/19 09:15
40197129027	MW-2R/T70	Water	10/09/19 10:50	10/11/19 09:15
40197129028	MW-3/T70	Water	10/09/19 11:05	10/11/19 09:15
40197129029	MW-4/T70	Water	10/09/19 11:10	10/11/19 09:15
40197129030	MW-5/T70	Water	10/09/19 10:55	10/11/19 09:15
40197129031	MW-6/T70	Water	10/09/19 11:00	10/11/19 09:15
40197129032	TRIP BLANK	Water	10/09/19 00:00	10/11/19 09:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40197129001	LRS-1	EPA 8021	ALD	9	PASI-G
40197129002	LRS-2	EPA 8021	ALD	9	PASI-G
40197129003	LRS-3	EPA 8021	ALD	9	PASI-G
40197129004	LRS-4	EPA 8021	ALD	9	PASI-G
40197129005	LRS-7	EPA 8021	ALD	9	PASI-G
40197129006	MW-1/FL	EPA 8021	ALD	9	PASI-G
40197129007	MW-2/FL	EPA 8021	ALD	9	PASI-G
40197129008	MW-3/FL	EPA 8021	ALD	9	PASI-G
40197129009	MW-9/FL	EPA 8021	ALD	9	PASI-G
40197129010	MW-10/FL	EPA 8021	ALD	9	PASI-G
40197129011	MW-11/FL	EPA 8021	ALD	9	PASI-G
40197129012	MW-13/FL	EPA 8021	ALD	9	PASI-G
40197129013	MW-14/FL	EPA 8021	ALD	9	PASI-G
40197129014	MW-1/T40	EPA 8260	LAP	11	PASI-G
40197129015	MW-2/T40	EPA 8260	LAP	11	PASI-G
40197129016	MW-4/T40	EPA 8260	LAP	11	PASI-G
40197129017	MW-5/T40	EPA 8260	LAP	11	PASI-G
40197129018	MW-6/T40	EPA 8260	LAP	11	PASI-G
40197129019	MW-7/T40	EPA 8260	LAP	11	PASI-G
40197129020	TS-1/T40	EPA 8260	LAP	11	PASI-G
40197129021	MW-1/T68	EPA 8260	HNW	63	PASI-G
40197129022	MW-2/T68	EPA 8260	HNW	63	PASI-G
40197129023	MW-4/T68	EPA 8260	HNW	63	PASI-G
40197129024	MW-5/T66	EPA 8260	HNW	63	PASI-G
40197129025	MW-5/T68	EPA 8260	HNW	63	PASI-G
40197129026	MW-6/T68	EPA 8260	HNW	63	PASI-G
40197129027	MW-2R/T70	EPA 8260	LAP	12	PASI-G
40197129028	MW-3/T70	EPA 8260	LAP	12	PASI-G
40197129029	MW-4/T70	EPA 8260	LAP	12	PASI-G
40197129030	MW-5/T70	EPA 8260	LAP	12	PASI-G
40197129031	MW-6/T70	EPA 8260	LAP	12	PASI-G
40197129032	TRIP BLANK	EPA 8260	HNW	63	PASI-G

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40197129008	MW-3/FL					
EPA 8021	Benzene	90.6	ug/L	4.0	10/16/19 17:04	
EPA 8021	Ethylbenzene	103	ug/L	4.4	10/16/19 17:04	
EPA 8021	Methyl-tert-butyl ether	3.1J	ug/L	4.4	10/16/19 17:04	
EPA 8021	Toluene	26.2	ug/L	4.0	10/16/19 17:04	
EPA 8021	1,2,4-Trimethylbenzene	994	ug/L	4.4	10/16/19 17:04	
EPA 8021	1,3,5-Trimethylbenzene	469	ug/L	4.4	10/16/19 17:04	
EPA 8021	m&p-Xylene	1610	ug/L	8.0	10/16/19 17:04	
EPA 8021	o-Xylene	306	ug/L	4.0	10/16/19 17:04	
40197129012	MW-13/FL					
EPA 8021	Benzene	5.0	ug/L	1.0	10/16/19 14:31	
EPA 8021	Ethylbenzene	0.62J	ug/L	1.1	10/16/19 14:31	
40197129013	MW-14/FL					
EPA 8021	Benzene	19.6	ug/L	1.0	10/16/19 14:56	
EPA 8021	Ethylbenzene	4.8	ug/L	1.1	10/16/19 14:56	
EPA 8021	Toluene	0.68J	ug/L	1.0	10/16/19 14:56	
EPA 8021	1,2,4-Trimethylbenzene	1.2	ug/L	1.1	10/16/19 14:56	
EPA 8021	m&p-Xylene	2.8	ug/L	2.0	10/16/19 14:56	
EPA 8021	o-Xylene	3.5	ug/L	1.0	10/16/19 14:56	
40197129014	MW-1/T40					
EPA 8260	1,2,4-Trimethylbenzene	57.8	ug/L	2.8	10/16/19 19:43	
EPA 8260	1,3,5-Trimethylbenzene	75.7	ug/L	2.9	10/16/19 19:43	
EPA 8260	Benzene	100	ug/L	1.0	10/16/19 19:43	
EPA 8260	Ethylbenzene	1.2	ug/L	1.0	10/16/19 19:43	
EPA 8260	Toluene	0.55J	ug/L	5.0	10/16/19 19:43	
EPA 8260	m&p-Xylene	311	ug/L	2.0	10/16/19 19:43	
EPA 8260	o-Xylene	6.2	ug/L	1.0	10/16/19 19:43	
40197129015	MW-2/T40					
EPA 8260	1,2,4-Trimethylbenzene	1140	ug/L	350	10/16/19 14:56	
EPA 8260	1,3,5-Trimethylbenzene	305J	ug/L	364	10/16/19 14:56	
EPA 8260	Benzene	10600	ug/L	125	10/16/19 14:56	
EPA 8260	Ethylbenzene	1670	ug/L	125	10/16/19 14:56	
EPA 8260	Toluene	464J	ug/L	625	10/16/19 14:56	
EPA 8260	m&p-Xylene	6370	ug/L	250	10/16/19 14:56	
EPA 8260	o-Xylene	2540	ug/L	125	10/16/19 14:56	
40197129016	MW-4/T40					
EPA 8260	1,2,4-Trimethylbenzene	869	ug/L	56.0	10/16/19 14:32	
EPA 8260	1,3,5-Trimethylbenzene	192	ug/L	58.2	10/16/19 14:32	
EPA 8260	Benzene	4910	ug/L	20.0	10/16/19 14:32	
EPA 8260	Ethylbenzene	214	ug/L	20.0	10/16/19 14:32	
EPA 8260	Toluene	5.3J	ug/L	100	10/16/19 14:32	
EPA 8260	m&p-Xylene	2580	ug/L	40.0	10/16/19 14:32	
EPA 8260	o-Xylene	1130	ug/L	20.0	10/16/19 14:32	
40197129017	MW-5/T40					
EPA 8260	1,2,4-Trimethylbenzene	106	ug/L	2.8	10/16/19 16:55	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
40197129017	MW-5/T40					
EPA 8260	1,3,5-Trimethylbenzene	14.7	ug/L	2.9	10/16/19 16:55	
EPA 8260	Benzene	6.7	ug/L	1.0	10/16/19 16:55	
EPA 8260	Ethylbenzene	8.2	ug/L	1.0	10/16/19 16:55	
EPA 8260	m&p-Xylene	172	ug/L	2.0	10/16/19 16:55	
EPA 8260	o-Xylene	0.44J	ug/L	1.0	10/16/19 16:55	
40197129018	MW-6/T40					
EPA 8260	Benzene	9.4	ug/L	1.0	10/17/19 09:30	
40197129019	MW-7/T40					
EPA 8260	1,2,4-Trimethylbenzene	869	ug/L	28.0	10/16/19 13:44	
EPA 8260	1,3,5-Trimethylbenzene	222	ug/L	29.1	10/16/19 13:44	
EPA 8260	Benzene	4850	ug/L	50.0	10/16/19 16:31	
EPA 8260	Ethylbenzene	1200	ug/L	10.0	10/16/19 13:44	
EPA 8260	Toluene	5.6J	ug/L	50.0	10/16/19 13:44	
EPA 8260	m&p-Xylene	3820	ug/L	20.0	10/16/19 13:44	
EPA 8260	o-Xylene	442	ug/L	10.0	10/16/19 13:44	
40197129020	TS-1/T40					
EPA 8260	Benzene	0.64J	ug/L	1.0	10/17/19 09:54	
40197129021	MW-1/T68					
EPA 8260	1,2,4-Trimethylbenzene	6.8	ug/L	2.8	10/16/19 14:03	
EPA 8260	1,3,5-Trimethylbenzene	2.1J	ug/L	2.9	10/16/19 14:03	
EPA 8260	Ethylbenzene	0.38J	ug/L	1.0	10/16/19 14:03	
EPA 8260	Naphthalene	1.9J	ug/L	5.0	10/16/19 14:03	
EPA 8260	Toluene	0.37J	ug/L	5.0	10/16/19 14:03	
EPA 8260	m&p-Xylene	3.3	ug/L	2.0	10/16/19 14:03	
EPA 8260	o-Xylene	1.6	ug/L	1.0	10/16/19 14:03	
40197129022	MW-2/T68					
EPA 8260	1,2,4-Trimethylbenzene	1180	ug/L	112	10/16/19 12:15	
EPA 8260	1,2-Dichloroethane	287	ug/L	40.0	10/16/19 12:15	
EPA 8260	1,3,5-Trimethylbenzene	421	ug/L	116	10/16/19 12:15	
EPA 8260	Benzene	2240	ug/L	40.0	10/16/19 12:15	
EPA 8260	Ethylbenzene	17.8J	ug/L	40.0	10/16/19 12:15	
EPA 8260	Naphthalene	98.3J	ug/L	200	10/16/19 12:15	
EPA 8260	Toluene	1330	ug/L	200	10/16/19 12:15	
EPA 8260	m&p-Xylene	3020	ug/L	80.0	10/16/19 12:15	
EPA 8260	o-Xylene	2040	ug/L	40.0	10/16/19 12:15	
40197129023	MW-4/T68					
EPA 8260	1,2,4-Trimethylbenzene	627	ug/L	28.0	10/16/19 12:37	
EPA 8260	1,2-Dichloroethane	64.6	ug/L	10.0	10/16/19 12:37	
EPA 8260	1,3,5-Trimethylbenzene	34.1	ug/L	29.1	10/16/19 12:37	
EPA 8260	Benzene	2640	ug/L	10.0	10/16/19 12:37	
EPA 8260	Ethylbenzene	420	ug/L	10.0	10/16/19 12:37	
EPA 8260	Isopropylbenzene (Cumene)	13.1J	ug/L	50.0	10/16/19 12:37	
EPA 8260	Toluene	4.8J	ug/L	50.0	10/16/19 12:37	
EPA 8260	m&p-Xylene	439	ug/L	20.0	10/16/19 12:37	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40197129

Method: EPA 8021
Description: 8021 GCV Short List
Client: Gannett Fleming Inc.
Date: October 17, 2019

General Information:

13 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 SUPERIOR REFINING CO
Pace Project No.: 40197129

Method: EPA 8260
Description: 8260 MSV
Client: Gannett Fleming Inc.
Date: October 17, 2019

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 SUPERIOR REFINING CO
Pace Project No.: 40197129

Method: EPA 8260
Description: 8260 MSV UST
Client: Gannett Fleming Inc.
Date: October 17, 2019

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.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-1/T40 **Lab ID: 40197129014** Collected: 10/09/19 09:35 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	57.8	ug/L	2.8	0.84	1		10/16/19 19:43	95-63-6	
1,3,5-Trimethylbenzene	75.7	ug/L	2.9	0.87	1		10/16/19 19:43	108-67-8	
Benzene	100	ug/L	1.0	0.25	1		10/16/19 19:43	71-43-2	
Ethylbenzene	1.2	ug/L	1.0	0.22	1		10/16/19 19:43	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/16/19 19:43	1634-04-4	
Toluene	0.55J	ug/L	5.0	0.17	1		10/16/19 19:43	108-88-3	
m&p-Xylene	311	ug/L	2.0	0.47	1		10/16/19 19:43	179601-23-1	
o-Xylene	6.2	ug/L	1.0	0.26	1		10/16/19 19:43	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		10/16/19 19:43	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		10/16/19 19:43	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		10/16/19 19:43	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-2/T40 **Lab ID: 40197129015** Collected: 10/09/19 09:45 Received: 10/11/19 09:15 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	350	105	125		10/16/19 14:56	95-63-6	
1,3,5-Trimethylbenzene	305J	ug/L	364	109	125		10/16/19 14:56	108-67-8	
Benzene	10600	ug/L	125	30.8	125		10/16/19 14:56	71-43-2	
Ethylbenzene	1670	ug/L	125	27.3	125		10/16/19 14:56	100-41-4	
Methyl-tert-butyl ether	<156	ug/L	519	156	125		10/16/19 14:56	1634-04-4	
Toluene	464J	ug/L	625	21.5	125		10/16/19 14:56	108-88-3	
m&p-Xylene	6370	ug/L	250	58.2	125		10/16/19 14:56	179601-23-1	
o-Xylene	2540	ug/L	125	32.7	125		10/16/19 14:56	95-47-6	
Surrogates									
Dibromofluoromethane (S)	105	%	70-130		125		10/16/19 14:56	1868-53-7	
Toluene-d8 (S)	101	%	70-130		125		10/16/19 14:56	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130		125		10/16/19 14:56	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-4/T40 **Lab ID: 40197129016** Collected: 10/09/19 10:10 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	869	ug/L	56.0	16.8	20		10/16/19 14:32	95-63-6	
1,3,5-Trimethylbenzene	192	ug/L	58.2	17.5	20		10/16/19 14:32	108-67-8	
Benzene	4910	ug/L	20.0	4.9	20		10/16/19 14:32	71-43-2	
Ethylbenzene	214	ug/L	20.0	4.4	20		10/16/19 14:32	100-41-4	
Methyl-tert-butyl ether	<24.9	ug/L	83.1	24.9	20		10/16/19 14:32	1634-04-4	
Toluene	5.3J	ug/L	100	3.4	20		10/16/19 14:32	108-88-3	
m&p-Xylene	2580	ug/L	40.0	9.3	20		10/16/19 14:32	179601-23-1	
o-Xylene	1130	ug/L	20.0	5.2	20		10/16/19 14:32	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		20		10/16/19 14:32	1868-53-7	
Toluene-d8 (S)	100	%	70-130		20		10/16/19 14:32	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		20		10/16/19 14:32	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-5/T40 **Lab ID: 40197129017** Collected: 10/09/19 09:50 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	106	ug/L	2.8	0.84	1		10/16/19 16:55	95-63-6	
1,3,5-Trimethylbenzene	14.7	ug/L	2.9	0.87	1		10/16/19 16:55	108-67-8	
Benzene	6.7	ug/L	1.0	0.25	1		10/16/19 16:55	71-43-2	
Ethylbenzene	8.2	ug/L	1.0	0.22	1		10/16/19 16:55	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/16/19 16:55	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		10/16/19 16:55	108-88-3	
m&p-Xylene	172	ug/L	2.0	0.47	1		10/16/19 16:55	179601-23-1	
o-Xylene	0.44J	ug/L	1.0	0.26	1		10/16/19 16:55	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		10/16/19 16:55	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		10/16/19 16:55	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130		1		10/16/19 16:55	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-6/T40 **Lab ID: 40197129018** Collected: 10/09/19 10:00 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		10/17/19 09:30	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		10/17/19 09:30	108-67-8	
Benzene	9.4	ug/L	1.0	0.25	1		10/17/19 09:30	71-43-2	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		10/17/19 09:30	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/17/19 09:30	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		10/17/19 09:30	108-88-3	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		10/17/19 09:30	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		10/17/19 09:30	95-47-6	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		10/17/19 09:30	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		10/17/19 09:30	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		1		10/17/19 09:30	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: MW-7/T40 **Lab ID: 40197129019** Collected: 10/09/19 10:05 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST									
Analytical Method: EPA 8260									
1,2,4-Trimethylbenzene	869	ug/L	28.0	8.4	10		10/16/19 13:44	95-63-6	
1,3,5-Trimethylbenzene	222	ug/L	29.1	8.7	10		10/16/19 13:44	108-67-8	
Benzene	4850	ug/L	50.0	12.3	50		10/16/19 16:31	71-43-2	
Ethylbenzene	1200	ug/L	10.0	2.2	10		10/16/19 13:44	100-41-4	
Methyl-tert-butyl ether	<12.5	ug/L	41.5	12.5	10		10/16/19 13:44	1634-04-4	
Toluene	5.6J	ug/L	50.0	1.7	10		10/16/19 13:44	108-88-3	
m&p-Xylene	3820	ug/L	20.0	4.7	10		10/16/19 13:44	179601-23-1	
o-Xylene	442	ug/L	10.0	2.6	10		10/16/19 13:44	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		10		10/16/19 13:44	1868-53-7	
Toluene-d8 (S)	100	%	70-130		10		10/16/19 13:44	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130		10		10/16/19 13:44	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: TS-1/T40 **Lab ID: 40197129020** Collected: 10/09/19 09:55 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST		Analytical Method: EPA 8260							
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		10/17/19 09:54	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		10/17/19 09:54	108-67-8	
Benzene	0.64J	ug/L	1.0	0.25	1		10/17/19 09:54	71-43-2	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		10/17/19 09:54	100-41-4	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/17/19 09:54	1634-04-4	
Toluene	<0.17	ug/L	5.0	0.17	1		10/17/19 09:54	108-88-3	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		10/17/19 09:54	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		10/17/19 09:54	95-47-6	
Surrogates									
Dibromofluoromethane (S)	114	%	70-130		1		10/17/19 09:54	1868-53-7	
Toluene-d8 (S)	98	%	70-130		1		10/17/19 09:54	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		10/17/19 09:54	460-00-4	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: TRIP BLANK **Lab ID: 40197129032** Collected: 10/09/19 00:00 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	630-20-6	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	71-55-6	
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	79-34-5	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		10/16/19 11:31	79-00-5	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	75-34-3	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	75-35-4	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		10/16/19 11:31	563-58-6	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		10/16/19 11:31	87-61-6	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		10/16/19 11:31	96-18-4	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		10/16/19 11:31	120-82-1	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		10/16/19 11:31	95-63-6	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		10/16/19 11:31	96-12-8	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		10/16/19 11:31	106-93-4	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	95-50-1	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	107-06-2	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		10/16/19 11:31	78-87-5	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		10/16/19 11:31	108-67-8	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		10/16/19 11:31	541-73-1	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		10/16/19 11:31	142-28-9	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		10/16/19 11:31	106-46-7	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		10/16/19 11:31	594-20-7	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		10/16/19 11:31	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		10/16/19 11:31	106-43-4	
Benzene	<0.25	ug/L	1.0	0.25	1		10/16/19 11:31	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		10/16/19 11:31	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		10/16/19 11:31	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		10/16/19 11:31	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		10/16/19 11:31	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		10/16/19 11:31	74-83-9	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		10/16/19 11:31	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		10/16/19 11:31	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		10/16/19 11:31	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		10/16/19 11:31	74-87-3	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		10/16/19 11:31	124-48-1	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		10/16/19 11:31	74-95-3	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		10/16/19 11:31	75-71-8	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		10/16/19 11:31	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		10/16/19 11:31	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		10/16/19 11:31	98-82-8	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		10/16/19 11:31	1634-04-4	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		10/16/19 11:31	75-09-2	
Naphthalene	<1.2	ug/L	5.0	1.2	1		10/16/19 11:31	91-20-3	
Styrene	<0.47	ug/L	1.6	0.47	1		10/16/19 11:31	100-42-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		10/16/19 11:31	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		10/16/19 11:31	108-88-3	

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ANALYTICAL RESULTS

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

Sample: TRIP BLANK **Lab ID: 40197129032** Collected: 10/09/19 00:00 Received: 10/11/19 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Trichloroethene	<0.26	ug/L	1.0	0.26	1		10/16/19 11:31	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		10/16/19 11:31	75-69-4	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		10/16/19 11:31	75-01-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		10/16/19 11:31	156-59-2	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		10/16/19 11:31	10061-01-5	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		10/16/19 11:31	179601-23-1	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		10/16/19 11:31	104-51-8	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		10/16/19 11:31	103-65-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		10/16/19 11:31	95-47-6	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		10/16/19 11:31	99-87-6	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		10/16/19 11:31	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		10/16/19 11:31	98-06-6	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		10/16/19 11:31	156-60-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		10/16/19 11:31	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		10/16/19 11:31	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		10/16/19 11:31	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		10/16/19 11:31	2037-26-5	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

QC Batch: 337629 Analysis Method: EPA 8021
 QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
 Associated Lab Samples: 40197129001, 40197129002, 40197129003, 40197129004, 40197129005, 40197129006, 40197129007, 40197129008, 40197129009, 40197129010, 40197129011, 40197129012, 40197129013

METHOD BLANK: 1961193 Matrix: Water
 Associated Lab Samples: 40197129001, 40197129002, 40197129003, 40197129004, 40197129005, 40197129006, 40197129007, 40197129008, 40197129009, 40197129010, 40197129011, 40197129012, 40197129013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.34	1.1	10/16/19 09:48	
1,3,5-Trimethylbenzene	ug/L	<0.33	1.1	10/16/19 09:48	
Benzene	ug/L	<0.31	1.0	10/16/19 09:48	
Ethylbenzene	ug/L	<0.33	1.1	10/16/19 09:48	
m&p-Xylene	ug/L	<0.32	2.0	10/16/19 09:48	
Methyl-tert-butyl ether	ug/L	<0.32	1.1	10/16/19 09:48	
o-Xylene	ug/L	<0.15	1.0	10/16/19 09:48	
Toluene	ug/L	<0.16	1.0	10/16/19 09:48	
a,a,a-Trifluorotoluene (S)	%	101	85-115	10/16/19 09:48	

Parameter	Units	1961194		1961195		% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	% Rec				
1,2,4-Trimethylbenzene	ug/L	20	18.6	19.9	93	87-118	7	20	
1,3,5-Trimethylbenzene	ug/L	20	18.5	19.8	92	84-115	7	20	
Benzene	ug/L	20	20.1	21.3	101	85-115	6	20	
Ethylbenzene	ug/L	20	19.3	20.7	97	85-115	7	20	
m&p-Xylene	ug/L	40	38.8	41.5	97	85-115	7	20	
Methyl-tert-butyl ether	ug/L	20	21.8	22.7	109	85-115	4	20	
o-Xylene	ug/L	20	19.6	20.8	98	85-115	6	20	
Toluene	ug/L	20	20.2	21.5	101	85-115	6	20	
a,a,a-Trifluorotoluene (S)	%				102	85-115			

Parameter	Units	1962028		1962029		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.					
1,2,4-Trimethylbenzene	ug/L	<0.34	20	19.2	18.3	96	91	72-135	5	20
1,3,5-Trimethylbenzene	ug/L	<0.33	20	19.4	18.4	97	92	67-134	5	20
Benzene	ug/L	0.79J	20	21.4	20.9	103	101	85-122	2	20
Ethylbenzene	ug/L	<0.33	20	20.4	19.4	102	97	85-129	5	20
m&p-Xylene	ug/L	<0.32	40	40.8	39.0	102	98	85-124	4	20
Methyl-tert-butyl ether	ug/L	<0.32	20	19.5	19.0	97	95	85-118	3	20
o-Xylene	ug/L	<0.15	20	20.2	19.2	101	96	85-124	5	20
Toluene	ug/L	<0.16	20	21.4	20.4	107	102	85-122	5	20
a,a,a-Trifluorotoluene (S)	%					104	102	85-115		

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

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

QC Batch: 337268 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

METHOD BLANK: 1959916 Matrix: Water
Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	10/16/19 07:13	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	10/16/19 07:13	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	10/16/19 07:13	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	10/16/19 07:13	
1,1-Dichloroethane	ug/L	<0.27	1.0	10/16/19 07:13	
1,1-Dichloroethene	ug/L	<0.24	1.0	10/16/19 07:13	
1,1-Dichloropropene	ug/L	<0.54	1.8	10/16/19 07:13	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	10/16/19 07:13	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	10/16/19 07:13	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	10/16/19 07:13	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	10/16/19 07:13	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	10/16/19 07:13	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	10/16/19 07:13	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	10/16/19 07:13	
1,2-Dichloroethane	ug/L	<0.28	1.0	10/16/19 07:13	
1,2-Dichloropropane	ug/L	<0.28	1.0	10/16/19 07:13	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	10/16/19 07:13	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	10/16/19 07:13	
1,3-Dichloropropane	ug/L	<0.83	2.8	10/16/19 07:13	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	10/16/19 07:13	
2,2-Dichloropropane	ug/L	<2.3	7.6	10/16/19 07:13	
2-Chlorotoluene	ug/L	<0.93	5.0	10/16/19 07:13	
4-Chlorotoluene	ug/L	<0.76	2.5	10/16/19 07:13	
Benzene	ug/L	<0.25	1.0	10/16/19 07:13	
Bromobenzene	ug/L	<0.24	1.0	10/16/19 07:13	
Bromochloromethane	ug/L	<0.36	5.0	10/16/19 07:13	
Bromodichloromethane	ug/L	<0.36	1.2	10/16/19 07:13	
Bromoform	ug/L	<4.0	13.2	10/16/19 07:13	
Bromomethane	ug/L	<0.97	5.0	10/16/19 07:13	
Carbon tetrachloride	ug/L	<0.17	1.0	10/16/19 07:13	
Chlorobenzene	ug/L	<0.71	2.4	10/16/19 07:13	
Chloroethane	ug/L	<1.3	5.0	10/16/19 07:13	
Chloroform	ug/L	<1.3	5.0	10/16/19 07:13	
Chloromethane	ug/L	<2.2	7.3	10/16/19 07:13	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	10/16/19 07:13	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	10/16/19 07:13	
Dibromochloromethane	ug/L	<2.6	8.7	10/16/19 07:13	
Dibromomethane	ug/L	<0.94	3.1	10/16/19 07:13	
Dichlorodifluoromethane	ug/L	<0.50	5.0	10/16/19 07:13	
Ethylbenzene	ug/L	<0.22	1.0	10/16/19 07:13	
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	10/16/19 07:13	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

METHOD BLANK: 1959916

Matrix: Water

Associated Lab Samples: 40197129021, 40197129022, 40197129023, 40197129024, 40197129025, 40197129026, 40197129032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	10/16/19 07:13	
m&p-Xylene	ug/L	<0.47	2.0	10/16/19 07:13	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	10/16/19 07:13	
Methylene Chloride	ug/L	<0.58	5.0	10/16/19 07:13	
n-Butylbenzene	ug/L	<0.71	2.4	10/16/19 07:13	
n-Propylbenzene	ug/L	<0.81	5.0	10/16/19 07:13	
Naphthalene	ug/L	<1.2	5.0	10/16/19 07:13	
o-Xylene	ug/L	<0.26	1.0	10/16/19 07:13	
p-Isopropyltoluene	ug/L	<0.80	2.7	10/16/19 07:13	
sec-Butylbenzene	ug/L	<0.85	5.0	10/16/19 07:13	
Styrene	ug/L	<0.47	1.6	10/16/19 07:13	
tert-Butylbenzene	ug/L	<0.30	1.0	10/16/19 07:13	
Tetrachloroethene	ug/L	<0.33	1.1	10/16/19 07:13	
Toluene	ug/L	<0.17	5.0	10/16/19 07:13	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	10/16/19 07:13	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	10/16/19 07:13	
Trichloroethene	ug/L	<0.26	1.0	10/16/19 07:13	
Trichlorofluoromethane	ug/L	<0.21	1.0	10/16/19 07:13	
Vinyl chloride	ug/L	<0.17	1.0	10/16/19 07:13	
4-Bromofluorobenzene (S)	%	99	70-130	10/16/19 07:13	
Dibromofluoromethane (S)	%	102	70-130	10/16/19 07:13	
Toluene-d8 (S)	%	102	70-130	10/16/19 07:13	

LABORATORY CONTROL SAMPLE: 1959917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	58.3	117	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	57.5	115	70-130	
1,1,2-Trichloroethane	ug/L	50	56.0	112	70-130	
1,1-Dichloroethane	ug/L	50	55.1	110	73-150	
1,1-Dichloroethene	ug/L	50	52.0	104	73-138	
1,2,4-Trichlorobenzene	ug/L	50	50.5	101	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	57.8	116	64-129	
1,2-Dibromoethane (EDB)	ug/L	50	55.2	110	70-130	
1,2-Dichlorobenzene	ug/L	50	52.9	106	70-130	
1,2-Dichloroethane	ug/L	50	59.0	118	75-140	
1,2-Dichloropropane	ug/L	50	54.6	109	73-135	
1,3-Dichlorobenzene	ug/L	50	50.8	102	70-130	
1,4-Dichlorobenzene	ug/L	50	50.1	100	70-130	
Benzene	ug/L	50	57.3	115	70-130	
Bromodichloromethane	ug/L	50	54.1	108	70-130	
Bromoform	ug/L	50	52.8	106	68-129	
Bromomethane	ug/L	50	25.8	52	18-159	
Carbon tetrachloride	ug/L	50	50.9	102	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

LABORATORY CONTROL SAMPLE: 1959917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	50	53.5	107	70-130	
Chloroethane	ug/L	50	50.6	101	53-147	
Chloroform	ug/L	50	53.1	106	74-136	
Chloromethane	ug/L	50	39.0	78	29-115	
cis-1,2-Dichloroethene	ug/L	50	52.4	105	70-130	
cis-1,3-Dichloropropene	ug/L	50	54.8	110	70-130	
Dibromochloromethane	ug/L	50	56.7	113	70-130	
Dichlorodifluoromethane	ug/L	50	40.3	81	10-130	
Ethylbenzene	ug/L	50	56.8	114	80-124	
Isopropylbenzene (Cumene)	ug/L	50	55.1	110	70-130	
m&p-Xylene	ug/L	100	112	112	70-130	
Methyl-tert-butyl ether	ug/L	50	48.2	96	54-137	
Methylene Chloride	ug/L	50	50.0	100	73-138	
o-Xylene	ug/L	50	54.4	109	70-130	
Styrene	ug/L	50	49.7	99	70-130	
Tetrachloroethene	ug/L	50	48.5	97	70-130	
Toluene	ug/L	50	55.4	111	80-126	
trans-1,2-Dichloroethene	ug/L	50	50.6	101	73-145	
trans-1,3-Dichloropropene	ug/L	50	51.1	102	70-130	
Trichloroethene	ug/L	50	55.0	110	70-130	
Trichlorofluoromethane	ug/L	50	48.3	97	76-147	
Vinyl chloride	ug/L	50	48.3	97	51-120	
4-Bromofluorobenzene (S)	%			109	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

QC Batch:	337260	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV UST-WATER
Associated Lab Samples:	40197129014, 40197129015, 40197129016, 40197129017, 40197129018, 40197129019, 40197129020, 40197129027, 40197129028, 40197129029, 40197129030, 40197129031		

METHOD BLANK:	1959896	Matrix:	Water
Associated Lab Samples:	40197129014, 40197129015, 40197129016, 40197129017, 40197129018, 40197129019, 40197129020, 40197129027, 40197129028, 40197129029, 40197129030, 40197129031		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	10/16/19 08:56	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	10/16/19 08:56	
Benzene	ug/L	<0.25	1.0	10/16/19 08:56	
Ethylbenzene	ug/L	<0.22	1.0	10/16/19 08:56	
m&p-Xylene	ug/L	<0.47	2.0	10/16/19 08:56	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	10/16/19 08:56	
Naphthalene	ug/L	<1.2	5.0	10/16/19 08:56	
o-Xylene	ug/L	<0.26	1.0	10/16/19 08:56	
Toluene	ug/L	<0.17	5.0	10/16/19 08:56	
4-Bromofluorobenzene (S)	%	96	70-130	10/16/19 08:56	
Dibromofluoromethane (S)	%	114	70-130	10/16/19 08:56	
Toluene-d8 (S)	%	101	70-130	10/16/19 08:56	

LABORATORY CONTROL SAMPLE: 1959897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	46.4	93	70-130	
Ethylbenzene	ug/L	50	49.5	99	80-124	
m&p-Xylene	ug/L	100	98.2	98	70-130	
Methyl-tert-butyl ether	ug/L	50	50.9	102	54-137	
o-Xylene	ug/L	50	47.3	95	70-130	
Toluene	ug/L	50	47.2	94	80-126	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1959898 1959899

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40197054001 Result	Spike Conc.	Spike Conc.	Result						
Benzene	ug/L	<0.00025 mg/L	50	50	47.0	48.8	94	98	70-130	4	20
Ethylbenzene	ug/L	<0.00022 mg/L	50	50	49.8	52.3	100	105	80-125	5	20
m&p-Xylene	ug/L	<0.47	100	100	98.3	104	98	104	70-130	5	20
Methyl-tert-butyl ether	ug/L	<0.0012 mg/L	50	50	52.5	53.6	105	107	51-145	2	20
o-Xylene	ug/L	<0.26	50	50	49.1	51.5	98	103	70-130	5	20

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QUALITY CONTROL DATA

Project: 34265.003 SUPERIOR REFINING CO

Pace Project No.: 40197129

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1959898												
Parameter	Units	40197054001		1959899		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Toluene	ug/L	<0.00017 mg/L	50	50	49.2	51.7	98	103	80-131	5	20	
4-Bromofluorobenzene (S)	%							100	98	70-130		
Dibromofluoromethane (S)	%							98	95	70-130		
Toluene-d8 (S)	%							94	98	70-130		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 34265.003 SUPERIOR REFINING CO
Pace Project No.: 40197129

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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 SUPERIOR REFINING CO

Pace Project No.: 40197129

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40197129001	LRS-1	EPA 8021	337629		
40197129002	LRS-2	EPA 8021	337629		
40197129003	LRS-3	EPA 8021	337629		
40197129004	LRS-4	EPA 8021	337629		
40197129005	LRS-7	EPA 8021	337629		
40197129006	MW-1/FL	EPA 8021	337629		
40197129007	MW-2/FL	EPA 8021	337629		
40197129008	MW-3/FL	EPA 8021	337629		
40197129009	MW-9/FL	EPA 8021	337629		
40197129010	MW-10/FL	EPA 8021	337629		
40197129011	MW-11/FL	EPA 8021	337629		
40197129012	MW-13/FL	EPA 8021	337629		
40197129013	MW-14/FL	EPA 8021	337629		
40197129021	MW-1/T68	EPA 8260	337268		
40197129022	MW-2/T68	EPA 8260	337268		
40197129023	MW-4/T68	EPA 8260	337268		
40197129024	MW-5/T66	EPA 8260	337268		
40197129025	MW-5/T68	EPA 8260	337268		
40197129026	MW-6/T68	EPA 8260	337268		
40197129032	TRIP BLANK	EPA 8260	337268		
40197129014	MW-1/T40	EPA 8260	337260		
40197129015	MW-2/T40	EPA 8260	337260		
40197129016	MW-4/T40	EPA 8260	337260		
40197129017	MW-5/T40	EPA 8260	337260		
40197129018	MW-6/T40	EPA 8260	337260		
40197129019	MW-7/T40	EPA 8260	337260		
40197129020	TS-1/T40	EPA 8260	337260		
40197129027	MW-2R/T70	EPA 8260	337260		
40197129028	MW-3/T70	EPA 8260	337260		
40197129029	MW-4/T70	EPA 8260	337260		
40197129030	MW-5/T70	EPA 8260	337260		
40197129031	MW-6/T70	EPA 8260	337260		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Gannett Fleming, Inc.
Branch/Location: Madison, WI
Project Contact: Cliff Wright
Phone: 608/836-1500 x6722
Project Number: 34265.003
Project Name: Superior Refining Company (SRC)
Project State: WI
Sampled By (Print): Marcus Mussey
Sampled By (Sign): *[Signature]*



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

COC No. 40197129

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	3																	

Quote #: Pace 2019
Mail To Contact: Cliff Wright
Mail To Company: Gannett Fleming
Mail To Address: 8040 Excelsior Dr., Suite 303, Madison, WI 53717-1338
Invoice To Contact: See "Mail to Contact" info above
Invoice To Company: "
Invoice To Address: "
Invoice To Phone: 608/836-1500 x6722
CLIENT COMMENTS **LAB COMMENTS (Lab Use Only)** **Profile #**

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	Analyses Requested
		DATE	TIME		
001	LRS-1	10/9	850	GW	3
002	LRS-2		855		
003	LRS-3		900		
004	LRS-4		845		
005	LRS-7		905		
006	MW-1/FL		750		
007	MW-2/FL		755		
008	MW-3/FL		800		
009	MW-9/FL		915		
010	MW-10/FL		910		
011	MW-11/FL		805		
012	MW-13/FL		810		
013	MW-14/FL		815		

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

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

Email #1: **Telephone:** **Fax:**

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

Relinquished By: <i>[Signature]</i>	Date/Time: 10/9, 12:30	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 10/11/09 9:45	Received By: Alan Loe	Date/Time: 10/11/09 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No. 40197129
Receipt Temp = ROI °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal
 Present / Not Present
 Intact / Not Intact

(Please Print Clearly)

Company Name: Gannett Fleming, Inc.
Branch/Location: Madison, WI
Project Contact: Cliff Wright
Phone: 608/836-1500 x6722
Project Number: 34265.003
Project Name: Superior Refining Company (SRC)
Project State: WI
Sampled By (Print): Marcus Mussey
Sampled By (Sign):



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

COC No. 40197129

Page 1 of 65

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	PV005	5260	V065	8260															

Quote #: Pace 2019
Mail To Contact: Cliff Wright
Mail To Company: Gannett Fleming
Mail To Address: 8040 Excelsior Dr., Suite 303, Madison, WI 53717-1338
Invoice To Contact: See "Mail to Contact" info above
Invoice To Company: "
Invoice To Address: "
Invoice To Phone: 608/836-1500 x6722
CLIENT COMMENTS **LAB COMMENTS (Lab Use Only)** **Profile #**

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	
014	MW-1/T40	10/9	9:35	6W
015	MW-2/T40		9:45	
016	MW-4/T40		10:10	
017	MW-5/T40		9:50	
018	MW-6/T40		10:00	
019	MW-7/T40		10:05	
020	TS-1/T40		9:55	
021	MW-1/T68		10:20	
022	MW-2/T68		10:30	
023	MW-4/T68		10:25	
024	MW-5/T68		10:40	
025	MW-5/T68		10:15	
026	MW-6/T68		10:35	

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

Relinquished By: Fed Ex **Date/Time:** 10/11/19 9:45 **Received By:** Alan Pace **Date/Time:** 10/11/19 9:45

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

Email #1: **Relinquished By:** **Date/Time:** **Received By:** **Date/Time:**

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:**

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

PACE Project No. 40197129
Receipt Temp = °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present Intact / Not Intact

(Please Print Clearly)

Company Name: Gannett Fleming, Inc.
 Branch/Location: Madison, WI
 Project Contact: Cliff Wright
 Phone: 608/836-1500 x6722
 Project Number: 34265.003
 Project Name: Superior Refining Company (SRC)
 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

COC No. 40197109

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CHAIN OF CUSTODY

***Preservation Codes**
 A=None B=HCL C=H2SO4 D=HNO3 E=D1 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	PVOC/Naph																			
		8260																			

Quote #:	Page 2019	
Mail To Contact:	Cliff Wright	
Mail To Company:	Gannett Fleming	
Mail To Address:	8040 Excelsior Dr., Suite 303, Madison, WI 53717-1338	
Invoice To Contact:	See "Mail to Contact" info above	
Invoice To Company:	"	
Invoice To Address:	"	
Invoice To Phone:	608/836-1500 x6722	
CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
027	MW-2R/T70	10/9	10:50	GW
028	MW-3/T70		11:05	
029	MW-4/T70		11:10	
030	MW-5/T70		10:55	
031	MW-6/T70		11:00	
032	Trip Blank			

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By: <i>Fed Ex</i> Date/Time: <i>10/11/19 9:45</i>	Received By: <i>Alan Pace</i> Date/Time: <i>10/11/19 9:45</i>	PACE Project No. <i>40197109</i>
Transmit Prelim Rush Results by (complete what you want):	Relinquished By:	Received By:	Receipt Temp = _____ °C
Email #1:	Relinquished By:	Received By:	Sample Receipt pH OK / Adjusted
Email #2:	Relinquished By:	Received By:	Cooler Custody Seal Present / Not Present
Telephone:	Relinquished By:	Received By:	Intact / Not Intact
Fax:	Relinquished By:	Received By:	
Samples on HOLD are subject to special pricing and release of liability	Relinquished By:	Received By:	

Sample Preservation Receipt Form

Pace Analytical Services, LLC,
1241 Bellevue Street, Suite 900
Green Bay, WI 54302

Client Name: Gannett Fleming

Project # 4051971291

All containers needing preservation have been checked and noted below: Yes No N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

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Pace Lab #	Glass						Plastic						Vials				Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)				
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU								WPFU	SP5T	ZPLC	GN
001																	3																2.5 / 5 / 10
002																	3																2.5 / 5 / 10
003																	3																2.5 / 5 / 10
004																	3																2.5 / 5 / 10
005																	3																2.5 / 5 / 10
006																	3																2.5 / 5 / 10
007																	3																2.5 / 5 / 10
008																	3																2.5 / 5 / 10
009																	3																2.5 / 5 / 10
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014																	3																2.5 / 5 / 10
015																	3																2.5 / 5 / 10
016																	3																2.5 / 5 / 10
017																	3																2.5 / 5 / 10
018																	3																2.5 / 5 / 10
019																	3																2.5 / 5 / 10
020																	3																2.5 / 5 / 10

Exceptions to preservation check (VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm): Yes No N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3B	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Sample Preservation Receipt Form

Client Name: Barnett Fleming

Project #: 40197127

Pace Lab #	Glass							Plastic						Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)							
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T								ZPLC	GN					
021																	3																					2.5 / 5 / 10
022																	3																					2.5 / 5 / 10
023																	3																					2.5 / 5 / 10
024																	3																					2.5 / 5 / 10
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030																	3																					2.5 / 5 / 10
031																	3																					2.5 / 5 / 10
032																	2																					2.5 / 5 / 10
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																																						2.5 / 5 / 20

LC/11/19
AS



1241 Bellevue Street, Green Bay, WI 54302

Document Name:
Sample Condition Upon Receipt (SCUR)

Document No.:
F-GB-C-031-Rev.07

Document Revised: 25Apr2018

Issuing Authority:
Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Gannett Fleming

WO#: **40197129**

Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____



Tracking #: 8149 6215 5813

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 SR - N/A Type of Ice: Blue, Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT / Corr: _____

Temp Blank Present: yes no

Biological Tissue is Frozen: yes no

Person examining contents:

Date: 10/11/19

Initials: AS

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

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 type="checkbox"/> Yes <input type="checkbox"/> No	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	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	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	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>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
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>433</u>		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HMTZ PC DM

Date: 10/11/19